Genesys®

Framework 8.1

T-Server for Siemens HiPath 4000 CSTA III

Deployment Guide

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Preface

Welcome to the *Framework 8.1 T-Server for Siemens HiPath 4000 CSTA III Deployment Guide.* This document introduces you to the concepts, terminology, and procedures relevant to T-Servers® in general and provides detailed reference information about T-Server for Siemens HiPath 4000 CSTA III.The reference information includes, but is not limited to, configuration options, limitations, and switch-specific functionality. You must configure the configuration objects and options described in this document in the Framework Configuration Layer.

Use this document only after you have read through the *Framework 8.1 Deployment Guide*, and the Release Note for your T-Server.

This document is valid only for the 8.1 release of this product.

Note: For versions of this document created for other releases of this product, visit the Genesys Technical Support website, or request the Documentation Library DVD, which you can order by e-mail from Genesys Order Management at `orderman@genesyslab.com`.

This preface contains the following sections:

For information about related resources and about the conventions that are used in this document, see the supplementary material starting on page 283.

About T-Server for Siemens HiPath 4000 CSTA III

T-Server is the Genesys software component that provides an interface between your telephony hardware and the rest of the Genesys software components in your enterprise. It translates and keeps track of events and

requests that come from, and are sent to, the CTI (computer-telephony integration) link in the telephony device. T-Server is a TCP/IP-based server that can also act as a messaging interface between T-Server clients. It is the critical point in allowing your Genesys solution to facilitate and track the contacts that flow through your enterprise.

Intended Audience

This document is primarily intended for This guide is intended primarily for system administrators, both those who are new to T-Server and those who are familiar with it.

- If you are new to T-Server, read the *Framework 8.1 Deployment Guide* and the Release Note mentioned earlier, and then read all of the sections of this document that apply to your software and its accompanying components. Refer back to the *Framework 8.1 Deployment Guide* as needed.

- If you are an experienced T-Server user—someone with computer expertise, who is used to installing, configuring, testing, or maintaining Genesys software—you may find it more time efficient to go to the Index to see what is new or different in T-Server release 8.1. If you take that approach, please also read Release Notes and refer to other related resources, such as the *Genesys Events and Models Reference Manual* and the *Voice Platform SDK 8.x .NET* (or *Java*) *API Reference* for complete information on the T-Server events, call models, and requests.

In general, this document assumes that you have a basic understanding of, and familiarity with:

- Computer-telephony integration concepts, processes, terminology, and applications.

- Network design and operation.

- Your own network configurations.

- Your telephony hardware and software.

- Genesys Framework architecture and functions.

- Configuration Manager interface and object-managing operations.

Based on your specific contact center environment and your responsibilities in it, you may need to be familiar with a much wider range of issues as you deploy T-Server.

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Document Change History

This version of the *Framework 8.1 T-Server for Siemens HiPath 4000 CSTA III Deployment Guide* has been updated with the following:

- The `propagated-call-type` configuration option is correctly documented in the `TServer` section.

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T-Server Deployment

Part One of this *T-Server Deployment Guide* familiarizes the reader with T-Server in general. It addresses architectural, functional, and procedural information common to all T-Servers.

The information in Part One is divided into the following chapters:

- Chapter 1, "T-Server Fundamentals," on page 17, describes T-Server, its place in the Framework 8 architecture, T-Server redundancy, and multi-site issues. It stops short of providing configuration and installation information.

- Chapter 2, "T-Server General Deployment," on page 31, presents configuration and installation procedures for all T-Servers.

- Chapter 3, "High-Availability Deployment," on page 45, addresses high availability (HA).

- Chapter 4, "Multi-Site Support," on page 57, details the variations available for T-Server implementations across geographical locations.

- Chapter 5, "Starting and Stopping T-Server Components," on page 115, describes how, and in what order, to start up T-Server among other Framework components. It also provides possible stopping commands.

New for All T-Servers in 8.1

Before looking at T-Server's place in Genesys solutions and in the architecture of the Genesys Framework, note the following general changes that have been implemented in the 8.1 release of T-Server:

- T-Server no longer connects to applications that have disabled status in the configuration environment.

- The default value of the `background-processing` configuration option has been changed to `true`. See "background-processing" on page 218 for details.

- T-Server now supports the Unresponsive Process Detection feature. The following configuration options enable this feature:
  - "heartbeat-period" on page 213
  - "hangup-restart" on page 214

  For more information, refer to the *Framework 8.0 Management Layer User's Guide.*

- T-Server now supports IPv6. For more information, refer to the *Framework 8.1 Deployment Guide.*

- T-Server now supports vSphere 4 Hypervisor.

- T-Server now supports Acresso FLEXNet Publisher v11.9 license manager.

Notes: • Configuration option changes common to all T-Servers are described in "Changes from Release 8.0 to 8.1" on page 243.

• For information about the new features that are available in your T-Server in the initial 8.1 release, see Part Two of this document.

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T-Server Fundamentals

This chapter provides general information about T-Server features and functionality and about its configuration and installation. For reference information about your specific T-Server and about options for all T-Servers, see "Part Two: Reference Information."

This chapter has various levels of information, some of it intended for people who have configured, installed, and used previous releases of T-Server, and some of it aimed at those less familiar with such T-Server operations. That means some sections will not necessarily be relevant for you.

- If you are an experienced user of T-Server, start with "New for All T-Servers in 8.1" on page 15, and then move to the chapters comprising Part Two of this document, where specific information about your T-Server is available.

- If you are new to T-Server, begin with "Learning About T-Server." Once you have read through that and subsequent sections, you are ready for the other chapters in Part One that go into detail about T-Server configuration and installation.

Generally, this chapter presents overview information that applies to all T-Servers (and Network T-Servers) and their deployment. This chapter is divided into the following sections:

Learning About T-Server

The *Framework 8.1 Deployment Guide* provides you with a high-level introduction to the role that T-Server plays in the Genesys Framework. If you have already looked through that guide, you may recall that T-Server is the most important component of the Framework Media Layer (the other two components are Load Distribution Server (LDS) and HA Proxy). The Media Layer enables Genesys solutions to communicate with various media, including traditional telephony systems, voice over IP (VoIP), e-mail, and the Web. This layer also provides the mechanism for distributing interaction-related business data, also referred to as *attached data,* within and across solutions.

Framework and Media Layer Architecture

Figure 1 illustrates the position Framework holds in a Genesys solution.
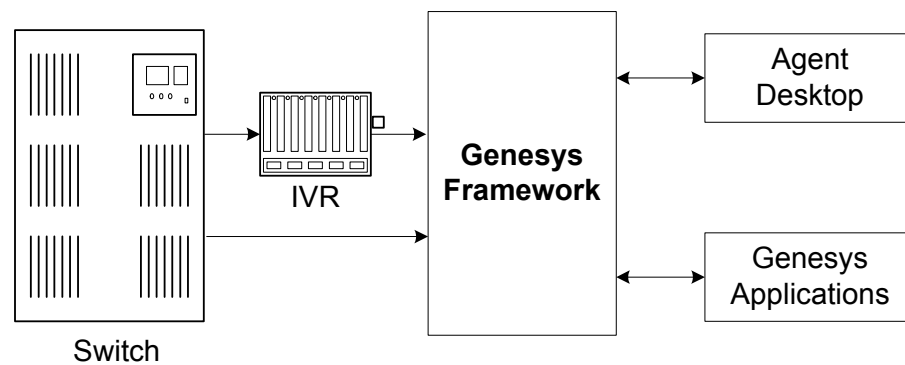
Figure 1: Framework in a Genesys Solution

Moving a bit deeper, Figure 2 presents the various layers of the Framework architecture.

Framework

Services Layer		Routing Services
Management Layer	Media Layer (including T-Server)	
Configuration Layer		Reporting Services
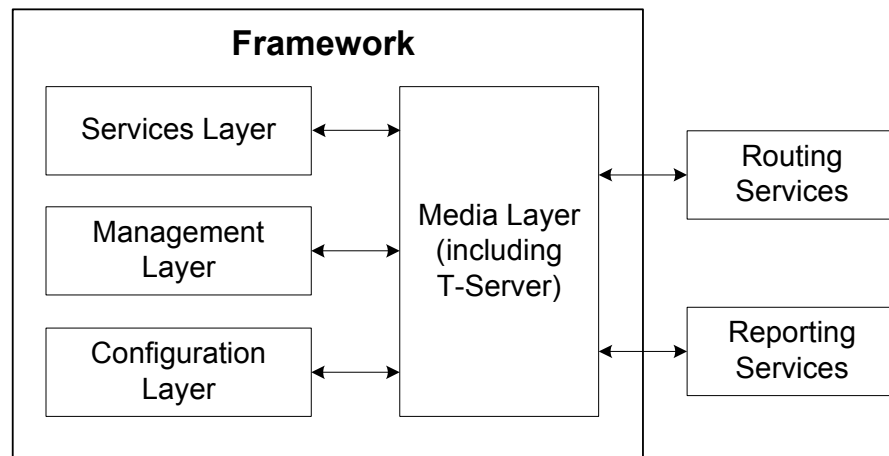
Figure 2: The Media Layer in the Framework Architecture

T-Server is the heart of the Media Layer—translating the information of the media-device realm into information that Genesys solutions can use. It enables your contact center to handle the computer-based form of the interactions that arrive and it translates the information surrounding a customer contact into reportable and actionable data.

Figure 3 presents the generalized architecture of the Media Layer.

Internet Media	Traditional Telephony	VoIP Telephony
Interaction Server	T-Servers	T-Servers for IP Solutions

SOLUTIONS
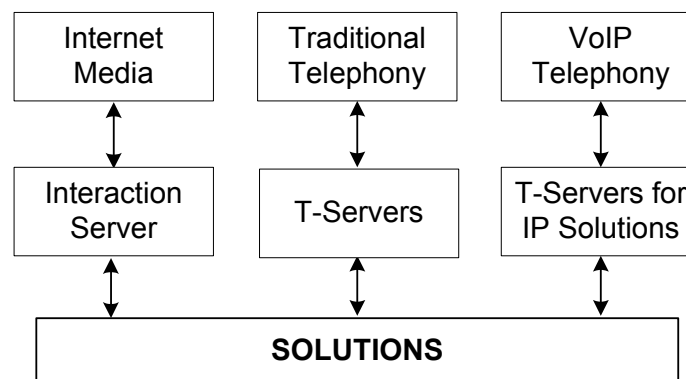
Figure 3: Media Layer Architecture

In addition to being the most important component of the Media Layer, T-Server plays the most significant role in making information about telephony traffic and its data available to Framework as a whole.

One or more components in practically every solution are T-Server clients. Solutions comprise a number of different Genesys software packages, from collections of components for various types of routing to those that allow for

outbound dialing to still others. Framework in general, and T-Server in particular, enable these solutions to function in your enterprise.

T-Server has several typical clients: Stat Server, Interaction Concentrator, Universal Routing Server, and agent desktop applications. T-Server gets the information it needs about the enterprise from Configuration Server. Additionally, if you use the Management Layer, T-Server provides its ongoing status and various other log messages to server components of the Management Layer (for instance, allowing you to set alarms).

T-Server Requests and Events

This section outlines the roles that T-Server plays in a contact center. While it is possible to describe roles for all T-Servers, at a detailed level, T-Server's functionality depends on the hardware to which it is connected. (For example, when connected to a traditional switch, it performs CTI functions, but when connected to a VOIP-based telephony device, it controls IP traffic.) The CTI connection is only for the switch.

Details of T-Server Functionality

T-Server is a TCP/IP server that enables intelligent communication between media-specific protocols (such as the various CTI protocols, including CSTA and ASAI) and TCP/IP-based clients of T-Server. Applications that are clients to T-Server use the T-Library format to transmit requests to T-Server through a TCP/IP socket. T-Server can then either translate those requests to CTI protocol for switch use or relay them directly to other TCP/IP clients.

T-Server performs three general functions in the contact center: Bridging, Messaging, and Interaction Tracking.

Bridging

T-Server acts as a platform-independent interface between media devices and business applications. In the case of a telephony device, for instance, it receives messages from and sends commands to the telephony equipment using either CTI links provided by the switch manufacturer or interface protocols provided by telephony network vendors.

On the client-application end, T-Server offers three models (call model, agent model, and device model) unified for all switches. The core functionality (such as processing an inbound call, an agent login, or a call-forwarding request) translates into a unified application programming interface (API) called T-Library, so that applications do not need to know what specific switch model they are dealing with. On the other hand, T-Library accommodates many functions that are unique to a specific switch, so that client applications are able to derive the maximum functionality offered by a particular switch.

Refer to the *Genesys Events and Models Reference Manual* for complete information on all T-Server events and call models and to the

`TServer.Requests` portion of the *Voice Platform SDK 8.x .NET* (or *Java*) *API Reference* for technical details of T-Library functions.

Messaging

In addition to translating requests and events for the client application involved in an interaction, T-Server:

- Provides a subscription mechanism that applications can use to receive notifications about interaction-related and non-interaction-related events within the contact center.

- Broadcasts messages of major importance (such as a notification that the link is down) to all clients.

- Broadcasts messages originated by a T-Server client to other T-Server clients.

The subscription mechanism consists of two parts, the DN subscription and event-type masking. Applications must register for a DN or a set of DNs to receive notifications about all events that occur in association with each registered DN. For example, when two softphone applications are registered for the same DN, and the first application initiates a call from the DN, T-Server notifies both applications that the call is initiated from the DN.

Client applications can also specify one or more types of events, and T-Server will filter out events of the non-specified types and only send events of the requested types. For example, if agent supervisors are interested in receiving agent-related events, such as `AgentLogin` and `AgentLogout,` they have to mask `EventAgentLogin` and `EventAgentLogout,` provided that a particular T-Server supports these events.

The combination of each client's subscription for DNs and masking of event types defines what messages T-Server distributes to what client.

Interaction Tracking

T-Server maintains call information for the life of the call (or other T-Server-supported media type) and enables client applications to attach user data to the call. Call information includes:

- A unique identifier, connection ID, that T-Server assigns when creating the call.

- Automatic Number Identification (`ANI`) and Dialed Number Identification Service (`DNIS`), if reported by the CTI link.

- User data that a client application (such as an Interactive Voice Response unit or Genesys Universal Routing Server) provides.

Difference and Likeness Across T-Servers

Although Figure 3 on (and other figures) depicts T-Server that works with telephony systems as a single product, this is a simplification. Because

almost every traditional telephony device has its own characteristics and communication protocols, Genesys makes different T-Servers for different telephony systems. (That means your T-Server will not work with another switch.) Thus, all T-Servers play a common role in the architecture, but their specific features differ from implementation to implementation, based on the media device in use.

Despite their switch-based differences, T-Servers for telephony systems are similar to one another in at least one important respect: they are all built with a certain amount of shared software code. This shared code is rolled into a single unit and is called T-Server Common Part (TSCP). TSCP is the central, common component for all T-Servers and has its own Release Note, which is accessible via a hyperlink from your T-Server's Release Note.

Note: This document separates common-code features based on TSCP into separate sections and chapters, such as the "T-Server Common Configuration Options" chapter. These are the options for all T-Servers that TSCP makes available for configuration.

T-Server Functional Steps During a Sample Call

The following example, Figure 4, outlines some basic steps that T-Server might take when a call arrives from outside the contact center. In this scenario, T-Server starts tracking the call even before it is delivered to the agent. T-Server then informs the selected agent that a call has arrived. When the switch delivers the call to the agent's extension, T-Server presents account information, collected at an Interactive Voice Response (IVR) unit, to the agent at the agent desktop application.

6. T-Server notifies the agent application of the call.

1. Switch notifies T-Server of call arrival. T-Server assigns ConnID.

7. T-Server delivers the call data to the desktop.

T-Server

Agent Desktop Application

2. Switch delivers a call to IVR for automated service.

3. IVR asks T-Server to attach the account number to the call.

4. IVR sends the call to an ACD queue.

IVR

5. ACD diverts the call to an agent DN.

Switch

Agent DN

Figure 4: Functional T-Server Steps

Step 1

When the call arrives at the switch, T-Server creates a call in its internal structure. T-Server assigns the call a unique identifier, connection ID.

Step 2

The switch delivers the call to an Interactive Voice Response (IVR) unit, which begins automated interactions with the caller.

Step 3

IVR acquires user information from the caller through prompts and requests T-Server to attach that information to the call. T-Server updates the call with the user information.

Step 4

IVR sends the call to an ACD (Automated Call Distribution) queue.

Step 5

The ACD unit distributes the call to an available agent logged in to a particular DN (directory number).

Step 6

T-Server notifies the agent desktop application that the call is ringing on the agent DN. The notification event contains call data including `ANI`, `DNIS`, and account information that the IVR has collected.

Step 7

The agent desktop application presents the account information, including the name of the person whose account this is, on the agent's screen, so that the agent answering the call has all the relevant information.

These seven steps illustrate just a small part of T-Server's bridging, messaging, and interaction-processing capabilities.

Advanced Disconnect Detection Protocol

Since the 6.0 release of T-Server, the Advanced Disconnect Detection Protocol (ADDP) has replaced the Keep-Alive Protocol (KPL) as the method to detect

failures for certain T-Server connections, including connections between two T-Servers and between a T-Server and its clients.

Notes: Starting with release 7.5, the KPL backward-compatibility feature is no longer supported.

ADDP applies only to connections between Genesys software components.

With ADDP, protocol activation and initialization is made on the client's side and you can change these parameters. No additional messages are sent when there is existing activity over the connection. T-Server client applications and the remote T-Server (if any) must be listening to the socket and respond promptly to the polling signal for the connection to be preserved.

If you are going to enable ADDP, you must do it using the `protocol`, `addp-timeout`, `addp-remote-timeout`, and `addp-trace` configuration options. When configuring a timeout, consider the following issues:

- The configured timeout must be at least twice as long as the maximum network latency.
- There may be an interval when T-Server does not check for network activity.
- If the link connection fails but the client is not notified (for example, because the host is turned off, or because a network cable is unplugged), the maximum reaction time to a link-connection failure is equal to double the configured timeout plus the established network latency.

Also keep in mind that the T-Server receiving the polling signal may not respond immediately, and that a delay occurs after the polling signal, while the response travels from one T-Server to another. If you do not account for these contingencies when configuring a timeout, the connection that ADDP is monitoring will be dropped periodically.

Redundant T-Servers

T-Servers can operate in a high-availability (HA) configuration, providing you with redundant systems. The basics of each T-Server's redundant capabilities differ from T-Server to T-Server. One basic principle of redundant T-Servers is the standby redundancy type, which dictates how quickly a backup T-Server steps in when the primary T-Server goes down.

The Framework Management Layer currently supports two types of redundant configurations: `warm standby` and `hot standby`. All T-Servers offer the `warm standby` redundancy type and, starting with release 7.1, the `hot standby` redundancy type is implemented in T-Servers for most types of switches. (See Table 1.)

Instructions for configuring T-Server redundancy are available in Chapter 3, "High-Availability Configuration and Installation." Specifics on your T-Server's HA capabilities are outlined in Part Two of this document.

Note: IVR Server and some Network T-Servers can be configured for load sharing or `warm` or `hot standby;` however, they do not support any combination of these redundancy types. Details of your component's HA capabilities are discussed in Part Two of this document.

Support for Hot Standby Redundancy in Various T-Servers

Use Table 1 to determine whether your T-Server supports the `hot standby` redundancy type. The table also indicates whether HA Proxy components are required for this support, and, if so, how many are required per pair of redundant T-Servers (or per link if so noted).

Table 1 only summarizes `hot standby` redundancy support in various T-Servers. For detailed, up-to-date information on the subject, see the *Genesys Supported Media Interfaces Reference Manual* located on the Technical Support website at
`http://genesyslab.com/support/dl/retrieve/default.asp?item=A9CB309A F4DEB8127C5640A3C32445A7&view=item`.

Table 1: T-Server Support of the Hot Standby Redundancy Type

T-Server Type	Hot Standby Supported	HA Proxy Required	Number of HA Proxy Components
Aastra MXONE CSTA I	Yes	No	—
Alcatel A4200/OXO	Yes	No	—
Alcatel A4400/OXE	Yes	No	—
Aspect ACD	Yes	No	—
Avaya Communication Manager	Yes	No[a]	—
Avaya INDeX	Yes	No	—
Avaya TSAPI	Yes	No	—
Cisco UCCE	Yes	No	—
Cisco Unified Communications Manager	Yes	No	—
DataVoice Dharma	Yes	No	—
Digitro AXS/20	Yes	No	—

Table 1: T-Server Support of the Hot Standby Redundancy Type (Continued)

T-Server Type	Hot Standby Supported	HA Proxy Required	Number of HA Proxy Components
EADS Intecom M6880	Yes	No	—
EADS Telecom M6500	Yes	No	—
eOn eQueue	Yes	No	—
Fujitsu F9600	Yes	No	—
Huawei C&C08	Yes	No	—
Huawei NGN	Yes	No	—
Mitel MiTAI	Yes	No	—
NEC NEAX/APEX	Yes	No	—
Nortel Communication Server 2000/2100	Yes	Yes[b], No[c]	1 per link
Nortel Communication Server 1000 with SCCS/MLS	Yes	No	—
Philips Sopho iS3000	Yes	No[d]	1
Radvision iContact	No	—	—
Samsung IP-PCX IAP	Yes	No	—
Siemens Hicom 300/HiPath 4000 CSTA I	Yes	No	—
Siemens HiPath 3000	Yes	No	—
Siemens HiPath 4000 CSTA III	Yes	No	—
Siemens HiPath DX	Yes	No	—
SIP Server	Yes	No	—
Spectrum	Yes	No	—
Tadiran Coral	Yes	No	—
Teltronics 20-20	Yes	Yes	1
Tenovis Integral 33/55	Yes	No	—
Network T-Servers[e]			
AT&T	No	—	—

Table 1: T-Server Support of the Hot Standby Redundancy Type (Continued)

T-Server Type	Hot Standby Supported	HA Proxy Required	Number of HA Proxy Components
Concert	No	—	—
CRSP	No	—	—
DTAG	No	—	—
GenSpec	No	—	—
ISCP	No	—	—
IVR Server, using network configuration	Yes	—	—
KPN	No	—	—
MCI	No	—	—
NGSN	No	—	—
Network SIP Server	No	—	—
Sprint	No	—	—
SR3511	No	—	—
Stentor	No	—	—

a. With release 7.1, T-Server for Avaya Communication Manager no longer uses HA Proxy for its support of `hot standby`. Earlier releases of this T-Server require two HA Proxies to support `hot standby`.

b. For T-Server for Nortel Communication Server 2000/2100 in high-availability (`hot standby`) configuration, Genesys recommends that you use link version SCAI14 or above with call-progress and noncontroller-released messages enabled. See the switch-specific information in Part 2 of this *Deployment Guide* for additional information on HA configurations.

c. Starting with release 7.5, T-Server for Nortel Communication Server 2000/2100 supports HA without HA Proxy when operating in Dual CTI Links mode. See the switch-specific information in Part 2 of this *Deployment Guide* for additional information on HA configurations.

d. Starting with release 6.5.3, T-Server for Philips Sopho iS3000 supports HA both with and without HA Proxy.

e. Although they do not support high availability per se, Network T-Servers do support a load-sharing schema.

Multi-Site Support

Multi-site configuration implies the existence of two or more switches that belong to the same enterprise or service provider, and that share the Genesys Configuration Database. (In some cases this may include isolated partitions on a given switch served by different T-Servers.) The main goal of T-Server support for multi-site operations is to maintain critical information about a call as it travels from one switch to another.

For instructions on installing and configuring a multi-site environment, including information on the Inter Server Call Control (ISCC) features, please see Chapter 4, "Multi-Site Support," on page 57.

Agent Reservation

T-Server provides support for clients to invoke the agent reservation function, `TReserveAgent()`. This function allows a server application that is a client of T-Server to reserve a DN along with an agent, a `Place,` or both, so that no other T-Server client can route calls to it during a specified reservation interval. Alternatively, when clients use the ISCC feature (see "ISCC Call Data Transfer Service" on page 59), they can use an agent reservation embedded in an ISCC request. (To do so, clients have to specify a certain `Extensions` attribute in an ISCC request when initiating an ISCC transaction. See page 66 for the list of ISCC requests.)

The reservation does not currently prevent the reserved objects from receiving direct calls or calls distributed from ACD Queues; agent reservation is intended as a way of synchronizing the operation of several clients. See `RequestReserveAgent` in the *Voice Platform SDK 8.x .NET (or Java) API Reference* for more details on this function from the client's point of view.

In addition to invoking the `TReserveAgent` function, you can customize the Agent Reservation feature by configuring options in the T-Server `Application` object. See"agent-reservation Section" on page 226 in the "T-Server Common Configuration Options" chapter in Part Two for more details.

Starting with version 8.1, T-Server supports Agent Reservation failure optimization, to ensure that only agent reservation requests of the highest priority are collected. T-Server responds immediately with the `EventError` message to existing or new reservation requests of a lower priority while collecting the agent reservation requests of the highest priority only. This functionality is controlled with the `collect-lower-priority-requests` configuration option (see page 226).

Client Connections

The number of connections T-Server can accept from its clients depend on the operating system that T-Server runs. Table 2 illustrates the number of client connections that T-Server support.

Table 2: Number of T-Server's Client Connections

Operating System	Number of Connections
AIX 32-bit mode (versions 5.3)	32767
AIX 64-bit mode (versions 5.3, 6.1, 7.1)	32767
HP-UX 32-bit mode (versions 11.11)	2048
HP-UX 64-bit mode (versions 11.11, 11i v2, 11i v3)	2048
HP-UX Itanium (version 11i v3)	2048
Linux 32-bit mode (versions RHEL 4.0, RHEL 5.0)	32768
Linux 64-bit mode (version RHEL 5.0)	32768
Solaris 32-bit mode (version 9)	4096
Solaris 64-bit mode (versions 9, 10)	65536
Windows Server 2003, 2008	4096

Next Steps

Now that you have gained a general understanding of the roles and features available with T-Servers, you are ready to learn how T-Servers are installed and configured. That information is presented in the next few chapters of this *Deployment Guide.* So unless you are already familiar with T-Server deployment and operation procedures, continue with Chapter 2, "T-Server General Deployment," on . Otherwise, you may want to jump to Part Two of this *Deployment Guide*, where you will find information about your specific T-Server.

2

T-Server General Deployment

This chapter contains general information for the deployment, configuration, and installation of your T-Server. You may have to complete additional configuration and installation steps specific to your T-Server and switch. You will find these steps in Part Two of this document.

This chapter contains these sections:

Note: You *must* read the *Framework 8.1 Deployment Guide* before proceeding with this T-Server guide. That book contains information about the Genesys software you must deploy before deploying T-Server.

Prerequisites

T-Server has a number of prerequisites for deployment. Read through this section before deploying your T-Server.

Software Requirements

Framework Components

You can only configure T-Server after you have deployed the Configuration Layer of Genesys Framework. This layer contains DB Server, Configuration

Server, and Configuration Manager. If you intend to monitor or control T-Server through the Management Layer, you must also install and configure components of this Framework layer, such as Local Control Agent (LCA), Message Server, Solution Control Server (SCS), and Solution Control Interface (SCI), before deploying T-Server.

Refer to the *Framework 8.1 Deployment Guide* for information about, and deployment instructions for, these Framework components.

Media Layer and LCA

To monitor the status of components in the Media Layer through the Management Layer, you must load an instance of LCA on every host running Media Layer components. Without LCA, Management Layer cannot monitor the status of any of these components. If you do not use the Management Layer, LCA is not required.

Supported Platforms

Refer to the *Genesys Supported Operating Environment Reference Manual* for the list of operating systems and database systems supported in Genesys releases 6.x, 7.x, and 8.x. You can find this document on the Genesys Technical Support website at
http://genesyslab.com/support/dl/retrieve/default.asp?item=B6C52FB6 2DB42BB229B02755A3D92054&view=item.

For UNIX-based (UNIX) operating systems, also review the list of patches Genesys uses for software product builds, and upgrade your patch configuration if necessary. A description of patch configuration is linked to installation `read_me.html` files for the Genesys applications that operate on UNIX, and is available within the installation packages.

Security

Starting with release 7.5, T-Server supports the Genesys Transport Layer Security (TLS) and can be configured for secure data exchange with the other Genesys components that support this functionality.

The Genesys TLS is not supported on all operating systems that T-Server itself supports. For information about the supported operating systems, see the *Genesys 8.x Security Deployment Guide.*

Hardware and Network Environment Requirements

Hosting

Genesys recommends that you or your IT specialist assign host computers to Genesys software before you start Genesys installation. Remember the following restrictions:

- Do not install all the Genesys server applications on the same host computer.
- When installing a few server applications on the same host computer, prevent them (except for Configuration Server) from using the swap area.

Installation Privileges

During deployment, be sure to log in with an account that will permit you to perform administrative functions—that is, one that has root privileges.

Server Locations

Refer to the "Network Locations for Framework Components" chapter of the *Framework 8.1 Deployment Guide* for recommendations on server locations.

Supported Platforms

Refer to the *Genesys Supported Media Interfaces Reference Manual* for the list of supported switch and PBX versions. You can find this document on the Genesys Technical Support website at
http://genesyslab.com/support/dl/retrieve/default.asp?item=A9CB309A
F4DEB8127C5640A3C32445A7&view=item.

Licensing Requirements

All Genesys software is licensed—that is, it is not shareware. Genesys products are protected through legal license conditions as part of your purchase contract. However, the level of technical license-control enforcement varies across different solutions and components.

Before you begin to install T-Server, remember that, although you may not have had to use technical licenses for your software when you deployed the Configuration and Management Layers in their basic configurations, this is not the case with the Media Layer.

T-Server requires seat-related DN technical licenses to operate even in its most basic configuration. Without appropriate licenses, you cannot install and start T-Server. If you have not already done so, Genesys recommends that you install License Manager and configure a license file at this point. For complete

information on which products require what types of licenses, and on the installation procedure for License Manager, refer to the *Genesys Licensing Guide* available on the Genesys Documentation Library DVD.

The sections that follow briefly describe the T-Server license types.

Note: Starting with release 7.2, the licensing requirements for T-Server have changed from previous releases. Please read this section carefully and refer to the *Genesys Licensing Guide* for complete licensing information.

Licensing Basic Implementations

A stand-alone T-Server serving a single site requires licenses to register all DNs it monitors. DNs that agents use in day-to-day contact center operations, such as Extensions and ACD Positions, have to be registered using licenses that control agent seats.

Note: Configure all seat DNs that agents use (Extensions and ACD Positions) in the Configuration Layer. This enables detailed call monitoring through Genesys reporting, and generally allows you to control access to individual DNs.

Licensing HA Implementations

T-Servers operating with the `hot standby` redundancy type require a special CTI HA technical license, which allows for high-availability implementations, in addition to regular T-Server licenses. Neither T-Server in a redundant pair configured for `hot standby` starts if this license is unavailable. Moreover, the primary and backup T-Servers must use the same licenses to control the same pool of DNs. If your T-Servers are configured with the `hot standby` redundancy type, order licenses for CTI HA support.

Licensing Multi-Site Implementations

T-Servers performing multi-site operations require licenses that allow for such operations, in addition to regular T-Server licenses. If some of your T-Servers are configured for multi-site routing while others are not, either order licenses for multi-site support for all T-Servers or install an additional License Manager to handle the T-Servers involved in multi-site routing.

Note: You do not need licenses for multi-site support if some T-Server clients include the local location as the `location` attribute value in their requests for routing within the same site.

Configuring License Files

You need a license to configure and install Media Layer components. Genesys recommends that, if you have not already done so, at this point you:

1. Install License Manager.

2. Configure license files.

> **Note:** If you use the `<port>@<server>` format when entering the name of the license server during installation, remember that some operating systems use `@` as a special character. In this case, the installation routine is unable to write license information for T-Server to the Configuration Layer or the `run.sh` file. Therefore, when you use the `<port>@<server>` format, you must manually modify the command-line license parameter after installing T-Server.

For information about which products require what types of licenses and for the installation procedure for License Manager, refer to the *Genesys Licensing Guide* available on the Genesys Documentation Library DVD.

About Configuration Options

Configuring T-Server is not a onetime operation. It is something you do at the time of installation and then in an ongoing way to ensure the continued optimal performance of your software. You must enter values for T-Server configuration options on the `Options` tab of your T-Server `Application` object in Configuration Manager. The instructions for configuring and installing T-Server that you see here are only the most rudimentary parts of the process. You must refer extensively to the configuration options chapters located in Part Two of this book. Pay particular attention to the configuration options specific to your own T-Server.

Configuration options common to all T-Servers, independent of switch type, are described in Chapter 9, "T-Server Common Configuration Options," on page 217. *T-Server-specific* configuration options are described in a separate chapter. T-Server also supports unified Genesys log options, as described in the "Common Configuration Options" chapter.

Options that configure values for the TSCP software in your T-Server are common to all T-Servers. Options based on the custom features of your switch apply to your T-Server only. Familiarize yourself with both types of options. You will want to adjust them to accommodate your production environment and the business rules that you want implemented there.

Deployment Sequence

This is the recommended sequence to follow when deploying T-Server.

Task Summary: T-Server Deployment Sequence

Objective	Related Procedures and Actions
1. Deploy Configuration Layer objects and ensure Configuration Manager is running.	See the *Framework 8.1 Deployment Guide* for details.
2. Deploy Network objects (such as Host objects).	See the *Framework 8.1 Deployment Guide* for details.
3. Deploy the Management Layer.	See the *Framework 8.1 Deployment Guide* for details.
4. Test your configuration and installation.	See Chapter 5, "Starting and Stopping T-Server Components," on page 115.

Note: If, during the installation procedure for any of the Genesys applications, the script warns you that Configuration Server is unavailable and that the configuration cannot be updated, continue with the installation. Following the installation, you must complete the information on the `Start Info` tab to ensure that T-Server will run.

Deployment of T-Server

Deploying T-Server manually requires that you configure a number of different objects in the Configuration Layer prior to setting up your T-Server objects and then install T-Server. This section describes the manual deployment process.

Configuration of Telephony Objects

This section describes how to manually configure T-Server telephony objects if you are using Configuration Manager. For information about configuring T-Server telephony objects using Genesys Administrator, refer to the *Framework 8.1 Genesys Administrator Help.*

Recommendations

Genesys recommends registering (configuring) only those entities you plan to use in the current configuration. The more data there is in the Configuration

Database, the longer it takes for the CTI setup to start, and the longer it will take to process configuration data. Remember that adding configuration objects to the Genesys Configuration Database does not cause any interruption in contact center operation.

Depending on how much work is required to manually configure all applications and objects, consider registering more `Person` objects first, with a set of privileges that lets them perform configuration tasks.

Switching Offices

Your telephony network may contain many switching offices, but you should only configure those that are involved with customer interactions.

Using Configuration Manager, be sure to register a `Switching Office` object that accommodates your `Switch` object under `Environment`. Until you have done this, you cannot register a `Switch` object under `Resources` (single-tenant environment) or a `Tenant` (multi-tenant environment).

Note: The value for the switching office name must not have spaces in it.

Switches

1. Configure a `Switch` object for each switch on your telephony network. Assign each `Switch` object to the appropriate T-Server `Application` object.

2. If implementing the multi-site configuration, specify access codes for all switches on the network so that the call-processing applications can route and transfer calls between switches.

   Two types of access codes exist in a Genesys configuration:
   - Default access codes that specify how to reach this switch from any other switch in the Genesys environment.
   - Switch-to-switch access codes that specify how to reach a particular switch from any other switch. Use this type when either a nondefault dial number or routing type is required between any two locations. When a switch-to-switch access code is configured, its value has a higher priority than that of a default access code.

   See Chapter 4, "Multi-Site Support," on , for step-by-step instructions.

Note: When the numbering plan uses unique directory number (DN) assignment across sites and multi-site routing is not used, you do not have to configure access codes.

DNs and Agent Logins

> **Note:** Starting with release 7.2, the requirements for configuring DNs in the Configuration Layer have changed. Refer to Part Two of this guide for information about the requirements on configuring specific DN types for your T-Server.

For each T-Server for which you are configuring DNs, you must configure all DNs that agents and their supervisors use in day-to-day contact center operation—so-called *seat-related DNs*—such as Extensions and ACD Positions. Otherwise, T-Server does not register such DNs.

1. To configure Telephony objects within each switch, consult the switch documentation. Information specific to your T-Server in Part Two of this document contains tables that indicate how to set DN types in the Genesys Configuration Database depending on the switch DN types and configuration.

2. Check the numbering plan for different types of DNs, to see if you can save time by registering Ranges of DNs. Usually, DNs of the same type have consecutive numbers, which will make an otherwise tedious configuration task easy. `Agent Login` objects almost always have consecutive numbers, which means you can register them through the Range of Agent Logins feature as well.

3. If you plan to use Virtual Queues and Virtual Routing Points in the contact center operation, Genesys recommends registering them after you have outlined the call-processing algorithms and identified your reporting needs.

> **Note:** Remember that CTI applications, not the switch, generate telephony events for DNs of these types.

> **Warning!** When setting the `Register` flag for a DN, make sure you select the value according to your T-Server. The `Register` flag values are as follows:
> - `False`—T-Server processes this DN locally, and never registers it on the switch.
> - `True`—T-Server always registers this DN on the switch during T-Server startup or CTI link reconnect.
> - `On Demand`—T-Server registers this DN on the switch only if a T-Server client requests that it be registered.

Multi-Site Operations

See the section, "Configuring Multi-Site Support" on , for information on setting up DNs for multi-site operations.

Configuration of T-Server

Use the *Framework 8.1 Deployment Guide* to prepare accurate configuration information. You may also want to consult *Configuration Manager Help* and/or *Genesys Administrator Help,* which contains detailed information about configuring objects.

Recommendations

Genesys recommends using an Application Template when you are configuring your T-Server application. The Application Template for your particular T-Server contains the most important configuration options set to the values recommended for the majority of environments. When modifying configuration options for your T-Server application later in the process, you can change the values inherited from the template rather than create all the options by yourself.

Procedure:
Configuring T-Server

Start of procedure

1. Follow the standard procedure for configuring all `Application` objects to begin configuring your T-Server `Application` object. Refer to the *Framework 8.1 Deployment Guide* for instructions.

2. In a `Multi-Tenant` environment, specify the `Tenant` to which this T-Server belongs on the `General` tab of the `Properties` dialog box.

3. On the `Connections` tab:
   * Add all Genesys applications to which T-Server must connect.

   Note: For multi-site deployments you should also specify T-Server connections on the `Connections` tab for any T-Servers that may transfer calls directly to each other.

4. On the `Options` tab, specify values for configuration options as appropriate for your environment.

   Note: For T-Server option descriptions, see Part Two of this document.

5. In a multi-site environment, you must complete additional T-Server configuration steps to support multi-site operations; see Chapter 4, "Multi-Site Support," on page 57.

End of procedure

Next Steps

- See "Installation of T-Server" on page 40.

Procedure:
Configuring multiple ports

Purpose: To configure multiple ports in T-Server for its client connections.

Start of procedure

1. Open the T-Server `Application Properties` dialog box.

2. Click the `Server Info` tab.

3. In the `Ports` section, click `Add Port`.

4. In the `Port Properties` dialog box, on the `Port Info` tab:

   a. In the `Port ID` text box, enter the port ID.

   b. In the `Communication Port` text box, enter the number of the new port.

   c. In the `Connection Protocol` box, select the connection protocol, if necessary.

   d. Select the `Listening Mode` option.

   Note: For more information on configuring secure connections between Framework components, see *Genesys 8.x Security Deployment Guide*.

   e. Click `OK`.

5. Click `OK` to save the new configuration.

End of procedure

Installation of T-Server

The following directories on the Genesys 8.1 Media product DVD contain T-Server installation packages:

- `media_layer/<switch>/<platform>` for UNIX installations, where `<switch>` is your switch name and `<platform>` is your operating system.

- `media_layer\<switch>\windows` for Windows installations, where `<switch>` is your switch name.

Procedure:
Installing T-Server on UNIX

Note: During installation on UNIX, all files are copied into the directory you specify. No additional directories are created within this directory. Therefore, do not install different products into the same directory.

Start of procedure

1. In the directory to which the T-Server installation package was copied, locate a shell script called `install.sh`.

2. Run this script from the command prompt by typing `sh` and the file name. For example: `sh install.sh`.

3. When prompted, confirm the host name of the computer on which T-Server is to be installed.

4. When prompted, specify the host and port of Configuration Server.

5. When prompted, enter the user name and password to access Configuration Server.

6. When prompted, select the T-Server application you configured in "Configuring T-Server" on from the list of applications.

7. Specify the destination directory into which T-Server is to be installed, with the full path to it.

8. If the target installation directory has files in it, do one of the following:
   - Type `1` to back up all the files in the directory (recommended).
   - Type `2` to overwrite only the files in this installation package. Use this option only if the installation being upgraded operates properly.
   - Type `3` to erase all files in this directory before continuing with the installation.

   The list of file names will appear on the screen as the files are copied to the destination directory.

9. If asked which version of the product to install, the 32-bit or the 64-bit, choose the one appropriate to your environment.

10. If asked about the license information that T-Server is to use: specify either the full path to, and the name of, the license file, or the license server parameters.

11. As soon as the installation process is finished, a message appears announcing that installation was successful. The process places T-Server in the directory with the name specified during the installation.

End of procedure

Next Steps

- To verify manual installation, go to "Verifying the installation of T-Server" on page 43.
- To test your configuration and installation, go to Chapter 5, "Starting and Stopping T-Server Components," on page 115, and try it out.
- To configure and install redundant T-Servers, see Chapter 3, "High-Availability Deployment," on page 45.
- To install T-Servers for a multi-site environment, proceed to Chapter 4, "Multi-Site Support," on page 57.

Procedure:
Installing T-Server on Windows

Start of procedure

1. In the directory to which the T-Server installation package was copied, locate and double-click `Setup.exe` to start the installation.

2. When prompted, specify the connection parameters to the Configuration Server associated with this T-Server.

3. When prompted, select the T-Server `Application` you configured in "Configuring T-Server" on page 39 from the list of applications.

4. Specify the license information that T-Server is to use: either the full path to, and the name of, the license file, or the license server parameters.

5. Specify the destination directory into which T-Server is to be installed.

6. Click `Install` to begin the installation.

7. Click `Finish` to complete the installation.

By default, T-Server is installed as a Genesys service (Windows `Services`) with `Automatic` startup type.

End of procedure

Next Steps

- To verify manual installation, go to "Verifying the installation of T-Server" on page 43.

- To test your configuration and installation, go to Chapter 5, "Starting and Stopping T-Server Components," on page 115, and try it out.
- To configure and install redundant T-Servers, see Chapter 3, "High-Availability Deployment," on page 45.
- To install T-Servers for a multi-site environment, proceed to Chapter 4, "Multi-Site Support," on page 57.

Procedure:
Verifying the installation of T-Server

Purpose: To verify the completeness of the manual installation of T-Server to ensure that T-Server will run.

Prerequisites

- Procedure: Installing T-Server on UNIX, on page 41
- Procedure: Installing T-Server on Windows, on page 42

Start of procedure

1. Open the `Properties` dialog box for a corresponding `Application` object in Configuration Manager.
2. Verify that the `State Enabled` check box on the `General` tab is selected.
3. Verify that the `Working Directory`, `command-line`, and `Command-Line Arguments` are specified correctly on the `Start Info` tab.
4. Click `Apply` and `OK` to save any configuration updates.

End of procedure

Next Steps

At this point, you have configured and installed T-Server using Configuration Manager. If you want to test your configuration and installation, go to Chapter 5, "Starting and Stopping T-Server Components," on page 115, and try it out. Otherwise, if you want to configure and install redundant T-Servers, see Chapter 3, "High-Availability Deployment," on page 45. If you want to install T-Servers for a multi-site environment, proceed to Chapter 4, "Multi-Site Support," on page 57.

3 High-Availability Deployment

This chapter describes the general steps for setting up a high-availability (HA) environment for your T-Server. The high-availability architecture implies the existence of redundant applications, a primary and a backup. These are monitored by a management application so that, if one application fails, the other can take over its operations without any significant loss of contact center data.

Every switch/T-Server combination offers different high-availability options. The Framework Management Layer currently supports two types of redundant configurations: warm standby and hot standby. All T-Servers offer the warm standby redundancy type and, starting with release 7.1, the hot standby redundancy type is implemented in T-Servers for most types of switches. Some T-Servers support a switch's ability to provide two CTI links to two T-Servers or even one CTI link to two T-Servers. Other T-Servers require Genesys's HA Proxy in order to support the hot standby redundancy type. See Table 1 on page 25 and the T-Server-specific information later in this document for details on your T-Server.

This chapter describes the redundant architecture and how to configure T-Server so that it operates with either type. Information in this chapter is divided into the following sections:

- Warm Standby Redundancy Type, page 46
- Hot Standby Redundancy Type, page 47
- Prerequisites, page 49
- Warm Standby Deployment, page 50
- Hot Standby Deployment, page 52
- Next Steps, page 56

Warm Standby Redundancy Type

Genesys uses the expression *warm standby* to describe the redundancy type in which a backup server application remains initialized and ready to take over the operations of the primary server. The warm standby redundancy type reduces to a minimum the inability to process interactions that may have originated during the time it took to detect the failure. It also eliminates the need to bring a standby server online, thereby increasing solution availability.

Warm Standby Redundancy Architecture

Figure 5 illustrates the warm standby architecture. The standby server recognizes its role as a backup and does not process client requests until the Management Layer changes its role to primary. When a connection is broken between the primary server and the Local Control Agent (LCA, not shown in the diagram) running on the same host, a failure of the primary process is reported, and the switchover occurs; or, if the host on which the T-Server is running fails, the switchover also occurs. (See the *Framework 8.1 Deployment Guide* for information on LCA.) As a result:

1. The Management Layer instructs the standby process to change its role from backup to primary.

2. A client application reconnects to the new primary.

3. The new primary (former backup) starts processing all new requests for service.
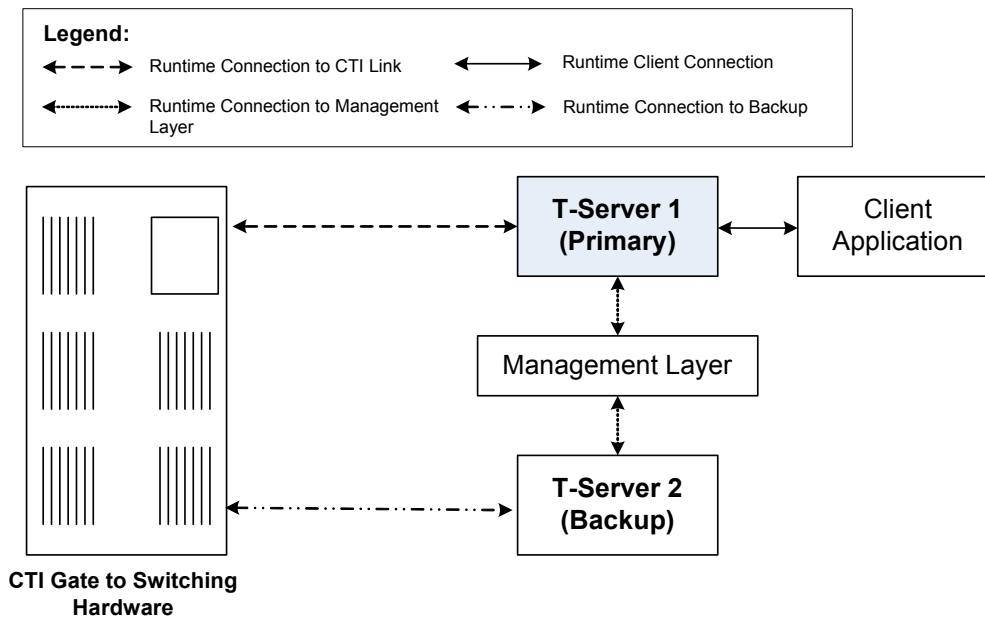
Figure 5: Warm Standby Redundancy Architecture

Although normal operations are restored as soon as the backup process takes over, the fault management effort continues. That effort consists of repeated attempts to restart the process that failed. Once successfully restarted, the process is assigned the backup role.

Note: You can find full details on the role of the Management Layer in redundant configurations in the *Framework 8.1 Deployment Guide*.

Hot Standby Redundancy Type

Genesys uses the expression *hot standby* to describe the redundancy type in which a backup server application remains initialized, clients connect to both the primary and backup servers at startup, and the backup server data is synchronized from the primary server. Data synchronization and existing client connections to the backup guarantee higher availability of a component. (See Figure 6 on page 48.)

Starting with release 7.1, the `hot standby` redundancy type is implemented in T-Servers for most types of switches. However, for some switches, you must compensate for the lack of link redundancy by using an additional Genesys component called *HA Proxy*.

Hot Standby Redundancy Architecture

Figure 6 illustrates the switch-independent side of a `hot standby` implementation. Here, T-Servers start simultaneously and connect to the switch. At T-Server startup, the Management Layer assigns the role of the primary server to T-Server 1, and the role of backup to T-Server 2. T-Server clients register with both T-Servers, but only the primary T-Server handles client requests other than the registration requests. The internal T-Server information, such as a DN status, `ConnID`, `UserData`, and `Call Type`, is synchronized between the primary and backup T-Servers. Therefore, the backup T-Server has the same information as the primary T-Server.

If T-Server 1 fails, the Management Layer makes T-Server 2 the new primary server, and it starts processing client requests. The Management Layer attempts to restart T-Server 1, and if it is successful, it makes T-Server 1 the new backup server.

The details of `hot standby` redundancy implementation between T-Servers and their switches vary depending on switch support for multiple CTI links. If your T-Server supports `hot standby` (see Table 1 on page 25), refer to Part Two for detailed information on the available `hot standby` schema.
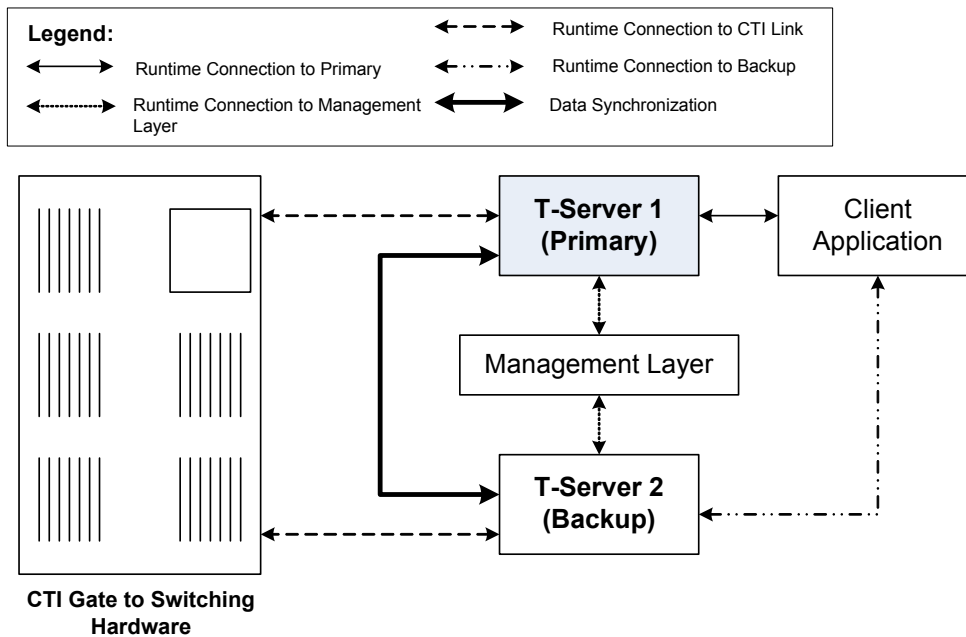
Figure 6: Hot Standby Redundancy Architecture

Benefits of Hot Standby Redundancy

The `hot standby` redundancy type provides the following benefits over the `warm standby` type:

*   Using `hot standby` ensures the processing of interactions in progress if a failure occurs. After the primary T-Server (T-Server 1) fails, T-Server 2 handles all new interactions and takes over the processing of interactions that are currently in progress.

*   T-Servers perform one-way (from primary to backup) synchronization of call-associated data, including, but not limited to:
    *   Connection IDs.
    *   Attached user data.
    *   Inter Server Call Control (ISCC; formerly called External Routing) call references to another site in a multi-site environment (to support the ISCC/COF feature).

    Note: Refer to "ISCC Call Data Transfer Service" on page 59 for ISCC feature descriptions.

*   When mirrored links are not available, HA Proxy helps T-Server synchronize the current states of agents, calls, parties, and devices between the primary and backup T-Servers.

However, keep the following `hot standby` limitations in mind:

- Client requests sent during the failure and switchover may be lost.
- Routing requests sent by the switch during the failure and switchover may be lost.
- T-Server does not synchronize interactions that begin before it starts, including incomplete ISCC-related transactions.
- Some T-Library events might be duplicated or lost.
- Reference IDs from client requests can be lost in events.

Prerequisites

This section presents basic requirements and recommendations for configuring and using redundant T-Servers.

Requirements

You must install the Management Layer if you are installing redundant T-Server applications. In particular, install Local Control Agent (LCA) on each computer that runs T-Server.

Warning!   Genesys strongly recommends that you install the backup and primary T-Servers on different host computers.

Synchronization Between Redundant T-Servers

When T-Servers operate in a high-availability environment, the backup T-Server must be ready to take on the primary role when required. For this purpose, both T-Servers must be running and must have the same information. When you configure redundant T-Servers to operate with the `hot standby` type, the primary T-Server uses the connection to the backup to deliver synchronization updates. Genesys recommends that you enable the Advanced Disconnect Detection Protocol (ADDP), described in Chapter 1, for this connection. Do so using the configuration options in the "Backup-Synchronization Section" section. Refer to the "T-Server Common Configuration Options" chapter for option descriptions.

Configuration Warnings

When configuring T-Servers to support either the `warm standby` or `hot standby` redundancy type, remember:

1. When at least one of the two T-Servers that operate in a redundant mode is running, do not change a redundancy type, host, or port in either T-Server configuration.

2. When both the primary and backup T-Servers are running, do not remove the backup T-Server `Application` object from the configuration.

You are responsible for the option synchronization in the configuration of the primary and backup T-Servers; Configuration Server does not synchronize either options or their values in different T-Server `Application` objects. That is, you must configure both T-Servers to have the same options with the same values. If you change a value in one T-Server configuration, you must change it in the other T-Server configuration manually. The log options in the primary T-Server can differ from those in the backup T-Server configuration. The link configuration options in the primary T-Server can also differ from those in the backup T-Server configuration.

Warm Standby Deployment

This section describes how to configure redundant T-Servers to work with the `warm standby` redundancy type, including details on their connections and settings.

General Order of Deployment

The general guidelines for T-Server `warm standby` configuration are:

1. Configure two T-Server `Application` objects as described in "Configuration of T-Server" on page 39.

2. Make sure the `Switch` object is configured for the switch these T-Servers should serve, as described in "Configuration of T-Server" on page 39.

3. Modify the configuration of the primary and backup T-Servers as instructed in the following sections.

After completing the configuration steps, ensure that both T-Servers are installed (see page 52).

Modification of T-Servers for Warm Standby

Modify the configuration of both the primary and backup T-Server `Application` objects as described in the following sections.

Note: Starting with release 7.5, you can configure multiple ports for any application of type `server`. When multiple ports are configured for a server in a `warm standby` redundancy pair, the number of ports, their `Port IDs`, and the `Listening Mode` settings of the primary and backup servers must match respectively.

Procedure:
Modifying the primary T-Server configuration for warm standby

Start of procedure

1. Stop both the primary and backup T-Servers if they are already running.

2. Open the Configuration Manager main window.

3. Open the `Properties` dialog box of the `Application` object for the T-Server that you want to configure as a primary server.

4. Click the `Switches` tab.

5. Ensure that it specifies the Switch that this T-Server `Application` should serve. If necessary, select the correct `Switch` using the `Browse` button.

6. Click `Apply` to save the configuration changes.

7. Click the `Server Info` tab.

8. Specify the T-Server `Application` you want to use as the backup server. Use the `Browse` button next to the `Backup Server` field to locate the backup T-Server `Application` object.

9. Select `Warm Standby` as the `Redundancy Type`.

10. Click `Apply` to save the configuration changes.

11. Click the `Start Info` tab.

12. Select `Auto-Restart`.

13. Click `Apply` and `OK` to save the configuration changes.

End of procedure

Next Steps

- Procedure: Modifying the backup T-Server configuration for warm standby, on page 52

Procedure:
Modifying the backup T-Server configuration for warm standby

Start of procedure

1. Make sure the two T-Servers are *not* running.

2. Open the Configuration Manager main window.

3. Open the `Properties` dialog box of the `Application` object for the T-Server that you want to configure as a backup server.

4. Click the `Switches` tab.

5. Using the `Browse` button, select the same `Switch` object you associated with the primary T-Server `Application` object.

6. Click `Apply` to save the configuration changes.

7. Click the `Start Info` tab.

8. Select `Auto-Restart`.

9. Click `Apply` and `OK` to save the configuration changes.

End of procedure

Warm Standby Installation of Redundant T-Servers

The installation of a redundant T-Server is the same as that for the stand-alone T-Server. If you have not installed the primary and backup T-Servers yet, follow the instructions in "Installation of T-Server" on for both installations.

Hot Standby Deployment

This section describes how to configure redundant T-Servers to work with the `hot standby` redundancy type, including details on their connections and settings.

General Order of Deployment

The general guidelines for T-Server `hot standby` configuration are:

1. Configure two T-Server `Applications` objects as described in "Configuring T-Server" on .

2. Make sure the `Switch` object is configured for the switch these T-Servers should serve, as described in "Configuration of Telephony Objects" on page 36.

3. Modify the configuration of the primary and backup T-Servers as instructed in the following sections.

After completing the configuration steps, ensure that both T-Servers are installed (see page 56).

Table 1 on page 25 summarizes `hot standby` redundancy support in various T-Servers. For detailed, up-to-date information on the subject, see the *Genesys Supported Media Interfaces Reference Manual* located on the Technical Support website at
http://genesyslab.com/support/dl/retrieve/default.asp?item=A9CB309A F4DEB8127C5640A3C32445A7&view=item.

Modification of T-Servers for Hot Standby

Modify the configuration of both the primary and backup T-Server `Application` objects for `hot standby` redundancy as described in the following sections.

Note: Starting with release 7.5, you can configure multiple ports for any application of type `server`. When multiple ports are configured for a server in a `hot standby` redundancy pair, the number of ports, their `Port IDs,` and the `Listening Mode` settings of the primary and backup servers must match respectively.

Procedure:
Modifying the primary T-Server configuration for hot standby

Start of procedure

1. Stop both primary and backup T-Servers if they are already running.

2. Open the Configuration Manager main window.

3. Open the `Properties` dialog box of the `Application` object for the T-Server that you want to configure as a primary server.

4. Click the `Switches` tab.

5. Ensure that it specifies the `Switch` that this T-Server `Application` should serve. If necessary, select the correct `Switch` using the `Browse` button.

6. Click `Apply` to save the configuration changes.

7. Click the `Server Info` tab.

8. In the `Ports` section, select the port to which the backup server will connect for HA data synchronization and click `Edit Port`.

Note: For information on adding multiple ports, see "Configuring multiple ports" on page 40.

---

a. In the `Port Properties` dialog box, on the `Port Info` tab, select the `HA sync` check box.

b. Click `OK`.

Note: If the `HA sync` check box is not selected, the backup T-Server will connect to the *default* port of the primary T-Server.

---

9. Specify the T-Server `Application` you want to use as the backup server. Use the `Browse` button next to the `Backup Server` field to locate the backup T-Server `Application` object.

10. Select `Hot Standby` as the `Redundancy Type`.

11. Click `Apply` to save the configuration changes.

12. Click the `Start Info` tab.

13. Select `Auto-Restart`.

14. Click `Apply` to save the configuration changes.

15. To enable ADDP between the primary and backup T-Servers, click the `Options` tab. Open or create the `backup-sync` section and configure corresponding options.

Note: For a list of options and valid values, see the "Backup-Synchronization Section" section of "T-Server Common Configuration Options" chapter in Part Two of this document.

---

16. Click `Apply` and `OK` to save the configuration changes.

End of procedure

Next Steps

• Procedure: Modifying the backup T-Server configuration for hot standby, on page 55

Procedure:
Modifying the backup T-Server configuration for hot standby

Start of procedure

1. Make sure the two T-Servers are *not* running.

2. Open the Configuration Manager main window.

3. Open the `Properties` dialog box of the `Application` object for the T-Server that you want to configure as a backup server.

4. Click the `Switches` tab.

5. Using the `Browse` button, select the same `Switch` object you associated with the primary T-Server `Application`.

6. Click the `Server Info` tab.

7. In the `Ports` section, select the port to which the primary server will connect for HA data synchronization and click `Edit Port`.

Note: For information on adding multiple ports, see "Configuring multiple ports" on .

---

   a. In the `Port Properties` dialog box, on the `Port Info` tab, select the `HA sync` check box.
   b. Click `OK`.

Note: If the `HA sync` check box is not selected, the primary T-Server will connect to the *default* port of the backup T-Server.

---

8. Click `Apply` to save the configuration changes.

9. Click the `Start Info` tab.

10. Select `Auto-Restart`.

11. Click the `Options` tab.

12. Modify the values for all necessary configuration options. Genesys recommends that you set all configuration options for the backup T-Server to the same values as for the primary T-Server; the only exceptions are the log options and the `server-id` option.

13. Click `Apply` and `OK` to save the configuration changes.

End of procedure

Hot Standby Installation of Redundant T-Servers

The installation of a redundant T-Server is the same as that for the stand-alone T-Server. If you have not installed the primary and backup T-Servers yet, follow instructions in "Installation of T-Server" on for both installations.

Next Steps

At this point, you have learned how to configure and install redundant T-Servers. Go to Chapter 5, "Starting and Stopping T-Server Components," on , to test your configuration and installation, or continue with Chapter 4, "Multi-Site Support," on , for more possibilities.

4

Multi-Site Support

This chapter contains general information about multi-site environments, as well as information on deploying a multi-site environment for your T-Server.

This chapter is divided into the following sections:

Note: Each switch/T-Server combination offers different multi-site options. For details describing your specific switch/T-Server environment, refer to Chapter 9, "T-Server Common Configuration Options," on page 217.

The following instructions apply to both local and remote switches and T-Servers. Because different vendor switches can be installed at the local and remote locations, this chapter covers several, but not all, possible configurations. To help determine which sections of this chapter apply to your situation, refer to Table 3 on page 75 and Table 4 on page 80.

For more information on your specific switch/T-Server environment, refer to the multi-site topics in Part Two of this guide.

Multi-Site Fundamentals

A multi-site configuration has two or more switches that belong to the same enterprise or service provider and that share the Genesys Configuration Database. (In some cases, this may include isolated partitions on a given switch served by different T-Servers.) The main goal of T-Server support for multi-site operations is to maintain critical information about a call as it travels from one switch to another.

T-Server supports multi-site operations using its *Inter Server Call Control* (*ISCC;* formerly called External Routing), which supports the following functions:

- **Call matching**—To link instances of a call distributed across multiple sites and to re-attach essential data associated with the call (`ConnID`, `UserData`, `CallType`, and `CallHistory`). The following T-Server features support this capability:
  - ISCC Call Data Transfer Service (active external routing)—when requested by a T-Server client by specifying the desired destination in the location parameter, and also with various ISCC strategies performed by direct dial or by using the Transfer Connect Service. See "ISCC Transaction Types" on page 66 and "Transfer Connect Service Feature" on page 78.
  - Inter Server Call Control/Call Overflow (ISCC/COF) feature (passive external routing)—applicable when calls are overflowed to another site either directly or manually (see page 79).
  - Number Translation feature (see page 83).
  - Network Attended Transfer/Conference (NAT/C) feature (see page 91).

  Note: When ISCC detects call instance reappearance on a given site, the call is assigned a unique `ConnID` and the user data is synchronized with the previous call instances. This ensures that `ConnIDs` assigned to different instances of the same call on a given site are unique.

- **Call data synchronization between associated call instances (ISCC Event Propagation)**—To provide the most current data to call instances residing on remote T-Servers. The following T-Server features support this capability:
  - User Data propagation (see page 94)
  - Party Events propagation (see page 95)

  Note: ISCC automatically detects topology loops and prevents continuous updates.

> **Note:** In distributed networks, Genesys recommends using call flows that prevent call topology loops and multiple reappearances of the same call instance. This approach ensures that all T-Servers involved with the call report the same `ConnID`, and also optimizes telephony trunk allocation by preventing trunk tromboning.

The T-Server configuration contains information about other T-Servers with which it will communicate. T-Server uses this information to connect with the other T-Servers. During this "handshake" process, T-Servers exchange information about the following parameters:

- Protocol type
- Switch type
- Server name
- Location name (switch name)
- T-Server role (primary or backup)

To complete the handshake process, T-Servers exchange messages about the current condition of the links to their switches. After the handshake process is complete, T-Server is ready to support a multi-site operation.

ISCC Call Data Transfer Service

Because ISCC supports active external routing, T-Servers that serve different switches (usually on different sites) can exchange call data when a call is passed from one switch to another. With this functionality, T-Server provides its clients with the following additional information about each call received from another switch:

- The connection identifier of the call (attribute `ConnID`).
- Updates to user data attached to the call at the previous site (attribute `UserData`).
- The call type of the call (attribute `CallType`)—In multi-site environments the `CallType` of the call may be different for each of its different legs. For example, one T-Server may report a call as an `Outbound` or `Consult` call, but on the receiving end this call may be reported as `Inbound`.
- The call history (attribute `CallHistory`)—Information about transferring/routing of the call through a multi-site contact center network.

> **Note:** Load-sharing IVR Servers and Network T-Servers cannot be designated as the destination location for ISCC, except when `cast-type` is set to `dnis-pool`. Consult the *Universal Routing Deployment Guide* for specific configuration details.

Figure 7 shows the steps that occur during a typical external routing (ISCC) transaction. Note that the location where a call is initially processed is called the *origination location,* and the location to which the call is passed is called the *destination location.*
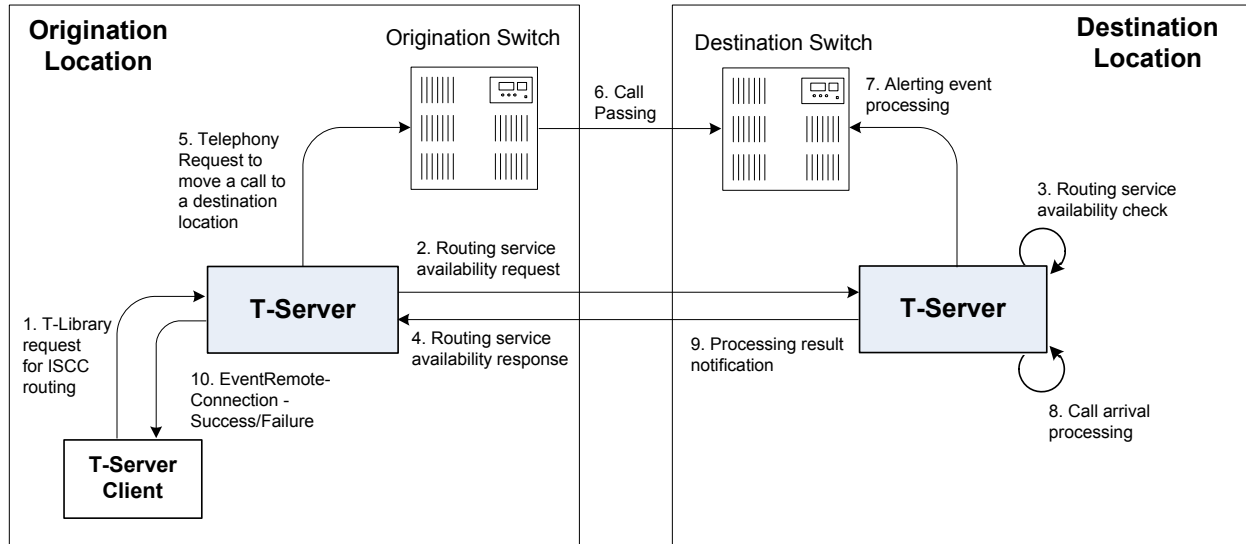
Figure 7: Steps in the ISCC Process

ISCC Call Flows

The following section identifies the steps (shown in Figure 7) that occur during an ISCC transfer of a call.

Step 1

A client connected to the T-Server at the origination location requests this T-Server to pass a call with call data to another location. For this purpose, the client must specify the `location` parameter (Attribute `Location`) when calling a corresponding T-Library function. ISCC processes the following T-Library requests:

- `TInitiateConference`
- `TInitiateTransfer`
- `TMakeCall`
- `TMuteTransfer`
- `TRouteCall`
- `TSingleStepTransfer`

Step 2

Upon receiving a client's request, the origination T-Server checks that the:

1. Connection to the destination T-Server is configured in the origination T-Server `Properties` dialog box.

2. The connection to the destination T-Server is active.

3. The destination T-Server is connected to its link.

4. The origination T-Server is connected to its link.

If these four conditions are met, the origination T-Server determines the transaction type that will be used for passing call data to another location in this transaction. The following possibilities exist:

- The client can request what *ISCC transaction type* (or simply *transaction type*) to use by specifying an appropriate key-value pair in the `Extensions` attribute of the request. The key-value pair must have a key equal to `iscc-xaction-type` and either an integer value as specified in the `TXRouteType` enumeration (see the *Voice Platform SDK 8.x .NET (or Java) API Reference*) or a string value equal to one of the following: `default`, `route`, `direct` (or `direct-callid`), `direct-network-callid`, `direct-notoken`, `direct-ani`, `direct-uui`, `direct-digits`, `reroute`, `dnis-pool`, `pullback`, or `route-uui`.

- If the client does not specify the transaction type in the request or specifies the `default` transaction type, T-Server checks the Switch configuration for the transaction type configured in the `Access Code` (or `Default Access Code`) properties:

  - If the `Route Type` property of the `Access Code` is set to any value other than `default`, T-Server uses the specified value as the transaction type.

  - If the `Route Type` property of the `Access Code` is set to the `default` value, T-Server uses the first value from the list specified in the `cast-type` configuration option configured for the destination T-Server. If no value has been specified for the `cast-type` option, the default value of `route` is used as the transaction type.

Note: For more information on Access Codes and Default Access Code, see "Switches and Access Codes" on .

After the origination T-Server determines the requested transaction type, it determines if the destination T-Server supports this transaction type.

You must list the transaction types T-Server supports in the `cast-type` configuration option.

The origination T-Server issues a request for routing service availability and sends it to the destination T-Server. The T-Server request contains data that should be passed along with the call to the destination location. This data includes the transaction type, `ConnID`, `UserData`, `CallType`, and `CallHistory`.

The timer specified by the `request-tout` configuration option is set when the origination T-Server sends the request. If either the specified timeout expires or the call is abandoned before the origination T-Server receives a response from the destination T-Server, the operation is considered failed. In this scenario, the origination T-Server:

1. Generates a request to the destination T-Server to cancel the request for routing service.

2. Sends `EventError` to the client that requested the service.

3. Deletes information about the request.

Step 3

The destination T-Server receives the request for routing service availability and checks the requested type of routing. Depending on the ISCC transaction type, it stores the request information and, when appropriate, allocates access resources for the coming call. For example, an External Routing Point is allocated when the transaction type is `route,` and an Access Resource of type `dnis` is allocated when the transaction type is `dnis-pool`.

Note: The `resource-allocation-mode` and `resource-load-maximum` configuration options determine how resources are allocated. For option descriptions, refer to Chapter 9, "T-Server Common Configuration Options," on page 217 for option descriptions.

If resources are unavailable, the request is queued at the destination location until a resource is free or the origination T-Server cancels the request. If the request is canceled, the destination T-Server deletes all information about the request.

If resources are unavailable because of incorrect configuration, the destination T-Server returns an error event to the origination T-Server.

Step 4

If resources are available, the destination T-Server generates a positive response and the timer is started for the interval specified by the `timeout` configuration option of the destination T-Server.

Step 5

If the origination T-Server receives a negative response, it sends an `EventError` message to the client and clears all data about the request.

If the origination T-Server receives the confirmation about routing service availability, it processes the client's request and sends a corresponding message to the switch. The timer on the origination T-Server is also started for the interval specified by the `timeout` configuration option of the destination T-Server.

Step 6

The origination switch processes the T-Server request and passes the call to the destination switch.

Step 7

If the call arrives at the destination switch, the switch generates an alerting event.

The destination T-Server waits for the call no longer than the interval specified by the timeout configured on the destination T-Server. If the call is not received at the destination location within this interval, the destination T-Server issues a failure notification to the origination T-Server, deletes all data about the request, and, when appropriate, frees the resources previously allocated for the request.

If either the specified timeout expires or the call is abandoned before the origination T-Server receives a response from the destination T-Server, the operation is considered failed. In this case, the origination T-Server:

1. Generates a request to the destination T-Server to cancel the request for routing service.

2. Responds to the client that requested the service in one of the following ways:
   - If the origination T-Server has already sent a response to the request the client sent in Step 1, the origination T-Server supplements its response with `EventRemoteConnectionFailed`.
   - If the origination T-Server has not yet sent a response to the client, the origination T-Server sends `EventError`.

3. Deletes information about the request.

Step 8

If the destination T-Server matches the arrived call, it updates the `ConnID`, `UserData`, `CallType`, and `CallHistory` attributes with the data received in the request for routing service availability. The connection ID is updated as follows:

The arrived call is assigned the `ConnID` that is specified in the request for routing service availability, but only if this `ConnID` does not coincide with the `ConnID` of a call that has existed at the destination site. If two such `ConnIDs` are identical, the arrived call is assigned a new unique `ConnID`.

For `direct-*` transaction types (where the asterisk stands for a `callid`, `uui`, `ani`, or `digits` extension), the call reaches the destination DN directly.

For the transaction types `route` and `route-uui`, the call first arrives at an External Routing Point from which it is routed to the destination DN. The call info is updated when the call reaches the External Routing Point. An External

Routing Point is considered free when the first alerting event (`EventQueued` or `EventRouteRequest`) is distributed.

Please keep the following issues in mind when using the ISCC feature:

*   If routing from a dedicated External Routing Point to the destination DN fails, T-Server considers the transaction failed. However, the `ConnID`, `UserData`, `CallType`, and `CallHistory` attributes are updated. Then, T-Server attempts to route the call to one of the Default DNs configured for this External Routing Point.

*   If the destination T-Server did not receive a request for routing service availability, but a call arrives at an External Routing Point, T-Server considers the call to be unexpected and routes the call to the DN specified by the `dn-for-unexpected-calls` configuration option. When no alternative targets are defined, the call remains at the External Routing Point until diverted by the switch or abandoned by the caller.

For `reroute` and `pullback` transaction types, the call returns to the network location. For the `dnis-pool` transaction type, the call reaches the destination DN directly.

Step 9

If, in Step 8, the call does not arrive within the configured timeout, or the transaction fails, the destination T-Server sends a notification of failure to the origination T-Server.

Otherwise, the destination T-Server notifies the origination T-Server that the routing service was successful and deletes all information about the request.

Step 10

The origination T-Server notifies the client that the routing service was successful (or failed) and deletes all information about the request.

Client-Controlled ISCC Call Flow

The following section identifies the steps that occur during a client-controlled ISCC transfer of a call.

Step 1

A client, such as Universal Routing Server (URS), that is connected to the T-Server at the origination location detects a call to be delivered to another destination location.

Step 2

The client chooses a destination location and the target DN for the call. Then, it sends the `TGetAccessNumber` request to the destination T-Server for routing service availability, indicating the target DN and other call context (`ConnID`, `UserData`, and `CallHistory` attributes).

Step 3

The destination T-Server receives the request for routing service availability. Depending on the ISCC transaction type, it stores the request information, including the call context. When appropriate, it allocates access resources for the coming call, such as External Routing Point.

If resources are unavailable, the request is queued at the destination T-Server until an appropriate ISCC resource is free or the client cancels the request. If the request is canceled, the destination T-Server deletes all information about the request.

If resources are unavailable because of incorrect configuration, the destination T-Server returns an `EventError` message to the client.

Step 4

The destination T-Server replies to the client with the `EventAnswerAccessNumber` message, which contains the allocated ISCC resource.

Step 5

The client requests that the origination T-Server delivers the call to the destination location using the allocated access resource.

Step 6

The origination T-Server receives and processes the client's request, and then sends a corresponding message to the switch.

Step 7

The call arrives at the destination switch and is reported to the destination T-Server via CTI. The call is matched by means of ISCC, based on the specified `cast-type` setting and allocated resource, and then the call is assigned a requested call context (such as `ConnID` or call data). Upon successful transaction completion, the destination T-Server notifies the client by sending `EventRemoteConnectionSuccess`.

The destination T-Server waits for the call no longer than the interval specified by the timeout that is configured on the destination T-Server. If the call is not received at the destination location within this interval, the destination T-Server issues a failure notification to the client by sending

`EventRemoteConnectionFailed,` deletes all data about the request, and, when appropriate, frees the resources previously allocated for the request.

The destination T-Server notifies the client whether the routing service succeeded or failed by sending either the `EventRemoteConnectionSuccess` or `EventRemoteConnectionFailure,` respectively.

ISCC Transaction Types

As switches of different types provide calls with different sets of information parameters, a single mechanism for passing call data between the switches is not feasible in some cases. Therefore, the ISCC feature supports a number of mechanisms for passing call data along with calls between locations. This section describes ISCC transaction type principles, identifies which transaction types are supported for each T-Server, and defines each transaction type (beginning with "direct-ani" on page 67).

It is important to distinguish the two roles that T-Servers play in an external routing (ISCC) transaction—namely *origination T-Server* and *destination T-Server*.

- The origination T-Server initiates an ISCC transaction. It prepares to send the call to another T-Server and coordinates the process.

- The destination T-Server receives call data from an origination T-Server and matches this data to a call that will arrive at some time in the future.

The distinction between these roles is important because the range of telephony-hardware functionality often requires T-Servers to support two entirely different sets of ISCC transactions based on which of the two roles they play. For instance, it is very common for a particular T-Server to support many types of ISCC transactions when it takes on the origination role, but fewer when it takes on the role of a destination T-Server.

The ISCC transaction type `reroute` is a good example. Most T-Servers support `Reroute` as origination T-Servers, but very few support `Reroute` as destination T-Servers.

Determining and Configuring Transaction Type Support

You can find descriptions of these transaction types starting on page 67. Use Table 3 on page 75 to identify the transaction types your destination T-Server supports. A blank table cell indicates that T-Server does not support a certain transaction type.

You can configure the transaction types specific to your T-Server as values of the `cast-type` configuration option specified in the ISCC configuration section `extrouter`. Refer to Chapter 9, "T-Server Common Configuration Options," on page 217 for the option description.

ISCC Transaction Type General Principles

Generally, since most of the ISCC implementation is done at the T-Server Common Part (TSCP) code level, all T-Servers support certain ISCC transaction types. Any T-Server can act as the origination T-Server for the following transaction types:

*   `direct-ani`, page 67
*   `direct-notoken`, page 69
*   `dnis-pool`, page 70
*   `pullback`, page 71
*   `reroute`, page 72
*   `route` (aliased as `route-notoken`), the default transaction type, page 73

The following transaction types are unevenly supported for both the origination and destination T-Server roles:

*   `direct-callid` (aliased as `direct`), page 68
*   `direct-digits` (reserved for Genesys Engineering)
*   `direct-network-callid`, page 68
*   `direct-uui`, page 69
*   `route-uui`, page 74

The `reroute` and `pullback` transaction types are supported only for selected T-Servers in the *destination* role. However, if you implement this support, other transaction types require additional configuration and testing—even those that would normally be supported by default.

direct-ani

With the transaction type `direct-ani`, the `ANI` call attribute is taken as the parameter for call matching. Properly configured switches and trunks can keep the `ANI` attribute when a call is transferred over the network. T-Server can use this network feature for call matching.

Warning! Depending on the switch platform, it may be possible to inherit the `ANI` attribute after routing a call to a remote destination, and after performing a single-step transfer and other telephone actions. However, ISCC only works properly in scenarios where the `ANI` attribute on the destination T-Server is represented by exactly the same digit string as on the origination T-Server.

Typically, the `ANI` attribute represents the original call identifier (customer phone number), which guarantees that the attribute remains unique. However, you can use the `non-unique-ani` resource type to block ISCC from matching calls based on an ANI that is known to be non-unique. (See "Configuring access resources for non-unique ANI" on page 111 for details.)

direct-callid

With the transaction type `direct-callid,` the call reaches the destination DN directly from another location, and the `CallID` of the call is taken as the attribute for call matching. When a call arrives at the final destination, the destination T-Server identifies its `CallID,` and updates the call info if the `CallID` matches.

Use this transaction type when the destination switch has the capability to assign to an incoming call the same network-wide unique `CallID` that the origination switch has already assigned to that call.

Notes: The `direct-callid` transaction type is used only in conjunction with the `TRouteCall` and `TSingleStepTransfer` function calls. It is applied only to the call that is in progress, and does not apply to functions that involve in the creation of a new call, such as `TMakeCall`.

For T-Server for Nortel Communication Server 2000/2100, the `direct-callid` transaction type is also applied to the `TMuteTransfer` function.

direct-network-callid

With the transaction type `direct-network-callid`, the call reaches the destination DN directly from another location, and the `NetworkCallID` of the call is taken as the attribute for call matching. When a call arrives at the final destination, the destination T-Server identifies its `NetworkCallID`, and updates the call info if the `NetworkCallID` matches.

Use this transaction type when the destination switch has the capability to assign to an incoming call the same network-wide unique `NetworkCallID` that the origination switch has already assigned to that call.

Note: To support this transaction type, you must configure `Target Type` and `ISCC Protocol Parameters` fields of the corresponding `Switch Access Code` in the Configuration Layer. For information about settings that are specific for your T-Server type, refer to Part Two of this document.

direct-uui

With the transaction type `direct-uui,` so-called user-to-user information (UUI) is taken as the attribute for call matching. Some switches make it possible to send a small data packet along with a call. T-Server can use this data to recognize a call passed from one switch to another. The destination T-Server generates a local unique value for `UUI,` and then notifies the origination T-Server. The origination T-Server uses a provided value to mark the call coming from the origination location. The destination T-Server receives a call and checks whether it is marked with an exact `UUI` value. If so, the call is considered to be matched.

On the Avaya Communication Manager and the Aspect ACD, UUI is referred to as "user-to-user information." On the Siemens Hicom 300 switch with CallBridge, UUI is referred to as "Private User Data." On the Alcatel A4400/OXE switch, UUI is referred to as "correlator data."

Note: To support this transaction type, you must configure your switches to pass the UUI provided by your T-Server. You must also ensure that the trunks involved do not drop this data.

direct-notoken

With the transaction type `direct-notoken`, T-Server expects a call to arrive from another location to the destination DN specified in the request for routing service availability. When a call reaches the specified DN, T-Server processes the call as the expected externally-routed call.

Notes: This matching criterion is weak because any call that reaches the specified DN is considered to be the expected call. Genesys recommends that you use this transaction type only in a contact center subdivision that can only be reached from within the contact center (such as the second line of support, which customers cannot contact directly).

When using `direct` transaction types, Network T-Servers and load-sharing IVR Servers are not meant to act as destination T-Servers for call routing. Using Network T-Server with these transaction types requires special architecture.

dnis-pool

With the `dnis-pool` transaction type, T-Server reserves one of its DNIS access resources and waits for the call that has the same `DNIS` attribute as the name of the reserved DNIS access resource.

If the arrived call is matched successfully, the destination T-Server may update the value of the `DNIS` attribute of the call (along with `ConnID, UserData, CallType,` and `CallHistory`) with the value of the `DNIS` attribute of the original call. This occurs when the value of the `DNIS` attribute of the original call is specified as a value of the key-value pair `_ISCC_TRACKING_NUMBER_` in the `Extensions` attribute of the original client request.

The DNIS matching can be based on any number of digits out of all the digits that comprise the `DNIS` attribute. The number of digits that T-Server should use for DNIS matching is specified for the destination switch as the `ISCC Protocol Parameters` property of the Switch Access Code. The value syntax should be as follows:

```
dnis-tail=<number-of-digits>
```

For example, if this property is set to the `dnis-tail=7` value, ISCC matches only the last seven digits of a `DNIS`.

You must configure DNIS access resources in the switch; otherwise, ISCC fails to use this transaction type and sends `EventError` in response to the client application request.

Note: The `dnis-pool` transaction type is typically used for networks that employ a "behind the SCP" architecture, such as network IVR. Network T-Server for GenSpec and IServer are two examples of this, but other Network T-Servers might also be used in this architecture.

In Load-Balancing Mode

When T-Server uses load balancing for call routing with the `dnis-pool` transaction type, the following processes occur:

1. A client of the origination T-Server sends a request to pass a call to the location with a DNIS access resource specified in the key-value pair `iscc-selected-dnis`.

2. The origination T-Server distributes the request for a routing service to all destination T-Servers.

3. The destination T-Servers receive the request and check that the specified DNIS is not being used by another routing service request.

4. The origination T-Server expects to receive a positive response from each destination T-Server. If the origination T-Server receives a negative response from at least one T-Server, it sends an `EventError` to the client and clears all data about the request. If the origination T-Server receives the confirmation about routing service availability from all destination T-Servers, it processes the client's request and sends a corresponding message to the switch.

5. The origination switch processes the T-Server request and passes the call to the destination switch.

6. The call arrives at the destination switch, which generates an alerting event to one of the corresponding load-balanced destination T-Servers.

7. That destination T-Server processes the call and notifies the origination T-Server that the routing service was successful and deletes all information about the request.

8. The origination T-Server sends a routing service request cancellation to all other destination T-Servers.

9. The origination T-Server notifies the client that the routing service has been successful and deletes all information about the request.

pullback

`Pullback` is used in the following scenario, for those T-Servers that support it:

1. A call arrives at Site A served by a Network T-Server.

2. At Site A, a Network T-Server client requests to pass the call by means of ISCC routing to Site B served by a premise T-Server. Any transaction type except `reroute` or `pullback` can be specified in this request.

3. The call arrives at Site B and is either answered by an agent or delivered to a routing point.

4. A client of the premise T-Server at Site B sends a `TRouteCall` or `TSingleStepTransfer` request to transfer the call to the network.

5. The Site B premise T-Server notifies the Network T-Server about this request.

6. The network T-Server receives the notification and issues an `EventRouteRequest` to obtain a new destination.

7. After receiving the new destination information, the Network T-Server disconnects the call from its current premise location at Site B and attempts to route the call to the new destination.

8. The Site B premise T-Server stops tracking the call, which has disconnected from the premise's agent DN or routing point and is delivered to the network.

9. The network T-Server completes routing the call to its new destination.

Note: The transaction type `pullback` can only be used to return a call from a premise T-Server to the Network T-Server that serves the site from which the call was previously transferred.

---

reroute

`Reroute` is used in the following scenario, for those T-Servers that support it:

1. A call arrives at Site A served by a Network T-Server.

2. At Site A, a Network T-Server client requests to pass the call by means of ISCC to Site B served by a premise T-Server. Any transaction type except `reroute` or `pullback` can be specified in this request.

3. An agent at Site B answers the call.

4. A client of the premise T-Server at Site B sends a `TSingleStepTransfer` or `TRouteCall` request to transfer the call elsewhere (to a PSTN, to an agent, or to a routing point).

5. The Site B premise T-Server notifies the Network T-Server about this request and releases the call leg that resides at the agent's phone (using `TReleaseCall`) or at the Routing Point (using `TRouteCall` with the parameter `RouteTypeCallDisconnect`).

6. The Network T-Server receives the notification and reroutes the call to the requested destination by sending `EventRouteRequest` and attaching the call's user data.

Notes: The transaction type `reroute` can only be used to return a call from a premise T-Server to the Network T-Server that serves the site from which the call was previously transferred.

To perform multi-site operations that are initiated with `TRouteCall` and for which the `reroute` transaction type is requested, the origination T-Server must support the `RouteTypeCallDisconnect` subtype of `TRouteCall`.

route

With the transaction type `route` (aliased as `route-notoken`), a call from the origination location reaches a dedicated External Routing Point, and from there, it is routed to a destination DN.

To control configured External Routing Points, T-Server must register these DNs with the switch. Failure to register implies that the External Routing Point is not available for ISCC purposes. Client applications can register External Routing Points via T-Server for monitoring purposes only.

Point-to-Point (One-to-One)

In the Point-to-Point access mode, only one trunk line is used to access an External Routing Point (for example, VDN, CDN) at the destination site. See Figure 8.
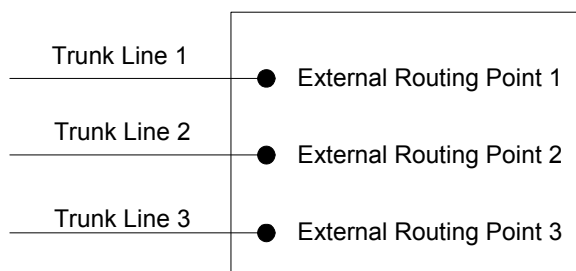
Figure 8: Point-to-Point Trunk Configuration

Note: Dedicated DNs of the `External Routing Point` type must be configured in a switch. See "Configuring Multi-Site Support" on page 100.

Multiple-to-Point (Multiple-to-One)

In the Multiple-to-Point access mode, trunk lines are assigned to the destination switch's trunk group, from which calls are routed to the final destination. See Figure 9.
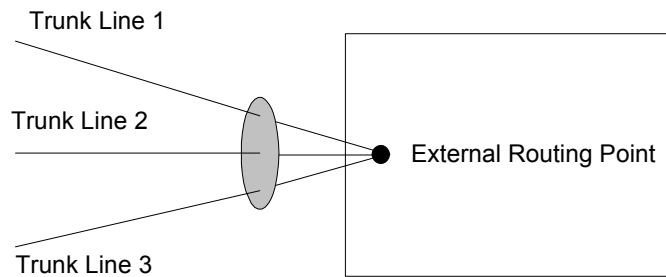
Figure 9: Multiple-to-Point Trunk Configuration

With this configuration, all calls reach the same External Routing Point. The `DNIS` attribute of a specific call differs from that of other calls and uniquely identifies the trunk from which the call arrived.

Note: To switch to this operating mode, you must configure the `route-dn` configuration option for T-Server.

---

route-uui

The `route-uui` transaction type employs the dedicated External Routing Point feature of the `route` transaction type (page 73) and the UUI matching feature of the `direct-uui` transaction type (page 69). This transaction type accommodates those switches that require a designated External Routing Point even though they use UUI for tracking.

Note: To support this transaction type, you must configure your switches to pass the UUI provided by your T-Server. You must also ensure that the trunks involved do not drop this data.

T-Server Transaction Type Support

Table 3 shows which transaction types are supported by a specific T-Server. Use this table to determine the transaction types that are available for use with your T-Server. This applies both to the `cast-type` you specify in the configuration options for your T-Server, and to any client-designated route-type requests specified for transfers of calls. A blank table cell indicates that T-Server does not support a certain transaction type.

Table 3: T-Server Support of Transaction Types

T-Server Type	Transaction Type										
	route		re-route	direct-callid	direct-uui / route-uui	direct-no-token	direct-ani	direct-digits	direct-network-callid	dnis-pool	pull-back
	one-to-one	multiple-to-one									
Aastra MXONE CSTA I	Yes			Yes[a]		Yes	Yes[a]				
Alcatel A4200/OXO	Yes			Yes		Yes	Yes				
Alcatel A4400/OXE	Yes			Yes[a,b,c]	Yes[d]	Yes	Yes[a]		Yes[e]		
Aspect ACD	Yes	Yes		Yes[c]		Yes[f]	Yes[f]				
Avaya Communication Manager	Yes				Yes	Yes	Yes				
Avaya INDeX	Yes					Yes	Yes[b]				
Avaya TSAPI	Yes				Yes	Yes	Yes				
Cisco UCCE	Yes					Yes	Yes				
Cisco Unified Communications Manager	Yes			Yes		Yes	Yes				
DataVoice Dharma	Yes			Yes		Yes	Yes				
Digitro AXS/20	Yes			Yes		Yes					
EADS Intecom M6880	Yes			Yes		Yes	Yes				
EADS Telecom M6500	Yes			Yes		Yes	Yes				
eOn eQueue	Yes			Yes		Yes					
Fujitsu F9600	Yes					Yes					

Table 3: T-Server Support of Transaction Types (Continued)

T-Server Type	Transaction Type										
	route		re-route	direct-callid	direct-uui / route-uui	direct-no-token	direct-ani	direct-digits	direct-network-callid	dnis-pool	pull-back
	one-to-one	multiple-to-one									
Huawei C&C08	Yes			Yes							
Huawei NGN	Yes					Yes	Yes				
Mitel MiTAI	Yes					Yes	Yes		Yes[g]		
NEC NEAX/APEX	Yes			Yes		Yes	Yes				
Nortel Communication Server 2000/2100	Yes			Yes[f]		Yes[f]	Yes[f]				
Nortel Communication Server 1000 with SCCS/MLS	Yes			Yes		Yes	Yes		Yes		
Philips Sopho iS3000	Yes			Yes		Yes	Yes				
Radvision iContact	Yes		Yes								Yes
Samsung IP-PCX IAP	Yes			Yes		Yes					
Siemens Hicom 300/HiPath 4000 CSTA I	Yes			Yes	Yes[d]	Yes	Yes				
Siemens HiPath 3000	Yes			Yes		Yes					
Siemens HiPath 4000 CSTA III	Yes				Yes[d]	Yes	Yes				

Table 3: T-Server Support of Transaction Types (Continued)

T-Server Type	Transaction Type										
	route		re-route	direct-callid	direct-uui / route-uui	direct-no-token	direct-ani	direct-digits	direct-network-callid	dnis-pool	pull-back
	one-to-one	multiple-to-one									
Siemens HiPath DX	Yes				Yes[h]	Yes	Yes[i]				
SIP Server	Yes		Yes		Yes[j]	Yes					Yes
Spectrum	Yes	Yes		Yes		Yes[f]	Yes[f]				
Tadiran Coral	Yes			Yes		Yes	Yes				
Teltronics 20-20	Yes			Yes		Yes	Yes				
Tenovis Integral 33/55	Yes			Yes		Yes	Yes				
Network T-Servers											
AT&T											
Concert											
CRSP											Yes
DTAG			Yes								
GenSpec	Yes	Yes	Yes							Yes	
IVR Server, using network configuration	Yes	Yes	Yes							Yes	Yes
KPN			Yes								
ISCP											
MCI											
NGSN	Yes										Yes
Network SIP Server	Yes					Yes	Yes			Yes	
Sprint	Yes										

Table 3: T-Server Support of Transaction Types (Continued)

T-Server Type	Transaction Type										
	route		re-route	direct-callid	direct-uui / route-uui	direct-no-token	direct-ani	direct-digits	direct-network-callid	dnis-pool	pull-back
	one-to-one	multiple-to-one									
SR-3511											
Stentor											

a. Not supported in the case of function `TRouteCall` on a Virtual Routing Point: a Routing Point can be simulated using a hunt group with calls being deflected or transferred from the hunt-group member when routing. When a two-step (typically mute) transfer is used on such a hunt-group member, `CallID` and `ANI` usually change; thus, the `direct-callid` and `direct-ani` types do not work.

b. Not supported in the case of function `TSingleStepTransfer` when the T-Server service is simulated using a two-step transfer to the switch. In this case, `CallID` and `ANI` change; thus, the `direct-callid` and `direct-ani` types do not work.

c. Not supported if two T-Servers are connected to different nodes.

d. There are some switch-specific limitations when assigning CSTA correlator data UUI to a call.

e. Supported only on ABCF trunks (Alcatel internal network).

f. To use this transaction type, you must select the `Use Override` check box on the `Advanced` tab of the DN `Properties` dialog box.

g. Supported only for `TRouteCall` requests made from a Native Routing Point.

h. Not supported if a `TMakeCall` request is made.

i. Not supported if a `TInitiateTransfer` or `TInitiateConference` request is made from an outgoing call on a device.

j. SIP Server supports the `direct-uui` type.

Transfer Connect Service Feature

The Transfer Connect Service (TCS) feature supports transfer connect services available on some telephony networks. When this feature is enabled, ISCC passes user data to remote locations to which calls are transferred or conferenced using transfer connect services.

Procedure:
Activating Transfer Connect Service

Start of procedure

1. Open the T-Server `Application's Properties` dialog box.

2. Click the `Options` tab.

3. Set the `tcs-use` configuration option to `always`.

4. Set the `tcs-queue` configuration option to the number of a DN on the origination switch.

   ISCC uses this DN as an intermediate step when sending calls to the remote location. The DN that is configured as `tcs-queue` receives attached data indicating the Feature Access Code (FAC) needed to reach the remote site. After a call is directed to the DN with data, a monitoring application takes the data and generates the required DTMF (dual-tone multifrequency) tones to redirect the call through the network to the remote location.

5. When you are finished, click `Apply`.

6. Click `OK` to save your changes and exit the `Properties` dialog box.

End of procedure

Note: With T-Server for Avaya Communication Manager, you can use `RequestRouteCall` with `RouteTypeOverwriteDNIS` to initiate the playing of DTMF tones. This is done through the use of another intermediate DN (typically, an announcement port configured to give the silent treatment), to which the call is routed. When the call is established on this DN, T-Server requests that the digits sent in the `DNIS` field of the `TRouteCall` be played by using the `ASAI-send-DTMF-single` procedure.

ISCC/Call Overflow Feature

The Inter Server Call Control/Call Overflow (ISCC/COF) feature of T-Server, that supports *passive external routing*, is specifically designed to handle calls delivered between sites without an explicitly defined destination location. Such scenarios include contact center overflows and manual call transfers.

An *overflow situation* occurs when a call comes into a contact center where all agents are currently busy. In this situation, the switch can transfer (overflow) the incoming call to another site where there is an available agent.

T-Server uses two methods to handle call overflow and manual transfer scenarios. The first method is based on `NetworkCallID` matching and the second method is based on `ANI/OtherDN` matching.

When connected to each other via switch-specific networks, switches of some types can pass additional information along with transferred calls. This information may contain the `NetworkCallID` of a call, which is a networkwide unique identifier of the call.

When connected via a regular PSTN, switches of all types can send the `ANI` and/or `OtherDN` attributes to the destination switch during any call transfer operation.

While all T-Servers support the ISCC/COF feature using the `ANI` and/or `OtherDN` attributes, only a few support this feature using the `NetworkCallID` attribute. Table 4 shows the T-Server types that provide the `NetworkCallID` of a call.

Table 4: T-Server Support of NetworkCallID for ISCC/COF Feature

T-Server Type	Supported NetworkCallID Attribute
Alcatel A4400/OXE[a]	Yes
Aspect ACD	Yes
Avaya Communication Manager[a,b]	Yes
Avaya TSAPI[a,b]	Yes
Cisco UCCE	Yes
Mitel MiTAI[a]	Yes
Nortel Communication Server 2000/2100[a]	Yes
Nortel Communication Server 1000 with SCCS/MLS[a]	Yes
SIP Server[a]	Yes
Spectrum	Yes

a. Supported only if the `match-flexible` configuration parameter is used.

b. ISCC/COF is cross-compatible between T-Server for Avaya Communication Manager and T-Server for Avaya TSAPI.

The ISCC/COF feature can use any of the three attributes (`NetworkCallID`, `ANI,` or `OtherDN`) as criteria for matching the arriving call with an existing call at another location. Consequently, the attribute that is used determines what

`ConnID`, `UserData`, `CallType`, and `CallHistory` are received for the matched call from the call's previous location.

Warning! Depending on the switch platform, it may be possible to inherit the ANI attribute after routing a call to a remote destination, and after performing a single-step transfer and other telephone actions. However, ISCC/COF works properly only in scenarios where the `ANI` attribute on the destination T-Server is represented by exactly the same unique digit string as on the origination T-Server.

Typically, the `ANI` attribute represents the original call identifier (customer phone number), which guarantees that the attribute remains unique.

Note: When the ISCC/COF feature is in use, the Number Translation feature becomes active. For more information on feature configuration, see "Number Translation Feature" on page 83.

ISCC/COF Call Flow

Figure 10 shows the sequence of steps that occur in an ISCC/COF scenario when a call is made or transferred by an agent at Site A to a DN at Site B, or when a call is overflowed from Site A to Site B.
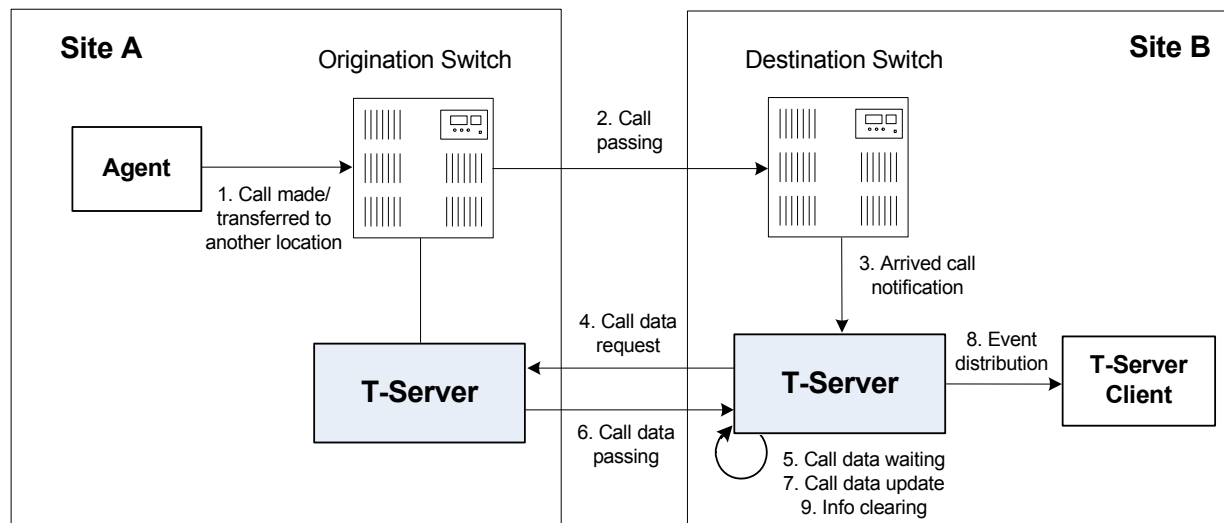

Figure 10: Steps in the ISCC/COF Process

Step 1

An agent makes or transfers a call manually to another location or a call is overflowed from Site A (origination location) to Site B (destination location).

Step 2

Switch A (the origination switch) passes the call to Switch B (the destination switch).

Step 3

The call reaches the destination switch, which notifies the destination T-Server about the arrived call.

Step 4

The destination T-Server verifies with remote locations whether the call overflowed at any of them.

To determine which calls to check as possibly having overflowed, T-Server relies on the `Switch` object and the presence of DNs on the `Switch` configured as the `Access Resource` type with the `Resource Type` set either to `cof-in` (COF-IN DNs) or to `cof-not-in` (COF-NOT-IN DNs):

T-Server skips an arriving call when one of following conditions is met:

- The call arrives at a DN configured as an Enabled COF-NOT-IN DN.
- COF-IN DNs are configured, but the call arrives at a DN other than one of the configured COF-IN DNs or to a COF-IN DN which is Disabled.

In all other cases, the call is checked for overflow.

To determine which location the call arrived from, T-Server checks the call type and checks whether the call has the `NetworkCallID`, `ANI`, or `OtherDN` attribute:

- If the call is not an inbound call, the request for call data is sent to all remote locations *except* those whose Switch Access Code has the ISCC Call Overflow `Parameters` property set to `inbound-only=true`.
- If the call of any type has the `NetworkCallID` attribute, the destination T-Server sends a request for call data to the remote locations of the same switch type as the destination location if their Switch Access Codes have the ISCC Call Overflow `Parameters` property set to `match-callid`.
- If the call of any type has the `ANI` or `OtherDN` attribute, the request for call data is sent to remote locations whose Switch Access Code has the ISCC Call Overflow `Parameters` property set to `match-ani`.

Step 5

The destination T-Server waits (suspending events related to that call) for the call data from the remote T-Server for the time interval specified in the `cof-ci-req-tout` configuration option. Within this interval, T-Server holds any events related to the call. In addition, the `cof-ci-defer-delete` option on the origination T-Server establishes the time interval only after which that T-Server deletes the call information. And the `cof-ci-wait-all`, if set to `true`,

forces the origination T-Server to wait for responses related to possible call overflow situations before updating call data.

Step 6

The T-Server at the location from which the call was transferred or overflowed sends call data to the requesting T-Server.

Step 7

If a positive response to the call-data request is received, T-Server updates `ConnID`, `UserData`, `CallType`, and `CallHistory`, distributes all suspended events related to that call, and deletes all information regarding the transaction (Step 9).

Step 8

If the timeout set by `cof-ci-req-tout` expires, T-Server distributes all suspended events, and starts the timeout specified by the `cof-rci-tout` option. If a positive response is received within the timeout set by `cof-rci-tout`, T-Server updates the `ConnID`, `UserData`, `CallType`, and `CallHistory`, and notifies client applications by distributing `EventPartyChanged`.

Step 9

T-Server deletes all information regarding the transaction when one of these results occurs:

*   The first positive response to the call-data request is received.
*   Negative responses from all queried locations are received.
*   The timeout specified by the `cof-rci-tout` option expires.

Number Translation Feature

The Number Translation feature of T-Server extends the ISCC/COF and `direct-ani` transaction type functions to provide more flexibility for handling calls distributed across multiple sites. T-Server translates the input string (ANI string) into a number defined by the translation rules. This processing is called number translation. T-Servers participating in handling calls at multiple sites exchange the translated numbers in order to match the call instances.

The translation process involves two algorithms, one for rule selection and the other for the actual translation. Through the first algorithm, T-Server selects a rule that will be used for number translation. Through the second algorithm, T-Server translates the number according to the selected rule definition. See "Number Translation Rules" on for more information on configuring rules for your environment.

Number translation occurs as follows:

1. The switch reports a number, typically via `AttributeANI`.

2. T-Server evaluates all configured inbound rules to determine which one is the best fit for the received number. The best fit is determined by comparing the length of, and the specific digits in, the input number with the inbound pattern of each configured rule. See "Rule Examples" on for specific examples.

3. T-Server translates the number according to the selected rule.

To enable T-Server to translate numbers, you must perform specific configuration tasks that are associated with translation. See "Configuring Number Translation" on .

Number Translation Rules

T-Server uses the number translation rules that you define in the T-Server configuration object in two ways:

• Rule selection—To determine which rule should be used for number translation

• Number translation—To transform the number according to the selected rule

Using ABNF for Rules

The number translation rules must conform to the following syntax, represented using Augmented Backus-Naur Form (ABNF) notation. For more information about ABNF, see RFC 2234, "Augmented BNF for Syntax Specifications: ABNF."

Note: The following notation explanations begin with the highest level notation. Each explanation includes the name of a component notation and a basic definition of each component that it contains. Some components require more detailed definitions, which are included later in this section.

Common Syntax Notations

Syntax notations common to many of these rules include:

• `*`—Indicates that 0 to an infinite number of the item following this symbol are acceptable.

• `1*`—Indicates that one repetition is required. For T-Server, only one instance is acceptable.

• `/`—Indicates that any of the items mentioned, or a combination of those items, is acceptable.

Component Notations

Component notations include:

- `dialing-plan = *dialing-plan-rule`

    where:

    - `dialing-plan-rule` represents the name of the rule. Each rule must have a unique name. There are no other naming restrictions, and you do not need to model your names according to the examples in this chapter.

    The rules are represented as separate options in the configuration. Also, fields from a rule are represented as parameters in a single option string.

- `rule = [name] in-pattern [out-pattern]`

    where:

    - `[name]` is the name for the rule option, for example, `rule-01`. In ABNF notation, the brackets `[]` indicate that 0 or 1 instance of the component is required. However, for T-Server, a name is required.
    - `in-pattern` is the part of the rule to which T-Server looks when attempting to match the input number.
    - `[out-pattern]` is the part of the rule that instructs T-Server on how to translate the input number into the required format. The brackets indicate that either 0 or 1 instance is required. You must create an `out-pattern` for number translation rules.

- `name = *( ALPHA  /  DIGIT  / "-")`

    where:

    - `ALPHA` indicates that letters can be used in the name for the rule option.
    - `DIGIT` indicates that numbers can be used in the name for the rule option.
    - `"-"` indicates that a dash (-) can also be used in the option name, for example, `rule-01`.

- `in-pattern = 1*(digit-part / abstract-group)`

    where:

    - `digit-part` represents numbers. T-Server uses this when selecting the most appropriate rule from the entire dialing plan.
    - `abstract-group` represents one or more letters with each letter representing one or more numbers. T-Server uses this when transforming a dial string.

    For example, `[1-9]` is the `digit-part` (representing a range of numbers) and ABBB is the `abstract-group` for in-pattern=[1-9]ABBB.

- `out-pattern = 1*(symbol-part / group-identifier) *param-part`

    where:

    - `symbol-part` represents digits, symbols, or a combination. Symbols are rarely used. They are not used in the United States.

- group-identifier are letters that represent groups of numbers. A letter in the out-pattern represents one or more digits, based on the number of times the letter is used in the in-pattern.
- *param-part represents an additional parameter, such as phone-context. Reminder: an asterisk means that 0 to an infinite number of these are acceptable.

For example, in rule-04; in-pattern=1AAABBBCCC;out-pattern=91ABC, 91 is the symbol-part; A, B, and C are group-identifiers in the out-pattern, each representing three digits, since there are three instances of each in the in-pattern.

Note: Prefix an out-pattern value with a plus sign (+) for the inbound rule when the output must be in a global form (E.164 format).

- digit-part = digits / range / sequence

  where:
  - digits are numbers 0 through 9.
  - range is a series of digits, for example, 1-3.
  - sequence is a set of digits.

- symbol-part = digits / symbols

  where:
  - digits are numbers 0 through 9.
  - symbols include such characters as +, -, and so on.

- range = "[" digits "-" digits "]" group-identifier

  where:
  - "[" digits "-" digits "]" represents the numeric range, for example, [1-2].
  - group-identifier represents the group to which the number range is applied.

    For example, [1-2] applies to group identifier A for in-pattern=[1-2]ABBB. When T-Server evaluates the rule to determine if it matches the number, it examines whether the first digit of the number, identified as group-identifier A, is 1 or 2.

- sequence = "[" 1*(digits [","]) "]" group-identifier

  where:
  - "[" 1*(digits [","]) "]" represents a sequence of digits, separated by commas, and bracketed. T-Server requires that each digit set have the same number of digits. For example, in [415,650] the sets have three digits.
  - group-identifier represents the group to which the number sequence is applied.

For example, in `in-pattern=1[415,650]A*B`, `[415,650]` applies to `group-identifier` A. When T-Server evaluates the rule to determine if it matches the number, it examines whether the three digits (`group-identifier` A) following the 1 in the number are `415` or `650`.

- `abstract-group = fixed-length-group / flexible-length-group / entity`

  where:

  - `fixed-length-group` specifies a group composed of a specific number of digits and determined by how many times the group identifier is included in the `in-pattern`. For example, for `in-pattern=1AAABBBCCCC`, there are three digits in group A and B but four in group C.

    When you create an `out-pattern`, you include the group identifier only once because the `in-pattern` tells T-Server how many digits belong in that group. For example, `rule-04` (see page 89) is `in-pattern=1AAABBBCCCC; out-pattern=91ABC`.

  - `flexible-length-group` specifies a group composed of 0 or more digits in the group represented by the `group-identifier`. For example, in `in-pattern=1[415,650]A*B`, `*B` represents the flexible length group containing the remaining digits in the number.

  - `entity` represents digits defined for a specific purpose, for example, country code.

  The component `abstract-group` is used only for the `in-pattern`.

- `fixed-length-group = 1*group-identifier`

  See the earlier explanation under `abstract-group`.

- `flexible-length-group = "*" group-identifier`

  See the earlier explanation under `abstract-group`.

- `entity = "#" entity-identifier group-identifier`

  where:

  - `"#"` indicates the start of a Country Code `entity-identifier`.

  - `entity-identifier` must be the letter C which represents Country Code when preceded by a pound symbol (`#`). Any other letter following the # causes an error.

  - `group-identifier` represents the Country Code group when preceded by `#C`.

  The `entity` component is a special group that assumes some kind of predefined processing, such as the Country Code detection.

- `param-part = ";" param-name "=" param-value`

  where:

  - `";"` is a required separator element.

  - `param-name` is the name of the parameter.

  - `"="` is the next required element.

- `param-value` represents the value for `param-name`.

- `param-name = "ext" / "phone-context" / "dn"`

  where:
  - `"ext"` refers to extension.
  - `"phone-context"` represents the value of the `phone-context` option configured on the switch.
  - `"dn"` represents the directory number.
- `param-value = 1*ANYSYMBOL`

  where:
  - `ANYSYMBOL` represents any number, letter, or symbol with no restrictions.
- `group-identifier = ALPHA`
- `entity-identifier = ALPHA`
- `digits = 1*DIGIT`
- `symbols = 1*("-" / "+" / ")" / "("/ ".")`

Recommendations for Rule Configuration

The configuration of rules for inbound numbers usually depends on the settings in the corresponding PBX. These settings often define the form in which the PBX notifies its client applications about the number from which an inbound call is coming.

As a general guideline, configure rules that define how to process calls from:

- Internal numbers.
- External numbers within the same local dialing area.
- External numbers within the same country.
- International numbers.

Rules for inbound numbers, typically for North American locations, might look like this:

1. Two rules to transform internal numbers (extensions):

   ```
   name=rule-01; in-pattern=[1-9]ABBB; out-pattern=AB
   name=rule-02; in-pattern=[1-9]ABBBB; out-pattern=AB
   ```

2. A rule to transform local area code numbers (in `333-1234` format in this example):

   ```
   name=rule-03; in-pattern=[1-9]ABBBBBB; out-pattern=+1222AB
   ```

3. A rule to transform U.S. numbers (in `+1(222)333-4444` format):

   ```
   name=rule-04; in-pattern=1AAAAAAAAAA; out-pattern=+1A
   ```

4. A rule to transform U.S. numbers without the `+1` prefix (in `(222)333-4444` format):

   ```
   name=rule-05; in-pattern=[2-9]ABBBBBBBBB; out-pattern=+1AB
   ```

5. A rule to transform U.S. numbers with an outside prefix (in `9 +1(222)333-4444` format):

   `name=rule-06; in-pattern=91AAAAAAAAAA; out-pattern=+1A`

6. A rule to transform international numbers with an IDD (international dialing digits) prefix (in `011 +44(111)222-3333` format):

   `name=rule-07; in-pattern=011*A; out-pattern=+A`

7. A rule to transform international numbers without an IDD prefix (in `+44(111)222-3333` format):

   `name=rule-08; in-pattern=[2-9]A*B; out-pattern=+AB`

Rule Examples

This section provides examples of six rules that are configured as options in the Genesys Configuration Database. It also provides examples of how T-Server applies rules to various input numbers.

Rules

rule-01   `in-pattern=[1-8]ABBB; out-pattern=AB`

rule-02   `in-pattern=AAAA; out-pattern=A`

rule-03   `in-pattern=1[415,650]A*B; out-pattern=B`

rule-04   `in-pattern=1AAABBBCCCC; out-pattern=91ABC`

rule-05   `in-pattern=*A913BBBB; out-pattern=80407913B`

rule-06   `in-pattern=011#CA*B; out-pattern=9011AB`

Examples

Here are examples of how T-Server applies configured above rules to various input numbers.

Example 1   T-Server receives input number `2326`.

As a result of the rule selection process, T-Server determines that the matching rule is `rule-01`:

   `name=rule-01; in-pattern=[1-8]ABBB; out-pattern=AB`

The matching count for this rule is `1`, because Group `A` matches the digit `2`.

As a result of the parsing process, T-Server detects two groups: Group `A = 2` and Group `B = 326`.

T-Server formats the output string as `2326`.

Example 2   T-Server receives input number `9122`.

As a result of the rule selection process, T-Server determines that the matching rule is `rule-02`:

   `name=rule-02; in-pattern=AAAA; out-pattern=A`

The matching count for this rule is `0`; however, the overall length of the input number matches that of the `in-pattern` configuration.

As a result of the parsing process, T-Server detects one group: Group `A` = `9122`.

T-Server formats the output string as `9122`.

Example 3   T-Server receives input number `16503222332`.

As a result of the rule selection process, T-Server determines that the matching rule is `rule-03`:

    name=rule-03; in-pattern=1[415,650]A*B; out-pattern=B

The matching count for this rule is `4`, because the first digit matches and all three digits in Group `A` match.

As a result of the parsing process, T-Server detects two groups: Group `A` = `650` and Group `B` = `3222332`.

T-Server formats the output string as `3222332`.

Example 4   T-Server receives input number `19253227676`.

As a result of the rule selection process, T-Server determines that the matching rule is `rule-04`:

    name=rule-04; in-pattern=1AAABBBCCCC; out-pattern=91ABC

The matching count for this rule is `1`, because the first digit matches.

As a result of parsing process, T-Server detects three groups: Group `A` = `925`, Group `B` = `322`, and Group `C` = `7676`.

T-Server formats the output string as `919253227676`.

Example 5   T-Server receives input number `4089137676`.

As a result of rule selection process, T-Server determines that the matching rule is `rule-05`:

    name=rule-05; in-pattern=*A913BBBB; out-pattern=80407913B

The matching count for this rule is `3`, because three digits match.

As a result of the parsing process, T-Server detects two groups: Group `A` = `408` and Group `B` = `7676`.

T-Server formats the output string as `804079137676`.

Example 6   T-Server receives input number `011441112223333`.

As a result of the rule selection process, T-Server determines that the matching rule is `rule-06`:

    name=rule-06; in-pattern=011#CA*B; out-pattern=9011AB

The matching count for this rule is `3`, because three digits match.

As a result of the parsing process, T-Server detects two groups: Group `A` = `44` and Group `B` = `1112223333`.

T-Server formats the output string as `9011441112223333`.

Procedure:
Configuring Number Translation

Purpose: To configure the Number Translation feature in T-Server to provide more flexibility for handling calls distributed across multiple sites.

Overview

• The Number Translation feature becomes active when the ISCC/COF feature and/or the `direct-ani` transaction type are used.

• This configuration procedure must be completed within the T-Server `Application` object corresponding to your T-Server.

Start of procedure

1. Open the T-Server `Application`'s Properties dialog box.

2. Click the `Options` tab.

3. Create a new section called `extrouter` or open an existing section with this name.

4. Create a new option called `inbound-translator-<n>`. This option points to another section that describes the translation rules for inbound numbers.

5. In this section, create one configuration option for each rule. Specify the rule name as the option name. The values of these options are the rules for the number translation.

   For the option description and its valid values, see Chapter 9, "T-Server Common Configuration Options," on page 217.

6. When you are finished, click `Apply`.

7. Click `OK` to save your changes and exit the `Properties` dialog box.

End of procedure

Network Attended Transfer/Conference Feature

The Network Attended Transfer/Conference (NAT/C) feature is designed to enable agents working in multi-site contact centers to consult with each other before making call transfers or conferences, regardless of whether both agents work at the same or different sites. It also enables the agent who requests a consultation to maintain his or her conversation with the customer while the system is looking for an available agent and setting up the consultation call.

The NAT/C feature does not rely on the call transfer capabilities of the local switch.

There are two modes in which the network attended transfer/conference can be performed: *direct* and *URS-controlled*. Figure 11 shows the sequence of steps that occur in *URS-controlled* mode, when Agent A, who is handling a customer call, requests a consultation with another agent, and URS (Universal Routing Server) selects Agent B, who is working at another site. The *direct* mode is similar to the *URS-controlled* mode, with the difference that URS is not involved in the process (Step 2 and Step 3 are omitted).
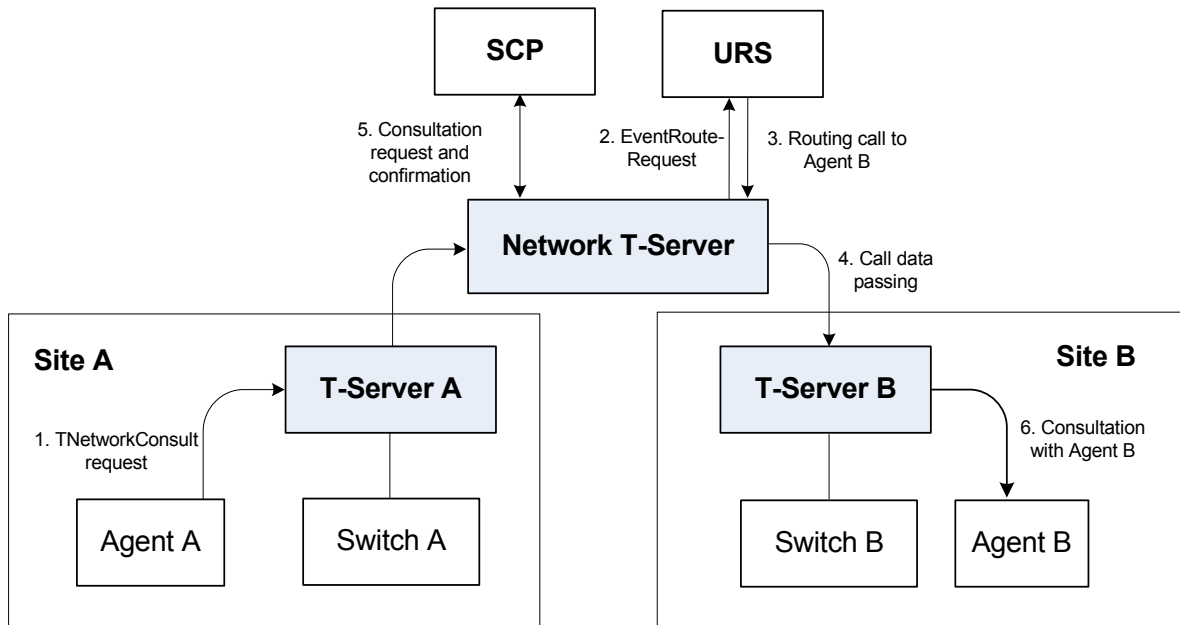
Figure 11: Steps in the NAT/C Process in URS-Controlled Mode

Step 1

Agent A makes a request for a consultation with another agent. A TNetworkConsult request is relayed to the Network T-Server. Depending on the parameter settings of the TNetworkConsult request, the NAT/C feature will operate in either *direct* or *URS-controlled* mode. For more information, see the *Voice Platform SDK 8.x .NET (or Java) API Reference.*

Step 2

(*URS-controlled* mode only.) The Network T-Server sends EventRouteRequest to URS.

Step 3

(*URS-controlled* mode only.) URS locates an available agent at Site B and instructs the Network T-Server to route the call to Agent B. The Network

T-Server confirms the initiation of the network transfer by sending `EventNetworkCallStatus` to T-Server A, which then relays it to Agent A.

Step 4

The Network T-Server proceeds to obtain the access number from T-Server B, and passes the call data to T-Server B. (See "ISCC Call Data Transfer Service" on for details.)

Step 5

The Network T-Server instructs the Service Control Point (SCP) to initiate a new voice path with Agent B. Once the connection is confirmed, the Network T-Server distributes `EventNetworkCallStatus` to both T-Server A and T-Server B, which then relay it to Agent A and Agent B respectively, to indicate that the consultation call is being established.

The Network T-Server also distributes `EventRouteUsed` to URS to confirm successful routing of the call to the selected agent.

Step 6

At this point, the customer is on hold, and Agent A is consulting with Agent B. Agent A can do one of the following:

- End the consultation and retrieve the original customer call
- Alternate between Agent B and the customer
- Set up a conference call with Agent B and the customer
- Transfer the customer call to Agent B

Note: All T-Servers support NAT/C requests with `AttributeHomeLocation` provided that this attribute identifies a network location that is capable of processing such requests. Refer to the *Network T-Server Deployment Guides* to determine whether a specific Network T-Server can process these requests.

Event Propagation Feature

The Event Propagation feature complements the ISCC and ISCC/COF features by distributing updated user data and party-related events to remote T-Servers. This feature is used when a call is being made, transferred, or conferenced to another location, and when, as a result, one or more instances of the call reside at one location while other call instances reside at another location. In this scenario, when a client at one location makes changes to user data, updated user data is passed *(propagated)* to T-Servers at other locations.

The Event Propagation feature consists of User Data update propagation and Party Events propagation.

User Data Propagation

User data propagation takes place when a client at one location makes changes to user data associated with a call that was made, transferred, conferenced, or routed to other locations. The remote clients involved with the call are notified about the changes with `EventAttachedDataChanged`.

When T-Server receives a local update to user data (that is, when a client of this T-Server has changed the call's user data), T-Server determines if parties at remote locations are involved with the call and, if so, sends (propagates) the updated user data to the T-Servers at remote locations.

When T-Server receives a remote update to user data (that is, when a client of a remote T-Server has changed the call's user data and the remote T-Server has used the Event Propagation feature to send the updated user data), T-Server:

1. Updates the user data of the corresponding local call.

2. Determines if parties at other remote locations are involved with the call and, if so, propagates the updated user data to T-Servers at other remote locations.

The locations to which user data is propagated are selected based on a call distribution topology. That is, the updated user data is passed directly to the location to which a call was sent and to the location from which the call was received, excluding the location from which the update was received.

For example, consider a call made from location A to location B, and then conferenced from location B to location C. The three instances of the call reside at different locations: the first instance is at location A, the second instance is at location B, and the third instance is at location C. The Event Propagation feature is employed in the following scenarios:

• When T-Server at location A receives a local update to user data, it notifies T-Server at location B (to which it sent the call) about changes to the call's user data. Thus, T-Server at location B receives a remote update to user data and, in turn, notifies T-Server at location C (to which it sent the call) about these changes.

   Although T-Server at location C receives a remote update to user data, it does not pass the notification to any other T-Servers, because it did not send the call to any other locations. As mentioned earlier, T-Servers at locations B and C update the user data of the corresponding local calls and notify their clients about the changes with `EventAttachedDataChanged`.

• When T-Server at location B receives a local update to user data, it notifies T-Server at location C (to which it sent the call) and T-Server at location A (from which it received the call) about changes to the call's user data. Thus, T-Servers at locations C and A receive a remote update to user data.

Because T-Server at location C did not send the call to any other locations, and T-Server at location A originated the call, neither of these T-Servers passes the notification to any other T-Servers. T-Servers at locations C and A update the user data of the corresponding local calls and notify their clients about the changes with `EventAttachedDataChanged`.

* When T-Server at location C receives a local update to user data, it notifies T-Server at location B (from which it received the call) about changes to the call's user data. Thus, T-Server at location B receives a remote update to user data and, in turn, notifies T-Server at location A (from which it received the call) about these changes.

    Although T-Server at location A receives a remote update to user data, it does not pass the notification to any other T-Servers, because it originated the call. T-Servers at locations B and A update the user data of the corresponding local calls and notify their clients about the changes with `EventAttachedDataChanged`.

When a call is distributed between location A and location C using location B, and is then deleted on location B, propagation between locations A and C still occurs through the transit node at location B.

Party Events Propagation

Party events propagation takes place when a transfer or a conference is completed for a call that was made to or from one or more remote locations, or when a conference party is removed from the conference.

In these cases, the Event Propagation feature distributes party events, such as `EventPartyChanged`, `EventPartyAdded`, and `EventPartyDeleted`, to remote locations involved with the call, according to appropriate call model scenarios.

For example, consider a call made from DN 1 to DN 2 on location A. A `TInitiateConference` request is then issued for DN 2 to transfer the call to external DN 3 on location B. That transfer is made by means of ISCC routing. When this conference is completed on location A, the Event Propagation feature sends `EventPartyChanged` to location B and distributes this event to involved client applications that are connected to location B and registered for DN 3. After that, if a party of the conference is removed from the conference (for example, a party on DN 2), the Event Propagation feature sends `EventPartyDeleted` to location B and distributes this event to client applications registered for DN 3.

If a call involved in the propagation has no local parties but has two or more remote parties, the party events propagation is processed in the same manner as the propagation of user data updates.

For a complete event flow in such scenarios, refer to the *Genesys Events and Models Reference Manual.*

Switch Partitioning

A multi-site environment with switch partitioning or intelligent trunks can be defined as a configuration of multiple virtual switches (or `Switch` objects) that are defined in Configuration Manager under a single `Switching Office` object representing a physical switch. Each `Switch` object has its own instance of a T-Server application. All T-Server applications connect to the switch via the same or different CTI link or a gateway. (See Figure 12.)

When the Event Propagation feature is active, updated user data and party-related events—`EventPartyChanged, EventPartyDeleted,` and `EventPartyAdded`—are propagated to T-Servers that are involved in call transactions, such as transfer or conference. However, with switch partitioning, the call instances may reside at one partition or at different partitions.

Site A
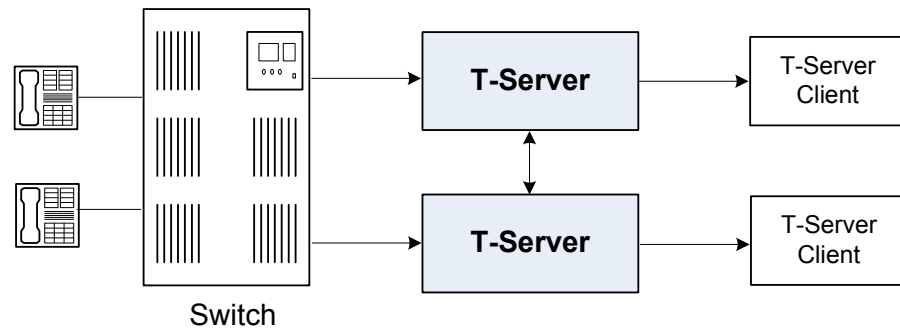
Figure 12: Switch Partitioning Architecture

Starting with version 8.0, in addition to `ConnIDs` and `UserData,` T-Server can synchronize the `CallType` attribute. Each T-Server is required to register all DNs it monitors. In a multi-partitioned environment, when configured, calls between partitions are reported as internal (`CallTypeInternal`). In a non-partitioned environment, such calls are reported as inbound (`CallTypeInbound`) and/or outbound (`CallTypeOutbound`), depending on the direction of a call. In order for T-Servers to report calls between specified partitions as internal, registered DNs of these partitions must be assigned to a Switch (T-Server), Switching Office, or Tenant, using the `dn-scope` configuration option. If DNs that are involved in calls are not in the T-Server scope, those DNs will be reported as inbound or outbound.

In addition, T-Server supports `LocalCallType` and `PropagatedCallType` attributes, which depend on the `propagated-call-type` configuration option setting for reporting. See the option description on page 222.

To control race conditions that may occur in the switch-partitioned environment, use the `epp-tout` configuration option (see).

Notes: Because of possible delays in TCP/IP connections, a sequence of events sent for the same call by two or more T-Servers to clients may appear in an unexpected order. For example, in a simple call scenario with two partitions, `EventRinging` and `EventEstablished` messages may both arrive before `EventDialing`.

Genesys switch partitioning does not apply to hardware partitioning functionality that is supported on some switches.

Table 5 shows the T-Server types that support switch partitioning.

Table 5: T-Server Support for Switch Partitioning

T-Server Type	Supported
Alcatel A4400/OXE	Yes
Avaya Communication Manager	Yes
Avaya TSAPI	Yes
Cisco Unified Communications Manager	Yes
SIP Server	Yes

Event Propagation Configuration

The basic Event Propagation feature configuration includes a setting of specific configuration options at a T-Server `Application` level. The advanced feature configuration allows you to customize the feature at a `Switch` level.

When determining whether to notify other T-Servers of changes to user data, or to distribute party events, T-Server checks:

1. Call topology (what location a call came from and to what location the call was then transferred or conferenced).

2. Outbound parameters of the `Switch` this T-Server relates to (whether propagation parameters are configured for the access codes this switch uses to reach the switch at the location a call came from and the switch at the location to which the call was then transferred or conferenced).

Warning! The direction of user-data or party-events propagation does not necessarily match the direction of call distribution. Therefore, the access code used to deliver the call can differ from the access code used for the purpose of Event Propagation.

If one of the T-Servers along the call distribution path has the Event Propagation feature disabled, that T-Server does not distribute events to remote locations.

Procedure:
Activating Event Propagation: basic configuration

Purpose: To activate the Event Propagation feature for User Data updates and call-party–associated events (Party Events) distribution.

Start of procedure

1. Open the T-Server `Application's Properties` dialog box.

2. Click the `Options` tab.

3. Open the `extrouter` section.

4. Set the `event-propagation` option to the `list` value.

   This setting enables User Data propagation. If you need to enable Party Events propagation, perform Step 5.

5. Set the `use-data-from` option to the `current` value.

   This setting enables Party Events propagation.

   For the option description and its valid values, see Chapter 9, "T-Server Common Configuration Options," on page 217.

6. When you are finished, click `Apply`.

7. Click `OK` to save your changes and exit the `Properties` dialog box.

End of procedure

Next Steps

- For advanced feature configuration, do the following procedure:

  Procedure: Modifying Event Propagation: advanced configuration, on page 98

Procedure:
Modifying Event Propagation: advanced configuration

Purpose: To modify access codes for advanced Event Propagation configuration.

Prerequisites

- Procedure: Activating Event Propagation: basic configuration, on page 98

Overview

You can set Event Propagation parameters using:

- The `Default Access Code` properties of the `Switch` that receives an ISCC-routed call (the destination switch).
- The `Access Code` properties of the `Switch` that passes an ISCC-routed call (the origination switch).

If you do not set up Event Propagation parameters for a given `Access Code`, T-Server uses corresponding settings configured for the `Default Access Code` of the destination switch.

The procedures for modifying `Default Access Codes` and `Access Codes` are very similar to each other.

Start of procedure

1. Among configured `Switches`, select the `Switch` that the configured T-Server relates to.

2. Open the `Switch's Properties` dialog box and click either the `Default Access Codes` tab or the `Access Codes` tab.

3. Select a configured `Default Access Code` or configured `Access Code` and click `Edit`.

   Note: If no `Default Access Code` is configured, see page 103 for instructions. If no `Access Codes` are configured, see page 104 for instructions.

4. In the `Switch Access Code Properties` dialog box that opens, specify a value for the `ISCC Protocol Parameters` field as follows:

   - To enable distribution of both user data associated with the call and call-party–associated events[1], type:

     `propagate=yes`

     which is the default value.

   - To enable distribution of user data associated with the call and disable distribution of call-party–associated events, type:

     `propagate=udata`

   - To disable distribution of user data associated with the call and enable distribution of call-party–associated events, type:

---

1. The following are call-party–associated events: `EventPartyChanged`, `EventPartyDeleted`, and `EventPartyAdded`.

```
propagate=party
```

- ✦ To disable distribution of both user data associated with the call and call-party–associated events, type:

```
propagate=no
```

5. Click `OK` to save configuration updates and close the `Switch Access Code Properties` dialog box.

6. Click `Apply` and `OK` to save configuration updates and close the `Switch Properties` dialog box.

End of procedure

ISCC Transaction Monitoring Feature

This feature allows T-Server clients to monitor ISCC transactions that occur during the call data transfer between T-Servers in a multi-site environment.

In order to be able to monitor ISCC messaging, a T-Server client must subscribe to the ISCC Transaction Monitoring. Once a subscription request is confirmed, a client will receive updates about all multi-site operations of this T-Server.

The `TTransactionMonitoring` request is used to instruct T-Server to start, stop, or modify a client's subscription to Transaction Monitoring feature notifications by setting the `TSubscriptionOperationType` parameter to `SubscriptionStart`, `SubscriptionStop`, or `SubscriptionModify` respectively. The transaction status is reported in `EventTransactionStatus` messages to the subscribed clients.

To determine whether the Transaction Monitoring feature is supported by a specific T-Server, a T-Server client may query T-Server's capabilities. For more information about support of this feature, see *Genesys Events and Models Reference Manual* and *Voice Platform SDK 8.x .NET (or Java) API Reference*.

Configuring Multi-Site Support

Prior to configuring T-Server to support multi-site operation, you must read the "Licensing Requirements" on page 33, as well as previous sections of this chapter on multi-site deployment. In particular, Table 3 on page 75 shows which transaction types are supported by a specific T-Server, while Table 4 on page 80 shows whether your T-Server supports the `NetworkCallID` attribute for

the ISCC/COF feature. Use this information as you follow the instructions in this chapter.

Note: Before attempting to configure a multi-site environment, Genesys recommends that you plan the changes you want to make to your existing contact centers. You should then gather the configuration information you will need (such as the name of each T-Server application, port assignments, and switch names), and use Configuration Manager to create and partially configure each T-Server object. Review multi-site option values in the "extrouter Section" on and determine what these values need to be, based on your network topology.

For T-Server to support multi-site operation, you must create and configure three types of objects in the Configuration Layer:

1. `Applications`

2. `Switches`, including `Access Codes`

3. `DNs`

You must configure these objects for origination and destination locations. Multi-site support features activate automatically at T-Server startup. See "DNs" on for details.

Applications

Ensure that T-Server `Application` objects, and their corresponding `Host` objects, exist and are configured for origination and destination locations.

Once you've done that, use Configuration Manager to add this configuration to a T-Server `Application`.

Procedure:
Configuring T-Server Applications

Purpose: To configure T-Server `Application` objects for multi-site operation support.

Start of procedure

1. Open the T-Server `Application's` `Properties` dialog box.

2. Click the `Connections` tab and click `Add` to add a connection to the appropriate T-Server. The `Connection Info Properties` dialog box displays.

3. Use the `Browse` button to search for the T-Server you want to connect to, and fill in the following values:
   - `Port ID`

- Connection Protocol
- Local Timeout
- Remote Timeout
- Trace Mode

4. Click the Options tab. Create a new section called extrouter or open an existing section with this name.

> **Note:** If you do not create the extrouter section, T-Server uses the default values of the corresponding configuration options.

5. Open the extrouter section. Configure the options used for multi-site support.

> **Note:** For a list of options and valid values, see "extrouter Section" on page 227, in the "T-Server Common Configuration Options" chapter in Part Two of this document.

6. When you are finished, click Apply.

7. Repeat this procedure for all T-Servers for origination and destination locations that are used for multi-site operations.

End of procedure

Next Steps

- See "Switches and Access Codes."

Switches and Access Codes

Ensure that Switching Office and Switch objects are configured for both origination and destination locations.

You configure Access Codes to a destination switch in the origination Switch's Properties dialog box. The only exception is the Default Access Code, which is configured at the destination Switch's Properties dialog box.

You can configure two types of switch Access Codes in the Switch's Properties dialog box:

- A Default Access Code (for inbound calls)—Specifies the access code that other switches can use to access this switch when they originate a multi-site transaction.

- An Access Code (for outbound calls)—Specifies the access code that this switch can use when it originates a multi-site transaction to access another switch.

When the origination T-Server processes a multi-site transaction, it looks for an access code to the destination switch. First, T-Server checks the `Access Code` of the origination `Switch`:

- If an access code to the destination switch is configured with the target type `Target ISCC` and with any transaction type except `Forbidden`, T-Server uses this access code to dial the destination switch.

- If the access code to the destination switch is not configured on the `Access Code` tab of the origination switch, the origination T-Server checks the `Default Access Code` tab of the destination switch. If an access code is configured there with the target type `Target ISCC` and with any transaction type except `Forbidden`, T-Server uses this access code to dial the destination switch.

- If no access code with the required properties is found, T-Server rejects the transaction.

Note: When migrating from previous releases of T-Servers to 8.1, or when using T-Servers of different releases (including 8.1) in the same environment, see "Compatibility Notes" on

Procedure:
Configuring Default Access Codes

Purpose: To configure the `Default Access Codes` (one per `Switch` object) to be used by other switches to access this switch when they originate a multi-site transaction.

Prerequisites

- Ensure that `Switching Office` and `Switch` objects are configured for both origination and destination locations.

Start of procedure

1. Among configured `Switches`, select the `Switch` that the configured T-Server relates to.

2. Open the `Switch Properties` dialog box and click the `Default Access Codes` tab.

3. Click `Add` to open the `Access Code Properties` dialog box.

4. In the `Code` field, specify the access code used by remote switches to reach a DN at this switch. An access code is used as a prefix to the remote switch numbers.

> **Note:** If no prefix is needed to dial to the configured switch, you can leave the `Code` field blank.

5. In the `Target Type` field, select `Target ISCC`.

6. In the `Route Type` field, select a value corresponding to the transaction type you want to use (given that it is supported for your switch type).

7. When you are finished, click `Apply`.

End of procedure

Next Steps

- See "Configuring Access Codes."

Procedure:
Configuring Access Codes

Purpose: To configure the `Access Codes` (one or more per `Switch` object) that this switch can use when it originates a multi-site transaction to access another switch.

Prerequisites

- Ensure that `Switching Office` and `Switch` objects are configured for both origination and destination locations.

Start of procedure

1. Among configured `Switches`, select the `Switch` that the configured T-Server relates to.

2. Open the `Switch Properties` dialog box and click the `Access Codes` tab.

3. Click `Add` to open the `Access Code Properties` dialog box.

4. In the `Switch` field, specify the switch that this switch can reach using this access code. Use the `Browse` button to locate the remote switch.

5. In the `Code` field, specify the access code used to reach a DN at the remote switch from this switch. An access code is used as a prefix to the remote switch numbers.

Note: If no prefix is needed to dial from one switch to another, you can leave the `Code` field blank.

---

6. In the `Target Type` field, select `Target ISCC`.

   When you select `Target ISCC` as your target type, the `Properties` dialog box changes its lower pane to the `Sources` pane. It is here that you enter the extended parameters for your access codes, by specifying the `ISCC Protocol` and `ISCC Call Overflow Parameters`.

   To set these parameters, locate the two drop-down boxes that appear below the `Target Type` field in the `Sources` pane of that `Properties` dialog box.

   a. In the `ISCC Protocol Parameters` drop-down box, enter the appropriate ISCC Protocol parameter, as a comma-separated list of one or more of the following items shown in Table 6:

Table 6: Target Type: ISCC Protocol Parameters

ISCC Protocol Parameters	Description
`dnis-tail=<number-of-digits>`	Where `number-of-digits` is the number of significant DNIS digits (last digits) used for call matching. `0` (zero) matches all digits.
`propagate=<yes, udata, party, no>`	Default is `yes`. For more information, see "Modifying Event Propagation: advanced configuration" on page 98.
`direct-network-callid=<>`	For configuration information, see Part Two of this document. (Use Table 4 on page 80 to determine if your T-Server supports the `direct-network-callid` transaction type.)

   b. In the `ISCC Call Overflow Parameters` drop-down box, enter call overflow parameters, as a comma-separated list of one or more of the following items shown in Table 7:

Table 7: Target Type: ISCC Call Overflow Parameters

ISCC Call Overflow Parameters	Description
`match-callid`	Matches calls using network `CallID`.
`match-ani`	Matches calls using ANI. **Note:** When using `match-ani`, the `match-flexible` parameter must be set to `false`.
`match-flexible`	Supports flexible call matching based on the following values: Default Value: `true` Valid Values: `true`, `false`, and `[matching-context-type]`, where `[matching-context-type]` is the switch-specific value, which must be the same as the value of the `default-network-call-id-matching` configuration option of the corresponding T-Server.
`inbound-only=<boolean>`	Default is `true`. Setting `inbound-only` to `true` disables COF on consultation and outbound calls.

7. In the `Route Type` field, select a value corresponding to the transaction type you want to use (given that it is supported for your switch type). Table 8 contains cross-reference information on transaction types that the Configuration Layer and T-Server use.

Table 8: Route Type and ISCC Transaction Type Cross-Reference

Route Type Field Value	ISCC Transaction Type
Default	The first value from the list of values specified in the `cast-type` option for the T-Server at the destination site
Direct	`direct-callid`
Direct ANI	`direct-ani`
Direct Digits	`direct-digits`
Direct DNIS and ANI	Reserved

Table 8: Route Type and ISCC Transaction Type Cross-Reference (Continued)

Route Type Field Value	ISCC Transaction Type
Direct Network Call ID	`direct-network-callid`
Direct No Token	`direct-notoken`
Direct UUI	`direct-uui`
DNIS Pooling	`dnis-pooling`
Forbidden	External routing to this destination is not allowed
ISCC defined protocol	Reserved
PullBack	`pullback`
Re-Route	`reroute`
Route	`route`

8. When you are finished, click `Apply`.

End of procedure

Next Steps

- After configuring a switch for multi-site support, proceed with the configuration of DNs assigned to this switch.

Compatibility Notes

When migrating from previous releases of T-Servers to 8.1, or when using T-Servers of different releases (including 8.1) in the same environment, keep in mind the following compatibility issues:

- The `Target External Routing Point` value of the `Target Type` field is obsolete and provided only for backward compatibility with T-Servers of releases 5.1 and 6.0. When two access codes for the same switch are configured, one with the `Target ISCC` target type and the other with the `Target External Routing Point` target type, T-Servers of releases 8.x, 7.x, 6.5, and 6.1:
  - Use the `Target ISCC` access code for transactions with T-Servers of releases 8.x, 7.x, 6.5, and 6.1.
  - Use the `Target External Routing Point` access code for transactions with T-Servers of releases 5.1 and 6.0.

When the only access code configured for a switch has the `Target External Routing Point` target type, T-Server uses this access code for all transactions.

- When the `Target External Routing Point` value of the `Target Type` field is configured, you must set the `Route Type` field to one of the following:
  - `Default` to enable the `route` transaction type
  - `Label` to enable the `direct-ani` transaction type
  - `Direct` to enable the `direct` transaction type

Note: The `direct` transaction type in releases 5.1 and 6.0 corresponds to the `direct-callid` transaction type in releases 6.1 and later.

  - `UseExtProtocol` to enable the `direct-uui` transaction type
  - `PostFeature` to enable the `reroute` transaction type

  These values are fully compatible with the transaction types supported in T-Server release 5.1.

- For successful multi-site operations between any two locations served by release 5.1 T-Servers, identical `Route Type` values must be set in the `Switch's Access Code Properties` dialog boxes for both the origination and destination switches.

DNs

Use the procedures from this section to configure access resources for various transaction types.

Procedure:
Configuring access resources for the route transaction type

Purpose: To configure dedicated DNs required for the `route` transaction type.

Prerequisites

- Ensure that `Switching Office` and `Switch` objects are configured for both origination and destination locations.

Start of procedure

1. Under a configured `Switch`, select the `DNs` folder. From the main menu, select `File > New > DN` to create a new `DN` object.

2. On the `General` tab of the DN's `Properties` dialog box, specify the number of the configured DN as the value of the `Number` field. This value must correspond to the Routing Point number on the switch.

3. Select `External Routing Point` as the value of the `Type` field.

4. If a dialable number for that Routing Point is different from its DN name, specify the number in the `Association` field.

5. Click the `Access Numbers` tab. Click `Add` and specify these access number parameters:
   * Origination switch.
   * Access number that must be dialed to reach this DN from the origination switch.

   In determining an access number for the Routing Point, T-Server composes it of the values of the following properties (in the order listed):

   a. Access number (if specified).

   b. Switch access code from the switch of the origination party to the switch to which the Routing Point belongs, concatenated with its `Association` (if the `Association` value is specified).

   c. Switch access code from the switch of the origination party to the switch to which the Routing Point belongs, concatenated with the number for the DN.

   d. Default access code of the switch to which the Routing Point belongs, concatenated with its `Association` (if the `Association` value is specified).

   e. Default access code of the switch to which the Routing Point belongs, concatenated with the number for the DN.

   Note: If option `use-implicit-access-numbers` is set to `true`, the access number composed of switch access code and DN can be used for external transfers of calls originating at switches for which an access number is not specified.

6. When you are finished, click `Apply`.

End of procedure

Procedure:
Configuring access resources for the dnis-pool transaction type

Purpose: To configure dedicated DNs required for the `dnis-pool` transaction type.

Start of procedure

1. Under a configured `Switch`, select the `DNs` folder. From the main menu, select `File > New > DN` to create a new `DN` object.
2. On the `General` tab of the DN's `Properties` dialog box, specify the number of the configured DN as the value of the `Number` field. This value must be a dialable number on the switch.
3. Select `Access Resource` as the `Type` field and type `dnis` as the value of the `Resource Type` field on the `Advanced` tab.
4. Click the `Access Numbers` tab. Click `Add` and specify these `Access Number` parameters:
    *   Origination switch.
    *   Access number that must be dialed to reach this DN from the origination switch.

    An access number for the access resource is determined in the same manner as for the `route` access resource.
5. When you are finished, click `Apply`.

End of procedure

Procedure:
Configuring access resources for direct-* transaction types

Start of procedure

You can use any configured DN as an access resource for the `direct-*` transaction types. (The `*` symbol stands for any of the following: `callid`, `uui`, `notoken`, `ani`, or `digits`.)

You can select the `Use Override` check box on the `Advanced` tab to indicate whether the override value should be used instead of the number value to dial to the DN. You must specify this value if the DN has a different DN name and dialable number. In fact, this value is required for T-Servers for some switch

types—such as Aspect ACD, Nortel Communication Server 2000/2100, and Spectrum.

End of procedure

Procedure:
Configuring access resources for ISCC/COF

Purpose: To configure dedicated DNs required for the ISCC/COF feature.

Start of procedure

Note: Use Table 4 on to determine if your T-Server supports the ISCC/COF feature.

1. Under a configured `Switch`, select the `DNs` folder. From the main menu, select `File > New > DN` to create a new `DN` object.

2. On the `General` tab of the DN `Properties` dialog box, enter the name of the configured DN in the `Number` field.

    Note: The name of a DN of type `Access Resource` must match the name of a DN in your configuration environment (typically, a DN of type `Routing Point` or `ACD Queue`), so T-Server can determine whether the calls arriving at this DN are overflowed calls.

3. Select `Access Resource` as the value for the `Type` field.

4. On the `Advanced` tab, type `cof-in` or `cof-not-in` as the value for the `Resource Type` field.

    Note: Calls coming to DNs with the `cof-not-in` value for the `Resource Type` are never considered to be overflowed.

5. When you are finished, click `Apply`.

End of procedure

Procedure:
Configuring access resources for non-unique ANI

Purpose: To configure dedicated DNs required for the `non-unique-ani` resource type.

The non-unique-ani resource type is used to block direct-ani and COF/ani from relaying on ANI when it matches configured/enabled resource digits. Using non-unique-ani, T-Server checks every ANI against a list of non-unique-ani resources.

Start of procedure

1. Under a configured Switch, select the DNs folder. From the main menu, select File > New > DN to create a new DN object.

2. On the General tab of the DN Properties dialog box, specify the ANI digits that need to be excluded from normal processing.

3. Select Access Resource as the value for the Type field.

4. On the Advanced tab, specify the Resource Type field as non-unique-ani.

5. When you are finished, click Apply.

End of procedure

Procedure:
Modifying DNs for isolated switch partitioning

Purpose: To modify DNs that belong to a particular partition where switch partitioning is used.

This configuration instructs T-Server to select an External Routing Point that has the same partition as the requested destination DN.

Note: When a target DN is not configured or has no configured partition name, T-Server allocates a DN of the External Routing Point type that belongs to any partition.

Start of procedure

1. Under a Switch object, select the DNs folder.

2. Open the Properties dialog box of a particular DN.

3. Click the Annex tab.

4. Create a new section named TServer.

5. Within that section, create a new option named epn. Set the option value to the partition name to which the DN belongs.

6. Repeat Steps 1–5 for all DNs, including DNs of the External Routing Point type, that belong to the same switch partition.

7. When you are finished, click `Apply`.

End of procedure

Configuration Examples

This section provides two configuration examples and describes how the configuration settings affect T-Server's behavior.

Multiple Transaction Types

This example demonstrates the difference in how ISCC directs a call when you specify two different transaction types (`route` and `direct-ani`).

In this example, you configure an origination and a destination switch for as described in "Switches and Access Codes" on .

1. Among configured `Switches`, select the origination `Switch`.

2. Open the `Switch Properties` dialog box and click the `Default Access Codes` tab.

3. Click `Add` to open the `Access Code Properties` dialog box.

4. Set the `Access Code` field to `9`.

5. When you are finished, click `Apply`.

6. Among configured `Switches`, select the destination `Switch`.

7. Under the destination `Switch`, configure a DN as described in "Configuring access resources for the route transaction type" on .

8. Set the DN `Number` field to `5001234567`.

9. Click the `Advanced` tab of this DN's `Properties` dialog box.

10. Select the `Use Override` check box and enter `1234567` in the `Use Override` field.

11. When you are finished, click `Apply` or `Save`.

12. Use a T-Server client application to register for this new DN with the destination T-Server and, therefore, with the switch.

13. Request to route a call from any DN at the origination switch to the destination DN you have just configured:

    ⬩ If you are using the `route` ISCC transaction type, the client requests that T-Server deliver a call to a destination location using the DN number `5001234567`. ISCC requests that the switch dial one of the external routing points at the destination location, using the value either of the `Access Number` field or of the `Access Code` field, which is `9`, concatenated with the external routing point at the destination location. The call is routed to the DN number `5001234567`.

- If you are using the `direct-ani` ISCC transaction type, the client requests that T-Server deliver a call to a destination location using the DN number `1234567`, which is the `Use Override` value. ISCC requests that the switch dial `91234567,` which is a combination of the `Switch Access Code` value and the `Use Override` value. The destination T-Server is waiting for the call to directly arrive at DN number `5001234567`.

Call Overflow Methods

This section demonstrates how to indicate which overflow methods a switch supports.

In this example, for T-Server to use ANI/OtherDN matching in call overflow and manual transfer scenarios, set the `ISCC Call Overflow Parameters` to:

    match-ani, inbound-only=true

when configuring `Switch Access Codes` as described on page 104.

With this setting, the switch's location is queried for call data each time the destination T-Server receives an inbound call with the `ANI` or `OtherDN` attribute.

For T-Server to use `NetworkCallID` matching in call overflow and manual transfer scenarios, set the `ISCC Call Overflow Parameters` to (for example):

    match-callid, inbound-only=false

when configuring `Switch Access Codes` as described on page 104.

With this setting, the switch's location is queried for call data each time the destination T-Server receives a call of any type (including inbound) with the `NetworkCallID` attribute.

Next Steps

Continue with Chapter 5, "Starting and Stopping T-Server Components," on page 115 to test your configuration and installation.

5 Starting and Stopping T-Server Components

This chapter describes methods for stopping and starting T-Server, focusing on manual startup for T-Server and HA Proxy for all switches. It includes these sections:

Command-Line Parameters

You can start and stop Framework components using the Management Layer, a startup file, a manual procedure, or the Windows Services Manager.

With all these methods, command-line parameters are usually required for a server application in addition to an executable file name.

Common command-line parameters are as follows:

`-host`	The name of the host on which Configuration Server is running.
`-port`	The communication port that client applications must use to connect to Configuration Server.
`-app`	The exact name of an Application object as configured in the Configuration Database.

-l   The license address. Use for the server applications that
                       check out technical licenses. Can be either of the following:

                       • The full path to, and the exact name of, the license file
                         used by an application. For example, -l
                         /opt/mlink/license/license.dat.

                       • The host name and port of the license server, as specified
                         in the SERVER line of the license file, in the port@host
                         format. For example, -l 7260@ctiserver.

                       Note: Specifying the License Manager's host and port
                       parameter eliminates the need to store a copy of a license
                       file on all computers running licensed applications.

-V   The version of a Framework component. Note that
                       specifying this parameter does not start an application, but
                       returns its version number instead. You can use either
                       uppercase or lowercase.

-nco X/Y   The Nonstop Operation feature is activated; X exceptions
                       occurring within Y seconds do not cause an application to
                       exit. If the specified number of exceptions is exceeded
                       within the specified number of seconds, the application
                       exits or, if so configured, the Management Layer restarts the
                       application. If the -nco parameter is not specified, the
                       default value of 6 exceptions handled in 10 seconds applies.
                       To disable the Nonstop Operation feature, specify -nco 0
                       when starting the application.

-lmspath   The full path to log messages files (the common file named
                       common.lms and the application-specific file with the
                       extension *.lms) that an application uses to generate log
                       events. This parameter is used when the common and
                       application-specific log message files are located in a
                       directory other than the application's working directory,
                       such as when the application's working directory differs
                       from the directory to which the application is originally
                       installed.

                       Note that if the full path to the executable file is specified in
                       the startup command-line (for instance,
                       c:\gcti\multiserver.exe), the path specified for the
                       executable file is used for locating the *.lms files, and the
                       value of the lmspath parameter is ignored.

- transport-port   <port number> is the port number that a client will use for
<port number>   its TCP/IP connection to Configuration Server. See the
                       Client-Side Port Definition section in the *Genesys 8.x
                       Security Deployment Guide* for more information.

- transport-address   <IP address> is the IP address that a client will use for its
<IP address>   TCP/IP connection to Configuration Server. See the
                       Client-Side Port Definition section in the *Genesys 8.x
                       Security Deployment Guide* for more information.

Note: In the command-line examples in this document, angle brackets indicate variables that must be replaced with appropriate values.

Starting and Stopping with the Management Layer

Procedure:
Configuring T-Server to start with the Management Layer

Start of procedure

1. Open the T-Server `Application's Properties` dialog box.

2. Click the `Start Info` tab.

3. Specify the directory where the application is installed and/or is to run as the `Working Directory`.

4. Specify the name of the executable file as the `command-line`.

5. Specify command-line parameters as the `Command-Line Arguments`.

   The command-line parameters common to Framework server components are described on .

6. When you are finished, click `Apply`.

7. Click `OK` to save your changes and exit the `Properties` dialog box.

End of procedure

Note: Before starting an application with the Management Layer, make sure the startup parameters of the application are correctly specified in the application's `Properties` dialog box in Configuration Manager.

After its command-line parameters are correctly specified in the `Properties` dialog box, you can start and stop T-Server from Solution Control Interface (SCI), which is the graphical interface component of the Management Layer. (The starting procedure for SCI is described in the *Framework 8.1 Deployment Guide.*) *Framework 8.0 Solution Control Interface Help* provides complete instructions on starting and stopping applications.

You can also use the Management Layer to start a T-Server that has failed. To enable T-Server's autorestart functionality, select the corresponding check box in the `Application's Properties` dialog box.

Note that when you start (or restart) an application via the Management Layer, the application inherits environment variables from Local Control Agent (LCA), which executes the startup command. Therefore, you must also set the environment variables required by the application for the account that runs LCA.

Warning!   *Stopping* an application via the Management Layer is not considered an application failure. Therefore, the Management Layer does not restart applications that it has stopped unless an appropriate alarm condition and alarm reaction are configured for these applications.

Starting with Startup Files

Startup files are files with the extension `run.sh` (on UNIX) or `startServer.bat` (on Windows), which installation scripts create and place into the applications' directories during the installations. These files are created for all Framework server applications except:

- Configuration Server (primary or backup) running on Windows.
- Backup Configuration Server running on UNIX.
- DB Server running on Windows.
- LCA running on either Windows or UNIX.

When using a startup file, verify that the startup parameters the installation script inserted in the startup file are correct. Use the following instructions for UNIX and Windows to start those application for which startup files are created. See the appropriate sections in "Starting Manually" on to identify which applications should be running for a particular application to start.

Procedure:
Starting T-Server on UNIX with a startup file

Start of procedure

1. Go to the directory where an application is installed.
2. Type the following command line:
   ```
   sh run.sh
   ```

End of procedure

Procedure:
Starting T-Server on Windows with a startup file

Start of procedure

To start T-Server on Windows with a startup file, use either of these methods:

* Go to the directory where an application is installed and double-click the `startServer.bat` icon.

Or

* From the `MS-DOS` window, go to the directory where the application is installed and type the following command-line:

  `startServer.bat`

End of procedure

Starting Manually

When starting an application manually, you must specify the startup parameters at the command prompt, whether you are starting on UNIX or Windows. At the command prompt, command-line parameters must follow the name of the executable file. On the `Shortcut` tab of the Program `Properties` dialog box, command-line parameters must also follow the name of the executable file.

The command-line parameters common to Framework server components are described on .

If an `Application` object name, as configured in the Configuration Database, contains spaces (for example, `T-Server Nortel`), the `Application` name must be surrounded by quotation marks in the command-line:

`-app "T-Server Nortel"`

You must specify the rest of the command-line parameters as for any other application.

The following sections provide general instructions for starting HA Proxy and T-Server manually. Along with these instructions, refer to Table 9, which lists T-Servers and HA Proxy executable file names for supported switches for Windows and UNIX operating systems.

Table 9: T-Server and HA Proxy Executable Names

T-Server Type	T-Server Executable File Name		HA Proxy Executable File Name	
	UNIX	**Windows**	**UNIX**	**Windows**
Aastra MXONE CSTA I	md110_server	md110_server.exe	Not Applicable	
Alcatel A4200/OXO	a4200_server	a4200_server.exe	Not Applicable	
Alcatel A4400/OXE	a4400_server	a4400_server.exe	Not Applicable	
Aspect ACD	aspect_server	aspect_server.exe	Not Applicable	
Avaya Communication Manager	avayacm_server	avayacm_server.exe	Not Applicable[a]	
Avaya INDeX	Not Applicable	index_server.exe	Not Applicable	
Avaya TSAPI	avayatsapi_server	avayatsapi_server.exe	Not Applicable	
Cisco UCCE	CiscoUCCE_server	CiscoUCCE_server.exe	Not Applicable	
Cisco Unified Communications Manager	ciscocm_server	ciscocm_server.exe	Not Applicable	
DataVoice Dharma	Dharma_server	Dharma_server.exe	Not Applicable	
Digitro AXS/20	digitro_server	digitro_server.exe	Not Applicable	
EADS Intecom M6880	intecom_server	intecom_server.exe	Not Applicable	
EADS Telecom M6500	m6500_server	m6500_server.exe	Not Applicable	
eOn eQueue	eon_server	eon_server.exe	Not Applicable	
Fujitsu F9600	Not Applicable	F9600_server.exe	Not Applicable	
Huawei C&C08	cc08_server	cc08_server.exe	Not Applicable	
Huawei NGN	huaweingn_server	huaweingn_server.exe	Not Applicable	
Mitel MiTAI	Not Applicable	mitel_server.exe	Not Applicable	
NEC NEAX/APEX	neax_server	neax_server.exe	Not Applicable	
Nortel Communication Server 2000/2100	ncs2000_server	ncs2000_server.exe	ha_proxy_dms	ha_proxy_dms.exe

Table 9: T-Server and HA Proxy Executable Names (Continued)

T-Server Type	T-Server Executable File Name		HA Proxy Executable File Name	
	UNIX	**Windows**	**UNIX**	**Windows**
Nortel Communication Server 1000 with SCSS/MLS	succession_server	succession_server.exe	Not Applicable	
Philips Sopho iS3000	iS3000_server	iS3000_server.exe	ha_proxy_iS3000	ha_proxy_iS3000.exe
Radvision iContact	nts_server	nts_server.exe	Not Applicable	
Samsung IP-PCX IAP	samsung_server	samsung_server.exe	Not Applicable	
Siemens Hicom 300/HiPath 400 CSTA I	rolmcb4_server	rolmcb4_server.exe	Not Applicable	
Siemens HiPath 3000	HiPath3000_server	HiPath3000_server.exe	Not Applicable	
Siemens HiPath 4000 CSTA III	HiPath4000_server	HiPath4000_server.exe	Not Applicable	
Siemens HiPath DX	HiPathDX_server	HiPathDX_server.exe	Not Applicable	
SIP Server	sip_server	sip_server.exe	Not Applicable	
Spectrum	spectrum_server	spectrum_server.exe	Not Applicable	
Tadiran Coral	Coral_server	Coral_server.exe	Not Applicable	
Teltronics 20-20	Teltronics2020_server	Teltronics2020_server.exe	ha_proxy_teltronics2020	ha_proxy_teltronics2020.exe
Tenovis Integral 33/55	Tenovis_server	Tenovis_server.exe	Not Applicable	
Network T-Servers				
AT&T	nts_server	nts_server.exe	Not Applicable	
Concert	nts_server	nts_server.exe	Not Applicable	
CRSP	nts_server	nts_server.exe	Not Applicable	
DTAG	dtag_server	dtag_server.exe	Not Applicable	
GenSpec	genspec_server	genspec_server.exe	Not Applicable	

Table 9: T-Server and HA Proxy Executable Names (Continued)

T-Server Type	T-Server Executable File Name		HA Proxy Executable File Name	
	UNIX	**Windows**	**UNIX**	**Windows**
ISCP	nts_server	nts_server.exe	Not Applicable	
IVR Server, using network configuration	nts_server	nts_server.exe	Not Applicable	
KPN	kpn_server	kpn_server.exe	Not Applicable	
MCI	mci800_server	mci800_server.exe	Not Applicable	
NGSN	nts_server	nts_server.exe	Not Applicable	
Network SIP Server	tsip_server	tsip_server.exe	Not Applicable	
Sprint	sprint_server	sprint_server.exe	Not Applicable	
SR3511	sr3511_server	sr3511_server.exe	Not Applicable	
Stentor	stentor_server	stentor_server.exe	Not Applicable	

a. For releases prior to 7.1, this T-Server has an HA Proxy available: `ha_proxy_g3tcp` (UNIX) or `ha_proxy_g3tcp.exe` (Windows).

HA Proxy

If you do not use HA Proxy in your Genesys implementation, proceed to "T-Server" on .

If one or more HA Proxy components are required for the T-Server connection, start HA Proxy before starting T-Server.

Before starting HA Proxy, be sure that the following components are running:

- DB Server that provides access to the Configuration Database
- Configuration Server

The command-line parameters common to Framework server components are described on .

Procedure:
Starting HA Proxy on UNIX manually

Start of procedure

1. Go to the directory where HA Proxy is installed and type the following command-line:
   ```
   ha_proxy_<switch> -host <Configuration Server host>
   -port <Configuration Server port> -app <HA Proxy Application>
   ```
2. Replace `ha_proxy_<switch>` with the correct HA Proxy executable name, which depends on the type of the switch used.

   Table 9 on page 120 lists HA Proxy executable names for supported switches.

End of procedure

Procedure:
Starting HA Proxy on Windows manually

Start of procedure

1. Start HA Proxy from either the `Start` menu or the `MS-DOS` window. If using the `MS-DOS` window, go to the directory where HA Proxy is installed and type the following command-line:
   ```
   ha_proxy_<switch>.exe -host <Configuration Server host> -port
   <Configuration Server port> -app <HA Proxy Application>
   ```
2. Replace `ha_proxy_<switch>.exe` with the correct HA Proxy executable name, which depends on the type of the switch used.

   Table 9 on page 120 lists HA Proxy executable names for supported switches.

End of procedure

T-Server

Before starting T-Server, be sure that the following components are running:

- DB Server that provides access to the Configuration Database
- Configuration Server
- License Manager

Note: If an HA Proxy component is required for the T-Server connection, HA Proxy must be started before T-Server.

The command-line parameters common to Framework server components are described on page 115.

Procedure:
Starting T-Server on UNIX manually

Start of procedure

1. Go to the directory where T-Server is installed and type the following command-line:

```
<switch>_server -host <Configuration Server host>
-port <Configuration Server port> -app <T-Server Application>
-l <license address> -nco [X]/[Y]
```

2. Replace `<switch>_server` with the correct T-Server executable name, which depends on the type of the switch used.

   Table 9 on page 120 lists T-Server executable names for supported switches.

End of procedure

Procedure:
Starting T-Server on Windows manually

Start of procedure

1. Start T-Server from either the `Start` menu or the `MS-DOS` window. If using the `MS-DOS` window, go to the directory where T-Server is installed and type the following command-line:

```
<switch>_server.exe -host <Configuration Server host>
-port <Configuration Server port> -app <T-Server Application>
-l <license address> -nco [X]/[Y]
```

2. Replace `<switch>_server.exe` with the correct T-Server executable name, which depends on the type of the switch used.

   Table 9 on page 120 lists T-Server executable names for supported switches.

End of procedure

Verifying Successful Startup

After executing the startup command, you might want to check whether it was successful.

If you used the Management Layer to start either T-Server or HA Proxy, check whether Solution Control Interface displays `Started` or `Service Unavailable` status for the corresponding application. Refer to the "Troubleshooting" section of the *Framework 8.0 Management Layer User's Guide* if the startup command does not result in either `Started` or `Service Unavailable` status for some period of time.

If you start your T-Server or HA Proxy with startup files or manually, and if you have configured logging to console or a log file, check the log for messages similar to the following:

- T-Server log file: `Link connected`
- HA Proxy log file: `Link connected`

Stopping Manually

The following stopping procedures apply to Genesys server applications, such as DB Server, Configuration Server, Message Server, Local Control Agent, Solution Control Server, HA Proxy, T-Server, and Stat Server.

Procedure:
Stopping T-Server on UNIX manually

Start of procedure

To stop a server application from its console window on UNIX, use either of these commands:

- `Ctrl+C`
- `kill <process number>`

End of procedure

Procedure:
Stopping T-Server on Windows manually

Start of procedure

To stop a server application on Windows, use either of these commands:

- To stop a server application from its console window on Windows, use the `Ctrl+C` command.
- To stop a server application on Windows, use the `End Task` button on the Windows `Task Manager`.

End of procedure

Starting and Stopping with Windows Services Manager

When starting an application installed as a Windows Service, make sure the startup parameters of the application are correctly specified in the `ImagePath` in the `Application` folder in the `Registry Editor`. The `ImagePath` must have the following value data:

```
<full path>\<executable file name> -service <Application Name as
Service> -host <Configuration Server host>
-port <Configuration Server port> -app <Application Name>
-l <license address>
```

where the command-line parameters common to Framework server components are described on and

`-service`   The name of the Application running as a Windows Service; typically, it matches the Application name specified in the `-app` command-line parameter.

Framework components installed as Windows Services with the autostart capability are automatically started each time a computer on which they are installed is rebooted.

You can start Framework components installed as Windows Services with the manual start capability with the `Start` button in `Services Manager`.

Note: Use the `Windows Services` window to change the startup mode from `Automatic` to `Manual` and vice versa.

Regardless of a component's start capability, you can stop Framework components installed as Windows Services with the `Stop` button in `Services Manager`.

Next Steps

This chapter concludes Part One of this document—the set of general instructions for deploying any T-Server. Refer to subsequent chapters in this guide for detailed reference information and any special procedural instructions that pertain to your particular T-Server.

![Genesys logo]

2

T-Server Configuration

Part Two of this *T-Server Deployment Guide* contains reference information specific to your T-Server. However, it also contains information on *all* T-Server options, both those specific to your T-Server and those common to all T-Servers. The information is divided among these chapters:

New in T-Server for Siemens HiPath 4000 CSTA III

The following new features are now available in the initial 8.1 release of T-Server for HiPath 4000 CSTA III:

- **Support for account codes:** T-Server now supports account codes. See "Support for Account Codes" on page 164.

- **Support for operating systems.** T-Server is now supported on the following platforms:
  - AIX 7.1 64-bit
  - HP-UX Itanium (version 11i v3)
  - Red Hat Enterprise Linux 5 64-bit

Notes: • Configuration option changes that apply to T-Server for HiPath 4000 are described in "Changes from 8.0 to 8.1" on page 281.

- For a list of new features common to all T-Servers, see Part One of this document.

6 HiPath 4000 Switch-Specific Configuration

This chapter presents switch-specific reference information for configuring T-Server for the Siemens HiPath 4000 CSTA III switch and includes these sections:

Known Limitations

The list below describes the more static limitations in the way T-Server and the relevant switch interact. Please refer to the Release Note for this product for the most up-to-date list of known limitations and detailed scenarios in which they apply. "Integration Notes" on gives useful information on integration issues between T-Server and other Genesys software and solutions.

1. If a secret DN redirects a call, the PBX does not give any indication that the DN is secret, so T-Server cannot hide the DN in events after the redirect.

2. The One Number Service (ONS) allows two phone sets to be linked together so that if either number is dialled both phone sets will ring. The numbers are set up so that one is Primary and one is a Slave.

   This feature has the following CTI limitations:

- ◆ When either number is dialled, in CTI, only a Ringing is received on the Primary. It is therefore possible to answer the call only on the Primary through CTI.
- ◆ If one device is busy and either number is dialled, then the free device does not ring. Instead an `EventDestinationBusy` message is received.
- ◆ It is not possible to set Call Forward from the Primary to the Slave and vice versa.

3. If DND and/or Forwarding are set, on startup, T-Server is unable to display the correct status for these features for VoIP telephones. This is due to switch reporting.

4. For PBX Boss/Secretary functionality, activation of the `RNGXFER, REP` and `DSS` keys cannot be done through CTI. It must be done manually.

5. T-Server does not support partitioned-switch configurations.

6. It is not possible to transfer a conference. It is only possible to delete oneself from the conference and not any other member of the conference.

7. When using MultiLine MultiDN configuration it is not possible to answer a call through CTI on anything other than the main line. Calls ringing on the other lines need to be answered manually. Also, if a call is established on an unmonitored line then a call is received on a monitored line, it is not possible to answer the second call through CTI. It is rejected by the PBX. It has to be answered manually.

8. It is not possible to make a supervised route of a consultation call from an emulated Routing Point to an ACD Queue.

9. If a direct call is made to an emulated Routing Point and not routed, after a while the switch moves the call to another Hunt Group member. When this happens the switch provides a `ConnectionCleared` event, but does not tell T-Server that the call has been diverted. This means that on the emulated Routing Point, T-Server generates `EventQueued` and `EventRouteRequest` events, followed by an `EventAbandoned` event, and then a new `EventQueued` and `EventRouteRequest` events. T-Server will retain the same ConnID. If the `rtmem-divert-tout` option is set, the T-Server will suppress the reporting of the change of route devices. If the option is not set, or set too low, the T-Server will generate `EventQueued` and `EventRouteRequest` events.

10. When T-Server makes a single-step transfer through ISCC with the configuration option, `cast-type`, set to `direct-ani`, the token used by ISCC is the origination of the primary call and not the destination. This does not match the ANI and the remote connection fails.

11. The switch reports forwarding to DNIT as forwarding to an RCG number. You cannot cancel forwarding without providing the old number. But when the number is provided in the `Cancel Fwd` request in the form as reported by the switch, the switch rejects the request.

12. If emulated predictive dialing is originated from an emulated Routing Point, you should set the configuration option, `prd-dist-call-ans-time`, to `0`. T-Server is not always able to handle the race condition that occurs when this option is enabled.

13. At startup, T-Server tries to take a snapshot of configured devices so it can restore call configuration. Unfortunately, the way in which the `Snapshot` service is implemented in CAP v1.0 makes it impossible to distinguish the `established` state from `originated/dialing`. T-Server therefore treats dialing parties as established at startup.

14. CAP v1.0 sometimes fails to report the end of the agent state, `wrap-up`. Agents may remain in the `wrap-up` state for CTI applications, when in fact they are ready to accept new calls. The agents must log off and log on again to clear this situation.

15. Chained consultation calls are not supported on analog lines. Also, a single-step transfer of a destination of a consultation call from an analog line is not supported. This affects VTO scenarios where a consultation call is made to a Routing Point then routed to a VTO port.

16. Support for trunk monitoring is restricted in T-Server. It is not possible to test every trunk configuration in the Genesys laboratories. Genesys specifically does not undertake to provide the level of support associated with the generally available software in regard to this feature. Customers who use this feature agree to restricted support levels, which may vary at Genesys' sole discretion. Customers also agree that any problems arising out of the use of this restricted feature may require the customers' cooperation to resolve and test the problem.

17. Some of the stuck-calls management functions (see "T-Server Common Configuration Options" on page 217) rely on T-Server being able to query distribution devices (ACD Queues and Routing Points). HiPath 4000 CSTA III is currently able to poll DNs only, to determine whether a call is active.

18. After a call is redirected externally, the PBX reports the call state on the external T-Server as `Forwarded` rather than `OK`. This also occurs if the call is redirected to a Routing Point, and then routed externally.

19. When an outbound call is made using CPDServer, if the Voice Transfer Destination is an emulated Routing Point, the `TInitiateTransfer` to the emulated Routing Point fails if the value of the Outbound Contact Server (OCS) configuration option, `call_transfer_type,` is set to `two_step`. The transfer succeeds if the OCS configuration option, `call_transfer_type,` is set to a value of `one_step`. See the *Outbound Contact 8.x Deployment Guide* for more information.

20. In the following scenario, the switch drops the call when:
- A Hunt Group has `CQMAX=0` and has no overflow DN configured.
- All members of the Hunt Group are busy.

◆   A call is single-step transferred to the Hunt Group.

21. The following limitations apply when dialing invalid numbers:

◆   Making a call to an invalid destination:
In some cases, when an invalid destination is dialed over a trunk, T-Server generates an `EventDestinationBusy` event with a call state of `SitInvalidNumber`. However, on some trunk types, the PBX does not provide enough messaging to generate this.

◆   Making a consultation call to an invalid desalination:
On a consultation call, the PBX does not provide enough information to generate an `EventDestinationBusy` event with a call state of `SitInvalidNumber`.

◆   Routing to an invalid/single-step transfer/redirect:
The PBX does not always provide a failed event when one of the above requests is attempted to an invalid destination through a trunk. Consequently, the operation often times out.

22. A consultation call to a busy destination cannot be released without retrieving the primary call.

23. In order for `TMakePredictiveCall` to work with the business-call type `extension`, the value of the configuration option, `bsns-call-type`, must be set to the value `ignore` on the `Annex` tab of the RCG devices, as well as on the distribution devices.

Support of Switch/CTI Environments

T-Server support of customer switch/CTI environments is dependent on several factors, including:

• Number of DNs

• Number of concurrent agents

• Number of concurrent connections

• Number of concurrent calls

• Number of calls or messages per second

Information about T-Server connection limits is provided in the *Genesys Supported Operating Environment Reference Manual*. Connection limits are determined by the platforms on which T-Servers run—T-Server itself does not set these limits.

The remaining factors are not limited by T-Servers, but could be limited by the switch and/or CTI interface. Unless specific exceptions are documented, T-Server can meet the performance capability of the switches it supports in each of these areas. The T-Server host environment and the network environment influences should also be taken into account.

Setting the DN Properties

Table 10 shows how to set DN properties for T-Server for the HiPath 4000 CSTA III switch.

Note: There are several ways to configure special devices like trunks and RCGs in Configuration Manager so that T-Server can monitor them. You should only use one such valid representation for each device; you should not configure several Configuration Manager devices that would amount to the same device ID on the switch.

Table 10: Setting the DN Properties

Switch Device Type	DN Type	Switch-Specific Type	Association	Comments
Agent Position	ACD Position		Not applicable	
Agent Groups	ACD Queue		Not applicable	Agent group devices are not monitorable or dialable. However, it is possible to monitor the number of calls queued on any particular agent group using events reported at the RCG (Routing Point or ACD Queue). It is also possible to follow and audit the number of agents logged in and available in any configured agent group. Device DN in Configuration Manager should follow the pattern `g<group_number>`. The group number can be provided as decimal switch notation (for example, `g5`), or CSTA notation (switch notation + `H'1000000'`, for example, `g16777221`). T-Server automatically adds the offset if the number is less than the offset.
Extension	Extension	1	Not applicable	

Table 10: Setting the DN Properties (Continued)

Switch Device Type	DN Type	Switch-Specific Type	Association	Comments
ACD Pilot	ACD Queue			Not a switch device, but a number that cannot be monitored. In order to receive events on the ACD Pilot DN, either the RCG group monitor, or the individual RCG device associated with this pilot, must be configured and enabled in Configuration Manager. Use this setup to monitor the switch ACD.
	Routing Point	1 or 2		Not a switch device, but a number that cannot be monitored. In order to receive events on the ACD Pilot DN, either the RCG group monitor, or the individual RCG device associated with this pilot, must be configured and enabled in Configuration Manager. Use this setup for Genesys Routing. The switch-specific type is affected when an `EventRouteRequest` event is issued. The default type `1` device issues an `EventRouteRequest` event when a `Queued` event is received from the switch. This allows for switch announcements before the call is routed, but requires an empty agent group and a specific ART script that must queue the call on that group. A type `2` device issues an `EventRouteRequest` event as soon as the call hits the ACD Queue (upon a `Delivered` event), which allows a simple "delay" ART script.
RCG Group monitor	ACD Queue DN = `*888`			A single virtual device that allows monitoring of all ACD events on the switch. If this device is configured and enabled in Configuration Manager, no individual RCG devices should be configured.

Table 10: Setting the DN Properties (Continued)

Switch Device Type	DN Type	Switch-Specific Type	Association	Comments
RCG device	ACD Queue Routing Point	1 or 2		A monitorable ACD device that allows events reporting and call control of ACD calls. It cannot be dialed, but must be associated to one or several of the switch dialable ACD pilot numbers instead. The device DN in Configuration Manager should follow the pattern `r<rcg_number>`. The group number can be provided as decimal switch notation (for example, `r2`), or CSTA notation (switch notation + `H'2000000'`, for example, `r33554434`). T-Server automatically adds the offset, if the number is less than the offset. These devices should not be configured or enabled if the RCG group device `*888` is configured and enabled. If the RCG device is configured as a Routing Point or a ACD Queue type 2, T-Server attempts to register as a routing server on this RCG, and uses the CSTA routing dialog for Genesys call routing. If it is configured as an ACD Queue type 1, T-Server uses the `Deflect` service to route calls from any pilot numbers that are configured as Routing Points and are associated with this RCG.

Table 10: Setting the DN Properties (Continued)

Switch Device Type	DN Type	Switch-Specific Type	Association	Comments
Analog Port VTO Port	Extension Voice Treatment Port	8	Not applicable	Provides special support for caller hang-up scenarios for analog IVR devices as well as analog dialing devices used by CPDServer. **Notes:** • Always configure the switch VTO ports as `Voice Treatment Ports` in Configuration Manager. • When Configuration Manager devices of type `extension` have a switch-specific type `8`, T-Server reports the `EventReleased` event upon release of the remote party.
Trunk	Extension Trunk			External trunk or trunk connecting to the internal resource, such as IVR. If configured as a Configuration Manager type `extension`, the trunk DN follows the pattern `t<trunk_number>`. If configured as `Trunk`, the 't' prefix is not required (although recommended, because it is not a dialable number). The trunk number can be provided as a decimal switch notation (for example, t200), or a CSTA notation (switch notation + H'8000000'—for example, `t134217928`). T-Server automatically adds the offset, if the number is less than the offset.
Hunt Group used for emulated routing	Routing Point		Not applicable	Specifies a Hunt Group with virtual members that T-Server uses to emulate a Routing Point. Calls delivered to Hunt Group members are reported as delivered to the Hunt Group and can be routed using this single number.

Table 10: Setting the DN Properties (Continued)

Switch Device Type	DN Type	Switch-Specific Type	Association	Comments
Hunt Group used for CTI routing	Routing Point	2	Not applicable	Calls landing on the Hunt Group can be diverted using CTI. This differs from Emulated Routing, which uses transfers for call distribution, and requires physical digital phone sets to be connected. The device prefix `'h'` is used to configure the Hunt Groups in Configuration Manager. To monitor a Hunt Group, T-Server must monitor a device identifier, and not a dialing number, because the same Hunt Group may have multiple access numbers. The hunt group must be configured as `h<device_number>`. Either of the following can be used: • The device number as reported by the switch. • The number that is left after subtracting `0x5000000` (`83886080` decimal) from the device number. The Hunt Group device number can be found out by dialing the access number and examining the `Delivered` event on the origination device.
Digital Extension	Extension	2	Hunt Group number	Emulated supervised router. Calls delivered to this device are reported as delivered to the Hunt Group. Routing is performed as a two-step transfer to the destination number.
Digital Extension	Extension	4		Emulated predictive dialer. Emulated `MakePredictiveCall` service makes a call from one of these devices and transfers it to the requesting ACD Queue for further distribution as soon as the call is established.

Switch Terminology

Table 11 compares relevant Siemens HiPath 4000 CSTA III switch terminology with Genesys terminology.

Table 11: Switch Terminology Comparison

Genesys Term	HiPath 4000 Term
ACD	ACD
ACD Position	Agent position
ACD Queue	Agent Group ACD Pilot RCG Group Monitor RCG device
Agent ID used in CTI login request	Agent ID
Extension	Extension Analog port VTO port Trunk Digital extension (predictive dialer)
Position	Position
Voice Treatment Port	Analog port VTO Port
Trunk (unmonitored)	Trunk
Trunk (monitored)	Trunk
Routing Point	ACD Pilot RCG device
Group DN	Not applicable
Predictive dialing device	Digital extension
Emulated Routing Point	Hunt Group (emulated routing) (CTI routing)
Emulated Routing Point member	Digital extension

Table 11: Switch Terminology Comparison (Continued)

Genesys Term	HiPath 4000 Term
Logon	Logon
Logoff	Logoff
Ready	Ready
NotReady	NotReady
AfterCallWork	After Call Work
ReasonCode	Not applicable

Configuration Requirements for CAP 3.0 and CAP 3.0 Inside

This section describes the special configuration requirements for CAP 3.0 and CAP 3.0 Inside.

CAP 3.0—RCGs and Licensing

CAP 3.0 requires that all RCGs be explicitly defined in the CAP device configuration. Consequently, additional CAP licenses may be required from your vendor.

Please refer to your CAP documentation for more information about configuring RCGs in CAP.

See also RCG configuration information on .

CAP 3.0 Inside (CA4000)—T-Server Configuration

To enable CAP 3.0 Inside (CA4000), additional configuration is required within T-Server.

Table 12: CAP 3.0 SMR 8—T-Server Configuration

Option	Action/Required Value
Link-Control Section	
hostname	Set to the name of the configured CAP link host.
port	Set to the name of the configured CAP link port.

Table 12: CAP 3.0 SMR 8—T-Server Configuration (Continued)

Option	Action/Required Value
acse-enable	Set to `true`.

authentication	Add this option in the T-Server `link-control` section and set its value to that of the `feature-id` in the license section (indicated by the `<license>` tag) of the license file.
	
	Sample file extract:
	
	`<license>`
	
	      `<feature_id>CAP-CallCenter</feature_id>`
	
	      `<mode>STAND_ALONE</mode>`
	
	      `<quantity>4</quantity>`
	
	      `<validity_days>54</validity_days>`
	
	`</license>`
	
	In this example, set the value of the `authentication` option to `CAP-CallCenter`.

Support for Emulated and Supervised Routing

T-Server can emulate Routing Points using Hunt Groups (HGs) as resources on the switch. The number of member devices in the HG defines the number of calls that can be queued simultaneously on a Routing Point. Therefore, the number of devices assigned to such an HG must be greater than the maximum number of calls expected to be queuing on the Routing Point at any time.

When you use emulated routing, T-Server can determine whether calls are answered at the routing destination. If calls are not answered within the specified timeout, you can configure T-Server to recall the calls to the Routing Point and initiate rerouting. The supervision of the call travels with the call, so if a supervised call is routed to from one Routing Point to another and is ultimately unanswered, T-Server cancels the supervision on the first Routing Point and recalls the call back to second Routing Point for rerouting. See configuration option `supervised-route-timeout` and the `Extensions` attribute `SUPERVISED_ROUTE` for more details.

Calls that arrive at an HG can never queue—they are immediately delivered to one of the HG members. If no members are available, the call is reported as `busy`. When HGs are used as Routing Points in this way, T-Server emulates routing events on the HG and hides all events for the HG members, even though the call is actually alerting on the member.

When a call is successfully routed, T-Server distributes an `EventRouteUsed` event to its clients for the HG (Routing Point), and the call is redirected from the HG member.

Note: Any CTI applications that try to register with T-Server for the HG members receive an error.

Configuring Hunt Groups as Routing Points

Table 13 illustrates an example configuration using Hunt Groups as Routing Points.

Table 13: Example Configuration

Switch Device Type/Value	Configuration Layer Device Type/Value	Switch-Specific Type	Association Field Value
Hunt Group/2500	Routing Point/2500	2	Not applicable
Hunt Group member/4000	Extension/4000	2	`2500` (Routing Point)
Hunt Group member/4001	Extension/4001	2	`2500` (Routing Point)

7

Supported T-Server Features

This chapter describes the telephony functionality that T-Server for Siemens HiPath 4000 CSTA III supports and includes these sections:

Support for Business-Call Handling

This section describes how T-Server handles different types of calls.

T-Server Call Classification

T-Server automatically assigns every call to one of three categories:

- business
- work-related
- private

Based on this assignment, T-Server applies the appropriate business-call handling after the call is released.

Business Call Type Configuration

T-Server uses the following criteria to determine the business call type of a call. The criteria are given in order of precedence, highest to lowest:

- T-Server supports a request `Extensions` attribute to define the business call type upon call initiation or answer.

- T-Server uses the originator agent state to determine if the call is work related.

- The Configuration Manager DN-level configuration option, `bsns-call-type`, specifies the business call type for calls that pass through or arrive at a distribution device. If the call passes through a distribution device and there is no DN-level option present, the call will be classified as a business call as long as this is enabled by the option `bsns-call-dev-types`. Automatic classification of calls as business calls on distribution DNs can be disabled by the Application-level option `bsns-call-dev-types`. If the corresponding flag of this option is disabled, calls passing distribution DNs of that type will not change their respective business classification. The request extension and DN-level option will still be effected.Distribution devices include the following device types:
  - Routing Point
  - ACD Queue
  - Routing Queue
  - External Routing Point

- T-Server supports options that are configured at the `Application` level to define whether specific call types (inbound, outbound, internal, or unknown) are to be classified as business calls.

To specify the business call type for the new call, the `Extensions` attribute `BusinessCallType` can be attached to the following requests:

- `TMakeCall`
- `TInitiateTransfer`
- `TMuteTransfer`
- `TInitateConference`
- `TMakePredicitiveCall`
- `TAnswerCall`
- `TRouteCall`

This `Extensions` attribute takes precedence over all other Configuration Manager business call type configuration options. The `Extensions` attribute can also be attached to `TAnswerCall` to specify the business call type for the answering party and call.

If the call passes through more than one distribution device, then the usual rules for assigning a business call type are followed. Once set, the business call type cannot be overridden unless it is changed to be a business call.

When the configuration options `inbound-bsns-calls`, `internal-bsns-calls`, and `outbound-bsns-calls` are set at the `Application` level, they control whether the call type of the associated calls are to be classified as business calls. T-Server will not classify the business type of the call using these options until the destination is known. Also these options are not be used to set the originating party's business type as business until after the `Dialing` event has been reported. (This is to ensure that Genesys reporting is consistent regardless of the switch reported order of events).

The private request, `TSetBusinessCall` allows T-Server clients to set the business call type of an existing call to be "business". T-Server will respond to a successful request by distributing the private event `EventBusinessCallSet`.

Call Transformation

Business type assignment at any stage does not affect parties already present in the call, except for outbound calls that are configured to be treated as business calls. In this case, the dialing party will become a business party as soon as T-Server determines that the call is an outbound call. An outbound work-related call remains work-related regardless of the option setting.

Calls that are already classified as private or work-related can only be promoted to the business type. Changing between private and work-related is not possible, regardless of device settings and request extensions.

Call transfers or conference calls result in the business classification propagation from the transferring or conferencing main party to all be participants of the secondary call.

Business Calls

T-Server automatically categorizes as a *business call* any call distributed to an agent either from an ACD Queue or from a Routing Point.

Work-Related Calls

T-Server categorizes as a *work-related* call any non-business call that an agent makes while in ACW. T-Server does not apply any automatic business-call handling after a work-related call.

Because emulated agents can make or receive a direct work-related call while in wrap-up time, T-Server pauses the emulated wrap-up timer for the duration of such a call.

If an agent receives a direct work-related call during legal-guard time, T-Server cancels the legal-guard timer and reapplies it at the end of the work-related call.

Private Calls

T-Server categorizes as a *private call* any call that does not fall into the business or work-related categories. T-Server does not apply any automatic business-call handling after a private call. If emulated agents receive a direct private call while in wrap-up or legal-guard time, the emulated wrap-up or legal-guard timer is not interrupted.

Feature Configuration

Use the following configuration options to define what additional calls to or from an agent are classified as business calls:

- agent-only-private-calls
- bsns-call-type
- bsns-call-dev-types
- inbound-bsns-calls
- inherit-bsns-type
- internal-bsns-calls
- outbound-bsns-calls
- unknown-bsns-calls

Support for Emulated Agents

T-Server provides a fully functional emulated-agent model that you can use either in addition to agent features available on the PBX or in place of them where they are not available on the PBX.

When this feature is used, T-Server emulates the following functionality:

- Login and logout
- Agent set ready
- Agent set not ready (using various work modes)
- Automatic after call work (ACW)
- After call work in idle
- Automatic legal-guard time to provide a minimum break between business related calls

Emulated Agent Login/Logout

You can configure T-Server to perform emulated login either always, never, or on a per-request basis.

Agent Logout on Client Unregistering from DN

In some scenarios (such as a power failure/disconnection or when a desktop stops responding), agents may still receive calls but be unable to handle them. To prevent this problem, T-Server can be configured to automatically logout the agent in such circumstances.

When a client desktop or application disconnects from the T-Server while an agent is still logged in, the T-Server receives a notification that the application is unregistering from the agent's DN. Also, the T-Server is able to uniquely identify the client application which sends a T-Library request, including `TAgentLogin` and `TRegisterAddress`.

The T-Server can associate the client application (the one that sends the initial `TAgentLogin` request) with the agent and automatically log that agent out when the client application unregisters the agent DN while the agent is still logged in. (The initial `TAgentLogin` request is the one which first logs the agent in). HA Considerations

If the T-Server is running in HA mode, a client connecting to one T-Server will be connected to both with the same session ID. Therefore the client's session ID must be used as part of the association data to ensure consistency across the primary and backup T-Servers. The primary T-Server will send an HA synchronization message to the backup when there is a change in client associations.

Emulated Agent Ready/NotReady

Emulated agents can perform an emulated `Ready` or `NotReady` request regardless of whether they are on a call, subject to the rules governing work modes.

T-Server also reports any change in agent mode requested by the agent while remaining in a `NotReady` state (*self-transition*).

Note: The *Genesys Events and Models Reference Manual* and the *Voice Platform SDK 8.x .NET (or Java) API Reference* define which agent state/agent mode transitions are permissible.

Emulated After-Call Work (ACW)

T-Server can apply emulated wrap-up (ACW) for agents after a business call is released, unless the agent is still involved in another business call (see "Business Calls" on page 146).

Timed and Untimed ACW
T-Server applies emulated ACW for an agent after any business call is released from an established state. T-Server automatically returns the agent to the `Ready` state at the end of a *timed* ACW period. The agent must return to the `Ready` state manually when the ACW period is *untimed*.

Events and Extensions
T-Server indicates the expected amount of ACW for an agent in `EventEstablished` using the extension `WrapUpTime`. It is not indicated in `EventRinging` because the value may change between call ringing and call answer. Untimed ACW is indicated by the string value `untimed`, otherwise the value indicates the expected ACW period in seconds.

T-Server reports ACW using `EventAgentNotReady` with `workmode = 3` (`AgentAfterCallWork`) and indicates the amount of ACW it will apply using the `Extensions` attribute `WrapUpTime`.

T-Server sends the `EventNotReady(ACW)` before the `EventReleased` at the end of the business call.

Emulated ACW Period

The amount of emulated ACW that T-Server applies (when required) after a business call is determined by the value set in the configuration option `wrap-up-time`.

The `untimed-wrap-up-value` configuration option determines which specific integer value of wrap-up-time indicates *untimed* ACW. To specify untimed ACW in request `Extensions` or `UserData`, you should use the string `untimed` instead. All positive integer values are treated as indicating timed ACW (in

seconds). For backwards compatibility, the default value of `untimed-wrap-up-value` is `1000`.

Note: Changing the value of untimed ACW can affect the interpretation of all integer values of the `wrap-up-time` configuration option in Configuration Manager. If the value is lowered, it may change timed ACW to untimed, or disable ACW altogether. If the value is raised, it may change untimed, or disabled ACW to timed ACW. The use of the new option (string) value `untimed` is encouraged where possible to minimize the impact of any future changes to the value of the configuration option, `untimed-wrap-up-value`.

Pending ACW

An agent can request emulated ACW, or override the period of (emulated) ACW to be applied to themselves, while on an established call. T-Server applies the emulated ACW when the call is released. The agent sends `TAgentReady` with `workmode = 3` to request pending ACW while on an established call. The `Extensions` attribute, `WrapUpTime,` indicates the amount of ACW that T-Server applies, using the following parameters and rules:

*   `Extensions` missing—request is rejected
*   Value = `0`—ACW is disabled
*   Value greater than `0`—period of timed ACW in seconds
*   Value = `untimed`—untimed ACW

If the request is successful, T-Server sends `EventAgentReady` with `workmode = 3` `(ACW).` T-Server also indicates that the agent is in a pending ACW state by adding the `Extensions` attribute, `ReasonCode,` with the new value `PendingACW.` It also indicates the period of ACW to be applied using the `Extensions` attribute, `WrapUpTime.`

An agent may alter the period of pending ACW by sending a new `TAgentReady` with `workmode = 3`, using a different value for the `Extensions` attribute, `WrapUpTime.` If the request is successful, T-Server sends another `EventAgentReady` event, indicating the new value in the `Extensions` attribute, `WrapUpTime.`

Note: To enable this feature, the agent desktop the `Extensions` attribute, `WrapUpTime,` must be enabled on the agent desktop.

ACW In Idle

An agent can activate wrap-up time on request when idle, by issuing a `TAgentNotReady` with `workmode = 3` `(AgentAfterCallWork)` to request emulated ACW while idle.

Extending ACW

An agent can request an extension to the amount of emulated ACW for a call while in emulated ACW or in the legal-guard state.

The agent requests an extension to ACW by sending `TAgentNotReady` with `workmode = 3 (AgentAfterCallWork)`. T-Server determines the period of the extended ACW from the `Extensions` attribute, `WrapUpTime`, as follows:

- Value = `0`—No change to ACW period, but T-Server reports how much ACW time remains.
- Value greater than `0`—T-Server adds the given number of seconds to the timed ACW period. Untimed ACW remains unaffected.
- Value = `untimed`—T-Server applies untimed ACW.

T-Server sends an `EventAgentNotReady` event with `workmode = 3 (AgentAfterCallWork)`, reporting the newly extended amount of ACW using the `Extensions` attribute, `WrapUpTime`. If the agent was in the emulated legal-guard state, T-Server places the agent back into emulated ACW state.

The agent may extend the period of ACW as many times as desired. At the end of the extended timed ACW period, T-Server applies legal guard if any is configured. No legal guard is applied if the emulated ACW was untimed.

Calls While in Emulated ACW

T-Server's handling of an agent making or receiving a call while in emulated ACW is governed by the configuration option, `backwds-compat-acw-behavior`.

Emulated Legal-Guard Time

T-Server applies emulated legal-guard time for agents before they are about to be automatically set ready after any period of timed ACW or after the last business call is released where there is no ACW to be applied. It is a regulatory requirement in many countries to guarantee that agents have a break of a few seconds before the next call can arrive. No legal-guard time is applied if the ACW period was not timed or if the agent is not being placed into the `Ready` state.

T-Server reports legal guard using `EventAgentNotReady` with `workmode = 2 (LegalGuard)`. If an agent requests to be logged out during emulated legal-guard time, T-Server immediately logs the agent out.

If the agent requests to go to a `Not Ready` or `Ready` state during legal-guard time, T-Server terminates legal guard and transitions the agent to the requested state. If the agent requests to return to the ACW state, T-Server re-applies legal guard at the end of ACW, provided that the agent still requires it according to the above criteria.

The period of legal guard is determined by the `legal-guard-time` configuration option.

HA Synchronization

On startup and link re-establishment, the Hot Standby backup T-Server requests the primary T-Server to send details of all agents. The primary T-Server replies with all the information required for switchover, including all emulated and switch-based data.

From this point on, the primary T-Server also sends a similar synchronization message whenever an emulated agent's state changes.

This means that a higher level of synchronization between the two T-Servers is maintained at all times.

Feature Configuration

Enabling or Disabling the Emulated Agent Login

The following T-Server configuration options enable or disable the emulated agent login:

- `agent-strict-id`
- `emulate-login`
- `emulated-login-state`
- `sync-emu-acw`

Enabling or Disabling the Automatic Agent Logout

The following configuration options enable or disable the automatic logout of the agent:

- `agent-emu-login-on-call`
- `agent-logout-on-unreg`
- `agent-logout-reassoc`

Enabling or Disabling the Emulated ACW Period

The following configuration options enable or disable the emulated ACW period functionality:

- `untimed-wrap-up-value`
- `wrap-up-threshold`
- `wrap-up-time`

Enabling or Disabling Pending ACW Functionality

The following configuration options enable or disable the pending ACW functionality:

- `emulate-login`
- `timed-acw-in-idle`

Enabling or Disabling the Emulated ACW Functionality

The `backwds-compat-acw-behavior` configuration option enables or disables the emulated ACW functionality.

Determining the Period of Legal Guard Time

The `legal-guard-time` configuration option determines the period of legal guard time.

Support for Emulated Predictive Dialing

This feature enables Genesys Outbound Contact Server (OCS) to initiate calls without the use of the Call Progress Detection (CPD) Server and Dialogic hardware.

Note: This feature is not related to the predictive dialing algorithm OCS uses to determine when to make the next call. This feature only concerns the outbound-call mechanism. You cannot use Emulated Predictive Dialing with Dialogic hardware.

To enable the Predictive Dialing feature in T-Server, you must configure (in Configuration Layer) a number of devices corresponding to the number of calls that can be made simultaneously. These devices are available as a pool for T-Server to use for predictive dialing. They are not associated with any specific dialing device (ACD Queue or Routing Point). They are configured in Genesys Configuration Layer with switch-specific type `4`.

Because of a small discrepancy in the way the availability of dialing devices is calculated in T-Server and in OCS, Genesys recommends configuring extra dialing devices. For example—if you plan to use five dialing devices in a campaign, configure six dialing devices in T-Server.

Limiting Distribution Time

Many countries forbid, by law, the queuing of more calls than there are available agents. The law in these countries states that such calls must be

immediately dropped. T-Server does not handle this requirement for the duration of call distribution. The distribution mechanism must handle it.

If you use Universal Routing Server (URS) to distribute outbound calls to agents, set the `Timeout` option in the Strategy Target-Selection object to an appropriate value—for example, `1 second` or `2 seconds`.

Note: Your routing strategy is likely to fail if you set the value of `Timeout` to `0` (zero).

Once outbound calls have been successfully distributed to an agent, use the value of the configuration option `prd-dist-call-ans-time` to limit the time that a call rings on an agent desktop without being answered.

If T-Server has no dialing devices available at the time of a `TMakePredictiveCall` request, it attempts to queue the request for the duration specified in the configuration option, `max-pred-req-delay`. If a dialing device becomes available, T-Server makes the call. If not, T-Server rejects the request.

Call Progress Detection

T-Server's Emulated Predictive Dialing feature does not support call progress detection (CPD) to the same extent as Dialogic hardware. CPD is limited to normal switch signaling. In-band CPD is not supported. The following dialing results are supported:

*   `Answer`
*   `No Answer`
*   `Busy`
*   `Dropped`
*   `Wrong number` (reported as `Sit Tone` by OC)
*   `Abandoned`

Unsolicited Calls on Predictive Dialing Devices

An *unsolicited call* on a predictive dialing device is defined as:

*   Any call delivered to a predictive dialing device.
*   Any call originated without `TMakePredictiveCall`.

T-Server attempts to clear such unsolicited calls, in order to keep the predictive dialing device available. For delivered calls, T-Server answers and releases the call. For originated or established calls, T-Server releases the call.

Feature Configuration

Configuring the Distribution Time

The following configuration options control the distribution time:

- `max-pred-req-delay`
- `prd-dist-call-ans-time`

Controlling Unsolicited Call on Predictive Dialing Devices

The `dn-for-undesired-calls` configuration option controls the unsolicited calls on predictive dialing devices functionality.

Support for No-Answer Supervision

This section describes T-Server's No-Answer Supervision feature.

Agent No-Answer Supervision

This feature provides the following functionality:

- If an agent does not answer a call within a specified timeout, T-Server can divert the call to a sequence of overflow destinations. Alternatively, you can configure T-Server to return calls automatically to the last distribution device.

- If an agent fails to answer a call within a specified timeout, you can configure T-Server to either log out the agent or set the agent to `NotReady` to prevent further calls from arriving.

Extension No-Answer Supervision

The No-Answer Supervision feature includes devices of type `Extension`. If a call is not answered on an `Extension` within a specified timeout, T-Server can divert the call to a sequence of overflow destinations. Alternatively, you can configure T-Server to return calls automatically to the last distribution device.

Position No-Answer Supervision

The No-Answer Supervision feature includes devices of type `ACD Position`. If a call is not answered on an `ACD Position` within a specified timeout, T-Server can divert the call to a sequence of overflow destinations. Alternatively, you can configure T-Server to return calls automatically to the last distribution device.

Feature Configuration

Enabling or Disabling the Agent No-Answer Supervision Feature

T-Server provides the following three configuration options for defining the behavior of the Agent No-Answer Supervision feature:

- `agent-no-answer-action`
- `agent-no-answer-overflow`
- `agent-no-answer-timeout`

Enabling or Disabling the Agent No-Answer Supervision Feature for Devices of type Extension

T-Server provides the following two configuration options for defining the behavior of No-Answer Supervision with devices of type `Extension`:

- `extn-no-answer-overflow`
- `extn-no-answer-timeout`

Enabling or Disabling the Agent No-Answer Supervision Feature for Devices of type ACD Positions

T-Server provides the following two configuration options for defining the behavior of No-Answer Supervision with devices of type `ACD Position`:

- `posn-no-answer-overflow`
- `posn-no-answer-timeout`

Enabling or Disabling the Agent No-Answer Supervision Feature for Device-Specific Overrides

T-Server provides the following three configuration options with which you can configure device-specific overrides for individual devices. You set the values for these options on the `Annex` tab of the `TServer` section of the individual device in the Framework Configuration Layer. These are the options:

- `no-answer-action`
- `no-answer-overflow`
- `no-answer-timeout`

Extension Attributes for Overrides for Individual Calls

For all of the No-Answer Supervision options, you can specify the corresponding `Extensions` attribute in `TRequestRouteCall`, to override the configured value for individual calls. This method allows the no-answer behavior to be determined in a routing strategy. The following are the three `Extensions` attributes:

- `NO_ANSWER_ACTION`
- `NO_ANSWER_OVERFLOW`
- `NO_ANSWER_TIMEOUT`

Enabling or Disabling the Agent No-Answer Supervision Feature for Private Calls

T-Server provides the following configuration option for applying No-Answer Supervision to private calls:

——`nas-private`

Enabling or Disabling the Agent No-Answer Supervision Feature for Recall Scenarios

T-Server provides the following configuration option to enable or disable No-Answer Supervision for recall scenarios:

——`recall-no-answer-timeout`

Enabling or Disabling the Agent No-Answer Supervision Feature for Reporting

T-Server provides the following configuration option to enable or disable No-Answer Supervision for reporting:

——`nas-indication`

Support for Smart OtherDN Handling

For T-Server clients that provide the Agent ID value as the `OtherDN` in requests to T-Server, T-Server can convert this `OtherDN` value using its knowledge of the association between the Agent ID and the DN to ensure the correct execution of the request by the switch. For switches expecting an Agent ID in the place of a DN for a particular operation, T-Server can convert the `OtherDN` value supplied by client to the Agent ID that the switch expects.

Feature Configuration

T-Server provides the following two configuration options to enable and disable Smart OtherDN Handling.

Configuration Options
- `convert-otherdn`
- `vto-onhook-dly`

Extensions Key T-Server provides an `Extensions` attribute key, `ConvertOtherDN`, to enable this feature to be applied on a call-by-call basis.

Supported Requests

Table 14 shows the requests that assume the use of the `OtherDN` value as a switch directory number, and can therefore support Smart OtherDN Handling.

Table 14: Requests That Support Smart OtherDN Handling

TRequest	Meaning of OtherDN Attribute	AgentID-to-DN Conversion	Reserved DN Conversion
TMakeCall	Call destination	Yes	Yes
TMakePredictiveCall[a]	Call destination	Yes	Yes
TRedirectCall	New destination for call	Yes	Yes
TInitiateTransfer	Call destination	Yes	Yes
TMuteTransfer	Call destination	Yes	Yes
TSingleStepTransfer	New destination for call	Yes	Yes
TInitiateConference	Call destination	Yes	Yes
TSingleStepConference	New destination for call	No	No
TDeleteFromConference	Conference member to be deleted	Yes	Yes
TListenDisconnect	Request target	No	No
TListenReconnect	Request target	No	No
TCallSetForward[b]	Request target	Yes	Yes

Table 14: Requests That Support Smart OtherDN Handling (Continued)

TRequest	Meaning of OtherDN Attribute	AgentID-to-DN Conversion	Reserved DN Conversion
TGetAccessNumber[c]	DN for which Access Number is requested	No	No
TSetCallAttributes[c]	Not specified	No	No
TReserveAgentAndGet AccessNumber[c]	DN for which Access Number is requested	No	No
TMonitorNextCall	Agent DN to be monitored	No	Not applicable
TCancelMonitoring	Agent DN that was monitored	No	Not applicable
TRouteCall[d]	New destination for call		
• RouteTypeUnknown		Yes	Yes
• RouteTypeDefault		Yes	Yes
• RouteTypeOverwriteDNIS		Yes	Yes
• RouteTypeAgentID		No	No

a. `TMakePredictiveCall` assumes that the directory number should be outside the switch; however, this request could also support Smart OtherDN Handling.

b. `TCallSetForward` has a separate flag in the configuration option for enabling conversion.

c. T-Server cannot intercept these requests.

d. Only the listed route types are applicable for OtherDN conversion.

Support for Keep-Alive Feature

T-Server may not always receive timely notification when the CTI link stops functioning. In order for T-Server to detect link failure and initialize alarm and recovery procedures, T-Server usually needs to actively check the link's integrity. This is referred to as Keep-Alive or "KPL" functionality.

Keep-alive functionality involves sending a *KPL request* which elicits either a positive or negative response from the CTI link. The responses are counted in

four cumulative counters. If the relevant counter reaches the maximum configured limit, T-Server either:

- Decrements the relevant warning/failure KPL tolerance counter
- Attempts to reconnect to the link
- Sends a warning message to Message Server

Feature Configuration

The following configuration options are available in the Link-Control section of T-Server:

- `kpl-interval` sets the interval timer for KPL requests.
- `kpl-tolerance` sets the threshold at which T-Server either attempts to reconnect to the link or issues a warning message.

Support for Call Type Prediction

T-Servers use CTI-provided information to assign a call type to a call. On occasions when the CTI information is either insufficient or arrives too late for T-Server to assign a definite call type, T-Server can use a call type prediction procedure to assign a call type on a "best possible guess" basis.

Table 15 shows how T-Server assigns call types in different scenarios.

Table 15: Call Type Prediction

Call Direction/ OtherDN	External	Internal	Unknown
Incoming	CallTypeInbound	CallTypeInternal	CallTypeUnknown
Outgoing	CallTypeOutbound	CallTypeInternal	CallTypeUnknown

Feature Configuration

The `call-type-by-dn` configuration option enables or disables the call type prediction feature.

Support for Call Release Tracking

T-Server provide information about which party initiated the release of a call. This can be valuable for different applications to provide historical and real-time call reporting.

The following T-Library SDK call models can be reported in this way:

- Normal call release

- Abnormal call release

- Call release from a conference

- Rejection of an alerting call

- Release for a failed or blocked call to a busy destination

DN-Based Reporting

In DN-based reporting, information about the call release initiator will be reported in the `AttributeExtension` using extension key `ReleasingParty` in `EventReleased` and `EventAbandoned` events, when those events are distributed.

One of the following values will be reported in the `ReleasingParty` key:

- `Local`—The call is released because the `ThisDN` value in the `EventReleased` was requesting the release.

- `Remote`—The call is released because the other party (which is remote to `ThisDN`) in the `EventReleased` or `EventAbandoned` events was requesting release operation.

- `Unknown`—The call is released, but T-Server cannot determine the release initiator.

Call-Based Reporting

Independently of DN-based reporting, T-server provides the call release initiator in `AttributeCtrlParty` for `EventCallPartyDeleted` and `EventCallDeleted` events. For scenarios where T-Server cannot provide the release initiator, `AttributeCtrlParty` will not appear in event reporting.

T-Server will provide `AttributeCtrlParty` reporting (for the party that initiated the call release) either:

- When the call is released using a GCTI request and T-Server is aware of the result of the requested operation, or;

- When the PBX CTI protocol provides reliable information about the identity of party that released.

Feature Configuration

T-Server provides the `releasing-party-report` configuration option to enable or disable the Call Release Tracking feature.

Support for Failed Route Notification

When this feature is enabled, a failed route timer is set using the interval defined in the `route-failure-alarm-period` configuration option. Each routing failure reported during this period is added to a counter. If this counter exceeds a "high water mark" threshold value defined by the `route-failure-alarm-high-wm` configuration option, T-Server sets a route failure alarm condition, and resets the counter.

The alarm condition is cleared when fewer route failures than configured in the `route-failure-alarm-low-wm` configuration option are recorded and there is also no more than the number of route failures configured in `route-failure-alarm-high-wm` in one complete period (configured in `route-failure-alarm-period`).

Setting the value of the `route-failure-alarm-period` configuration option to `0` (zero) disables the feature.

HA Considerations

Only the primary T-Server maintains the failed routing counter. The backup T-server will not run the `route-failure-alarm-period` timer, and so keeps the routing failure alarm in the canceled state.

On switchover from primary role to backup role, T-Server stops the `route-failure-alarm-period` timer and clears any alarm internally, without sending any LMS message.

On switchover from backup role to primary role, T-Server starts the `route-failure-alarm-period` timer and starts counting route requests and routing failures.

Feature Configuration

The following configuration options control the Failed Route Notification feature:

- `route-failure-alarm-high-wm`
- `route-failure-alarm-low-wm`
- `route-failure-alarm-period`

Support for Link Bandwidth Monitoring

T-Server provides bandwidth monitoring on a CTI link and can notify the Genesys Management Layer when Configuration Layer limits are exceeded.

When configured high or low thresholds are reached, T-Server sends alarm messages `LINK_ALARM_HIGH` LMS or `LINK_ALARM_LOW` LMS, as appropriate.

High and Low Watermarks

The configuration option, `link-alarm-high`, specified as a percentage of the `max-bandwidth` value, defines an upper threshold bandwidth value which when breached raises a `LINK_ALARM_HIGH` LMS message.

The configuration option, `link-alarm-low`, specified as a percentage of the `max-bandwidth` value, defines a lower threshold bandwidth value which when breached raises a `LINK_ALARM_LOW` LMS message.

Alarm Set Algorithm

T-Server measures requests sent to the CTI link and whenever there is a 99.7% probability that a high or low watermark threshold has been crossed, an appropriate LMS message is generated.

If the value for the configuration option, `link-alarm-high`, is set to `0` (zero), no high alarm is generated.

Notes: A high or low watermark LMS message is only generated when there is at least a 99.7% probability that the requisite threshold has been crossed. Therefore, if the value for `link-alarm-low` is set to `0` (zero), it cannot be crossed and no low alarm can be generated. Since a subsequent high alarm LMS message will only be generated after a low watermark message, no further alarms can be raised.

LMS Messages

High alarm

```
STANDARD Link bandwidth: %d1 requests per second exceeds alarm
threshold %d2 requests per second on CTI link ID %d3
```

Attributes:

%d1 represents estimated requests rate

%d2 represents link-alarm-high * max_bandwidth / 100

%d3 represents the CTI Link ID

Low alarm

`STANDARD Link bandwidth: %d1 requests per second dropped below alarm threshold %d2 requests per second on CTI link ID %d3`

Attributes:

%d1 represents estimated requests rate

%d2 represents link-alarm-low * max_bandwidth / 100

%d3 represents the CTI Link ID

Notes: • Setting the link-alarm-low option to a value of `0` (zero) will not create a link alarm low LMS message. The link bandwidth must drop below the set low alarm level in order to create the low watermark message. For a high watermark, the bandwidth recorded must exceed the set high alarm watermark to create the high watermark LMS message. The consequence of setting the low alarm watermark to `0` (zero) is that T-Server will only generate one high watermark LMS message since a low watermark LMS message is never created. Therefore, T-Server will remain in high watermark alarm state indefinitely and never generate a subsequent LMS high watermark message.

• If the value of the `link-alarm-low` configuration option is set to a value higher than the value of the `link-alarm-high` configuration option, then the two values are swapped. However, the values are not swapped if either value is set to `0` (zero).

The `LinkLoad` key of the `Extensions` attribute has been introduced for the link bandwidth feature. See the description of the `Extensions` key on .

HA Considerations

If the primary T-Server is at the high watermark prior to a switchover, its state is not transferred to the backup T-Server.

Feature Configuration

The following configuration options control the Link Bandwidth Monitoring feature:

• `link-alarm-high`

• `link-alarm-low`

• `use-link-bandwidth`

Support for Account Codes

T-Server distinguishes between two situations for the Account Code feature:

- Account codes that are entered during a call or during ACW when the released call is left are treated as account codes.

- Account codes that are entered while the agent is idle are interpreted as walk-away codes.

Any account codes entered during a call are treated by T-Server as call account codes. T-Server reports such account codes using attached user-data with configurable keys. Optionally, T-Server can report an account code as an `Extensions` attribute key, instead of `UserData`, to minimize interference with the other components, such as ISCC and other user applications.

While Call Concentrator can pick up event `Extensions` the same as the `UserData`, Stat Server can only work with the `UserData`.

Indexing by Key Name

In scenarios where multiple account codes are required, it is possible to turn on key name indexing. When indexing is enabled, T-Server should attach each subsequent account code and increment the index part of the key.

The index is an incremental integer attached to the configured key name after an underscore, starting with 1 (for example—`AccountCode_1`, `AccountCode_2`, and so on). T-Server only attaches unique codes that are not yet attached. T-Server keeps non-indexed key (for example—`AccountCode`) updated with the last received value irrespective of whether indexing is enabled or not.

In case multiple calls exist on the device, T-Server attaches the code to the last active call. For this reason, T-Server has to keep a historically ordered stack of active calls on the device so that last active call can be easily and reliably identified.

The data key name is set by the configuration option, `accode-name`. If the configured name is different from `AccountCode`, the name for multiple account codes is also changed and represented as `"<value of "accode-name">_<N>"`.

Entering Account Codes Manually

If account codes are entered manually on the phoneset (or by some means other than a CTI request from T-Server), T-Server verbosely attaches the user-data key under the configured name to the call. This user-data appears in all subsequent call related events on all devices that are involved in the call. If `Extensions` are chosen as the account code holder, these are reported with the next call-related event.

Note: If the configuration option, `accode-data`, is set to any value other than `udata`, then T-Server does not attach account codes to the user data.

Entering Account Codes by CTI Request

Explicit attaching of account codes by CTI request (`Attach/Update UserData`) is supported. You are responsible for setting the correct key as configured.

When T-Server receives such a CTI request, it sends this account code to the PBX for the requested DN after the requested call function is complete, and only for the requested DN. In this case, T-Server immediately replies with an `EventAttachedDataChanged` as event user-data is handled by the T-Server common part, and this event is sent automatically. T-Server suppresses reporting of any associated acknowledgment or error from the PBX.

Setting Keys in Call-Related Requests

T-Server allows these keys to be set in any call-related request that supports `UserData` (for example—`TMakeCall` with `UserData`), or in the `Extensions` attribute of any call-related request. If such a request is received, T-Server reports the account code as normal and additionally, it sends the account code to the PBX as soon as the call request to the PBX is successfully completed. T-Server suppresses reporting of any associated acknowledgment or error from the PBX. T-Server does not proceed with the account code update, if the original call-related request fails.

In scenarios using `TReleaseCall`, `TRedirectCall`, `TRouteCall`, `TSingleStepTransfer`, and `TCompleteTransfer`, T-Server attaches the account code first, and then performs a call release or transfer. This is because there is no chance to report, or maybe even attach, the account code after the call is released or transferred. When using `TMuteTransfer`, T-Server attaches the account code after the `EventDialing` event, if the dial-out was successful.

Notes: • It is not possible to set a call associated account code for a call until the call has been initiated.
• It is not possible to set a call associated account code for a finished call after the call has been released.

T-Server can use the Call Locking feature as described in the *Call Concentrator 7 Reference Guide*. When locking is enabled, T-Server locks the call before the `EventReleased` event, if the call is to be retained, and unlocks it as soon as the released call is deleted, for instance, at the end of ACW or when the new call is initiated or received.

T-Server sends an `EventUserEvent` message immediately upon receipt of an account code from the PBX. It is possible to set an account code by CTI during this phase as described above using a `TUpdateUserData` request or a `TPrivateService` request.

Feature Configuration

The following configuration options and Extensions attribute key enable T-Server to keep connection IDs alive after a call is released, if there is automatic ACW. This allows agents to enter call-related account codes during the ACW phase:

Configuration Options
- accode-data
- accode-name
- accode-privateservice
- acw-retain-call
- acw-retain-lock

Extensions Key   The default Extensions attribute key is AccountCode.

Walk-Away Codes

Any account code entered while an agent is idle and not-ready is treated by T-Server as a walk-away code. T-Server reports these walk-away codes using an EventAgentNotReady event with the predefined Extensions attribute key ReasonCode in the AttributeExtensions field.

Examples of Different Walk-Away Scenarios

1. Idle and Ready agent:

   If the account code is entered manually on the phoneset while the agent is idle and in the Ready state, T-Server either ignores this event from the PBX or reports it using a TPrivateService request.

2. Idle and Not-Ready agent:
   - If the account code is entered manually on the phoneset while an agent is in the Not-Ready state, T-Server resends an EventAgentNotReady event with the Extensions attribute key ReasonCode.
   - If an agent who is ready sends a TAgentNotReady with the Extensions attribute key ReasonCode in the AttributeExtension field, T-Server immediately sets the agent to the NotReady state and sets the account code on the PBX. T-Server acknowledges the request by sending an EventAgentNotReady event with the corresponding AttributeExtension.
   - If an idle and not-ready agent sends a TAgentNotReady request with the Extensions attribute key ReasonCode , T-Server only sets the account code on the PBX and reports the EventAgentNotReady event with the corresponding AttributeReason. T-Server does not change the actual agent state on the PBX in this case.

Account Code as a Private Event/Service

You can set and report account code using a `TPrivateService` request and a `EventPrivateInfo` event. The `Extensions` attribute should contain the account code in question, reported or requested. An account code can only be set through the CTI on an established call.

Currently, T-Server uses the same ID (`51971`) for the request and event. The `Extensions` attribute name is defined by the configuration option, `accode-name`.

Request Handling Enhancements

T-Server provides two major enhancements to queue handling: request conflict resolution and a new device queue.

Requests submitted by different clients are treated no differently to requests submitted by the same client. For this reason, having multiple clients controlling the same device can result in unexpected behavior.

Note: While this configuration is supported, it should be recognised that there is no special handling for multiple clients.

Feature Configuration

The following configuration options control the request handling enhancements:

- `call-rq-gap`
- `device-rq-gap`
- `max-outstanding`
- `rq-conflict-check`
- `rq-gap`

T-Library Functionality

Table 16 presents T-Library functionality supported in the T-Server for Siemens HiPath 4000 CSTA III. The table entries use these notations:

N—Not supported

Y—Supported

I—Supported, but reserved for Genesys Engineering

E—Event only supported

In Table 16, when a set of events is sent in response to a single request, the events are listed in an arbitrary order. An asterisk (*) indicates the event that

contains the same Reference ID as the request. For more information, refer to the *Genesys Events and Models Reference Manual* and the *Voice Platform SDK 8.x .NET (or Java) API Reference.*

Table 16 reflects only that switch functionality used by Genesys software and might not include the complete set of events offered by the switch.

Certain requests in Table 16 are reserved for Genesys Engineering and are listed here merely for completeness of information.

Notes describing specific functionality appear at the end of a table.

Table 16: Supported T-Library Functionality

Feature Request	Request Subtype	Corresponding Event(s)	Supported
General Requests			
TOpenServer		EventServerConnected	Y
TOpenServerEx		EventServerConnected	Y
TCloseServer		EventServerDisconnected	Y
TSetInputMask		EventACK	Y
TDispatch		Not Applicable	Y
TScanServer		Not Applicable	Y
TScanServerEx		Not Applicable	Y
Registration Requests			
TRegisterAddress		EventRegistered	Y
TUnregisterAddress		EventUnregistered	Y
Call-Handling Requests			
TMakeCall	Regular	EventDialing	Y
	DirectAgent		N
	SupervisorAssist		N
	Priority		N
	DirectPriority		N
TAnswerCall			Y
TReleaseCall		EventReleased	Y
TClearCall		EventReleased	N

Table 16: Supported T-Library Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
THoldCall		EventHeld	Y
TRetrieveCall		EventRetrieved	Y
TRedirectCall[a]		EventReleased	Y
TMakePredictiveCall		EventDialing* EventQueued	Y
Transfer/Conference Requests			
TInitiateTransfer		EventHeld EventDialing*	Y
TCompleteTransfer		EventReleased* EventPartyChanged	Y
TInitiateConference		EventHeld EventDialing*	Y
TCompleteConference		EventReleased* EventRetrieved EventPartyChanged EventPartyAdded	Y
TDeleteFromConference		EventPartyDeleted* EventReleased	Y[b]
TReconnectCall		EventReleased, EventRetrieved*	Y
TAlternateCall		EventHeld* EventRetrieved	Y
TMergeCalls	ForTransfer	EventReleased* EventPartyChanged	N
	ForConference	EventReleased* EventRetrieved EventPartyChanged EventPartyAdded	N
TMuteTransfer		EventHeld, EventDialing* EventReleased EventPartyChanged	Y
TSingleStepTransfer		EventReleased* EventPartyChanged	Y

Table 16: Supported T-Library Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
TSingleStepConference		EventRinging* EventEstablished	N
Call-Routing Requests			
TRouteCall	Unknown	EventRouteUsed	Y
	Default		Y
	Label		N
	OverwriteDNIS		Y
	DDD		Y
	IDDD		Y
	Direct		Y
	Reject[c]		Y
	Announcement		N
	PostFeature		N
	DirectAgent		N
	Priority		N
	DirectPriority		N
	AgentID		N
Call-Treatment Requests			
TApplyTreatment	Unknown	(EventTreatmentApplied + EventTreatmentEnd)/Event TreatmentNotApplied	N
	IVR		N
	Music		N
	RingBack		N
	Silence		N
	Busy		N
	CollectDigits		N

Table 16: Supported T-Library Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
TApplyTreatment (cont.)	PlayAnnouncement	(EventTreatmentApplied + EventTreatmentEnd)/Event TreatmentNotApplied	N
	PlayAnnouncementAnd-Digits		N
	VerifyDigits		N
	RecordUserAnnouncement		N
	DeleteUserAnnouncement		N
	CancelCall		N
	PlayApplication		N
	SetDefaultRoute		N
	TextToSpeech		N
	TextToSpeechAndDigits		N
	FastBusy		N
	RAN		N
TGiveMusicTreatment		EventTreatmentApplied	N
TGiveRingBackTreatment		EventTreatmentApplied	N
TGiveSilenceTreatment		EventTreatmentApplied	N
DTMF (Dual-Tone Multifrequency) Requests			
TCollectDigits		EventDigitsCollected	N
TSendDTMF[d]		EventDTMFSent	Y
Voice-Mail Requests			
TOpenVoiceFile		EventVoiceFileOpened	N
TCloseVoiceFile		EventVoiceFileClosed	N
TLoginMailBox		EventMailBoxLogin	N
TLogoutMailBox		EventMailBoxLogout	N
TPlayVoice		EventVoiceFileEndPlay	N

Table 16: Supported T-Library Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
Agent & DN Feature Requests			
TAgentLogin	WorkModeUnknown	EventAgentLogin	Y
	ManualIn		Y
	AutoIn/Legal Guard		Y
	AfterCallWork		Y
	AuxWork		Y
	Walk Away		Y
	Return Back		Y
	NoCallDisconnect		N
TAgentLogout		EventAgentLogout	Y
TAgentSetIdleReason		EventAgentIdleReasonSet	N
TAgentSetReady		EventAgentReady	Y
TAgentSetNotReady	WorkModeUnknown	EventAgentNotReady	Y
	ManualIn		Y
	AutoIn/Legal Guard		Y
	AfterCallWork		Y
	AuxWork		Y
	Walk Away		Y
	Return Back		Y
	NoCallDisconnect		N
TMonitorNextCall	OneCall	EventMonitoringNextCall	N
	AllCalls		N
TStartCallMonitoring		EventStartCallMonitoring	Y
TStopCallMonitoring		EventStopCallMonitoring	Y
TCancelMonitoring		EventMonitoringCanceled	N

Table 16: Supported T-Library Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
TCallSetForward	None	EventForwardSet	N
	Unconditional		Y
	OnBusy		Y
	OnNoAnswer		Y
	OnBusyAndNoAnswer		N
	SendAllCalls		N
TCallCancelForward	None	EventForwardCancel	N
	Unconditional		Y
	OnBusy		Y
	OnNoAnswer		Y
	OnBusyAndNoAnswer		N
	SendAllCalls		N
TSetMuteOff		EventMuteOff	N
TSetMuteOn		EventMuteOn	N
TListenDisconnect		EventListenDisconnected	N
TListenReconnect		EventListenReconnected	N
TSetDNDOn		EventDNDOn	Y
TSetDNDOff		EventDNDOff	Y
TSetMessageWaitingOn		EventMessageWaitingOn	Y
TSetMessageWaitingOff		EventMessageWaitingOff	Y
Query Requests			
TQuerySwitch	DateTime	EventSwitchInfo	N
	ClassifierStat		N
TQueryCall	PartiesQuery	EventPartyInfo	N
	StatusQuery		Y

Table 16: Supported T-Library Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
TQueryAddress	AddressStatus	EventAddressInfo	Y
	MessageWaitingStatus		N
	AssociationStatus		N
	CallForwardingStatus		N
	AgentStatus		Y
	NumberOfAgentsInQueue		Y
	NumberOfAvailableAgents-InQueue		Y
	NumberOfCallsInQueue		Y
	AddressType		Y
	CallsQuery		Y
	SendAllCallsStatus		N
	QueueLoginAudit		N
	NumberOfIdleTrunks		N
	NumberOfTrunksInUse		N
	DatabaseValue		N
	DNStatus		Y
	QueueStatus		Y
TQueryLocation	AllLocations	EventLocationInfo[e]	I
	LocationData		I
	MonitorLocation		I
	CancelMonitorLocation		I
	MonitorAllLocations		I
	CancelMonitorAllLocations		I
TQueryServer		EventServerInfo	Y

Table 16: Supported T-Library Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
User-Data Requests			
TAttachUserData		EventAttachedDataChanged	Y
TUpdateUserData		EventAttachedDataChanged	Y
TDeleteUserData		EventAttachedDataChanged	Y
TDeleteAllUserData		EventAttachedDataChanged	Y
ISCC (Inter-Server Call Control) Requests			
TGetAccessNumber		EventAnswerAccessNumber	I
TCancelReqGetAccess-Number		EventReqGetAccessNumber Canceled	I
Special Requests			
TReserveAgent		EventAgentReserved	I
TSendEvent		EventACK	I
TSendEventEx		EventACK	I
TSetCallAttributes		EventCallInfoChanged	Y
TSendUserEvent		EventACK	Y
TPrivateService		EventPrivateInfo	Y
TCopyEvent			Y
TFreeEvent			Y
Network Requests[f]			
TNetworkConsult		EventNetworkCallStatus	Y
TNetworkAlternate		EventNetworkCallStatus	Y
TNetworkTransfer		EventNetworkCallStatus	Y
TNetworkMerge		EventNetworkCallStatus	Y
TNetworkReconnect		EventNetworkCallStatus	Y
TNetworkSingleStep-Transfer		EventNetworkCallStatus	Y

Table 16: Supported T-Library Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
TNetworkPrivateService		EventNetworkPrivateInfo	Y
ISCC Transaction Monitoring Requests			
TTransactionMonitoring		EventACK	Y
		EventTransactionStatus	E

a. The switch rejects `TRedirectCall` for calls distributed through a Hunt Group.

b. You can delete only yourself from a conference. You cannot delete any other parties.

c. Starting in release 7.6, the subtype `Reject` no longer requires the `SupervisedRoute = 1 Extension` to clear the call, because T-Server intelligently clears the call in the best manner for the switch.

d. The CSTA III `GenerateDigits` service request is acknowledged immediately by CAP, and no events follow when the digits are actually sent. Therefore, T-Server generates `EventDTMFSent` as soon as the request is acknowledged, not when generation of digits is complete. T-Server client applications should work out the time required for service completion based on the digits' string length and tone/pulse duration.

e. Two subtypes are supported by `EventLocationInfo`: `LocationMonitorCanceled` and `InfoAllLocationsMonitor-Canceled`.

f. All T-Servers support NAT/C requests with `AttributeHomeLocation,` provided that this attribute identifies a network location that is capable of processing such requests.

Support for Agent Work Modes

Table 17 indicates the types of agent work modes that T-Server for Siemens HiPath 4000 CSTA III supports.

Table 17: Supported Agent Work Modes

Agent Work Mode Type	Feature Request	Supported
AgentWorkModeUnknown	TAgentLogin TAgentSetReady TAgentSetNotReady	Y
AgentAfterCallWork	TAgentSetNotReady	Y

Use of the Extensions Attribute

The T-Server for the Siemens HiPath 4000 switch supports the use of the `Extensions` attribute as documented in the *Genesys Events and Models Reference Manual* and the *Voice Platform SDK 8.x .NET (or Java) API Reference.*

Additionally, the `Extensions` described in Table 18 are also supported.

Table 18: Use of the Extensions Attribute

Extension		Used In	Description
Key	**Type**		
NO_ANSWER_TIMEOUT	string	TRouteCall	If set, the value of this key overrides any value set in any of the following configuration options for the current call: • `no-answer-timeout` • `agent-no-answer-timeout` • `extn-no-answer-timeout` • `posn-no-answer-timeout`
NO_ANSWER_ACTION	string	TRouteCall	If set, the value of this key overrides any value set in any of the following configuration options for the current call: • `no-answer-action` • `agent-no-answer-action`
NO_ANSWER_OVERFLOW	comma-separated list	TRouteCall	If set, the value of this key overrides any value set in any of the following configuration options for the current call: • `no-answer-overflow` • `agent-no-answer-overflow` • `extn-no-answer-overflow` • `posn-no-answer-overflow`
SUPERVISED_ROUTE	string	TRouteCall	Overrides the value of the configuration option, `supervised-route-timeout`, for individual calls.

Table 18: Use of the Extensions Attribute (Continued)

Extension		Used In	Description
Key	**Type**		
GCTI_CSTA_ACCOUNT_INFO GCTI_CSTA_AUTH_CODE	string	EventPrivateEvent TMakeCall TMakePredictiveCall TSingleStepTransfer TInitiateTransfer TInitiateConference TMuteTransfer	Reports or provides Account Information and Authorization Code to/from relevant CSTA III events and services.
GCTI_AUTO_ORIGINATE	integer string	TMakeCall	Specifies whether to ring the phone before proceeding with the call set-up. A value of `0` (zero) disables this feature, and therefore, means that the phone is rung. Any other integer makes T-Server attempt to auto-originate the call. Cannot be used with analog devices.
origination	integer	TSetDNDOn TSetDNDOff	Specifies the origination of calls that have to be barred: `0`—Default `1`—Internal `2`—Inbound `3`—Both internal and inbound **Note:** CAP 1.0 does not support this parameter.
caller-1, caller-2...	string	TSetDNDOn TSetDNDOff	Each `Extensions` attribute represents a call number, calls from which are to be barred. **Note:** CAP 1.0 does not support this parameter.
device	string	TSetMessageWaitingOn TSetMessageWaitingOff	Parameter `deviceforMessage` for CSTA `setMessageWaitingIndicator` operation.
rotary	integer	TSendDTMF	Selects Rotary Digits mode if the `Extensions` attribute is not `0` (zero). **Note:** CAP 1.0 does not support this parameter.

Table 18: Use of the Extensions Attribute (Continued)

Extension		Used In	Description
Key	**Type**		
tone_duration	integer	TSendDTMF	Duration of the DTMF tone, in milliseconds. Not applicable to rotary pulse.
pulse_rate	integer	TSendDTMF	Rotary pulse rate, in pulses per second. Not applicable to DTMF.
pause_duration	integer	TSendDTMF	Duration of the pauses between digits (interdigit delay).
ConvertOtherDN	string	See "Support for Smart OtherDN Handling" on page 156.	A value of 0 disables all conversions for the call. A value of 1 forces the relevant conversion for the call.
SwitchSpecificType	string	TRegisterAddress	Defines the switch-specific type of a DN that is not configured in Configuration Manager.
EmulateLogin	string	TAgentLogin	If set to a value of yes, T-Server performs an emulated login. If set to a no, T-Server attempt a real login.
EmulateLogin	string	EventAgentLogin EventAddressInfo EventRegistered	A value of yes indicates that the T-Server has performed an emulated login.
WrapUpTime	integer	TAgentLogin	Specifies the amount of emulated wrap-up time (in seconds) allocated to this agent at the end of a business call. This value is effective for the duration of this login's agent session. It can be overridden by the value in the WrapUpTime Extensions attribute in TAgentNotReady.
WrapUpTime	integer	TAgentNotReady	Specifies the amount of emulated wrap-up time (in seconds) allocated to this agent at the end of a business call. This value is effective only for the lifespan of this request.

Table 18: Use of the Extensions Attribute (Continued)

Extension		Used In	Description
Key	**Type**		
BusinessCallType	string or integer	TMakeCall TInitiateTransfer TMuteTransfer TInitateConference TMakePredictiveCall TAnswerCall TRouteCall	Specifies the call business type to be used by TServer for the new call or the answering party. Valid values are: `0`/`private`—Private call `1`/`business`—Business call `2`/`work`—Work-related call
AgentLogoutOnUnregister	string	TAgentLogin TRegisterAddress	Specifies whether the T-Server performs an automatic logout of an agent whenever their client application unregisters its DN from the T-Server. `true`—the T-Server will logout emulated and native agents on unregister `false`—the T-Server will not logout emulated or native agents on unregister `emu-only`—the T-Server will logout emulated agents only on unregister.
AssociateClientWithLogin	boolean	TAgentLogin TRegisterAddress	Specifies whether the client should be associated with the agent session.
AssociateClientWithLogin	boolean	EventAgentLogin EventRegistered EventPrivateInfo	Specifies that the client has been associated with the agent session.
AgentEmuLoginOnCall	boolean	TAgentLogin TAgentLogout	Specifies whether the T-Server allows an emulated agent login or logout from a device where there is a call in progress.
LegalGuardTime	integer	TAgentLogin	Specifies the amount of emulated legal guard time allocated to an agent at the end of a business call.

Table 18: Use of the Extensions Attribute (Continued)

Extension		Used In	Description
Key	**Type**		
SyncEmuACW	integer	TAgentLogin	Specifies whether the T-Server synchronizes emulated ACW and/or legal guard with the switch for native agents.
ReleasingParty	string	EventReleased EventAbandoned	Identifies which party was the initiator of the call release. Possible values are: 1—Local 2—Remote 3—Unknown
LinkLoad	integer	EventRouteRequest	A value of 1—High indicates that T-Server is in a high watermark condition. The feature is disabled if the value of the `use-link-bandwidth` option is set to `0` (zero). Possible values are: `0`—OK 1—High
T-Server Common Part Extensions			
sdn-licenses-in-use	integer	EventServerInfo	Specifies how many SDN licenses are currently in use.
sdn-licenses-available	integer		Specifies how many SDN licenses are currently available.

Private Services and Events

Table 19 describes private services and events.

Table 19: Private Services and Events

Function	Switch Function	Synopsis	Description
PrivateEvent AccountInfo(1)	CallInformationEvent	Account Code or Authorization Set	`CallInformationEvent` received from the switch. `Extensions` attributes `GCTI_CSTA_ACCOUNT_INFO` and `GCTI_CSTA_AUTH_CODE` contain the relevant information.
DialDigits(0, 516)	Dial Digits	Overlap dialing	Invokes switch function Dial Digits for overlap (partial number) dialing. May be used to invoke function codes such as call monitoring. An originating call has to be initiated beforehand by lifting a handset or dialing partial number using the Make Call function with Auto-Originate. The digits to dial have to be passed with the request as `Extensions` attribute `digits`.
SetDisplay(1)	Set Display	Display text	Displays text on the telephone set display for a few seconds. The text to display has to be provided with this request in the `Extensions` attribute `text`.
PrivateEvent Ringback (500)		Reports ringback	Reports ringback of a held call. The Genesys call model does not allow state transition from `Held` to `Ringing`, so ringback is reported using a private event.
PrivateEvent AccountCode (501)		Reports an account code	May report an account code reported by the switch, if the configuration option, `accode-privateservice`, is enabled. The code is reported as an `Extensions` attribute under the key name `AccountCode`.

Table 19: Private Services and Events (Continued)

Function	Switch Function	Synopsis	Description
RequestSet BusinessCall	Service Number (700)		Sets the business call type of the associated call to `business`.
	ThisDN = Agent DN		DN of agent connected to call—the agent is also set to type `business` (but there is no change to current NAS or ACW settings).
	`Extensions` key = AttributeConnID		Connection ID of the call.
EventSet BusinessCall	Event Number (510)		Sent in response to successful `TSetBusinessCall`.
	ThisDN = Agent DN		DN of agent connected to call
	Attribute = AttributeConnID		Connection ID of the call.

User Data Keys

The T-Server for the Siemens HiPath 4000 switch supports the use of the user data keys as presented in Table 20.

Table 20: User Data Keys

Extension		Used In	Description
Key	**Type**		
UU_DATA GCTI_CSTA_CORRELATOR	string integer binary	TMakeCall TMakePredictiveCall TSingleStepTransfer TInitiateTransfer TInitiateConference TMuteTransfer All call events	If this key is present in either the T-Library request or in the user data attached to the call, T-Server passes the attached data attached on to the CAP with a corresponding function request. This enables the switch to do one of the following: • Pass the UU data to the remote switch using trunk signaling • Attach the Correlator data to the local call The remote T-Server attaches the UU data to the incoming call as binary, unless the configuration option, `uui-as-text`, is enabled. Data type information is not propagated. Integer values are propagated as a formatted decimal ASCII string.
WrapUpTime	integer	Call-related requests	Specifies the amount of emulated wrap-up time allocated to all agents at the end of the business call.
LegalGuardTime	integer	Call-related requests	Specifies the amount of emulated Legal Guard time allocated to the agent at the end of a business call.

T-Server Error Messages

Table 21 presents the complete set of error messages that T-Server distributes in `EventError`.

Table 21: T-Server Error Messages

Code	Description
T-Server-Defined Errors	
40	No additional licenses
41	Client has not registered for DN
42	Resource is already seized
43	Object is already in requested state
50	Unknown error
51	Unsupported operation
52	Internal error
53	Invalid attribute
54	Switch not connected
55	Incorrect protocol version
56	Invalid connection ID
57	Timeout expired
58	Out of service
59	DN not configured in Configuration Manager
71	Invalid called DN
96	Cannot complete conference
97	Cannot initiate transfer
98	Cannot complete transfer
99	Cannot retrieve original signal
100	Unknown cause
105	Information element missing

Table 21: T-Server Error Messages (Continued)

Code	Description
109	Link down or bad link specified
111	Too many outstanding requests
118	Requested service unavailable
119	Invalid password
123	DN for association does not exist
128	Invalid DN type for DN registration
132	Invalid link ID
133	Link already established
147	No link responding
148	Facility already enabled
149	Facility already disabled
164	Invalid system command
166	Resource unavailable
168	Invalid origination address
169	Invalid destination request
171	Switch cannot retrieve call
172	Switch cannot complete transfer
173	Switch cannot complete conference
174	Cannot complete answer call
175	Switch cannot release call
177	Target DN invalid
179	Feature could not be invoked
185	Set is in invalid state for invocation
186	Set is in target state
191	Agent ID IE is missing or invalid

Table 21: T-Server Error Messages (Continued)

Code	Description
192	Agent ID is invalid
202	Another application has acquired the resource
220	No internal resource available
221	Service not available on device
223	Invalid parameter passed to function
231	DN is busy
236	Timeout performing operation
256	API restricted from monitor
259	Invalid password
263	Must be logged on to use this command
302	Invalid DTMF string
323	No answer at DN
380	Interdigit timeout occurred
402	Invalid route address
452	No trunk for outbound calls
477	Invalid Call ID
496	Invalid call state
503	Network failed to deliver outbound call
504	Network rejected outbound call
527	Agent ID already in use
627	Unknown information element detected
700	Invalid login request
701	Invalid logout request
704	Invalid make call request
705	Route request is invalid

Table 21: T-Server Error Messages (Continued)

Code	Description
706	Invalid mute transfer request
708	Invalid initiate transfer request
710	Invalid complete transfer request
711	Invalid retrieve request
712	Cannot find route point in call
717	Agent not logged in
714	Invalid Call_ID
742	Invalid DN
749	Agent already logged in
750	Extension in use
804	Invalid Call_ID
ISCC (Inter Server Call Control) Errors	
1000	Invalid or missing server location name
1001	Remote server disconnected
1002	Remote server has not processed request
1004	Remote link disconnected
1005	External routing feature not initiated
1006	No free CDNs
1007	No access number
1008	TCS feature is not initiated
1009	Invalid route type
1010	Invalid request
1011	No primary server was found on location
1012	Location is invalid or missing
1013	Timeout performing requested transaction

Table 21: T-Server Error Messages (Continued)

Code	Description
1014	No configured access resources are found
1015	No registered access resources are found
1016	Client is not authorized
1017	Invalid transaction type
1018	Invalid or missing transaction data
1019	Invalid location query request
1020	Invalid origin location
Operational Errors	
1110	Duplicate invocation (packet missed)
1111	Unrecognized operation (packet transmission error)
1112	Mistyped argument (packet transmission error)
1113	Resource limitation
1114	Initiator releasing
1115	Unrecognized link ID
1116	Unexpected linked response
1117	Unexpected child operation
1120	Unrecognized invocation
1121	Result response unexpected
1122	Mistyped result
1130	Unrecognized invocation
1131	Unexpected error response
1132	Unrecognized error
1133	Unexpected error
1134	Mistyped parameter
1135	ROLM switch RouteSelect failed

Table 21: T-Server Error Messages (Continued)

Code	Description
1140	Generic
1141	Request incompatible with object
1142	Value is out of range
1143	Object not known
1144	Invalid calling device
1145	Invalid called device
1146	Invalid forwarding destination
1147	Request caused privilege violation on device
1148	Request caused privilege violation on called device
1149	Request caused privilege violation on calling device
1150	Invalid call identifier
1151	Invalid device identifier
1152	Invalid CSTA connection identifier
1153	Invalid call destination
1154	Invalid feature requested
1155	Invalid allocation state
1156	Invalid cross-reference identifier
1157	Invalid object type provided in the request
1158	Security violation
State-Incompatibility Errors	
1160	Generic
1161	Invalid object state
1162	Invalid connection ID
1163	No active call
1164	No held call

Table 21: T-Server Error Messages (Continued)

Code	Description
1165	No call to clear
1166	No connection to clear
1167	No call to answer
1168	No call to complete
System Resource–Availability Errors	
1170	Generic
1171	Service is busy
1172	Resource is busy
1173	Resource is out of service
1174	Network busy
1175	Network out of service
1176	Overall monitor limit exceeded
1177	Conference member limit exceeded
Subscribed Resource–Availability Errors	
1180	Generic
1181	Object monitor limit exceeded
1182	Trunk limit exceeded
1183	Outstanding request limit exceeded
Performance-Management Errors	
291	Other telephony operation in prog
1185	Generic
1186	Performance limit exceeded
Security Errors	
1190	Unspecified
1191	Sequence number violated

Table 21: T-Server Error Messages (Continued)

Code	Description
1192	Timestamp violated
1193	PAC violated
1194	Seal violated
1700	The agent is already reserved by another server
Switch-Routing Errors	
1195	Routing timer or delay ringback timer expired
1196	Caller abandoned call
1197	Call successfully routed
1198	Aborted because of RouteSelect resource problem
Network Attended Transfer/Conference Errors	
1901	Unexpected request `TNetworkConsult`
1902	Unexpected request `TNetworkAlternate`
1903	Unexpected request `TNetworkReconnect`
1904	Unexpected request `TNetworkTransfer`
1905	Unexpected request `TNetworkMerge`
1906	Unexpected request `TNetworkSingleStepTransfer`
1907	Unexpected request `TNetworkPrivateService`
1908	Unexpected message

Integration Notes

URS In a single-step transfer from an analog device to an agent, the PBX never sends a `ConnectionCleared` event for the analog device, which has to be physically hung up. This means that using URS and an IVR treatment with the value of the configuration option `transfer_to_agent` set to `true`, leaves the analog device stuck.

Note: If the single-step transfer is made to a queuing device, then the switch correctly sends an `ConnectionCleared` event.

VTO   Chained consultation calls are not supported on analog lines. Also single-step transfers of the destination of a consultation call from an analog line is not supported as this affects VTO scenarios where a consultation call is made to a Routing Point then routed to a VTO port.

If connected to a HiPath 4000 switch, VTServer cannot transfer a consultation call by a two-step or a single-step transfer.

So, consultation calls to VTO ports must be transferred before VTO transfers the call.

![Genesys]

Chapter

8

Common Configuration Options

Unless otherwise noted, the common configuration options that this chapter describes are common to all Genesys server applications and applicable to any Framework server component. This chapter includes the following sections:

Note: Some server applications also support log options that are unique to them. For descriptions of a particular application's unique log options, refer to the chapter/document about that application.

Setting Configuration Options

Unless specified otherwise, set common configuration options in the `Options` of the `Application` object, using one of the following navigation paths:

- In Genesys Administrator—`Application` object > `Options` tab > `Advanced View (Options)`

- In Configuration Manager—`Application` object > `Properties` dialog box > `Options` tab

Warning! Configuration section names, configuration option names, and predefined option values are case-sensitive. Type them in Genesys Administrator or Configuration Manager exactly as they are documented in this chapter.

Mandatory Options

You do not have to configure any common options to start Server applications.

log Section

This section must be called `log`.

verbose

Default Value: `all`
Valid Values:

`all`   All log events (that is, log events of the Standard, Trace, Interaction, and Debug levels) are generated.

`debug`   The same as `all`.

`trace`   Log events of the Trace level and higher (that is, log events of the Standard, Interaction, and Trace levels) are generated, but log events of the Debug level are not generated.

`interaction`   Log events of the Interaction level and higher (that is, log events of the Standard and Interaction levels) are generated, but log events of the Trace and Debug levels are not generated.

`standard`   Log events of the Standard level are generated, but log events of the Interaction, Trace, and Debug levels are not generated.

`none`   No output is produced.

Changes Take Effect: Immediately

Determines whether a log output is created. If it is, specifies the minimum level of log events generated. The log events levels, starting with the highest priority level, are Standard, Interaction, Trace, and Debug. See also "Log Output Options" on .

Note: For definitions of the Standard, Interaction, Trace, and Debug log levels, refer to the *Framework 8.0 Management Layer User's Guide, Framework 8.0 Genesys Administrator Help,* or to *Framework 8.0 Solution Control Interface Help.*

buffering

Default Value: `true`

Valid Values:

`true`	Enables buffering.
`false`	Disables buffering.

Changes Take Effect: Immediately

Turns on/off operating system file buffering. The option is applicable only to the `stderr` and `stdout` output (see page 202). Setting this option to `true` increases the output performance.

Note: When buffering is enabled, there might be a delay before log messages appear at the console.

---

segment

Default Value: `false`
Valid Values:

`false`	No segmentation is allowed.
`<number> KB` or `<number>`	Sets the maximum segment size, in kilobytes. The minimum segment size is `100 KB`.
`<number> MB`	Sets the maximum segment size, in megabytes.
`<number> hr`	Sets the number of hours for the segment to stay open. The minimum number is 1 hour.

Changes Take Effect: Immediately

Specifies whether there is a segmentation limit for a log file. If there is, sets the mode of measurement, along with the maximum size. If the current log segment exceeds the size set by this option, the file is closed and a new one is created. This option is ignored if log output is not configured to be sent to a log file.

expire

Default Value: `false`
Valid Values:

`false`	No expiration; all generated segments are stored.
`<number> file` or `<number>`	Sets the maximum number of log files to store. Specify a number from 1–`1000`.
`<number> day`	Sets the maximum number of days before log files are deleted. Specify a number from 1–`100`.

Changes Take Effect: Immediately

Determines whether log files expire. If they do, sets the measurement for determining when they expire, along with the maximum number of files (segments) or days before the files are removed. This option is ignored if log output is not configured to be sent to a log file.

Note: If an option's value is set incorrectly—out of the range of valid values— it will be automatically reset to `10`.

---

keep-startup-file

Default Value: `false`
Valid Values:

`false`	No startup segment of the log is kept.
`true`	A startup segment of the log is kept. The size of the segment equals the value of the `segment` option.
`<number> KB`	Sets the maximum size, in kilobytes, for a startup segment of the log.
`<number> MB`	Sets the maximum size, in megabytes, for a startup segment of the log.

Changes Take Effect: After restart

Specifies whether a startup segment of the log, containing the initial T-Server configuration, is to be kept. If it is, this option can be set to `true` or to a specific size. If set to `true`, the size of the initial segment will be equal to the size of the regular log segment defined by the `segment` option. The value of this option will be ignored if segmentation is turned off (that is, if the `segment` option set to `false`).

Note: This option applies only to T-Servers.

messagefile

Default Value: As specified by a particular application
Valid Values: `<string>.lms` (message file name)
Changes Take Effect: Immediately, if an application cannot find its `*.lms` file at startup

Specifies the file name for application-specific log events. The name must be valid for the operating system on which the application is running. The option value can also contain the absolute path to the application-specific `*.lms` file. Otherwise, an application looks for the file in its working directory.

Warning! An application that does not find its `*.lms` file at startup cannot generate application-specific log events and send them to Message Server.

message_format

Default Value: `short`
Valid Values:

`short`	An application uses compressed headers when writing log records in its log file.
`full`	An application uses complete headers when writing log records in its log file.

Changes Take Effect: Immediately

Specifies the format of log record headers that an application uses when writing logs in the log file. Using compressed log record headers improves application performance and reduces the log file's size.

With the value set to `short`:

*   A header of the log file or the log file segment contains information about the application (such as the application name, application type, host type, and time zone), whereas single log records within the file or segment omit this information.

*   A log message priority is abbreviated to `Std`, `Int`, `Trc`, or `Dbg`, for Standard, Interaction, Trace, or Debug messages, respectively.

*   The message ID does not contain the prefix `GCTI` or the application type `ID`.

A log record in the full format looks like this:

`2002-05-07T18:11:38.196 Standard localhost cfg_dbserver GCTI-00-05060 Application started`

A log record in the short format looks like this:

`2002-05-07T18:15:33.952 Std 05060 Application started`

Note: Whether the full or short format is used, time is printed in the format specified by the `time_format` option.

---

time_convert

Default Value: `Local`
Valid Values:

`local`   The time of log record generation is expressed as a local time, based on the time zone and any seasonal adjustments. Time zone information of the application's host computer is used.

`utc`   The time of log record generation is expressed as Coordinated Universal Time (UTC).

Changes Take Effect: Immediately

Specifies the system in which an application calculates the log record time when generating a log file. The time is converted from the time in seconds since the Epoch (00:00:00 UTC, January 1, 1970).

time_format

Default Value: `time`
Valid Values:

`time`   The time string is formatted according to the `HH:MM:SS.sss` (hours, minutes, seconds, and milliseconds) format.

`locale`   The time string is formatted according to the system's locale.

`ISO8601`   The date in the time string is formatted according to the ISO 8601 format. Fractional seconds are given in milliseconds.

Changes Take Effect: Immediately

Specifies how to represent, in a log file, the time when an application generates log records.

A log record's time field in the ISO 8601 format looks like this:

`2001-07-24T04:58:10.123`

print-attributes

Default Value: `false`
Valid Values:

`true`	Attaches extended attributes, if any exist, to a log event sent to log output.
`false`	Does not attach extended attributes to a log event sent to log output.

Changes Take Effect: Immediately

Specifies whether the application attaches extended attributes, if any exist, to a log event that it sends to log output. Typically, log events of the Interaction log level and Audit-related log events contain extended attributes. Setting this option to `true` enables audit capabilities, but negatively affects performance. Genesys recommends enabling this option for Solution Control Server and Configuration Server when using audit tracking. For other applications, refer to *Genesys 8.0 Combined Log Events Help* to find out whether an application generates Interaction-level and Audit-related log events; if it does, enable the option only when testing new interaction scenarios.

check-point

Default Value: `1`
Valid Values: `0`–`24`
Changes Take Effect: Immediately

Specifies, in hours, how often the application generates a `check point` log event, to divide the log into sections of equal time. By default, the application generates this log event every hour. Setting the option to `0` prevents the generation of `check-point` events.

memory

Default Value: No default value
Valid Values: `<string>` (memory file name)
Changes Take Effect: Immediately

Specifies the name of the file to which the application regularly prints a snapshot of the memory output, if it is configured to do this (see "Log Output Options" on page 202). The new snapshot overwrites the previously written data. If the application terminates abnormally, this file will contain the latest

log messages. Memory output is not recommended for processors with a CPU frequency lower than 600 MHz.

Note: If the file specified as the `memory` file is located on a network drive, an application does not create a snapshot file (with the extension `*.memory.log`).

---

memory-storage-size

Default Value: `2 MB`
Valid Values:

`<number>KB` or `<number>`	The size of the memory output, in kilobytes. The minimum value is `128 KB`.
`<number> MB`	The size of the memory output, in megabytes. The maximum value is `64 MB`.

Changes Take Effect: When memory output is created

Specifies the buffer size for log output to the memory, if configured. See also "Log Output Options" on page 202.

spool

Default Value: The application's working directory
Valid Values: `<path>`   (the folder, with the full path to it)
Changes Take Effect: Immediately

Specifies the folder, including full path to it, in which an application creates temporary files related to network log output. If you change the option value while the application is running, the change does not affect the currently open network output.

compatible-output-priority

Default Value: `false`
Valid Values:

`true`	The log of the level specified by "Log Output Options" is sent to the specified output.
`false`	The log of the level specified by "Log Output Options" and higher levels is sent to the specified output.

Changes Take Effect: Immediately

Specifies whether the application uses 6.x output logic. For example, you configure the following options in the `log` section for a 6.x application and for a 7.x application:

```
[log]
verbose = all
debug = file1
standard = file2
```

The log file content of a 6.x application is as follows:

- `file1` contains Debug messages only.
- `file2` contains Standard messages only.

The log file content of a 7.x application is as follows:

- `file1` contains Debug, Trace, Interaction, and Standard messages.
- `file2` contains Standard messages only.

If you set `compatible-output-priority` to `true` in the 7.x application, its log file content will be the same as for the 6.x application.

Warning! Genesys does not recommend changing the default value of this option unless you have specific reasons to use the 6.x log output logic—that is, to mimic the output priority as implemented in releases 6.x. Setting this option to `true` affects log consistency.

Log Output Options

To configure log outputs, set log level options (`all`, `alarm`, `standard`, `interaction`, `trace`, and/or `debug`) to the desired types of log output (`stdout`, `stderr`, `network`, `memory`, and/or `[filename]`, for log file output).

You can use:

- One log level option to specify different log outputs.
- One log output type for different log levels.
- Several log output types simultaneously, to log events of the same or different log levels.

You must separate the log output types by a comma when you are configuring more than one output for the same log level. See "Examples" on page 206.

Warnings! • If you direct log output to a file on the network drive, an application does not create a snapshot log file (with the extension `*.snapshot.log`) in case it terminates abnormally.
- Directing log output to the console (by using the `stdout` or `stderr` settings) can affect application performance. Avoid using these log output settings in a production environment.

Note: The log output options are activated according to the setting of the `verbose` configuration option.

---

all

Default Value: No default value

Valid Values (log output types):

stdout	Log events are sent to the Standard output (stdout).
stderr	Log events are sent to the Standard error output (stderr).
network	Log events are sent to Message Server, which can reside anywhere on the network. Message Server stores the log events in the Log Database.
	Setting the all log level option to the network output enables an application to send log events of the Standard, Interaction, and Trace levels to Message Server. Debug-level log events are neither sent to Message Server nor stored in the Log Database.
memory	Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance.
[filename]	Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory.

Changes Take Effect: Immediately

Specifies the outputs to which an application sends all log events. The log output types must be separated by a comma when more than one output is configured. For example:

```
all = stdout, logfile
```

> **Note:** To ease the troubleshooting process, consider using unique names for log files that different applications generate.

alarm

Default Value: No default value
Valid Values (log output types):

stdout	Log events are sent to the Standard output (stdout).
stderr	Log events are sent to the Standard error output (stderr).
network	Log events are sent to Message Server, which resides anywhere on the network, and Message Server stores the log events in the Log Database.
memory	Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance.
[filename]	Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory.

Changes Take Effect: Immediately

Specifies the outputs to which an application sends the log events of the Alarm level. The log output types must be separated by a comma when more than one output is configured. For example:

```
standard = stderr, network
```

standard

Default Value: No default value
Valid Values (log output types):

stdout	Log events are sent to the Standard output (stdout).
stderr	Log events are sent to the Standard error output (stderr).
network	Log events are sent to Message Server, which can reside anywhere on the network. Message Server stores the log events in the Log Database.
memory	Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance.
[filename]	Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory.

Changes Take Effect: Immediately

Specifies the outputs to which an application sends the log events of the Standard level. The log output types must be separated by a comma when more than one output is configured. For example:

```
standard = stderr, network
```

interaction

Default Value: No default value
Valid Values (log output types):

stdout	Log events are sent to the Standard output (stdout).
stderr	Log events are sent to the Standard error output (stderr).
network	Log events are sent to Message Server, which can reside anywhere on the network. Message Server stores the log events in the Log Database.
memory	Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance.
[filename]	Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory.

Changes Take Effect: Immediately

Specifies the outputs to which an application sends the log events of the Interaction level and higher (that is, log events of the Standard and Interaction levels). The log outputs must be separated by a comma when more than one output is configured. For example:

```
interaction = stderr, network
```

trace

Default Value: No default value

Valid Values (log output types):

stdout	Log events are sent to the Standard output (stdout).
stderr	Log events are sent to the Standard error output (stderr).
network	Log events are sent to Message Server, which can reside anywhere on the network. Message Server stores the log events in the Log Database.
memory	Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance.
[filename]	Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory.

Changes Take Effect: Immediately

Specifies the outputs to which an application sends the log events of the Trace level and higher (that is, log events of the Standard, Interaction, and Trace levels). The log outputs must be separated by a comma when more than one output is configured. For example:

```
trace = stderr, network
```

debug

Default Value: No default value
Valid Values (log output types):

stdout	Log events are sent to the Standard output (stdout).
stderr	Log events are sent to the Standard error output (stderr).
memory	Log events are sent to the memory output on the local disk. This is the safest output in terms of the application performance.
[filename]	Log events are stored in a file with the specified name. If a path is not specified, the file is created in the application's working directory.

Changes Take Effect: Immediately

Specifies the outputs to which an application sends the log events of the Debug level and higher (that is, log events of the Standard, Interaction, Trace, and Debug levels). The log output types must be separated by a comma when more than one output is configured—for example:

```
debug = stderr, /usr/local/genesys/logfile
```

Note: Debug-level log events are never sent to Message Server or stored in the Log Database.

Log File Extensions

You can use the following file extensions to identify log files that an application creates for various types of output:

- `*.log`—Assigned to log files when you configure output to a log file. For example, if you set `standard = confservlog` for Configuration Server, it prints log messages into a text file called `confservlog.<time_stamp>.log`.

- `*.qsp`—Assigned to temporary (spool) files when you configure output to the network but the network is temporarily unavailable. For example, if you set `standard = network` for Configuration Server, it prints log messages into a file called `confserv.<time_stamp>.qsp` during the time the network is not available.

- `*.snapshot.log`—Assigned to files that contain the output snapshot when you configure output to a log file. The file contains the last log messages that an application generates before it terminates abnormally. For example, if you set `standard = confservlog` for Configuration Server, it prints the last log message into a file called `confserv.<time_stamp>.snapshot.log` in case of failure.

  Note: Provide `*.snapshot.log` files to Genesys Technical Support when reporting a problem.

- `*.memory.log`—Assigned to log files that contain the memory output snapshot when you configure output to memory and redirect the most recent memory output to a file. For example, if you set `standard = memory` and `memory = confserv` for Configuration Server, it prints the latest memory output to a file called `confserv.<time_stamp>.memory.log`.

Examples

This section presents examples of a `log` section that you might configure for an application when that application is operating in production mode and in two lab modes, debugging and troubleshooting.

Production Mode Log Section

```
[log]
verbose = standard
standard = network, logfile
```

With this configuration, an application only generates the log events of the `Standard` level and sends them to Message Server, and to a file named `logfile`, which the application creates in its working directory. Genesys recommends that you use this or a similar configuration in a production environment.

> **Warning!**   Directing log output to the console (by using the `stdout` or `stderr` settings) can affect application performance. Avoid using these log output settings in a production environment.

Lab Mode Log Section

```
[log]
verbose = all
all = stdout, /usr/local/genesys/logfile
trace = network
```

With this configuration, an application generates log events of the `Standard`, `Interaction`, `Trace`, and `Debug` levels, and sends them to the standard output and to a file named `logfile`, which the application creates in the `/usr/local/genesys/` directory. In addition, the application sends log events of the `Standard`, `Interaction`, and `Trace` levels to Message Server. Use this configuration to test new interaction scenarios in a lab environment.

Failure-Troubleshooting Log Section

```
[log]
verbose = all
standard = network
all = memory
memory = logfile
memory-storage-size = 32 MB
```

With this configuration, an application generates log events of the `Standard` level and sends them to Message Server. It also generates log events of the `Standard`, `Interaction`, `Trace`, and `Debug` levels, and sends them to the memory output. The most current log is stored to a file named `logfile`, which the application creates in its working directory. Increased memory storage allows an application to save more of the log information generated before a failure.

> **Note:**   If you are running an application on UNIX, and you do not specify any files in which to store the memory output snapshot, a core file that the application produces before terminating contains the most current application log. Provide the application's core file to Genesys Technical Support when reporting a problem.

Debug Log Options

The options in this section enable you to generate `Debug` logs containing information about specific operations of an application.

x-conn-debug-open

Default Value: 0
Valid Values:

0	Log records are not generated.
1	Log records are generated.

Changes Take Effect: After restart

Generates Debug log records about "open connection" operations of the application.

Warning! Use this option only when requested by Genesys Technical Support.

---

x-conn-debug-select

Default Value: 0
Valid Values:

0	Log records are not generated.
1	Log records are generated.

Changes Take Effect: After restart

Generates Debug log records about "socket select" operations of the application.

Warning! Use this option only when requested by Genesys Technical Support.

---

x-conn-debug-timers

Default Value: 0
Valid Values:

0	Log records are not generated.
1	Log records are generated.

Changes Take Effect: After restart

Generates Debug log records about the timer creation and deletion operations of the application.

Warning! Use this option only when requested by Genesys Technical Support.

---

x-conn-debug-write

Default Value: 0
Valid Values:

0	Log records are not generated.
1	Log records are generated.

Changes Take Effect: After restart

Generates `Debug` log records about "write" operations of the application.

Warning!   Use this option only when requested by Genesys Technical
Support.

---

x-conn-debug-security

Default Value: `0`
Valid Values:

0   Log records are not generated.
1   Log records are generated.

Changes Take Effect: After restart

Generates `Debug` log records about security-related operations, such as
Transport Layer Security and security certificates.

Warning!   Use this option only when requested by Genesys Technical
Support.

---

x-conn-debug-api

Default Value: `0`
Valid Values:

0   Log records are not generated.
1   Log records are generated.

Changes Take Effect: After restart

Generates `Debug` log records about connection library function calls.

Warning!   Use this option only when requested by Genesys Technical
Support.

---

x-conn-debug-dns

Default Value: `0`
Valid Values:

0   Log records are not generated.
1   Log records are generated.

Changes Take Effect: After restart

Generates `Debug` log records about DNS operations.

Warning!   Use this option only when requested by Genesys Technical
Support.

---

x-conn-debug-all

Default Value: `0`
Valid Values:

`0`	Log records are not generated.
`1`	Log records are generated.

Changes Take Effect: After restart

Generates `Debug` log records about open connection, socket select, timer creation and deletion, write, security-related, and DNS operations, and connection library function calls. This option is the same as enabling or disabling all of the previous `x-conn-debug-<op type>` options.

Warning! Use this option only when requested by Genesys Technical Support.

---

log-extended Section

This section must be called `log-extended`.

level-reassign-<eventID>

Default Value: Default value of log event `<eventID>`
Valid Values:

`alarm`	The log level of log event `<eventID>` is set to `Alarm`.
`standard`	The log level of log event `<eventID>` is set to `Standard`.
`interaction`	The log level of log event `<eventID>` is set to `Interaction`.
`trace`	The log level of log event `<eventID>` is set to `Trace`.
`debug`	The log level of log event `<eventID>` is set to `Debug`.
`none`	Log event `<eventID>` is not recorded in a log.

Changes Take Effect: Immediately

Specifies a log level for log event `<eventID>` that is different than its default level, or disables log event `<eventID>` completely. If no value is specified, the log event retains its default level. This option is useful when you want to customize the log level for selected log events.

These options can be deactivated with the option `level-reassign-disable`.

Warning! Use caution when making these changes in a production environment.

Depending on the log configuration, changing the log level to a higher priority may cause the log event to be logged more often or to a greater number of outputs. This could affect system performance.

Likewise, changing the log level to a lower priority may cause the log event to be not logged at all, or to be not logged to specific outputs, thereby losing important information. The same applies to any alarms associated with that log event.

In addition to the preceding warning, take note of the following:

• Logs can be customized only by release 7.6 or later applications.

• When the log level of a log event is changed to any level except `none`, it is subject to the other settings in the `[log]` section at its new level. If set to `none`, it is not logged and is therefore not subject to any log configuration.

• Using this feature to change the log level of a log changes only its priority; it does not change how that log is treated by the system. For example, increasing the priority of a log to `Alarm` level does not mean that an alarm will be associated with it.

• Each application in a High Availability (HA) pair can define its own unique set of log customizations, but the two sets are not synchronized with each other. This can result in different log behavior depending on which application is currently in primary mode.

• This feature is not the same as a similar feature in Universal Routing Server (URS) release 7.2 or later. In this Framework feature, the priority of log events are customized. In the URS feature, the priority of debug messages only are customized. Refer to the *Universal Routing Reference Manual* for more information about the URS feature.

• You cannot customize any log event that is not in the unified log record format. Log events of the `Alarm`, `Standard`, `Interaction`, and `Trace` levels feature the same unified log record format.

Example

This is an example of using customized log level settings, subject to the following log configuration:

```
[log]
verbose=interaction
all=stderr
interaction=log_file
standard=network
```

Before the log levels of the log are changed:

- Log event 1020, with default level `standard,` is output to `stderr` and `log_file,` and sent to Message Server.
- Log event 2020, with default level `standard,` is output to `stderr` and `log_file,` and sent to Message Server.
- Log event 3020, with default level `trace,` is output to `stderr`.
- Log event 4020, with default level `debug,` is output to `stderr`.

Extended log configuration section:

```
[log-extended]
level-reassign-1020=none
level-reassign-2020=interaction
level-reassign-3020=interaction
level-reassign-4020=standard
```

After the log levels are changed:

- Log event 1020 is disabled and not logged.
- Log event 2020 is output to `stderr` and `log_file`.
- Log event 3020 is output to `stderr` and `log_file`.
- Log event 4020 is output to `stderr` and `log_file,` and sent to Message Server.

level-reassign-disable

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately

When this option is set to `true`, the original (default) log level of all log events in the `[log-extended]` section are restored. This option is useful when you want to use the default levels, but not delete the customization statements.

log-filter Section

The `log-filter` section contains configuration options used to define the default treatment of filtering data in log output. This section contains one configuration option, `default-filter-type`. Refer to the chapter "Hide Selected Data in Logs" in the *Genesys 8.x Security Deployment Guide* for complete information about this option.

log-filter-data Section

The `log-filter-data` section contains configuration options used to define the treatment of filtering data in log output on a key-by-key basis. This section contains one configuration option in the form of `<key name>`. Refer to the

chapter "Hide Selected Data in Logs" in the *Genesys 8.0 Security Deployment Guide* for complete information about this option.

security Section

The `security` section contains configuration options used to specify security elements for your system. In addition to other options that may be required by your application, this section contains the configuration option `disable-rbac`, which is used to enable or disable Role-Based Access Control for an application. Refer to the chapter "Role-Based Access Control" in the *Genesys 8.x Security Deployment Guide* for complete information about this option.

sml Section

This section must be called `sml`.

Options in this section are defined in the `Annex` of the `Application` object, as follows:

- in Genesys Administrator—`Application` object > `Options` tab > `Advanced View (Annex)`
- in Configuration Manager— `Application` object > `Properties` dialog box > `Annex` tab

---

Warning! Use the first three options in this section (`heartbeat-period`, `heartbeat-period-thread-class-<n>`, and `hangup-restart`) with great care, and only with those applications of which support for this functionality has been announced. Failure to use these options properly could result in unexpected behavior, from ignoring the options to an unexpected restart of the application.

---

heartbeat-period

Default Value: None
Valid Values:

`0`   This method of detecting an unresponsive application is not used by this application.

`3-604800`   Length of timeout, in seconds; equivalent to 3 seconds–7 days.

Changes Take Effect: Immediately

Specifies the maximum amount of time, in seconds, in which heartbeat messages are expected from an application. If Local Control Agent (LCA) does not receive a heartbeat message from the application within this period, it assumes the application is not responding and carries out corrective action.

This option can also be used to specify the maximum heartbeat interval for threads registered with class zero (0). This thread class is reserved for use by the Management Layer only.

If this option is not configured or is set to zero (`0`), heartbeat detection is not used by this application.

heartbeat-period-thread-class-<n>

Default Value: None
Valid Values:

| `0` | Value specified by `heartbeat-period` in application is used. |
| `3-604800` | Length of timeout, in seconds; equivalent to 3 seconds–7 days. |

Changes Take Effect: Immediately

Specifies the maximum amount of time, in seconds, in which heartbeat messages are expected from a thread of class <n> registered by an application. If a heartbeat message from the thread is not received within this period, the thread is assumed to be not responding, and therefore, the application is unable to provide service.

If this option is not configured or is set to zero (`0`), but the application has registered one or more threads of class <n>, the value specified by the value of `heartbeat-period` for the application will also be applied to these threads.

Refer to application-specific documentation to determine what thread classes, if any, are used.

hangup-restart

Default Value: `true`
Valid Values: `true`, `false`
Changes Take Effect: Immediately

If set to `true` (the default), specifies that LCA is to restart the unresponsive application immediately, without any further interaction from Solution Control Server.

If set to `false`, specifies that LCA is only to generate a notification that the application has stopped responding.

suspending-wait-timeout

Default Value: `10`
Valid Values: `5-600`
Changes Take Effect: Immediately

Specifies a timeout (in seconds) after the Stop Graceful command is issued to an application during which the status of the application should change to `Suspending` if the application supports graceful shutdown. If the status of the application does not change to `Suspending` before the timeout expires, it is assumed that the application does not support graceful shutdown, and it is stopped ungracefully.

Use this option if you are unsure whether the Application supports graceful shutdown.

Note: Genesys recommends that you do not set this option for any Management Layer component (Configuration Server, Message Server, Solution Control Server, or SNMP Master Agent) or any DB Server. These components by definition do not support graceful shutdown, so this option is not required.

---

common Section

This section must be called `common`.

enable-async-dns

Default Value: `off`
Valid Values:

`off`	Disables asynchronous processing of DNS requests.
`on`	Enables asynchronous processing of DNS requests.

Changes Take Effect: Immediately

Enables the asynchronous processing of DNS requests such as, for example, host-name resolution.

Warnings! • Use this option only when requested by Genesys Technical Support.
• Use this option only with T-Servers.

---

rebind-delay

Default Value: `10`
Valid Values: `0–600`
Changes Take Effect: After restart

Specifies the delay, in seconds, between socket-bind operations that are being executed by the server. Use this option if the server has not been able to successfully occupy a configured port.

Warning! Use this option only when requested by Genesys Technical Support.

Changes from 8.0 to 8.1

There are no changes in common configuration options between 8.0 and 8.1 releases.

![Genesys logo]

9

T-Server Common Configuration Options

This chapter describes the configuration options that are generally common to all T-Server types, with some exceptions noted. It contains the following sections:

T-Server also supports common log options described in Chapter 8, "Common Configuration Options," on .

Setting Configuration Options

Unless specified otherwise, set T-Server common configuration options in the `Options` of the `Application` object, using one of the following navigation paths:

- In Genesys Administrator—`Application` object > `Options` tab > `Advanced View (Options)`
- In Configuration Manager—`Application` object > `Properties` dialog box > `Options` tab

Mandatory Options

Except as noted for certain environments, the configuration of common options is not required for basic T-Server operation.

TServer Section

The `TServer` section contains the configuration options that are used to support the core features common to all T-Servers.

This section must be called `TServer`.

ani-distribution

Default Value: `inbound-calls-only`
Valid Values: `inbound-calls-only`, `all-calls`, `suppressed`
Changes Take Effect: Immediately

Controls the distribution of the ANI information in `TEvent` messages. When this option is set to `all-calls`, the `ANI` attribute will be reported for all calls for which it is available. When this option is set to `suppressed`, the `ANI` attribute will not be reported for any calls. When this option is set to `inbound-calls-only`, the `ANI` attribute will be reported for inbound calls only.

background-processing

Default Value: `true`
Valid Values: `true`, `false`
Changes Take Effect: Immediately

When set to `true`, T-Server processes all client requests in the background, giving higher priority to the rest of the messages. This ensures that it processes these messages without any significant delay.

With Background Processing functionality enabled, T-Server processes all switch messages immediately and waits until there are no switch messages before processing the message queue associated with T-Server client requests. T-Server reads all connection sockets immediately and places client requests in the input buffer, which prevents T-Server clients from disconnecting because of configured timeouts.

When T-Server processes client requests from the message queue, requests are processed in the order in which T-Server received them.

When set to `false`, T-Server processes multiple requests from one T-Server client before proceeding to the requests from another T-Server client, and so on.

background-timeout

Default Value: `60 msec`
Valid Values: See "Timeout Value Format" on
Changes Take Effect: Immediately

Specifies the time interval that T-Server waits before processing client requests in background mode. You must set the `background-processing` option to `true` in order for this option to take effect.

check-tenant-profile

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: For the next connected client

When set to `true`, T-Server only allows a client to register if the client provides the correct name and password of a T-Server Tenant. If the client provides the Tenant name concatenated with a slash (/) and the Tenant password for the Tenant to which T-Server belongs as the value of `AttributeApplicationPassword` in the `TRegisterClient` request, T-Server allows that client to register DNs that are included in the switch configuration in the Configuration Database, but it does not allow the client to register DNs that are *not* included in the switch configuration.

consult-user-data

Default Value: `separate`
Valid Values:

`separate`	Stores user data for original and consultation calls in separate structures. The data attached to the original call is available for review or changes only to the parties of that call. The data attached to the consultation call is available only to the parties of the consultation call.
`inherited`	Copies user data from an original call to a consultation call when the consultation call is created; thereafter, stores user data separately for the original and the consultation call. Changes to the original call's user data are not available to the parties of the consultation call, and vice versa.
`joint`	Stores user data for an original call and a consultation call in one structure. The user data structure is associated with the original call, but the parties of both the original and consultation calls can see and make changes to the common user data.

Changes Take Effect: For the next consultation call created

Specifies the method for handling user data in a consultation call.

Note: A T-Server client can also specify the `consult-user-data` mode in the `Extensions` attribute `ConsultUserData` key for a conference or transfer request. If it is specified, the method of handling user data is based on the value of the `ConsultUserData` key-value pair of the request and takes precedence over the T-Server `consult-user-data` option. If it is not specified in the client request, the value specified in the `consult-user-data` option applies.

customer-id

Default Value: No default value. (A value must be specified for a multi-tenant environment.)
Valid Values: Any character string
Changes Take Effect: Immediately

Identifies the T-Server customer. You must set this option to the name of the tenant that is using this T-Server. You must specify a value for this option if you are working in a multi-tenant environment.

Note: Do not configure the `customer-id` option for single-tenant environments.

dn-scope

Default Value: `undefined`
Valid Values: `undefined, switch, office, tenant`
Changes Take Effect: Immediately
Related Feature: "Switch Partitioning" on page 96

Specifies whether DNs associated with the `Switch, Switching Office,` or `Tenant` objects will be considered in the T-Server monitoring scope, enabling T-Server to report calls to or from those DNs as internal.

With a value of `tenant,` all DNs associated with the switches that are within the `Tenant` will be in the T-Server monitoring scope. With a value of `office,` all DNs associated with the switches that are within the `Switching Office` will be in the T-Server monitoring scope. With a value of `switch,` all DNs associated with the `Switch` will be in the T-Server monitoring scope.

With a value of `undefined` (the default), pre-8.x T-Server behavior applies and the switch partitioning is not turned on.

Note: Setting the option to a value of `office` or `tenant,` which requires T-Server to monitor a large set of configuration data, may negatively affect T-Server performance.

log-trace-flags

Default Value: `+iscc, +cfg$dn, -cfgserv, +passwd, +udata, -devlink, -sw,`
`-req, -callops, -conn, -client`

Valid Values (in any combination):

`+/-iscc`	Turns on/off the writing of information about Inter Server Call Control (ISCC) transactions.
`+/-cfg$dn`	Turns on/off the writing of information about DN configuration.
`+/-cfgserv`	Turns on/off the writing of messages from Configuration Server.
`+/-passwd`	Turns on/off the writing of `AttributePassword` in TEvents.
`+/-udata`	Turns on/off the writing of attached data.
`+/-devlink`	Turns on/off the writing of information about the link used to send CTI messages to the switch (for multilink environments).
`+/-sw`	Reserved by Genesys Engineering.
`+/-req`	Reserved by Genesys Engineering.
`+/-callops`	Reserved by Genesys Engineering.
`+/-conn`	Reserved by Genesys Engineering.
`+/-client`	Turns on/off the writing of additional information about the client's connection.

Changes Take Effect: Immediately

Specifies—using a space-, comma- or semicolon-separated list—the types of information that are written to the log files.

management-port

Default Value: `0`
Valid Values: `0` or any valid TCP/IP port
Changes Take Effect: After T-Server is restarted

Specifies the TCP/IP port that management agents use to communicate with T-Server. If set to `0` (zero), this port is not used.

merged-user-data

Default Value: `main-only`
Valid Values:

`main-only`	T-Server attaches user data from the remaining call only.
`merged-only`	T-Server attaches user data from the merging call.
`merged-over-main`	T-Server attaches user data from the remaining and the merging call. In the event of equal keys, T-Server uses data from the merging call.
`main-over-merged`	T-Server attaches data from the remaining and the merging call. In the event of equal keys, T-Server uses data from the remaining call.

Changes Take Effect: Immediately

Specifies the data that is attached to the resulting call after a call transfer, conference, or merge completion.

Note: The option setting does not affect the resulting data for merging calls if the `consult-user-data` option is set to `joint`. (See "consult-user-data" on page 219.)

---

propagated-call-type

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately
Related Feature: "Switch Partitioning" on page 96

Determines what T-Server reports as the value of the `CallType` attribute in events related to calls that have been synchronized with another site via ISCC, as follows:

*   When set to `false`, T-Server reports in events related to calls that have been synchronized with another site via ISCC the same value for the `CallType` attribute as it did in pre-8.0 releases and adds the new `PropagatedCallType` attribute with the value of the `CallType` attribute at the origination site. This provides backward compatibility with existing T-Server clients.

*   When set to `true`, T-Server reports in events related to calls that have been synchronized with another site via ISCC the same value for the `CallType` attribute as at the origination site, and adds the new `LocalCallType` attribute with the same value as `CallType` in pre-8.0 releases.

server-id

Default Value: An integer equal to the value `ApplicationDBID` as reported by Configuration Server
Valid Values: Any integer from `0–16383`
Changes Take Effect: Immediately

Specifies the `Server ID` that T-Server uses to generate `Connection IDs` and other unique identifiers. In a multi-site environment, you must assign each T-Server a unique `Server ID`, in order to avoid confusion in reporting applications and T-Server behavior.

Configuration of this option is necessary for Framework environments in which there are two or more instances of the Configuration Database.

Note: If you do not specify a value for this option, T-Server populates it with the `ApplicationDBID` as reported by Configuration Server. Each data object in the Configuration Database is assigned a separate DBID that maintains a unique Server ID for each T-Server configured in the database.

> **Warning!** Genesys does not recommend using multiple instances of the
> Configuration Database.

user-data-limit

Default Value: `16000`
Valid Values: `0–65535`
Changes Take Effect: Immediately

Specifies the maximum size (in bytes) of user data in a packed format.

> **Note:** When T-Server works in mixed 8.x/7.x/6.x environment, the value of
> this option must not exceed the default value of `16000` bytes;
> otherwise, 6.x T-Server clients might fail.

license Section

The License section contains the configuration options that are used to
configure T-Server licenses. They set the upper limit of the seat-related DN
licenses (`tserver_sdn`) that T-Server tries to check out from a license file. See
"License Checkout" on .

This section must be called `License`.

> **Notes:** • T-Server also supports the `License-file` option described in the
> *Genesys Licensing Guide.*
> • The `License` section is not applicable to Network T-Server for
> DTAG.
> • On selected platforms, the limitation of 9999 licenses may no
> longer apply. Use values greater than 9999 only when instructed by
> Genesys Technical Support.

If you use two or more T-Servers, and they share licenses, you must configure
the following options in the `License` section of the T-Servers.

num-of-licenses

Default Value: `0` or `max` (all available licenses)
Valid Values: String `max` or any integer from `0–9999`
Changes Take Effect: Immediately

Specifies how many DN licenses T-Server checks out. T-Server treats a value
of `0` (zero) the same as it treats `max`—that is, it checks out all available
licenses.

The sum of all `num-of-licenses` values for all concurrently deployed
T-Servers must not exceed the number of seat-related DN licenses
(`tserver_sdn`) in the corresponding license file. The primary and backup

T-Servers share the same licenses, and therefore they need to be counted only once. T-Server checks out the number of licenses indicated by the value for this option, regardless of the number actually in use.

num-sdn-licenses

Default Value: `0` or `max` (all DN licenses are seat-related)
Valid Values: String `max` (equal to the value of `num-of-licenses`), or any integer from `0`–`9999`
Changes Take Effect: Immediately

Specifies how many seat-related licenses T-Server checks out. A value of `0` (zero) means that T-Server does not grant control of seat-related DNs to any client, and it does not look for seat-related DN licenses at all.

The sum of all `num-sdn-licenses` values for all concurrently deployed T-Servers must not exceed the number of seat-related DN licenses (`tserver_sdn`) in the corresponding license file. The primary and backup T-Servers share the same licenses, and therefore they need to be counted only once. T-Server checks out the number of licenses indicated by the value for this option, regardless of the number actually in use.

Notes: • For Network T-Servers, Genesys recommends setting this option to `0`.

• Be sure to configure in the Configuration Database all the DNs that agents use (Extensions and ACD Positions) and that T-Server should control. For further information, see Chapter 7, "DNs and Agent Logins," page 38.

License Checkout

Table 22 shows how to determine the number of seat-related DN licenses that T-Server attempts to check out. See the examples on page 225.

Table 22: License Checkout Rules

Options Settings[a]		License Checkout[b]
num-of-licenses	**num-sdn-licenses**	**Seat-related DN licenses**
max (or 0)	max	all available
max (or 0)	x	x
max (or 0)	0	0
x	max	x

Table 22: License Checkout Rules (Continued)

Options Settings[a]		License Checkout[b]
num-of-licenses	**num-sdn-licenses**	**Seat-related DN licenses**
x	y	min (y, x)
x	0	0

a. In this table, the following conventions are used: x and y - are positive integers; max is the maximum number of licenses that T-Server can check out; min (y, x) is the lesser of the two values defined by y and x, respectively.

b. The License Checkout column shows the number of licenses that T-Server attempts to check out. The actual number of licenses will depend on the licenses' availability at the time of checkout, and it is limited to 9999.

Examples

This section presents examples of option settings in the license section.

Example 1

If...		Then...
Options Settings	**License File Settings**	**License Checkout**
num-of-licenses = max num-sdn-licenses = max	tserver_sdn = 500	500 seat-related DNs

Example 2

If...		Then...
Options Settings	**License File Settings**	**License Checkout**
num-of-licenses = 1000 num-sdn-licenses = max	tserver_sdn = 500	500 seat-related DNs

Example 3

If...		Then...
Options Settings	**License File Settings**	**License Checkout**
num-of-licenses = 1000	tserver_sdn = 600	400 seat-related DNs
num-sdn-licenses = 400		

Example 4

If...		Then...
Options Settings	**License File Settings**	**License Checkout**
num-of-licenses = max	tserver_sdn = 5000	1000 seat-related DNs
num-sdn-licenses = 1000		

agent-reservation Section

The `agent-reservation` section contains the configuration options that are used to customize the T-Server Agent Reservation feature. See "Agent Reservation" on page 28 section for details on this feature.

This section must be called `agent-reservation`.

Note: The Agent Reservation functionality is currently a software-only feature that is used to coordinate multiple client applications. This feature does not apply to multiple direct or ACD-distributed calls.

---

collect-lower-priority-requests

Default Value: `true`
Valid Values: `true, false`
Changes Take Effect: Immediately

Specifies whether an agent reservation request is collected, depending on its priority during the time interval specified by the `request-collection-time` configuration option. When set to `false`, during the `request-collection-time` interval T-Server collects reservation requests of the highest priority only, rejecting newly submitted requests that have a lower priority or rejecting all previously submitted requests if a request with a higher priority arrives. When set to `true` (the default), agent reservation requests are collected as they were in pre-8.x releases.

reject-subsequent-request

Default Value: `true`
Valid Values:

`true`   T-Server rejects subsequent requests.
`false`   A subsequent request prolongs the current reservation made by the same client application for the same agent.

Changes Take Effect: Immediately

Specifies whether T-Server rejects subsequent requests from the same client application, for an agent reservation for the same `Agent` object that is currently reserved.

Note: Genesys does not recommend setting this option to `false` in a multi-site environment in which remote locations use the Agent-Reservation feature.

---

request-collection-time

Default Value: `100 msec`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: Immediately

Specifies the interval that agent reservation requests are collected before a reservation is granted. During this interval, agent reservation requests are delayed, in order to balance successful reservations between client applications (for example, Universal Routing Servers).

reservation-time

Default Value: `10000 msec`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: Immediately

Specifies the default interval for which a an Agent DN is reserved. During this interval, the agent cannot be reserved again.

extrouter Section

The `extrouter` section contains the configuration options that are used to support multi-site environments with the Inter Server Call Control (ISCC) feature. The configuration options in this section of the document are grouped with related options that support the same functionality, as follows:

This configuration section must be called `extrouter`.

For a description of the ways in which T-Server supports multi-site configurations and for an explanation of the configuration possibilities for a multi-site operation, see the "Multi-Site Support" chapter.

Note: In a multi-site environment, you must configure the `timeout`, `cast-type`, and `default-dn` options with the same value for both the primary and backup T-Servers. If you do not do this, the value specified for the backup T-Server overrides the value specified for the primary T-Server.

match-call-once

Default Value: `true`
Valid Values:

`true`	ISCC does not process (match) an inbound call that has already been processed (matched).
`false`	ISCC processes (attempts to match) a call as many times as it arrives at an ISCC resource or multi-site-transfer target.

Changes Take Effect: Immediately

Specifies how many times ISCC processes an inbound call when it arrives at an ISCC resource. When set to `false`, ISCC processes (attempts to match) the call even if it has already been processed.

Note: Genesys does not recommend changing the default value of the `match-call-once` option to `false` unless you have specific reasons. Setting this option to `false` may lead to excessive or inconsistent call data updates.

reconnect-tout

Default Value: `5 sec`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: At the next reconnection attempt

Specifies the time interval after which a remote T-Server attempts to connect to this T-Server after an unsuccessful attempt or a lost connection. The number of attempts is unlimited. At startup, T-Server immediately attempts the first connection, without this timeout.

report-connid-changes

Default Value: `false`
Valid Values:

`true`	`EventPartyChanged` is generated.
`false`	`EventPartyChanged` is not generated.

Changes Take Effect: Immediately

Specifies whether the destination T-Server generates `EventPartyChanged` for the incoming call when the resulting `ConnID` attribute is different from the `ConnID` attribute of an instance of the same call at the origination location.

use-data-from

Default Value: `current`
Valid Values:

`active`	The values of `UserData` and `ConnID` attributes are taken from the consultation call.
`original`	The values of `UserData` and `ConnID` attributes are taken from the original call.
`active-data-original-call`	The value of the `UserData` attribute is taken from the consultation call and the value of `ConnID` attribute is taken from the original call.
`current`	If the value of `current` is specified, the following occurs: • Before the transfer or conference is completed, the `UserData` and `ConnID` attributes are taken from the consultation call. • After the transfer or conference is completed, `EventPartyChanged` is generated, and the `UserData` and `ConnID` are taken from the original call.

Changes Take Effect: Immediately

Specifies the call from which the values for the `UserData` and `ConnID` attributes are taken for a consultation call that is routed or transferred to a remote location.

Note: For compatibility with the previous T-Server releases, you can use the values `consult`, `main`, and `consult-user-data` for this option. These are aliases for `active`, `original`, and `current`, respectively.

ISCC Transaction Options

cast-type

Default Value: `route, route-uui, reroute, direct-callid, direct-uui, direct-network-callid, direct-notoken, direct-digits, direct-ani, dnis-pool, pullback`

Valid Values: `route, route-uui, reroute, direct-callid, direct-uui, direct-network-callid, direct-notoken, direct-digits, direct-ani, dnis-pool, pullback`

Changes Take Effect: For the next request for the remote service

Specifies—using a space-, comma- or semicolon-separated list—the routing types that can be performed for this T-Server.

The valid values provide for a range of mechanisms that the ISCC feature can support with various T-Servers, in order to pass call data along with calls between locations.

Because switches of different types provide calls with different sets of information parameters, some values might not work with your T-Server. See Table 3 on page 75 for information about supported transaction types by a specific T-Server. The "Multi-Site Support" chapter also provides detailed descriptions of all transaction types.

Notes: For compatibility with the previous T-Server releases, you can use the `direct` value for this option. This is an alias for `direct-callid`.

An alias, `route-notoken`, has been added to the `route` value.

default-dn

Default Value: No default value
Valid Values: Any DN
Changes Take Effect: For the next request for the remote service

Specifies the DN to which a call is routed when a Destination DN (`AttributeOtherDN`) is not specified in the client's request for routing. If neither this option nor the client's request contains the destination DN, the client receives `EventError`.

Note: This option is used only for requests with route types `route`, `route-uui`, `direct-callid`, `direct-network-callid`, `direct-uui`, `direct-notoken`, `direct-digits`, and `direct-ani`.

direct-digits-key

Default Value: `CDT_Track_Num`
Valid Values: Any valid key name of a key-value pair from the `UserData` attribute
Changes Take Effect: For the next request for the remote service

Specifies the name of a key from the `UserData` attribute that contains a string of digits that are used as matching criteria for remote service requests with the `direct-digits` routing type.

Note: For compatibility with the previous T-Server releases, this configuration option has an alias value of `cdt-udata-key`.

dn-for-unexpected-calls

Default Value: No default value
Valid Values: Any DN
Changes Take Effect: Immediately

Specifies a default DN for unexpected calls arriving on an External Routing Point.

network-request-timeout

Default Value: `20 sec`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: For the next network request

For a premise T-Server, this option specifies the time interval that the premise T-Server waits for a response, after relaying a `TNetwork<...>` request to the Network T-Server. For a Network T-Server, this option specifies the time interval that the Network T-Server waits for a response from an SCP (Service Control Point), after initiating the processing of the request by the SCP.

When the allowed time expires, the T-Server cancels further processing of the request and generates `EventError`.

register-attempts

Default Value: `5`
Valid Values: Any positive integer
Changes Take Effect: For the next registration

Specifies the number of attempts that T-Server makes to register a dedicated External Routing Point.

register-tout

Default Value: `2 sec`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: For the next registration

Specifies the time interval after which T-Server attempts to register a dedicated External Routing Point. Counting starts when the attempt to register a Routing Point fails.

request-tout

Default Value: `20 sec`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: For the next request for remote service

Specifies the time interval that a T-Server at the origination location waits for a notification of routing service availability from the destination location. Counting starts when the T-Server sends a request for remote service to the destination site.

resource-allocation-mode

Default Value: `circular`
Valid Values:

home   T-Server takes an alphabetized (or numerically sequential) list of configured DNs and reserves the first available DN from the top of the list for each new request. For example, if the first DN is not available, the second DN is allocated for a new request. If the first DN is freed by the time the next request comes, the first DN is allocated for this next request.

circular   T-Server takes the same list of configured DNs, but reserves a subsequent DN for each subsequent request. For example, when the first request comes, T-Server allocates the first DN; when the second request comes, T-Server allocates the second DN; and so on. T-Server does not reuse the first DN until reaching the end of the DN list.

Changes Take Effect: Immediately

Specifies the manner in which T-Server allocates resources (that is, DNs of the `External Routing Point` type and Access Resources with the `Resource Type` set to `dnis`) for multi-site transaction requests.

resource-load-maximum

Default Value: `0`
Valid Values: Any positive integer
Changes Take Effect: Immediately

Specifies the maximum number of ISCC routing transactions that can be concurrently processed at a single DN of the `External Routing Point` route type. After a number of outstanding transactions at a particular DN of the `External Routing Point` type reaches the specified number, T-Server considers the DN not available. Any subsequent request for this DN is queued until the number of outstanding transactions decreases. A value of `0` (zero) means that no limitation is set to the number of concurrent transactions at a single External Routing Point. In addition, the `0` value enables T-Server to perform load balancing of all incoming requests among all available External Routing Points, in order to minimize the load on each DN.

route-dn

Default Value: No default value
Valid Values: Any DN
Changes Take Effect: Immediately

Specifies the DN that serves as a Routing Point for the `route` transaction type in the multiple-to-one access mode.

timeout

Default Value: `60 sec`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: For the next request for remote service

Specifies the time interval that the destination T-Server waits for a call routed from the origination location. Counting starts when this T-Server notifies the requesting T-Server about routing service availability. The timeout must be long enough to account for possible network delays in call arrival.

use-implicit-access-numbers

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: After T-Server is restarted

Determines whether an External Routing Point in which at least one access number is specified is eligible for use as a resource for calls coming from switches for which an access number is not specified in the External Routing Point. If this option is set to `false`, the External Routing Point is not eligible for use as a resource for calls coming from such switches. If this option is set to `true`, an implicit access number for the External Routing Point, composed of the switch access code and the DN number of the External Routing Point, will be used.

Note: If an External Routing Point does not have an access number specified, this option will not affect its use.

Transfer Connect Service Options

tcs-queue

Default Value: No default value
Valid Values: Any valid DN number
Changes Take Effect: For the next request for the remote service

Specifies the TCS DN number to which a call, processed by the TCS feature, is dialed after the originating external router obtains an access number. This option applies only if the `tcs-use` option is activated.

tcs-use

Default Value: `never`
Valid Values:

`never`	The TCS feature is not used.
`always`	The TCS feature is used for every call.
`app-defined`	In order to use the TCS feature for a multi-site call transfer request, a client application must add a key-value pair with a TC-type key and a nonempty string value to the `UserData` attribute of the request.

Changes Take Effect: Immediately

Specifies whether the Transfer Connect Service (TCS) feature is used.

Note: For compatibility with the previous T-Server releases, you can use the value `up-app-depended` for this option. This is an alias for `app-defined`.

ISCC/COF Options

cof-ci-defer-create

Default Value: `0`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: Immediately

Specifies the time interval that T-Server waits for call data from the switch before generating a negative response for a call data request from a remote T-Server. If T-Server detects the matching call before this timeout expires, it sends the requested data. This option applies only if the `cof-feature` option is set to `true`.

cof-ci-defer-delete

Default Value: `0`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: Immediately

Specifies the time interval that T-Server waits before deleting call data that might be overflowed. If set to `0`, deletion deferring is disabled. This option applies only if the `cof-feature` option is set to `true`.

cof-ci-req-tout

Default Value: `500 msec`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: For the next COF operation

Specifies the time interval during which T-Server will wait for call data requested with respect to a call originated at another site. After T-Server sends the call data request to remote T-Servers, all events related to this call will be

suspended until either the requested call data is received or the specified timeout expires. This option applies only if the `cof-feature` option is set to `true`.

cof-ci-wait-all

Default Value: `false`
Valid Values:

`true`	T-Server waits for responses from all T-Servers that might have the requested call data before updating the call data with the latest information.
`false`	T-Server updates the call data with the information received from the first positive response.

Changes Take Effect: Immediately

Specifies whether T-Server, after sending a request for matching call data, waits for responses from other T-Servers before updating the call data (such as `CallHistory`, `ConnID`, and `UserData`) for a potentially overflowed call. The waiting period is specified by the `cof-ci-req-tout` and `cof-rci-tout` options. This option applies only if the `cof-feature` option is set to `true`.

cof-feature

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: Immediately

Enables or disables the Inter Server Call Control/Call Overflow (ISCC/COF) feature.

cof-rci-tout

Default Value: `10 sec`
Valid Values: See "Timeout Value Format" on
Changes Take Effect: For the next COF operation

Specifies the time interval that T-Server waits for call data from other T-Servers' transactions. Counting starts when `cof-ci-req-tout` expires. This option applies only if the `cof-feature` option is set to `true`.

local-node-id

Default Value: `0`
Valid Values: `0` or any positive integer
Changes Take Effect: Immediately

This option, if enabled, checks all networked calls against the specified `NetworkNodeID` (the identity of the switch to which the call initially arrived). If the `NetworkNodeID` is the same as the value of this option, the request for call information is *not* sent. The default value of `0` disables the functionality of this

option. To establish an appropriate `NetworkNodeID`, specify a value other than the default. This option applies only if the `cof-feature` option is set to `true`.

Note: This option applies only to T-Server for Nortel Communication Server 2000/2100.

---

default-network-call-id-matching

Default Value: No default value
Valid Values: See the "T-Server-Specific Configuration Options" chapter for an option description for your T-Server
Changes Take Effect: Immediately

When a value for this option is specified, T-Server uses the `NetworkCallID` attribute for the ISCC/COF call matching.

To activate this feature, the `cof-feature` option must be set to `true`.

Note: SIP Server and several T-Servers support the `NetworkCallID` attribute for the ISCC/COF call matching in a way that requires setting this option to a specific value. For information about the option value that is specific for your T-Server, see the "T-Server-Specific Configuration Options" chapter of your *T-Server Deployment Guide.*

Event Propagation Options

compound-dn-representation

Default Value: `true`
Valid Values: `true, false`
Changes Take Effect: Immediately

Specifies which format T-Server uses to represent a DN when reporting an `OtherDN` or `ThirdPartyDN` attribute in event propagation messages.

When set to `true`, the `<switch>::DN` (compound) format is used. This option value supports backward compatibility for pre-8.x T-Server ISCC/EPP functionality and is provided for multi-site deployments where the same DNs are configured under several switches.

When set to `false`, the `DN` (non-compound) format is used. This option value ensures more transparent reporting of `OtherDN` or `ThirdPartyDN` attributes and is recommended for all single-site deployments, as well as for multi-site deployments that do not have the same DNs configured under several switches. This option applies only if the `event-propagation` option is set to `list`.

Note: Local DNs are always represented in the non-compound `(DN)` form.

---

epp-tout

Default Value: `0`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: Immediately

Specifies the time interval during which T-Server attempts to resolve race conditions that may occur in deployments that use switch partitioning or intelligent trunks. This option applies only if the `event-propagation` option is set to `list`.

Note: If the time interval is not long enough to account for possible network switching delays, T-Server may produce duplicated events, such as events that are propagated by the ISCC and generated locally.

---

event-propagation

Default Value: `list`
Valid Values:

`list`   Changes in user data and party events are propagated to remote locations through call distribution topology.

`off`   The feature is disabled. Changes in user data and party events are not propagated to remote locations.

Changes Take Effect: Immediately

Specifies whether the Event Propagation feature is enabled.

Number Translation Option

inbound-translator-<*n*>

Default Value: No default value
Valid Value: Any valid name
Changes Take Effect: Immediately

Specifies the name of another configuration section as the value for the `inbound-translator` option. For example,
`inbound-translator-1 = ani-translator`

where `ani-translator` is the name of the configuration that describes the translation rules for inbound numbers.

GVP Integration Option

handle-vsp

Default Value: `no`
Valid Values:

`requests`	ISCC will process and adjust requests related to this DN and containing a `Location` attribute before submitting them to the service provider.
`events`	ISCC will process and adjust each event received from the service provider in response to a request containing a `Location` attribute before distributing the event to T-Server clients.
`all`	ISCC will process and adjust both events and requests.
`no`	No ISCC processing of such requests and events takes place.

Changes Take Effect: Immediately

Specifies if multi-site Call Data synchronization of virtual calls or simulated call flows is performed by T-Server or is left to an external application (Service Provider) that has registered for a DN with the `AddressType` attribute set to `VSP` (Virtual Service Provider).

backup-sync Section

The backup-synchronization section contains the configuration options that are used to support a high-availability (`hot standby` redundancy type) configuration.

This section must be called `backup-sync`.

Note: These options apply only to T-Servers that support the `hot standby` redundancy type.

---

addp-remote-timeout

Default Value: `0`
Valid Values: Any integer from `0–3600`
Changes Take Effect: Immediately

Specifies the time interval that the redundant T-Server waits for a response from this T-Server after sending a polling signal. The default value of `0` (zero) disables the functionality of this option. To establish an appropriate timeout, specify a value other than the default. This option applies only if the `protocol` option is set to `addp`.

addp-timeout

Default Value: `0`
Valid Values: Any integer from `0–3600`
Changes Take Effect: Immediately

Specifies the time interval that this T-Server waits for a response from another T-Server after sending a polling signal. The default value of `0` (zero) disables the functionality of this option. To establish an appropriate timeout, specify a value other than the default. This option applies only if the `protocol` option is set to `addp`.

addp-trace

Default Value: `off`
Valid Values:

`off, false, no`	No trace (default).
`local, on, true, yes`	Trace on this T-Server side only.
`remote`	Trace on the redundant T-Server side only.
`full, both`	Full trace (on both sides).

Changes Take Effect: Immediately

Specifies whether `addp` messages are traced in a log file, to what level the trace is performed, and in which direction. This option applies only if the `protocol` option is set to `addp`.

protocol

Default Value: `default`
Valid Values:

`default`	The feature is not active.
`addp`	Activates the Advanced Disconnect Detection Protocol.

Changes Take Effect: When the next connection is established

Specifies the name of the method used to detect connection failures. If you specify the `addp` value, you must also specify a value for the `addp-timeout`, `addp-remote-timeout`, and `addp-trace` options.

sync-reconnect-tout

Default Value: `20 sec`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: Immediately

Specifies the time interval after which the backup T-Server attempts to reconnect to the primary server (for a synchronized link).

call-cleanup Section

The call-cleanup section contains the configuration options that are used to control detection and cleanup of stuck calls in T-Server. For more information on stuck call handling, refer to the "Stuck Call Management" chapter in the *Framework 8.0 Management Layer User's Guide*.

This section must be called `call-cleanup`.

cleanup-idle-tout

Default Value: `0`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: Immediately

Specifies the time interval that T-Server waits for a call to be updated from its last update. After this time elapses, if no new events about the call are received, T-Server clears this call as a stuck call, either by querying the switch (if a CTI link provides such capabilities) or by deleting the call information from memory unconditionally. The default value of `0` disables the stuck calls cleanup.

Note: If the call-cleanup functionality is enabled in T-Server for Avaya Communication Manager, the UCID (Universal Call ID) feature must be enabled on the switch as well. This allows the UCID to be generated and passed to T-Server.

notify-idle-tout

Default Value: `0`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: Immediately

Specifies the time interval that T-Server waits for a call to be updated from its last update. After this time elapses, if no new events about the call are received, T-Server reports this call as a stuck call. The default value of `0` disables the stuck calls notification.

periodic-check-tout

Default Value: `10 min`
Valid Values: See "Timeout Value Format" on page 242.
Changes Take Effect: Immediately

Specifies the time interval for periodic checks for stuck calls. These checks affect both notification and cleanup functionality, and are made by checking the T-Server's own call information with call information available in the switch. For performance reasons, T-Server does not verify whether the

`notify-idle-tout` or `cleanup-idle-tout` option has expired before performing this check.

Note: Setting this option to a value of less than a few seconds can affect T-Server performance.

Examples

This section presents examples of option settings in the `call-cleanup` section.

Example 1
```
cleanup-idle-tout = 0
notify-idle-tout = 0
periodic-check-tout = 10
```
With these settings, T-Server will not perform any checks for stuck calls.

Example 2
```
cleanup-idle-tout = 0
notify-idle-tout = 5 min
periodic-check-tout = 10 min
```
With these settings, T-Server performs checks every 10 minutes and sends notifications about all calls that have been idle for at least 5 minutes.

Example 3
```
cleanup-idle-tout = 20 min
notify-idle-tout = 5 min
periodic-check-tout = 10 min
```
With these settings, T-Server performs checks every 10 minutes, sends notifications about all calls that have been idle for at least 5 minutes, and attempts to clean up all calls that have been idle for more than 20 minutes.

Translation Rules Section

The section name is specified by the `inbound-translator-<n>` option. It contains options that define translation rules for inbound numbers.

You can choose any name for this section, provided that it matches the value of the section. Every option in this section corresponds to a rule and must conform to the format described below. You can configure as many rules as necessary to accommodate your business needs.

rule-<*n*>

Default Value: No default value
Valid Value: Any valid string in the following format:
`in-pattern=<input pattern value>;out-pattern=<output pattern value>`
Changes Take Effect: Immediately

Defines a rule to be applied to an inbound number. The two parts of the option value describe the input and output patterns in the rule. When configuring the

pattern values, follow the syntax defined in "Using ABNF for Rules" on page 84. See "Configuring Number Translation" on page 91 for examples of these rules as well as detailed instructions for creating rules for your installation. For example, a value for this configuration option might look like this:

```
rule-01 = in-pattern=0111#CABBB*ccD;out-pattern=ABD
```

security Section

The `security` section contains the configuration options that are used to configure secure data exchange between T-Servers and other Genesys components. Refer to the *Genesys 8.x Security Deployment Guide* for complete information on the security configuration.

Timeout Value Format

This section of the document describes the values to use for those T-Server common options that set various timeouts. The current format allows you to use fractional values and various time units for timeout settings.

For timeout-related options, you can specify any value that represents a time interval, provided that it is specified in one of the following formats:

[[[*hours*:]*minutes*:]*seconds*][*milliseconds*]

or

[*hours* hr][*minutes* min][*seconds* sec][*milliseconds* msec]

Where a time unit name in italic (such as *hours*) is to be replaced by an integer value for this time unit.

Integer values with no measuring units are still supported, for compatibility with previous releases of T-Server. When you do not specify any measuring units, the units of the default value apply. For example, if the default value equals `60 sec`, specifying the value of `30` sets the option to 30 seconds.

Example 1

The following settings result in a value of 1 second, 250 milliseconds:

```
sync-reconnect-tout = 1.25
sync-reconnect-tout = 1 sec 250 msec
```

Example 2

The following settings result in a value of 1 minute, 30 seconds:

```
timeout = 1:30
timeout = 1 min 30 sec
```

Changes from Release 8.0 to 8.1

Table 23 lists the configuration options that:

- Are new or changed in the 8.1 release of T-Server

- Have been added or changed since the most recent 8.0 release of this document

If a configuration option has been replaced with another that enables the same functionality, the new option name and its location in this chapter are noted.

Table 23: Option Changes from Release 8.0 to 8.1

Option Name	Option Values	Type of Change	Details
TServer Section			
background-processing	`true, false`	See Details	Default value changed to `true`. See the option description on page 218.

![Genesys logo]

10

Configuration Options in T-Server for Siemens HiPath 4000

This chapter describes configuration options specific to the T-Server for Siemens HiPath 4000 CSTA III and contains these sections:

- Application-Level Options, page 245
- Agent Login-Level and DN-Level Options, page 278
- Changes from 8.0 to 8.1, page 281

The configuration options common to all T-Servers are described in Chapter 8, "Common Configuration Options," on page 195 and Chapter 9, "T-Server Common Configuration Options," on page 217.

Application-Level Options

The configuration options specific to T-Server functionality are set in Configuration Manager, in the corresponding sections on the `Options` tab of the T-Server `Application` object.

For ease of reference, the options have been arranged in alphabetical order within their corresponding sections:

- Mandatory Options, page 246
- TServer Section, page 246
- SwitchSpecificType Section, page 271
- link-control Section, page 272
- Link-Disconnect Handling Options, page 276

Mandatory Options

Table 24 lists the options that you must configure for basic T-Server operation. All other options in this chapter are configured to enable T-Server to support various features. Also see the requirements in "Configuration Requirements for CAP 3.0 and CAP 3.0 Inside" on page 139.

To establish a link connection, simply configure the link options (TCP/IP) that are applicable to the connection protocol used in your environment.

Table 24: Mandatory Options

Option Name	Default Value	Details
T-Server Section		
link-control	None	See description on page 262.
CTI-Link Section		
host	None	See description on page 273.
port	`1040`	See description on page 274.

TServer Section

This section must be called `TServer`.

accept-dn-type

Default Value: `+extension +position +acdqueue +routedn`
Valid Values:

`+/-extension`	Accepts or rejects registration on DN of type `Extension` (`AddressTypeDN`)
`+/-position`	Accepts or rejects registration on DN of type `ACD Position` (`AddressTypePosition`)
`+/-acdqueue`	Accepts or rejects registration on DN of type `ACD Queue` (`AddressTypeQueue`)
`+/-routedn`	Accepts or rejects registration on DN of type `Routing Point` (`AddressTypeRouteDN`)
`+/-trunk`	Accepts or rejects registration on DN of type `Trunk` or `Tie Line` (`AddressTypeTrunk`)
`+/-voicemail`	Accepts or rejects registration on DN of type `Voice Mail` (`AddressTypeVoiceChannel`)
`+/-data`	Accepts or rejects registration on DN of type `modem` (`AddressTypeDataChannel`)

+/-announcement   Accepts or rejects registration on DN of type `Music port` (`AddressTypeAnnouncement`)

+/-routequeue   Accepts or rejects registration on DN of type `Routing Queue` (`AddressTypeRouteQueue`)

Changes Take Effect: Immediately

Defines the supported set of device types that are not configured in the Configuration Layer but that T-Server can register.

accode-agent

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately

Specifies whether T-Server uses account codes as agent Walk-Away codes. If the value of this option is set to `true` and the agent is in the `NotReady` state, when the switch reports an account code T-Server sends another `EventAgentNotReady` with the `Extensions` attribute `ReasonCode` set to the value of the reported account code.

accode-data

Default Value: `none`
Valid Values: `none, udata, ext`

none   T-Server does not map switch account codes.

udata   T-Server attaches reported account codes as user data, using configured `Extensions` attribute keys such as `GCTI_ACCOUNT_CODE_<N>`. T-Server then sends requests to set account codes to the switch, when such user data keys are used in client requests `AttachUserData` or `UpdateUserData`.

ext   T-Server attaches user data as extensions to all call events and does not intercept user data update requests with the reserved keys.

Changes Take Effect: Immediately
Related Feature: "Support for Account Codes" on

Specifies whether T-Server has to map the switch account codes to call user data (`udata`), to extensions (`ext`) or does not map switch account codes (`none`).

Note: T-Server always uses the reserved keys sent in any call-related client request's `Extensions` attribute, irrespective of the value of this option.

accode-index

Default Value: `false`
Valid Values: `false`, `true`
Changes Take Effect: Immediately

Allows T-Server to attach multiple account codes to the call. Each new unique account code is attached to the call, as `Extensions` or `UserData`, with the key as configured by the option, `accode-name`, with an appended underscore and an incremental integer index, starting from 1 (such as `AccountCode_1`). T-Server keeps the nonindexed key updated with the latest received value, irrespective of the value of this option.

accode-name

Default Value: `AccountCode`
Valid Values: Any valid key name
Changes Take Effect: Immediately
Related Feature: "Support for Account Codes" on page 164

Specifies the data key name under which T-Server attaches the account code to the call, as either user data or extensions.

accode-privateservice

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: Immediately
Related Feature: "Support for Account Codes" on page 164

Enables or disables the use of `TPrivateService` and `EventPrivateInfo` for handling the Account Code feature.

acw-in-idle-force-ready

Default Value: `true`
Valid Values: `true`, `false`
Changes Take Effect: Immediately
Related Features: "Support for Emulated Agents" on page 147

Specifies whether, after timed manual wrap-up (when you have set the value of the configuration option, `timed-acw-in-idle`, to `true`), T-Server forces the agent to the `Ready` state. If the value of the configuration option is set to `false`, T-Server returns the agents to the state that they were in prior to wrap-up.

acw-retain-call

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: Immediately
Related Feature: "Support for Account Codes" on page 164

Instructs T-Server to retain the last agent business call while the agent is in an After-Call Work (ACW) period and allows user data updates to be added after

the call has been released. This allows the account code to be attached to the previous call. When set to `true`, T-Server sends the account code in the `EventUserEvent` message, rather than the `EventAttachedDataChanged` message, to avoid confusing existing desktop applications.

Note: To enable the Standard Account Code functionality in T-Server, both this option and `acw-retain-lock` must be enabled.

---

acw-retain-lock

Default Value: 0
Valid Values: Any positive integer
Changes Take Effect: Immediately
Related Feature: "Support for Account Codes" on page 164

Specifies the period of time, in seconds, for the call to remain locked in Call Concentrator after the call has been released. When this option is enabled, T-Server sends an `EventUserEvent` event with the key `LockCall` in `AttributeExtensions` and the value set by the option. Typically, this value should be greater than the ACW value.

Note: To enable the Standard Account Code functionality in T-Server, both this option and `acw-retain-call` must be enabled.

In addition, the `acw-retain-lock` option must be set to a value equal to, or greater than, the value set on the PBX for the Account Code timeout. For further information on Call Locking, refer to the *Call Concentrator 7 Reference Manual*.

---

agent-clean-login

Default Value: `false`
Valid Values: `true, false`
Changes Take Place: Immediately

Clears all device calls when T-Server receives an `Agent Login` event from the switch if the value of the configuration option is set to `true`. If the value of the configuration option is set to `false`, this workaround is disabled.

agent-emu-login-on-call

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately
Related Feature: "Support for Emulated Agents" on page 147

Specifies whether the T-Server allows an emulated agent login or logout on a device where there is a call in progress.

The option can be set in the Configuration Layer in the following places in order of precedence (highest to lowest):

1. The `TServer` section in the `Annex` tab of an agent.

2. The `TServer` section in the `Annex` tab of a device.

3. The `TServer` section of the T-Server `Application`.

The value can also be set by using the `AgentEmuLoginOnCall` Extensions attribute in the `TAgentLogin` or `TAgentLogout` requests. The value specified by the `Extensions` attribute, where present, takes precedence over the settings configured in the Configuration Layer.

agent-group

Default Value: None
Valid Value: Any agent group value
Changes Take Effect: At the next agent login session
Related Feature: "Support for Emulated Agents" on page 147

Specifies a value for a virtual group to be used for T-Server reporting.

T-Server obtains the value for this option in the following order of precedence:

1. In the `TServer` section of the `Annex` tab of the `Agent Login` object.

2. In the `TServer` section of the `Annex` tab of the `DN` object.

3. In the `TServer` section of the T-Server `Application` object.

agent-logout-on-unreg

Default Value: `false`
Valid Values:

`true`	T-Server will log out emulated and native agents on unregister.
`false`	T-Server will not log out emulated or native agents on unregister.
`emu-only`	T-Server will log out only emulated agents on unregister.

Changes Take Effect: After agent logs out and then logs in again
Related Feature: "Support for Emulated Agents" on page 147

Specifies whether T-Server performs an automatic logout of an agent whenever their client application unregisters the DN from the T-Server. This happens whenever a client application disconnects from the T-Server.

The option can be set in the Configuration Layer in the following places in order of precedence (highest to lowest):

1. The `TServer` section in the `Annex` tab of the device representing the agent's group (such as an ACD Queue).

2. The `TServer` section in the `Annex` tab of an agent.

3. The `TServer` section in the `Annex` tab of a device.

4. The `TServer` section of the Application level.

The Configuration Layer configuration setting may be overridden by adding the extension `AgentLogoutOnUnregister` to the `TAgentLogin` request.

Any subsequent self-transition `TAgentLogin` request can override the current agent association by adding the `AgentLogoutOnUnregister` key of the `Extensions` attribute with a value of `true`.

Similarly a `TRegisterAddress` request can override the current agent association by adding the `AgentLogoutOnUnregister` key of the `Extensions` attribute with a value of `true`.

agent-logout-reassoc

Default Value: `false`
Valid Values:

`true`	T-Server automatically associates a new client application with the agent.
`false`	T-Server does not automatically associate a new client application with the agent.

Changes Take Effect: After agent logs out and then logs in again
Related Feature: "Support for Emulated Agents" on page 147

Specifies whether the T-Server automatically associates a new client application with the agent, when the application either:

• Registers on the agent DN, or;

• Sends a login request while the T-Server is currently waiting to log the agent out due to the previously associated client disconnecting.

Note: The new client application must have the same application name as the previously disconnected client.

---

agent-no-answer-action

Default Value: `none`
Valid Values:

`none`	T-Server takes no action on agents when calls are not answered.
`notready`	T-Server sets agents `NotReady` when calls are not answered.
`logout`	T-Server automatically logs out agents when calls are not answered.

Changes Take Effect: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

When defined in the main `TServer` options section, this option defines the default action that T-Server takes if a logged-in agent (real or emulated) fails to

answer a call within the time defined in `agent-no-answer-timeout`. See also the `Extensions` attribute key `NO_ANSWER_ACTION` on page 177.

Note: If you define the `no-answer-action` configuration option on the `Annex` tab of an `Agent Login` object in Configuration Manager, that value overrides the value of `agent-no-answer-action` for that agent ID.

---

agent-no-answer-overflow

Default Value: No default value
Valid Values:

`none`	T-Server does not attempt to overflow a call on an agent when `agent-no-answer-timeout` expires.
`recall`	T-Server returns the call to the last distribution device (the device reported in the `ThisQueue` attribute of the call) when `agent-no-answer-timeout` expires.
`release`	T-Server drops the call.
Any valid overflow destination in a comma-separated list	T-Server returns the call to the specified destination when `agent-no-answer-timeout` expires.

Changes Take Effect: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

When defined in the main `TServer` options section, this configuration option specifies a sequence of overflow destinations that T-Server attempts to overflow to when the time specified in option `agent-no-answer-timeout` expires. T-Server attempts to overflow in the order specified in the list. If all overflow attempts fail, T-Server abandons overflow. See also the `Extensions` attribute key `NO_ANSWER_OVERFLOW` on page 177. If the list of overflow destinations contains the value `recall`, and the call was not distributed, T-Server skips to the next destination in the list.

Note: If you define option `no-answer-overflow` on the `Annex` tab of an `Agent Login object` in Configuration Manager, that value overrides the value of `agent-no-answer-overflow`.

---

agent-no-answer-timeout

Default Value: `15`
Valid Value: Any integer from `0`–`600`
Changes Take Effect: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

Defines the default time (in seconds) that T-Server waits for a logged-in agent (real or emulated) to answer a call before executing the actions defined in options `agent-no-answer-overflow` and `agent-no-answer-action`. A value of `0`

(zero) disables the Agent No-Answer Supervision feature. See also the `Extensions` attribute key `NO_ANSWER_TIMEOUT` on page 177.

Note: If you define the configuration option, `no-answer-timeout`, on the `Annex` tab of an `Agent Login object` in Configuration Manager, that value overrides the value of `agent-no-answer-timeout` for that agent.

Because T-Server for HiPath 4000 supports emulated routing, the option `supervised-route-timeout` overrides this option for supervised routed calls. If a call is delivered to a device using supervised routing, and the routing timeout expires, T-Server does not apply the specified no-answer overflow. If the call is routed to an agent, T-Server does apply the specified no-answer action after the supervised routing timeout expires.

agent-only-private-calls

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: Immediately
Related Feature: "Support for Business-Call Handling" on page 144

Specifies whether T-Server blocks the classification of a call's business type as `private` when there is no agent on the call.

If the value of the configuration option is set to `false`, calls with no agents present are classified with a business type of `private`, enabling No-Answer Supervision (NAS) to be applied for private calls.

If the value of the configuration option is set to `true`, calls remain classified with a business type of `unknown`.

agent-strict-id

Default Value: `false`
Valid Values: `true`, `false`, `passwd`
Changes Take Effect: Immediately
Related Feature: "Support for Emulated Agents" on page 147

Specifies whether, for emulated agents, T-Server allows:

- Any agent ID to be used during login (`false`)
- Only agent IDs configured in the Configuration Layer to be used during login (`true`)
- Only agent IDs that match an agent ID configured in the Configuration Layer and that also have a matching password (`passwd`).

auto-reconnect-on-fail

Default Value: `true`
Valid Values: `true`, `false`
Changes Take Effect: Immediately

Enables/disables the automatic reconnection of the main call when a consult call is reported as either failed or blocked..

Note: This option can also be configured at the DN-level. The DN-level setting takes precedence.

---

backwds-compat-acw-behavior

Default Value: `false`
Valid Value: `true`, `false`
Changes Take Effect: Immediately
Related Feature: "Support for Emulated Agents" on page 147

Specifies whether pre-7.5 behavior after-call work is enabled (value = `true`) or disabled (value = `false`), for backward compatibility.

If the value of the configuration option is set to `false` and if an agent receives or makes a business call while in emulated ACW, T-Server does the following:

1. Stops the ACW timer.

2. Forces the agent to the `Ready` state.

3. Restarts ACW (and the legal-guard timer) after the new business call is released.

If an agent makes or receives a work-related call while in ACW, T-Server does the following:

1. Suspends the ACW, but leaves the agent in the `ACW` state.

2. Resumes the ACW timer once the work-related call is released.

Note: A work-related call is one made by an agent while in ACW, or a consult call where the main call is either a business call or a work-related call.

After the ACW and any configured legal-guard time have been completed, the agent is forced to the `Ready` state.

If an agent makes or receives a private call during ACW, no action is taken and the ACW timer keeps running.

If the value of the configuration option is set to `true`, pre-7.5 behavior is used. In this case, T-Server forces the agent to the `Ready` state after the after-call work and legal-guard timer have been applied.

bsns-call-dev-types

Default Values: `+acdq +rp +rpq +xrp`
Valid Values: A set of space separated flags.

`+/-acdq`	Turns on/off the classification of the call type as business on an ACD Queue.
`+/-rp`	Turns on/off the classification of the call type as business on a Routing Point.
`+/-rpq`	Turns on/off the classification of the call type as business on a Routing Queue.
+/-xrp	Turns on/off the classification of the call type as business on an External Routing Point.

Changes Take Effect: Immediately

Related Feature: "Support for Business-Call Handling" on

Specifies which types of distribution devices will be exempt from default business-call handling. By default, T-Server classifies any call arriving at a distribution device (ACD Queue, Routing Point, Routing Queue, External Routing Point) as a business call. Using this option, you can disable automatic classification for calls to a particular type of distribution device. For example, if the value for this option is set to `-rp`, calls to `Routing Point` DNs will not be automatically classified as `business`, allowing the routing strategy to use the `BusinessCallType` Extension.

This option does not affect the application of the DN-level `bsns-call-type` option.

callback-dn

Default Value: `CallbackDN`
Valid Value: Any string that does not correspond to an existing internal device
Changes Take Effect: After startup

Defines the value of the third-party DN used in reporting the switch CallBack scenario as an emulated single-step transfer.

Note: The value for this option should not be included in any PBX dialing plan, nor should any DN with a name of this value be configured in the Configuration Layer.

---

call-type-by-dn

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately
Related Feature: "Support for Call Type Prediction" on

Enables or disables the setting of call type based on dialing plan analysis (when configured) and on the DN configuration in the Configuration Layer.

clid-withheld-name

Default Value: `PRIVATE`
Valid Values: Any string
Changes Take Effect: Immediately

Defines a name that replaces a withheld CLID. If no value is entered (empty string) the withheld CLID will be displayed.

consult-supervised-rt

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: Immediately

Specifies whether T-Server allows supervised routing of consultation calls. If the value of this configuration option is set to `false`, T-Server forces nonsupervised routing for consultation calls, regardless of configuration option or call-by-call settings.

> **Note:** When set in the `TServer` section, this option defines the default value for all Routing Points. However, you can also set a value for this option on the `Annex` tab of DNs of type `Routing Point` in a section called `TServer`. When set there, this value overrides the default value for the specific Routing Point.

convert-otherdn

Default Value: `+agentid +reserveddn +fwd`
Valid Values:

`+/-agentid`	Turns on/off either the conversion of the Agent ID value provided in the `OtherDN` attribute to the DN associated with this Agent, or the DN value to Agent ID value (where appropriate).
`+/-reserveddn`	Turns on/off the conversion of `OtherDN` for reserved DNs.
`+/-fwd`	Turns on/off conversion of `OtherDN` in request `TSetCallForward`.

Changes Take Effect: Immediately
Related Feature: "Support for Smart OtherDN Handling" on page 156

Defines whether T-Server has to convert (if applicable) the value provided in a request's `AttributeOtherDN`.

correct-connid

Default Value: `true`
Valid Value: `true`, `false`
Changes Take Effect: Immediately

If the value of the configuration option is set to `true`, T-Server corrects the value of the wrong connection IDs provided by the application in CTI requests. A valid value of `false` disables this feature.

correct-rqid

Default Value: `true`
Valid Value: `true, false`
Changes Take Effect: Immediately

If the value of the configuration option is set to `true`, T-Server mutates CTI requests provided by the application if the value of the request does not correspond semantically to the actual state of calls on the device. A valid value of `false` disables this feature.

Note: The value of this option must be set to `false` when using a multiline or MEA device, otherwise T-Server rejects the release request for the active call if there are two or more held calls on the device.

default-dn-type

Default Value: `none`
Valid Values:

`none`	T-Server assigns DN type using PBX-provided information
`extension`	T-Server uses value `AddressTypeDN`
`position`	T-Server uses value `AddressTypePosition`
`acdqueue`	T-Server uses value `AddressTypeQueue`
`routedn`	T-Server uses value `AddressTypeRouteDN`
`trunk`	T-Server uses value `AddressTypeTrunk`
`voicemail`	T-Server uses value `AddressTypeVoiceChannel`
`data`	T-Server uses value `AddressTypeDataChannel`
`announcement`	T-Server uses value `AddressTypeAnnouncement`
`routequeue`	T-Server uses value `AddressTypeRouteQueue`

Changes Take Effect: Immediately

Defines the value that T-Server applies for `AttributeAddressType` when the client does not provide that attribute or provides value `AddressTypeUnknown`.

dial-separator

Default Value: `,` (comma)
Valid Values: String that consists of all possible symbols for separation in the dialing string.
Changes Take Effect: Immediately

Specifies the symbol that T-Server uses as a separator when splitting into separate parts the dialing string provided in the following requests: `TMakeCall`, `TInitiateTransfer` and `TInitiateConference`.

The resulting request is made by using a combination of the CSTA requests `MakeCall (MakeConsultationCall)` and one or more Escape Service Dial Digits, separated by a pause.

dn-del-mode

Default Value: `idle`
Valid Values: See "Timeout Value Format" on page 242

`never`	T-Server does not unregister the DN with the PBX and device related information is never deleted from T-Server memory.
`idle`	T-Server unregisters the DN with the PBX and device-related information is deleted from T-Server memory as soon as there are no more calls on this device.
`force`	T-Server unregisters DN with the PBX and device-related information is deleted from T-Server memory regardless of the calls existed on that DN.
Timeout Value Format	T-Server applies a defined delay before unregistering the DN after the last call has left that DN. The valid value `idle` is equivalent to setting the Timeout Value to `0` (zero).

Changes Take Effect: Immediately

Defines how T-Server handles device and device-related information when the DN is not configured in the Configuration Layer and there are no clients registered on that DN.

Note: DNs not configured in the Configuration Layer feature cannot be used with Switch Partitioning feature. When using Switch Partitioning, all DNs must be configured in the Configuration Layer.

dn-for-undesired-calls

Default Value: No default value
Valid Values: Any valid switch DN
Changes Take Effect: Immediately
Related Feature: See "Support for Call Type Prediction" on page 159

Specifies the DN that T-Server uses as the request destination if the client provides a reserved DN in the request.

Note: You can set a value for this option on the `Annex` tab of appropriate DNs in a section called `TServer`. When set there, this value overrides the default value for the DN.

dtmf-digit-length

Default Value: `80`
Valid Value: Any integer from `40-100`
Changes Take Effect: Immediately

Specifies the length of DTMF tones generated when a `TSendDTMF` request is performed.

emulate-login

Default Value: `on-RP`
Valid Values:

`true`	T-Server performs an emulated login.
`false`	T-Server passes a login request to the PBX.
`on-RP`	T-Server checks the Agent Group associated with the login request. If the Agent Group is a standard Routing Point the emulated login request succeeds. This value can only be set at the Application level, and is available for backwards compatibility.

Changes Take Effect: Immediately
Related Feature: "Support for Emulated Agents" on page 147

Specifies whether T-Server performs an emulated agent login when the login device is configured in the Configuration Layer as a device of type `Extension`. This value can be set in a number of places, and T-Server processes it in the order of precedence shown below, highest first. If the value is not present at the higher level, T-Server checks the next highest level, and so on.

1. In `TAgentLogin`, using the `Extensions` attribute key `EmulateLogin`.

2. In the `Agent Login object` on the `Annex` tab.

3. In the login device object on the `Annex` tab.

4. In the device representing an `Agent Group` object, on the `Annex` tab.

5. In the T-Server `Application` object, in the `Tserver` section.

6. Using an Agent Group corresponding to an object which is configured in the Configuration Layer as a device of type `Routing Point`.

emulated-login-state

Default Value: `ready`
Valid Values:

`not-ready`	T-Server distributes `EventAgentNotReady` after `EventAgentLogin`
`ready`	T-Server distributes `EventAgentReady` after `EventAgentLogin`

Changes Take Effect: Immediately
Related Feature: "Support for Emulated Agents" on page 147

When T-Server performs an emulated agent login and the client specifies an agent work mode other than `ManualIn` or `AutoIn`, T-Server uses this option to determine which event to distribute.

This option can be set in a number of places, and T-Server processes it in the order of precedence shown below, highest first. If the value is not present at the higher level, T-Server checks the next level, and so on.

1. In `TAgentLogin`, using the `Extensions` attribute key `EmulateLogin`.

2. In the `Agent Login object` on the `Annex` tab.

3. In the agent login device on the `Annex` tab.

4. In the login device representing an `Agent Group` object during login, on the `Annex` tab.

5. In the T-Server `Application` object in the `Tserver` section.

6. Using an Agent Group corresponding to an object which is configured in the Configuration Layer as a device of type `Routing Point`.

extn-no-answer-overflow

Default Value: No default value.
Valid Values: `none`, `recall`, `release`, any valid overflow destination, in a comma-separated list

`none`	T-Server does not attempt to overflow a call on an extension when `extn-no-answer-timeout` expires.
`recall`	T-Server returns the call to the last distribution device (the device reported in the `ThisQueue` attribute of the call) when `extn-no-answer-timeout` expires.
`release`	T-Server drops the call.
Any valid overflow destination, in a comma-separated list	T-Server returns the call to the specified destination when `extn-no-answer-timeout` expires.

Changes Take Effect: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

Specifies a sequence of overflow destinations that T-Server attempts to overflow to when the time specified in the `extn-no-answer-timeout` configuration option expires.

T-Server attempts to overflow in the order specified in the list. If all overflow attempts fail, T-Server abandons overflow. See also `Extensions` attribute key `NO_ANSWER_OVERFLOW` on page 177.

If the list of overflow destinations contains the value `recall`, and the call was not distributed, T-Server skips to the next destination in the list.

Note: If you define option `no-answer-overflow` on the `Annex` tab of any individual `Extension` object in Configuration Manager, that value overrides the value of `extn-no-answer-overflow` for that `Extension` object only.

---

extn-no-answer-timeout

Default Value: `15`
Valid Value: Any integer from `0–600`
Changes Take Effect: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

Defines the default no-answer timeout (in seconds) that T-Server applies to any device of type `Extension`. When the timeout ends, T-Server executes the actions defined in option `extn-no-answer-overflow`.

A value of `0` deactivates the no-answer supervision feature for devices of type `Extension`.

See also `Extensions` attribute key `NO_ANSWER_TIMEOUT` on page 177.

Note: If you define option `no-answer-timeout` on the `Annex` tab of an `Extension` object in Configuration Manager, that value overrides the value of `extn-no-answer-timeout` for that `Extension` object.

---

heartbeat-appname

Default Value: No default value
Valid Value: Any valid application name
Changes Take Effect: Immediately

Defines the identity of the heartbeat application that keeps calls queued while waiting for routing instructions. The switch expects heartbeat messages with this preconfigured application name.

heartbeat-overflow

Default Value: No default value
Valid Value: Any valid destination
Changes Take Effect: Immediately

Defines the destination to which queued calls are overflowed (by the application defined in `heartbeat-appname`) if the switch does not receive the expected heartbeat message.

inbound-bsns-calls

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately
Related Feature: "Support for Business-Call Handling" on

Specifies whether T-Server should consider all established inbound calls to be business calls (and consequently apply emulated wrap-up). This applies to both local and real (CCD or RSI) agents from release 7.1 of T-Server.

inherit-bsns-type

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately
Related Feature: "Support for Business-Call Handling" on

Determines whether a consult call that is made from a business primary call should inherit the `Extensions` attribute key `GCTI_BUSINESS_CALL`.

internal-bsns-calls

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately
Related Features: "Support for Emulated Agents" on

Determines whether T-Server considers internal calls made from or to any agent as business calls.

legal-guard-time

Default Value: `0`
Valid Value: Any integer from `0-10`
Changes Take Effect: Immediately
Related Feature: "Support for Emulated Agents" on

Specifies a legal-guard time (in seconds) for emulated agents to postpone the transition to the `Ready` state after a business call. T-Server always considers a routed call a business call.

link-control

Default Value: None. Required if the configuration section `link-control` is absent.
Valid Values: Any valid section name
Changes Take Effect: Immediately

Specifies the section where CTI-link options are specified.

max-pred-req-delay

Default Value: `3`
Valid Value: Any integer from `0–10`
Changes Take Effect: Immediately
Related Feature: "Support for Emulated Predictive Dialing" on page 152

Defines the maximum time (in seconds) that T-Server waits for a free dialing resource to become available before rejecting a `TMakePredictiveCall` request.

nas-indication

Default Value: `none`
Valid Values:

`none`	No reason or extension is provided in `EventReleased`
`ext`	`Extensions` attribute key `NO_ANSWER_TIMEOUT` is supplied in `EventReleased`
`rsn`	Reason `NO_ANSWER_TIMEOUT` is supplied in `EventReleased`

Changes Take Effect: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

Specifies the reporting action in `EventReleased` when No-Answer Supervision overflows a call.

nas-private

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Place: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

Specifies whether No-Answer Supervision is enabled for private calls.

Note: When set in the `TServer` section, this option defines the default value for all private calls. However, you can also set a value for this option on the `Annex` tab of DNs of type `Extension` or `Agent ID` in a section called `TServer`. When set there, this value overrides the default value for the specific DN.

---

outbound-bsns-calls

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: Immediately
Related Features: "Support for Emulated Agents" on page 147

Specifies whether T-Server should consider all established outbound calls on a emulated agent as business calls after being established.

override-switch-acw

Default Value: `false`
Valid Value: `true, false`
Changes Take Effect: Immediately

Reserved for Genesys Engineering.

pend-state-sync-tout

Default Value: `0`
Valid Values: Any integer from `0-10`
Changes Take Effect: Immediately

Sets the timeout period (in seconds) for the PBX to send a synchronizing agent-state event after the call is released. A value of `0` indicates that the PBX does not send such events.

posn-no-answer-overflow

Default Value: No default value
Valid Values:

`none`	T-Server does not attempt to overflow a call on a position when the timeout value specified for the `posn-no-answer-timeout` configuration option expires.
`recall`	T-Server returns the call to the last distribution device (the device reported in the `ThisQueue` attribute of the call) when `posn-no-answer-timeout` expires.
`release`	T-Server drops the call.
Any valid overflow destination, in a comma-separated list	T-Server returns the call back to the specified destination when the timeout value specified for the `posn-no-answer-timeout` configuration option expires.

Changes Take Effect: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

Specifies a sequence of overflow destinations that T-Server attempts to overflow to when the timeout value specified in the `posn-no-answer-timeout` configuration option expires.

T-Server attempts to overflow in the order specified in the list. If all overflow attempts fail, T-Server abandons overflow. See also `Extensions` attribute key `NO_ANSWER_OVERFLOW` on page 177.

If the list of overflow destinations contains the value `recall` and the call was not distributed, T-Server skips to the next destination in the list.

Note: If you define the option, `no-answer-overflow`, on the `Annex` tab of any individual `ACD Position` object in Configuration Manager, that value overrides the value of `posn-no-answer-overflow` for that position only.

---

posn-no-answer-timeout

Default Value: `15`
Valid Value: Any integer from `0–600`
Changes Take Effect: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

Defines the default no-answer timeout (in seconds) that T-Server applies to any device of type `ACD Position`. When the timeout ends, T-Server executes the actions defined in the `posn-no-answer-overflow` configuration option.

See also `Extensions` attribute key `NO_ANSWER_TIMEOUT` on page 177.

Note: If you define the option, `no-answer-overflow,` on the `Annex` tab of an `ACD Position object` in Configuration Manager, that value overrides the value of `posn-no-answer-timeout` for that position.

---

prd-dist-call-ans-time

Default Value: `0`
Valid Value: Any integer from `0-10`
Changes Take Effect: Immediately
Related Feature: "Support for Emulated Predictive Dialing" on page 152

Specifies the duration of a timer (in seconds) which starts after a customer answers a predictive call. If the call has not been answered by an agent when the timer expires, T-Server abandons the call. With value `0` (zero), T-Server does not automatically abandon the call, which then rings on the agent until it is answered.

Notes: • When set at the Application level, this option defines the default value to be applied for all agents. However, you can also set this option on the `Annex` tab of the `Agent login` object, in a section called `TServer`. When set in this way, this value overrides the default value for the specific agent ID.
When an emulated predictive dial is made from an emulated Routing Point, and configuration options, `prd-dist-call-ans-time` and `route-no-answer-timeout,` are set, the value in `prd-dist-call-ans-time` takes precedence.
• When using T-Server 8.0 with Outbound Contact Server (OCS) 7.6 or lower, this option must be set to `0` (zero).

---

recall-no-answer-timeout

Default Value: 15
Valid Values: Any integer from 0-600
Changes Take Place: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

Defines the time that T-Server waits for a call to reappear on a device as a result of a recall (for example, a ringback waiting to be answered). When the timer expires, T-Server executes the actions defined by the relevant overflow option, as well as the action option for cases where an agent is logged in.

If the value is set to 0, there is no No-Answer Supervision for such calls.

This option can be defined either at the Application level or in a section called Tserver on the Annex tab of any of the following configuration object types in Configuration Manager:

- Extension

- ACD Position

- Voice Treatment Port

- Agent Login

releasing-party-report

Default Value: false
Valid Values: true, false
Changes Take Effect: Immediately

Specifies whether T-Server reports the Extensions attribute key ReleasingParty in events EventReleased and EventAbandoned to indicate which party initiated the call release.

retain-call-tout

Default Value: 15
Valid Value: Any integer from 0–3600
Changes Take Effect: Immediately

Specifies the interval (in seconds) that T-Server waits before cleaning up either a released call, or a call that is connected to an unmonitored device, where the call is still in T-Server internal structures.

route-failure-alarm-high-wm

Default Value: 10
Valid Values: Positive integer for absolute value or floating point number followed by % (percent) symbol. For example—10%, 2.25%, 5E-2%.
Changes Take Effect: Immediately
Related Feature: See "Support for Failed Route Notification" on page 161

Defines the high water mark which must be reached in order for a route failure alarm to be triggered, within the period configured in the route-failure-alarm-period configuration option.

route-failure-alarm-low-wm

Default Value: `1`
Valid Values: Positive integer for absolute value or floating point number followed by `%` (percent) symbol. For example—`10%`, `2.25%`, `5E-2%`.
Changes Take Effect: Immediately
Related Feature: See "Support for Failed Route Notification" on

Defines the low water mark which must be reached, while under the route failure alarm condition, within the period configured in the `route-failure-alarm-period` configuration option.

route-failure-alarm-period

Default Value: `0`
Valid Values: Positive integer
Changes Take Effect: Immediately
Related Feature: See "Support for Failed Route Notification" on

Defines the interval (in seconds) in which the number of failed route requests is totalled, in order to determine either a possible route failure alarm or the cancelation of an alarm, based on the failed route counter reaching the relevant high or low water mark.

Note: This option also specifies the minimum time between alarm setting and alarm clearing.

---

rtmem-divert-tout

Default Value: `0`
Valid Value: Any integer from `0-500`
Changes Take Effect: Immediately

Defines the length of the delay (in milliseconds) between the PBX reporting of `released` on an emulated Routing Point member device (switch-specific type `2`) and the T-Server reporting the `released` event. If there is a `ringing` event on an alternate route member device during the delay, then the T-Server handles the event as an internal transfer. This prevents the reporting of `abandoned` events on the emulated Routing Point when the call moves between route member devices.

supervised-route-timeout

Default Value: `5`
Valid Value: Any integer from `0–600`
Changes Take Effect: Immediately

Specifies the interval (in seconds) that T-Server waits for a call routed from an emulated Routing Point using supervised routing to be answered. If the call is not answered within the period specified, T-Server recalls the call to the Routing Point and initiates rerouting. Setting this configuration option to a value of `0` (zero) deactivates this feature. If a combination of `Extensions` and

option values forces T-Server to use routing through `Transfer`, but the timeout is set to `0` (zero), T-Server does not consider the routing as supervised, and completes the transfer immediately.

See also `agent-no-answer-timeout`. For predictive dialing to work, you must set values greater than `0` (zero) for both this option and the `prd-dist-call-ans-time` option.

This timeout should be set to a value higher than the system latency.

Note: When set at the Application level, this option defines the default value for all Routing Points. However, you can also set a value for this option on the `Annex` tab of DNs of type `Routing Point` in a section called `TServer`. When set there, this value overrides the default value for the specific Routing Point. You can also use the `Extensions` attribute key `SUPERVISED_ROUTE` to override the value of this configuration option on a call-by-call basis. When a value is set in the `Extensions` attribute, this takes precedence, followed by values set in the `Annex` tab, then the application value.

When an emulated predictive dial is made from an emulated Routing Point, and options `prd-dist-call-ans-time` and `route-no-answer-timeout` are set, the value in `prd-dist-call-ans-time` takes precedence.

---

sync-emu-acw

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: Immediately
Related Feature: "Support for Emulated Agents" on page 147

Specifies whether T-Server synchronizes emulated ACW for emulated agents. The `TAgentLogin Extensions` attribute key `SyncEmuAgentACW` overrides the value configured for this option.

timed-acw-in-idle

Default Value: `true`
Valid Values: `true`, `false`
Changes Take Effect: Immediately
Related Feature: "Support for Emulated Agents" on page 147

Specifies whether T-Server applies the automatic wrap-up timer (using the wrap-up-time parameter) when an agent sends `TAgentNotReady`. If the value of the configuration option is set to `false`, T-Server does not automatically end manual wrap-up—the agent must return manually from ACW.

transfer-timer

Default Value: `1000`
Valid Value: Any integer from `0-10000`
Changes Take Effect: Immediately

Specifies the time (in milliseconds) for automatic device cleanup after a transfer. After a two-step or single-step transfer CTI request, the switch may initiate a new call, leaving the device busy. If this option has a value, T-Server starts a timer on the device after transfer: any new calls initiated on that device during the specified time are automatically cleared by T-Server using a CSTA `ClearConnection` request. `EventOnHook` is postponed until the new call is cleared, or the timer has expired, to prevent new calls being routed to such a device.

A value of `0` (zero) disables this option.

unknown-bsns-calls

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: Immediately
Related Feature: "Support for Business-Call Handling" on page 144

Determines whether T-Server considers calls of unknown call type made from or to any agent as business calls.

untimed-wrap-up-value

Default Value: `1000`
Valid Value: Any nonzero positive integer
Changes Take Effect: Immediately
Related Feature: "Support for Emulated Agents" on page 147

Specifies the threshold at which the timing of ACW stops and manual intervention is required (*untimed ACW*).

unknown-xfer-merge-udata

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Place: Immediately

If the value of the configuration option is set to `true`, T-Server copies the user data from the current monitored call to the call transferred from an unmonitored destination. Because the primary call was previously unknown, normal user data inheritance mechanisms cannot be used.

uui-as-text

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: Immediately

Specifies whether the user data type `UU_DATA` is sent to CallBridge/CAP as text (value = `true`) or binary (value = `false`). Data must be in ASCII format when this option is enabled.

vto-onhook-dly

Default Value: `0`
Valid Values: Any integer from `0-5000`
Changes Take Effect: Immediately

Defines the length of the delay (in milliseconds) between the PBX reporting of on-hook for VTO devices and the T-Server sending `EventOnHook` for the device. A value of `0` (zero) indicates that there will be no delay. This option is valid only for DNs configured as VTO devices (switch-specific type `8`).

wrap-up-threshold

Default Value: `0`
Valid Values: Any positive integer
Changes Take Effect: Immediately
Related Feature: "Support for Emulated Agents" on page 147

Specifies the minimum period (in seconds) that a business call must last before emulated ACW is applied at the end of the call.

wrap-up-time

Default Value: `0`
Valid Value:

`0`	ACW is disabled Exception: When set in the `Annex` tab of the `Agent Login object`, value `0` (zero) means T-Server will process from Step 4 in the processing order of precedence below.
Value greater than `0` but less than `untimed-wrap-up-value`	The number of seconds of timed ACW, after which T-Sever returns the agent automatically to the `Ready` state.
Value equal to `untimed-wrap-up-value`	ACW is untimed and the agent must manually return to the `Ready` state.
Value greater than `untimed-wrap-up-value`	Disables ACW.
`untimed`	ACW is untimed and the agent must manually return to the `Ready` state.

Changes Take Place: Immediately
Related Feature: "Support for Emulated Agents" on page 147

Specifies the amount of wrap-up time (ACW) allocated to emulated agents at the end of a business call.

This option can be set in a number of places, and T-Server processes it in the order of precedence shown below, highest first. If the value is not present at the higher level, T-Server checks the next level, and so on.

1. In `TAgentPendingACW`, in `Extensions` attribute key `WrapUpTime` (applies to this agent only).

2. In `TACWInIdle`, in `Extensions` attribute key `WrapUpTime` (applies to this agent only).

3. In the call, in user data `WrapUpTime` (limited to ISCC scenarios).

4. In a configuration object of type `ACD Queue` or `Routing Point`, on the `Annex` tab.

5. In `TAgentLogin`, in `Extensions` attribute key `WrapUpTime` (applies to this agent only).

6. In the `Agent Login object`, on the `Annex` tab.

7. In the login device object, on the `Annex` tab.

8. Using an Agent Group corresponding to an object configured in the Configuration Layer as a device of type `ACD Queue`.

9. In the T-Server `Application` object.

SwitchSpecificType Section

This section must be called `SwitchSpecificType`.

acd-queue

Default Value: `0`
Valid Value: Switch-specific types for DN of type `ACD Position` supported by T-Server
Changes Take Effect: Immediately

Defines the switch-specific type that T-Server uses for registration of DNs of type `ACD Position` (`AddressTypePosition`) that are not configured in the Configuration Layer.

extension

Default Value: `0`
Valid Value: Switch-specific types for DN of type `Extension` supported by T-Server
Changes Take Effect: Immediately

Defines the switch-specific type that T-Server uses for registration of DNs of type `Extension` (`AddressTypeDN`) that are not configured in the Configuration Layer.

routing-point

Default Value: `0`
Valid Value: Switch-specific types for DN of type `Routing Point` supported by T-Server
Changes Take Effect: Immediately

Defines the switch-specific type that T-Server uses for registration of DNs of type `Routing Point` (`AddressTypeRouteDN`) that are not configured in the Configuration Layer.

routing-queue

Default Value: `0`
Valid Value: Switch-specific types for DN of type `Routing Queue` supported by T-Server
Changes Take Effect: Immediately
Defines the switch-specific type that T-Server uses for registration of DNs of type `Routing Queue` (`AddressTypeRouteQueue`) that are not configured in the Configuration Layer.

link-control Section

The section name must be `link-control`.

acse-enable

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately

Note: Specifies whether ACSE negotiation should be used at link startup. Genesys recommends using the default value and configuring T-Server to connect to CSTA III services on the CAP server.

See also "Configuration Requirements for CAP 3.0 and CAP 3.0 Inside" on .

call-rq-gap

Default Value: `250`
Valid Value: Any integer from `0-1000`
Changes Take Place: Immediately

Specifies (in milliseconds) the length of delay applied to a request issued against a busy call (a call that has another request working on it already). This prevents race conditions on the different call legs.

Set the value of this option to a time longer than the usual response time for a request from the switch.

device-rq-gap

Default Value: `250`
Valid Value: Any integer from `0-1000`
Changes Take Place: Immediately

Specifies (in milliseconds) the minimum time gap between sequential requests relating to a device. Note that this setting only affects the gap between requests in a device queue.

> **Note:** You can also set a value for this option at a DN-level in the `TServer` section on the `Annex` tab with option `rq-gap`.

hostname

Default Value: No default value. Mandatory option.
Valid Value: Any valid host name
Changes Take Effect: At T-Server start/restart

Specifies the hostname of the CAP server. You must specify a value for this option.

See also "Configuration Requirements for CAP 3.0 and CAP 3.0 Inside" on page 139.

kpl-interval

Default Value: `10`
Valid Value: Any integer from `0-600`
Changes Take Effect: Immediately
Related Feature: "Support for Keep-Alive Feature" on page 158

Specifies a "keep-alive" interval (in seconds). To check network connectivity, T-Server issues a dummy CTI request at the interval specified when there is no other activity on the link. A value of `0` (zero) disables this feature.

The value of this option may need to be increased to avoid false restarts if the switch is sometimes slow to respond, for example, during busy periods.

kpl-tolerance

Default Value: `3`
Valid Value: Any integer from `0-10`
Changes Take Effect: Immediately
Related Feature: "Support for Keep-Alive Feature" on page 158

Specifies the threshold number of accumulated KPL request failures. When the threshold is reached T-Server may either consider the CTI link:

• To be lost—in which case T-Server tries to reconnect to it.

• To be unstable—in which case T-Server issues a warning message.

link-alarm-high

Default Value: `0`
Valid Values: `0-100`
Changes Take Effect: Immediately

Specifies the percentage of the `use-link-bandwidth` option when LMS message `LINK_ALARM_HIGH` is triggered.

A value of `0` (zero) disables the feature.

link-alarm-low

Default Value: `0`
Valid Values: `0-100`
Changes Take Effect: Immediately

Specifies percentage of the `use-link-bandwidth` option when LMS message `LINK_ALARM_LOW` will be triggered.

max-outstanding

Default Value: `100`
Valid Value: Any integer from `1-100`
Changes Take Effect: Immediately

Specifies the maximum number of the outstanding sent requests awaiting the response from the link.

port

Default Value: `1040`
Valid Value: Any valid TCP port address
Changes Take Effect: At T-Server start/restart

Specifies the TCP port address of the CallBridge server.

See also "Configuration Requirements for CAP 3.0 and CAP 3.0 Inside" on .

reg-delay

Default Value: `1000`
Valid Values: `0 - 5000`
Changes Take Effect: Immediately

Defines the time (in milliseconds) that T-Server waits for the `DN Created` notification from Configuration Server before it starts processing the registration request from the client as a request for a DN not configured in the Configuration Layer.

reg-interval

Default Value: `60`
Valid Values: Any integer from `0-600`
Changes Take Effect: Immediately
Related Feature: "Support for Keep-Alive Feature" on

Specifies the time interval (in seconds) for the `Start Monitor` request to be re-sent to the switch if the initial request fails. A value of `0` (zero) switches this feature off.

reg-silent

Default Value: `true`
Valid Values: `true, false`
Changes Take Effect: Immediately

If the value of the configuration option is set to `true`, T-Server reports `EventRegistered` for "on-demand" registration with the PBX when the procedure is completed

If the value is `false`, T-Server reports `EventRegistered` as early as possible during the PBX registration procedure.

Note: Reserved for Genesys Engineering.

---

rq-conflict-check

Default Value: `true`
Valid Value: `true, false`
Changes Take Place: Immediately

Specifies whether the request conflict checking feature is enabled. This feature intelligently resolves conflicting client requests.

rq-expire-tout

Default Value: `10000`
Valid Value: Any integer from `0-30000`
Changes Take Effect: Immediately
Related Feature: "Support for Keep-Alive Feature" on

Specifies the interval (in milliseconds) that T-Server waits before deleting pending requests (requests for which it has received no notification from the switch) from clients.

This timeout should be set to a value higher than the system latency.

Note: This option has no effect if the value for the configuration option, `kpl-tolerance`, is set to `0`. In that case, a single KPL failure will trigger a link restart.

---

rq-gap

Default Value: `0`
Valid Value: Any integer from `0-1000`
Changes Take Effect: Immediately

Specifies the minimum interval (in milliseconds) between succeeding CTI requests sent over the link. You can adjust the value to meet CTI-link load and performance requirements.

use-link-bandwidth

Default Value: `auto`
Valid Values: `0-999`, `auto`
Changes Take Effect: Immediately

Specifies the maximum number of requests per second throughput to be used by T-Server to calculate link alarm messages. A value of `0` (zero) disables the feature.

Link-Disconnect Handling Options

ha-sync-dly-lnk-conn

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: At T-Server start/restart

Determines whether the backup T-Server delays sending of `EventLinkConnected` until it has been notified that T-Server synchronization has completed. With value `true`, the backup T-Server sends `EventLinkConnected` once it has completed switch synchronization (that is, after all calls are cleared n the primary T-Server. If the value of the configuration option is set to `false`, there is no delay in sending `EventLinkConnected` and synchronization takes place as for pre-7.1 T-Servers.

quiet-cleanup

Default Value: `false`
Valid Values: `true`, `false`
Changes Take Effect: Immediately

Disables the events that T-Server would otherwise send to clients during clean-up to notify them about the deleted calls. If the value of the configuration option is set to `true`, the T-Server clients are supposed to drop all the calls upon `EventLinkDisconnected` without waiting for T-Server notification. See `restart-cleanup-limit`.

quiet-startup

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately

Disables the events that T-Server would otherwise send to clients during link start-up to notify clients about the changes that occurred during the link outage. If the value of the configuration option is set to `true`, clients should query the T-Server after the `EventLinkConnected`.

restart-cleanup-limit

Default Value: `0`
Valid Values: Any integer
Changes Take Effect: Immediately

Defines the maximum number of reconnect attempts for calls (and possibly agent logins) in T-Server during link outage. A value of `0` zero means all the calls are deleted immediately after the link failure. See `restart-period`.

restart-cleanup-dly

Default Value: `0`
Valid Values: Any integer
Changes Take Effect: Immediately

Specifies the delay, in seconds, for T-Server to keep "unreliable" calls after link startup. This delay allows T-Server to salvage calls that existed before the link failure (for which any events were received) if T-Server was unable to verify the their existence using snapshot. A value of `0` (zero) means any non verified calls are cleared up immediately after completion of link startup.

restart-period

Default Value: `20`
Valid Values: `0-600`
Changes Take Effect: Immediately

Specifies the interval (in seconds) that T-Server waits between attempts to reconnect to the switch when the link fails. A value of `0` (zero) means T-Server does not try to reconnect unless the link configuration is changed.

Agent Login-Level and DN-Level Options

You can set the configuration options described in this section in the `TServer` section of the `Annex` tab of the relevant configuration object in the Configuration Layer.

auto-reconnect-on-fail

Default Value: `true`
Valid Values: `true, false`
Changes Take Effect: Immediately

Enables/disables the automatic reconnection of the main call when a consultation call initiated from this DN is reported as either failed or blocked.

Note: This option can also be configured at the Application level, where it applies globally to all consultation calls. However, the DN-level setting takes precedence.

---

bsns-call-type

Default Value: none
Valid Values:

`business`	The call is classified as a business call.
`private`	The call is classified as a private call.
`ignore`	The distribution device has no effect on business call classification.

Changes Take Effect: Immediately
Related Features: "Support for Business-Call Handling" on

The option can be configured in the `TServer` section on the `Annex` tab of a distribution device. This option takes precedence over the Application-level options `inbound-bsns-call,  internal-bsns-call,` and `outbound-bsns-call,` and is applied on calls arriving on the device in question.

Distribution devices include ACD Queue, Routing Point, Routing Queue and External Routing Point. This option has no effect on any other device types.

The value of the option overrides any of the following T-Server configuration options set at the `Application` level for the object where it has been set (depending on the type of configuration object). It may be overridden by the `BusinessCallType` key of the `Extensions` attribute.

no-answer-action

Default Value: `none`
Valid Values:

`none`	T-Server takes no action on agents when business calls are not answered.
`notready`	T-Server sets agents `NotReady` when business calls are not answered.
`logout`	T-Server automatically logs out agents when business calls are not answered.

Changes Take Effect: Immediately
Related Feature: "Support for No-Answer Supervision" on

This option is defined in a section called `TServer` on the `Annex` tab of any `Agent Login object` in Configuration Manager. The value set in the `Annex` tab is specific to this instance of an agent, and overrides the value for the same option set in the `Options` tab.

If an emulated or real PBX agent receives a T-Server business call and the agent fails to answer the call within the time defined in option `agent-no-answer-timeout`, option `no-answer-action` determines the action T-Server performs on this agent.

Note: If a call is abandoned before one of the timeouts specified for `agent-no-answer-timeout`, `no-answer-timeout`, or `supervised-route-timeout` expires (depending on which timer is applicable), T-Server performs no action on this agent.

---

no-answer-overflow

Default Value: No default value
Valid Values:

`none`	T-Server does not attempt to overflow a call on an agent when `agent-no-answer-timeout` expires.
`recall`	T-Server returns the call to the last distribution device (the device reported in the `ThisQueue` attribute of the call) when `agent-no-answer-timeout` expires.
`release`	T-Server drops the call.
`default`	T-Server stops execution of the current overflow sequence and continues with the T-Server default overflow sequence defined by the relevant overflow option in the main `TServer` section.
Any valid overflow destination, in a comma-separated list	T-Server returns the call to the specified destination when `agent-no-answer-timeout` expires.

Changes Take Effect: Immediately

Related Feature: "Support for No-Answer Supervision" on page 154

Defined in a section called `TServer` on the `Annex` tab of any of the following configuration object types in Configuration Manager:

- `Agent Login`

- `Extension`

- `ACD Position`

- `Voice Treatment Port`

The value of this option overrides any of the following T-Server configuration options set at the `Application` level for the object where it has been set (depending on configuration object type):

- `agent-no-answer-overflow` if defined for an `Agent Login` object

- `extn-no-answer-overflow` if defined for an `Extension` object or a `Voice Treatment Port` object

- `posn-no-answer-overflow` if defined for an `ACD Position` object

T-Server attempts to apply the overflow in the order that is listed. If the first overflow destination fails, then T-Server attempts the next one in the list. If all overflow destinations in the list fail, then T-Server abandons overflow. If the list of overflow destinations contains the value `recall`, and the call was not distributed, T-Server skips to the next destination in the list.

no-answer-timeout

Default Value: `15`
Valid Value: Any integer from `0–600`
Changes Take Effect: Immediately
Related Feature: "Support for No-Answer Supervision" on page 154

Defined in a section called `TServer` on the `Annex` tab of any of the following types of configuration object in Configuration Manager:

- `Extension`

- `ACD Position`

- `Agent Login`

- `Voice Treatment Port`

This option defines the time (in seconds) that T-Server waits for a call that is ringing on the device in question to be answered. When the timer expires, T-Server applies the appropriate overflow, and, in the case of agents, the appropriate logout or not-ready action.

A value of `0` deactivates `no-answer supervision` for this device.

The value of this option overrides any of the following T-Server configuration options set at the `Application` level for the object where it has been set (depending on configuration object type):

- `agent-no-answer-timeout` if defined for an `Agent Login` object

- `extn-no-answer-timeout` if defined for an `Extension` object or a `Voice Treatment Port` object

- `posn-no-answer-timeout` if defined for an `ACD Position` object

Changes from 8.0 to 8.1

Table 25 lists the configuration options that:

- Are new or changed in the 8.1 release of T-Server

- Have been added or changed since the most recent 8.0 release of this document

If a configuration option has been replaced with another that enables the same functionality, the new option name and its location in this chapter are noted.

Table 25: Changes from 8.0 to 8.1

Option Name	Details
T-Server Section	
auto-reconnect-on-fail	Re-located to the `TServer` section in 8.1. See description on page 254.

Related Documentation Resources

The following resources provide additional information that is relevant to this software. Consult these additional resources as necessary.

T-Server for Siemens HiPath 4000 CSTA III

- The Release Notes and Product Advisories for this product, which are available on the Genesys Technical Support website at http://genesyslab.com/support.

Management Framework

Consult these additional resources as necessary:

- The *Framework 8.1 Deployment Guide*, which will help you configure, install, start, and stop Framework components.
- The *Framework 8.1 Configuration Manager Help*, which describes how to use Configuration Manager in either an enterprise or multi-tenant environment.
- The *Framework 8.1 Genesys Administrator Help,* which describes how to use Genesys Administrator in either an enterprise or multi-tenant environment.
- The *Framework 8.0 Configuration Options Reference Manual*, which will provide you with descriptions of configuration options for other Framework components.

Platform SDK

- The *Genesys Events and Models Reference Manual*, which contains an extensive collection of events and call models describing core interaction processing in Genesys environments.

- The *Voice Platform SDK 8.x .NET (or Java) API Reference*, which contains technical details of T-Library functions.

Genesys

- *Genesys Technical Publications Glossary,* which ships on the Genesys Documentation Library DVD and which provides a comprehensive list of the Genesys and computer-telephony integration (CTI) terminology and acronyms used in this document.

- *Genesys Migration Guide*, which ships on the Genesys Documentation Library DVD, and which provides documented migration strategies for Genesys product releases. Contact Genesys Technical Support for more information.

Information about supported hardware and third-party software is available on the Genesys Technical Support website in the following documents:

- *Genesys Supported Operating Environment Reference Manual*
- *Genesys Supported Media Interfaces Reference Manual*

Consult these additional resources as necessary:

- *Genesys Hardware Sizing Guide,* which provides information about Genesys hardware sizing guidelines for the Genesys 7.x and 8.x releases.

- *Genesys Interoperability Guide,* which provides information on the compatibility of Genesys products with various Configuration Layer Environments; Interoperability of Reporting Templates and Solutions; and Gplus Adapters Interoperability.

- *Genesys Licensing Guide,* which introduces you to the concepts, terminology, and procedures relevant to the Genesys licensing system.

- *Genesys Database Sizing Estimator 8.0 Worksheets,* which provides a range of expected database sizes for various Genesys products.

For additional system-wide planning tools and information, see the release-specific listings of System Level Documents on the Genesys Technical Support website, accessible from the `system level documents by release` tab in the Knowledge Base `Browse Documents` Section.

Genesys product documentation is available on the:

- Genesys Technical Support website at `http://genesyslab.com/support`.
- Genesys Documentation Library DVD, which you can order by e-mail from Genesys Order Management at `orderman@genesyslab.com`.

Document Conventions

This document uses certain stylistic and typographical conventions—introduced here—that serve as shorthands for particular kinds of information.

Document Version Number

A version number appears at the bottom of the inside front cover of this document. Version numbers change as new information is added to this document. Here is a sample version number:

80fr_ref_06-2008_v8.0.001.00

You will need this number when you are talking with Genesys Technical Support about this product.

Screen Captures Used in This Document

Screen captures from the product graphical user interface (GUI), as used in this document, may sometimes contain minor spelling, capitalization, or grammatical errors. The text accompanying and explaining the screen captures corrects such errors *except* when such a correction would prevent you from installing, configuring, or successfully using the product. For example, if the name of an option contains a usage error, the name would be presented exactly as it appears in the product GUI; the error would not be corrected in any accompanying text.

Type Styles

Table 26 describes and illustrates the type conventions that are used in this document.

Table 26: Type Styles

Type Style	Used For	Examples
Italic	• Document titles • Emphasis • Definitions of (or first references to) unfamiliar terms • Mathematical variables Also used to indicate placeholder text within code samples or commands, in the special case where angle brackets are a required part of the syntax (see the note about angle brackets on page 286).	Please consult the *Genesys Migration Guide* for more information. Do *not* use this value for this option. A *customary and usual* practice is one that is widely accepted and used within a particular industry or profession. The formula, $x + 1 = 7$ where x stands for . . .
Monospace font (Looks like `teletype` or `typewriter text`)	All programming identifiers and GUI elements. This convention includes: • The *names* of directories, files, folders, configuration objects, paths, scripts, dialog boxes, options, fields, text and list boxes, operational modes, all buttons (including radio buttons), check boxes, commands, tabs, CTI events, and error messages. • The values of options. • Logical arguments and command syntax. • Code samples. Also used for any text that users must manually enter during a configuration or installation procedure, or on a command line.	Select the `Show variables on screen` check box. In the `Operand` text box, enter your formula. Click `OK` to exit the `Properties` dialog box. T-Server distributes the error messages in `EventError` events. If you select `true` for the `inbound-bsns-calls` option, all established inbound calls on a local agent are considered business calls. Enter `exit` on the command line.
Square brackets ([ ])	A particular parameter or value that is optional within a logical argument, a command, or some programming syntax. That is, the presence of the parameter or value is not required to resolve the argument, command, or block of code. The user decides whether to include this optional information.	`smcp_server -host [/flags]`
Angle brackets (< >)	A placeholder for a value that the user must specify. This might be a DN or a port number specific to your enterprise. **Note:** In some cases, angle brackets are required characters in code syntax (for example, in XML schemas). In these cases, italic text is used for placeholder values.	`smcp_server -host <confighost>`

Framework 8.1

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Symbols

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