Framework 8.0

T-Server for Aspect ACD

Deployment Guide

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Preface

Welcome to the *Framework 8.0 T-Server Deployment Guide.* This document introduces you to the concepts, terminology, and procedures relevant to T-Servers® in general and provides detailed reference information about your T-Server. 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 Deployment Guide*, and the Release Note for your T-Server.

This document is valid only for the 8.0 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 289.

About T-Server for Aspect ACD

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.

Note that the T-Server name has changed over the course of previous releases for various reasons (including, but not limited to, changes in vendor name or in Genesys policy). The former names include:

- T-Server for Aspect ACD Application Bridge and Contact Center Server

Intended Audience

This document is primarily intended 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 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 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. If you take that approach, please also read Release Notes and refer to other related resources, such as the *Genesys 7 Events and Models Reference Manual* and *Voice Platform SDK 8 .NET* (or *Java*) *API Reference.*

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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Before contacting technical support, refer to the *Genesys Technical Support Guide* for complete contact information and procedures.		

Part

1 Common Functions and Procedures

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 49, addresses high availability (HA).
- Chapter 4, “Multi-Site Support,” on page 61, details the variations available for T-Server implementations across geographical locations.
- Chapter 5, “Start and Stop T-Server Components,” on page 119, 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 8.0

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 8.0 release of T-Server:

- **Enhanced Event Propagation support for switch partitioning.** T-Server now supports the Event Propagation feature in deployments that use switch partitioning or intelligent trunks. See “Switch Partitioning” on page 100.

- **Enhanced ISCC Transaction Monitoring support.** T-Server now supports new key-value pairs in `AttributeExtensions` with ISCC transaction data requested using `TGetAccessNumber` in the following requests: `TMakeCall, TRouteCall, TSingleStepTransfer, TInitiateTransfer, TInitiateConference,` and `TMuteTransfer`. The ISCC Transaction Monitoring allows T-Server clients to monitor ISCC transactions of the call data transfer between T-Servers in a multi-site environment. See "ISCC Transaction Monitoring Feature" on page 104 and the *Genesys 7 Events and Models Reference Manual* for details about key-value pairs in `AttributeExtensions`.
- **Enhanced Agent Reservation support.** T-Server now supports Agent Reservation failure optimization, to ensure that only agent reservation requests of the highest priority are collected. This functionality can now be controlled with the `collect-lower-priority-requests` configuration option. See "Agent Reservation" on page 28 for details.
- **Notification of failed routing attempts support.** T-Server now supports new log events to notify about failed routing attempts and link bandwidth utilization:
  - `20009|STANDARD|MSG_TS_COMMON_LINK_ALARM_HIGH`
  - `20010|STANDARD|MSG_TS_COMMON_LINK_ALARM_LOW`
  - `20011|STANDARD|MSG_TS_COMMON_ALARM_ROUTE_FAILURE_HIGH_WATER_MARK`
  - `20012|STANDARD|MSG_TS_COMMON_ALARM_ROUTE_FAILURE_LOW_WATER_MARK`

  Also, T-Server now supports a new log event to notify about failed ISCC transactions:
  - `21019|STANDARD|ISCC_LOGMSG_TRANSACTION_FAILED`

  Refer to *Framework 8.0 Combined Log Events Help* for information about the log events.
- **Real-time SDN licenses query support.** T-Server can now report how many SDN licenses are currently available and in use, using the following key-value pairs in `AttributeExtensions` in `EventServerInfo` messages: `sdn-licenses-in-use` and `sdn-licenses-available`. See Part Two of this document for details on the use of `AttributeExtensions` in a particular T-Server.

Notes: Configuration option changes common to all T-Servers are described in "Changes from Release 7.6 to 8.0" on page 236.

For information about the new features that are available in your T-Server in the initial 8.0 release, see Part Two of this document.

Chapter

1 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 8.0" 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 8.0 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.

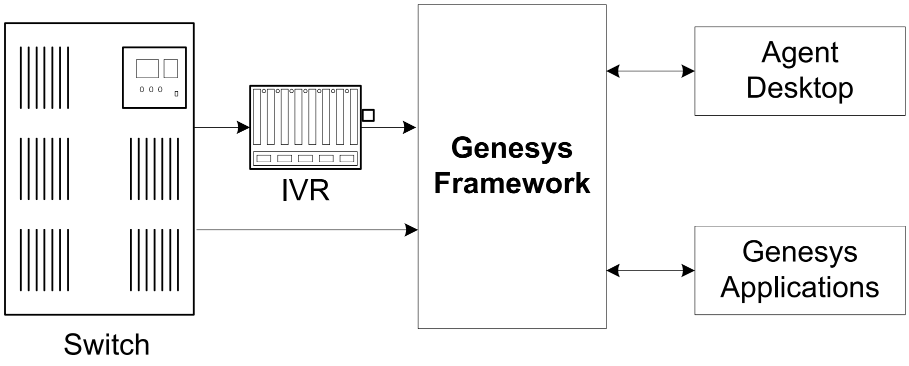


Figure 1: Framework in a Genesys Solution

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

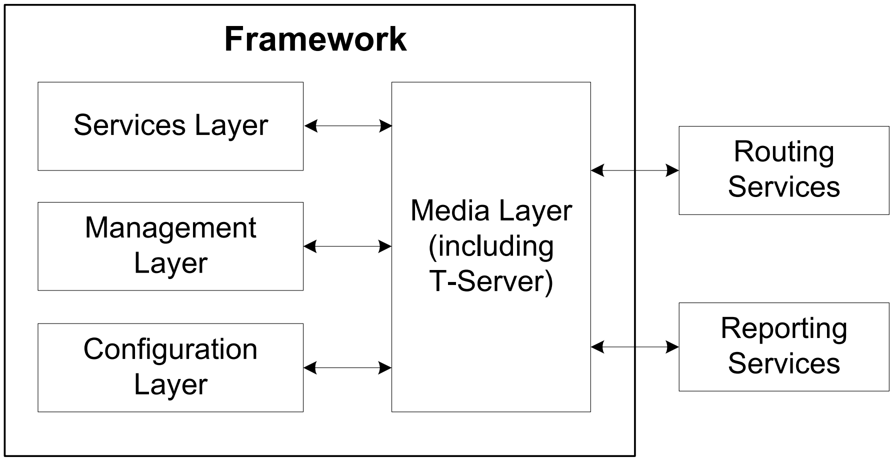


Figure 2: The Media Layer in the Framework Architecture

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.

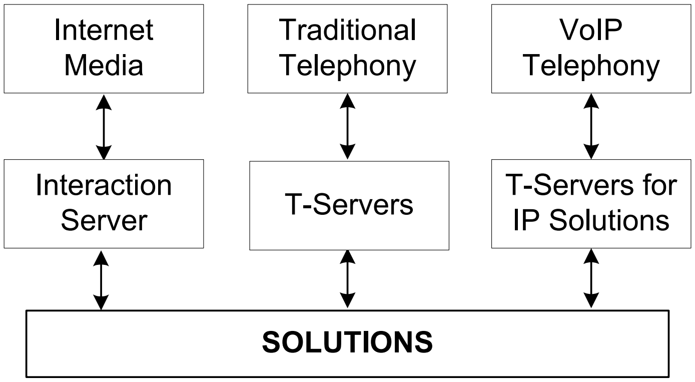


Figure 3: Media Layer Architecture

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, Call 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 7 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 8.0 .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 page 19 (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.

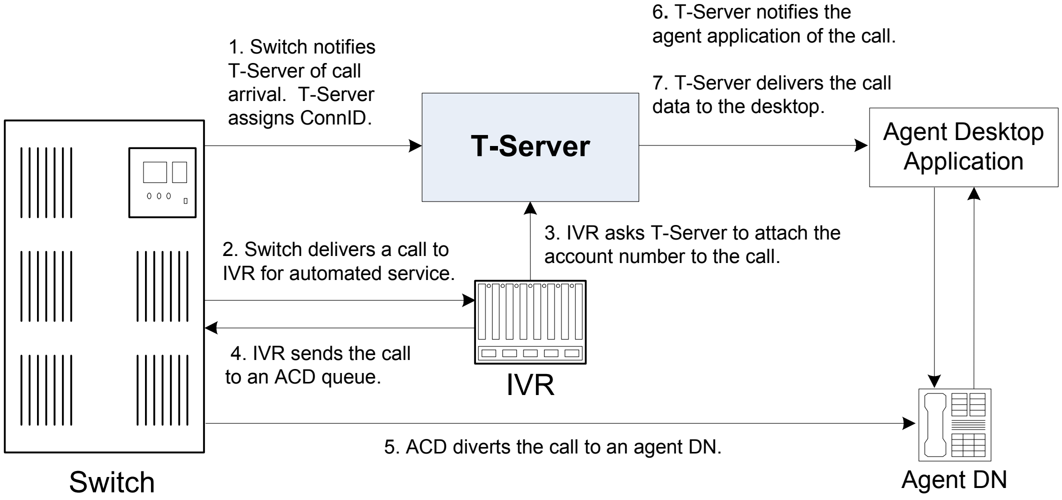

6. T-Server notifies the agent application of the call.
7. T-Server delivers the call data to the desktop.
1. Switch notifies T-Server of call arrival. T-Server assigns ConnID.
T-Server
Agent Desktop Application
3. IVR asks T-Server to attach the account number to the call.
2. Switch delivers a call to IVR for automated service.
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.

Notes: 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* white paper located on the Technical Support website at `http://genesyslab.com/support/dl/retrieve/default.asp?item=A9CB309AF4DEB8127C5640A3C32445A7&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
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 Unified Communications Manager	Yes	No	—
DataVoice Dharma	Yes	No	—
Digitro AXS/20	Yes	No	—
EADS Intecom M6880	Yes	No	—
EADS Telecom M6500	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
eOn eQueue	Yes	No	—
Ericsson MD110	Yes	No	—
Fujitsu F9600	Yes	No	—
Huawei C&C08	Yes	No	—
Huawei NGN	Yes	No	—
Mitel SX-2000/MN-3300	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	—	—
Rockwell Spectrum	Yes	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	—
Tadiran Coral	Yes	No	—
Teltronics 20-20	Yes	Yes	1
Tenovis Integral 33/55	Yes	No	—
Network T-Servers[e]			
AT&T	No	—	—
Concert	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
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 (for which there is a Configuration Wizard) 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 61.

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 63), 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 70 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 8.0 .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 220 in the "T-Server Common Configuration Options" chapter in Part Two for more details.

Starting with version 8.0, 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 220).

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 5.1, 5.2, 5.3)	32767
AIX 64-bit mode (versions 5.1, 5.2, 5.3, 6.1)	32767
HP-UX 32-bit mode (versions 11.11, 11i v2)	2048
HP-UX 64-bit mode (versions 11.11, 11i v2, 11i v3)	2048
Linux 32-bit mode (versions RHEL 3.0, RHEL 4.0, RHEL 5.0)	32768
Solaris 32-bit mode (versions 8, 9)	4096
Solaris 64-bit mode (versions 8, 9, 10)	65536
Tru64 UNIX (versions 4.0F, 5.1, 5.1B)	4096
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 page 31. Otherwise, you may want to jump to Part Two of this *Deployment Guide*, where you will find information about your specific T-Server.

Chapter

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 8.0 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, Configuration Manager, and, at your option, Deployment Wizards. 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 8.0 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=B6C52FB62DB42BB229B02755A3D92054&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 8.0 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 8.0 Deployment Guide* for recommendations on server locations.

Supported Platforms

Refer to the *Genesys Supported Media Interfaces* white paper for the list of supported switch and PABX versions. You can find this document on the Genesys Technical Support website at http://genesyslab.com/support/dl/retrieve/default.asp?item=A9CB309AF4DEB8127C5640A3C32445A7&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 in the relevant Wizard screens or 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 211. *Switch-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

Genesys recommends deploying T-Server by using the Media Configuration Wizard. However, if for some reason you must manually deploy T-Server, you will also find instructions for doing that in this chapter.

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 8.0 Deployment Guide* for details.
2. Deploy Network objects (such as Host objects).	See the *Framework 8.0 Deployment Guide* for details.
3. Deploy the Management Layer.	See the *Framework 8.0 Deployment Guide* for details.
4. Deploy T-Server using the Wizard (recommended), or manually.	See “Wizard Deployment of T-Server” on page 36. If you are deploying T-Server manually, see “Manual Deployment of T-Server” on page 39.
5. Test your configuration and installation.	See Chapter 5, “Start and Stop T-Server Components,” on page 119.

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.

Wizard Deployment of T-Server

Configuration Wizards facilitate component deployment. T-Server configuration and installation involves many steps, and Genesys strongly recommends that you set up T-Server using the Wizard rather than manually. T-Server Wizard guides you through a series of steps and options to customize your deployment of T-Server.

Wizard Configuration of T-Server

The first step to take for a Wizard-based configuration is to install and launch Genesys Wizard Manager. (Refer to the *Framework 8.0 Deployment Guide* for instructions.) When you first launch Genesys Wizard Manager, it suggests that you set up the Management Layer and then the Framework. The Framework setup begins with configuring and creating the objects related to T-Server, starting with the `Switch` and `Switching Office` objects, and the T-Server's `Application` object itself.

Note: With the Wizard, you create your T-Server `Application` object in the course of creating your `Switch` object.

During creation of the `Switch` object, you also have an opportunity to run the Log Wizard to set up T-Server logging. Then, you can specify values for the most important T-Server options. Finally, you can create contact center objects related to T-Server, such as `DNs`, `Agent Logins`, and some others.

Note: During configuration of a `Switch` object, the Wizard prompts you to copy a T-Server installation package to an assigned computer. After that package is copied to the destination directory on the T-Server host, complete the last steps of the T-Server configuration. Then, install T-Server on its host.

After you complete the Framework configuration, the Genesys Wizard Manager screen no longer prompts you to set up the Framework. Instead, it suggests that you set up your solutions or add various contact center objects to the Framework configuration, including the `Switch, DNs` and `Places, Agent Logins, Agent Groups, Place Groups`, and, in a multi-tenant environment, a Tenant. In each case, click the link for the object you wish to create. Again, you create a new T-Server `Application` object in the course of creating a new `Switch` object.

Wizard Installation of T-Server

After creating and configuring your T-Server and its related components with the Wizard, proceed to T-Server installation. That installation process is similar to that of previously installed components.

Note: Certain Wizard-related procedures are not described in this document. Refer to the *Framework 8.0 Deployment Guide* for general instructions.

Warning! Genesys does not recommend installation of its components using a Microsoft Remote Desktop connection. The installation should be performed locally

Procedure: Installing T-Server on UNIX using Wizard

Start of procedure

1. In the directory to which the T-Server installation package was copied during Wizard configuration, 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 you are installing T-Server.
4. When prompted, confirm the application name of the T-Server that you are installing.
5. Specify the destination directory into which you are installing T-Server, with the full path to it.
6. 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.
7. If asked which version of the product to install, the 32-bit or the 64-bit, choose the one appropriate to your environment.
8. If asked, specify the license information that T-Server is to use.
9. 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 test your configuration and installation, go to Chapter 5, “Start and Stop T-Server Components,” on page 119, and try it out.
- To configure and install redundant T-Servers, see Chapter 3, “High-Availability Deployment,” on page 49.

- To install T-Servers for a multi-site environment, proceed to Chapter 4, “Multi-Site Support,” on page 61.

Procedure: Installing T-Server on Windows using Wizard

Start of procedure

1. Open the directory to which the T-Server installation package was copied during Wizard configuration.
2. Locate and double-click `Setup.exe` to start the installation. The `Welcome` screen launches.
3. When prompted, specify the connection parameters to the Configuration Server associated with this T-Server.
4. Identify the T-Server `Application` object in the Configuration Layer to be used by this T-Server.
5. Specify the license information that T-Server is to use.
6. Specify the destination directory into which you are installing T-Server.
7. Click `Install` to begin the installation.
8. 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 test your configuration and installation, go to Chapter 5, “Start and Stop T-Server Components,” on page 119, and try it out.
- To configure and install redundant T-Servers, see Chapter 3, “High-Availability Deployment,” on page 49.
- To install T-Servers for a multi-site environment, proceed to Chapter 4, “Multi-Site Support,” on page 61.

Manual 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.

Manual Configuration of Telephony Objects

This section describes how to manually configure T-Server Telephony objects if you are using Configuration Manager.

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` 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 page 61, 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 needs. 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 page 104, for information on setting up DNs for multi-site operations.

Manual Configuration of T-Server

Use the *Framework 8.0 Deployment Guide* to prepare accurate configuration information. You may also want to consult *Configuration Manager 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 manually

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 8.0 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 61.

End of procedure

Next Steps

- See “Manual Installation of T-Server” on page 44.

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 8.0 Security Deployment Guide*.

   e. Click `OK`.

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

End of procedure

Manual Installation of T-Server

The following directories on the Genesys 8.0 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 manually

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 manually" on page 42 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 manual installation of T-Server" on page 46.
- To test your configuration and installation, go to Chapter 5, "Start and Stop T-Server Components," on page 119, and try it out.
- To configure and install redundant T-Servers, see Chapter 3, "High-Availability Deployment," on page 49.
- To install T-Servers for a multi-site environment, proceed to Chapter 4, "Multi-Site Support," on page 61.

Procedure: Installing T-Server on Windows manually

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 manually" on page 42 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 manual installation of T-Server" on page 46.
- To test your configuration and installation, go to Chapter 5, "Start and Stop T-Server Components," on page 119, and try it out.
- To configure and install redundant T-Servers, see Chapter 3, "High-Availability Deployment," on page 49.
- To install T-Servers for a multi-site environment, proceed to Chapter 4, "Multi-Site Support," on page 61.

Procedure: Verifying the manual 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 manually, on page 44
- Procedure: Installing T-Server on Windows manually, on page 45

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 either used the Wizard to configure and install T-Server, or you have done it manually, using Configuration Manager. In either case, if you want to test your configuration and installation, go to Chapter 5, “Start and Stop T-Server Components,” on page 119, and try it out. Otherwise, if you want to configure and install redundant T-Servers, see Chapter 3, “High-Availability Deployment,” on page 49. If you want to install T-Servers for a multi-site environment, proceed to Chapter 4, “Multi-Site Support,” on page 61.

Chapter

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

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 8.0 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.

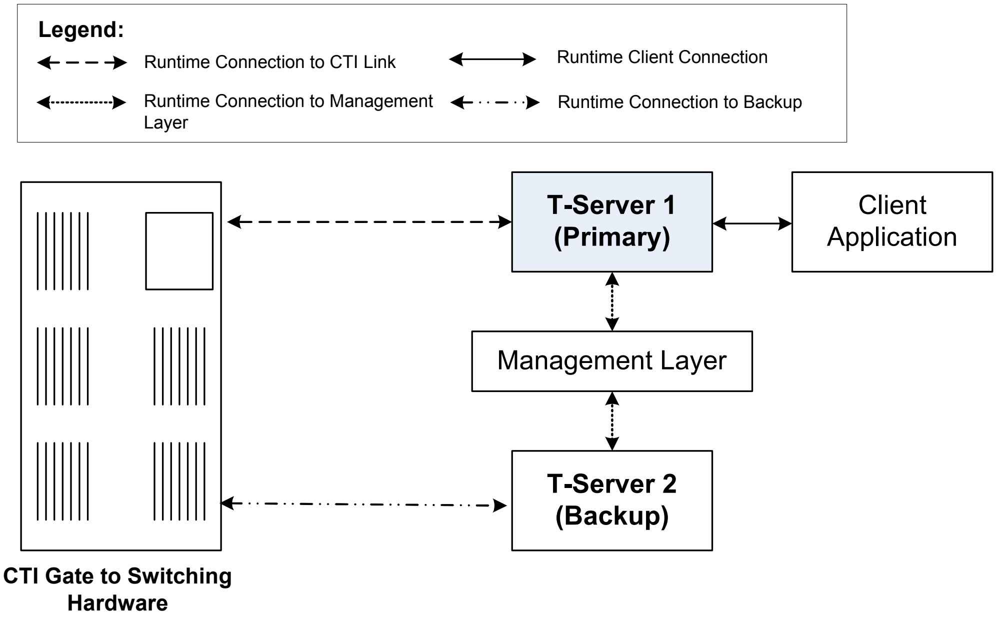

Legend:
Runtime Connection to CTI Link
Runtime Client Connection
Runtime Connection to Management Layer
Runtime Connection to Backup
T-Server 1 (Primary)
Client Application
Management Layer
T-Server 2 (Backup)
CTI Gate to Switching Hardware

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 8.0 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 52.)

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.

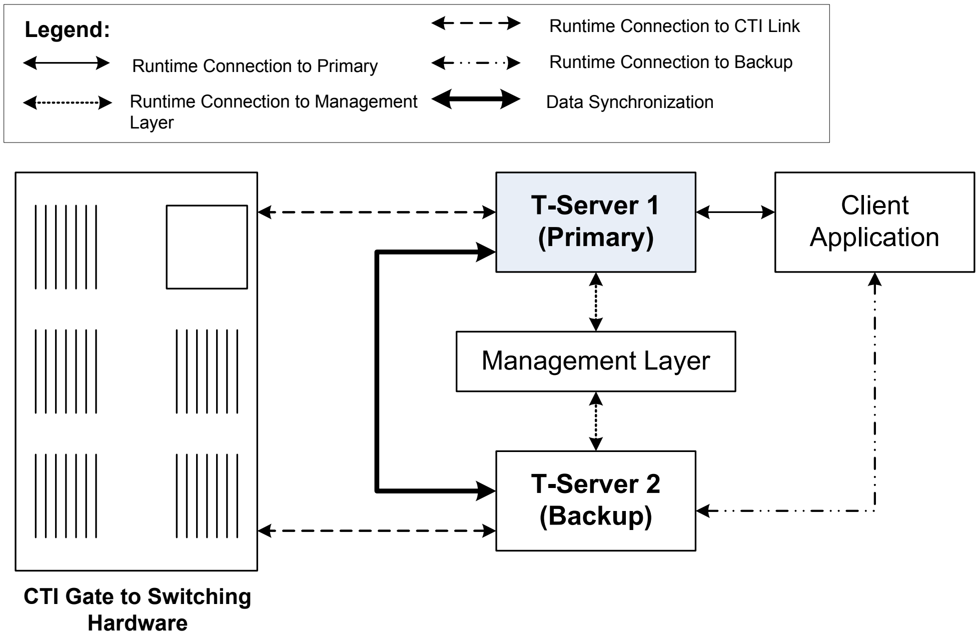

Legend:
Runtime Connection to Primary
Runtime Connection to Management Layer
Runtime Connection to CTI Link
Runtime Connection to Backup
Data Synchronization
T-Server 1 (Primary)
Client Application
Management Layer
T-Server 2 (Backup)
CTI Gate to Switching Hardware

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 63 for ISCC feature descriptions.

- Allocation of ISCC-controlled resources.

- 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.
- 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:

Wizard Deployment

- If you used wizards to configure T-Servers and selected the `warm standby` redundancy type, no additional configuration is required for your T-Servers.

Manual Deployment

- If you did not use wizards to configure T-Servers:
  a. Manually configure two T-Server `Application` objects as described in “Manual Configuration of T-Server” on page 42.
  b. Make sure the `Switch` object is configured for the switch these T-Servers should serve, as described in “Manual Configuration of T-Server” on page 42.
  c. 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).

Manual 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 56

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 "Manual Installation of T-Server" on page 44 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:

Wizard Deployment

- If you used wizards to configure T-Servers and selected the hot standby redundancy type, no additional configuration is required for your T-Servers.

Manual Deployment

- If you did not use wizards to configure T-Servers:
  a. Manually configure two T-Server Applications objects as described in "Configuring T-Server manually" on page 42.
  b. Make sure the Switch object is configured for the switch these T-Servers should serve, as described in "Manual Configuration of Telephony Objects" on page 40.
  c. 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 60).

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* white paper located on the Technical Support website at http://genesyslab.com/support/dl/retrieve/default.asp?item=A9CB309AF4DEB8127C5640A3C32445A7&view=item.

Manual 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 43.

   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 59

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 page 43.

   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 “Manual Installation of T-Server” on page 44 for both installations.

Next Steps

At this point, you have learned how to configure and install redundant T-Servers. Go to Chapter 5, “Start and Stop T-Server Components,” on page 119, to test your configuration and installation, or continue with Chapter 4, “Multi-Site Support,” on page 61, for more possibilities.

Chapter

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 211.

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 79 and Table 4 on page 84.

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 70 and "Transfer Connect Service Feature" on page 82.
  - 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 83).
  - Number Translation feature (see page 87).
  - Network Attended Transfer/Conference (NAT/C) feature (see page 95).

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 `ConnID`s 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 98)
  - Party Events propagation (see page 99)

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.*

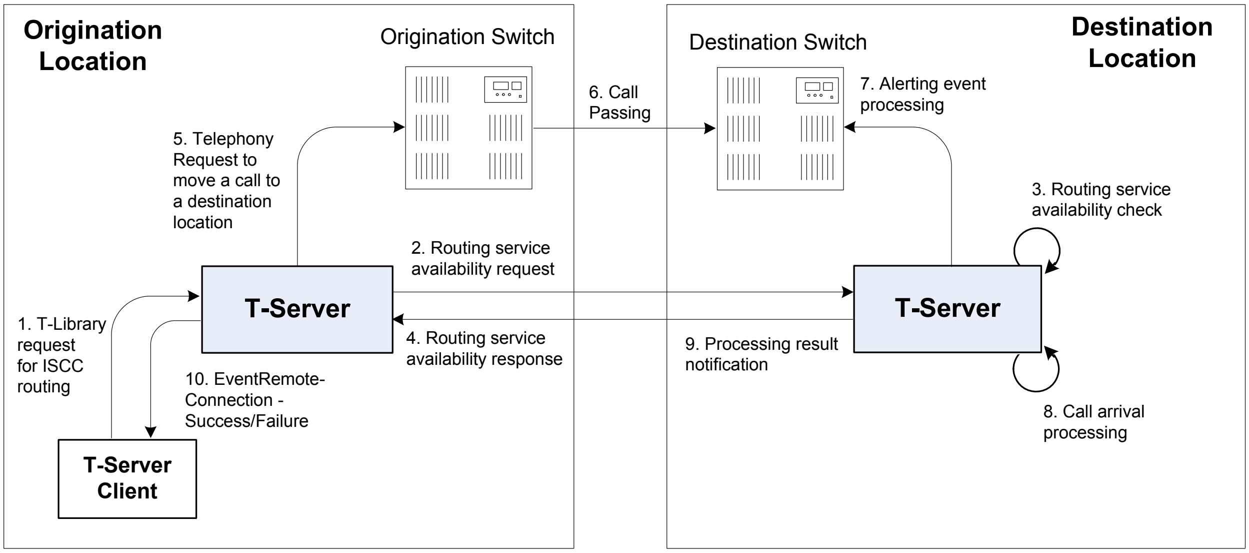

Origination Location
Origination Switch
Destination Switch
Destination Location
6. Call Passing
7. Alerting event processing
5. Telephony Request to move a call to a destination location
3. Routing service availability check
2. Routing service availability request
T-Server
T-Server
1. T-Library request for ISCC routing
4. Routing service availability response
9. Processing result notification
10. EventRemote-Connection - Success/Failure
8. Call arrival processing
T-Server Client

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 8.0 .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 page 106.

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 211 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 `ConnID`s 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 71).

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 71. Use Table 3 on page 79 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 211 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 71
- `direct-notoken`, page 73
- `dnis-pool`, page 74
- `pullback`, page 75
- `reroute`, page 76
- `route` (aliased as `route-notoken`), the default transaction type, page 77

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

- `direct-callid` (aliased as `direct`), page 72
- `direct-digits` (reserved for Genesys Engineering)
- `direct-network-callid`, page 72
- `direct-uui`, page 73
- `route-uui`, page 78

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 115 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.

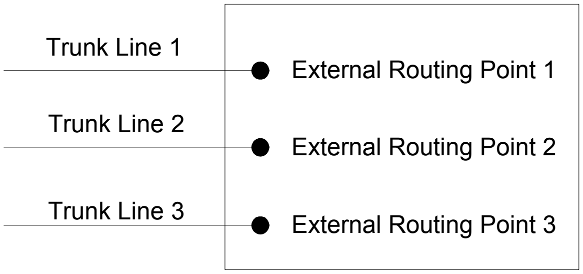


Figure 8: Point-to-Point Trunk Configuration

Note: Dedicated DNs of the External Routing Point type must be configured in a switch. See “Configuring Multi-Site Support” on page 104.

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.

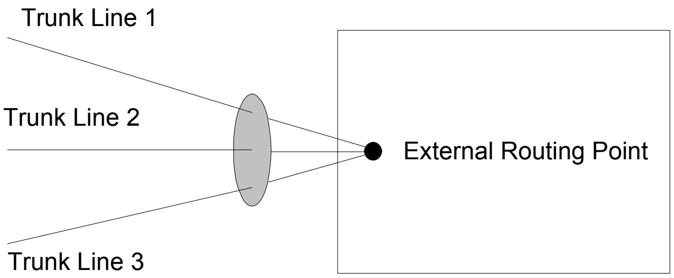


Figure 9: Multiple-to-Point Trunk Configuration

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 77) and the UUI matching feature of the `direct-uui` transaction type (page 73). 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									
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		Yes[f]	Yes[f]				
Avaya Communication Manager	Yes				Yes	Yes	Yes				
Avaya INDeX	Yes					Yes	Yes				
Avaya TSAPI	Yes				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					
Ericsson MD110	Yes			Yes[a]		Yes	Yes[a]				
Fujitsu F9600	Yes					Yes					
Huawei C&C08	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 NGN	Yes					Yes	Yes				
Mitel SX-2000/MN3300	Yes			Yes		Yes	Yes				
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
Rockwell Spectrum	Yes	Yes		Yes		Yes[f]	Yes[f]				
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	Yes	Yes	Yes				
SIP Server	Yes		Yes		Yes[g]	Yes					Yes
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										
SR-3511											
Stentor											

a. Not supported in the case of function TRequestRouteCall 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. 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 TRequestRouteCall 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 p*assive external routing*, is specifically designed to handle calls delivered between sites by means other than ISCC. 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	Yes
Aspect ACD	Yes
Avaya Communication Manager	Yes
Avaya TSAPI	Yes
Nortel Communication Server 2000/2100	Yes
Nortel Communication Server 1000 with SCCS/MLS	Yes
Rockwell Spectrum	Yes
SIP Server	Yes

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 87.

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.

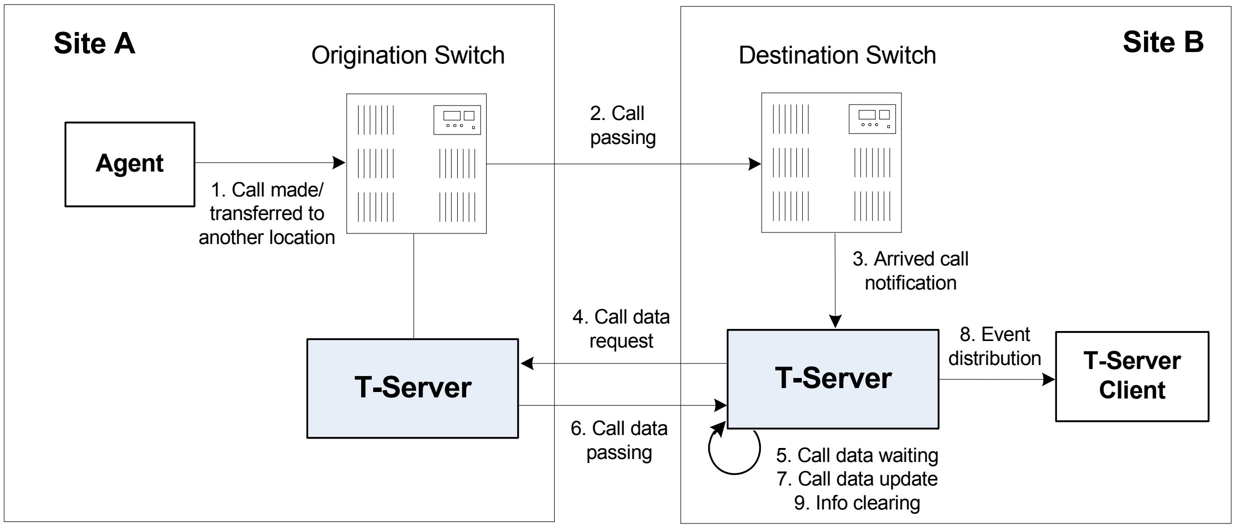


Figure 10: Steps in the ISCC/COF Process

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 was overflowed from any of them.

To determine which calls to check as possibly overflowed, T-Server relies on the `Switch` object configuration:

- If no COF DNs (that is, DNs of the `Access Resources` type with the `Resource Type` set to `cof-in` or `cof-not-in`) are configured for the destination switch, the ISCC/COF feature of the destination T-Server checks all arriving calls.

- If a number of COF DNs are configured for the destination switch, one of three scenarios occurs:
  - If the COF DNs with the `cof-in` setting for the `Resource Type` property are configured, the ISCC/COF checks for overflow only those calls that arrive to those `cof-in` DNs that are `Enabled`.
  - If no DNs with the `cof-in` setting for the `Resource Type` property are configured, but some DNs have the `cof-not-in` setting for the `Resource Type` property, the ISCC/COF checks for overflow only those calls that arrive to those `cof-not-in` DNs that are `Disabled`.
  - If no DNs with the `cof-in` setting for the `Resource Type` property are configured, some DNs have the `cof-not-in` setting for the `Resource Type` property, and some other DNs do not have any setting for the `Resource Type` property, the ISCC/COF checks for overflow only those calls that arrive to the DNs without any setting for the `Resource Type` property.
- In all other cases, no calls are 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 page 88 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 page 93 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 page 95.

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 93) 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 211.
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).

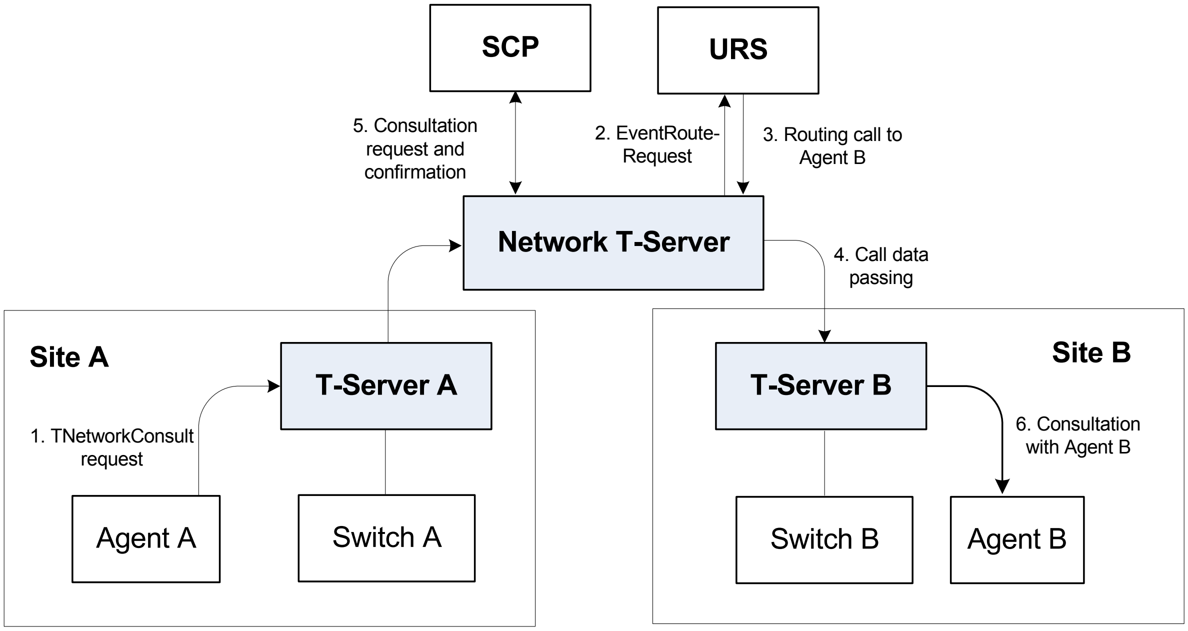


Figure 11: Steps in the NAT/C Process in URS-Controlled Mode

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 8.0 .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 page 63 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 7 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.

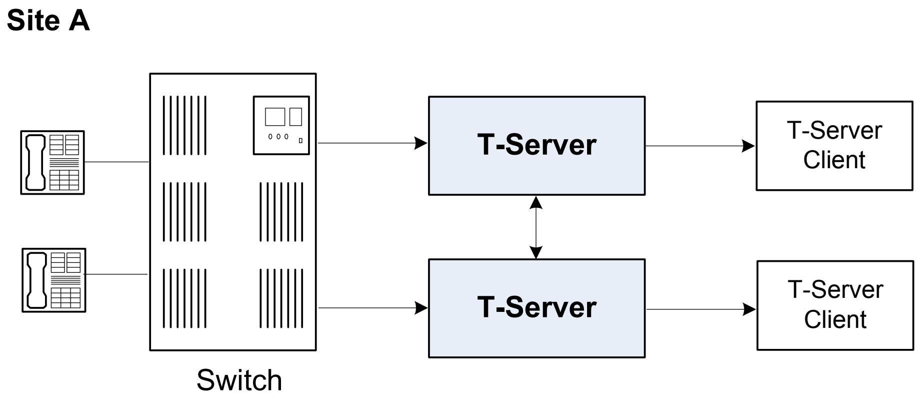


Figure 12: Switch Partitioning Architecture

Starting with version 8.0, in addition to ConnIDs and UserData, T-Server can now 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 216.

To control race conditions that may occur in the switch-partitioned environment, use the `epp-tout` configuration option (see page 230).

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
Cisco Unified Communications Manager	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 211.
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 102

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 102

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 107 for instructions. If no `Access Codes` are configured, see page 108 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:

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

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

```
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 7 Events and Models Reference Manual* and *Voice Platform SDK 8.0 .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 79 shows which transaction types are supported by a specific T-Server, while Table 4 on page 84 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 "Multi-Site Support Section" on page 221 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 page 112 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 “Multi-Site Support Section” on page 221, 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 8.0, or when using T-Servers of different releases (including 8.0) in the same environment, see "Compatibility Notes" on page 111.

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 102.
`direct-network-callid=<>`	For configuration information, see Part Two of this document. (Use Table 4 on page 84 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 8.0, or when using T-Servers of different releases (including 8.0) 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

Overview

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.

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 page 84 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.

   Note: The number of the access resource must match the name of a DN configured on the switch (usually, an ACD Queue) so that T-Server can determine whether the calls arriving to this DN are overflowed calls.

2. On the `General` tab of the DN `Properties` dialog box, specify the number of the configured DN as the value for the `Number` field.
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 page 106.

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 page 112.
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 108.

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 108.

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, "Start and Stop T-Server Components," on page 119 to test your configuration and installation.

Chapter

5 Start and Stop 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>` `<port number>` is the port number that a client will use for its TCP/IP connection to Configuration Server. See the Client-Side Port Definition section in the *Genesys 8.0 Security Deployment Guide* for more information.

`- transport-address <IP address>` `<IP address>` is the IP address that a client will use for its TCP/IP connection to Configuration Server. See the Client-Side Port Definition section in the *Genesys 8.0 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 page 119.
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 8.0 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 page 123 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 page 119.

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

Switch Type	T-Server Executable File Name		HA Proxy Executable File Name	
	UNIX	Windows	UNIX	Windows
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 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	
Ericsson MD110	md110_server	md110_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 SX-2000/ MN 3300	SX2000_server	SX2000_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)

Switch 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	
Rockwell Spectrum	spectrum_server	spectrum_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 iCCL	RealitisDX-iCCL_server	RealitisDX-iCCL_server.exe	Not Applicable	
SIP Server	sip_server	sip_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)

Switch 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 page 127.

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 page 119.

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 <Configuation 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 124 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 124 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 119.

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 124 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 124 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 page 119 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.

Part

2 Reference Information

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:

- Chapter 6, "Aspect ACD Switch-Specific Configuration," on page 133, describes compatibility and configuration information specific to this T-Server, including how to set the DN properties and recommendations for the switch configuration.
- Chapter 7, "Supported Functionality in T-Server for Aspect ACD," on page 153, describes which features this T-Server supports, including T-Library functionality, use of the `extensions` attribute, and error messages.
- Chapter 8, "Common Configuration Options," on page 191, describes log configuration options common to all Genesys server applications.
- Chapter 9, "T-Server Common Configuration Options," on page 211, describes configuration options that are common to all T-Server types, including options for multi-site configuration.
- Chapter 10, "Configuration Options in T-Server for Aspect ACD," on page 239, describes configuration options specific to T-Server for Aspect ACD, including the link-related options—those which address the interface between T-Server and the switch.
- Chapter 11, "Configuring High-Availability and Contact Server," on page 261, outlines supported HA configurations and describes Contact Server configurations, including HA.
- Chapter 12, "Configuring Outbound Solution with Aspect T-Server," on page 271 describes ways to configure Genesys Outbound Solution.
- Chapter 13, "Configuring Aspect VoIP with Uniphi and T-Server," on page 281, describes how to configure Aspect Voice over IP (VoIP) using the Uniphi Connect client and Genesys T-Server.

New in T-Server for Aspect ACD

The following new features are now available in the initial 8.0 release of T-Server for Aspect ACD:

- **Support for call release tracking:** In release 8.0, T-Server can now provides 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. This can be configured using the new configuration option "releasing-party-report". See "Call Release Tracking" on page 156.
- **Support for failed route notification:** In release 8.0, T-Server supports alarm messages for unsuccessful routing scenarios.See "Failed Route Notification" on page 158.
- **Support for link bandwidth monitoring:** In release 8.0, T-Server can provide bandwidth monitoring on a CTI link and can notify the Genesys Management Layer when Configuration Layer limits are exceeded. See "Link Bandwidth Monitoring" on page 159.
- **Logging performance**: In release 8.0, T-Server's logging performance has been improved.

Note: Configuration option changes that apply to your T-Server are described in "Changes from 7.6 to 8.0" on page 258.

Chapter

6 Aspect ACD Switch-Specific Configuration

This chapter presents switch-specific reference information for configuring T-Server for the Aspect ACD and includes these sections:

Known Limitations

Several known limitations exist in the current T-Server/Aspect environment:

1. The Aspect T-Server does not support switch feature activation via `TMakeCall`.
2. The Aspect switch is an agent switch and does not support boss/secretary functionality.
3. With T-Server 8.0 on Aspect PBX version 9.3, Data Interlink version 8, single-step transfers may fail. This does not apply to Data Interlink version 6.
4. T-Server does not support partitioned-switch configurations.

5. Deflect Group services (Directed Pickup, Group Pickup) are not supported because of switch limitations.
6. DND is not supported.
7. Secret Identity is not supported.
8. Blind transfer, mute transfer, redirect, divert, forwarding and internal single-step transfer are not supported. Consultation calls to Routing Point (Inbound/Outbound only) are supported only if a trunk is involved.
9. Because the switch does not allow blind transfer, in two-step transfer scenarios the consultation call has to be answered before the transfer can be completed.
10. The switch can only single–step-transfer a call if at least one of the parties in the call is a trunk party (for example, inbound call or outbound call followed by single-step transfer to an agent).
11. The Aspect switch does not support camp-on functionality.
12. The Aspect switch does not support Call Parking.
13. The Aspect switch does not support Call Pickup.
14. The Aspect switch does not support CallBack.
15. The Aspect T-Server does not support No-Answer Supervision (NAS).
16. Initiating transfer of a conference call is not supported.
17. When an unmonitored DN is used to make a call, the PBX releases the call. To avoid this, use the Agent ID logged on to that DN to make a call, instead of the DN number.
18. CTI monitoring and control of analog extensions is limited in the Aspect switch:
    - No Call Offered Event Message (`COEM`) is distributed by the switch when an inbound call is made to an analog extension. Hence, T-Server only distributes `EventRinging` once the call is established.
    - No Call Disconnect Event Message (`CDEM`) is distributed by the switch when an inbound call is established to an analog extension, then released. Hence, T-Server does not distribute `EventReleased` when a call is released from the originator. However, if the call is released by CTI from the analog set, behavior is correct.
    - A CTI call from an analog extension cannot be answered by CTI.
19. Where remote DNs are used and you therefore cannot configure the agent logins as DNs, you must set the Universal Routing Server (URS) configuration option `reduced` to the value `16`.
20. Support for the ISCC feature with cast type `direct-ani` is limited.The supported scenarios are:
    - Inbound, outbound call and then single-step transfer to a remote location.
    - Inbound call routed to a remote location.

No other scenario is supported.

21. The Aspect switch does not support the ISCC feature with cast type `route-uui` and `direct-uui`.
22. The time it takes for T-Server to respond to the dropping of the link connection might exceed the value set in the `HMM` timeout for monitoring the link.
23. A number of scenarios require special attention in connection with the use of configuration option `send-rls-on-acw`. See page 243.
24. Support for trunk monitoring is restricted in T-Server. It is not possible to test every possible trunk configuration in Genesys laboratories. Genesys specifically does not undertake to provide the level of support associated with generally available software with 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 customers' cooperation to resolve and test the problem.
25. Support for Event Party Propagation (EPP) is restricted in release 7.1+. Additionally, use of EPP with the Aspect Network InterQueue (NIQ) feature is not supported.
26. On Aspect 9.x ACD, when one analog phone calls another, the switch does not report anything except `CDEM` when the phones are placed on hook.
27. On Aspect 9.x ACD, `TAgentNotReady` when an agent is already in `NotReady` state places the agent into `Ready` state.

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.

Switch DN Monitoring Limits

There are no limits within T-Server to the number of DNs that can be monitored. Table 10 shows the DN monitoring limits that apply within the Aspect switch and call center environment.

Table 10: Switch DN Monitoring Limits

DN/Device Type	Maximum Number Supported
Agent Instruments	3000
Stations	192
Trunks	3000
Out-of-Band (Network InterQueue)	600
Virtual Agent	896

The Aspect Call Center System can handle a maximum of 3000 instruments and trunks in total. For example, if you allocate 1500 ports to agent instruments, a maximum of 1500 are available for trunks.

Also each CCT counts as one or two devices (either Routing Point or ACD), so a maximum of 999 CCTs could be defined.

For example, 3000 agents and trunks + 1000 CCTs + 192 stations + 600 NIQ trunks + 896 virtual agents (IP phones) would give a total of 5688 devices.

Switch Terminology

Table 11 compares relevant Aspect switch terminology with Genesys terminology.

Table 11: Terminology Comparison

Genesys Term	Aspect Term
ACD	Not applicable
ACD Position	Not applicable
ACD Queue	Distribution Script (CCT) Predictive Dialing Script (CCT)

Table 11: Terminology Comparison (Continued)

Genesys Term	Aspect Term
Agent ID used in CTI login request	Agent ID Agent
Extension	Digital instrument Administrative User VoiceMail access Analog station
Position	Not applicable
Voice Treatment Port	Administrative User
Trunk (unmonitored)	Trunk
Trunk (monitored)	Trunk
Routing Point	Routing Script (CCT)
Group DN	Not applicable
Predictive dialing device	Not applicable
Emulated Routing Point	Not applicable
Emulated Routing Point member	Not applicable
Logon	Sign in
Logoff	Sign off
Ready	Ready
NotReady	Idle
AfterCallWork	After Call Work
ReasonCode	Idle code

Setting the DN Properties

Table 12 shows how to set the DN properties for the Aspect ACD PBX.

Table 12: Setting the DN Properties

Switch Device Type	DN Type	Switch-Specific Type	Association	Register	Comments
Digital Instrument[a]	Extension	Not applicable	Not applicable	True	An *instrument* is a physical extension in the switch (instrument 1 is DN 1, instrument *n* is DN *n,* and so on.).
Analog Line	Extension	Not applicable	Not applicable	True	Must be declared as `S1` for line 1, `Sn` for line *n* and so on.
Routing Script (CCT)	Routing Point	Not applicable	Not applicable	True	Must be declared as `0` + *`<CCT number>`*.
Distribution Script (CCT)	ACD Queue	Not applicable	Not applicable	True	Must be declared as `#8` + *`<CCT number>`*.
Predictive Dialing Script (CCT)	ACD Queue	Not applicable	Not applicable	True	Write a dedicated specific script for predictive dialing. See "Predictive Dialing Using Aspect Call Classifier (ADC Board)" on page 144.) Must be declared as `#8` + *`<CCT number>`*.
Voice Mail Access	Extension Voice Channel	Not applicable	Not applicable	True	Must be declared as `V1` for Access 1, `V2` for Access 2, and so on.
Agent Group	ACD Queue	Not applicable	Not applicable	True	Must be declared as `*8001` for group 1, `*8002` for group 2, and so on. Used for statistics only in `TQueryAddress`. See footnotes on page 170.

Table 12: Setting the DN Properties (Continued)

Switch Device Type	DN Type	Switch-Specific Type	Association	Register	Comments
Physical Trunk	Trunk	Not applicable	Not applicable	True	Must be declared as `T` + *`<trunk number>`*.
NIQ Trunk	Trunk	Not applicable	Not applicable	True	Must be declared as `0` + *`<trunk number>`*.

a. Agent IDs in the switch must only be configured as Agent IDs in Configuration Manager.

Aspect Call Control Tables

Unlike other PBX switches, Aspect ACD requires Call Control Tables (CCTs) to specify what should happen to every call in the switch. At the most basic level, call specifications from a CCT involve either a class of service or a Routing Point, and thus T-Server uses them to handle a given call. So it is absolutely necessary to define CCTs properly to have T-Server and the rest of the software effectively manage calls. This chapter contains the most basic CCT configuration steps required to permit Aspect ACD to work with T-Server 7.0+.

Configuring Call Control Tables (CCTs)

The following examples offer some guidance for setting up Aspect CCTs in a Genesys software environment. The figures following each scenario are by way of suggestion only. Your implementation will certainly be different.

Procedure: Enabling call connection without EventBridge

Purpose: To enable receipt of messaging from T-Server if you do not have an `EventBridge` with the Aspect Call Center. Without notification from the Aspect CCTs, T-Server cannot track the progress of calls. By default, however, Aspect Call Center and its CCTs deliver no information regarding call connections. If you do not have an `EventBridge` with the Aspect Call Center, to get any messaging from T-Server at all you must complete this procedure.

Start of procedure

1. In all the CCTs that connect calls, place the following command just before the `CONNECT` command to the agent (for inbound and internal calls) or to the trunk (for outbound calls):
   `SEND CONNECT LINK #>xx  SUBTYPE CONNECT VAR A-E`
   where `xx` stands for the link number, and the `SUBTYPE` is `CONNECT`.
2. In Configuration Manager, under configuration options for T-Server, set the value of option `connect-subtype` to `CONNECT`. See “connect-subtype” on page 249 for details about this `SUBTYPE` field option.

   After completing the above steps, the system should receive `EventEstablished` on the origination DN, and `EventRinging/EventEstablished` on the destination DN.

End of procedure

Note: Either of the DNs could designate a trunk, and, for trunks, DN is `T` + the trunk number.

Warning! You have a single option setting for T-Server in Configuration Manager for the message that indicates call connection. Thus, you must use the same value for the `SUBTYPE` field in all CCTs that establish call connections.

Procedure:
Configuring ACD (queue) emulation

Purpose: To configure a CCT that will enable ACD (queue) emulation.

Summary

To emulate an ACD (Queue), you must assign a specific CCT for that ACD, for example, `CCT 600` (see Figure 13 on page 141). From the application’s point of view, that CCT is `DN #8600`. That is, `8` + the three-digit CCT number.

Start of procedure:

1. Ensure that in the CCT, the very first command is:
`SEND DATA LINK #>xx  SUBTYPE QUEUE600 VAR A-E`
where `xx` stands for the link number—`11` or `12,` for instance—and the `SUBTYPE` is `QUEUE` + the three-digit CCT number.
2. In Configuration Manager under configuration options for T-Server, set the value of option `queue-subtype` to `QUEUE` (default value).See “queue-subtype” on page 251 for details about this `SUBTYPE` field option.

Note: From T-Server release 7.2, `SEND TRACK DATA` can be used in place of `SEND DATA`.

Subsequently, an `EventQueued` reaches `DN #8600` each time a call is placed under the control of `CCT 600`. After the call is placed to the destination agent/trunk, or released, `EventDiverted` or `EventAbandoned` arrives at the same DN (`#8600`).

End of procedure

Sample CCT

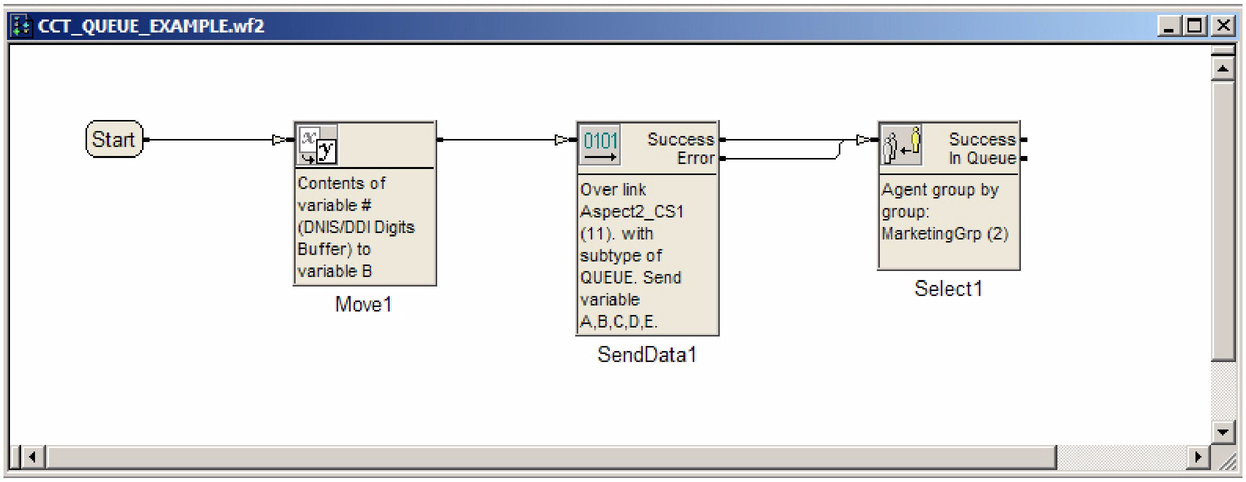

CCT_QUEUE_EXAMPLE.wf2
Start
Contents of variable # (DNIS/DDI Digits Buffer) to variable B
Move1
0101
Success
Error
Over link Aspect2_CS1 (11). with subtype of QUEUE. Send variable A,B,C,D,E.
SendData1
Success
In Queue
Agent group by group: MarketingGrp (2)
Select1

Figure 13: ACD (Queue) Emulation in Aspect Call Center, Example 1

See Chapter 12, “Configuring High-Availability and Contact Server,” page 261, for an example of this scenario in a high-availability environment.

Procedure: Configuring CDN (Routing Point) emulation

Purpose: To configure a CCT that will enable CDN (Routing Point) emulation.

Summary

To emulate a CDN (Routing Point), you must assign a specific CCT for that CDN; for example, `CCT 123` (see Figure 14 on page 143). From the Genesys application's point of view, that CCT is `DN 0123`. That is, `0` + the three-digit CCT number. Table 13 shows how to emulate a CDN (Routing Point).

Table 13: CDN (Routing Point) Emulation

Step	Description

N	`SEND DATA LINK #>11 SUBTYPE ROUTE123 VAR A-E`
	`ON ERROR, EXECUTE STEP N+2`

N+1	`RECEIVE DATA LINK #>11 ON NAK, EXECUTE STEP N+2`
	`ON ERROR, EXECUTE STEP N+2`

Note: `SEND TRACK DATA` can be used in place of `SEND DATA` from release 7.2.

Start of procedure

1. In the CCT ensure that, in the first command lines, `11` stands for the link number, and the `SUBTYPE` is `ROUTE` + the three-digit CCT number.
2. In Configuration Manager under configuration options for T-Server, set the value of option `route-subtype` to `ROUTE`. See "route-subtype" on page 251 for details about this `SUBTYPE` field option.

   Subsequently, each time a call is placed under the control of `CCT 123, DN 0123` receives an `EventRouteRequest`. After the call is routed to the destination agent/CCT via `RequestRouteCall`, to a default route, or released, the same DN (`0123`) receives an `EventRouteUsed`.

End of procedure

Sample CCT

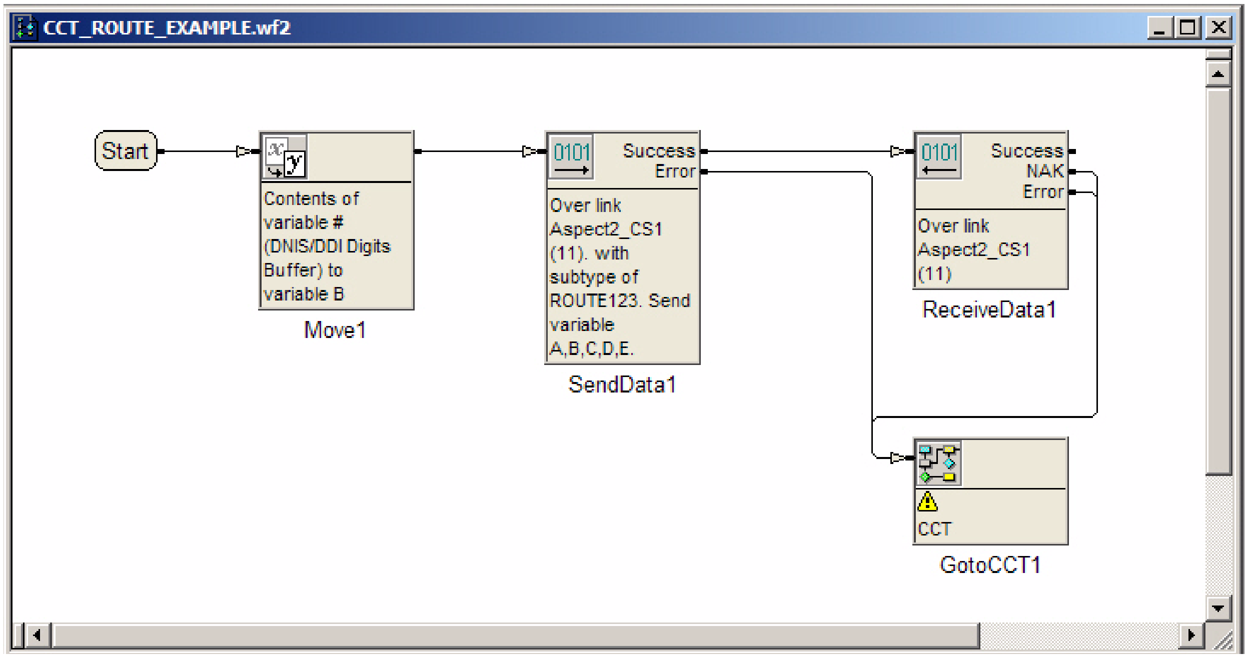

CCT_ROUTE_EXAMPLE.wf2
Start
Contents of variable # (DNIS/DDI Digits Buffer) to variable B
Move1
0101
Success
Error
Over link Aspect2_CS1 (11). with subtype of ROUTE123. Send variable A,B,C,D,E.
SendData1
0101
Success
NAK
Error
Over link Aspect2_CS1 (11)
ReceiveData1
CCT
GotoCCT1

Figure 14: CDN (Routing Point) Emulation in Aspect Call

Note: See Chapter 12, “Configuring High-Availability and Contact Server,” page 261, for an example of this scenario in a high-availability environment.

Routing Using CTIMR

CTIMR messages

From T-Server release 7.2, a new routing message, CTIMR (Call Track Information Message Response), was implemented in T-Server.

T-Server reacts if a call notification for calls on a Routing Point is made via a CTIM message instead of a CIM message (the same subtypes are used when CTIM notification is used in CCTs, in the `SendTrackData` step).

Configuration option `route-uses-ctimr` controls how CTIM and CIM messages are used—see “route-uses-ctimr” on page 241.

End-of-routing messages

Option `rtend-subtype` (see “rtend-subtype” on page 252) allows you to define an “end-of-routing” notification by specifying the subtype that T-Server uses to change the call state.

In release 7.2, T-Server understands both CTIM and CIM messages with subtype {`RTEND`}{*CCT number*} and generates `EventRouteUsed` if there was prior `EventRouteRequest` from the same CCT.

In release 7.5 T-Server contains an additional subtype for use in Abandon scenarios. This subtype enables “end-of-routing” to be distinguished from `Abandoned`.

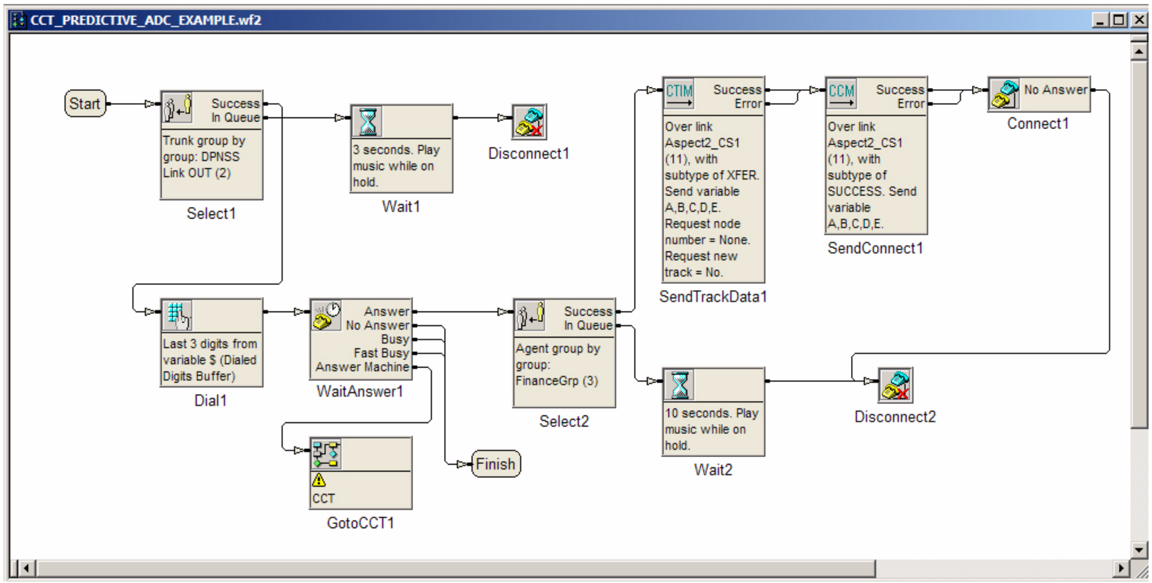
T-Server recognizes CTIM or CIM messages with subtype {`RTABRT`}{*CCT number*} and generates `EventAbandoned` if there was a prior `EventRouteRequest` from the same CCT. See “rtabrt-subtype” on page 251.

Predictive Dialing Using Aspect Call Classifier (ADC Board)

Requests for predictive dialing using Aspect Call Classifier (ADC board) do not use the standard Outbound CCT. They require a separate CCT, which you must configure both as an ACD Queue (or a Routing Point from T-Server release 7.1), and also in the campaign as `VoiceTransferDestination`.

See Figure 15 on page 144 shows a sample CCT.

Sample CCT



Trunk group by group: DPNSS Link OUT (2)

3 seconds. Play music while on hold.

Over link Aspect2_CS1 (11), with subtype of XFER. Send variable A,B,C,D,E. Request node number = None. Request new track = No.

Over link Aspect2_CS1 (11), with subtype of SUCCESS. Send variable A,B,C,D,E.

Last 3 digits from variable $ (Dialed Digits Buffer)

Agent group by group: FinanceGrp (3)

10 seconds. Play music while on hold.

CCT

Figure 15: Predictive Dialing Using Aspect Call Classifier (ADC Board)

Note: The `WaitAnswer1` step only uses the `Answer` or `Answer Machine` output—other outputs are not required.

Call Results in OCS from T-Server

When the call is released, T-Server updates the `GSW_CALL_RESULT`. You do not need to modify the CCT to send a message that T-Server would translate as `EventBusy`, for example.

For more information see the *Aspect Outbound Application Integration Guide* (available from your switch vendor) for the relevant release of your switch.

Error Reporting

If at any point during call processing within a CCT an error arises, you may wish to report the specific error condition to the T-Server. By doing so, T-Server clients receive the error condition as a `CallState` attribute in the `EventReleased` for that call.

Procedure: Reporting a specific error condition

Purpose: To enable reporting of a specific error condition.

Start of procedure

1. To report a specific error condition to the T-Server, use the command:
   `SEND DATA LINK #>xx  SUBTYPE code VAR A-E`
   where `xx` stands for the link number, `11` or `12,` for instance, and the `SUBTYPE` is from the following list:

   ```
   BUSY
   FASTBUSY
   TBUSY
   NOANSWER
   ANSWMACH
   VACANT
   UNDEFINED
   ```

2. Then, in Configuration Manager under configuration options for T-Server, specify the error-reporting options shown in Table 14.

Table 14: Error Reporting

Option	Value
busy-subtype	BUSY
fast-busy-subtype	FASTBUSY
tbusy-subtype	TBUSY
no-answer-subtype	NOANSWER
answ-mach-subtype	ANSWMACH

Table 14: Error Reporting (Continued)

Option	Value
vacant-subtype	VACANT
undefined-subtype	UNDEFINED

See "SUBTYPE Field Options" on page 249 for details about these `SUBTYPE` field options. The `SUBTYPE` field codes exactly correspond to all possible error branches in CCT commands. Please refer to the Aspect Call Center switch documentation for details.

End of procedure

Note: Do not use `SEND CONNECT` instead of `SEND DATA` to report an error condition. This might not work for some Aspect Call Center releases.

Configuring CCTs to Support Rerouting via CTI

The Aspect switch does not natively support through CTI either of the following features:

- Call Forwarding on No Answer (CFNA)
- The Redirect Call service

As a consequence, to enable an interaction to be rerouted, you must simulate it using CCTs.

In the Aspect switch, any CTI call (internal, outbound, call to a queue or to a Routing Point) goes through a CCT. You can modify CCTs and link them to another CCT to implement CFNA.

Procedure:
Linking CCTs using GoToCCT

Purpose: To link CCTs to simulate CFNA or the Redirect Call service.

Start of procedure

1. Whenever there is a `Connect` step in the CCT, include a `GotoCCT` step on the no-answer exit as shown in Figure 16.

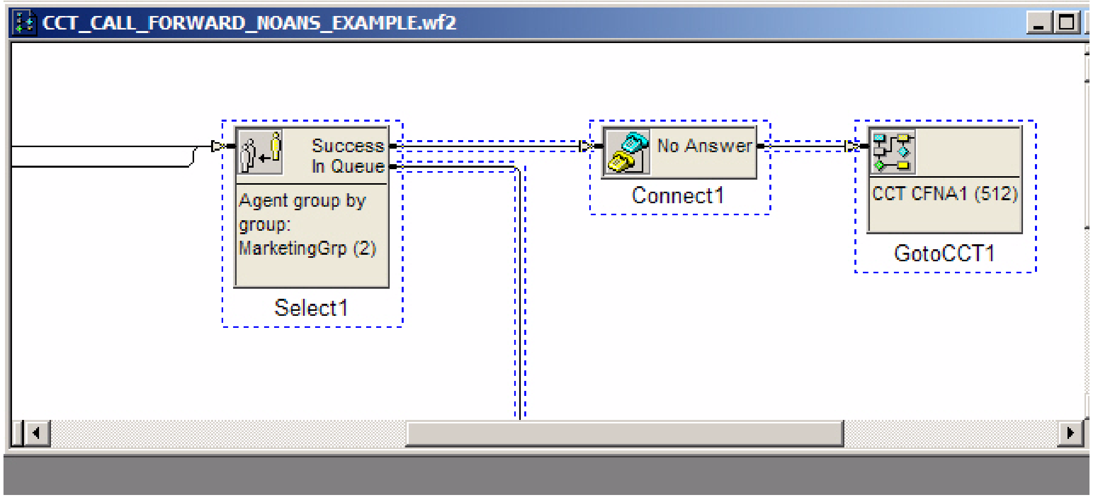

CCT_CALL_FORWARD_NOANS_EXAMPLE.wf2
Success
In Queue
Agent group by group: MarketingGrp (2)
Select1
No Answer
Connect1
CCT CFNA1 (512)
GotoCCT1

Figure 16: GoToCCT Step in CFNA Scenario

2. Configure a `SENDDATA` step for debugging purposes—see “The SENDDATA Step” on page 148).

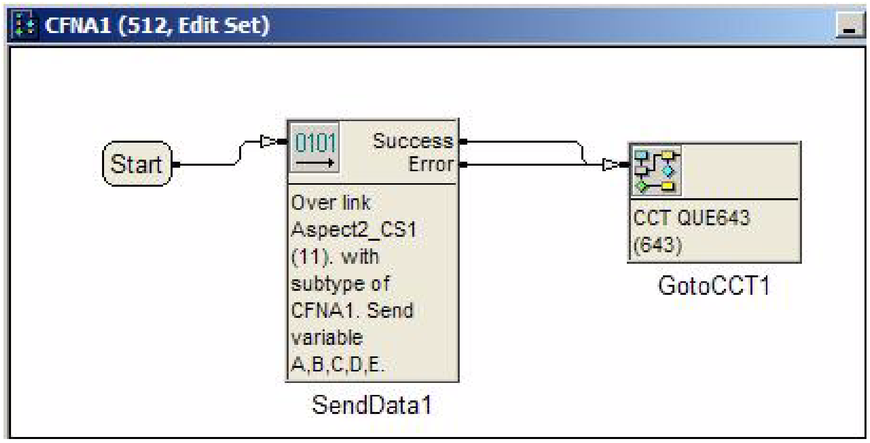

CFNA1 (512, Edit Set)
Start
0101
Success
Error
Over link Aspect2_CS1 (11). with subtype of CFNA1. Send variable A,B,C,D,E.
SendData1
CCT QUE643 (643)
GotoCCT1

Figure 17: CFNA to Queue Device

End of procedure

You can modify *any* CCTs, including those listed below, in this way:

- `internal-call-cct`
- `single-step-transfer-cct`
- `outbound-call-cct`
- `route-call-cct`

Sample CCT

This CFNA CCT can be a queue, a Routing Point, an extension, or any other DN type as shown in Figure 17.

The SENDDATA Step

The `SendData1` step is useful for debugging purposes in the T-Server log. Figure 17 on page 147 shows an example of this step.

T-Server maintains consistent reporting in all CFNA scenarios.

CCT Debugging

There are supplementary commands to assist in tracking the progress of calls through the CCTs. T-Server reports messages from these commands in the logs, but does not act on them.

One such supplementary command is:

```
SEND DATA  LINK #>xx  SUBTYPE ZZanytext  VAR A-E
```

where *xx* stands for the link number, and `SUBTYPE` should be `ZZ` + any other text allowed by the `SUBTYPE` field.

Aspect PBX Licensing for T-Server

There are licenses on the Aspect switch that are made available on a per Data Interlink basis. These licenses define the number of trunks, queues and agents that can be monitored simultaneously on the switch. Contact your switch vendor for details.

Network InterQueue Support Using Track ID

Note: UUI in Network Inter-Queue (NIQ) is not supported. UUI is only supported on ISDN connections.

Description

From release 7.0.2, Aspect T-Server supports the `TrackID` (track number/track node) as a network `CallID`. T-Server uses the COF feature and the Aspect `TrackID` to match calls that have arrived via NIQ. The terminating T-Server updates the `ConnectionID` and attaches the user data from the originating T-Server upon matching the `TrackID` to a call in the originating T-Server.

Configuring the Switch

Procedure: Configuring the switch for NIQ support using Track ID

Purpose: To configure the switch to support NIQ using Track ID.

Start of procedure

1. Turn on `Trunk Notification` on Contact Server for all sites.
   a. From Internet Explorer, access the CMI web interface to configure the Contact Server (CMI server).
   b. Type `http://CS_hostame:8082` or `8083`.
   c. Click `Aspect CMI Server`.
2. Ensure that the Aspect Event Bridge Monitor table has the entries shown in Table 15.

Table 15: Aspect Event Bridge Monitor Table

Monitor Whom	Monitor Number	Agent-State Map	Call-State Map
Monitor all trunks	N/A	YYYYYYYYYYY	YYYYYYYYYYYYYYYYYYYY

   This entry enables the sending of trunk messages to T-Server. The CNEM message is the message that contains the call attributes necessary to create a new call in T-Server. Without this information, T-Server cannot specify the call it is looking for in its request to other T-Servers. Also, the next CTI message should be a CTIM message (`Send Track Data` step) so it can retrieve the `TrackID` associated with the call.

3. Modify Aspect NIQ scripts (CCT) so that `TrackID` is sent to T-Server.
   a. In the NIQ CCT that sends the call to a remote location insert a `Send Track Data` step:
      i. Set `Subtype` to any string.
      ii. Set `Variables` to `A B C D E`.
      iii. Set `Trace Node` to `out`.
      iv. Select the `Assign New Call Track Information` check box.
      This step assigns a `TrackID` to the call and the `TrackID` is sent to T-Server via a CTIM message.

b. In the NIQ CCT that receives a call from another location, insert a `Send Track Data` step.

   i. Set `Subtype` to any string.

   ii. Set `Variables` to `A B C D E`.

   iii. Set `Trace Node` to `in`.

   iv. Clear the `Assign New Call Track Information` check box.
   This step should be one of the first steps in the script so that the CTIM message is reported as soon as possible (preferably the first message for the call).

c. If the solution does not meet expectations (for example, `Connection ID` or `UserData` are not maintained), consider inserting a `Send Data` step before the `Send Track Data` step:

   i. Set `Subtype` to `NORMAL` (note uppercase).

   ii. Set `Variables to A B C D E`.

4. Configure NIQ to pass the `TrackID` to any other switch for calls going via this NIQ.

End of procedure

Next Steps

- Procedure: Configuring Genesys for NIQ support using Track ID.

Procedure: Configuring Genesys for NIQ support using Track ID

Purpose: To configure Genesy to support the switch NIQ feature using Track ID.

Start of procedure

1. Enable the ISCC/COF feature on both T-Servers.

   a. Set the following configuration options to `true`:

   - In T-Server, `use-track-id`.
   - In ISCC, `cof-feature`.
   This forces T-Server to use `TrackID` as a unique identifier for a call.

   b. Restart T-Server.

2. Configure the Access Codes between the two switches.

   a. Set `Target Type to Target ISCC`.

   b. Set `Route Type` to `Default`.

   c. Do not set a value for `ISCC Protocol Parameters`.

3. Set `ISCC Call Overflow Parameters` to `match-callid`.

End of procedure

Chapter

7

Supported Functionality in T-Server for Aspect ACD

This chapter describes the telephony functionality T-Server for Aspect ACD supports and includes the following sections:

Disconnection-Detection Configuration

Aspect ACD offers its own Disconnection-Detection feature to monitor the connection between the Aspect CTI link and T-Server. Use the Application Bridge Monitor Host to provide disconnection detection for that link:

1. In the `Data Interlink Record`, open the `Link Properties` configuration window.
2. On the `Monitoring and Timeout` tab, set `Time interval between monitor messages` to `10`. (This sets the monitoring interval to 10 seconds.)

Once you set this option, Aspect ACD sends T-Server `Host Monitor Messages (HMMs)`. When the first `HMM` arrives, T-Server turns on its Disconnect-Detection feature, ADDP, and responds with the `HMM Response` message. If T-Server must wait more than 15 seconds between `HMMs`, the CTI link is considered disconnected. T-Server then generates the corresponding event and sends it to its clients. At this point, T-Server closes the TCP/IP connection with Aspect ACD and waits for the next opportunity to reconnect the link.

If you do not configure link monitoring, then Aspect ACD sends no `HMMs` to T-Server, and the Aspect ACD Disconnection-Detection feature remains switched off.

Configuring Genesys Voice Platform (GVP)

Genesys is not aware of any specific PBX configuration requirements for GVP to work with T-Server for Aspect. However, you may need to create specific CCTs for your own environment.

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 the client into the `Agent ID` that the switch expects.

Configuration Option and Extension

The following configuration option and extension are provided to enable and disable this feature.

Configuration Option

convert-otherdn

Default Value: `+agentid +reserveddn +fwd`
Valid Values: `+/-agentid +/-reserveddn, +/-fwd`
Changes Take Effect: Immediately

Defines whether T-Server has to convert (if applicable) the value provided in request's `AttributeOtherDN`.

`+/-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 the `Agent ID` value (where appropriate).
`+/-reserveddn`	Turns on/off the conversion of `OtherDN` for reserved DNs. (Reserved for Genesys Engineering.)
`+/-fwd`	Turns on/off the conversion of `OtherDN` in request `TSetCallForward.` (Reserved for Genesys Engineering.)

Extension Extension key ConvertOtherDN is also provided to enable this feature to be applied on a call-by-call basis.

Note: If T-Server cannot distinguish between call delivery to an extension or an Agent ID, it cannot perform Smart OtherDN handling.

Supported Requests

Table 16 shows the requests that assume the use of the OtherDN value as a switch directory number, and can therefore support Smart OtherDN Handling.

Table 16: 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	No	No
TInitiateTransfer	Call destination	Yes	Yes
TMuteTransfer	Call destination	No	No
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	No	No
TGetAccessNumber[c]	DN for which Access Number is requested	No	No
TSetCallAttributes[c]	Not specified	No	No

Table 16: Requests That Support Smart OtherDN Handling (Continued)

TRequest	Meaning of OtherDN Attribute	AgentID-to-DN Conversion	Reserved DN Conversion
TReserveAgentAndGetAccessNumber[c]	DN for which Access Number is requested	No	No
TMonitorNextCall	Agent DN to be monitored	Not applicable	Not applicable
TCancelMonitoring	Agent DN that was monitored	Not applicable	Not applicable
TRouteCall[d]	New destination for call		
• RouteTypeUnknown		Yes	Yes
• RouteTypeDefault		Yes	Yes
• RouteTypeOverwriteDNIS		Yes	Yes
• RouteTypeAgentID		Yes[e]	Yes[e]

[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.

[e] T-Server must perform Agent ID-to-DN conversion explicitly. The configuration option should be ignored.

Call Release Tracking

In release 8, T-Server can now 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 now be reported in this way:

- Normal call release
- Abnormal call release
- Call release from a conference
- 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;
- The PBX CTI protocol provides reliable information about the identity of party that released.

Configuration Option

The feature is enabled/disabled by configuration option releasing-party-report:

releasing-party-report

Default Value: false
Valid Values: true, false
Changes Take Effect: Immediately

Specifies whether T-Server reports Attribute Extension ReleasingParty in events EventReleased and EventAbandoned to indicate which party initiated the call release.

Failed Route Notification

In release 8, T-Server supports a variety of alarm messages for unsuccessful routing scenarios.

When this feature is enabled, a failed route timer is set using the interval defined in configuration option `route-failure-alarm-period`. 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 option `route-failure-alarm-high-wm`, T-Server sets a route failure alarm condition, and resets the counter.

The alarm condition is cleared when fewer route failures than configured in option `route-failure-alarm-low-wm` 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 configuration option `route-failure-alarm-period` to `0` (zero) disables the feature.

Configuration Options

The feature is controlled by the following configuration options:

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

Defines the high water mark which must be reached in order for a route failure alarm to be triggered, within the period configured in option `route-failure-alarm-period.`

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

Defines the low water mark which must be reached, while under the route failure alarm condition, within the period configured in `route-failure-alarm-period.`

route-failure-alarm-period

Default Value: `0`
Valid Values: Positive integer
Changes Take Effect: Immediately

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.

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.

Link Bandwidth Monitoring

In release 8, T-Server can provide 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

Configuration option `link-alarm-high`, specified as a percentage of the `use-link-bandwidth` value, defines an upper threshold bandwidth value which when breached raises a `LINK_ALARM_HIGH` LMS message.

Configuration option `link-alarm-low`, specified as a percentage of the `use-link-bandwidth` value, defines a lower threshold bandwidth value which when breached raises a `LINK_ALARM_LOW` LMS message.

Configuration Options

link-alarm-high

Default Value: `0`
Valid Values:`0-100`

Changes Take Effect: Immediately

Specifies percentage of `use-link-bandwidth` option when LMS message `LINK_ALARM_HIGH` will be triggered.

Value `0` (zero) disables the feature.

link-alarm-low

Default Value: `0`
Valid Values:`0-100`
Changes Take Effect: Immediately

Specifies percentage of `use-link-bandwidth` option when LMS message `LINK_ALARM_LOW` will be triggered.

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.Value `0` (zero) disables the feature. Value `0` (zero) disables the feature.

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 the measured requests sent on the link

`%d2` represents the current `link-alarm-high` option setting

`%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 the measured requests sent on the link

`%d2` represents the current `link-alarm-low` option setting

%d3 represents the CTI Link ID

Note: The text description for this message is slightly misleading because the LMS message is created if the set request rate is reached. This is so that users can use 0 (zero) as a value and therefore a low watermark LMS message will still be created. This is different from high watermark handling, where the value must be exceeded to create the LMS message.

If both high and low alarm values are set to 0 (zero), generation of alarms is disabled.

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.

T-Library Functionality

Table 17 on page 161 presents T-Library functionality supported in the Aspect ACD. The table entries use these notations:

N—Not supported

Y—Supported

I—Supported, but reserved for Genesys Engineering

E—Event only is supported

In Table 17, 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 7 Events and Models Reference Manual.*

Table 17 reflects only the switch functionality Genesys software uses and might not include the complete set of events offered by the switch.

Certain requests in Table 17 are reserved for Genesys Engineering use and are listed here merely for completeness of information.

Notes describing specific functionalities appear at the end of a table.

Table 17: Supported Functionality

Feature Request	Request Subtype	Corresponding Event(s)	Supported
General Requests			
TOpenServer		EventServerConnected	Y
TOpenServerEx		EventServerConnected	Y

Table 17: Supported Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
TCloseServer		EventServerDisconnected	Y
TSetInputMask		EventACK	Y
TDispatch		Not Applicable	Y
TScanServer		Not Applicable	Y
TScanServerEx		Not Applicable	Y
Registration Requests			
TRegisterAddress[a]		EventRegistered	Y
TUnregisterAddress[a]		EventUnregistered	Y
Call-Handling Requests			
TMakeCall[b]	Regular	EventDialing	Y
	DirectAgent		N
	SupervisorAssist		N
	Priority		N
	DirectPriority		N
TAnswerCall		EventEstablished	Y
TReleaseCall		EventReleased	Y
TClearCall		EventReleased	N
THoldCall		EventHeld	Y
TRetrieveCall		EventRetrieved	Y
TRedirectCall		EventReleased	N
TMakePredictiveCall		EventDialing*, EventQueued	Y
Transfer/Conference Requests			
TInitiateTransfer[b]		EventHeld, EventDialing*	Y
TCompleteTransfer		First arriving EventReleased*, EventPartyChanged	Y

Table 17: Supported Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
TInitiateConference[b]		EventHeld, EventDialing*	Y
TCompleteConference		EventReleased*, EventRetrieved, EventPartyChanged, EventPartyAdded	Y
TDeleteFromConference		EventPartyDeleted*, EventReleased	Y
TReconnectCall		EventReleased, EventRetrieved*	Y
TAlternateCall		EventHeld*, EventRetrieved	Y
TMergeCalls	ForTransfer	EventReleased*, EventPartyChanged	N
	ForConference	EventReleased*, EventRetrieved, EventPartyChanged, EventPartyAdded	N
TMuteTransfer[b]		EventHeld, EventDialing*, EventReleased, EventPartyChanged	N
TSingleStepTransfer[b]		EventReleased*, EventPartyChanged	Y
TSingleStepConference		EventPartyAdded* or EventRinging*, EventEstablished	N

Table 17: Supported Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
Call-Routing Requests			
TRouteCall[b]	Unknown	EventRouteUsed	Y
	Default		Y
	Label		N
	OverwriteDNIS		Y[c]
	DDD		N
	IDDD		N
	Direct		N
	Reject		Y
	Announcement		N
	PostFeature		N
	DirectAgent		N
	Priority		N
	DirectPriority		N
	AgentID		N
	CallDisconnect		Y

Table 17: Supported Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
Call-Treatment Requests			
TApplyTreatment	Unknown	(EventTreatmentApplied + EventTreatmentEnd)/EventTreatmentNotApplied	N
	IVR		N
	Music		N
	RingBack		N
	Silence		N
	Busy		N
	CollectDigits		N
	PlayAnnouncement		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

Table 17: Supported Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
TSendDTMF		EventDTMFSent	Y
Voice-Mail Requests			
TOpenVoiceFile		EventVoiceFileOpened	N
TCloseVoiceFile		EventVoiceFileClosed	N
TLoginMailBox		EventMailBoxLogin	N
TLogoutMailBox		EventMailBoxLogout	N
TPlayVoice		EventVoiceFileEndPlay	N
Agent & DN Feature Requests			
TAgentLogin	WorkModeUnknown	EventAgentLogin	Y
	ManualIn		N
	AutoIn		N
	AfterCallWork		Y
	AuxWork		N
	NoCallDisconnect		N
TAgentLogout		EventAgentLogout	Y
TAgentSetIdleReason		EventAgentIdleReasonSet	Y
TAgentSetReady		EventAgentReady	Y
TAgentSetNotReady	WorkModeUnknown	EventAgentNotReady	Y
	ManualIn		N
	AutoIn		N
	AfterCallWork		Y
	AuxWork		N
	NoCallDisconnect		N
TMonitorNextCall	OneCall	EventMonitoringNextCall	N
	AllCalls		N

Table 17: Supported Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
TCancelMonitoring		EventMonitoringCancelled	N
TCallSetForward	None	EventForwardSet	N
	Unconditional		N
	OnBusy		N
	OnNoAnswer		N
	OnBusyAndNoAnswer		N
	SendAllCalls		N
TCallCancelForward		EventForwardCancel	N
TSetMuteOff		EventMuteOff	N
TSetMuteOn		EventMuteOn	N
TListenDisconnect		EventListenDisconnected	N
TListenReconnect		EventListenReconnected	N
TSetDNDOn		EventDNDOn	N
TSetDNDOff		EventDNDOff	N
TSetMessageWaitingOn		EventMessageWaitingOn	N
TSetMessageWaitingOff		EventMessageWaitingOff	N
Query Requests			
TQuerySwitch[a]	DateTime	EventSwitchInfo	N
	ClassifierStat		N
TQueryCall[a]	PartiesQuery	EventPartyInfo	N
	StatusQuery		Y
TQueryAddress[a]	AddressStatus	EventAddressInfo	Y
	MessageWaitingStatus		N
	AssociationStatus		Y
	CallForwardingStatus		N

Table 17: Supported Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
	AgentStatus		Y
	NumberOfAgentsInQueue		Y[d]
	NumberOfAvailableAgents InQueue		Y[d]
	NumberOfCallsInQueue		Y
	AddressType		Y
	CallsQuery		Y
	SendAllCallsStatus		N
	QueueLoginAudit		Y[d]
	NumberOfIdleTrunks		N
	NumberOfTrunksInUse		N
	DatabaseValue		N
	DNStatus		Y
	QueueStatus		Y
TQueryLocation[a]	AllLocations	EventLocationInfo[e]	I
	LocationData		I
	MonitorLocation		I
	CancelMonitorLocation		I
	MonitorAllLocations		I
	CancelMonitorAllLocations		I
TQueryServer[a]		EventServerInfo	Y
User-Data Requests			
TAttachUserData		EventAttachedDataChanged	Y
TUpdateUserData		EventAttachedDataChanged	Y
TDeleteUserData		EventAttachedDataChanged	Y
TDeleteAllUserData		EventAttachedDataChanged	Y

Table 17: Supported Functionality (Continued)

Feature Request	Request Subtype	Corresponding Event(s)	Supported
ISCC (Inter Server Call Control) Requests			
TGetAccessNumber[b]		EventAnswerAccessNumber	I
TCancelReqGetAccess Number		EventReqGetAccess-NumberCanceled	I
Special Requests			
TReserveAgent		EventAgentReserved	I
TSendEvent		EventACK	I
TSendEventEx		EventACK	I
TSetCallAttributes		EventCallInfoChanged	I
TSendUserEvent		EventACK	Y
TPrivateService[f]		EventAck/EventPrivateInfo	Y
Network Requests[g]			
TNetworkConsult		EventNetworkCallStatus	Y
TNetworkAlternate		EventNetworkCallStatus	Y
TNetworkTransfer		EventNetworkCallStatus	Y
TNetworkMerge		EventNetworkCallStatus	Y
TNetworkReconnect		EventNetworkCallStatus	Y
TNetworkSingleStep Transfer		EventNetworkCallStatus	Y
TNetworkPrivateService		EventNetworkPrivateInfo	Y
ISCC Transaction Monitoring Requests			
TTransactionMonitoring		EventACK	Y
		EventTransactionStatus	E

a. Only the requestor receives a notification of the event associated with this request.

b. Because this feature request may be made across locations in a multi-site environment, if the location attribute of the request contains a value relating to any location other than the local site—except when the response to this request is EventError—there is a second event response that contains the same Reference ID as the first event. This second event is either EventRemoteConnectionSuccess or EventRemoteConnectionFailed.

c. Supported only with routing method CIMR or CTIMR.

d. To support NumberOfAgentsInQueue and NumberOfAvailableAgentsInQueue, a new device to represent Agent Groups is used. No event reporting is sent for this device—it is only used for TQueryAddress requests. The NumberOfAgentsInQueue, NumberOfAvailableAgentsInQueue, and QueueLoginAudit queries are issued against the new ACD queues used to support this query (DN *8nnn), whereas the NumberOfCallsInQueue is issued against the actual ACD queue (DN #8nnn). Furthermore, the PBX does not provide details of the Agent Group for agents that are already logged in when T-Server starts up. So T-Server can only provide details for the NumberOfAgentsInQueue, NumberOfAvailableAgentsInQueue, and QueueLoginAudit queries for agents who log in while T-Server is running. See “Agent Group” on page 138.

e. Two subtypes are supported by EventLocationInfo: LocationMonitorCanceled and AllLocationsMonitorCanceled.

f. See also information about extensions on page 179.

g. 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 18 indicates the types of agent work modes that T-Server for Aspect ACD supports.

Table 18: 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 Aspect ACD switch supports the use of the Extensions attribute, as documented in the *Genesys 7 Events and Models Reference Manual,* as well as the Extensions described in Table 19.

Table 19: Use of the Extensions Attribute

Request/Event	Attribute Extensions			
	Key	Value Type	Valid Values	Value Description
TAgentNotReady TAgentLogout EventAgentLogout EventAgentNotReady	REASON	integer/ string in requests string in events	1–999	Used to send the Idle Reason to the switch. Only used when the option walk-away-bck-compat is set to true. Otherwise, extension key ReasonCode is used.
TAgentNotReady TAgentLogout EventAgentLogout EventAgentNotReady	ReasonCode	integer/ string in requests string in events	1–999	Used to send the Idle Reason to the switch. Only used when the option walk-away-bck-compat is set to false. Otherwise, extension key REASON is used.
TRouteCall TSingleStepTransfer TMakePredictive Call	A	string	Up to 20 characters long	Used to pass data variable A to the switch
	B	string	Up to 20 characters long	Used to pass data variable B to the switch
	C	string	Up to 7 characters long	Used to pass data variable C to the switch
	D	string	Up to 7 characters long	Used to pass data variable D to the switch
	E	string	Up to 40 characters long	Used to pass data variable E to the switch

Table 19: Use of the Extensions Attribute (Continued)

Request/Event	Attribute Extensions			
	Key	Value Type	Valid Values	Value Description
EventRouteRequest/ EventRouteUsed All events that T-Server sends for a call after receiving the CIM/CCM message from the switch.	A	string	Up to 20 characters long	Used to pass data variable A from the switch
	B	string	Up to 20 characters long	Used to pass data variable B from the switch
	C	string	Up to 7 characters long	Used to pass data variable C from the switch
	D	string	Up to 7 characters long	Used to pass data variable D from the switch
	E	string	Up to 40 characters long	Used to pass data variable E from the switch
All events that T-Server sends for a call after receiving the CTIM message from the switch.	CC_NODE	digit string	1–99	Used to pass the CC_NODE value received from the switch
	TRACKNODE	digit string	1–99	Used to pass the TRACKNODE value received from the switch
	TRACKNUM	digit string	Any positive integer up to 10 digits long	Used to pass the TRACKNUM value received from the switch
	TRACKSEQ	digit string	1–999	Used to pass the TRACKSEQ value received from the switch
	REQUEST	digit string	0–5	Used to pass the REQUEST value received from the switch

Table 19: Use of the Extensions Attribute (Continued)

Request/Event	Attribute Extensions			
	Key	Value Type	Valid Values	Value Description
All events that T-Server sends for a call after receiving the CIM/CCM message from the switch.	SUBTYPE	string	Up to 12 characters long	Used to pass the SUBTYPE value received from the switch
	A	string	Up to 20 characters long	Used to pass data variable A received from the switch
	B	string	Up to 20 characters long	Used to pass data variable B received from the switch
	C	string	Up to 7 characters long	Used to pass data variable C received from the switch
	D	string	Up to 7 characters long	Used to pass data variable D received from the switch
	E	string	Up to 40 characters long	Used to pass data variable E received from the switch
TRouteCall TSingleStepTransfer TInitiateTransfer TInitiate Conference TMakeCall TMakePredictive Call	CCT	integer string	0–999 none or a three-digit CCT number, 000–999	Used to pass a CCT number for placing a call. The value none specifies the use of an ACD dialing plan.
TInitiateTransfer TMakeCall TInitiateConference TPrivateService	LINE	string	I	Consultative call to CCT (#8cct) will be placed via an internal line.
EventAgentLogin EventAgentLogout EventAgentReady EventAgentNotReady	AGENT_ GROUP	string		Passes to T-Server clients the value of field AGENT_GROUP received from the switch.

Table 19: Use of the Extensions Attribute (Continued)

Request/Event	Attribute Extensions			
	Key	**Value Type**	**Valid Values**	**Value Description**
TMakePredictiveCall	RNA_TIMEOUT	integer	0–99	Specifies the maximum time (in seconds) that the Aspect ACD system allows, starting at the receipt of ringback tone or an `alerting` message from the network, before declaring a call unanswered after `TMakePredictiveCall` is initiated. If specified, this value overrides any value defined for configuration option `rna-timeout`.
TMakePredictiveCall	CPNDigits OLI	OLI: integer, string CPNDigits: string	0 - max integer, 0 - 9 ,*,# 0 - 9 ,*,#	Specifies the number passed to Aspect ACD system as the `Original Line Identity` (`OLI`) when `TMakePredictiveCall` is requested. **Note:** Originally optional 20-byte keypad numeric field (0-9, *, #) specifies the 'Originating Line Identity' that should be used if the outgoing trunk is DPNSS.
TMakePredictiveCall	ANSWER_MODE[a]	integer	0–3	Specifies when to consider the Outbound Application Integration call as answered.
			0	Disables answering machine screening. Considers call answered immediately on detection of voice or cessation of ringback tone (whichever comes first) by the `Answer Detect` resource or on receiving answer indication from the network.

Table 19: Use of the Extensions Attribute (Continued)

Request/Event	Attribute Extensions			
	Key	Value Type	Valid Values	Value Description
TMake PredictiveCall (continued)	ANSWER_ MODE[b] (continued)		1	Disables answering machine screening. Considers the call answered immediately upon detection of voice by the `Answer Detect` resource. Considers the call answered based on cessation of ringback tone by the `Answer Detect` resource or receipt of answer indication from the network after a delay to verify that the call was not answered by a modem. If none of the above indicates the call was answered, it is classified as not answered.
			2	Performs answering machine screening after `Answering Machine Screening` delay to determine whether a human or an answering machine answered the call. Considers the call answered by a human if either voice detect or answer supervision occurs before the screening delay elapses. Before the screening delay elapses, answer detection is handled as for value `0`.
			3	Performs answering machine screening after `Answering Machine Screening` delay to determine whether a human or an answering machine answered the call. Considers the call answered by a human if either voice detect or answer supervision occurs before the screening delay elapses. Before the screening delay elapses, answer detection is handled as for value `1`.

Table 19: Use of the Extensions Attribute (Continued)

Request/Event	Attribute Extensions			
	Key	**Value Type**	**Valid Values**	**Value Description**
TMake PredictiveCall	AMS_DELAY[b]	integer	0—99	Specifies the Answering Machine Screening delay time (in seconds). This delay is used with the ANSWER_MODE field of the Make Predictive Call Request (MPCR) message and is ignored unless ANSWER_MODE has a value of 2 or 3 (screening enabled). The maximum value for this field is 3 seconds less than the value of the RNA_TIMEOUT field.
TMake PredictiveCall	AMR_MODE[b]	integer	0–3	Specifies that an extension be used with Outbound application integration calls. It also specifies the method of reporting answering machine detection. This parameter is relevant only for ANSWER_MODE = 2 or 3 (screening enabled). Call processing passes this parameter to the Answer Detect (AD) card.
			0	Specifies that T-Server report as soon as voice duration has exceeded the threshold for human answer. This mode provides the best opportunity for a live agent to leave a message after the beep and for manual agent override of answering machine classification. The manual override is through the OCMS.
			1	Specifies that T-Server report immediately after initial voice segment ends. Due to long duration, this voice segment is assumed to be the answering machine greeting.

Table 19: Use of the Extensions Attribute (Continued)

Request/Event	Attribute Extensions			
	Key	Value Type	Valid Values	Value Description
TMake PredictiveCall (continued)	AMR_MODE[b] (continued)	integer	2	Specifies that T-Server report after elapse of fixed delay after the end of the initial voice segment. The intention is to attempt to delay past the beep tone.
			3	Specifies that T-Server report when initial voice segment and answering machine beep tone ends.
TMake PredictiveCall	ANS_MAP[b]	string	32 characters	This alphanumeric extension is 32 bytes long and consists of characters `0` and `1`. The `ANS_MAP` field instructs the AD card how to classify various call events. Each bit of the resulting 32-bit field specifies which of the following two actions to take when the associated event is detected after dialing an Outbound application integration call. The first character produces bit `31`; the last character produces bit `0`.
			1	Specifies that the call take the `ANSWER` branch of the `WAIT ANSWER CCT` step.
			0	Disconnects the call.

Table 19: Use of the Extensions Attribute (Continued)

Request/Event	Attribute Extensions			
	Key	Value Type	Valid Values	Value Description
TMake PredictiveCall	COUNTRY	integer	0–40	Specifies the destination country. The value specified in this field is used by the Answer Detect (AD) card to interpret tone frequencies, cadences, and so on. Valid values: `01-40`. Currently, assignments to specific countries are only as shown in the country-code table. **Note:** Aspect ACD System does not support tone detection in all of these countries. Contact your switch vendor for a list of fully supported countries.
TMake PredictiveCall	AD_PARAM[b]	string	32 characters	This alphanumeric extension is 32 bytes long and consist of characters `0` and `1`. Each bit in this field controls an optional feature of the `Answer Detect` resource for this call. The first character produces bit `31`; the last character produces bit `0`.

Table 19: Use of the Extensions Attribute (Continued)

Request/Event	Attribute Extensions			
	Key	Value Type	Valid Values	Value Description
TPrivateService	LINE	string		When made with the following values, this request permits sending of specific Press Key Requests (PKR:L) to the switch: 0—Outside line 1 1—Outside line 2 2—Internal line The request is only allowed for instruments. Requests from other devices are rejected. On positive acknowledgement T-Server returns EventPrivateInfo with privateID=0 with the extension key from the request.
All call-related events	BusinessCall	integer	0–2	0—Private call 1—Business call 2—Work-related call
EventReleased/ EventAbandoned	ReleasingParty	integer	1–3	Indicates which party initiated the release of the call. Possible values are: 1—Local 2—Remote 3—Unknown
EventRouteRequest	LinkLoad	Integer		LinkLoad, in the EventRouteRequest message, is set to 1—High when T-Server is in an alarm state, 0—Ok otherwise. If use-link-bandwidth is set to 0 (zero) or no high watermark is set, then this feature is disabled and the extension will be absent.

Table 19: Use of the Extensions Attribute (Continued)

Request/Event	Attribute Extensions			
	Key	**Value Type**	**Valid Values**	**Value Description**
TInitiateTransfer TInitiateConference	TC-call	any		A call to CCT (#8CCT) will be placed via an internal line.
EventRinging	TimeInQueue	integer		This key will be reported if the option `deliver-time-in-queue` is set to anything other than `No`.
T-Server Common Part Extensions				
EventServerInfo	sdn-licenses-in-use	integer		Specifies how many SDN licenses are currently in use.
	sdn-licenses-available	integer		Specifies how many SDN licenses are currently available.

a. For more detailed information about this field, see the `Make Predictive Call Request (MPCR)` information in the *Integration Guide* for the *Outbound* application.

b. For more detailed information about this field, see the `Make Predictive Call Request (MPCR)` information in the *Integration Guide* for the *Outbound* application.

Error Messages

Table 20 presents the complete set of error messages T-Server for Aspect ACD distributes with `EventError`.

Table 20: 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

Table 20: Error Messages (Continued)

Code	Description
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
88	Origination DN not specified
96	Cannot complete conference
97	Cannot initiate transfer
98	Cannot complete transfer
99	Cannot retrieve original signal
100	Unknown cause
105	Information element missing
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

Table 20: Error Messages (Continued)

Code	Description
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
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

Table 20: Error Messages (Continued)

Code	Description
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
506	Invalid teleset state
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	Invalid route request
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
714	Invalid Call_ID
717	Agent not logged in

Table 20: Error Messages (Continued)

Code	Description
742	Invalid DN
749	Agent already logged in
750	Extension in use
804	Invalid Call_ID
910	Negative acknowledgement
911	Invalid equipment
912	Invalid teleset state
913	Invalid CCT
914	Invalid outbound dialing pattern
915	Invalid mode
916	Invalid origination
917	Invalid route
970	Invalid reason code

Table 20: Error Messages (Continued)

Code	Description
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
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)

Table 20: Error Messages (Continued)

Code	Description
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
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

Table 20: Error Messages (Continued)

Code	Description
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
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

Table 20: Error Messages (Continued)

Code	Description
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	
1185	Generic
1186	Performance limit exceeded
Security Errors	
1190	Unspecified
1191	Sequence number violated
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`.

Table 20: Error Messages (Continued)

Code	Description
1904	Unexpected request `TNetworkTransfer`.
1905	Unexpected request `TNetworkMerge`.
1906	Unexpected request `TNetworkSingleStepTransfer`.
1907	Unexpected request `TNetworkPrivateService`.
1908	Unexpected message.

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 `Application` object, using the following navigation path:

- 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 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 page 198.

Note: For definitions of the Standard, Interaction, Trace, and Debug log levels, refer to the *Framework 8.0 Management Layer User's Guide* 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 198). 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`–`100`.
`<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 198). 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 198.

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 the 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 203.

Note: The log output options are activated according to the setting of the `verbose` configuration option.

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.

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. Use this configuration when trying to reproduce an application's failure. The memory log file will contain a snapshot of the application's log at the moment of failure; this should help you and Genesys Technical Support identify the reason for the 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 following options 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 logs. This section contains one configuration option, `default-filter-type`. Refer to the chapter “Hide

Selected Data in Logs” in the *Genesys 8.0 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 logs 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.

SML Section

This section must be called `sml`.

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: This option is defined in the `Application` object, as follows:

- in Configuration Manager— `Application` object > `Properties` dialog box > `Annex` tab

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 7.6 to 8.0

Table 21 on page 210 provides all the changes to common configuration options between release 7.6 and the latest 8.0 release.

Table 21: Common Configuration Option Changes from 7.6 to 8.0

Option Name	Option Values	Type of Change	Details
log-filter Section			
default-filter-type	Additional option values	Modified	See description on page 208.
log-filter-data Section			
<key-name>	Additional option values	Modified	See description on page 209.
sml Section			
suspending-wait-timeout	5-600	New	See description on page 209.

Chapter

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 page 191.

Setting Configuration Options

Unless it is specified otherwise, you set configuration options in Configuration Manager in the corresponding sections on the `Options` tab for the T-Server `Application` object.

Mandatory Options

Except as noted for certain environments, the configuration of common options is not required for basic T-Server operation.

T-Server Section

The T-Server section contains the configuration options that are used to support the core features common to all T-Servers.

TServer 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: `false`
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.

Note: Use of this option can negatively impact T-Server processing speed.

background-timeout

Default Value: `60 msec`
Valid Values: See "Timeout Value Format" on page 235.
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 checks whether a client provides the correct name and password of a tenant. If it does, 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`

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-8.0 T-Server behavior applies.

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 213.)

propagated-call-type

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately

When set to `false,` T-Server reports a value in the `CallType` attribute as it did in pre-8.0 releases and extends distribution of call-related TEvents that contain the `PropagatedCallType` attribute (if known). This provides backward compatibility with existing T-Server clients.

When set to `true,` T-Server extends distribution of call-related TEvents that contain a call type value in the `LocalCallType` attribute (as in a single-site T-Server deployment) and replaces the value of the regular `CallType` attribute with the `PropagatedCallType` value.

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 page 218.

license 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.

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: 0 or string max
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 2, "DNs and Agent Logins," page 41.

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 219.

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
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	tserver_sdn = 500	500 seat-related DNs
num-sdn-licenses = max		

Example 2

If...		Then...
Options Settings	**License File Settings**	**License Checkout**
num-of-licenses = 1000	tserver_sdn = 500	500 seat-related DNs
num-sdn-licenses = max		

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.

agent-reservation 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-8.0 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 235.
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 235.
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.

Multi-Site Support Section

The Multi-Site Support 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:

- ISCC Transaction Options, page 223
- Transfer Connect Service Options, page 227
- ISCC/COF Options, page 228
- Event Propagation Options, page 230
- Number Translation Option, page 231

extrouter 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 235.
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 79 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 235.
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 235.
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 235.
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 `Resource Type 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 235.
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 235.
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 235.
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 235.
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 page 235.
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-8.0 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 235.
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.

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 88. See “Configuring Number Translation” on page 95 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
```

Backup-Synchronization Section

The Backup-Synchronization section contains the configuration options that are used to support a high-availability (hot standby redundancy type) configuration.

backup-sync 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 235.
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*.

call-cleanup This section must be called `call-cleanup`.

cleanup-idle-tout

Default Value: `0`
Valid Values: See “Timeout Value Format” on page 235.
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 235.
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 235.
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.

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 8.0 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 7.6 to 8.0

Table 23 lists the configuration options that:

- Are new or changed in the 8.0 release of T-Server
- Have been added or changed since the most recent 7.6 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 7.6 to 8.0

Option Name	Option Values	Type of Change	Details
TServer Section			
dn-scope	switch, office, tenant	New in 8.0	See the option description on page 214.
propagated-call-type	true, false	New in 8.0	See the option description on page 216.
extrouter Section			
compound-dn-representation	true, false	New in 8.0	See the option description on page 230.
default-network-call-id-matching	No default value	See Details	This option is undocumented in previous versions. See the option description on page 230.
epp-tout	Timeout value format	New in 8.0	See the option description on page 230.
use-data-from	active, original, current, active-data-original-call	New default value	New default value: current. Old default value: active. See the option description on page 223.

Table 23: Option Changes from Release 7.6 to 8.0 (Continued)

Option Name	Option Values	Type of Change	Details
agent-reservation Section			
collect-lower-priority-requests	`true, false`	New in 8.0	See the option description on page 220.

Chapter

10 Configuration Options in T-Server for Aspect ACD

This chapter describes configuration options unique to the T-Server for Aspect ACD and includes these sections:

Options common to all T-Servers are described in Chapter 8, "Common Configuration Options," on page 191 and Chapter 9, "T-Server Common Configuration Options," on page 211.

T-Server Section

This section must be called `TServer`.

deliver-time-in-queue

Default Value: `no`
Valid Values: `no, yes, ringing`
Changes Take Effect: Immediately

Specifies whether the `TimeInQueue` attribute is delivered to T-Server 3.x clients. This attribute specifies the number of seconds between the moment an event is sent and the moment a call is created. With value `ringing,` T-Server delivers this attribute only with `EventRinging`.

deliver-event-held

Default Value: `no`
Valid Values: `yes, no`
Changes Take Effect: Immediately

Specifies whether `EventHeld` is delivered to T-Server 3.x clients.

deliver-data-variables

Default Value: `no`
Valid Values: `yes, no, ringing, established`
Changes Take Effect: Immediately

`yes`	The values of the `SUBTYPE` field and data variables `A` through `E` (from the last CIM/CCM message for a call) that T-Server uses for all subsequent events for this call (events with this `Connection ID`) are included in the `Extensions` attribute with keys `SUBTYPE` and `A` through `E`.
`no`	The values and data variables are not included.
`ringing`	The values and data variables are added only on `Event Ringing`.
`established`	The values and data variables are added only on `Event Established.`

deliver-track-data

Default Value: `no`
Valid Values:

`yes`	T-Server extracts the values of the `track-data` fields from the `CTIM` message and delivers them in the `Extensions` attribute. It also delivers the `SUBTYPE` field value and data variables `A` through `E` with all events for a corresponding call. The values of the `track-data` fields are delivered as string values with keys `CC_NODE, TRACKNODE, TRACKNUM, TRACKSEQ,` and `REQUEST.`
`no`	The `SUBTYPE` value, data variables, and `track-data` field values are not delivered in the `Extensions` attribute.
`in-user-data`	Provides same functions as value `yes,` but also adds corresponding string values to the `AttributeUserData`.
`user-data`	Provides same functions as value `yes,` but also adds corresponding string values to the `AttributeUserData`.

Changes Take Effect: Immediately

Note: Refer to the *Aspect ACD Developer Guide* for detailed information on `track-data` fields.

Warning! `Yes` is only valid for this option if you have set the value of the `deliver-data-variables` option to `yes.` If this condition is not met, setting the value here to `yes` has no effect.

max-registrations-per-sec

Default Value: `30`
Valid Values: `1-1000000000`
Changes Take Effect: Immediately

Limits the number of registration requests sent to the switch during a 1-second interval. When the number of outstanding registration requests reaches the limit specified, T-Server delays the registration process for 1 second.

route-call-method

Default Value: `CIMR-or-CCR`
Valid Values: `CIMR-only, CIMR-or-CCR, CIMR-and-CCR`
Changes Take Effect: Immediately

`CIMR-or-CCR`	T-Server uses the `CCR` command if the route destination is an agent extension.
`CIMR-only`	Forces T-Server to route calls exclusively via the Call Control Table (CCT).
`CIMR-and-CCR`	Forces the `CIMR` method for internal calls.

Specifies the route-call method.

route-uses-ctimr

Default Value: `true`
Valid Values: `true, false`
Changes Take Effect: Immediately

Specifies whether T-Server uses the `CTIMR` request to route calls on a Routing Point. With value `true,` T-Server use the `CTIMR` request if the CIMR method of routing is to be used.

With value `false,` T-Server uses the CTIMR method only if the PBX is notified about call on a Routing Point via a CTIM message.

route-uses-dnis

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately

Defines whether T-Server will use variable `DNIS` (value `true`) or variable `Target` (value `false`) when `TRouteCall` is requested and the CIMR method is in use.

station-svc-evt

Default Value: `yes`
Valid Values: `yes, no, dnd`
Changes Take Effect: Immediately

Defines whether T-Server has to report maintenance events when an agent is logged off from the station.

yes Report maintenance events (EventDNOutOfService / EventDNBackInService)

no Do not report any events (compatible with the 7.1 release of T-Server)

dnd Report DND events (EventDNDOn / EventDNDOff)

collected-digits-to

Default Value: No default value
Valid Value: Any valid key string
Changes Take Effect: Immediately

Allows T-Server to deliver collected digits as user data in the form of key-value pairs. Use this option to specify a user-data key to which collected digits are attached as a string value. With no value specified, collected digits are not delivered in user data.

same-agent-login

Default Value: error
Valid Values:

error T-Server returns an error message when an agent tries to log in more than once.

permit T-Server permits multiple logins of the same agent on a teleset.

Changes Take Effect: Immediately

Specifies whether an agent can perform multiple logins on the same phone set.

agent-acw-predict

Default Value: true
Valid Values: true, false

true T-Server generates EventAgentNotReady(AfterCallWork) before EventReleased and synchronizes to the real state of the agent later. If the switch disconnects the call before putting the agent into wrap-up state, then EventAgentReady is issued.

false T-Server generates events in the same order as the switch does.

Changes Take Effect: Immediately

Enables or disables prediction of After Call Work (ACW).

process-connect-subtype

Default Value: without-EventBridge
Valid Values: always, without-EventBridge
Changes Take Effect: Immediately

When set to always, forces delivery of events for call connection upon CCT notification even if an EventBridge is enabled.

link-*n*-name

Default Value: `link-tcp`
Valid Value: Any character string
Changes Take Effect: Immediately

Specifies the section name containing the configuration options assigned to that link (the connection to Aspect Contact Server), where *n* is a number for a CTI link.

Note: This option is for use only with Aspect Contact Server. If you configure this option, delete or comment out the `TServer` section `primary-port` option.

use-dndoff

Default Value: `false`
Valid Values: `false, true`
Changes Take Effect: Immediately

With value `false`, T-Server does not send `EventDNDOff` after `EventAgent Ready`. With value `true`, T-Server sends `EventDNDOff` after `EventAgent Ready`.

walk-away-bck-compat

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately

With value `true`, T-Server accepts (`TAgentNotReady` service) and reports `Idle Reason` codes (agent-related events) in `Backward-Compatible` mode using extension `REASON` instead of extension `ReasonCode`.

second-call-consult

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately

With value `true`, T-Server sets an initiated (manually or by another T-Server) second call on a device to call type `Consult`.

send-rls-on-acw

Default Value: `yes`
Valid Values: `yes, no, omit-pkr`
Changes Take Effect: Immediately

With value `yes`, T-Server sends `EventReleased` on ACW and uses the workaround.

With value `no`, T-Server does not send `EventReleased` on ACW and the workaround is disabled (behavior is same as for T-Server release 6.5). In this case `EventReleased` is only sent if one of the following applies:

- Aspect PBX reports that the call is disconnected.
- The agent goes to `Ready` state.
- Another call comes via the same trunk.

With value `omit-pkr`, T-Server does not send Press Key Request (PKR) `L0/L1` to the PBX to unfreeze the lines. With this value, retrieval of held calls is optional.

Note: Option `send-rls-on-acw` is effective only if the option `agent-acw-predict` is set to `true`.

Because this option uses PKR `L0/L1` sent to the Aspect PBX in order to unfreeze the phone set, there are some scenarios which require attention.

Hold and Automatic Retrieval

In some scenarios, an established party can be put on hold, then retrieved automatically:

- Inbound or internal call, internal consult call, answer consult call, release originator of main call.
- Inbound or internal call, internal consult call, answer consult call, complete conference, release originator of main call.
- With internal calls, only CTI-initiated internal calls may cause a problem.

Automatic Retrieval

In the following scenario, a held party can be retrieved automatically:

- Inbound or internal call, external consult call, answer consult call, then release the destination of consult call.

This happens due to sending PKR `Lx` to a frozen line (where a remotely disconnected call was placed) and the PBX forces another line to flip from a `connected` to a `held` state and vice versa.

Automatic Hold

In some scenarios, an established party can be put on hold automatically:

- Inbound or internal call, external consult call, answer consult call, complete conference, release the destination of consult call.

Manual Unfreeze

In some scenarios, you still need to unfreeze the phone set by manually pressing a line.

- Any scenario where a consult call (internal, external) is not answered and the main call (any type) is released either on origination or remotely, could be affected.

use-hook-evt

Default Value: `false`
Valid Values: `true, false`
Changes Take Effect: Immediately

With value false, T-Server does not generate EventOnHook or EventOffHook (for backward compatibility). With value true, T-Server generates these events for all regular instruments (extensions in Configuration Manager) and for trunks.

password-separator

Default Value: No default value
Valid Value: String, maximum 12 characters
Changes Take Effect: Immediately

Defines a separator string that separates the agent ID from the password in field AttributeAgentId (for older clients that do not support the AttributePassword field in TAgentLogin). If the request TAgentLogin contains an empty AttributePassword (attribute is present but empty) then AttributeAgentId is not processed.

correct-connid

Default Value: true
Valid Values: true, false
Changes Take Effect: Immediately

With value true, T-Server corrects wrong Connection IDs provided by the application in CTI requests. Value false disables this feature.

correct-rqid

Default Value: true
Valid Values: true, false
Changes Take Effect: Immediately

With value true, T-Server mutates CTI requests provided by the application. Value false disables this feature.

use-track-id

Default Value: false
Valid Values: true, false
Changes Take Effect: Immediately

With value true, T-Server assigns the switch's Track ID for ISCC calls. The first action in CCT should be the assigning of a unique ID within the Aspect network to the call, and the CTIM message should be reported as soon as possible, preferably in the first message for the call.

convert-otherdn

Default Value: +agentid
Valid Values: +/-agentid
Changes Take Effect: Immediately

Defines whether T-Server has to convert (if applicable) the value provided in request's AttributeOtherDN.

Value +/-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).

poll-dn-tout

Default Value: 0
Valid Values: 0-30
Changes Take Effect: Immediately

Specifies an interval (in minutes) that forces T-Server to periodically query the equipment state of devices. The query is sent for instruments, stations, normal trunks and voice channels that are defined (and not disabled) in the Configuration Layer.

When a value is set for this option, T-Server periodically submits Equipment Status Requests (ESRs) for all devices that are registered in Configuration Manager as DN/Position/Voice Channel/Trunk (of type T). On receiving an acknowledgement, T-Server corrects the device state and, if necessary, distributes EventOutOfService/EventBackInService.

releasing-party-report

Default Value: false
Valid Values: true, false
Changes Take Effect: Immediately

Specifies whether T-Server reports Attribute Extension ReleasingParty in events EventReleased and EventAbandoned to indicate which party initiated the call release.

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

Defines the high water mark which must be reached in order for a route failure alarm to be triggered, within the period configured in option route-failure-alarm-period.

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

Defines the low water mark which must be reached, while under the route failure alarm condition, within the period configured in route-failure-alarm-period.

route-failure-alarm-period

Default Value: `0`
Valid Values: Positive integer
Changes Take Effect: Immediately

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.

Application Bridge Options

primary-port

Default value: `-1` (disabled)
Valid Value: Any valid TCP/IP port
Changes Take Effect: Immediately

Specifies the TCP/IP port that the Application Bridge primary link uses to establish a connection with T-Server. This value, if specified, must match the `Port` field in the `Data System InterLink` record.

Note: If you have configured `Link-`*n*`-name` in the `TServer` section, delete or comment out the `primary-port` option.

use-event-bridge

Default Value: `autodetect`
Valid Values: `autodetect, yes, no`
Changes Take Effect: Immediately

Specifies whether `EventBridge` is used. With value `autodetect`, T-Server determines if `EventBridge` is present.

field-separator

Default Value: – (hyphen)
Valid Values:

,	(comma, 5)
!	(exclamation point, 6)
|	(vertical bar, 7)
.	(period, 8)
?	(question mark, 9)
/	(stroke, 10)

~	(tilde, 11)

Changes Take Effect: Immediately

Defines the character used to separate the fields within messages. This value must match the `Field Separator` field in the `Data System InterLink` record.

Aspect T-Server auto-updates dynamically the field separator used in Aspect messages, matching it to one of the 12 allowed. So, when configuring a Data Interlink in the Aspect Hardware Administrator, you must specify its name in the Call Center System address field without using characters from this list of 12.

In cases where Contact Server is used, the field separator is always the pipe character `|,` irrespective of the field separator defined in the Data Interlink properties. In this case the field separator in T-Server configuration should be set to the default value hyphen – or to the pipe character `|`.

In cases where Application Bridge is used directly, the field separator is automatically retrieved (at link connection, T-Server sends 12 query requests and uses the separator passed in the first successful acknowledgement). In this case, the setting of T-Server option `field-separator` is ignored.

Call Control Table (CCT) Options

internal-call-cct

Default Value: `none`
Valid Value: Any 3-digit table designation
Changes Take Effect: Immediately

Specifies which CCT to use for agent-to-agent calls. By default, T-Server places agent-to-agent calls using the internal line.

single-step-transfer-cct

Default Value: none
Valid Value: Any 3-digit table designation
Changes Take Effect: Immediately

Specifies the CCT to use for single-step transfer calls.

outbound-call-cct

Default Value: `none`
Valid Value: Any 3-digit table designation
Changes Take Effect: Immediately

Specifies the CCT to use for outbound calls. By default, T-Server uses the default outbound-calling plan as configured in Application Bridge.

route-call-cct

Default Value: none
Valid Value: Any 3-digit table designation

Changes Take Effect: Immediately

Specifies the CCT to use for call routing.

Data Variable Options

dnis-variable

Default Value: A
Valid Values: A-E
Changes Take Effect: Immediately

Specifies the variable in which the DNIS field is delivered.

ani-variable

Default Value: B
Valid Values: A-E
Changes Take Effect: Immediately

Specifies the variable in which the ANI field is delivered.

target-variable

Default Value: C
Valid Values: A-E
Changes Take Effect: Immediately

Specifies the variable for the identification of the destination target.

data-variable

Default Value: E
Valid Values: A-E
Changes Take Effect: Immediately

Specifies the variable for the UserData field.

SUBTYPE Field Options

ringing-subtype

Default Value: RINGING
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND CONNECT command. Specifies the SUBTYPE field value that notifies T-Server a call is ringing.

connect-subtype

Default Value: SUCCESS
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND CONNECT command. Specifies the SUBTYPE field value that notifies T-Server a call has been connected.

busy-subtype

Default Value: BUSY
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND DATA command. Specifies the SUBTYPE field value that notifies T-Server a call has been placed on a busy destination.

fast-busy-subtype

Default Value: FASTBUSY
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND DATA command. Specifies the SUBTYPE field value that notifies T-Server all circuits are busy.

tbusy-subtype

Default Value: TBUSY
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND DATA command. Specifies the SUBTYPE field value that notifies T-Server all outbound trunks are busy.

no-answer-subtype

Default Value: NOANSWER
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND DATA command. Specifies the SUBTYPE field value that notifies T-Server a call has been placed on a no-answer destination.

answ-mach-subtype

Default Value: ANSW_MACH
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND DATA command. Specifies the SUBTYPE field value that notifies T-Server a call has been placed to a destination with an answering machine.

vacant-subtype

Default Value: VACANT
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND DATA command. Specifies the SUBTYPE field value that notifies T-Server a call has been placed on an unassigned number.

undefined-subtype

Default Value: UNDEFINED
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND DATA command. Specifies the SUBTYPE field value that notifies T-Server an undefined problem occurred while placing a call.

queue-subtype

Default Value: QUEUE
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND DATA command. Specifies the beginning of the SUBTYPE field value that notifies T-Server a call has entered a queue with DN #8*nnn,* where *nnn* is taken from the rest of the same SUBTYPE field.

route-subtype

Default Value: ROUTE
Valid Value: Any valid value for the SUBTYPE field
Changes Take Effect: Immediately

Specific to the SEND DATA command. Specifies the beginning of the SUBTYPE field value that notifies T-Server a call has entered a routing point and is waiting to be routed. The routing point has a DN 0*nnn,* where 0*nnn* is taken from the rest of the same SUBTYPE field.

Note: If the CCT SEND DATA command contains a three-digit number for the CDN, T-Server prepends a 0 to that number for processing. For example, Route*nnn* in the CCT command becomes DN 0*nnn* in T-Server.

From release 7.2, SEND TRACK DATA can be used in place of SEND DATA.

rtabrt-subtype

Default Value: RTABRT
Valid Values: Any valid subtype (alphanumeric string with maximum 12 characters)
Changes Take Effect: Immediately

Specifies the subtype that T-Server uses to change the call state on the Routing Point from routing to abandoned when the corresponding Routing Point sends a `CIM` or `CTIM` message generated after a call leaves the `Receive Data` step in the CCT.

rtend-subtype

Default Value: `RTEND`
Valid Values: Any valid subtype (alphanumeric string with maximum of 12 characters)
Changes Take Effect: Immediately

Specifies the subtype that T-Server uses to change the state of the call on a Routing Point from `routing` to `nonrouting`, when the corresponding Routing Point sends a CIM or CTIM message after a call leaves the "Receive Data" step.

Predictive Call Options

This section contains brief descriptions of the options that support Aspect's Predictive Call functionality. Refer to the *Aspect CallCenter Outbound Application Integration Guide* (available from your switch vendor) for more details.

rna-timeout

Default Value: `20`
Valid Values: `6-99`
Changes Take Effect: Immediately

Specifies the interval (in seconds) after which a call is considered unanswered. You can specify this interval for each call individually. If `Extension RNA_TIMEOUT` is passed in the message `TMakePredictiveCall` to T-Server, the value specified in the `Extension` is used to define a no-answer timeout instead of the value of `rna-timeout`. See page 174.

answer-mode

Default Value: `3`
Valid Values: `0, 1, 2, 3`
Changes Take Effect: Immediately

`0` Disables answering machine screening. Specifies that the `Answer Detect` resource consider a call answered immediately upon detection of a voice or cessation of a ringback tone (whichever comes first), or on receiving an answer indication from the network.

`1` Disables answering machine screening. Specifies that the `Answer Detect` resource consider a call answered immediately upon detection of `a` voice or cessation of a ringback tone, or upon receipt of an answer indication from the network after a delay to verify that the call was not answered by a modem. If none of the preceding indicates the call was answered, it is classified as not answered.

2 Performs answering machine screening after the answering machine screening delay to determine whether a human or an answering machine answered the call. Specifies that the Answer Detect resource consider the call answered by a human if either voice detection or answer supervision occurs before the screening delay elapses. Before the screening delay elapses, answer detection is handled as for value 0.

3 Performs answering machine screening after the answering machine screening delay to determine whether a human or an answering machine answered the call. Specifies that the Answer Detect resource consider the call answered by a human if either voice detection or answer supervision occurs before the screening delay elapses. Before the screening delay elapses, answer detection is handled as for value 1.

Specifies the method of reporting the detection of an answering machine. This parameter is relevant only for ANSWER_MODE = 2 or 3 (screening enabled). Call processing passes this parameter to the Answer Detect (AD) card.

ams-delay

Default Value: 5
Valid Values: 0-99
Changes Take Effect: Immediately

Specifies (in seconds) the answering machine screen delay time. This delay time is used with the ANSWER_MODE field of the Make Predictive Call Request (MPCR) message and is ignored unless ANSWER_MODE has a value of 2 or 3 (screening enabled). The maximum value for this field is 3 seconds less than the RNA_TIMEOUT field value.

amr-mode

Default Value: 1
Valid Values: 0, 1, 2, 3
Changes Take Effect: Immediately

0 Specifies that the answering machine report as soon as the voice duration has exceeded the threshold for human answer. This mode provides the best opportunity for a live agent to leave a message after the beep and for manual agent override of answering machine classification. The manual override is through the OCMS.

1 Specifies that the answering machine report immediately after the initial voice segment ends. Because it may be many seconds in duration, this voice segment is assumed to be the answering machine greeting.

`2` Specifies that the answering machine report after the elapsing of a fixed delay after the end of the initial voice segment. The intention is to attempt to delay past the beep tone.

`3` Specifies that the answering machine report when the initial voice segment and answering machine's beep tone end.

Determines the mode when reporting and call processing occur.

ans-map

Default Value: Bits from `0-23` are zeros; bits from `24` onwards are `11111110`
Valid Value: 32–character string
Changes Take Effect: Immediately

Determines whether a call is answered based on answer-detection conditions.

ad-param

Default Value: Bits from `0` through `31` are zeros
Valid Value: 32–character string
Changes Take Effect: Immediately

Determines whether a call is answered based on answer-detection conditions.

country

Default Value: `1`
Valid Value: `0-99`
Changes Take Effect: Immediately

Specifies the country destination for the call based on tone cadence and frequency.

oli

Default Value: No default value
Valid Value: Any string of keypad numbers
Changes Take Effect: Immediately

Specifies Originated Line Identity for DPNSS trunks.

Link-Control Section

This section must be called `link-control`.

kpl-interval

Default Value: `15`
Valid Value: Any integer from `0-600`
Changes Take Effect: Immediately

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. Value `0` (zero) disables this feature. See also option `kpl-tolerance`.

kpl-tolerance

Default Value: `1`
Valid Value: Any integer from `0-10`
Changes Take Effect: Immediately

Specifies the number of failed keep-alive requests that T-Server permits before considering the CTI link to be interrupted. See also option `kpl-interval`.

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). With value `false`, there is no delay in sending `EventLinkConnected` and synchronization takes place as for pre-7.1 T-Servers.

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. Value `0` (zero) means T-Server does not try to reconnect unless the link configuration is changed.

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. Value `0` zero means all the calls are deleted immediately after the link failure. See also option `restart-period`.

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. With value `true`, the T-Server clients are supposed to drop all the calls upon EventLinkDisconnected without waiting for T-Server notification. See also the option 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 startup to notify clients about the changes that occurred during the link outage. With value true, clients should query the T-Server after the EventLinkConnected.

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. Value 0 (zero) means any non verified calls are cleared up immediately after completion of link startup.

link-alarm-high

Default Value: 0
Valid Values:0-100
Changes Take Effect: Immediately

Specifies percentage of use-link-bandwidth option when LMS message LINK_ALARM_HIGH will be triggered.

Value 0 (zero) disables the feature.

link-alarm-low

Default Value: 0
Valid Values:0-100
Changes Take Effect: Immediately

Specifies percentage of use-link-bandwidth option when LMS message LINK_ALARM_LOW will be triggered.

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.Value 0 (zero) disables the feature.

CTI-Link Section

The section name is specified by the `link-n-name` option in the `TServer` section. Use this section only if you have deployed Aspect Contact Server in your environment.

hostname

Default Value: No default value. Mandatory field.
Valid Value: Any valid name
Changes Take Effect: At T-Server start/restart

Specifies the name of the host where Aspect Contact Server is running. You must specify a value for this option.

port

Default Value: No default value. Mandatory field.
Valid Value: Any valid TCP/IP port
Changes Take Effect: At T-Server start/restart

Specifies the TCP port where Aspect Contact Server is listening to client connections. You must specify a value for this option.

protocol

Default Value: `tcp.` Mandatory field.
Valid Value: `tcp`
Changes Take Effect: Immediately

Designates the communication protocol to be used. You must specify a value for this option.

cs-configuration

Default Value: `single`
Valid Values: `single, dual`
Changes Take Effect: Immediately
Specifies the type of Contact Server (CS) configuration.

Use `single` for:

- A `simplex` T-Server configuration.
- An HA configuration with one AB Link and one Contact Server.
- Two T-Servers connecting to one Contact Server without an HA configuration.

Use `dual` for an HA configuration with two AB links and two Contact Servers.

link-id (removed)

Default Value: `-` (hyphen)
Valid Value: String composed of *`xx`*`.1` or *`xx`*`.2`

Changes Take Effect: Immediately

Note: You must set a value for this option if CS Proxy HA is configured.

Specifies the link and CS Proxy/T-Server pairings to be used in an HA configuration with two CS Proxies. Here *xx* is an ACD `Link ID` (`11` or higher) for Contact Server 4 for the CS Proxy to which T-Server connects. Use *xx*`.1` or *xx*`.2` depending on the deployment in place.

The value of `Link-id` must be identical to the value of `Link-id` used for the CS Proxy connected to T-Server. With two T-Servers and two CS Proxies, then, `Link-id` for both `TServer1` and `CSProxy1` would be equal to the number of the Aspect ACD link in use with a `1` appended to it; for example, *linknumber*`.1`. So, the value of `Link-id` for `TServer2` and `CS Proxy2`, would be *linknumber*`.2`.

Changes from 7.6 to 8.0

Table 24 lists the configuration options that:

- Are new or have been changed in the 8.0 release of T-Server
- Have been added or changed since the most recent 7.6 release of this document

If a configuration option has been replaced with another that enables the same functionality, the new option name and location in this chapter are noted.

Table 24: Changes from 7.6 to 8.0

Option Name	Details
T-Server Section	
releasing-party-report	Introduced in 8.0. See description on page 246.
route-failure-alarm-high-wm	Introduced in 8.0. See description on page 246.
route-failure-alarm-low-wm	Introduced in 8.0. See description on page 246.
route-failure-alarm-period	Introduced in 8.0. See description on page 247.
Link-Control Section	
link-alarm-high	Introduced in 8.0. See description in page 256.

Table 24: Changes from 7.6 to 8.0 (Continued)

Option Name	Details
link-alarm-low	Introduced in 8.0. See description in page 256.
use-link-bandwidth	Introduced in 8.0. See description in page 256.
CTI-Link Section	
link-id	Removed in 8.0. See description on page 257.

Chapter

11 Configuring High-Availability and Contact Server

This chapter describes configuration scenarios for High Availability for T-Server with the Aspect switch and configurations for Contact Server, including High Availability. It contains the following sections:

Introduction

In conjunction with high-availability functionality provided by the Aspect ACD, T-Server for Aspect ACD supports a specialized high-availability (HA) implementation option: the dual ACD links directly to two T-Servers. This chapter outlines supported HA configurations and describes the Aspect ACD features that serve as the bases for the designs described.

This chapter also describes configurations for Aspect Contact Server, including high availability.

HA for Aspect ACD

Messages that Aspect Call Center sends to its CTI application are of one of two general types:

- Script independent
- Application Bridge

Script-independent messages (such as Event Bridge messages) do not depend on Aspect's CCT scripts.

Application Bridge messages are generated by the Aspect CCT `SEND DATA` command, and are therefore script dependent. To communicate with Aspect Call Center, T-Server must receive messages of both types.

While Aspect's native Redundancy Link distributes those messages from the first group to all active links, messages resulting from the `SEND DATA` command, the second group, are distributed only to a link named in the script for that command. For this reason, the Aspect Redundancy Link is not suited for Genesys `Hot Standby` configuration because `Hot Standby` requires that the primary and backup T-Servers always receive the same messages.

The HA configurations set out in this chapter, then, offer a means by which you can use the high-availability features of both Aspect Call Center and the Genesys T-Server for Aspect ACD.

Supported HA Configuration

From release 7.0 of T-Server, the only supported HA configurations for Aspect Application Bridge (AB) are `Warm` and `Hot Standby` for the Aspect AB with two AB links.

Note: HA configurations using HA Proxy are not supported in release 7.x. See the *Genesys Supported Media Interfaces Reference Manual* for more details.

HA configuration requires that an Event Bridge be available for all ACD links used in the HA environment.

Warm and Hot Standby for the Aspect AB with Two AB Links

Figure 18 on page 263, shows the Aspect CTI configuration with two AB links and two connected T-Servers in either `Warm` or `Hot Standby` mode. The `Warm` and `Hot Standby` configurations are almost identical.

The switch scripts for `Warm` and `Hot Standby` mode are alike, as are the T-Server responses to route requests. For `Hot Standby` mode only, however, the primary T-Server synchronizes with the backup through a direct connection.

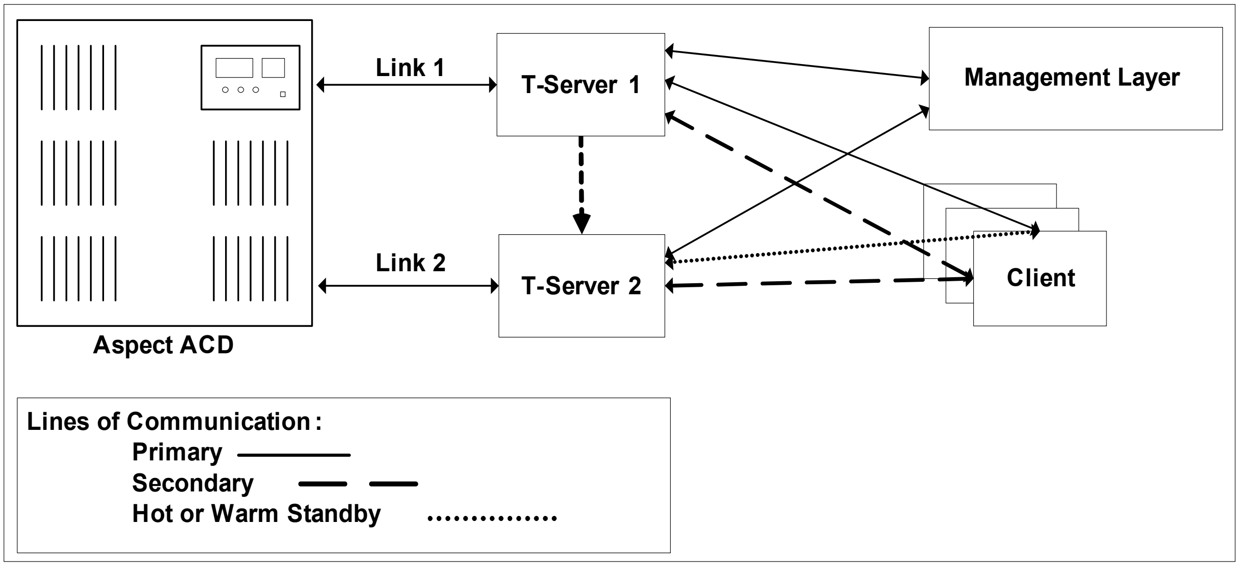


Figure 18: Warm and Hot Standby T-Server Configuration

Both T-Servers and their corresponding switch links carry the same information. By default, T-Servers start in `Backup` mode, and the Management Layer must switch the appropriate T-Server into `Primary` mode. In most instances, the T-Server that starts first becomes the primary T-Server.

The Aspect ACD connects directly to both T-Server 1 and T-Server 2 on separate links. After a successful connection, both T-Servers send messages `CTILinkConnected` and `EventLinkConnected`.

Sample Application Bridge Messages

Aspect CCT sends all Application Bridge messages, except `Route Request`, to both links, as in this example (see also Figure 19 on page 264):

Table 25: Sample Application Bridge Messages

Step	Description
N	SEND DATA LINK #>11 SUBTYPE QUEUE600 VAR A-E ON ERROR, EXECUTE STEP N+1
N+1	SEND DATA LINK #>12 SUBTYPE QUEUE600 VAR A-E ON ERROR, EXECUTE STEP N+2
N+2	...

CCT to Support CDN (Queue) Emulation

Figure 19 shows CDN queue emulation with high availability for the Aspect.

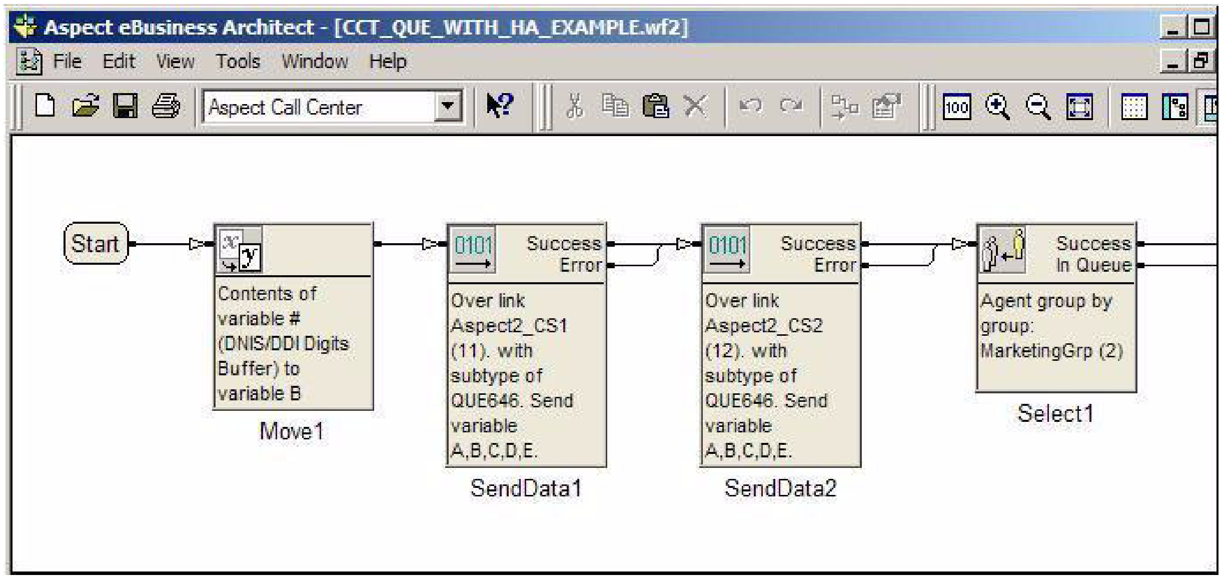

Aspect eBusiness Architect - [CCT_QUE_WITH_HA_EXAMPLE.wf2]
File Edit View Tools Window Help
Aspect Call Center
Start
Contents of variable # (DNIS/DDI Digits Buffer) to variable B
Move1
0101
Success
Error
Over link Aspect2_CS1 (11). with subtype of QUE646. Send variable A,B,C,D,E.
SendData1
0101
Success
Error
Over link Aspect2_CS2 (12). with subtype of QUE646. Send variable A,B,C,D,E.
SendData2
Success
In Queue
Agent group by group: MarketingGrp (2)
Select1

Figure 19: CDN (Queue) Emulation in Aspect Call Center with HA

If the Aspect script has route point emulation, it must execute a sequence of commands such as those in Table 26 on page 264.

CCT to Support CDN (Routing Point) Emulation

Figure 20 shows CDN Routing Point emulation with high availability for the Aspect.

Table 26: Command Sequence for Routing Point Emulation

Step	Description
N	SEND DATA LINK #>11 SUBTYPE ROUTE123 VAR A-E ON ERROR, EXECUTE STEP N+2
N+1	RECEIVE DATA LINK #>11 ON NAK, EXECUTE STEP N+2 ON ERROR, EXECUTE STEP N+2
N+2	SEND DATA LINK #>12 SUBTYPE ROUTE123 VAR A-E ON ERROR, EXECUTE STEP N+4
N+3	RECEIVE DATA LINK #>12 ON NAK, EXECUTE STEP N+4 ON ERROR, EXECUTE STEP N+4
N+4	...

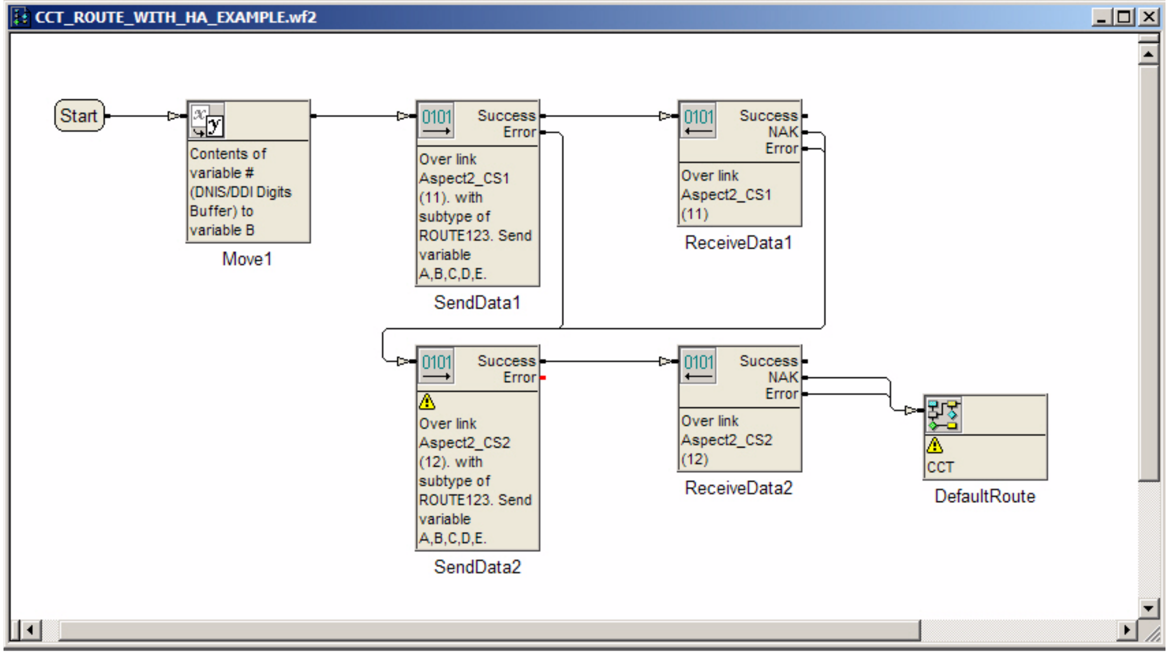

CCT_ROUTE_WITH_HA_EXAMPLE.wf2
Start
Contents of variable # (DNIS/DDI Digits Buffer) to variable B
Move1
0101
Success
Error
Over link Aspect2_CS1 (11). with subtype of ROUTE123. Send variable A,B,C,D,E.
SendData1
0101
Success
NAK
Error
Over link Aspect2_CS1 (11)
ReceiveData1
0101
Success
Error
Over link Aspect2_CS2 (12). with subtype of ROUTE123. Send variable A,B,C,D,E.
SendData2
0101
Success
NAK
Error
Over link Aspect2_CS2 (12)
ReceiveData2
CCT
DefaultRoute

Figure 20: CDN (Route Point) Emulation in Aspect Call Center with High Availability

Note: In these dual-link HA script examples, the `SEND DATA` and `RECEIVE DATA` commands for the lower-numbered link must be used first, and those for the higher-numbered link must be used second. If the `SEND DATA` command fails, the corresponding `RECEIVE DATA` command is not executed.

T-Server Responses to Route Requests

Each T-Server sends a response to the route request, and each response is distinct. The primary T-Server sends the usual response, one with a positive acknowledgment and the number of the CCT that is to treat the response. The backup T-Server sends a “fake” response, one with a negative acknowledgment and `0` (zero) as the CCT number. This fake response ensures that no delay results in acting on a script for a backup T-Server, if that T-Server happens to be connected to the link with a lower number than the primary T-Server.

When Aspect ACD gets this fake response, it continues to execute its script, beginning with the command immediately following the `RECEIVE DATA` step. In the above code example, the next command is the `SEND DATA` step for the link with the higher number.

Sample Scenarios

The following scenarios could occur when you are using the above HA configuration:

- The primary T-Server is connected to the first link and the backup to the second. If the response from T-Server is positive, the script executes the CCT with the number provided in the response from T-Server. If the response is negative, the script executes SEND DATA and RECEIVE DATA for the second link.
- The backup T-Server is connected to the first link and the primary to the second. The backup T-Server uses its “fake” message, and the script moves on to execute SEND DATA and RECEIVE DATA for the primary T-Server.
- The first link becomes disconnected. This causes SEND DATA to return ERROR and prompts the script to execute SEND DATA and RECEIVE DATA for the second link.
- The first link experiences a delay on the network. This forces RECEIVE DATA to end upon the expiration of the Receive Data Timeout option. The script then executes SEND DATA and RECEIVE DATA for the second link.

Note: The Receive Data Timeout configurable parameter in the Aspect Data System InterLink Record is the value of the timeout in seconds, ranging from 1 to 999. Genesys recommends that you set this value to 4 or greater.

Comments

- The switch scripts (CCT Tables) do not identify which link is primary and which is backup. Any positive response from T-Server is treated as the one response for the given route request.
- The Management Layer initiates the switchover of a T-Server from the Backup to the Primary mode only if the primary T-Server is down, its switch link is disconnected, or an alarm has triggered a failover. The T-Server formerly used as the backup, once switched to Primary mode, continues to act as the primary T-Server even if the former primary T-Server restarts and has its link restored.

Switch Configuration—Monitor Host Interval

If you configure Monitor Host Interval in the Data Interlink Record used by a T-Server in hot standby mode, set its value to 10 seconds to reduce excessive messaging.

Configurations for Aspect Contact Server

Introduction

T-Server supports direct connection to Aspect Contact Server. This chapter describes the configurations available for direct connection.

Note: T-Server's ability to connect to Aspect Contact Server was previously provided by Genesys Contact Server Proxy (CS Proxy). That functionality is now built in to T-Server—T-Server now incorporates the Computer Media Integration (CMI) application programming interface (API) (available through the Aspect Contact Server vendor) which makes direct connection possible.

Supported Configurations with Contact Server

Aspect Contact Server and T-Server for Aspect ACD support these configuration modes:

- Simplex T-Server (no redundancy)
- Hot Standby for one AB link and one Contact Server
- Warm Standby for one AB link and one Contact Server (only supported from T-Server release 7.0.203 onwards—not supported in earlier releases)
- Hot and Warm Standby for two AB links and two Contact Servers

Simplex T-Server (No Redundancy)

With the simplex configuration, T-Server connects directly to Aspect Contact Server, which occupies one AB link (see Figure 21). In this configuration, you must configure the link to provide Event Bridge messages. On the switch side, the scripting here is identical to that for using a single AB link to connect directly to T-Server (see Figure 21).

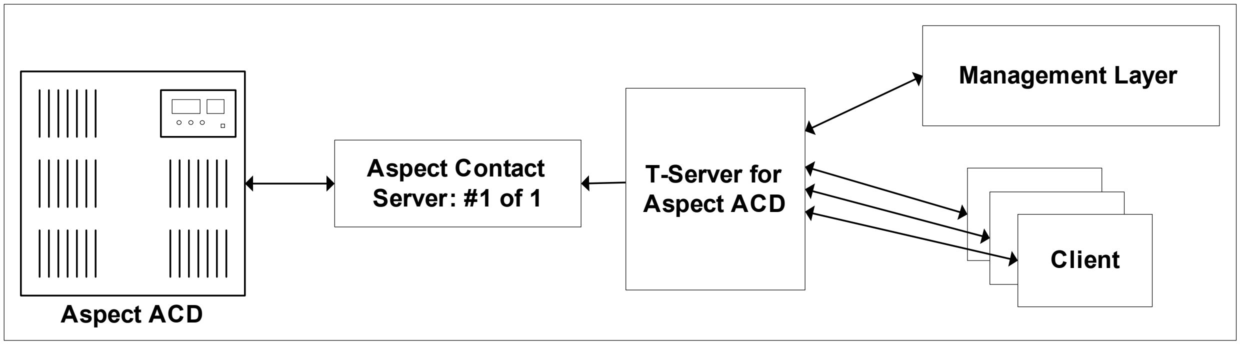


Figure 21: Simplex T-Server (No Redundancy)

Hot and Warm Standby for One AB Link and One Contact Server

Note: `Warm Standby` for one AB link and one Contact Server is only supported from T-Server release 7.0.203 onwards—it is not supported in earlier releases.

Figure 22 on page 268, shows two T-Servers connected to one Contact Server, which occupies one AB link (with `Event Bridge` support). Switch scripting here is the same as that for the `simplex` (nonredundant) T-Server configuration.

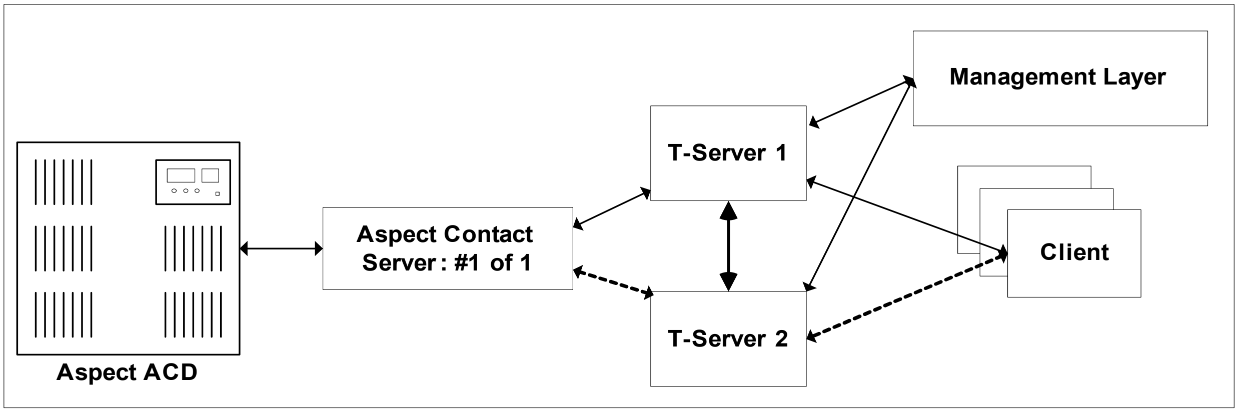


Figure 22: Hot and Warm Standby for One AB Link and One Contact Server

The switch scripts for `Warm` and `Hot Standby` mode are alike. Furthermore, both T-Server 1 and T-Server 2 produce the same responses to route requests. For `Hot Standby` mode only, however, the primary T-Server synchronizes with the backup through a direct connection.

Both T-Servers and their corresponding switch links carry the same information. By default, T-Servers start in `Backup` mode, and the Management Layer must switch the appropriate T-Server into `Primary` mode. In most instances, the T-Server that starts first becomes the primary T-Server.

Hot and Warm Standby for Two AB links and Two Contact Servers

Figure 23 on page 269 describes the model for a dual link/dual Contact Server configuration.

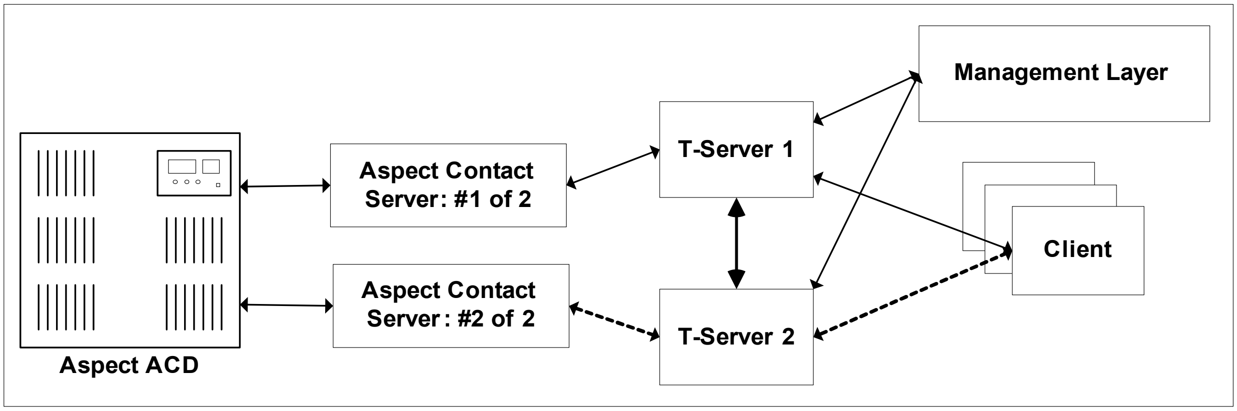

Management Layer
T-Server 1
Aspect Contact Server: #1 of 2
Client
Aspect Contact Server : #2 of 2
T-Server 2
Aspect ACD

Figure 23: Hot and Warm Standby with Two AB Links and Two Aspect Contact Servers

Each Contact Server uses a separate AB Link, and each T-Server connects to a single Contact Server. Switch scripting here is the same as it is for an HA configuration with two AB links, and no Contact Server. (For details see Chapter 11.)

Contact Server Configuration Options

To use Contact Server with T-Server you must adapt the configuration options in the T-Server `Application` object for the Contact Server to which T-Server connects. In this case, for purposes of setting the configuration options, the T-Server connection to Aspect Contact Server is the CTI link.

The list of configuration options shown here is for quick reference only. Detailed descriptions of these and all configuration options for an Aspect ACD requiring attention in the T-Server `Application` object in Configuration Manager are described in detail in Chapter 10 on page 239.

T-Server Section

link-*n*-name

Specifies the section name containing the configuration options assigned to that link (the connection to Aspect Contact Server), where *n* is a number for a CTI link. (See “link-n-name” on page 243.)

Note: Delete or comment out the `primary-port` option in the `TServer` section.

CTI-Link Section

The section name is specified by the `link-`*n*`-name` option in the `TServer` section.

hostname

Specifies the name of the host where Aspect Contact Server is running. (See "hostname" on page 257.)

port

Specifies the TCP port where Aspect Contact Server is listening to client connections. (See "port" on page 257.)

protocol

Designates the communication protocol to be used. (See "protocol" on page 257.)

cs-configuration

Default Value: `single`
Valid Values: `single, dual`
Changes Take Effect: Immediately
Specifies the type of Contact Server configuration.

Use `single` for:

- A `simplex` T-Server configuration.
- An HA configuration with one AB Link and one Contact Server.
- Two T-Servers connecting to one Contact Server without an HA configuration.

Use `dual` for an HA configuration with two AB links and two Contact Servers.

(See "cs-configuration" on page 257.)

Chapter

12 Configuring Outbound Solution with Aspect T-Server

This chapter describes different ways to implement the Genesys Outbound Solution with Aspect T-Server. It contains the following sections:

Terminology

Table 27 explains important terminology.

Table 27: Terminology

Component	Term	Description
Aspect Switch	CCT	Call Control Table Aspect script used for routing and handling calls.
	MPCR	Make Predictive Call Request Message sent from T-Server to Aspect to make a predictive call from an ADC port.
	MPCRR	Make Predictive Call Request Response Message sent from Aspect to T-Server in response to the predictive call.
	ADC	Answer Detection Card Call progress is performed by the switch.
Genesys	CPD	Call Progress Dialer Genesys application controlling the Dialogic card to make calls, classify calls (fax, busy, human voice, and so on), and transfer calls to an ACD distribution device.
	CM	Configuration Manager Genesys Solution stores its configuration data in CM tables.
Dialogic	ASM	Active Switching Matrix Switch-independent method CPD engages an agent using a port, calls a customer using a different port then activates the switching between the two ports if the customer answers.

Configuring OCS for the Aspect ACD

On the Aspect ACD, you can implement a Genesys Outbound Solution using any of three different methods, depending on how you want to implement call progress. The three methods are:

- Answer Detection Card (ADC) in the Aspect switch
  The call progress is performed by the switch itself using an Answer Detection Card (ADC). This is the most common way to implement an Outbound Solution with Aspect.
- CPD with analog ports
  The call progress is performed by CPD. See "Configuring OCS Using CPD with Analog Lines" on page 276.
- CPD with E1 trunks
  The call progress is performed by CPD in ASM mode only (Active Switching Matrix) as no CAS trunk is available on the switch.

Configuration Requirements

The Aspect PBX does not require any queue parameter in `RequestAgentLogin` and also provides no queue or group information in `EventAgentLogin`. Therefore these options must be configured as follows:

```
OCS Application/Options Tab/OCServer/login_ignore_queue=false
```

```
Agent or Place Group/Annex Tab/OCServer/ocs_group=yes
```

With these settings, OCS identifies the appropriate outbound campaign group depending on the Place Group or Agent Group to which an agent is assigned. This means that an agent can be assigned to only one Agent Group or Place Group. To overcome this limitation, use the following key-value pair in `TAttributeReason` in `RequestAgentLogin` when logging the agent in.

Table 28: Using TAttributeReason in Agent Login Requests for Interworking with OCS

Key	Value	Description
`ThisGroup`	<Name of group in the Configuration Layer>	If the person is assigned to several agent groups, or the DN is assigned to several place groups in the Configuration Layer, then this attribute tells OCS which campaign to assign the agent to.

This allows OCS to assign agents to Agent Groups or Place Groups dynamically at the time of login.

Configuring OCS using ADC Card in Aspect PBX

This solution does not use either CPD server or URS server. It also does not use the standard Outbound CCT in Aspect but requires a separate CCT, which you must configure as either:

- An `ACD Queue` object in the Configuration Layer.
- A `VoiceTransferDestination` in the campaign.

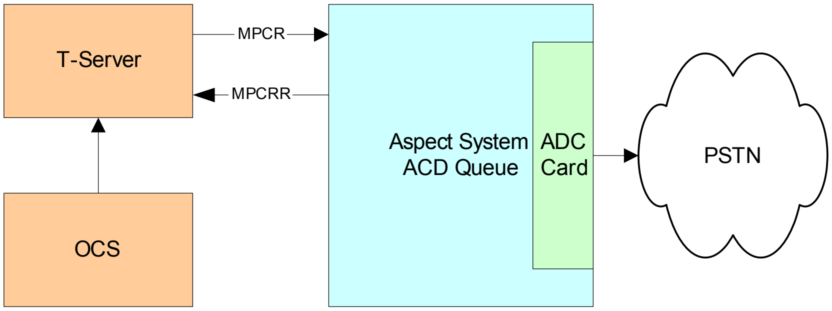


Figure 24: ACD Card Interworking Architecture

Procedure:
Creating an Aspect CCT to support predictive dialing with Genesys OCS using an ADC card in the PBX

Purpose: To configure the Aspect ACD PBX and Genesys Outbound Solution to work with an ADC card in the PBX.

Summary

The CCT does the following:

1. Seizes a channel on the outbound trunk group.
2. Dials the digits obtained from the MPCR request sent by T-Server to the Aspect PBX.
3. Waits for an answer.
4. Transfers to an agent group.

Start of procedure

1. Configure the `Dial1` step with three digits (as in the example in Figure 25 on page 275). You could configure it with more digits (up to 10), depending on the country.
2. Configure the `WaitAnswer1` step to use only the Answer or Answer Machine outputs. Other outputs are not required.
3. Configure the `Wait2` step with the value `10 seconds.` You could use a lower value where required.
   When the call is released, T-Server updates the `GSW_CALL_RESULT`. You do not need to modify the CCT to send a message that T-Server would translate as `EventDestinationBusy`, for example.

End of procedure

Sample CCT

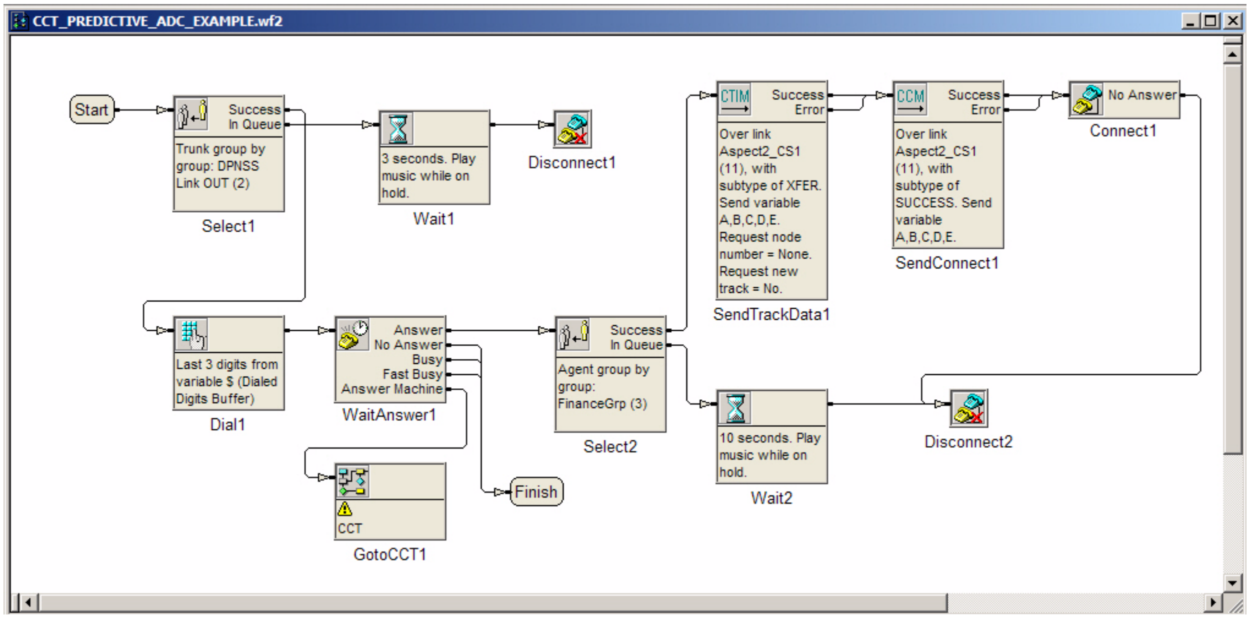

CCT_PREDICTIVE_ADC_EXAMPLE.wf2
Start
Success
In Queue
Trunk group by group: DPNSS Link OUT (2)
Select1
3 seconds. Play music while on hold.
Wait1
Disconnect1
CTIM
Success
Error
Over link Aspect2_CS1 (11), with subtype of XFER. Send variable A,B,C,D,E. Request node number = None. Request new track = No.
SendTrackData1
CCM
Success
Error
Over link Aspect2_CS1 (11), with subtype of SUCCESS. Send variable A,B,C,D,E.
SendConnect1
No Answer
Connect1
Last 3 digits from variable $ (Dialed Digits Buffer)
Dial1
Answer
No Answer
Busy
Fast Busy
Answer Machine
WaitAnswer1
Success
In Queue
Agent group by group: FinanceGrp (3)
Select2
10 seconds. Play music while on hold.
Wait2
Disconnect2
Finish
CCT
GotoCCT1

Figure 25: Predictive Dialing Using Aspect ADC Card

For more information, see the *Aspect Outbound Application Integration Guide* (available from your switch vendor) for the relevant release of your switch.

Next Steps

- Procedure: Configuring Genesys Configuration Layer to support predictive dialing with Genesys OCS using an ADC card in the PBX

Procedure: Configuring Genesys Configuration Layer to support predictive dialing with Genesys OCS using an ADC card in the PBX

Start of procedure

1. Declare the Aspect script (CCT) as a device with type `ACD Queue`.
2. Set `DN Number` to be `#8+CCT`. For example, for CCT number 932, create DN number `#8932` in the Configuration Layer.
3. Leave the `Association` field empty.
4. Set `Switch-Specific Type` to `1` on the `Advanced` tab.

End of procedure

Limitations

- The ADC card does not detect fax machines.
- The Aspect switch cannot distinguish invalid numbers from busy numbers. To distinguish dropped calls from abandoned calls, the call overflow DN must be implemented.

Configuring OCS Using CPD with Analog Lines

Using this method, call progress is performed by Genesys CPD Server using an analog Dialogic card for the connection to the Aspect ACD. This requires analog ports to be configured in the Aspect PBX. Either an ACD Queue or a Routing Point can be used for distribution. These distribution devices are standard Aspect scripts (CCTs), and are no different from standard ACD Queues or Routing Points.

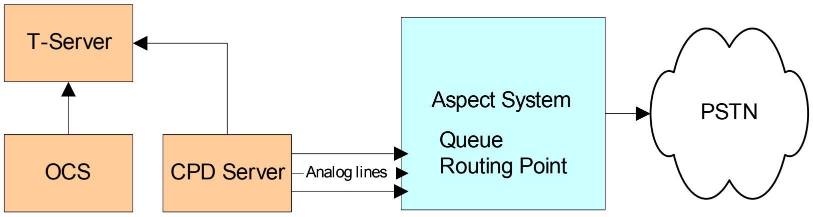


Figure 26: CPD with Analog Lines Architecture

Procedure: Configuring the Aspect PBX for Genesys OCS using CPD with analog lines

Start of procedure

1. From the Aspect Hardware Administrator, find the `Resources/Station Interfaces/` menu.
2. Make sure each analog port is:
   - Online.
   - Configured as an Administrative Telephone with an associated phone number.

     For example, port number `3` associated with the number `201` should be configured in Configuration Manager as a DN of type `Extension` with the number `S3`.

Warning! CTI control and reporting for analog devices on the Aspect ACD is not suitable for general usage, but is sufficient for use with the Genesys Outbound Contact solution.

End of procedure

Next Steps

- Procedure: Configuring Genesys Configuration Layer Genesys OCS using CPD with analog lines

Limitations

- `TInitiateTransfer`, `TCompleteTransfer` and `TReconnect` are not supported on analog devices.
- No `EventOnHook/OffHook` is distributed when the device is on hook or off hook.
- If an internal call is made from an analog device, the call cannot be answered.
- No `COEM` message (`EventRinging`) is sent for an internal or inbound call to an analog device.

Procedure: Configuring Genesys Configuration Layer Genesys OCS using CPD with analog lines

Start of procedure

1. Create the analog devices in the Configuration Layer using the notation `S<port>`. For example, port number `3,` which is associated with the number `201` in the PBX configuration, should be configured in the Configuration Layer as a DN of type `Extension` with the number `S3`.
2. If URS is used to distribute outbound calls to agents instead of the ACD, set OCS option `divert_to_unknown_dn` (found in `OCS Application/OCServer/`) to value `true`.
3. Because Aspect only supports CTI SingleStepTransfer from analog devices, you must set OCS option `call_transfer_type` (found in `OCS Application/OCServer/`) to value `one_step`.

End of procedure

Limitations

The Aspect switch cannot distinguish invalid numbers from busy numbers. To distinguish dropped call from abandoned calls, call overflow DNs must be implemented.

Configuring OCS with CPD with E1 Trunks

Aspect does not provide CAS trunks. Therefore, the only way to integrate CPD (E1 trunks) with Aspect ACD is to connect Dialogic cards using ISDN or QSIG protocols. CPD Server is only able to use these protocols in Active Switching Matrix (ASM) mode, which means that it is connected in front of the Aspect PBX.

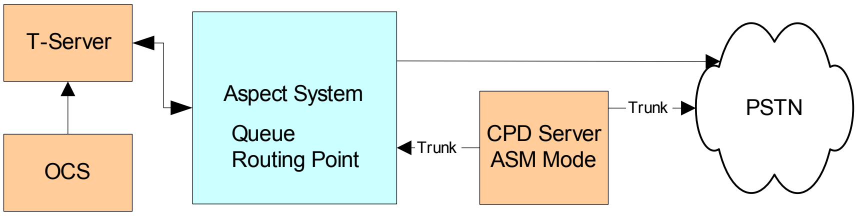


Figure 27: CPD Server In-Front Architecture

Procedure: Configuring the Aspect PBX for Genesys OCS using CPD with E1 Trunks

Purpose: To enable CPD to call a Routing Point or an ACD Queue via a trunk to engage an agent.

Start of procedure

1. Configure the Trunk Group to engage the agents:
   a. From the Aspect Hardware Administrator, find `Groups/Trunk Groups`.
   b. Select the trunk group used between Aspect and Dialogic.
   c. Click on `Properties/Routing Tab`.
   d. Check the box `Enable DNIS/DID/DDI routing`.
   e. Set the value of `Number of digits to receive` to `3`.
   f. Set the value of `DDI Digits Type` to `Fixed`.
2. Configure the routing inside Aspect:
   a. From the Aspect Route Administrator, go to `Resources/DNIS/DID/DDI`.
   b. Select the trunk group involved.
   c. Add the DDI number for each ACD Queue/Routing Point and set the right CCT.

End of procedure

Next Steps

The remaining configuration steps are as described in the *Genesys Outbound Contact Deployment Guide*.

Chapter

13 Configuring Aspect VoIP with Uniphi and T-Server

This chapter describes how to configure Aspect VoIP using the Uniphi Agent Desktop and Genesys T-Server. It contains the following sections:

Introduction

Aspect IP phones are controlled via an IP hard phone and client software. There are two variations of client software:

- Uniphi Connect Agent Desktop Windows Client—a Windows-based application.
- Uniphi Connect Agent Desktop Web Client—a software application installed on a central WebSphere server and displayed via a browser on agents' computers.

References to Aspect clients in the following section refer to both the Uniphi Windows and web clients.

The IP client performs call control functions (such as answer, transfer, and so on), while the IP hard phone is required to serve as the voice path for a call, which can be set up to automatically register with the Aspect Proxy Server (the gatekeeper). The Aspect Proxy Server serves as a registrar to facilitate communication between the IP phone and the IP card.

Enabling CTI Control on IP Hard Phones

In order for CTI control to be enabled on IP phones, you must first login to an IP hard phone using a Uniphi Client. The IP hard phone will ring when a successful login request is made, and must physically be answered and taken offhook (must be picked up within 20 seconds). At this point the agent is in `NotReady` state.

Procedure: Enabling CTI control on IP hard phones

Start of procedure

1. Login to an IP hard phone using the Uniphi client.
2. Make an outbound call from the IP hard phone to an available IP trunk port.
3. The IP hard phone rings when a successful login request is made, and must physically be answered either by taking the receiver off hook or by pressing the line button to accept the call. At this point the agent is in `Not Ready` state.

End of procedure

Configuring Virtual Instrument Groups

IP phones can be configured to have a static or dynamic instrument ID allocated.

Dynamic Allocation Aspect maintains a queue of virtual instruments associated with the virtual instrument group, and clients (such as Aspect Uniphi Connect) request the next available instrument in the group during the registration process.

Static Allocation: The client is configured to specify an instrument ID when registering with the Aspect Call Center System.

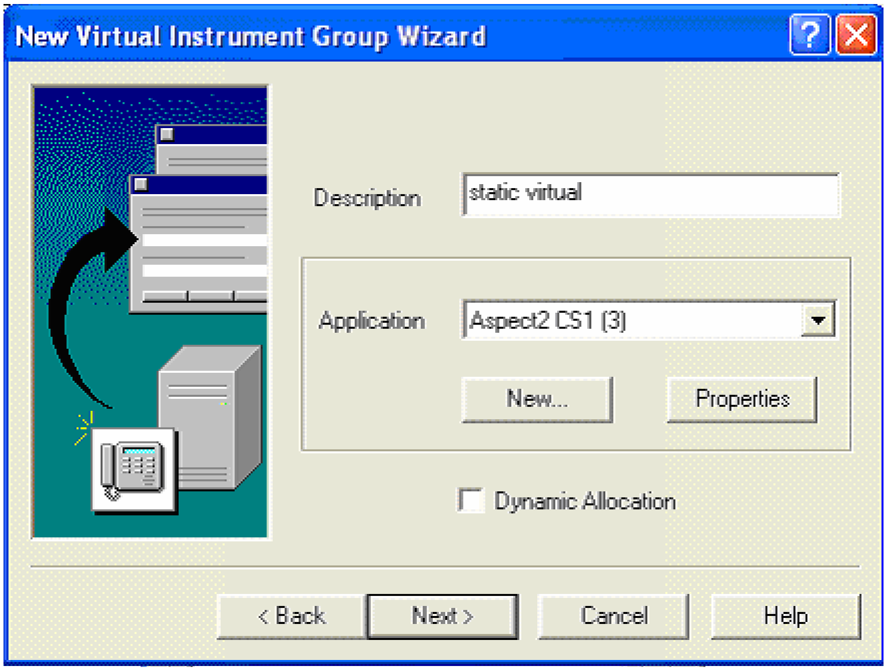
Genesys recommends that a virtual instrument group of static instruments be used.

Procedure: Configuring a Static-Allocation Virtual-Instrument Group

Purpose: To configure the client to specify an instrument ID when registering with the Aspect Call Center System.

Start of procedure

1. In Aspect Contact Manager Suite (ACMS), on the `Hardware Administrator` menu, create a virtual instrument group, ensuring that the `Dynamic Allocation` check box is not selected.



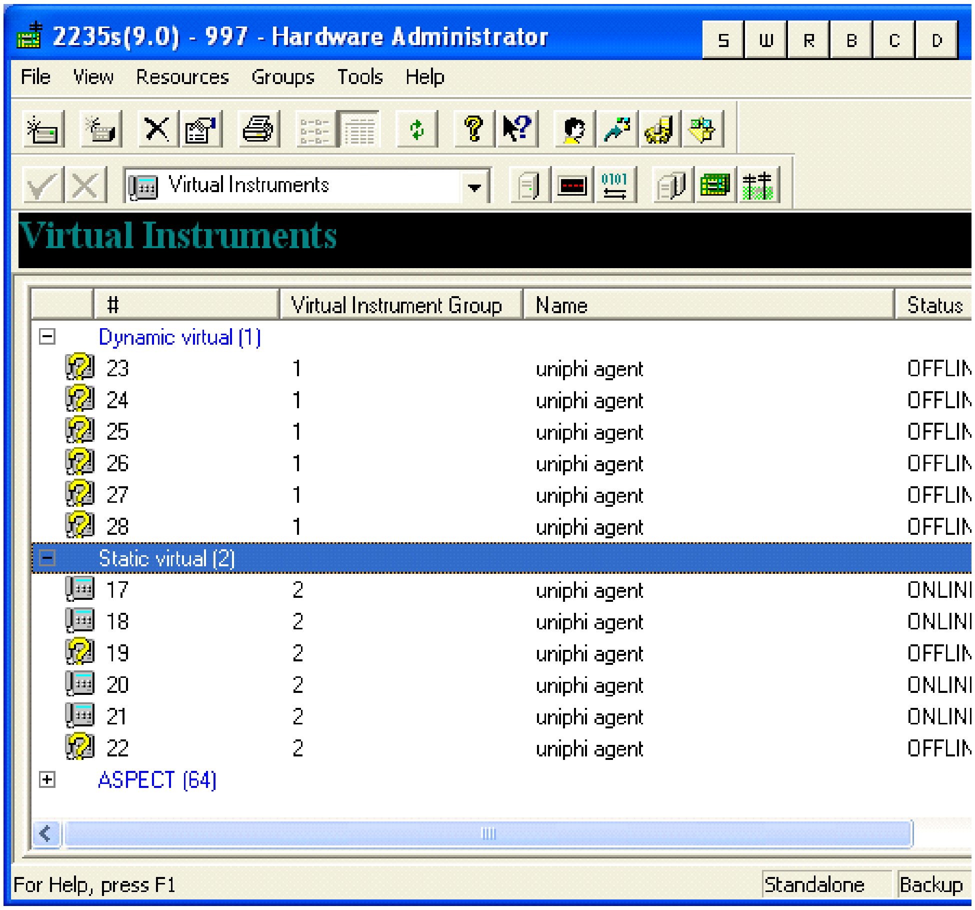
Description: static virtual

Application: Aspect2 CS1 (3)

☐ Dynamic Allocation

Figure 28: New Virtual Instrument Group Wizard

2. Assign virtual instruments to this group. In Figure 29 on page 284, virtual instruments 17–22 have been allocated to the `static virtual` group.



#	Virtual Instrument Group	Name	Status
Dynamic virtual (1)			
23	1	uniphi agent	OFFLIN
24	1	uniphi agent	OFFLIN
25	1	uniphi agent	OFFLIN
26	1	uniphi agent	OFFLIN
27	1	uniphi agent	OFFLIN
28	1	uniphi agent	OFFLIN
Static virtual (2)			
17	2	uniphi agent	ONLIN
18	2	uniphi agent	ONLIN
19	2	uniphi agent	OFFLIN
20	2	uniphi agent	ONLIN
21	2	uniphi agent	ONLIN
22	2	uniphi agent	OFFLIN
ASPECT (64)			

Figure 29: Assigning Virtual Instruments to a Group

End of procedure

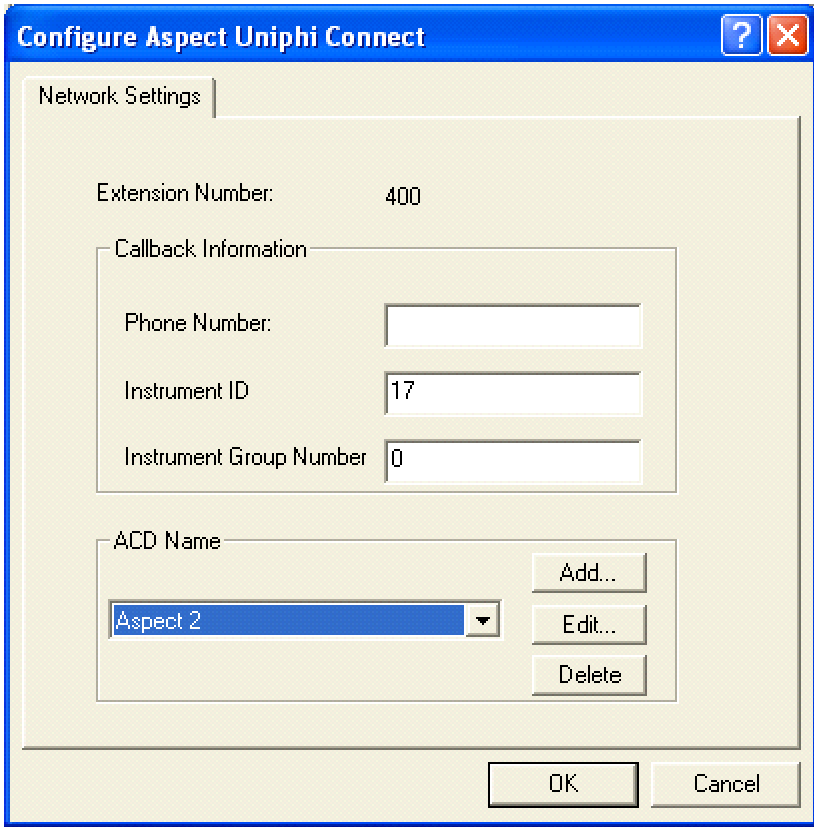
Agent Login via the Aspect Uniphi Connect Client

This section describes how to perform agent login via the Aspect Uniphi Connect client.

Procedure:
Performing agent login via the Aspect Uniphi Connect client

Start of procedure

1. Using the Uniphi client, specify an Extension Number to log into (use an extension specified in ACMS/Agent Administrator).
2. Do not enter a callback number in the `Phone Number` field, and make sure to specify a valid `Instrument ID` to be used (in this case, instrument `17`).
3. Leave `Instrument Group Number` with its default value (`0`) and select `OK` as shown in Figure 30 on page 285.



Extension Number: 400

Phone Number:

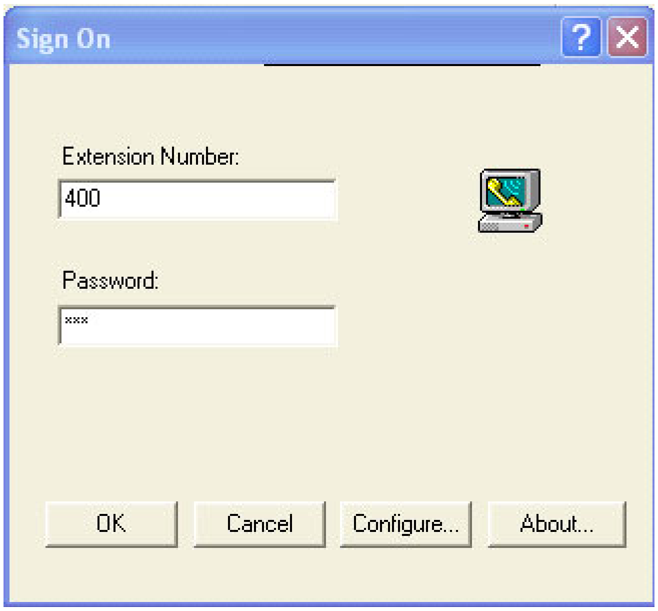
Instrument ID 17

Instrument Group Number 0

Aspect 2

Figure 30: Logging In via Uniphi Connect

4. Enter a valid password (the default password is `1234`) and select `OK` as shown in Figure 31 on page 286.



Sign On

Extension Number: 400

Password: ***

Figure 31: Entering a Password

At this point, an outbound call from the IP hard phone is made to an available IP trunk port, in order to establish an audio path. The IP hard phone rings and must be picked up (within 20 seconds). The IP phone can now be controlled by CTI, as shown in Figure 32 on page 287.

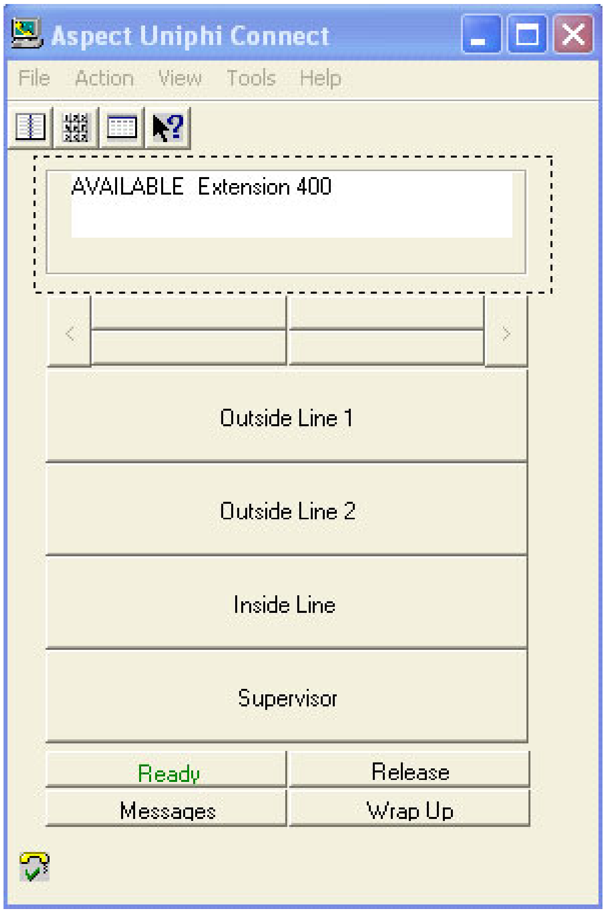


Figure 32: Logged In Uniphi Connect Client (CTI Ready)

End of procedure

Related Documentation Resources

The following resources provide additional information that is relevant to this software. Consult these additional resources as necessary.

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.
- Release Notes and Product Advisories for this product, which are available on the Genesys Technical Support website at `http://genesyslab.com/support`.

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*
- *The Framework 8 Deployment Guide*, which will help you configure, install, start, and stop Framework components.
- *The Framework 8 Configuration Options Reference Manual*, which will provide you with descriptions of configuration options for other Framework components.
- *The Framework 8 Configuration Manager Help*, which will help you use Configuration Manager.

- *The Genesys Migration Guide*, also on the Genesys Documentation Library DVD, which contains a documented migration strategy from Genesys product releases 5.x and later to all Genesys 7.x releases. Contact Genesys Technical Support for additional information.
- The *Genesys 7 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 .NET* (or *Java*) *API Reference*, which contains technical details of T-Library functions.
- The *Genesys Technical Publications Glossary,* which ships on the Genesys Documentation Library DVD and which provides a comprehensive list of the Genesys and CTI terminology and acronyms used in this document.
- *Genesys 8 Hardware Sizing Guide,* which provides information about Genesys hardware sizing guidelines for the Genesys 8.x releases.
- *Genesys 7 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 7.6 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 29 describes and illustrates the type conventions that are used in this document.

Table 29: 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 292).	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 . . .

Table 29: Type Styles (Continued)

Type Style	Used For	Examples
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>`

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