Call Concentrator 7

Getting Started Guide

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Table of Contents

Chapter

1 About This Document

Welcome to the *Call Concentrator 7 Getting Started Guide*. This guide provides a high level overview of Call Concentrator 7.0 features and functions, together with architecture information and deployment-planning materials.

Call Concentrator 7 is a Reporting product that collects and processes call-based data on activity in your enterprise. It draws on information from Configuration Server and T-Server® to create detailed representations of each leg of a call and of the call as a whole. Call Concentrator then stores this data in various tables, several of which you can customize to best suit your interaction management environment. These tables provide data that your reporting applications can take up, perform additional processing on, and present.

This guide is valid only for the 7.0 release(s) of this product.

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

This chapter provides an overview of this guide, identifies the primary audience, introduces document conventions, and lists related reference information:

Intended Audience

This guide, primarily intended for contact center and business enterprise managers and system engineers, assumes that you have a basic understanding of:

- Computer-telephony integration (CTI) concepts, processes, terminology, and applications.
- Network design and operation.
- Your own network configurations.
- Editing and running database scripts and managing database tables.

You should also be familiar with Genesys Framework, in particular Management Layer, Load Distribution Server (LDS), T-Server, and DB Server.

Chapter Summaries

In addition to this opening chapter, this guide contains these chapters:

- Chapter 2, "Introducing Call Concentrator 7" on page 11, which presents a functional and conceptual overview of Call Concentrator 7.
- Chapter 3, "Architecture" on page 17, which discusses Call Concentrator data sources and the connections with the Genesys Framework.
- Chapter 4, "Deployment Planning" on page 21, which assists you in preparing for Call Concentrator installation. It raises issues such as how to gather the necessary data in your environment and practical considerations of prerequisite software and hardware.

Document Conventions

This document uses some stylistic and typographical conventions with which you might want to familiarize yourself.

Version Number

A document version number appears at the bottom of the inside front cover of this guide. Version numbers change as new information is added to this guide. Here is a sample version number:

```
70fr_ref_09-2003_v1.00
```

You will need this version number when you are talking with Genesys Technical Support about this product.

Type Styles

Italic

In this document italic is used:

- When a term is being defined.

  Example

  - *A customary and usual practice* is one that is widely accepted and used within a particular industry or profession.
- For emphasis. For example, "Do *not* use this value for this option."
- For variables, for example, $x + 1 = 7$ where x stands for . . .

Monospace

A monospace font, which is shown in the following examples, is used for:

- All programming identifiers and GUI elements—*except* for instances of these occurring in tables and figures. This convention includes the *names* of directories, files, folders, paths, scripts, dialog boxes, options, fields, text and list boxes, all buttons including radio buttons, check boxes, commands, tabs, CTI events, and error messages; the values of options; logical arguments and command syntax; and code samples.

  Examples

  - Select the `Show variables on screen` check box.
  - Click the `Summation` button.
  - On the `Properties` dialog box, enter the value for the host server in your environment.
  - In the `Operand` text box, enter your formula.
  - Click `OK` to exit the `Properties` dialog box.
  - The following table presents the complete set of error messages T-Server distributes 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.
- For any text the user must manually enter during a configuration or installation procedure:

  Example

  - Enter `exit` at the command line.

Correction of Errors in Screen Captures

Screen captures taken from the product GUI (graphical user interface) and used in this document may sometimes contain a minor spelling, capitalization, or grammatical error. The text accompanying and explaining the screen captures corrects such errors.

Use of Square Brackets

In any logical arguments, commands, and programming syntax presented in this document, square brackets are used to indicate that a particular parametric value is optional. That is, the value is not required to resolve a command, argument, or programming syntax. The customer/user decides whether to supply a value and what that value is. Here is a sample:

```
smcp_server -host [/flags]
```

Use of Angle Brackets

Angle brackets are used to indicate that a value in a logical argument, command, or programming syntax is required, but that the user must supply the data for the value. Because the value is specific to an individual enterprise—for example, DNs or port numbers—the program cannot predict (that is, program in) what the value is. Here is a sample:

```
smcp_server -host <confighost>
```

Related Resources

Consult these additional resources as necessary:

- *Call Concentrator 7 Deployment Guide,* which provides detailed instructions for installing and configuring Call Concentrator. It also includes instructions for starting and stopping Call Concentrator using any of the available methods.
- *Call Concentrator 7 Reference Manual,* which discusses in detail the various tables and fields that Call Concentrator uses. It also includes detailed information on configuring custom table fields.
- *Technical Reference Guide for the Reporting 6.5 Release*, which contains useful information regarding call flows in the Genesys environment.
- The documentation provided for your Genesys T-Server.
- The *Framework 6.5 Load Distribution Server User's Guide*, which explains how to use LDS with Call Concentrator.
- *Genesys 7 Licensing Guide*, which includes information on obtaining and using licenses for Call Concentrator.
- The *Genesys Technical Publications Glossary,* which ships on the Genesys Documentation Library CD and which provides a comprehensive list of the Genesys and CTI terminology and acronyms used in this document.

- The *Genesys Migration Guide*, also on the Genesys Documentation Library CD, which contains a documented migration strategy for Genesys product releases 5.x and later. It also includes licensing and interoperability information for each product. Contact Genesys Technical Support for additional information.
- The Release Notes and Product Advisories for this product, which are available on the Genesys Technical Support website at http://genesyslab.com/support.

Information on supported hardware and third-party software is available on the Genesys Technical Support website in the following documents:

- *Genesys 7 Supported Operating Systems and Databases*
- *Genesys 7 Supported Media Interfaces*

Genesys product documentation is available on the:

- Genesys Technical Support website at http://genesyslab.com/support.
- Genesys Documentation Library CD, which you can order by e-mail from Genesys Order Management at orderman@genesyslab.com.

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When you send us comments, you grant Genesys a nonexclusive right to use or distribute your comments in any way it believes appropriate, without incurring any obligation to you.

Chapter

2 Introducing Call Concentrator 7

Call Concentrator 7 collects and records call data for contact centers and business enterprises that use Genesys Framework 7.0. This chapter introduces the product and includes these sections:

What Is Call Concentrator?

Call Concentrator 7.0 works with certain Genesys Framework components to collect and record call data in your enterprise, whether single tenant or multi-tenant. Call Concentrator is a Reporting product that is designed to provide data for call-based reporting. That is, you can trace the course of specific calls, collect data about them, and create reports based on that information.

Note: This is in contrast to CCPulse+ and CC Analyzer, which provide aggregated, object-based reports.

Call-Based Reporting

From the moment a customer interaction begins to final hang-up, Call Concentrator tracks and records the result of each interaction, even when the interaction has multiple segments, as in the case of a transfer or conference. Call Concentrator collects information about events and user data that sent by T-Server. Each call has various T-Events associated with it and also various

configuration objects—Agent, Queue, DN (directory number), and so on—that handled the call at during the course of the interaction.

In addition, Call Concentrator can include extra information in the form of attached data, which includes records, such as Customer Entered Digits (CED) that a customer enters at an IVR, business data in the form of revenue generated, or an account history an agent collects using a desktop application.

With the help of DB Server, the collected data is recorded to a number of tables, each of which provides access to a different aspect of the data. You can customize several of these tables to enable even more precise records of activity in your particular environment.

Data Handling

Think of the basic Call Concentrator functionality as two processes: interpreting the data it receives and recording the data after it is interpreted. Call Concentrator collects two types of data:

- **Contact Center Objects**—Agents, DNs, Queues, and so on.
- **T-Server Events**—Messages that reflect the states and transitions between states that a call goes through during the course of an interaction.
  - An *interaction* consists of the entirety of a single call: the customer call plus the contact center objects that handled it and the events generated during its existence.
  - An interaction is made up of multiple *call segments*, which are pieces of the call that occur between one T-Server event and the next.

Linking Call Segments to Interactions: the ConnID

Call Concentrator receives T-Events and combines them with relevant information on contact center objects to create detailed records of every call handled in your contact center. To maintain an accurate record of call data, Call Concentrator attaches a Connection ID (`ConnID`) to each call segment that matches the `ConnID` of the parent call.

For example, a simple call might consist of a customer calling, being placed in a queue, and then being transferred to an agent who completes the customer's business. For each of these events Call Concentrator collects a variety of information that can help you understand the call flow, evaluate contact center performance, and judge customer satisfaction.

When the call is routed, for instance, you get a record of the time it left the queue and when the agent answered it. You know how long it took for the agent to handle the call. You might have attached data that records whether any revenue was generated. You know whether the agent who received the call was able to handle it alone or needed to consult with an expert.

Note: For a detailed discussion of call models with call flow diagrams, see Chapter 3, "Sources of Reporting Data," in the *Reporting Technical*

Reference Guide for the 6.5 Release. This version is applicable to Call Concentrator 7.

Storing the Data

Call Concentrator stores call and call segment data in a number of database tables, each of which maintains records of a different aspect of the interaction.

For example, the Global Call Details Records (GCDR) table tracks entire calls, while the Single Call Details Records (SCDR) table contains data on each individual call segment. Other tables track user data and other associated records.

These tables are introduced in "Call Concentrator Tables" on page 22 and described fully in the *Call Concentrator 7 Reference Manual*.

Call Concentrator 7 Features

This section describes certain features that Call Concentrator supports in addition to the functionality described above.

Release 7.0 Features

- Support for the Genesys Framework 7 environment
- Backward compatibility with applications developed using the 6.1 Call Concentrator database schema
- Correct calculation of time in queue and time at route points in scenarios when multiple diversions from a queue occur. See "WtTime and RoutTime Calculations" on page 13 for details.
- Correct calculation of queued time and ringing time after blind and mute transfers. See "WtTime and RingTime Calculations after Transfers" on page 14 for details.

WtTime and RoutTime Calculations

In Call Concentrator 6.1, `WTime` (time a call spent in queue) and `RoutTime` were sometimes calculated incorrectly. Specifically, the issue arose in cases when a call was routed from a queue to a route point and back to a queue.

`WtTime` was formerly calculated as the time between the initial entry into a queue and the time the call was finally diverted. Similarly, `RoutTime` was calculated as the time between the initial entry into a route point and the time the call was finally routed. However, if the call was on a route point two different times with a wait in a queue in between, the time on the route point would also include the time in queue, as shown in Figure 1:

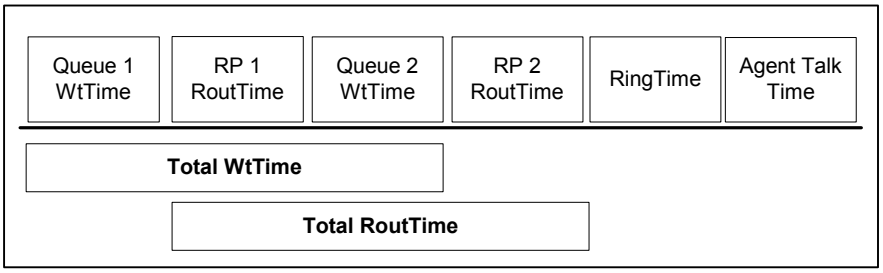

Figure 1: `WtTime` and `RoutTime` in Call Concentrator 6.1

For Call Concentrator 7.0, the calculation has been refined. `WtTime` is now the sum of all time spent in queue (`WtTime 1` + `WtTime 2`, and so on) and `RoutTime` of all time spent on a route point (`RoutTime 1` + `RoutTime 2`, and so on), as shown in Figure 2:

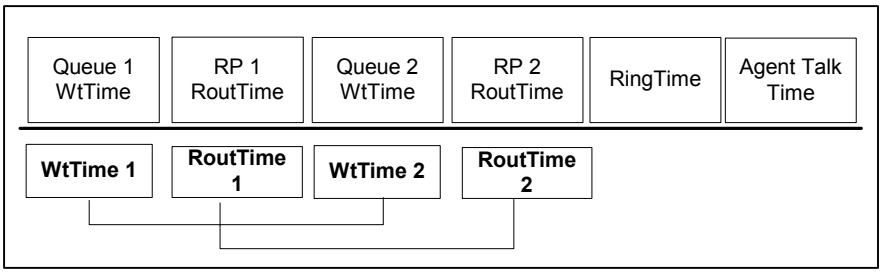

Figure 2: `WtTime` and `RoutTime` in Call Concentrator 7.0

WtTime and RingTime Calculations after Transfers

Call Concentrator 6.1 did not record time in queue correctly in scenarios when a blind or mute transfer sent the call to a queue before it was answered. Specifically, the post-transfer time in queue was not included. Similarly, the `RingTime` value did not include the time after a blind or mute transfer if that transfer did not go through a monitored queue or route point.

Call Concentrator 7.0 resolves these issues by changing the way it interprets the T-Events that mark the transitions during these particular call flows so that `WtTime` and `RingTime` are now calculated accurately.

Compatibility with Genesys Solutions

In addition to being compatible with Framework 7, Call Concentrator 7 is backward compatible with Framework 6.5 and 6.1.

For complete compatibility information, see Appendix B in the *Genesys Migration Guide*.

Supported Operating Systems and Databases

You can run Call Concentrator on any of a number of commonly used operating systems and databases. For a complete list, see *Genesys 7 Supported Operating Systems and Databases*.

Licensing Call Concentrator 7

Like all Genesys 7 products, Call Concentrator 7 requires:

- The updated version of License Server (included in the installation package).
- A 7.0 license file.

Call Concentrator licensing is based on the number of instances of Call Concentrator you use. You must have a license for each instance of Call Concentrator.

Chapter

3 Architecture

This chapter shows how Call Concentrator 7 is integrated into the Genesys Framework. This chapter includes these sections:

Call Concentrator Data Sources

Call Concentrator 7.0 works with certain Genesys Framework components to collect and record interactions in your enterprise. The primary source of the input for Call Concentrator is the Genesys Framework Media Layer, in particular its T-Server component, which generates events for interactions using traditional (voice) telephony.

Call Concentrator collects information about events and user data and then associates each event both with the interaction and also with each contact center object—Agent, Queue, DN, and so on—that handled the interaction.

Figure 3, on page 18 illustrates the data sources from which Call Concentrator collect information.

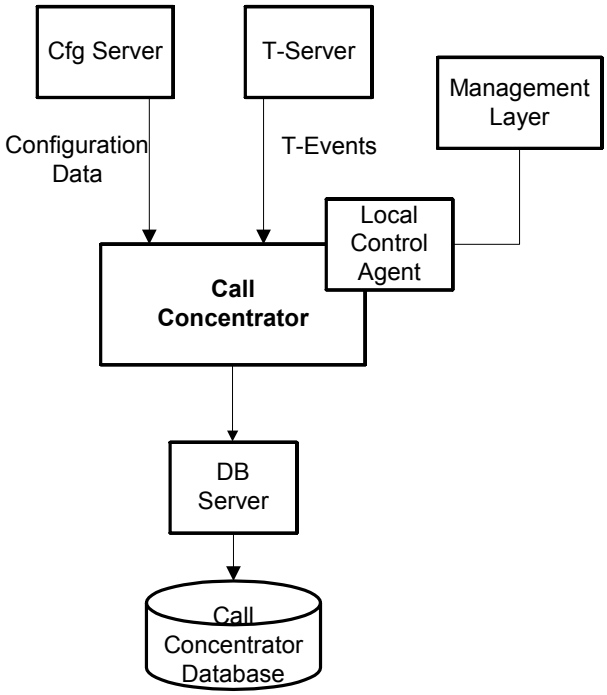

Figure 3: Call Concentrator Data Sources

Configuration Server—Call Concentrator receives dynamic notification of configuration changes made to the environment, such as the addition or removal of agents, switches, and tenants.

T-Servers—Monitor CTI objects within the switch domain and notify their clients about changes using T-Events.

DB Server—Provides the interface between Genesys applications and the database management system where the databases for solution operations reside.

Using Management Layer

Use the Framework Management Layer to control Call Concentrator startup and monitoring, logging of maintenance events, alarm generation and processing, and fault management. To achieve this, Local Control Agent (LCA) is installed for each Call Concentrator, enabling you to control Call Concentrator through the Solution Control Interface (SCI).

Note: See the "Starting and Stopping" chapter in the *Call Concentrator 7 Deployment Guide* for more information about how to use the Management Layer to control Call Concentrator.

Connection and Reconnection to Servers

Call Concentrator uses standard Genesys protocols for reconnection to T-Server and Configuration Server.

- If you have not configured a backup, Call Concentrator automatically reconnects to the primary server after the primary server is restarted.
- If you are using High Availability and have a backup server running, Call Concentrator automatically reconnects to the backup. High Availability can occur in either hot standby or warm standby mode.

Establishing Connections at Startup

Call Concentrator uses this procedure to connect at startup in a primary/backup configuration:

1. Makes one attempt to establish connection with the primary server.
2. If the primary server is not available, immediately makes one attempt to establish connection with backup server.
3. If the backup server is not available, Call Concentrator waits for the reconnect timeout and then makes one attempt to establish connection with primary server. Specify the reconnect timeout in the `Server Info` tab of the server's application object using Configuration Manager.
4. If primary server is still not available, Call Concentrator immediately makes one attempt to establish connection with the backup server.
5. Call Concentrator repeats steps 3 and 4 until it establishes a connection.

Reconnecting After Loss of Connection

In this situation, the sequence of steps is the same as that described in the preceding section, except that Call Concentrator does not rely on Configuration Layer to identify which is the primary and backup server. The server with which connection Call Concentrator lost connection is assumed to be the primary and the other in the pair is assumed to be the backup.

Load Balancing Using LDS

Genesys recommends the use of the Load Distribution Server (LDS) to distribute a high volume of data to multiple Call Concentrators. The typical *N*+1 architecture used with LDS allows you to scale your capacity to meet the requirements of your environment. You can also use the data distribution capabilities of LDS to maintain Call Concentrator performance in case of failure.

Note: For a complete discussion of using Call Concentrator and LDS, see the *Framework 6.5 Load Distribution Server User's Guide*.

The AREC Table and LDS

When using LDS, the AREC (Associated Records) table behaves differently from other Call Concentrator data tables. Whereas interaction data is written to only the one Call Concentrator database associated with the instance of Call Concentrator that processed that interaction, AREC table data is duplicated in *all* Call Concentrator databases.

Reconnecting to LDS

If you use Call Concentrator with Load Distribution Server (LDS), the procedure for connecting or reconnecting to a T-Server is, for the most part, the same as it is without LDS.

The one important difference is that Call Concentrator may not know what caused the lost of connection: T-Server failure or LDS failure.

As a result, if the connection with a T-Server is broken, Call Concentrator initially tries to reconnect with the T-Server or its backup using the same instance of LDS through which it had originally been initially connected to the T-Server.

This is the same behavior that Call Concentrator uses for lost connections without LDS. See "Reconnecting After Loss of Connection" on page 19 for details.

However, if the number of lost connections increases, Call Concentrator behavior changes. Instead of continuing to try to reconnect, Call Concentrator waits for a short time to see if lost connections continue to occur. If so, and eventually connection with all T-Servers is broken, Call Concentrator decides LDS has failed. At this point, Call Concentrator tries reconnect to all T-Servers through the backup instance of LDS.

Chapter

4 Deployment Planning

This chapter describes the deployment-planning activities that must take place before you configure and install Call Concentrator 7.0. This chapter includes these sections:

Overview

Before you deploy Call Concentrator, you must:

- Plan your reporting strategies and determine whether you need to customize Call Concentrator tables and fields.
- Allocate appropriate hardware and confirm that you are using supported hardware and software.
- Configure and install certain other Genesys Framework components, as specified in "Genesys Framework Requirements" on page 23.
- Obtain the correct number of licenses for all Genesys products. For more information, see the *Genesys 7 Licensing Guide*.

Note: For step-by-step Call Concentrator configuration and installation procedures, refer to *Call Concentrator 7 Deployment Guide*.

Planning Your Reporting Strategies

This section identifies important characteristics and functions of Call Concentrator that will help you understand what data it can make available and

how you can customize that data to create reports that best suit your environment.

Call Concentrator Tables

Call Concentrator data is stored in these tables:

- GCDR (Global Call Details Records)—Stores each call as a whole. Each GCDR record is identified by the value of its `ConnID` field. A parent GCDR record is linked to its associated SCDR records by this field.
- SCDR (Single Call Details Records)—Stores data for each call segment. Segments that make up a particular call all have the same `ConnID` and can therefore be linked to the call record stored in the GCDR table.
- User Data Tables—Records custom user data that might be attached to each call segment. You can customize the structure of these tables to suit the needs of your enterprise.
  - EVREF—An EVREF record is a reference point that connects attached user data (stored in the EVDATA record) to a call segment.
  - EVDATA—Stores user data in the form of key-value pairs.
  - EVREFEX—Combines the data in the EVREF and EVDATA tables and contains some user-customizable fields.
  - GDATAEX (User Data records)—Stores user data that is attached to an entire interaction instead of a single call segment.
- AREC (Associated Records)—Collects information about DN states. You can customize the structure of this table to suit the needs of your enterprise. If the DN state is associated with a call, it refers to the interaction in the GCDR table.

Note: For detailed information on these database tables, see the *Call Concentrator 7 Reference Manual*. The *Reference Manual* also gives intructions for customizing the database tables.

Options for Data Customization

Call Concentrator provides several ways for you to customize the data Call Concentrator collects and the tables in which it stores that data. You can use one or all of them to make sure Call Concentrator is capturing and storing data in the most effective way for your environment.

Turning Tables Off

By default, Call Concentrator writes data to all the tables described in “Call Concentrator Tables” on page 22. However, you can choose *not* to write to some of these by changing the values of certain application options when you are configuring the Call Concentrator application in Configuration Manager.

Note: For a description of these application options and their values, see Chapter 3, "Customize Your Configuration," in the *Call Concentrator 7 Deployment Guide*.

Custom User Data Fields

To customize a user data table to your needs, first specify the custom fields that are to be added to the table using the `EventData` configuration option for the EVREFEX table or the `GlobalData` configuration option for the GDATAEX table. After creating the fields, you enter the custom user data in the form of key-value pairs.

Note: For details, see "Customizing User Data Tables" in Chapter 5 of the *Call Concentrator 7 Reference Manual*.

The AREC table contains DN state information. You can create custom DN states that Call Concentrator can recognize and record.

Note: For more information on customizing the AREC table, see "Customizing the AREC Table" in Chapter 6 of the *Call Concentrator 7 Reference Manual.*

Software and Hardware Requirements

The most important Call Concentrator–specific hardware requirement is a database, which you must provide. For example, you might use a database from Oracle, Microsoft (SQL Servers), Informix, DB2, or Sybase.

- For regularly updated database information, see *Genesys 7 Supported Operating Systems and Databases*.
- For Genesys solution-compatibility information, see Appendix B of the *Genesys Migration Guide*.

Genesys Framework Requirements

Call Concentrator 7.0 works within the Genesys Framework, which contains the core functionality required for the normal operation of any Genesys-based interaction management system. See "Configuring Contact Center Objects" on page 24.

The specific applications required to run Call Concentrator are:

- License Manager for the Genesys 7 release (refer to *Genesys 7 Licensing Guide* for licensing information).

Note: You must have a 7.0 license file to use Call Concentrator 7.

- One or more T-Servers.
- DB Server (refer to the *Framework 7 DB Server User's Guide* for information about using DB Server).
- Configuration Server (refer to the *Framework 7* documentation for information on the Configuration Layer).

Configuring Contact Center Objects

While or before configuring Call Concentrator, you must also configure the following contact center objects using Configuration Manager:

- Switch Objects (DNs, Agents, Places, and so on)—Call Concentrator can only track objects that have been set up (registered) in Configuration Manager. Refer to the *Framework 7 Deployment Guide* for information about configuring and registering switch objects.
- T-Server—Monitors CTI objects within the switch domain and notifies its clients about changes using T-Events.
- Database Access Points—Call Concentrator's point of contact with DB Server is a Database Access Point (DAP), which describes both the parameters required for communication with the Call Concentrator database and the DB Server through which you can access this database.
- DB Server—See the *Framework 7 DB Server User's Guide* for more information about DB Server and DAPs.

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