Framework 8.0

CSTA Connector for BroadSoft BroadWorks Deployment Guide Wiki Redirect

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Category:CSTA Connector for BroadSoft BroadWorks Deployment Guide

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 Home > **CSTA Connector for BroadSoft BroadWorks Deployment Guide**

[**?**] CSTA Connector for BroadSoft BroadWorks Deployment Guide
[+] CSTA Connector for BroadSoft BroadWorks Deployment Guide

Framework 8.0

CSTA Connector for BroadSoft BroadWorks

Deployment Guide

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Contents

Preface

Welcome to the *Framework 8.0 CSTA Connector for BroadSoft BroadWorks*. This document introduces you to the concepts, terminology, and procedures relevant to Connectors in general and provides detailed reference information about CSTA Connector for BroadSoft BroadWorks. The reference information includes, but is not limited to, configuration options, limitations, and specific functionality. You must configure the configuration objects and options described in this document in the Framework Configuration Layer.

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:

- About CSTA Connector for BroadSoft BroadWorks
- Intended Audience
- Usage Guidelines
- Making Comments on This Document
- Contacting Genesys Technical Support

For information about related resources and about the conventions that are used in this document, see the Related Documentation Resources section..

About CSTA Connector for BroadSoft BroadWorks

Genesys CSTA Connector for BroadSoft BroadWorks is an application designed to provide a CSTA Phase III interface used by T-Server for CSTA Connector. Connector is installed between the BroadWorks XSI Interface and T-Server to allow the translation of CSTA requests and events into BroadWorks XSI requests and events.

Genesys CSTA Connector for BroadSoft BroadWorks is also responsible for authentication, session management, and data type translation between the BroadWorks XSI interface and the CSTA Phase III Interface.
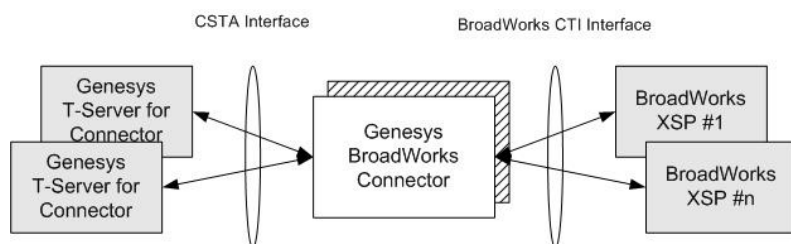
Genesys CSTA Connector for BroadSoft BroadWorks

Intended Audience

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

If you are new to Connectors, read the *Framework 8.0 Deployment Guide* and the Release Note, and then read all of the sections of this document that apply to your software and its accompanying components. Refer back to the *Framework 8.0 Deployment Guide* as needed.

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.

Usage Guidelines

The Genesys developer materials outlined in this document are intended to be used for the following purposes:

- Creation of contact center agent desktop applications associated with Genesys software implementations.
- Server-side integration between Genesys software and third-party software.
- Creation of a specialized client application specific to customer needs.

The Genesys software functions available for development are clearly documented. No undocumented functionality is to be utilized without the express written consent of Genesys. The following Use Conditions apply in all cases for developers employing the Genesys developer materials outlined in this document:

1. Possession of interface documentation does not imply a right to use by a third party. Genesys conditions for use, as outlined below or in the *Genesys Developer Program Guide,* must be met.
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3. A developer shall not be entitled to use any licenses granted hereunder unless the developer's organization has met or obtained all prerequisite licensing and software as set out by Genesys.
4. A developer shall not be entitled to use any licenses granted hereunder if the developer's organization is delinquent in any payments or amounts owed to Genesys.
5. A developer shall not use the Genesys developer materials outlined in this document for any general application development purposes that are not associated with the above-mentioned intended purposes for the use of the Genesys developer materials outlined in this document.
6. A developer shall disclose the developer materials outlined in this document only to those employees who have a direct need to create, debug, and/or test one or more participant-specific objects and/or software files that access, communicate, or interoperate with the Genesys API.
7. The developed works and Genesys software running in conjunction with one another (hereinafter referred to together as the "integrated solutions") should not compromise data integrity. For example, if both the Genesys software and the integrated solutions can modify the same data, then modifications by either product must not circumvent the other product's data integrity rules. In addition, the integration should not cause duplicate copies of data to exist in both participant and Genesys databases, unless it can be assured that data modifications propagate all copies within the time required by typical users.
8. The integrated solutions shall not compromise data or application security, access, or visibility restrictions that are enforced by either the Genesys software or the developed works.
9. The integrated solutions shall conform to design and implementation guidelines and restrictions described in the *Genesys Developer Program Guide* and Genesys software documentation. For example:
    1. The integration must use only published interfaces to access Genesys data.
    2. The integration shall not modify data in Genesys database tables directly using SQL.
    3. The integration shall not introduce database triggers or stored procedures that operate on Genesys database tables.

Any schema extension to Genesys database tables must be carried out using Genesys Developer software through documented methods and features.

The Genesys developer materials outlined in this document are not intended to be used for the creation of any product with functionality comparable to any Genesys products, including products similar or substantially similar to current Genesys general-availability, beta, and announced products.

Any attempt to use the Genesys developer materials outlined in this document or any Genesys Developer software contrary to this clause shall be deemed a material breach with immediate termination of this addendum, and Genesys shall be entitled to seek to protect its interests, including but not limited to, preliminary and permanent injunctive relief, as well as money damages.

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You can comment on what you regard as specific errors or omissions, and on the accuracy, organization, subject matter, or completeness of this document. Please limit your comments to the scope of this document only and to the way in which the information is presented. Contact your Genesys Account Representative or Genesys Technical Support if you have suggestions about the product itself.

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Europe, Middle East, and Africa	+44-(0)-1276-45-7002	support@genesyslab.co.uk

Asia Pacific	+61-7-3368-6868	support@genesyslab.com.au
Malaysia	1-800-814-472 (toll-free)+61-7-3368-6868	support@genesyslab.com.au
India	000-800-100-713 (toll-free)+91-(022)-3918-0537	support@genesyslab.com.au
Japan	+81-3-6361-8950	support@genesyslab.co.jp

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

Common Deployment Information

The Common Deployment Information provides information for the deployment and operation of CSTA Connector for BroadSoft BroadWorks.

CSTA Connector for BroadSoft BroadWorks

This section describes functionality supported by CSTA Connector for BroadSoft BroadWorks and includes these sections:

. Configuring CSTA Connector in Management Layer
. Hot Desking
. Configuration Layer

Configuring CSTA Connector in Management Layer

With the 8.1 Management Layer, an application should be configured as type CSTA Connector, and with a pre 8.1 Management Layer, an application should be configured as type High Availability Proxy.

T-Server Specific Connection Configuration

T-Server for Connector initiates a session with a Connector as follows:

. If there is at least one application with the type CSTA Connector in the list of Connections, T-Server will read in the Connector's connectivity options (including secure port information); Connector is handled as a server with normal connectivity options.

T-Server looks for an application type of CSTA Connector or HA Proxy (a pre-8.1 Management layer cannot be used with a CSTA Connector type).

> 💡 **Note:** At the moment, T-Server can only have one CSTA Connector in its list of connections.

. If there is no CSTA Connector application object in the list of Connections, T-Server uses the normal link section configuration.

Device Configuration in the Configuration Layer

Switch Device Type	DN Type	Switch-Specific Type	Association
End Point	Extension	Not applicable	Not applicable
Call Center	ACD Queue	Not applicable	Not applicable
Route Point	Routing Point	Not applicable	Not applicable
	Routing Queue	Not applicable	Not applicable
	External Routing Point	Not applicable	Not applicable

Switch Terminology

The following table compares relevant switch terminology with Genesys terminology.

Genesys Term	Switch Term
ACD Queue	Call Center
Agent ID	User
Extension	End Point
Routing Point	Route Point
Logon	Sign In
Logoff	Sign Out
Ready	Available
NotReady	Unavailable
AfterCallWork	ACD Wrap-up Timer
Account Code	Call Disposition Code
Reason Code	Agent Unavailable Code

Hot Desking

BroadWorks Connector makes this feature available to T-Server by using the Broadsoft hoteling feature.

Hoteling allows subscribers to associate their service profiles with a different device. Hoteling functionality is delivered through two separate subscribers, Hoteling Host and Hoteling Guest. To provide Hoteling Host functionality, subscriber accounts need to have the Hoteling Host service assigned to them in the BroadWorks configuration. Subscribers that have Hoteling Guest assigned can be associated with a Hoteling Host subscriber and use the Hoteling Host subscriber's device with their service profiles.

Once a guest subscriber has established a hoteling association with a host, it is assigned the host's endpoint (physical device), leaving the host without it. The guest subscriber's id is used in BroadWorks call reporting such as when a call is sent directly to the guest or when an ACD Queue diverts a call to them.

As part of establishing a hoteling session, the Connector sets unconditional forwarding from the Host subsriber to the Guest subscriber. When the hoteling session is cancelled, the Connector cancels forwarding.

T-Server CTI clients initiate a hoteling guest/host association for Hot Desking by sending a `PrivateService` request.

Call Centre Operation

Hoteling is used to support call centre operations by providing a pool of physical devices configured as hoteling hosts that can be used by a potentially larger number of agents configured as hoteling guests. These entities are configured in the Genesys Configuration Layer as Extensions and Agent Logins respectively. It is important that the Hoteling Guests are configured as Agent Logins only and that no Extension is configured for the Hoteling Guest.

T-Server CTI clients initiate a hoteling guest/host association by sending an `AgentLogin` request. The hoteling association is reported as the agent being logged in on the host DN. T-Server uses agent substitution to report all subsequent events using the host as the device id. T-Server CTI clients terminates a hoteling guest/host association by sending an `AgentLogout` request.

> 💡 **Note:** The `AgentLogin` request does not assign the agent to a queue as BroadWorks CTI does not support this feature. T-Server CTI clients can still manipulate the agent's queue state using the `AgentReady` and `AgentNotReady` requests.

Event Subscription for Hoteling Guest Subscribers

BroadWorks Connector identifies hoteling guest subscribers using the `MonitorDeviceType` private extension in the CSTA `StartMonitor` request; they have a `MonitorDeviceType` of acdAgent. Initially BroadWorks Connector only subscribes for `HotelingGuest` events on behalf of guest subscribers. When BroadWorks Connector receives a `HotelingGuest` event indicating that the guest subscriber is associated with a hoteling host, it subscribes for all event types. When BroadWorks Connector receives a `HotelingGuest` event indicating that the guest subscriber is no longer associated with a hoteling host, the Connector deletes all event subscriptions except for Hoteling Guest.

Initiating a Hoteling Guest/Host Association

The BroadWorks Connector performs the following actions when it initiates a hoteling association:

- Send a request to the BroadWorks XSP server to set the host subscriber's agent status to signed out if there is an agent signed in;
- send a request to the BroadWorks XSP server to set unconditional call-forward on the host's subscriber id to the guest's subscriber id;
- send a request to the BroadWorks XSP server to begin the hoteling guest/host association;
- send a request to the BroadWorks XSP server to set the guest subscriber's agent state to unavailable.

BroadWorks Connector initiates a hoteling association when it receives a CSTA `SetAgentState` indicating an agent login. The host subscriber id is taken from the request's device id and the guest subscriber id is taken from the request's agent id.

The following diagram and table shows the sequence of requests and events that are exchanged between BroadWorks Connector and the BroadWorks XSP server.

Initiate Hoteling Association Message Flow
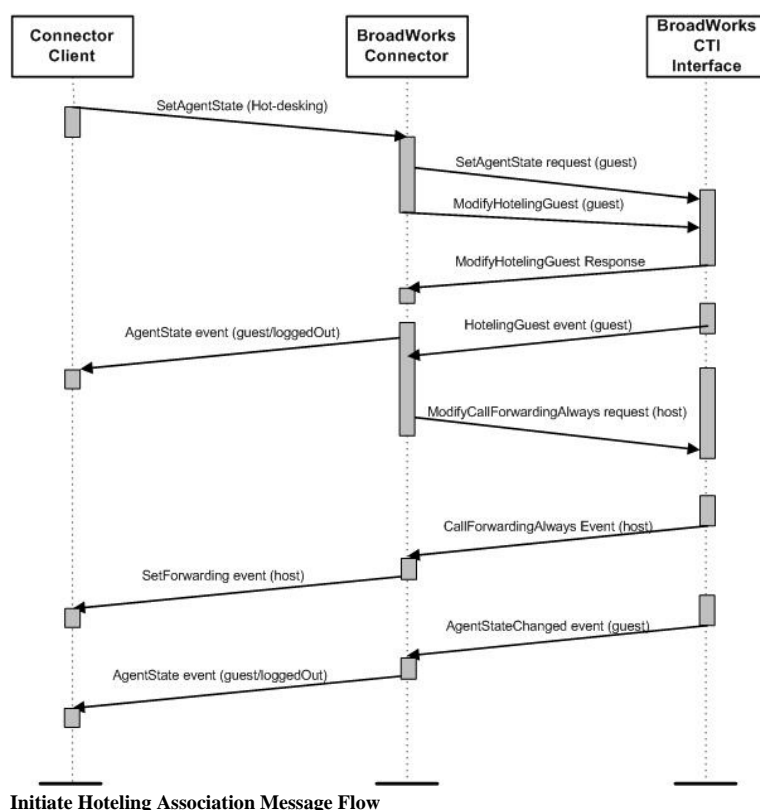
Requests and Events Exchanged Between BroadWorks Connector and the BroadWorks XSP Server

CSTA	BroadWorks CTI	Notes
SetAgentState request	SetAgentState request	BroadWorks Connector determines whether the SetAgentState request is an agent login from the current agent state and the semantics of the request.
. device: host subscriber id . agent state: state . agent ID: guest subscriber id	. subscriberId: host subscriber id . state: signed out	If the HotelingGuest event is matched with a Connector request then these requests will be sent to the XSP in response to the receipt of the HotelingGuest event Note that BroadWorks Connector always initialises the agent state to unavailable to remove any dependency between this request and the initial CSTA SetAgentState request.
group: n/a	ModifyCallForwardingAlways request	
	. subscriberId: host subscriber id . address: guest subscriber address . active: true	
	ModifyHotelingGuest request	The HotelingGuest information is provided in the Hoteling Guest events from initial events subscription.
	. subscriberId: guest subscriber id . hotelingGuest: see notes . hotelingGuest.isActive: true . hotelingGuest.hostSubscriberId: host subscriber id	
AgentState event	HotelingGuest event	BroadWorks Connector may also receive a HotelGuest event when an external application modifies the hoteling guest association of a monitored subscriber id.
. device: host subscriber id . agent ID: guest subscriber id . logged on state: true . acd group: n/a . agent state: logged in	. subscriberId: guest subscriber id . hotelingGuest: from event . hotelingGuest.isActive: true . hotelingGuest.hostSubscriberId: host subscriber id	
	SetAgentState request	
	. subscriberId: guest subscriber id . state: unavailable	

| AgentState event	AgentStateChanged event	BroadWorks Connector's handling of AgentStateChanged events will be independent of whether the request was sent as part of the initiate hoteling sequence or in response to any subsequent CSTA SetAgentState request.
. device: subscriber id . agent ID: subscriber id . logged on state: agent_state dependent . acd group: n/a . agent state: agent_state	. subscriberId: subscriber id . agentACDState: agent_state	BroadWorks Connector will send the AgentState event to the client in response to receiving the AgentStateChanged event.
SetForwarding event	CallForwardingAlways event	BroadWorks Connector's handling of CallForwardingAlways events is independent of whether the request was sent as part of the initiate hoteling sequence or in response to any other CSTA SetForwarding request.
. device: host subscriber id . type: immediate . activate: true . forwardDN: guest subscriber id	. subscriberId: host subscriber id . address: guest subscriber address . active: true	BroadWorks Connector sends the SetForwarding event to the Connector client in response to receiving the CallForwardingAlways event.

Terminating a Hoteling Guest/Host Association

BroadWorks Connector performs the following actions when it terminates a hoteling association:

. Send a request to the BroadWorks XSP server to set the guest subscriber's agent status to signed out.
. Send a request to the BroadWorks XSP server to cancel unconditional call-forward on the host's subscriber id.
. Send a request to the BroadWorks XSP server to end the hoteling guest/host association.

The following diagram and table shows the sequence of requests and events that are passed between BroadWorks Connector and the BroadWorks XSP server.
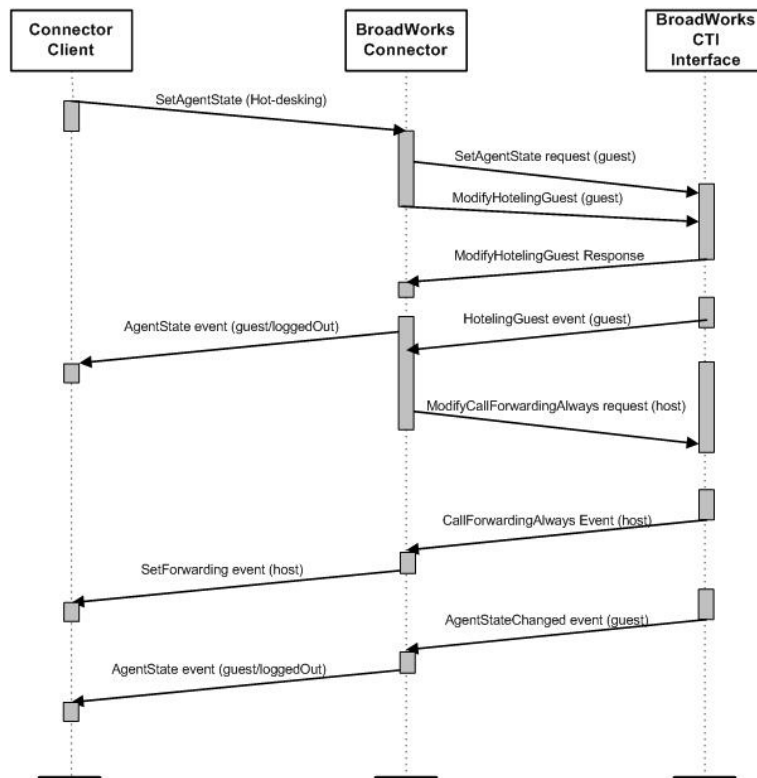
Terminate Hoteling Association Call Flow

Requests and Events Passed Between BroadWorks Connector and BroadWorks XSP Server

CSTA	BroadWorks CTI	Notes
SetAgentState request	SetAgentState request	The ModifyHotelingGuest request is sent by BroadWorks Connector to the XSP server in response to the receipt of a SetAgentState request from Connector's client appliaction.
. device: host subscriber id . agent state:	. subscriberId: guest subscriber id . state: signed out	The HotelingGuest information is provided in the Hoteling Guest event(s).

|		

logged out
• agent ID: guest subscriber id
• group: n/a
	ModifyCallForwardingAlways request
	
	  • subscriberId: host subscriber id
	  • address: guest subscriber address
	  • active: false
	
	ModifyHotelingGuest request
	
	  • subscriberId: guest subscriber id
	  • hotelingGuest: see notes
	  • hotelingGuest.isActive: false
	  • hotelingGuest.hostSubscriberId:	

AgentState event
 	
• device: guest subscriber id
• agent ID: guest subscriber id
• logged on state: false
• acd group: n/a
• agent state: logged out
	HotelingGuest event
	
	  • subscriberId: guest subscriber id
	  • hotelingGuest: from event
	  • hotelingGuest.isActive: false
	  • hotelingGuest.hostSubscriberId:
		BroadWorks Connector may also receive a `HotelGuest` event when an external application modifies the hoteling guest association of a monitored subscriber id.
		
		BroadWorks Connector will send the `AgentState` event to the Connector client to indicate that hoteling guest/host association has ended
		
		Note that the CSTA `AgentState` event uses the guest subscriber id as it has no information about the former host subscriber.

AgentState event
 	
• device: subscriber id
• agent ID: subscriber id
• logged on state: true
• acd group: n/a
• agent state: logged in
	AgentStateChanged event
	
	  • subscriberId: guest subscriber id
	  • agentACDState: agent_state
		BroadWorks Connector's handling of `AgentStateChanged` events is independent of whether the request was sent as part of the terminate hoteling sequence or in response to any subsequent CSTA `SetAgentState` request.
		
		BroadWorks Connector sends the `AgentState<tt>` event to the T-Server in response to receiving the `<tt>AgentStateChanged` event.

SetForwarding event
 	
• device: host subscriber id
• type: immediate
• activate: false
• forwardDN: guest subscriber id
	CallForwardingAlways event
	
	  • subscriberId: host subscriber id
	  • address: guest subscriber address
	  • active: true
		BroadWorks Connector's handling of `CallForwardingAlways` events is independent of whether the request was sent as part of the initiate hoteling sequence or in response to any other CSTA `SetForwarding` request.
		
		BroadWorks Connector sends the `SetForwarding` event to its client in response to receiving the `CallForwardingAlways` event.

CSTA Connector Configuration Options

This section describes configuration options specific to CSTA Connector and includes:

• CSTA Connector Application-Level Options
• Link-%s Section
• License Section
• log-filter-x Section
• CSTA Client Configuration

CSTA Connector Application-Level Options

This section must be called `Connector`

app-controller

Default Value: Mandatory field. No default value.
Valid Value: String
Changes Take Effect: Immediately
Required identifier used by BroadWorks routing functionality. Refer to Route Point Failure Policy in BroadWorks CTI documentation.

application-name

Default Value: `GenesysConnector`
Valid Value: String
Changes Take Effect: Immediately
Identifier used in BroadWorks event reporting to represent the Connector application.

channel-set-name

Default Value: Mandatory field. No default value.
Valid Values: Any string
Changes take effect: When the link is started, or restarted.
The ChannelSet name specifies a logical name for a CTI link to BroadWorks. Multiple TCP/IP channels opened to BroadWorks CTI server(s) with the same ChannelSet name are treated as a single CTI link. The Connector will generate a unique ChannelSet name to ensure that there is no unwanted interaction between multiple Connectors connected to the same switch.

default-domain

Default Value: None
Valid Value: String
Changes Take Effect: Immediately
BroadWorks require a fully qualified device identifier in requests. A default domain name can be appended to a userId in requests for convenience. In the BroadWorks switch web configuration, the list of assigned domains can be seen by browsing to the Enterprise branch, selecting the Resources section, and then selecting the Assign Domains sub-section. See also the dn-prefix option.

def-treatment-uri

Default Value: None
Valid Value: Any valid URI path
Changes Take Effect: Immediately
The URI to a default treatment to apply in treatment requests. Refer to the vendor's configuration documentation for further information.

def-whisper-video-uri

Default Value: None
Valid Value: Any valid URI path
Changes Take Effect: Immediately
The URI to default whisper video message to apply in routing requests with supervision. Refer to the vendor's configuration documentation for further information.

def-whisper-uri

Default Value: None
Valid Value: Any valid URI path
Changes Take Effect: Immediately
The URI to default whisper message to apply in routing requests with supervision. Refer to the vendor's configuration documentation for further information.

dn-prefix

Default Value: Mandatory field. No default value.
Valid Value: String
Changes Take Effect: Immediately
Numbers (DNs) are provisioned in BroadWorks and COnfiguration Manager using a shortened number format. However, CTI requests require the fully qualified E.164 number. The DN Prefix is prepended to the short DN to provide the full E.164 number.

max-outstanding

Default Value: 16
Valid Value: 1-1000
Changes Take Effect: Immediately
Specifies the maximum number of outstanding unacknowledged requests sent to the switch at any given time.

password

Default Value: Mandatory field. No default value.
Valid Value: The password configured on the BroadWorks switch.
Changes Take Effect: When the link is started, or restarted.
This option configures the password provisioned in BroadWorks Administrator. This is required for request authentication on the XSP CTI interface.

restart-period

Default Value: 10
Valid Values: Integer (3-300)
Changes Take Effect: When the link is started, or restarted.
This is a global option that encompassing all CTI links to the switch. The value set represents the time that Connector should wait, in seconds, before attempting to reconnect on all configured connections.

rq-gap

Default Value: 0
Valid Value: 0-1000
Changes Take Effect: Immediately
Specifies the minimum interval, in milliseconds, between successive requests sent over the link to the PBX. The value can be adjusted to meet the CTI-link load and performance requirements.

username

Default Value: Mandatory field. No default value.
Valid Value: The username configured on the BroadWorks switch.
Changes Take Effect: When the link is started, or restarted.
This option configures the username provisioned in BroadWorks Administrator. This is required for request authentication on the XSP CTI interface.

link-%s Section

This section name represents a specific Connector link to the switch and is user-customisable with %s being replaced by any string.

hostname

Default Value: Mandatory field. No default value.
Valid Value: Any valid host name
Changes Take Effect: When the link is started, or restarted.
Specifies the hostname/IP address of the switch/XSP Server. You must specify a value for this option.

port

Default Value: 8011
Valid Value: Any valid TCP/IP port
Changes Take Effect: When the link is started, or restarted.
Specifies the port address of the switch interface. This option must be specified.

priority

Default Value: 0
Valid Values: 0-100
Changes Take Effect: When the link is started, or restarted.
Specifies the priority of the connection. Higher numbers have higher priority.

License Section

Connector is a licensed product and can only be operational if a valid license is applied. Licensing uses the FlexLM library in common with T-Server and is configured in Configuration Manager.

num-sdn-licenses

Default Value: max
Valid Value: Integer or max
Changes Take Effect: Immediately
Specifies how many seat-related licenses Connector checks out. A value of 0 (zero) means that Connector does not grant control of seat-related DNs to any client, and it does not look for seat-related DN licenses at all. When set to Max all available licenses are checked out.

Connector also uses the log section which is common to T-Server. Refer to the *CSTA T-Server for Connector Deployment Guide* for full details of these options.

log-filter-x Section

Feature to hide sensitive data from log(s). Sensitive data will be masked by asterisks (*) in the log file. Refer to section **Data Hiding in Log** for further details.

Any

(Anything can be used for the option name(s) in this section.)

Default Value: None
Valid Value: PCRE compatible expression
Changes Take Effect: Immediately
For detailed information about PCRE syntax, please refer to http://pcre.org.

A Perl-Compatible regular expression with or without string sub-patterns. If the expression contains a parensesis-delimited capture subexpressions, these substring matches will be masked. Otherwise, the remainder of the string after the matching expression will be masked. To define a substring that is a part of matching expression but not a part of sensitive data, a non-capturing subexpression can be used which is denoted by (?:). For example, the pattern: User (?:PIN|pin|account) can be used to mask everything after the full match of the word User followed by PIN, pin or account, but these words themselves will not be masked. Case insensitive match can be forced by prefixing the expression with PCRE option (?i).

Examples:

[Pp]assword:? *

Mask everything after a word password, possible colon and any whitespace up to the end of the line. There are no sub-patterns so everything is masked after a greedy match of the whole pattern. For example:

User password (syspw) becomes User password *******

```
[dD]igits.*"([^"])"
```

Blank everything between double quotes that is preceded by digits. For example:

```
collectedDigits: numberString "773645" becomes collectedDigits: numberString "*******"
```

```
(?i)account.*(\d{4})\d{2}-(\d{3-5})\d+
```

The account consists of 2 parts: 6-digit sort code, a dash and a variable-length number which is 4 digits or more. The pattern inhibits the first 4 digits of the sort code (first sub-pattern), up to 5 first digits of the account number (second sub-pattern) but shows the last two digits of the sort code and at least one last number of the account number, or all last numbers after the initial 5 that are suppressed. Matching of the word account is case-insensitive due to the preceding option.

Supported BroadWorks Requests and Events

This section describes the following supported BroadWorks requests and events:

- BroadWorks Requests
- BroadWorks Events

BroadWorks Requests

Call Requests

BroadWorks CTI	CSTA	Note
BlindTransferRequest	Single Step Transfer Call	
ConsultativeTransferRequest	Transfer Call	
DialRequest	Make Call, Consultation Call	
DirectedCallPickupRequest	Directed PickUp Call	
DirectedCallPickupWithBargeInRequest	Join Call	With extension BargeIn
HoldRequest	Hold Call	
MonitorCallRequest	Join Call	
MonitorNextCallRequest	Make Connection	
MuteTransferRequest	Consultation Call	Private extension MuteTransfer in request
TransmitDTMFRequest	Generate Digits	
ReconnectRequest	Reconnect Call	
ReleaseRequest	Clear Connection	
RetrieveCallIdInfoListRequest	Snapshot Device	
TalkRequest	Answer Call, Retrieve Call, Alternate Call	
ConferenceAddParticipantRequest	Conference Call	
ConferenceHoldRequest	Hold Call	
ConferenceReleaseRequest	Clear Call	
ConferenceRetrieveRequest	Retrieve Call	
ConferenceStartRequest	Conference Call	
EscalateToSupervisorRequest	Consultation Call	Agent request
EmergencyCallToSupervisorRequest	Single Step Conference	Agent request
GetACDRequest	Snapshot Device	ACD request
GetRoutePointRequest	Snapshot Device	Route Point request
RoutePointBounceCallRequest	Route Reject / Re-Route	Route Point request
RoutePointBlindTransferRequest	Route Select	Route Point request
RoutePointDistributeCallRequest	Route Select	Route Point request (CSTA extensions)
RoutePointFailCallRequest	Route End	Route Point request
RoutePointOutgoingDialRequest	Make Predictive Call	Route Point request
RoutePointReleaseCallRequest	Route Reject	Route Point request
ModifyRoutePointStateRequest	SetRouteingMode	Route Point request
GetRoutePointStateRequest	GetRouteingMode	Route Point request

Device Requests

BroadWorks CTI	CSTA	Note
SetAgentStateRequest	Set Agent State	
TagDispositionCodeRequest	Escape service	
TagDispositionCodeToCallIdRequest	Escape Service	
GetCallForwardingAlwaysRequest	Get Forwarding	
ModifyCallForwardingAlwaysRequest	Set Forwarding	
GetCallForwardingNoAnswerRequest	Get Forwarding	

ModifyCallForwardingNoAnswerRequest	Set Forwarding	
GetCallForwardingBusyRequest	Get Forwarding	
ModifyCallForwardingBusyRequest	Set Forwarding	
GetHotelingGuestRequest	Escape service	
ModifyHotelingGuestRequest	Set Agent State or Escape Service	
GetHotelingHostListRequest	N/A	Internal Connector service
GetDoNotDisturbRequest	Get Do Not Disturb	
ModifyDoNotDisturbRequest	Set Do Not Disturb	

System Requests

BroadWorks CTI	CSTA	Note
AddChannelRequest	Not required	Internal Connector service
GetChannelSetRequest	Not required	Internal Connector service
UpdateChannelRequest	Not required	Internal Connector service
DeleteChannelRequest	Not required	Internal Connector service
AddEnterpriseGroupSubscriptionRequest	Not required	
AddEnterpriseSubscriptionRequest	Not required	
AddServiceProviderGroupSubscriptionRequest	Not required	
AddServiceProviderSubscriptionRequest	Not required	
AddSystemSubscriptionRequest	Not required	
AddUserSubscriptionRequest	Start Monitor	
UpdateSubscriptionRequest	Not required	Internal Connector service
DeleteSubscriptionRequest	Stop Monitor	Internal Connector service
GetSingleSubscriptionRequest	Not required	Internal Connector service
GetSubscriptionsRequest	Not required	Internal Connector service
SetApplicationControllerStateRequest	Route Register	
GetApplicationControllerStateRequest	Not requested	Internal Connector KPL service

Media Requests

BroadWorks CTI	CSTA
RoutePointPlayBusyRequest	Play Message
RoutePointPlayMOHRequest	Play Message
RoutePointPlayRingbackRequest	Play Message
RoutePointPlaySilenceRequest	Play Message, StartDataCollection
RoutePointPlayTreatmentRequest	Play Message, StartDataCollection

BroadWorks Events

Call Events

BroadWorks CTI	CSTA	Note
CallAnsweredEvent	Established	
CallBargedInEvent	Conferenced	
CallCollectingEvent	Service Initiated	With private data
CallForwardedEvent	Diverted	
CallHeldEvent	Held	
CallMonitoredEvent	Conferenced	
CallOriginatedEvent	Originated	
CallOriginatingEvent	Service Initiated	
CallParkRetrievedEvent	Retrieved	
CallPicked-UpEvent	Diverted	
CallReceivedEvent	Delivered	
CallRedirectedEvent	Diverted	
CallReleasedEvent	Connection Cleared	
CallReleasingEvent	Failed, Connection Cleared	
CallRetrievedEvent	Retrieved	
CallSubscriptionEvent	---	Event may be translated into various CSTA Events
CallTransferredEvent	Transferred	
CallUpdatedEvent	---	Depends on call topology
ConferenceHeldEvent	Held	
ConferenceReleasedEvent	Connection Cleared	
ConferenceRetrievedEvent	Retrieved	
ConferenceStartedEvent	Conferenced	Depends on call topology
ConferenceUpdatedEvent	Conferenced	

ACDCallAbandonedEvent	Connection Cleared	
ACDCallAddedEvent	Queued	
ACDCallAnsweredByAgentEvent	Diverted	
ACDCallBouncedEvent	Delivered, Diverted	Translated to Diverted event if "redirect" field is provided
ACDCallEscapedEvent	Connection Cleared	
ACDCallForwardedEvent	Diverted	
ACDCallOfferedToAgentEvent	Delivered	
ACDCallOverflowedEvent	Diverted	
ACDCallPromotedEvent	Call Information	
ACDCallReleasedEvent	Connection Cleared	
ACDCallReorderedEvent	Call Information	
ACDCallStrandedEvent	Connection Cleared	
ACDCallTransferredEvent	Diverted	
ACDCallUpdatedEvent	Transferred	
ACDHolidayPolicyAppliedEvent	Diverted	
ACDNightPolicyAppliedEvent	Diverted	
ACDSubscriptionEvent	N/A	Internal Connector functionality
RoutePointCallAbandonedEvent	Connection Cleared	Route End is send if Routing dialog is opened
RoutePointCallAddedEvent	Queued; Route Request	
RoutePointCallAnsweredByAgentEvent	Diverted; Route End	
RoutePointCallBouncedEvent	Queued; Route Request	
RoutePointCallFailedEvent	Diverted; Route End	Route End is send if Routing dialog is opened
RoutePointCallForwardedEvent	Diverted; Route End	Route End is send if Routing dialog is opened
RoutePointCallOfferedToAgentEvent	Route End	
RoutePointCallOverflowedEvent	Diverted; Route End	Route End is send if Routing dialog is opened
RoutePointCallReleasedEvent	Connection Cleared, Route End	Route End is send if Routing dialog is opened
RoutePointCallTransferredEvent	Diverted; Route End	
RoutePointCallUpdatedEvent	Transferred	
RoutePointFailedEvent	Connection Cleared; Route End	Route End is send if Routing dialog is opened
RoutePointHolidayPolicyAppliedEvent	Connection Cleared; Route End	Route End is send if Routing dialog is opened
RoutePointNightPolicyAppliedEvent	Connection Cleared; Route End	Route End is send if Routing dialog is opened
RoutePointOutgoingCallAnsweredEvent	Queued; Route Request	
RoutePointOutgoingCallOriginatedEvent	Originated; Delivered	
RoutePointRecoveredEvent	Routeing Mode	
RoutePointSubscriptionEvent	N/A	Internal Connector functionality
RoutePointWhisperStartedEvent	N/A	

Device Events

BroadWorks CTI	CSTA	Note
ACDAgentJoinUpdateEvent	Agent Logged On	
	Agent Logged Off	
AgentSubscriptionEvent	Agent [varies]	Combination of agent events to provide target agent state
AgentDispositionCodeAddedEvent	Call Information	
AgentStateEvent	Agent [varies]	Appropriate CSTA event to provide matching target Agent state.
CallForwardingAlwaysEvent	Forwarding	
CallForwardingBusyEvent	Forwarding	
CallForwardingNoAnswerEvent	Forwarding	
DoNotDisturbEvent	Do Not Disturb	
HotelingGuestEvent	Agent Logged On	Distinguished from ACDAgentJoinUpdateEvent by omission of group (ACD Queue)
	Agent Logged Off Private Event	

System Events

BroadWorks CTI	CSTA	Note
ChannelTerminatedEvent	System Status, Monotor Stop	Monitor Stop sent for all Subscriptions created over the terminated Channel
SubscriptionTerminatedEvent	Monitor Stop	

Media Events

BroadWorks CTI	CSTA
RoutePointBusyCompletedEvent	Stop
RoutePointBusyStartedEvent	TelephonyTones Generated
RoutePointMOHCompletedEvent	Stop

RoutePointMOHStartedEvent	TelephonyTones Generated
RoutePointRingbackCompletedEvent	Stop
RoutePointRingbackStartedEvent	TelephonyTones Generated
RoutePointSilenceCompletedEvent	Stop
RoutePointSilenceStartedEvent	TelephonyTones Generated
RoutePointTreatmentCompletedEvent	Stop
RoutePointTreatmentStartedEvent	TelephonyTones Generated

Redundancy Support

This section describes redundancy support for Connector and includes these sections:

- Redundancy Support Feature Overview
- BroadWorks Connector Operation

Redundancy Support Feature Overview

BroadWorks Connector operates in unison with the generic Connector T-Server in order to provide a high availability solution. The HA deployment configurations are shown below.
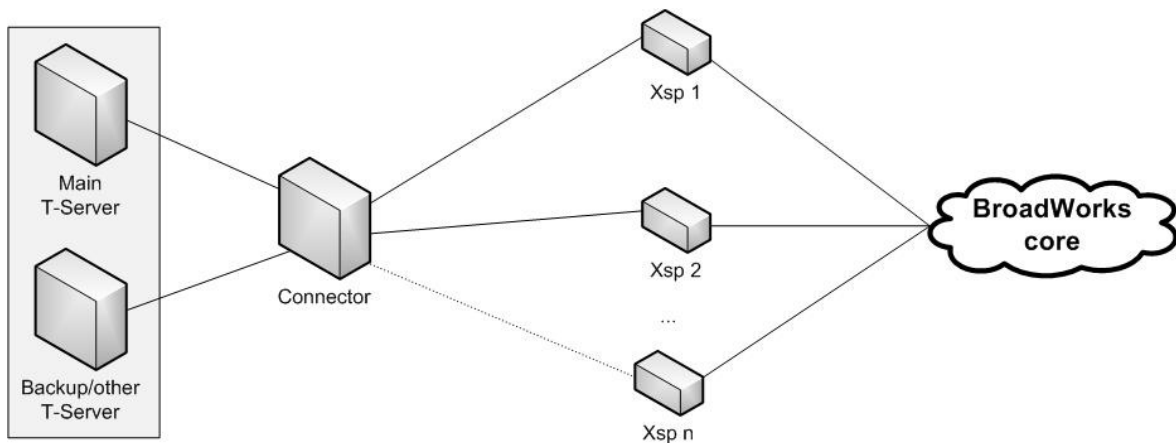
Multiple links From CSTA client to Connector

The main features of this solution are:

- Connector T-Servers runs as a standard Genesys HA pair.
- BroadWorks Connector operates independently of other Connectors, it does not synchronise information in the same manner as the T-Server HA pair.
- BroadWorks Connector maintains redundant links to the BroadWorks switch independently of the Connector T-Server.
- BroadWorks Connector is able to support multiple T-Server connections.

BroadWorks Connector Operation

BroadWorks Connector supports connections to multiple XSP servers. BroadWorks Connector uses multiple Event Channels, and each Event Channel is given equal weight. BroadWorks CTI balances the event reporting across all the Event Channels. If one of the Event Channels fails, BroadWorks CTI continues to serve the event subscription over the remaining Event Channels adjusting the load accordingly. BroadWorks Connector initiates its link recovery procedure to re-establish a failed connection.

Connector supports multiple T-Server connections. T-Servers may or may not start monitors for the same set of devices, Connector filters the events and requests for each connection against their respective start monitor requests.

Connector responds to SystemStatusRequests from T-Server indicating overall status of links, and reports a failure if all links are down.

Data Hiding in Log

This section describes data hiding in log for Connector and includes these sections:

- Data Hiding in Log Overview
- Data Hiding in Log Configuration
- Data Hiding in Log Limits and Constraints

Data Hiding in Log Overview

Feature Description

CSTA Connector provides data filtering capabilities based on Perl-Compatible Regular Expressions library. Sensitive data is defined by a set of regular expressions provisioned in application configuration though Genesys Management Framework. All data to be hidden is overwritten with an asterisk (*) symbol.

CSTA Connector supports two major modes of hiding sensitive data:

Simple: Data identified by a matching prefix is hidden up to the end of line.

Complex: If the regular expression contains one or more "capture" subexpressions, the data matching the subexpressions is hidden while the rest of the text is not. This allows partial hiding of data, such as displaying the last 4 digits of a credit card number, and preservation of syntactic elements such as parentheses and quotes.

The technical definition of the behaviour of complex patterns is the following:

   . If the regular expression positively matches, and there are no captured sub-strings, the remainder of the text line after the match is hidden.
   . If the regular expression matches and there are one or more captured sub-strings, all captured sub-strings are hidden.

Multiple regular expressions can be provided that will be arranged in ASCII order by their corresponding option name and applied sequentially. Each subsequent expression is applied to a string that could have been already modified by the preceding expression. It is thus essential that preceding regular expressions do not hide the keyword part of the succeeding expressions. It is recommended that the expressions do not overlap in their matches and that multiple sensitive data chunks are handled in a single expression.

The `non-capture` subexpressions denoted by `(?:)` is not hidden and can be used for grouping the keyword expressions. For example, the expression `User (?:PIN|account)` has no `capture` strings and thus the remainder of the string after the match is hidden. If the expression `User (PIN|account)` is used, the words `PIN` or `account` are hidden, while the following data is not, because `(PIN|account)` forms a `capture` sub-expression.

The `non-capture` and `capture` sub-expressions can be combined in one expression with the expected results. For example, the expression:

`[Aa](?:uthentication|ccess)(?: code)?: *"([^"]).{3}"` has two non-capture and one capture strings; the latter, which is the leading characters of the code enclosed between double quotes, is hidden; the last three characters of the code and the closing double quotes are displayed. (The `non-capture` part matches words `authentication` or `authorisation` with optionally capitalised initial `a` and optionally followed by the word `code`).

> 💡 **Note:** The use of optional capture strings can lead to obscure results. For example, the expression `User( name)?` which matches `User` or `User name` results in hiding the trailing string in the former case, but the result is hiding the word `name` in the latter case, because `( name)` is a capture subexpression. In this instance, a non-capture string should be used, like `User(?: name)?`. A valid example of optional capture string is a code that can come in one or two parts, like: `Code ([A-Z]{3-5} )? ([0-9]{10})`. This expression matches the word `Code` followed by a code that is composed of an optional alphanumeric prefix of 3 to 5 symbols, and a whitespace, followed by mandatory 10-digit code. Both the prefix and the digital code are masked.

Data Hiding in Log Configuration

Configuration Options

The section called `log-filter-x` is defined that hold all sensitive data definitions. The definitions comprise a set of PCREs provisioned as arbitrary options in that section. The option names will be lexicographically compared to determine the order of application of the expressions.

Changes to the contents of the section or any option take effect immediately. Please note that logs already written are not processed retrospectively; data already written remains in the log.

HA Considerations

Redundant instances of Connectors will have independent sensitive data settings that are not automatically synchronised. A generic option synchronisation mechanism through the use of application template can be used that is described in the *Framework Deployment Guide*.

Data Hiding in Log Limits and Constraints

This feature allows arbitrarily complex expressions which affect CPU ussage according to the number and the complexity of the expressions. It is recommended to test the CPU usage impact of your regular expressions before deploying the solution in production environment.

CSTA Connector Appendix A

Appendix A describes the following sections:

   . CSTA Connector CTI Connection
   . CSTA Connector Messaging
   . CSTA Connector Call Models

- CSTA Connector Device Mapping
- CSTA Connector Distribution Model
- BroadWorks Conference Model

CSTA Connector CTI Connection

Establishing Connection to CTI Link

Upon startup, CSTA Connector for BroadSoft BroadWorks opens a TCP connection to the BroadWorks XSP server. All requests (including Channel related requests for event reporting) are sent over the connection. Responses and Events are received from BroadWorks CTI interface through the same connection.

Connector supports connections to multiple XSP servers. CSTA Connector for BroadSoft BroadWorks creates one event channel per TCP connection. See the Redundancy Support section for further details.
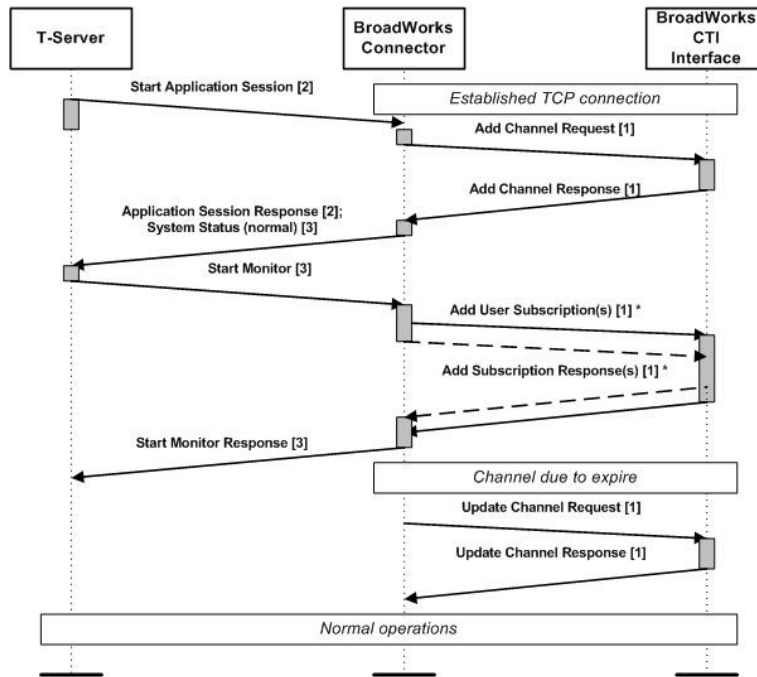
* Start monitor may invoke subscription for multiple event packages

Initialization Procedure

Failure Detection and CTI Link Recovery

BroadWorks Connector uses keep-alive functionality on the TCP connection level. In addition, Channel integrity is checked using the Get Application Controller State request.

If Connector detects a channel failure, CSTA clients are sent system status and / or monitor stop messages indicating the failed CTI link(s). Connector then restores the TCP socket after the failure and re-creates the Event channel. Resource re-subscription must be re-initiated by the CSTA client.

CSTA Connector Messaging

Requests

Connector processes incoming CSTA requests according to device types specified in the request. The result of a CSTA request invocation varies according to different types of targets.

Request Groups Requirements

BroadWorks CTI interface offers different subset of requests for different types of resources. Please see table ? and *CTI Interface Specification, v 1.6. BroadSoft* for more information on BroadWorks request applicability.

Request Response

BroadWorks Connector uses responses received from BroadWorks CTI to generate appropriate response(s) to send to CSTA clients.

Events

Event Subscription

BroadWorks Connector subscribes to specific types of notifications called `Event Packages`. Different types of event packages are required for different device types. For example, Routing Points require Route Point Queue event package subscription. Refer to *CTI Interface Specification, v 1.6. BroadSoft* for further details.

Event Processing

BroadWorks CTI events are translated into a common set of CSTA events, which are independant (generally) from the resource type. Please see Tables in section "Use of BroadWorks Functionality" for more information.

CSTA Connector Call Models

BroadWorks Connector uses the CSTA call model for reporting. BroadWorks CTI uses a call model which is close to the CSTA call model. Genesys BroadWorks Connector performs BroadWorks CTI object translation to CSTA objects.
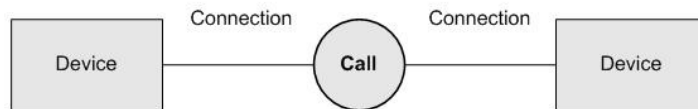
BroadWorks vs CSTA Call Model

> 💡 **Note:** The BroadWorks Conference call model does not fit the CSTA call model. See Appendix A and Limitation chapter for more details.

Device

The Subscriber ID in BroadWorks uniquely identifies an addressable telephony system user – a subscriber. Subscribers are normally assigned E.164 number. For compatibility with CSTA Device Identifier, the E.164 phone number format is used for Subscriber ID in BroadWorks CTI and CSTA. Refer to ITU E.164 Numbering Plan, http://www.itu.int/rec/T-REC-E.164/en for further details.

BroadWorks Connector translates the Public Directory Number used by BroadWorks for identifying Subscribers into a Private Directory Number used in CSTA switching and computing functions. The CSTA Device Monitoring service is traslated to a BroadWorks User Subscription on all available event packages for the specified Device type. Connector will support subscription for the following BroadWorks resources:

- User - Generally translates to a virtual or real endpoint.
- Call Center - Generally translates to a CSTA ACD device.
- Routing Point - Translates to a CSTA Routing device.

Call

A call session in BroadWorks is identified by a BroadWorks External Tracking ID. An External Tracking Id is translated into a CSTA Call ID.

All changes of an External Tracking ID will be reflected in appropriate CSTA event reporting.

Connection

A Call in the BroadWorks CTI call model is a "logical connection between a subscriber and a call session". Therefore, a "BroadWorks Call" is translated into a CSTA Connection. However, the BroadWorks Call ID is not equivalent to a CSTA Call ID because two or more parties on a call have differing BroadWorks Call IDs. The BroadWorks Call ID is really a party ID. The BroadWorks external tracking ID is equivalent to a CSTA Call ID. Due to this characteristic, the BroadWorks Call ID is mapped to a CSTA dynamic device ID element of the CSTA Connection ID.

CSTA Connector Distribution Model

Two types of call distribution are available:

- Automatic (ACD Queue)
- Host Controlled (Routing Point)

ACD and Agent Model

Agent assignment to a BroadWorks Call Centre device is provisioned in BroadWorks configuration and can not be controlled through CTI; that is, it is not possible to control through CTI which ACD Queue the agent will be taking calls from. Call will be automatically distributed to agents in state `Available`. The agent state can be changed using CTI requests. No state transition restrictions are applied by BroadWorks Connector, this is, a transition from any agent state is permissable to any state at any time.

ACD Queue Assignment Limitation

BroadWorks CTI does not provide a request to enable agents to modify their queue assignment. Agent assignment must be accomplished through BroadWorks configuration.

Agent Model

BroadWorks implements a simple agent model where all agent state changes are permitted. The following table provides a list of Broadsoft agent states along with BroadWorks Connector's mapping into the CSTA agent state model.

Broadsoft Agent States Mapping

BroadWorks agent state	CSTA agent state	Comments
Agent Sign-in	agentNotReady	This state is a temporary state while logging in.
Agent Available	agentReady	
Agent Unavailable	agentNotReady	
Agent Wrapping-up	agentWorkingAfterCall	
Agent Signed-out	agentNull	

Agent State Synchronization

BroadWorks CTI issues an `ACDAgentJoinUpdate` event whenever an agent joins or leaves a queue as well as initial synchronisation events when Connector subscribes for these events. Connector will use the information in these events to allow CSTA client's agent objects to remain synchronised with the switch status.

BroadWorks Connector will send the following CSTA Agent State event to its client whenever it receives an `ACDAgentJoinUpdate` event from the BroadWorks Xsp server.

CSTA AgentState Event Sent to Clients

CSTA	BroadWorks CTI
AgentState event	ACDAgentJoinUpdate event
- device: acd subscriber id - agent ID: subscriber id - logged on state: true if signed in - acd group: acd subscriber id - agent state: agent_state	- subscriberId: agent subscriber id - ACDAgentJoinInfo: - ACDUserId: acd subscriber id - agentACDState: agent_state

Routing

BroadWorks Connector supports the CSTA Routing Profile. A BroadWorks Routing Point subscriber is used as Routing Device.

> **Note:** Only Routing devices support Make Predictive Call requests.
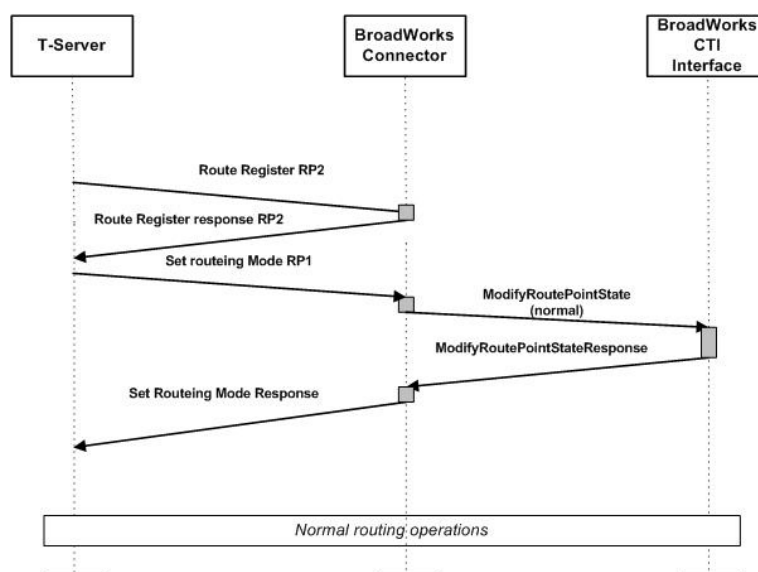
Routing Registration

Treatments

The CSTA request Play Message is mapped into a BroadWorks Treatment request according to the table below.

BroadWorks Treatment

BroadWorks request	Parameters	CSTA Play Message parameter
		Message ID = 0
RoutePointPlayBusyRequest	duration	Duration
	busyPattern	Extension busyPattern
		Message ID = 1
RoutePointPlayMOHRequest	duration	Duration
	digitMap	Extension collectDigits
		Message ID = 2
RoutePointPlayRingbackRequest	duration	Duration
	digitMap	Extension collectDigits
		Message ID = 3
RoutePointPlaySilenceRequest	duration	Duration
	digitMap	Extension collectDigits
		Message ID = 4
	duration	Duration
RoutePointPlayTreatmentRequest	digitMap	Extension collectDigits
	audioUrlList	Extension audioUrl
	videoUrlList	Extension videoUrl
NoMatch	CauseInvalidNumberFormat	
Timeout	CauseTimeout	
EOF	CauseTerminationCharReceived	
Stopped-OutOfQueue	CauseSwitchTerminated	
Stopped-NewPlayCollect	CauseNextMessage	
Stopped-OfferedWithRingback	CauseDistributed	
Error	CauseReserved	There is no specific error cause in CSTA

The CSTA message PlayEvent is generated upon receiving appropriate Treatment started BroadWorks message.

CSTA message PlayEvent

BroadWorks events	Parameters CSTA Play Event parameter
RoutePointBusyStartedEvent	Message ID = 0
RoutePointMOHStartedEvent	Message ID = 1
RoutePointRingbackStartedEvent	Message ID = 2
RoutePointSilenceStartedEvent	Message ID = 3
RoutePointTreatmentStartedEvent	Message ID = 4

CSTA message StopEvent is generated upon receiving appropriate Treatment completed BroadWorks message.

CSTA message StopEvent

BroadWorks events	Parameters	CSTA Stop Event parameter
RoutePointBusyCompletedEvent	completionReason errorReason digits	Message ID = 0 Cause N/A (presented as string in BroadWorks) Extension "collectDigits"
RoutePointMOHCompletedEvent	completionReason errorReason digits	Message ID = 1 Cause N/A (presented as string in BroadWorks) Extension "collectDigits"
RoutePointRingbackCompletedEvent	completionReason errorReason digits	Message ID = 2 Cause N/A (presented as string in BroadWorks) Extension "collectDigits"
RoutePointSilenceCompletedEvent	completionReason errorReason digits	Message ID = 3 Cause N/A (presented as string in BroadWorks) Extension "collectDigits"
RoutePointTreatmentCompletedEvent	completionReason errorReason digits	Message ID = 4 Cause N/A (presented as string in BroadWorks) Extension "collectDigits"

Cause translation for StopEvent

BroadWorks event cause	CSTA event cause	Comment
Match	CauseCharacterCountReached	
NoMatch	CauseInvalidNumberFormat	
Timeout	CauseTimeout	
EOF	CauseTerminationCharReceived	
Stopped-OutOfQueue	CauseSwitchTerminated	
Stopped-NewPlayCollect	CauseNextMessage	
Stopped-OfferedWithRingback	CauseDistributed	
Error	CauseReserved	There is no specific error cause in CSTA

BroadWorks Conference Model

In BroadWorks conference is logicaly established by Conference controller. BroadWorks CTI messaging does not include any messages that inform other conference participants that they are included into the conference. All call sessions remains the same before and after conference establishing.

In the CSTA model all conference members (including conference controller) are connected to the same CSTA call.

BroadWorks
Conference Model

| Subscriber 1 | Call 1 | Call Session 1 | Call 2 | Subscriber 2 |
| Subscriber 1 | Call 3 | Call Session 2 | Call 4 | Subscriber 3 |

Controller

CSTA Conference
Model

| Device 1 | Connection | Call | Connection | Device 2 |
| | | | Connection | Device 3 |
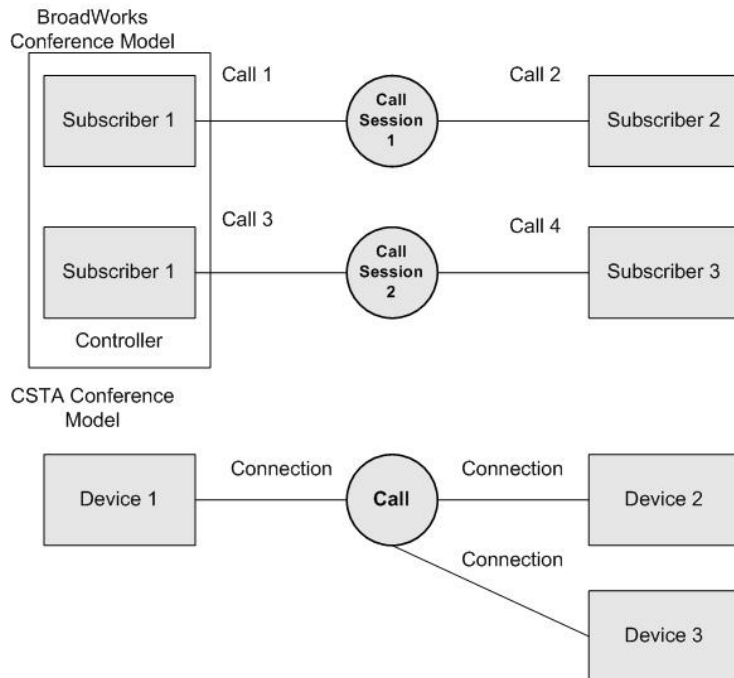
BroadWorks vs CSTA conference model

In conference scenario BroadWorks Connector will use BroadWorks Events for conference controller to link multiple CallSessions into the single CSTA Call. CSTA conference model in general does not apply additional restrictions on conference controller device. Due to BroadWorks specific way of reporting conference calls, the following restrictions will be applied on CSTA level to the conference controller device(Device 1 in the Figure above):

- Conference controller can not be deleted from conference without releasing whole conference
- Consultation call from conference controller is supported, however Reconnect Call and Transfer Call CSTA services are not available for conference controller.

CSTA Connector Appendix B

Interoperability With T-Server For Genesys Connector

T-Server for Genesys Connector is designed to work with BroadWorks Connector. Here is set of supported functionality on T-Server for Genesys Connector. Data is presented in T-Library vew.

Registration Services

T-Library	CSTA	BroadWorks CTI	T-Server	Note
TRegisterAddress	Monitor Start	AddUserSubscriptionRequest	Y	Multiple subscriptions may be created for single subscriber
TRegisterAll			Y	Internal service, deprecated
TUnRegisterAddress	Monitor Stop	DeleteUserSubscriptionRequest	Y	Multiple subscriptions may be deleted for single subscriber
TSetInputMask			Y	Internal service

Call Control Services

T-Library	CSTA	BroadWorks CTI	T-Server	Note
TAlternateCall	Alternate Call	TalkRequest	Y	
TAnswerCall	Answer Call	TalkRequest	Y	
TAttachUserData				Internal service
TClearCall	Clear Call	ConferenceReleaseRequest	Y	Applicable for Conference only
TCompleteConference	Conference Call	ConferenceStartRequest	Y	
		ConferenceAddParticipantRequest		Applicable for Conference controller only (see Appendix A)
TCompleteTransfer	Transfer Call	ConsultativeTransferRequest	Y	
TDeleteAllUserData			Y	Internal service
TDeleteFromConference	Connection Cleared	ReleaseRequest	Y	Conference controller can not be deleted from confrence (see Appendix A)

TDeleteUserData			Y	Internal service
THoldCall	Hold Call	HoldRequest	Y	
		ConferenceHoldRequest		Applicable for Conference controller only (see Appendix A)
TInitiateConference	Consultation Call	DialRequest	Y	
TInitiateTransfer	Consultation Call	DialRequest	Y	
TListenDisconnect	Speaker Mute	ConferenceDeafRequest	Y	
TListenReconnect	Speaker Mute	ConferenceUnDeafRequest	Y	
TMakeCall	Make Call	DialRequest	Y	
TMakePredictiveCall	Make Predictive Call	RoutePointOutgoingDialRequest	Y	Available from BroadWorks Route Point only
TMergeCalls				
--MergeForTransfer			N	
--MergeForConference			N	
TMuteTransfer	Consultation Call	MuteTransferRequest	Y	Private extension "MuteTransfer" in CSTA request
TQueryAddress				
--AddressInfo			Y	Internal service
AddressStatus				
--AddressInfo			Y	Internal service
MessageWaitingStatus				
--AddressInfoAssociationStatus			N	Internal service
--AddressInfo			Y	Internal service
CallForwardingStatus				
--AddressInfo			Y	Internal service
AgentStatus				
--AddressInfo			Y	Internal service
NumberOfAgentsInQueue				
--AddressInfo			Y	Internal service
NumberOfAvailableAgentsInQueue				
--AddressInfo			Y	Internal service
NumberOfCallsInQueue				
--AddressInfo			Y	Internal service
AddressType				
--AddressInfo			Y	Internal service
CallsQuery				
--AddressInfo			N	
SendAllCallsStatus				
--AddressInfo			Y	Internal service
QueueLoginAudit				
--AddressInfo			N	
NumberOfIdleTrunks				
--AddressInfo			N	
NumberOfTrunksInUse,				
--AddressInfo			N	
DatabaseValue				
--AddressInfo			Y	Internal service
DNStatus				
--AddressInfo			Y	Internal service
QueueStatus				
TQueryCall				
--CallInfoPartiesQuery	Snapshot Call		Y	Internal service
--CallInfoStatusQuery			Y	Internal service
TReconnectCall	Reconnect Call	ReconnectRequest	Y	
TRedirectCall	Deflect Call	BlindTransferRequest	Y	
TReleaseCall	Connection Cleared	ReleaseRequest	Y	
TRetrieveCall	RetrieveCall	TalkRequest	Y	
		ConferenceRetrieveRequest		Applicable for Conference controller only (see Appendix A)
TSendDTMF	Generate Digits	TransmitDTMFRequest	Y	
TSetCallAttributes			Y	Internal service
TSingleStepConference	Single Step Conference	MonitorCallRequest	Y	
TSingleStepTransfer	Single Step Transfer	BlindTransferRequest	Y	
TUpdateUserData			Y	Internal service

T-Library	CSTA	BroadWorks CTI	T-Server
TMonitorNextCall	MakeConnection	MonitorNextCallRequest	Y
TCancelMonitoring	Clear Connection	ReleaseRequest	Y

Routing and Treatment Services

T-Library	CSTA	BroadWorks CTI	T-Server	Note
TRouteCall				
--RouteTypeUnknown	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	
--RouteTypeDefault	Route End service	RoutePointFailCall	Y	
--RouteTypeLabel	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	Processed as RouteType unknown
--RouteTypeOverwriteDNIS	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	
--RouteTypeDDD	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	Processed as RouteType unknown
--RouteTypeIDDD	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	Processed as RouteType unknown
--RouteTypeDirect	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	Processed as RouteType unknown
--RouteTypeReject	Route End	RoutePointReleaseCallRequest	Y	
--RouteTypeAnnouncement	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	Processed as RouteType unknown
--RouteTypePostFeature	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	Processed as RouteType unknown
--RouteTypeDirectAgent	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	Processed as RouteType unknown
--RouteTypePriority	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	Processed as RouteType unknown
--RouteTypeDirectPriority	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	Processed as RouteType unknown
--RouteTypeAgentID	Route Select service	RoutePointDistributeCallRequest, RoutePointBlindTransferRequest	Y	Processed as RouteType unknown
--RouteTypeCallDisconnect	Route Reject	RoutePointReleaseCallRequest	Y	
TGiveMusicTreatment	Play Message	PlayTreatmentRequest	Y	
TGiveSilenceTreatment	GenerateTelephonyTones	PlaySilenceRequest	Y	
TGiveRingBackTreatment	GenerateTelephonyTones	PlayRingbackRequest	Y	
TApplyTreatment				
--TreatmentUnknown			N	
--TreatmentIVR			N	
--TreatmentMusic	Play Message	PlayMusicOnHoldRequest	Y	
--TreatmentRingBack	GenerateTelephonyTones	PlayRingbackRequest	Y	
--TreatmentSilence	GenerateTelephonyTones	PlaySilenceRequest	Y	
--TreatmentBusy	GenerateTelephonyTones	PlayBusyRequest	Y	
--TreatmentCollectDigits	Start Data Collection	PlaySilenceRequest	Y	Collect digit pattern is added to request
--Treatment PlayAnnouncement	GenerateTelephonyTones	PlayTreatmentRequest	Y	
--Treatment PlayAnnouncementAndDigits	Play Message	PlayTreatmentRequest	Y	
--Treatment RecordUserAnnouncement	Start Data Collection		N	
--Treatment DeleteUserAnnouncement			N	
--TreatmentCancelCall	Route End	ReleaseCallRequest	Y	
--TreatmentPlayApplication			N	
--TreatmentSetDefaultRoute			N	
--TreatmentTextToSpeech			N	
--Treatment TextToSpeechAndDigits			N	
--TreatmentFastBusy			N	
--TreatmentRAN			N	
TReserveAgent			Y	Internal service

Set feature Services

T-Library	CSTA	BroadWorks CTI	T-Server	Note
TSetDNDOn	Set Do Not Disturb	ModifyDoNotDisturb	Y	
TSetDNDOff	Set Do Not Disturb	ModifyDoNotDisturb	Y	
TCallSetForwardOn				
--ForwardModeNone	Set Forwarding	ModifyCallForwardingAlways	Y	Processed as unconditional
--ForwardMode Unconditional	Set Forwarding	ModifyCallForwardingAlways	Y	
--ForwardMode OnBusy	Set Forwarding	ModifyCallForwardingBusy	Y	
--ForwardMode OnNoAnswer,	Set Forwarding	ModifyCallForwardingNoAnswer	Y	
--ForwardMode OnBusyAndNoAnswer,			N	
--ForwardMode SendAllCalls			N	
TCallCancelForward				
--ForwardModeNone	Set Forwarding	ModifyCallForwardingAlways		Processed as unconditional
--ForwardMode Unconditional	Set Forwarding	ModifyCallForwardingAlways	Y	
--ForwardModeOnBusy	Set Forwarding	ModifyCallForwardingBusy	Y	
--ForwardMode OnNoAnswer	Set Forwarding	ModifyCallForwardingNoAnswer	Y	
--ForwardMode OnBusyAndNoAnswer			N	
--ForwardMode SendAllCalls			N	
TAgentLogin				
-- AgentWorkModeUnknown	Set Agent State	SetAgentStateRequest(Sign-In), ModifyHotelingGuest	Y	Full support for emulated agents only, used for hoteling functionality with guest subscribers
--AgentManualIn	Set Agent State	SetAgentStateRequest(Sign-In), ModifyHotelingGuest	Y	
--AgentAutoIn	Set Agent State	SetAgentStateRequest(Sign-In), ModifyHotelingGuest	Y	
--AgentAfterCallWork			N	
--AgentAuxWork			N	
--AgentNoCallDisconnect			N	
TAgentLogout	Set Agent State	SetAgentStateRequest(Sign-Out), ModifyHotelingGuest	Y	Full support for emulated agents only, used for hoteling functionality with guest subscribers
TAgentSetReady	Set Agent State	SetAgentStateRequest(Available)	Y	
TAgentSetNotReady				
-- AgentWorkModeUnknown,	Set Agent State	SetAgentStateRequest (Unavailable)	Y	
--AgentManualIn	Set Agent State	SetAgentStateRequest (Unavailable)	Y	
--AgentAutoIn	Set Agent State	SetAgentStateRequest (Unavailable)	Y	
--AgentAfterCallWork	Set Agent State	SetAgentStateRequest(Wrap-Up)	Y	
--AgentAuxWork	Set Agent State	SetAgentStateRequest (Unavailable)	Y	
--AgentNoCallDisconnect			N	
TAgentSetIdleReason			N	

Capability Exchange Services

T-Library	CSTA	BroadWorks CTI	T-Server	Note
TQueryServer			Y	Internal service
TQuesryLocation			Y	Internal service
TSwitchQuery			N	

Voice Unit Services

T-Library	CSTA BroadWorks CTI T-Server	Note
T Play Voice File	N	
T Login Mail Box	N	
T Logout Mail Box	N	
T Open Voice File	N	
T Close Voice File	N	
T Collect Digits	N	

Private and Special Services

T-Library	CSTA BroadWorks CTI T-Server	Note
T Private Service	Y	Reference to supported Private Services to be provided
TGetAccessNumber	Y	Internal service
TCancelReqGetAccessNumber	Y	Internal service
TReserveAgentAndGetAccessNumber	Y	Internal service
TTransactionMonitoring	Y	Internal service
TSendUserEvent	Y	Internal service
TSendEvent	Y	Internal service
TSendEventEx	Y	Internal service

Supported Events

T-Library	CSTA	BroadWorks CTI	T-Server	Note
EventAbandoned	Connection Cleared	CallReleased, ACDCallAbandoned, RoutePointCallAbandoned	Y	
EventAddressInfo			Y	Internal T-Server event
EventAgentIdleReasonSet			N	
EventAgent Login				
--AgentWorkModeUnknown,	Agent Logged On	AgentState	Y	
--AgentManualIn	Agent Logged On	AgentState	Y	
--AgentAutoIn	Agent Logged On	AgentState	Y	
--AgentAfterCallWork			N	
--AgentAuxWork			N	
--AgentNoCallDisconnect			N	
EventAgentLogout	Agent Logged Off	AgentState	Y	
EventAgentNotReady				
--AgentWorkModeUnknown,	Agent Not Ready	AgentState	Y	
--AgentManualIn	Agent Not Ready	AgentState	Y	
--AgentAutoIn	Agent Not Ready	AgentState	Y	
--AgentAfterCallWork	Agent Working After Call	AgentState	Y	
--AgentAuxWork	Agent Not Ready	AgentState	Y	
--AgentNoCallDisconnect			N	
EventAgentReady		AgentState	Y	
EventAttachedData Changed			Y	Internal T-Server Event
EventDestinationBusy	Failed	CallReleasingEvent	Y	
EventDialing	Originated, Delivered	CallOriginated	Y	
EventDigitsCollected	Stop Event (with collectDigits extension)	RoutePointTreatmentCompleted, RoutePointMOHCompleted, RoutePointRingbackCompleted, RoutePointBusyCompleted, RoutePointSilenceCompleted	Y	Distributed when collected data is available
EventDiverted	Diverted	RoutePointCallForwarded, RoutePointCallFailed, RoutePointCallAnsweredByAgent., ACDCallForwarded, ACDCallAnsweredByAgent, ACDCallBounced (when "redirect" attribute present)	Y	
EventDNDOff	Do Not Disturb	DoNotDisturb	Y	
EventDNDOn	Do Not Disturb	DoNotDisturb	Y	
EventDTMFSent	Digits Generated	Response on TransmitDTMFRequest	Y	Response on Request
EventError			Y	Negative response on request

EventEstablished	Established	CallAnswered	Y	
EventForwardCancel	Forwarding	CallForwardingAlways, CallForwardingNoAnswer, CallForwardingBusy	Y	
EventForwardSet	Forwarding	CallForwardingAlways, CallForwardingNoAnswer, CallForwardingBusy	Y	
EventHeld	Held	CallHeld, ConferenceHeld	Y	
EventHardwareError			N	
EventLinkConnected			Y	Internal T-Server event
EventLinkDisconnected			Y	Internal T-Server event
EventMailBoxLogin			N	
EventMailBoxLogout			N	
EventMessageWaitingOff			N	
EventMessageWaitingOn			N	
EventNetworkReached	NetworkReached	CallUpdated	Y	
EventOffHook	ServiceInitiated	CallOriginating	Y	
EventOnHook	ConnectionCleared	CallReleased	Y	
EventPartyAdded	Conferenced	ConferenceStarted	Y	
EventPartyChanged	Transferred, Conferenced	CallTransferred	Y	
EventPartyDeleted	ConnectionCleared	CallReleased	Y	
EventQueued	Queued, Delivered	ACDCallAdded, RoutePointCallAdded	Y	
EventRegistered	Response on Monitor Start Request	Initial Subscription Event	Y	Internal T-Server event for subsequent registartions
EventRegisteredAll			Y	Internal T-Server Event
EventReleased	ConnectionCleared	CallReleased		
EventRemoteConnectionFailed			Y	Internal T-Server Event
EventRemoteConnectionSuccess			Y	Internal T-Server Event
Event Retrieved	Retrieved	CallRetrieved, ConferenceRetrieved	Y	
Event Ringing	Delivered	CallReceived	Y	
Event Route Request		RoutePointCallAdded	Y	
Event Route Used		RoutePointCallOfferedToAgent, RoutePointCallAnsweredByAgent	Y	
Event Server Connected			Y	Internal T-Server Event
Event Server Disconnected			Y	Internal T-Server Event
Event Server Info			Y	Internal T-Server Event
Event Unregistered		SubscriptionTerminated	Y	
Event Unregistered All			Y	Internal T-Server Event
Event User Event			Y	Internal T-Server Event
Event Voice File Closed			N	
Event Voice File End Play			N	
Event Voice File Opened			N	
EventResourceAllocated			N	
EventResourceFreed			N	
EventListenDisconnected		ConferenceCallMadeDeaf	Y	
EventListenReconnected		ConferenceCallMadeUndeaf	Y	
EventPartyInfo			Y	Internal T-Server Event
EventCallInfoChanged			Y	Internal T-Server Event
EventTreatmentApplied		RoutePointTreatmentStarted, RoutePointMOHStarted, RoutePointRingbackStarted, RoutePointBusyStarted, RoutePointSilenceStarted	Y	
EventTreatmentNotApplied		Error Response	Y	
EventTreatmentEnd		RoutePointTreatmentCompleted, RoutePointMOHCompleted, RoutePointRingbackCompleted, RoutePointBusyCompleted, RoutePointSilenceCompleted	Y	
EventTreatmentRequired			N	
EventSwitchInfo			N	

Event DN Out Of Service	TBD
Event DN Back In Service	TBD
Event Private Info	Y

Related Documentation Resources

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

CSTA Connector for BroadSoft BroadWorks

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

Management Framework

Consult these additional resources as necessary:

- *The Framework 8.0 Deployment Guide,* which will help you configure, install, start, and stop Framework components.
- *The Framework 8.0 Configuration Options Reference Manual,* which will provide you with descriptions of configuration options for other Framework components.
- *The Framework 8.0 Configuration Manager Help,* which will help you use Configuration Manager.

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.
- 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 8.0 .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.
- 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

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 ConventionsThis document uses certain stylistic and typographical conventions"introduced here"that serve as shorthands for particular kinds of information.

Document Version Number

This document uses certain stylistic and typographical conventions—introduced here—that serve as shorthands for particular kinds of information.

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

The following table describes and illustrates the type conventions that are used in this document.

Type Style

Type Style	Used For	Examples
Italic	Document titles	Please consult the *Genesys Migration Guide* for more

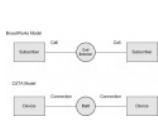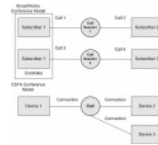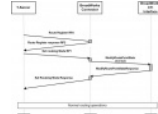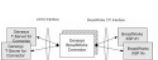|		
	• Emphasis • Definitions of (or first references to) unfamiliar terms • Mathematical variables	information.Do *not* use this value for this option.A *customary and usual* practice is one that is widely accepted and used within a particular industry or profession.The formula, $x + 1 = 7$ where x stands for . . .
	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).	
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.	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.
	• 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.	
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.	`smcp_server -host <confighost>`
	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.	

Subcategories

This category has only the following subcategory.

C

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