Cisco ICM Software ACD Supplement for Aspect CallCenter

(Aspect Event Link PIM)

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Preface

Purpose

This document contains the specific information you need to maintain an Aspect Peripheral Gateway (PG) in a Cisco Intelligent Contact Management (ICM) environment. It is intended to be used as the Aspect-specific companion to the Cisco ICM software documentation set.

While other ICM documents (for example, the *ICM Configuration Guide for Cisco ICM Enterprise Edition*, and the *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*) cover general topics such as configuring an overall ICM system and writing scripts to route contact center requests, the *ACD Supplement for Aspect* provides specific information on configuring an Aspect PG and making any necessary adjustments to the Aspect ACD configuration.

Audience

This document is intended for ICM system managers. The reader should understand ICM functions as described in the *ICM Installation Guide for Cisco ICM Hosted Edition, ICM Configuration Guide for Cisco ICM Enterprise Edition*, and *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*. The reader should also have specific knowledge of the Aspect CallCenter ACD.

Organization

Chapter 1, “Overview”

Provides an overview of ACD interface and hardware and software requirements.

Chapter 2, “ACD Configuration”

Describes items in the Aspect configuration that must be checked to ensure compatibility with the ICM software.

Chapter 3, “ICM Software Configuration”

Describes the relationships between the Aspect ACD objects and the ICM database objects. This chapter also describes Aspect-specific settings that must be confirmed in the ICM configuration.

Chapter 4, “Post-Routing”

Describes the features of ICM Post-Routing available with the Aspect PG.

Appendix A, “Outstanding Event Link Issues”

Highlights several outstanding issues with the new version of the Aspect Event Link provided in CallCenter Release 6.0.

Typographic Conventions

This manual uses the following conventions:

- Boldface type is used for emphasis; for example:

  Real-time information **is not** stored in the central database.

- Italic type indicates one of the following:
  - A newly introduced term; for example:

    A *skill group* is a collection of agents who share similar skills.

  - A generic syntax item that you must replace with a specific value; for example:

    IF (*condition, true-value, false-value*)

  - A title of a publication; for example:

    For more information see the *Database Schema Handbook for Cisco ICM/IPCC Enterprise & Hosted Editions.*

- Sans serif type with small caps is used to represent keys on your keyboard; for example:

  Press the SHIFT key to select a range of items.

- An arrow (→) indicates an item from a pull-down menu. For example, the Save command from the File menu is referenced as File→Save.

Other Publications

For more information on Cisco ICM software, see the following documents:

- *ICM Administration Guide for Cisco ICM Enterprise Edition*
- *ICM Installation Guide for Cisco ICM Enterprise Edition*
- *ICM Configuration Guide for Cisco ICM Enterprise Edition*
- *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*

For information on Cisco Network Applications Manager (NAM), see the following documents:

- *ICM Features and Configuration Guide for Cisco ICM Hosted Edition.*

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1 408 525-6532

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http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html
The link on this page has the current PGP key ID in use.
If you do not have or use PGP, contact PSIRT at the aforementioned e-mail addresses or phone numbers before sending any sensitive material to find other means of encrypting the data.

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For S1 or S2 service requests, or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

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1. Overview

The ICM Peripheral Gateway interacts with two Aspect-provided software packages on the Aspect CallCenter ACD: the Application Bridge Event Link Interface and the Real-Time Bridge. The PG uses the *Application Bridge Event Link interface* to monitor agent status and call states. The Event Link interface consists of a set of unsolicited messages that indicate transitions in agent and call state.

The Peripheral Gateway uses the Aspect *Real-Time Bridge* to access real-time agent group, trunk group, and application statistics. The PG requires this data from the Aspect ACD for use in call routing and real-time reporting.

This chapter describes the options for connecting the Aspect CallCenter ACD to the Cisco ICM PG. This chapter also lists the hardware and software required for the Aspect CallCenter to work with the ICM software.

1.1. ACD Interface Requirements

A basic, simplexed Aspect PG has the following interface requirements:

- One Real-Time Bridge Client.
- Application Bridge Software (TCP/IP version).
- An additional Application Bridge Data Link required for redundant PG installations.
- If more than one application is utilizing the Application Bridge, the Cisco Application Bridge Server software is required.

1.1.1. General Network Requirements

The Aspect ACD is connected to the Peripheral Gateway via a single Ethernet thin-net cable. The termination points for the thin-net cable can be a HUB port on the ICM visible LAN or directly to the Aspect PG (50ohm terminator required). The exact network requirements depend on the customer's needs for access to additional applications on the Aspect CallCenter. The PG connects to the ICM visible LAN via an Ethernet cable. Figure 1 shows the Aspect CallCenter-PG interface in a duplexed PG environment.

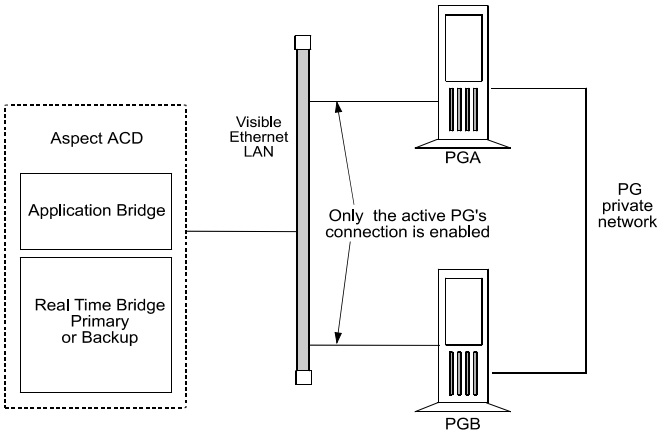

Figure 1: Aspect PG Interface (Duplexed PGs)

1.1.2. Network Addresses

On the Aspect ACD, you must configure both Off-Board Processor (OBP) and Application Bridge (AB) TCP/IP network addresses for the PG. These addresses provide the PG with access to the Real-Time Bridge and Application Bridge, respectively. The duplexed PG configuration for the Aspect ACD, which is shown in Figure 1, requires an additional PG, another Ethernet connection to the visible LAN, and another set of addresses (OBP and AB) on the ACD. In duplexed PG configurations, both PGs must use the same OBP and AB network addresses on the ACD. Only one side of the duplexed PG pair is allowed to have an active Application Bridge and Real-Time Bridge connection.

1.1.3. Application Bridge

The PG monitors agent and call activity on the Aspect ACD through the Application Bridge Event Link Interfaces. This connection also supports ICM Post-*Routing* capabilities.

Note: The ICM software supports only the TCP/IP version of the Application Bridge.

The Application Bridge Event Link Interface is an Aspect software package that provides a set of unsolicited messages from the Application Bridge that indicate changes in agent can call state. The Application Bridge must be installed and enabled in order for the ICM software to run.

Note: The Aspect Application Bridge Interface does not support device status query, and therefore call survivability does not exist at the ICM during PIM failures.

1.1.4. Real-Time Bridge

The Real-time Bridge software option must be installed and enabled in order for the ICM software to run. The Aspect Real-Time Bridge is an Aspect software package that provides access to miscellaneous aggregated data on the Aspect ACD regarding calls and agents. The PG retrieves data from the Real-Time Bridge through Aspect-proprietary, SQL-like queries. The PG receives responses to its queries every three seconds, which is the minimum refresh rate supported by Aspect. The data retrieved through the Real-Time Bridge is used to support ICM call routing and real-time reporting.

1.1.5. Optional Application Bridge Server

The Aspect Application Bridge provides a Call Disconnect Message (CDM) or Call Transfer Message (CTM) *only* to the last Application Bridge data link that handled the call. This may cause other applications that are monitoring the call to miss a CDM or CTM. The loss of a CDM or CTM may leave call states hanging until certain recovery checks are enabled.

To avoid the loss of CDM and CTM messages, Cisco provides the *Application Bridge Server (ABS)* option. The Cisco Application Bridge Server ensures that all applications that are tracking a call receive a CDM or CTM for disconnected or transferred calls.

An example in which the ABS software is required is in a situation where an application is informed of a call on one data link and the Aspect CallCenter ACD performs an ICM post-route request to the PG over another data link. Without the ABS, the application that was originally monitoring the call would miss a Call Transfer Message or Call Disconnect Message.

Note: Cisco PGs that use the Application Bridge Event Link interface rely on event messages from the Application Bridge. They do not use Call Disconnect and Call Transfer messages. In most cases, these PGs do not require the ABS option.

Consult with your Cisco ICM project manager to determine if your specific ICM software application requires the ABS software.

See also: For more information on the Application Bridge Server software, see Chapter 3, "ICM Configuration."

1.1.6. Multiple ACDs

A simplexed or duplexed PG is capable of connecting to up to five Aspect ACDs simultaneously. If you want to connect multiple ACDs to a single PG, you must ensure that the data communications link between the PG and the ICM Central Controller has the necessary bandwidth. In addition, to handle multiple ACDs you may require a high-end PG platform with more processing capability and memory.

1.1.7. Multiple PGs

Aspect ACD allows connections from multiple PGs. However, while using such a configuration, the resources (like Agents, Applications, CCTs, dial plans, Trunk, Trunk Groups and any other resources) used by each PG should be maintained as separate configurations.

Although these configuration guidelines are followed, below are some of the known limitations and risks in using such systems.

- All the call and agent events for any PG will be sent by Aspect to all the other PGs. Problems related to reporting of calls for other PGs may exist.
- When such configurations are servicing two different customers, the call statistics and agent statistics may be shared across customers.

Note: Please contact the ACD vendor for ACD related issues or limitations on connecting multiple PGs to a single ACD.

1.1.8. Remote PG Configuration

The Aspect Event Link PG supports a remote TCP/IP connection to the ACD as long as enough network bandwidth is provided. For ACDs that will implement Post-*Routing*, a three-second response time is required.

1.2. Hardware and Software Requirements

In order to work with the ICM software, the Aspect CallCenter ACD must be configured with the hardware and software listed in Table 1.

Table 1: Aspect CallCenter System Requirements

Releases Supported	For specific release information for Aspect, see the *Cisco ICM Software Supported Switches (ACDs)* document. This document can be found on Cisco Connection On-line (CCO).
Features Required	One Real Time Bridge client for the PG.
	Application Bridge software (TCP/IP version) with the Event Link interface option.
	An additional Application Bridge data link in a duplexed PG configuration.
	Event monitoring must be enabled on the Application Bridge.
Optional	Application Bridge Server software may be required if a CallCenter CTI application affects ICM monitoring of call events. (See "Optional Application Bridge Server" for more information.)

(continued)

Performance	Real Time Bridge minimum refresh rate: 3 seconds.
ACD Processor Requirements	68040, 33 Mhz or faster, 32 MB RAM Administrative Processor
	Administrative Processor must be a MVE167 class processor board.[1]

1.2.1. Supported ICM Software Features

The Aspect CallCenter ACD supports the following ICM software features:

- Pre-Routing
- Post-Routing
- Enterprise CTI (includes third-party call control)[2]
- Agent reporting
- Duplexed PG implementation
- ICM Web Option

[1] The faster class processor board is required because of the additional load the ICM software places on the Aspect CallCenter ACD.

[2] For third-party call control, the Aspect CallCenter ACD must be running the Application Bridge Event Link interface.

1.2.2. Multiple Application Support

Multiple applications applying treatment to a call may require the ICM Application Bridge Server to distribute the Call Disconnect and Call Transfer Messages (CDM/CTM). The Application Bridge Server allows multiple applications to share the Aspect Application Bridge.

See also: For more information, see "Optional Application Bridge Server," earlier in this chapter.

1.2.3. ACD Restrictions

The Aspect ACD limits agents to one skill group assignment per agent.

2. ACD Configuration

Some configuration settings on the Aspect CallCenter ACD must be changed to ensure proper operation with the ICM software. For example, the Aspect CallCenter Call Control Tables (CCTs) must be modified to include SEND DATA steps to notify the ICM software of call state transitions. In addition, certain elements must be set properly in the Aspect Data Interlink Configuration Table.

This chapter describes these settings. It also provides guidelines that will help you maintain your Aspect and ICM configurations.

2.1. Configuring the Aspect CallCenter

To best understand the configuration of the Aspect CallCenter switch, read the Aspect documentation shipped with your switch. The information provided in this document is meant to supplement, but not replace the Aspect documentation. The limited information in this document is provided to help you configure the switch to work with Media Blender.

The following tasks are described:

- Setting up the Data Interlink
- Updating the system hosts file
- Setting up classes of service
- Setting up agent groups
- Setting up agents
- Setting up phantom agents
- Setting up call routing

2.1.1. Setting up the Data Interlink

Complete the following steps to set up the data link from the Aspect CallCenter to Media Blender:

1. From a desktop running the Aspect Management Suite, select **Start > Aspect Management Suite > Hardware Administrator**.
2. From the Hardware Administrator menu, select **Resources > Data Interlinks**.

   The Data Interlinks dialog box appears:

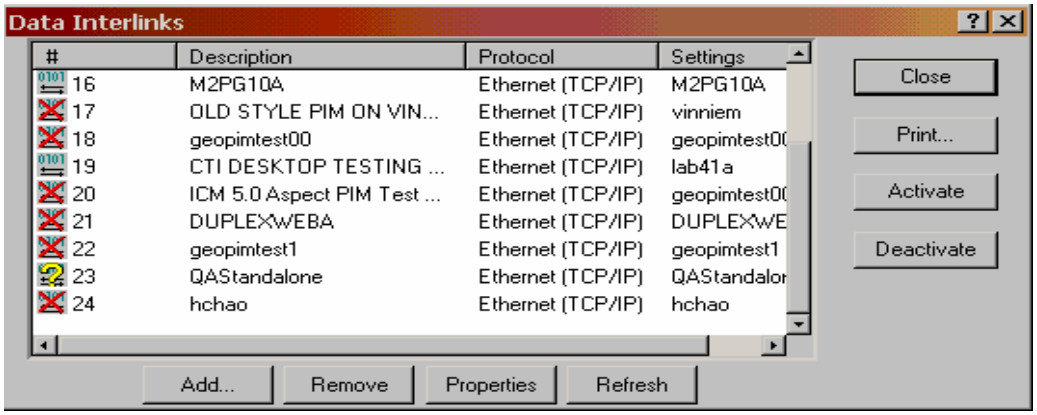

Figure 2: Data Interlinks Dialog Box

3. Click **Add**. The New Data Interlinks Wizard appears and guides you through the process of setting up the link.
4. On the first screen:
   - Select the radio button for **TCP/IP** (Ethernet).
   - Click **Next.**
5. On the next screen:
   - Add a name for the *Media Blender link* (i.e., CMB1).
   - Select **Version 4**.
   - Accept the default (**None**) for the *Backup link*.
   - Click **Next**

6. On the third screen:
   - Accept the *Port* default (**TCP/IP**).
   - Enter **CallCenter** in the *CallCenter System* field.
   - Enter **CMB1** in the *Data System* field.
   - Click **Next**.
7. On the fourth screen:
   - For *Message Length*, select the **Variable** radio button.
   - Select the check box for **Send disconnect notice** and enter **Disconnect**.
   - Select the check box for **Send a transfer notice** and enter **Transfer**.
   - In the *Field Separator* field, enter a **forward slash** (/).
   - In the *Character Set* field, enter **ASCII**.
   - Select the check box for **Include Type** field in *Message*.
   - Click **Next**.
8. On the next screen, accept the defaults and click **Next**.
9. On the final screen:
   - Select the radio button for **Automatically assign the next available number**.
   - Click **Finish**.

To check or change your settings, click **Properties** on the *Data Interlinks* dialog.

2.1.2. Updating the System hosts File

To enable the Media Blender to communicate with the Aspect CallCenter ACD, add the IP address for the Media Blender to the ACD system *hosts* file. The *hosts* file is located in the following directory:

`<drive>:\Winnt\System32\drivers\etc`

Completing the following steps to add the IP address to the *hosts* file:

1. Double-click the *hosts* file.
2. Add the **Media Blender IP address** (using an ASCII text editor such as WordPad) and the **Media Blender machine name** to the bottom of the file (i.e., 171.23.76.152 CMB1).
3. Select File > Save.

2.1.3. Setting up Classes of Service

It is necessary to set up phantom and predictive classes of service to support the various phantom and the predictive CTI strategies used by Media Blender. It is also necessary to assign agents to the classes of service (see the following section, *Setting up Agents).*

Note: The default class of service must be different for phantom agents, phantom lines, and predictive agents.

To set up a phantom class of service:

1. Click the **Classes of Service** on the Aspect Administrator desktop. The *Classes of Service* dialog appears.

2. Click **Add**. The **New Class of Service Wizard** appears and guides you through the process of creating a class of service. On most of the screens, accept the default values, however, there are some exceptions.
3. On the first screen:
   - Add a description (i.e., PhantomLine1).
   - Select the check box for *Allow the agent to activate teleset one-way speaker* or *hands-free speakerphone*.
   - Select **all calls** for incoming calls. You can also limit the types of calls according to the rules of your contact center.
   - Select **all the types of outgoing calls** (unless you want to limit the types of calls).
4. On the last screen:
   - Select the radio button for **Automatically assign the next available number**.
   - Click **Finish**.

To check or change your settings, click **Properties** on the *Classes of Service* dialog.

After adding the phantom classes of service, use the same procedure to create a predictive class of service.

2.1.4. Setting up Agent Groups

The agent groups you create can reflect a particular skill or an expertise that is shared by a number of agents. For example, you might create an agent group called *Spanish* for all agents who can speak Spanish. Another agent group might share a location and role, such as *Boston sales*.

Note: You must assign a group for each phantom group. The default agent group must be different for phantom agents, phantom lines, and predictive agents.

To create an agent group:

1. Click **Agent Group** on the Aspect Administrator desktop, the *Agent Groups* dialog appears:

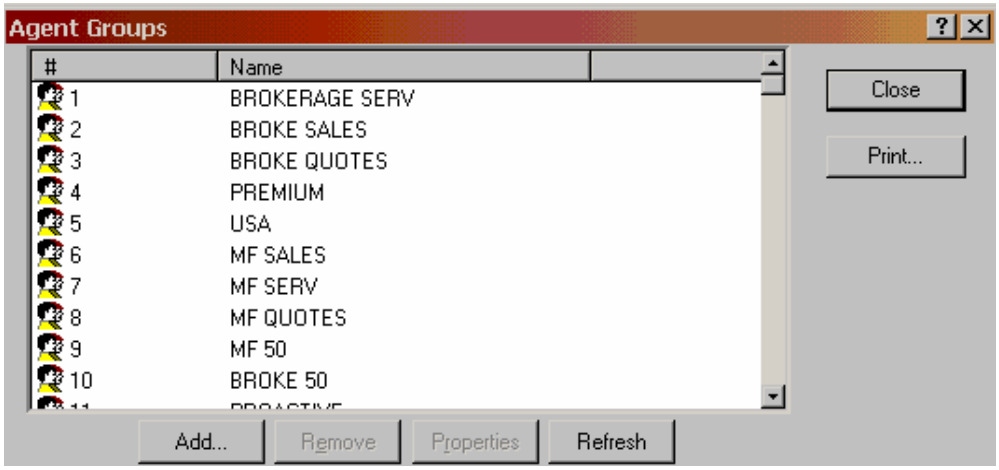

Figure 3: Agent Groups Dialog

2. Click **Add**. The *New Agent Group Wizard* appears.
3. On the first screen:
   - Accept the default (**1**) for the number of resources to create.
   - Click **Next**.
4. On the next screen:
   - Add a description for the agent group (i.e., Spanish).
   - Select the radio button for Route Calls to Agent available the longest.
   - Click **Next**.
5. On the third screen:
   - For *CCT is for Outgoing Calls*, select the types of calls required according to the rules of your contact center.
   - For *Override the system threshold*, select the items required for your contact center. This is where you choose colors to indicate agent conditions on your desktop.
   - Click **Next**.
6. On the final screen:
   - Select the check box for **Automatically assign the next available number**.
   - Click **Finish**.

To check or change your settings, click **Properties** on the *Agent Groups* dialog.

2.1.5. Setting up Agents

When setting up agents, assign them to an agent group and a class of service. Remember to record the agent's logical ID and password for the CCS administrator.

To set up an agent on the Aspect CallCenter:

1. Select **Start > Aspect Management Suite > Agent Administrator.**
2. From the Agent Administrator window click **New User**. 

   The *New Aspect CallCenter System User Wizard* appears.
3. On the first screen:
   - Select the number of resources to create.
   - Click **Next**.
4. On the second screen:
   - Add the last name, first name, and preferred name (such as a nickname) in the appropriate fields.
   - For reporting purposes, you can also add additional information in the *User ID* field.
   - Click **Next**.
5. On the third screen:
   - Select **Agent** from the *Type of User* drop-down list.
   - Under *User Status*, select the **Active** radio button.
   - Click **Next**.
6. On the next screen:
   - Put the agent under the appropriate Supervisor Team and/or Agent Group (i.e., Spanish might be a type of Agent Group).
   - For *Class of Service*, select the appropriate choice (i.e., Teleset Agent). The class of service determines the types of calls the agent is allowed to make.
   - Click **Next**.
7. On the final screen:
   - Select the **Automatically assign the next available number** radio button.

     Note: This is the agent extension number on the Aspect CallCenter and the logical ID on Media Blender.)
   - Click **Finish**.

The new agent's name appears in the list of agents on the *Agent Administrator* window.

Note: In addition to setting up real agents on the Aspect CallCenter, you must set up phantom agents. See the following section, *Setting up Phantom Agents*.

2.1.6. Setting Up Phantom Agents

Because the Aspect CallCenter requires agents to be logged in before the ACD phone can be used to place calls, agents called phantom lines must be set aside so that Media Blender can log in and use them to route calls to actual agents in the phantom skill group. These phantom lines and their respective phantom phones are configured in the Media Blender *phantomagents.properties* file. Their passwords are set up in the Media Blender *phantompasswords.properties* file.

A phantom line is simply a queuing agent on the Aspect CallCenter. When Media Blender starts up, it uses the phantom line information. When a call

comes in, Media Blender picks up a phantom line extension number and calls into the queue (CCT). The Aspect CallCenter then finds a real available agent and routes the call to that agent.

A phantom agent (a real agent that will be assigned calls queued to a phantom line) must be configured for every phantom line you plan to use. When you set up phantom agents, you assign them to an agent group and a class of service. The default class of service must be a different class of service than the phantom line class of service.

To set up a phantom agent on the Aspect CallCenter, complete the same steps you followed for setting up regular agents. See the section *Setting up Agents* for details.

Remember to record the following for the Media Blender administrator:

- The phantom agent name
- The phantom agent ID
- The phantom terminal ID
- The phantom password

2.1.7. Setting up Call Routing

The Aspect CallCenter ACD uses a Call Control Table (CCT) to route calls to appropriate agents. A CCT is really a script the ACD follows to ensure the right call gets to the right agent. CCTs can also direct outgoing calls, ensuring that the correct trunk group is used for each call.

Note: The property auto-answer in the ACD.ciscocti.properties file must be set to true if the eventbridge property is unset or set to false in that file, and if you are using a phantom CTI strategy such as PhantomWaitRelease or PhantomWaitNoRelease.

The ACD routes calls based on the CTI strategy used. The Aspect CallCenter supports both the phantom and the predictive CTI strategies. See the Aspect documentation for instructions on how to create a CCT.

Phantom CCT Example

The following is an example of a phantom CCT.

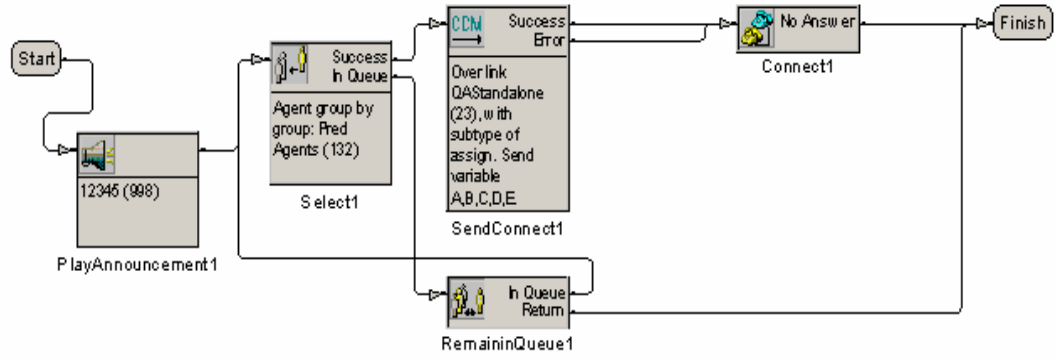

Figure 4: A phantom CCT (Example)

Note the variables A, B, C, D, and E in the above example. The Media Blender administrator configures the *ACD.ciscocti.properties* file to match the value in each data variable with an existing session.

Predictive CCT Example

The following is an example of a predictive CCT.

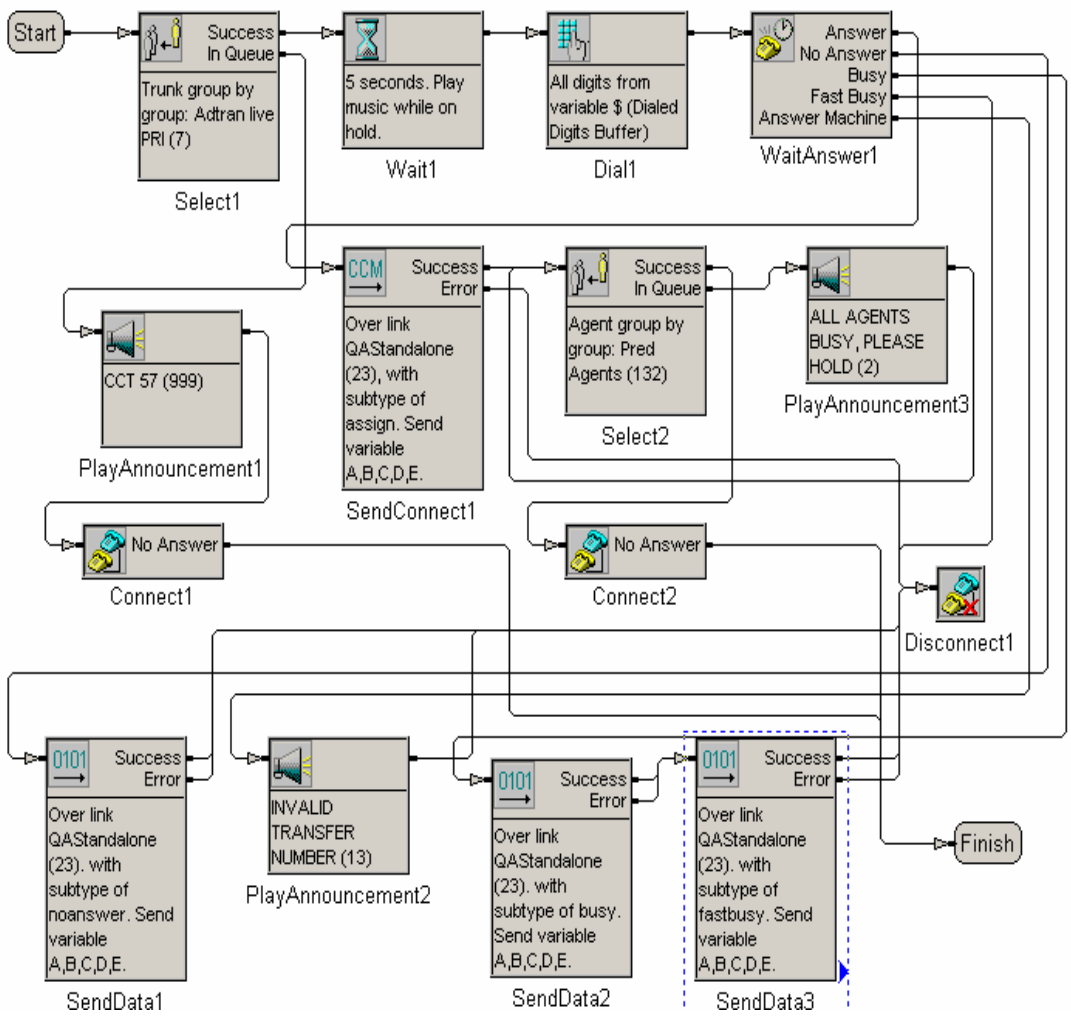

Figure 5: Predictive CCT (Example)

2.1.8. Sharing Information

Ensure proper call flow by recording and sharing the following information with the Cisco Collaboration Server administrator and the Cisco Media Blender administrator:

- The Collaboration Server administrator needs switch configuration information in order to set up agents on Collaboration Server.
- The Media Blender administrator needs values for the Media Blender property files.

2.1.9. Collaboration Server Administrator

For the basic Media Blender configuration, agents must be set up in two places. The switch administrator sets up agents on the ACD and the Cisco Collaboration Server administrator sets up agents on the Collaboration Administration desktop using the **Agents: Create** node. The Collaboration Server administrator must enter the Voice agent ID when setting up an agent. This Voice Agent ID must be the same as the logical ID (agent ID) used on the ACD.

If agents need to be able to log in to the ACD and Collaboration Server at the same, time, blended login capability must be configured on Collaboration Server. How the Collaboration Server administrator sets up blended login depends on whether the agent will frequently change phones. The Collaboration Server administrator might also need the terminal ID (the identifier of the phone on the ACD system) and the ACD password for each agent.

See the *Cisco Collaboration Server Administration Guide* for details about setting up agents on Collaboration Server.

2.1.10. Media Blender Administrator

The Media Blender administrator is responsible for creating a phantom pool file, *phantoms.properties*, which lists the phantom physical ID on the ACD or the agent's permanent extension with the phantom line type (**D** - the only phantom line type since Media Blender only supports digital line types). To set up phantom agents, the administrator must also configure two other files:

- The *phantomagents.properties* file, which maps a phantom agent's logical ID to a specific physical phone ID
- The *phantompasswords.properties* file, which maps a phantom agent's logical ID to a specific phantom password.

See the *Cisco Media Blender Administration Guide* for details about the property files.

For the Aspect CallCenter ACD, the administrator needs the value used for the phantom logical ID and the phantom terminal ID. In addition, the administrator needs the password for each phantom agent for the file. The Media Blender administrator must configure the *ACD.ciscocti.properties* file for the Aspect CallCenter ACD. When setting up the Data Interlink, make note of the values for the link ID, the socket port number, the delimiter, and the header or host name. For example, for the Aspect CallCenter ACD, the administrator needs the call control table (CCT) number.

2.2. Recording Aspect CallCenter Information

The following tables describe the information you need to record when configuring the Aspect CallCenter switch. Please share the information with the Collaboration Server and Media Blender administrators.

2.2.1. For the Collaboration Server Administrator

Collect the information in the following table for each agent you configure on the switch and share this information with the Collaboration Server Administrator:

Table 2: Configuring Agents with the Collaboration Server

Agent Name	Logical ID	Password	Terminal ID

2.2.2. For the Media Blender Administrator

The Media Blender Administrator needs three types of information:

- Phantom line
- Data Interlink
- Call Control Table

Phantom Line Information

Because the Aspect CallCenter requires a logged in agent ID before it will place calls, you need to assign a logical ID (agent permanent extension) to each phantom line as you would to an agent. The Media Blender administrator needs information for three Media Blender property files:

- phantom.properties
- phantomagents.properties
- phantompasswords.properties

Collect the information in the following table and share this information with the Media Blender Administrator:

Table 3: Configuring Agents with the Media Blender Administrator

Phantom Agent Name	Phantom Agent ID	Phantom Terminal ID	Phantom Password

Data Interlink Information

The Media Blender administrator needs the following information for the *ACDciscocti.properties* file. Collect the information in the following table and share this information with the Media Blender administrator:

Table 4: Collecting Media Blender Administrator Properties

Link ID	Socket port number	Header (host name)	Delimiter (separator)

2.3. Application Bridge Configuration

The configuration setup for the Application Bridge connection to the Peripheral Gateway is typically performed by an Aspect Field Engineer.

2.4. Real-Time Bridge Configuration

To configure the Real-Time Bridge access to the Aspect CallCenter, an Off-Board Processor Workstation must be configured. This configuration setup is performed by an Aspect Field Engineer.

2.4.1. Real-Time Bridge Data Timeout Configuration

A timeout value has been added to the registry in the following key:

Cisco System's, Inc.\ICM*Customer**NodeName*\PG\CurrentVersion\PIMS*ProcessName*\AspPIMData\Dynamic

The following entries have been added:

- **SwitchDataWaitTimeout**. Real-Time Bridge default timeout value for determining if the socket connection from the PIM to the Realtime Bridge is unable to process data messages. The PIM will check during switch events if the switch data has not been received for the timeout period. If no data messages have been received during this period, the socket connection will be aborted and restarted. If this occurs a second time, the PIM will be restarted if the RestartPIMOnSecondRTBFailure has been set to true (1) in the registry. The default value for this parameter is 30 seconds.
- **RestartPIMOnSecondRTBFailure**. Real-Time Bridge value (boolean) used to determine if the PIM should be restarted on a second consecutive failure attempt at reading from the Real-Time Bridge. This is an option initiated to prevent the socket connection to the Real-Time Bridge from hanging during a read attempt. The default value for this is zero (0) indicating that the PIM should not be restarted on a second consecutive failure at reading from the Real-Time Bridge.

2.5. ICM Software-Required CCT Programming

The following sections describe the modifications that must be made to CallCenter CCTs in order for the Aspect CallCenter to function with the ICM software.

Note: Release 6.0 of the Aspect CallCenter provides support for a Redundant Data Link configuration. When implementing CCT modifications for a redundant PG, keep the following points in mind:

- The CCT needs to target only a single Data Link.
- The CallCenter targets the message to/from the Primary Data Link if it is ONLINE.
- The CallCenter targets the message to/from the Backup Data Link if the Primary Data Link is OFFLINE and the Backup Data Link is ONLINE.

This allows redundant PG configurations to only require a single CCT step to be invoked to target MESSAGES to and from the Primary and Backup Peripheral Gateways.

2.5.1. Call Event Notifications

The Aspect Event Link interface informs a Monitoring Application of transitions in Agent and Call states for actively monitored Trunk Groups and Agent Groups. It is up to the Monitoring Application to enable Event Notifications for the Trunk Groups and Agent Groups required.

The following sections define cases where enhancements to CCTs are required to properly track the transition in Call States. These steps are required to track calls in the ICM software where call transitions are missing on the Aspect Event Link Interface.

The Aspect PG decodes the Application Bridge Call Information Message sub-type to determine a call state change.

Note: The Aspect CallCenter's Application Bridge Link provides a Call Disconnect Message and a Call Transfer Message implicitly over the last Data Link that provided call treatment on the disconnected or transferred call.

Call Offered Public (COP)

The ICM software requires that transition in call targets (that is, a CALL CONTROL TABLE CCT step to a CCT associated with a different CallCenter Application) be noticed when they occur. The Event Link Interfaces will inform the Monitoring Application of the new CallCenter Application if the call CONNECTS to a resource or the call QUEUES to a NEW Agent Group. If the re-targeted call does neither of these actions, the CCT must be modified to include a SEND DATA step to inform the ICM software of the new CallCenter Application association.

The Call Offered Public (COP) message defines when a call has been offered to an application on the Aspect CallCenter. The Call Offered Public is defined by a SEND DATA subtype set to COPxxx where xxx is the Application Number (ICM Service Peripheral Number) associated with

the Call (see Figure 6). One of the A-E variables may optionally contain the DNIS associated with the call. The variable is configured by the Call Control Variable Map field within the ICM Configuration Manager's PG Explorer tool.

```
1        MOVE          CONTENTS OF VARIABLE [#] TO VARIABLE [D]
2        SEND DATA     LINK #>12 SUBTYPE      COP34 VAR LIST A-E
                       ON ERROR, EXECUTE STEP #  3
```

Figure 6: Call Offered Public SEND DATA Message

Call Service Map (CSM)

This is similar to the Call Offered Public (COP) message; however, it allows the script developers to override the CallCenter Application (ICM Service Peripheral Number) associated with the call. The Call Service Map is defined by a SEND DATA subtype set to CSMxxxxx, where xxxxx is the Application Number (ICM Service Peripheral Number) associated with the Call (see Figure 7). One of the A-E variables may optionally contain the DNIS associated with the call. The variable is configured by the Call Control Variable Map field within the ICM Configuration Manager's PG Explorer tool.

The Call Service Map (CSM) SEND DATA step informs the ICM to disregard the Application Number reported over the Event Bridge while processing events. For example, in Figure 7, the SEND DATA step with the CSM12345 subtype associates the call to the ICM Service with the Peripheral Number of 12345. The Peripheral Number specified in the SUBTYPE field can be up to 5 digits. ICM will associate the call with Service Peripheral Number 12345 regardless of the Application mapping on the switch as reported by the Application Bridge and Event Bridge. To change the Service Mapping of a call that executed a CSM SEND DATA step, the call must execute another Send Data Step with a new CSM Service Peripheral Number.

```
1        MOVE          CONTENTS OF VARIABLE [#] TO VARIABLE [D]
2        SEND DATA     LINK #>12 SUBTYPE      CSM12345 VAR LIST A-E
                       ON ERROR, EXECUTE STEP #  3
```

Figure 7: Call Service Map SEND DATA Message

New Transaction (NEW)

The Aspect Event Link interface provides no indication of when the CallCenter CCT has invoked the NEW TRANSACTION CCT step. The NEW TRANSACTION CCT step causes the CallCenter to terminate the call as defined by its current CallID and create a new Call instance (CallID).

To inform the ICM software of calls passing through a NEW TRANSACTION CCT step the CCT must be modified to include a SEND DATA step with a subtype set to NEWxxx where xxx is the Application Number (ICM Service Peripheral Number) associated with the call (see

Figure 8). One of the A-E variables may optionally contain the DNIS associated with the call. The variable is configured by the Call Control Variable Map field within the ICM Configuration Manager's PG Explorer tool..

```
4        SEND DATA      LINK #>12 SUBTYPE      NEW37 VAR LIST A-E
                        ON ERROR, EXECUTE STEP #   5
```

Figure 8: New Transaction CCT Step

Call Disconnect Message (CDM)

The Call Disconnect Message (CDM) is implicitly sent by the Aspect CallCenter when a call has disconnected from a device. The Aspect CallCenter only sends the CDM message to the last Data Link that handled the call. If multiple applications are managing calls, the ICM Application Bridge Server should be used to protect against lost disconnect messages.

Call Transfer Message (CTM)

The Call Transfer Message (CTM) is implicitly sent by the Aspect CallCenter when a call has been transferred from a device. The Aspect CallCenter only sends the CTM message to the last Data Link that handled the call. If multiple applications are managing calls, the ICM Application Bridge Server should be used to protect against lost transfer messages.

Example CCT—Selecting Agents

The CCT in Figure 9 illustrates the steps required to support ICM software monitoring of calls directed to agents. Refer to the COP definition sections to determine if SEND DATA with a subtype COP34 is required.

```
1       SEND DATA       LINK #>12 SUBTYPE       COP34 VAR LIST A-E
                                ON ERROR, EXECUTE STEP #   2
2       PRIORITY        EQUAL TO:5 OR EQUAL TO VALUE FROM VARIABLE [ ]
3       SELECT    AGENT    BY> GROUP  NUMBER>  22
4       IF                 AVAIL AG   21 LT          2
                                EXECUTE STEP #   6
5       SELECT    AGENT    BY> GROUP  NUMBER>  21
6       ANNOUNCEMENT NUMBER:  5
7       QUEUE              30 SECONDS
8       ANNOUNCEMENT  NUMBER:  8
9       GOTO               STEP NUMBER:  7
```

Figure 9: Example CCT—Selecting Agents

Example CCT for NEW TRANSACTION Step

Figure 10 illustrates the steps required to support ICM software monitoring of calls passing through the NEW TRANSACTION CCT step.

```
1       NEW TRANSACTION
2       SEND DATA          LINK #>12 SUBTYPE   NEW51  VAR LIST A-E
                                  ON ERROR, EXECUTE STEP # 3
3       ANNOUNCEMENT       NUMBER>  1
4       CALL CONTROL TABLE   NUMBER> 52
```

Figure 10: Example CCT for NEW TRANSACTION Step

Call Connected to Voice Msg (MSG)

The Call Connected to Voice message is defined by a SEND DATA subtype set to MSGxxx where xxx is the Application Number (ICM Service Peripheral Number) associated with the Call (see Figure 11). One of the A-E variables contains the DNIS associated with the call. The variable is configured by the Variable Map Configuration string.

```
4       SEND DATA          LINK #>12 SUBTYPE        MSG37 VAR LIST A-E
                                  ON ERROR, EXECUTE STEP # 5
```

Figure 11: Call Connected to Voice Msg (MSG)

2.6. Changes to Support Post-Routing

To support Post-*Routing* on the Aspect CallCenter, you must program a CCT to perform a Route SEND DATA step followed by a RECEIVE DATA step. The Route SEND DATA step contains a subtype RTE<xxxxxxxxx> or XFR<xxxxxxxxx> or ARR<xxxxxxxxx> where <xxxxxxxxx> can specify additional routing information regarding the dialed number or the Aspect Application ID. The Aspect variable used to specify the dialed number is defined in the Call Control Variable Map field within the ICM Configuration Manager's PG Explorer tool.

Post-*Routing* on the Aspect PG is broken into two types of Routing Client Dialogs. The RTE and XFR SEND DATA Steps are used to define a two step Routing Client Dialog. The ACD make the route request and receives a response. The ARR SEND DATA Step is used to define a three step Routing Client Dialog. The ACD makes the route request, receives a response, and then informs the PG when the route selected by the ICM software has been used.

2.6.1. Route Call Request Message (CIM)

In Figure 12, the CallCenter variable D contains the DNIS and is used by the ICM Call*Router* as the called number.

```
1    SEND DATA      LINK #>12 SUBTYPE    RTE191 VAR LIST A-E
                        ON ERROR, EXECUTE STEP #  3
```

Figure 12: Route Call Request Example

2.6.2. Transfer Call Request Message (CIM)

In Figure 13, the ICM dialed number for the transfer request is extracted from the SUBTYPE field of the SEND DATA request **(**XFRSALES**).**

```
1    SEND DATA      LINK #>12 SUBTYPE    XFRSALES VAR LIST A-E
                        ON ERROR, EXECUTE STEP #  3
```

Figure 13: Transfer Call Request Example

2.6.3. Adjunct Route Request Message (ARR)

In Figure 14, the ICM dialed number for the transfer request is extracted from the SUBTYPE field of the SEND DATA request **(**ARRSALES**).**

```
1    SEND DATA      LINK #>12 SUBTYPE    ARRSALES VAR LIST A-E
                        ON ERROR, EXECUTE STEP #  3
```

Figure 14: Adjunct Route Request Example

2.6.4. Example CCT for Two Step RC Dialog

Figure 15 illustrates the steps required to invoke a post-route request using RTE with dialed number from DNIS.

```
1    CONTENTS OF VARIABLE [#] TO VARIABLE [D]
2    SEND DATA      LINK #>12 SUBTYPE    RTE37 VAR LIST A-E
                        ON ERROR, EXECUTE STEP #  5
3    RECEIVE DATA   LINK #>12 ON NAK, EXECUTE STEP 6
                        ON ERROR, EXECUTE STEP 7
4    CALL CONTROL TABLE  CCT 12        // CCT to handle timeouts
5    CALL CONTROL TABLE  CCT 13        // CCT SEND DATA ERROR.
6    CALL CONTROL TABLE  CCT 14        // CCT to handle NAKs
7    CALL CONTROL TABLE  CCT 15        // CCT to handle ERRORs
```

Figure 15: CCT for Two Step RC Dialog—RTE, Dialed Number from DNIS

Figure 16 represents the above CCT (Figure 15) as depicted in the Aspect 7 Architect Program:

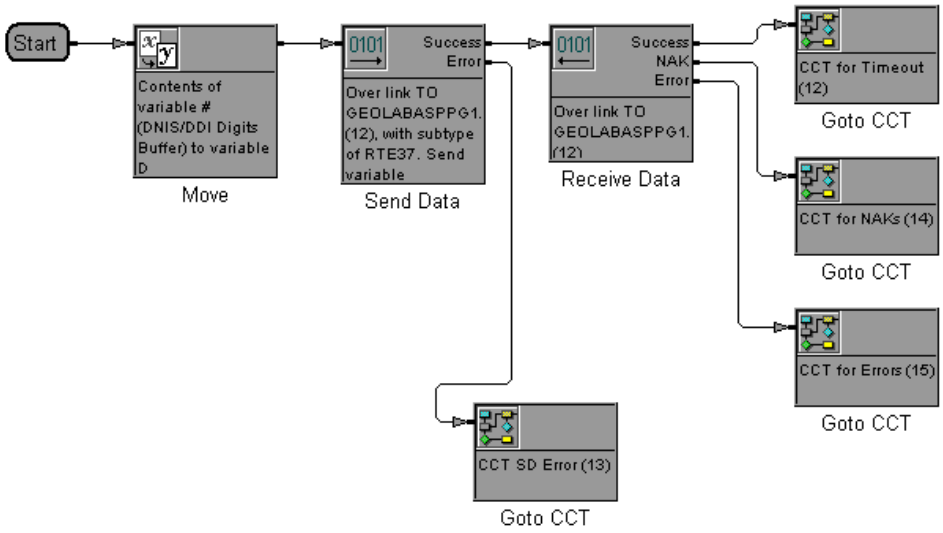

Figure 16: CCT for Two Step RC Dialog--RTE, Dialed Number from DNIS (Aspect Architect Version)

Figure 17 illustrates the steps required to invoke a post route request using XFE with dialed number XFRTOSALES from SUBTYPE.

1	SEND DATA A-E	LINK #>12 SUBTYPE	**XFRTOSALES** VAR LIST
		ON ERROR, EXECUTE STEP # 4	
2	RECEIVE DATA	LINK #>12 ON NAK, EXECUTE STEP 5	
		ON ERROR, EXECUTE STEP 6	
3	CALL CONTROL TABLE	CCT 12	// CCT to handle timeouts
4	CALL CONTROL TABLE	CCT 13	// CCT SEND DATA ERROR.
5	CALL CONTROL TABLE	CCT 14	// CCT to handle NAKs
5	CALL CONTROL TABLE	CCT 15	// CCT to handle ERRORs

Figure 17: CCT for Two Step RC Dialog—XFE, Dialed Number from XFRTOSALES

2.6.5. Example CCT for Three Step RC Dialog

Figure 18 illustrates the steps required to implement a three step post-route request between the CallCenter and the Peripheral Gateway. The Adjunct Route Request uses the ARR37 to define the dialed number associated with the post-route request.

```
1    CONTENTS OF VARIABLE [#] TO VARIABLE [D]
2    SEND DATA          LINK #>12 SUBTYPE    ARR37 VAR LIST A-E
                                ON ERROR, EXECUTE STEP #  5
3    RECEIVE DATA       LINK #>12 ON NAK, EXECUTE STEP 4
                                ON ERROR, EXECUTE STEP 4
4    SEND DATA          LINK #>12 SUBTYPE    ART37 VAR LIST A-E
                                ON ERROR, EXECUTE STEP #  5
5    …
6    … SOME TYPE OF RECOVER MECHANISM on the CallCenter.
```

Figure 18: CCT for Three Step RC Dialog

If STEP 3, RECEIVE DATA, fails or a time-out occurs, the SEND DATA STEP that follows the RECEIVE DATA step (ART**)** informs the PG that the Routing dialog has terminated. The PG response will be ignored. The PG should free any ICM software resources associated with the original Adjunct Route Request. The steps following the ART should provide backup recover conditions for handling the call.

The target CCT associated with a route request should contain the following CCT step when the ACD has completed the required steps to perform a translation route (that is, directed the call to go off-switch).

```
1    SEND DATA          LINK #>12 SUBTYPE    ARE110 VAR LIST A-E
                                ON ERROR, EXECUTE STEP #  2
```

Figure 19: CCT Step for Target CCT

2.7. Maintaining Your Configuration

It is preferred that changes made to your configuration be accomplished first on the Aspect ACD, then in the ICM Configuration. This will ensure that the PG sees the configuration updates on the Aspect ACD systems.

3. ICM Software Configuration

In order to properly configure and maintain the ICM database, you need to understand the relationships between the Aspect CallCenter database objects and the ICM database objects. For example, an ICM Service corresponds directly to an Application on the Aspect CallCenter ACD. An ICM Skill Group is equivalent to an Aspect Agent Group.

By understanding the relationships between the database objects of the Aspect CallCenter and ICM software, it will be easier to keep the Aspect and ICM databases synchronized (that is, up-to-date with each other).

This chapter describes how objects map between the Aspect ACD and the ICM software. It also provides information specific to configuring an Aspect PG by using the ICM Configuration Manager's PG Explorer tool.

See also: For detailed information on the ICM Configuration Manager user interface, see the *ICM Software Configuration Guide.*

3.1. Peripheral Configuration

In ICM software terms, the Aspect CallCenter itself corresponds to a peripheral. The ICM software treats all contact center devices (e.g., ACDs, PBXs, IVR systems) as peripherals.

No special ICM peripheral configuration parameters are required. However, there are certain items within the ICM configuration that you may want to check.

3.1.1. Peripheral Configuration Parameters

Typically, for peripherals configured with the Aspect Event Link the Configuration Parameters field within the PG Explorer tool are left blank. The required peripheral configuration parameters are set automatically in the Windows registry during PG setup.

However, the Configuration Parameters filed does support the configuration of Idle Reason Code and Resource Bridge Available (see Table 5). The format used to set these parameters is as follows:

```
/parameter value
```

In this example, *parameter* is the parameter you wish to configure, and *value* is the value of the data for this parameter. Multiple configuration parameters can be entered in the Configuration Parameters field. All parameters and values are space-separated. The order in which the parameters are entered is not significant.

Table 5: Supported Peripheral Configuration Parameters

Configuration Parameter	Definition	Example
irc	Command defining the default Idle Reason Code. Any valid idle reason code may be used for a value.	/irc 5 This sets the default Idle Reason Code to 5.
rba	Command defining whether or not the resource bridge is available. A value of 0 indicates that it is not available; a value of 1 indicates that it is available.	/rba 1 Sets the default to use the Resource Bridge. /rba 0 Sets the default to not use the Resource Bridge.

3.1.2. Peripheral Call Control Variable Map

The Call Control Variable Map field, shown in **Error! Reference source not found.**, controls the mapping of route request elements to peripheral variables. The following example defines the format of the Call Control Variable Map field:

/command switch-var= cmd-var switch-var= cmd-var /command switch-var= cmd-var

Figure 20 shows some examples of entries in the Call Control Variable Map field. Examples 1 and 2 define the same Call Control Variable Map settings; however, Example 2 uses the abbreviated commands and variable references which are available in ICM Software Release 2.0 and greater. Example 3 shows a different example of Call Control Variable Map settings.

Example 1:
/route %d= callednum /transfer %subtype= callednum /calloffered %d= dnis /new %d= dnis
Example 2:
/rte %d= dn /xfr %st= dn /cop %d= dnis /new %d= dnis
Example 3:
/rte %d= dn /cop %d= dnis /resp %a= ld

Figure 20: Call Control Variable Map Examples

Table 6 defines the commands that can be used in the Call Control Variable Map field. All fields are space-separated. The order in which the commands are entered is not significant. For some commands, the abbreviation (for example, rte), can be used instead of typing the whole command.

Table 6: Call Control Variable Map Commands

Commands	Definition
route (rte)	Command defining the variable map for the post-route request.
transfer (xfr)	Command defining the variable map for a post-route request that deal with transfers.
queue (que)	Obsolete.
calloffered (cop)	Command defining the variable map for the CALL OFFERED indication message from the ACD. (Usage of COP may be required in call diversion sequences.)
response (resp)	Command defining the variable map for the post-route response data.
new	Command defining the variable map for the NEW TRANSACTION indication message.
arr	Command defining the variable map for the Adjunct Route Request (post-routing request).

Table 7 defines the variables used by the route, rte, transfer, xfr, and arr commands associated with Post-*Routing* applications on the Aspect ACD. For some commands, an abbreviated version of the command can also be used (for example, dn).

Table 7: Route Command Variables

Variable	Definition
dnis	Defines the DNIS digits associated with the call.
callednum (dn)	Defines the Called Number associated with the call.
callingnum (ani)	Defines the Calling Number associated with the call.
ced	Defines the Caller Enter Digits associated with the call.

Table 8 defines the variables used by the calloffered command from the Aspect ACD.

Table 8: Call Offered Public Variables

Variable	Definition
dnis	Defines the DNIS digits associated with the call.

Table 9 defines the variables used by the PG when sending a response to a CallCenter post-route request using the rte or the xfr Send Data commands.

Table 9: Route Response Variables

Variable	Definition
labeldata (ld)	Defines the GLOBAL mapping for additional label data returned during Post Route Request. (Refer to "Label Syntax," later in this sectin, for additional information.)

Table 10 defines the variables used by the new command from the Aspect ACD.

Table 10: New Transaction Variables

Variable	Definition
dnis	Defines the DNIS digits associated with the call.

Table 11 defines the switch variables that can be mapped to the previously defined command variables.

Table 11: Aspect Variables Definition

Switch Variable	Definition
%a	Used to denote the Aspect ACD's A variable.

%b	Used to denote the Aspect ACD's B variable.
%c	Used to denote the Aspect ACD's C variable.
%d	Used to denote the Aspect ACD's D variable.
%e	Used to denote the Aspect ACD's E variable.
%subtype (%st)	Used to denote values as specified in the Sub-Type field of a SEND DATA CCT step.

3.2. Peripheral Target Configuration

An ICM Peripheral Target is a network target identified by a Trunk Group and DNIS that terminates on the Aspect ACD. A Peripheral Target is required for all DNIS and Trunk Group(s) through which an incoming call arrives.

Important: All TrunkGroup/DNIS combinations that are in any way connected with the handling of any incoming ACD call **must be** configured in the ICM software as Peripheral Targets to ensure complete call monitoring.

Those calls that do not map to a valid Peripheral Target are associated with the Service defined in the sub-type of the SEND DATA CCT step. If neither mapping fits, the call is associated with the Peripheral's default route as defined in the ICM Peripheral Configuration table. If a Default Route is not defined, the PG will log an event.

You can configure Peripheral Targets using the Peripheral Target tab in the Service Explorer tool within ICM Configuration Manager.

3.3. Trunk Group Configuration

No special configuration information is required for Trunk Groups for the Aspect ACD. The ICM software and Aspect Trunk Group mapping is as follows:

ICM Software	Aspect
Trunk Group	Trunk Group
Trunk Group Peripheral Number	Trunk Group number (e.g., Trunk Group 5)
Trunk Group Extension	(Not used by Aspect PG)

3.4. Trunk Configuration

Call Event notification, associated with both inbound and outbound ACD calls, is monitored by the Aspect ACD trunk instrument number. For the ICM software to properly monitor ACD calls, **all** individual trunks and their corresponding Trunk Group assignments **must be configured** in the ICM database. If the PG is informed of a call associated with an unknown Trunk Instrument number, an ICM Event will be logged.

The Trunk Instrument Number as defined on the ACD (e.g., Instrument 5) is the ICM Trunk Peripheral Number. Trunks and Trunk Group assignments are configured by using the Trunk tab of the Network Trunk Group Explorer tool within the ICM Configuration Manager.

3.5. Skill Group Configuration

The ICM Software and Aspect Skill Group mapping is as follows:

ICM Software	Aspect
Name	Agent Group
Peripheral Number	Agent Group Number
Extension	(Not used by Aspect PG)

No special configuration information is required for the Skill Group for the Aspect ACD.

3.6. Service Configuration

The ICM software and Aspect Service mapping is as follows:

ICM Software	Aspect
Name	Application
Peripheral Number	Application Number
Peripheral Service Level	Application Service Level

The Peripheral Service Level can be set to one of the four Aspect Peripheral Service Levels on the Service tab of the Service Explorer tool.

3.6.1. Skill Group-to-Service Mapping

The ICM Skill Group-to-Service mapping (Service Explorer tool, Service Members tab) corresponds to the list of Aspect ACD Agent Groups selected throughout a CallCenter's CCTs. The Application assigned to the CCT maps to the specified ICM Service Peripheral Number used to map the Skill Groups.

No special ICM configuration consideration is required.

3.7. Agent Configuration

Agents are dynamically configured by the PG. They **do not** need to be added individually via the ICM Configuration Manager's PG Explorer tool.

The ICM Software and Aspect agent mapping is as follows:

ICM Software	Aspect
Agent	Agent
Agent Peripheral Number	ACD extension number assigned to the agent

Note: While using CTI clients (such as CTIOS, CTI Desktop, Custom Clients), the agent must select the **placement of the call** as **Outbound** before making an Outbound call.

For detailed information, refer to the CTI specific User Guide.

3.8. Agent States

Table 12 lists the Aspect agent states and their definitions.

Table 12: Aspect Agent State Definitions

Aspect Agent State	Definition
ACD1	Agent is handling and incoming call on line 1.
ACD2	Agent is handling and incoming call on line 2.
ACT1	Agent is handling an ACT call on line 1.
ACT2	Agent is handling an ACT call on line 2.
AVAIL	Agent is available to handle calls.
CONF	Agent is in a conference with two lines.
EMER	The Emergency KEY is pressed on the TeleSet.
HELP	Agent is listening to a help announcement.
HOLD	One or more calls are on HOLD.
IDLE	Agent is in the IDLE state.
INS	Agent is talking on the inside line.
MSG	Agent is listening to void mail or callback messages.
OFF	Agent is not signed on to a TeleSet.
OUT1	Agent is making an outgoing call on line1.
OUT2	Agent is making an outgoing call on line2.

Aspect Agent State	Definition
RSVD	Agent is reserved for an incoming InterQueue call.
SUPR	Agent is talking on the supervisor line.
WRAP	Agent is in wrap-up State.

Table 13 shows how ICM agent states are derived from the Aspect states.

Table 13: ICM Software-Aspect Agent State Derivation

ICM Agent State	Derivation from Aspect Agent States
Not Ready	IDLE
Ready	Any state other than those identified by the NotReady state.
Available	AVAIL
WorkReady	WRAP
TalkingIn	ACD1, ACD2, ACT1, ACT2,(HOLD,CONF)
TalkingOut	OUT1, OUT2,(HOLD, CONF)
TalkingOther	INS, SUPR,(HOLD,CONF)
BusyOther	Not mapped to an Aspect agent state.
Reserved	RSVD
Hold	When all call appearances are on HOLD by an agent.
Logged Out	OFF

3.9. Route Configuration

No special ICM configuration consideration is required for routes.

An ICM Route is one or more ICM Peripheral Targets. An ICM Peripheral Target is a Network Target identified by a trunk group and DNIS that terminate on the Aspect ACD. A Peripheral Target is equivalent to the combination of DNIS and the trunk group(s) through which the incoming calls arrive.

3.10. Translation Route Configuration

No special ICM configuration consideration is required for translation routes.

Translation routes are supported on the Aspect PG. Translation routes can be used to pass caller information to the Aspect (for example, ANI or Network CED).

3.11. Routing Client Configuration

The Configuration Parameters field in the PG Explorer tool, Routing Client tab should be blank. No information is required in this field.

See also: For more information on Routing Client configuration and Post-Routing, see Chapter 4, "Post-Routing."

3.12. Application Bridge Server

The existing implementation of the Aspect Application Bridge provides the Call Disconnect Message (CDM) or Call Transfer Message (CTM) *only* to the last data link that handled the call. The lack of the (CDM or CTM) can cause the ICM software to leave call states hanging until certain recovery checks are enabled. This can cause additional applications monitoring a call to miss a (CDM or CTM).

To work around the loss of (CDM/CTM) messages, Cisco provides a Server process for the Application Bridge. The Application Bridge Server (ABS) ensures that all applications tracking a call receive a Call Disconnect Message or Call Transfer Message for the disconnected or transferred call.

Note: The Peripheral Gateway does not rely on the CDM or CTM messages; therefore, the ABS is typically only required if the CallCenter invokes SEND DATA steps to the PG to work around missing Event Link Notifications of calls, or if the CallCenter performs a post-route request to the PG after another application was informed of the call over another data link.

3.12.1. ABS Client

The Application Bridge Server utilizes the Windows NT Registry to configure the list of clients it should monitor. Clients are added through the ABS setup procedure.

When using ABS with duplexed Aspect Event PIMs, you **must** also change the OPC-configured timeout (PIMConfiguredTimeout) on the PG systems to at least 90 seconds. When ABS is toggling between the sides on connection failures this allows the PIMs enough time to get an ABS connection and fully establish their links to the CallCenter. You can change the OPC-configured timeout in the following registry location:

Cisco System's, Inc.\ICM*CustomerName*\PG1A\PG\CurrentVersion\OPC*PIMConfiguredTimeout*

Once the client name is entered, you **must** update the registry information for your client. The registry key in which to update the information is as follows:

Cisco System's, Inc.\ICM*CustomerName*\ABS\CurrentVersion\Clients*ClientName*

The following list defines the registry data elements required to support the Application Bridge Server process. Each application managed by the ABS requires the following entries:

- **ApplicationActive**. A none zero value enables this client for the Application Bridge Server. The Application Bridge Server allows activation/deactivation of clients while the system is running.
- **AppProgramHostNameSideA**. TCP/IP Host Name for the Data System Application Bridge Program running on Side A.
- **AppProgramHostNameSideB**. TCP/IP Host Name for the Data System Application Bridge Program running on Side B. The Side B Application Bridge Program Host Names is configured for applications that support redundancy.
- **AppProgramPortNumberSideA**. TCP/IP Port Number for Data System Application Bridge Program running on AppProgramHostNameSideA. If CallCenterHostName equals the AppProgramHostNameSideA then the value here must be different from the CallCenterPortNumber.
- **AppProgramPortNumberSideB**. TCP/IP Port Number for Data System Application Bridge Program running on AppProgramHostNameSideB. If CallCenterHostName equals the AppProgramHostNameSideB, then the value here must be different from the CallCenterPortNumber.
- **CallCenterConnectsFirst**. Used to determine what side of the connection is used to start the activation of the Data Link connection. A non-zero value disables the connection to the Application (AppProgramHostNameSideA and AppProgramPortNumberSideB) until a connection is first received from the CallCenter (CallCenterHostName and CallCenterPortNumber).
- **CallCenterHostName**. TCP/IP Host Name for the CallCenter.
- **CallCenterPortNumber**. TCP/IP Port Number used to accept connection from the CallCenter. The value specified here should reflect the value specified in the Aspect CallCenter Data Link Configuration Table.
- **DataLinkNumber**. Application Bridge Data Link Number as configured on the CallCenter. The value specified here should reflect the value specified in the Aspect CallCenter Data Link Configuration Table.
- **FieldSeparator**. As defined in the Data Link Configuration Table. The value specified here should reflect the value specified in the Aspect CallCenter Data Link Configuration Table.
- **MessageFormatFixed**. Specifies either Fixed-Length or Variable-Length message formats over the data link. A value of zero specifies a variable length message format (default). The value specified here should reflect the value specified in the Aspect CallCenter Data Link Configuration Table.

  Note: When configuring a client for the PG application, the CallCenterConnectsFirst field should be set to zero.

Optionally, you can update the PIM configuration refresh rate registry information (for realtime messages) for your client. The registry key is as follows:

Cisco System's, Inc.\ICM*CustomerName**NodeName*\PG\CurrentVersion\PIMS*ProcessName*\AspPIMData\Config

The following defines the Windows NT Registry Data Elements required to support the adjustment of the refresh rates for the trunk group, RT3 service, realtime peripheral and RT4 agent group. The following entries reside in the

- **AgentGroupRT4QueryListEvent**. Real-time Bridge default configuration information for reporting of agent group RT4 queries. The value specified here specifies the frequency with which these events are reported, with a default value of 300 seconds.
- **PeripheralRealtimeQueryListEvent**. Real-time Bridge default configuration information for reporting of peripheral realtime queries. The value specified here specifies the frequency with which these events are reported, with a default value of 60 seconds.
- **ServiceRT3QueryListEvent**. Real-time Bridge default configuration information for reporting of service RT3 queries. The value specified here specifies the frequency with which these events are reported, with a default value of 3 seconds.
- **TrunkGroupQueryListEvent**. Real-time Bridge default configuration information for reporting of trunk group queries. The value specified here specifies the frequency with which these events are reported, with a default value of 3 seconds.

For third party support, Idle with Reason Code has been added. This supports (via CTI) an agent going idle with a valid reason code. Two new entries have been added to the following registry key:

Cisco System's, Inc.\ICM*CustomerName**NodeName*\PG\CurrentVersion\PIMS*ProcessName*\AspPIMData\Dynamic

The following entries support the Idle Reason Code implementation:

- **TPRetryIRROnFailure**. This entry tells the PIM whether it should send the default value if an invalid reason code was received on an agent going idle. If set to one (1) it will instruct the PIM to send the default idle reason code, and if set to zero (0), it will instruct the PIM not to send the default reason code, when an invalid reason code was provided.
- **TPUpdateOPCOnRetry**. This entry tells the PIM whether it should update OPC when a retry on sending the default idle reason code has been issued. Setting this to one (1) will instruct the PIM to update OPC, and setting it to zero (0) will instruct the PIM not to update OPC.

3.13. Maintaining Your Configuration

It is preferred that changes made to your configuration be accomplished first on the Aspect ACD, then in the ICM Configuration. This will ensure that the PG sees the configuration updates on the Aspect ACD systems.

4. Post-Routing

The Aspect PG supports Post-*Routing* and can therefore be considered a Routing Client. The PG can route to any valid dialed number.

This chapter describes the features of ICM Post-*Routing* available with the Aspect PG. It also discusses any considerations you should be aware of when using Post-*Routing* or Translation Routing on the PG.

See also: For information on Post-Routing related configuration on the Aspect ACD, see Chapter 2, “ACD Configuration.”

4.1. Routing Client Dialogs

There are two types of Routing Client dialogs supported between the Aspect ACD and the Peripheral Gateway: a two-step RC dialog and a three-step RC dialog. The three-step Routing Client dialog provides more control when post-routing calls using Translation Routing.

To initiate a post-route, call processing on the Aspect ACD must execute a SEND DATA step followed by a RECEIVE DATA step. The responding ICM label is an Aspect CCT number where call processing resumes.

See also: See "Peripheral Call Control Variable Map" in Chapter 3, "ICM Software Configuration," for more information on the Aspect A-E variable definitions.

Note: A responding CCT value of "000" causes the ACD to resume call processing at the step following the RECEIVE DATA step. This occurs when the Route Request resulted in an error or the Routing Client Timer has expired for the pending request.

4.1.1. Route Request (Two Step RC)

The Aspect ACD sends a route request to the PG via the SEND DATA CCT step with the SUBTYPE set to RTE<xxxxxxxxx> or XFR<xxxxxxxxx> where <xxxxxxxxx> can specify additional routing information regarding the dialed number or the Aspect Application ID.

The following information is extracted from the Application Bridge message generated from the SEND DATA step.

- Called number (typically the DNIS) from A-E variables or Sub-type string.
- Last set of collected digits (CED) (if any) from A-E variables.
- DNIS chars (optional) from A-E variables.
- Call ID.
- Trunk Instrument or Agent Instrument number.

See also: See "Peripheral Call Control Variable Map" in Chapter 3, "ICM Software Configuration," for more information on the Aspect A-E variable definitions.

4.1.2. Adjunct Route Request (Three Step RC)

To provide the ICM software with additional control for calls routed via Translation Routes, the CallCenter-to-ICM Routing dialog has been expanded to include a 3 step Adjunct Route Request mechanism. The Aspect ACD initiates an Adjunct Route Request by performing a SEND DATA CCT step with the SUBTYPE set to ARR<xxxxxxxxx> where <xxxxxxxxx> can specify additional routing information regarding the dialed number or the Aspect Application ID. The following information is extracted from the Application Bridge Message generated from the SEND DATA step.

- Called number (typically the DNIS) from A-E variables or Sub-type string. Note that the DN (called number) will be taken from variable C if a value is present in this variable, otherwise it will get the DN from the subtype field.
- Last set of collected digits (CED) (if any) from A-E variables.
- DNIS chars (optional) from A-E variables.
- Call ID.
- Trunk Instrument or Agent Instrument number.

See also: See "Peripheral Call Control Variable Map" in Chapter 3, "ICM Software Configuration," for more information on the Aspect A-E variable definitions.

4.1.3. Adjunct Route End/Timeout

The second step associated with Adjunct Route Request is for the Peripheral Gateway to respond to the Aspect CallCenter with a CCT to specify where call processing should resume for the call associated with the ARR request. The steps to carry out the response to the ARR request is similar to those specified in the "Route Select," section with the following requirements:

- To terminate the Adjunct Route Request routing dialog, the CallCenter must issue an Adjunct Route End or Adjunct Route Timeout to the Peripheral Gateway.
- For the CallCenter to indicate the Route Select chosen by the ICM software, the CCT associated with the response should perform a SEND DATA CCT step with the SUBTYPE set to ARE<xxxxxxxxx> where <xxxxxxxxx> specifies the Aspect Application ID associated with the CCT. The ARE step informs the Peripheral Gateway the Routing Client Dialog for the previously routed call has terminated.
- For the CallCenter to indicate to the Peripheral Gateway that the Routing Dialog has timed out, the CCT Step following the RECEIVE DATA should contain a SEND DATA with the SUBTYPE set to ART<xxxxxxxxx> where <xxxxxxxxx> specified the Aspect ApplicationID associated with the CCT.
- Both the ARE and ART are used by the CallCenter to indicate to the Peripheral Gateway that the routing dialog has terminated. These messages are the third and final step involved with Adjunct Route Request.

4.1.4. Route Select

The PG receives the selected route information from the Call*Router* and converts it into a Call Information Response message for the Aspect ACD. The Call Information Response message is directed to a call blocked on a RECEIVE DATA CCT step. The resulting Label corresponds to a CCT number as defined by the Aspect CallCenter. When the Aspect ACD

receives the Call Information Response message, call processing resumes at the CCT specified in the message.

Call Information Response results containing a value of “000” cause the call processing on the Aspect ACD to resume on the CCT step following the original RECEIVE DATA step. ICM software scripts that control the dialed number, as specified above, can pass additional information to the Aspect ACD by setting the A-E variables.

See also: See “Peripheral Call Control Variable Map” in Chapter 3, “ICM Software Configuration,” for more information on the Aspect A-E variable definitions.

4.2. Label Syntax

The primary makeup of the ICM Label for Post-*Routing* on the Aspect ACD is a valid CCT number as defined on the Aspect CallCenter. On the CallCenter, a valid CCT number is in the range of “000” to “999”. (Release 6.0 and beyond supports CCT numbers up to “999.”) Invalid CCT numbers (that is, CCTs that do not exist or are out of the valid range), will result in an error reported in the Aspect CallCenter Activity logs.

See also: Refer to the *Aspect CallCenter Workstation User’s Guide* for additional information on access to the Activity Logs.

Labels containing the value “000” or an invalid CCT numbers will cause call treatment on the Aspect ACD to resume at the step following the original SEND DATA step. Labels containing valid CCT numbers cause call treatment to resume at the beginning of the specified CCT number.

In addition to the CCT number, the label can contain additional data it would like to be passed down to the CallCenter. The additional data is the data defined beyond the first 3 digits in the label. This data can be alphanumeric and is stored in one of the defined CallCenter A-E variables.

The formats used for Labels are as follows:

XXX

XXX is the CCT number returned to the CallCenter.

XXXyyyyyyyyyy

XXX is the CCT Number returned to the CallCenter and yyyyyyyyyy is the additional label data that is stored in the variable configured by the /response %<var>= labeldata in the Call Control Variable Map field. The limits on the amount of information passed down is based on the variable used.

XXX%2yyyyyyyyy

XXX is the CCT Number returned to the CallCenter; %2 specifies to use the CallCenter “B” variable when storing the additional information (for example, %1=“A” %2=“B” %3= “C” %4=“D” %5=“E”); and yyyyyyyyyy is the additional label data that is stored in the variable specified after the

% escape field in the label. The limits on the amount of information passed down is based on the variable used.

4.2.1. Label Examples

```
02412345678 -
```

The digits 12345678 are stored in the variable defined by the Call Control Variable Map field /response %a= labeldata. In this example, the data is stored in the CallCenter variable A and control of the call is resumed in CCT 24 of the CallCenter.

To override the variable selection defined in the Call Control Variable Map field, the following formats of the label are supported:

```
033%112345678
```

The digits 12345678 are stored in variable A (defined by %1). Control of the call is resumed in CCT 033 of the CallCenter.

```
33%21234567890
```

The digits 1234567890 are stored in variable B (defined by %2). Control of the call is resumed in CCT 033 of the CallCenter.

```
33%31234567890
```

The digits 1234567 are stored in variable C (defined by %3). Control of the call is resumed in CCT 033 of the CallCenter. Note that only the first seven digits of the additional label data are stored in the CallCenter variable C. This is a limitation on the length of the variable supported on the CallCenter.

```
198%41234567890
```

The digits 1234567 are stored in variable D (defined by %4). Control of the call is resumed in CCT 198 of the CallCenter. Note that only the first seven digits of the additional label data are stored in the CallCenter variable D. This is a limitation on the length of the variable supported on the CallCenter.

```
198%51234567890ABCDEFG
```

The digits 1234567890ABCDEFG are stored in variable E (defined by %5). Control of the call is resumed in CCT 198 of the CallCenter. Note that variable E is the **only** CallCenter Variable that supports alpha-numeric strings. Trying to pass alpha-numeric string in the other variables will result in a null string being presented to the CallCenter CCT.

4.2.2. Network Take-Back and Transfer Support

Release 6.2.1. of the Application Bridge Interface has been modified to provide messages to allow an application (for example, the PG) to take advantage of the AT&T Call Transfer feature. The new message set allows

a host to generate a transfer call request to the carrier (AT&T *8xxxxxxxxx).

ICM software customers currently perform the following actions when transferring calls inter-switch using ICM Enterprise Routing:

1. An agent receives an inbound call.
2. The agent initiates a consultative call (#8XXX or speed dial #), which results in a new call executing in an Aspect CCT that performs a Post Route Request.
3. The Call*Router* response to the Post Route request is a CCT that will target another Switch using tie lines between ACDs or a CCT to target agent groups locally on the requesting ACD.
4. The agent then consults with the target agent and either conferences or transfers the call. When inter-switch transfers are performed, the ACD requires trunk lines between all targeted ACDs.

With the use of the new interfaces, the following steps are performed when transferring calls inter-switch:

1. An agent receives an inbound call.
2. The agent then initiates a consultative call (#8XXX or speed dial #), which results in a new call executing in an Aspect CCT that performs a Post Route Request.
3. The Call*Router* response to the Post Route request is a label of the form DTMF*8xxxxxxxx or DTMFD*8xxxxxxx. The DTMF and DTMFD(TBD) prefix in the label is the indicator used to inform the PIM that it must perform a Carrier Call Transfer.

To perform the Carrier Call Transfer, the Aspect PIM must perform the following steps:

1. Terminate the consultative call used to perform the post-route request. This is done by issuing a Release Call Request (505) to the Aspect ACD over the Application Bridge.
2. When the PIM receives the Release Call Request Response (105) message (confirmation of call disconnecting), the PIM must connect the initial call that was placed on HOLD by the customer. The new interface requires the call to be in the connected state to perform the Carrier Call Transfer. This is accomplished by issuing a Retrieve Call Request (514) to the Aspect ACD over the Application Bridge.
3. When the PIM receives the Retrieve Call Request Response (114) message (confirmation the call was retrieved and is in the connected state), the PIM must then issue the new Dial DTMF Digits Request with the digits in the label returned from the Call*Router*.

The DTMFD is similar to the DTMF prefix except it indicates to the PIM that the original call should be disconnected by the PIM when the SendDTMF request has completed. This is useful when Carrier Call Transfers are implemented on an MCI network which requires a customer to configure their transfer methods as either all Blind Transfers or all Consultative Transfers. If the Customer wishes to mix the transfer types,

the Consultative Transfer method can be enabled and the PIM can terminate the agents association with the call if the DTMFD prefix is used (similar to a blind transfer configuration where the network would terminate the agent associated).

The Release Call Request and Retrieve Call Request are currently used by the PIM for CTI Third Party Call Control Interfaces. These steps allow the agent to be hand free for the transfer steps after initiating the consultative call.

Appendix A: Outstanding Event Link Issues

The following list highlights several outstanding issues with the new version of the Aspect Event Link provided in CallCenter Release 6.0. Issues regarding the Event Link resolved with ICM software workarounds are not provided.

- **Running Multiple Data Link Applications**.

  The Aspect CallCenter only provides the CDM/CTM to the last Data Link for which the CallCenter invoked a SEND DATA or RECEIVE DATA step. The ICM Peripheral Gateway uses the Event Link Interfaces and therefore does not require the CDM/CTM to properly terminate calls. But, because there are occasions when the CallCenter must provide a SEND DATA or RECEIVE DATA step (Post Routing or CCT JUMPING), multiple applications running on behalf of a CallCenter will require the ICM Application Bridge Server.

- **Data Links configured NOT to receive the CDMs or CTMs are still given precedence for those messages if they are the last Data Link to apply Call Treatment**.

  To address this problem, the CallCenter should not consider Data Links NOT configured to receive the CDM/CTM when a call terminates. The ICM Data Link would then be configured to NOT receive the CDM/CTM.

- **Calls that are Interflow rejected cause the Aspect Event Link to issue a Call Disconnect Event even though the call still persists on the original CallCenter**.

  There is currently no workaround for this problem.

  (FIXED in Release 6.1.)

- **The Event Link does not send over a Call Disconnect Event for HELP calls noticed**.

  The ICM software does not track help calls invoked by agents, because the Event Link does not provide a Call Disconnect Event.

  (FIXED in Release 6.1.)

- **Transfer and Disconnect Event Messages seem to be very inconsistent on delivery**.

The Aspect Event Link does not provide a Call Disconnect Event Message for the resulting call in a consultative transfer (#8xxx). This can be an issue for calls transferred off switch, where they may not be properly terminated when the call drops.

The Aspect Event Link does not provide a Call Disconnect Event Message for the resulting call in an Agent to Agent consultative transfer. The ICM software has provided a workaround for this case.

- **The Transfer and Disconnect Event Message do not consistently set the Reason CODE of the transferred call to 'E" the Transfer Termination Indication FLAG**.

  Research for a workaround is in progress.

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