



## Post-Routing

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- [Post Route Dial Number Registration for TSAPI Interface, on page 1](#)
- [Route Request, on page 1](#)
- [Route Select, on page 3](#)

### Post Route Dial Number Registration for TSAPI Interface

When **Avaya** PG uses **TSAPI** interface **PIM** gets registered as the routing server to post route the calls. Every time a new dial number is added to the **ICM** configuration, **PIM** sends a route registration request to the **AES** server. On confirmation, **PIM** acts as the routing server for that dial number.

### Route Request

To initiate a post-route, the **Avaya** vector that is handling the incoming call must include an **adjunct route request** step with the correct **ASAI/CTI** extension specified.

A **wait time** is specified after the adjunct route request to allow for **Unified ICM** software to route the call. Although Unified ICM post-route destination decision is (virtually) instantaneous, a typical wait time of four to six seconds in the vector is appropriate. The wait time may require to be adjusted depending on anticipated call volumes.

Vector writers consider the state of the call, if **Avaya** cannot properly route the post-routed call, or if the CTI link is down. There can be a scenario, where the label (call destination) returned from the CallRouter is not valid. For example incorrect Trunk Access Code, extension destination is busied-out, Class of Restriction (COR) does not allow the call to complete. In this case, it is necessary for you to consider how you want the call to be handled.

### Route Request Elements

The Avaya sends a route request to the PG containing the following Route Request Elements.

- Calling number (CLID)
- Called number (typically the VDN)
- User-user information (32 bytes maximum, where the data type is (a) user defined or (b) ASCII)
- Last set of Avaya collected digits (CED) (if any)

- Digit collection timeout (seconds)
- Call priority level (values: not\_used, not\_in\_queue, low, medium, high, top)
- Interflow type (that is, cause of interflow; values: all, threshold, vector)
- Time (time the routed call is to spend in the queue before interflow)
- DNIS chars (optional)
- Call ID
- Trunk group number and trunk number (optional; mutually exclusive with calling number)
- UCID
- II - digits\Call Originator Information

## Route Request Peripheral Variable Usage

If PIM is allowed Peripheral variable modification through **Call Control Variable Map**, the **Route Request** elements (such as **CLID** and Called Number) into **Peripheral Variables**. Unified **ICM** script writer can then use the information in the **Peripheral Variables** to create scripts that determine which destination best suits the caller's needs. All **Peripheral Variable** data types are ASCII.

The **Call Control Variable Map** field is available on the **Peripheral Configuration** window of the **Configure ICM** tool. This field controls the mapping of **Route Request Elements** to **Peripheral Variables**.

## Call Control Variable Map

The **Call Control Variable Map** fields are used to configure the peripheral variables, which are reserved for a **CTI** application. These fields are used by the **PG**. There are (two) ways, by which you can control the variable usage through the **Call Control Variable Map** field:

- Direct the **PIM**. The **PIM** can be directed on which call variables are accessed. For example, the following setting (made in the Call Control Variable Map field) allows the PIM to set call variable 1 and call variables 5 through 10. The call variables are set, while preserving the existing values of call variables 2 through 4 (which means that the PIM does not set call variables 2 through 4). This argument is from the perspective of the **PIM**.

```
/PIM=ynnnyyyyyy
```

- Direct the **CTI** portion of the PG. The CTI portion of the PG can be directed to allow the CTI Client to override any PIM Call Variable setting. For example, the following setting allows a CTI Client to set call variable 1 and call variables 5 through 10 while preserving the peripheral-determined values of call variables 2 through 4.

```
/CTI = ynnnyyyyyy
```

*See also:* For more details on **Unified ICM CTI** capabilities and interaction with the PG, see the ICM Software Enterprise **CTI Interface** Specification. The Route Select Peripheral Variable Map displays the **Peripheral Variable** numbers and the **Route Request Elements** which these numbers represent. It also displays the possible values contained in the **Route Request Elements**.

Table 1: Route Request Peripheral Variable Map

Peripheral Variable	Route Request Element	Possible Values
1	CallPriorityLevel	CP_UNUSED, CP_NOT_IN_QUEUE, CP_LOW, CP_MEDIUM, CP_HIGH, CP_TOP
2	InterflowType	IT_UNUSED, IT_ALL, IT_THRESHOLD, IT_VECTOR
3	TimeInQBeforeInterflow	ASCII char string (empty string if unused), units = Seconds
4	DNIS	ASCII char string (empty string if unused)
5	User-User Information	See Note 1.
6	CED	Caller Entered Digits (empty string if unused)
7	II - digits \ UCID	II - digits (ASCII form) (empty string if unused)  <b>Note</b> Peripheral Variable 7 is set to UCID value by TSAPI PIM.
8	Trunk Information	Format (if provided by switch): TrunkGroup Number, Trunk Number, Trunk Direction
9	Calling Number	If provided by switch (for example if on ISDN trunks or on-switch call)
10	VDN	Vector Directory Number



**Note** The **UUI** is limited to **ASCII** characters (null-terminated ASCII character string). That is, any non-ASCII UUI data received are not stored in the Peripheral Variable.

UUI data (ASCII and non-ASCII) is stored in the **Termination call Detail** table Unified ICM database. ICM Schema guide can be referred for more details.

#### Related Topics

[Route Select Peripheral Variable Usage](#), on page 5

## Route Select

The PG receives the selected route information from the *CallRouter* and converts it to a Route Select message for the **Avaya**. The **Route Select** message can be used to set call attributes, request digit collection from the switch, provide dial-ahead digits to the switch for collection, or specify user-user information to be included in the call.

You can specify the **Route Select** functionality through the **Peripheral Variables** or the syntax used in the **Label**. Unified ICM script can be used to set the Peripheral Variable contents. Where the setting of Route Select functionality overlaps, the **Peripheral Variable** setting takes precedence. Refer to the **Avaya** documentation to determine when any of the Route Select features can be used. For example, it may not make sense to have call priority **ON** if the destination is a **VDN** or **Split**. As another example, direct agent calling does not make sense if the destination is a **VDN**.

## Route Select Message

The Avaya Route Selection Message has the following elements:

- Destination route select. On-switch or off-switch called number.
- User-user information.

This consists of:

- **Data type:** (a) UU\_TYPE\_USER (user defined); or (b) UU\_TYPE\_IA5 (ASCII)
- **Length:** number of bytes (40 bytes maximum)
- **Data**
- **Call priority (ON or OFF).** If **ON**, this parameter represents a special type of call. This call carries three burst distinctive ringing. The call does not go to the covering point for coverage or send all calls.
- **Direct agent call.** This consists of:
  - Agent extension.
  - ACD Split extension, specifies the queue, to place the waiting call. The agent must be logged in to this split.
- **User data.** Used for digit collection or to specify dial-ahead digits:
  - **User data type:**
    1. **COLLECT** that specifies digits are to be collected
    2. **COLLECTED**, which specifies dial-ahead digits

The PIM default is **COLLECTED**.
  - **Digit collection timeout (0-63 seconds):** Specifies the number of seconds tone detector will continue to collect digits after the first digit is received. The **PIM** default is no timeout.
  - **Data:** If the user data type is **COLLECT**, this field is interpreted as a binary integer specifying the number of digits to collect. If the user data type is **COLLECTED**, this field is an ASCII string specifying the dial-ahead digits.
  - Use external **trunk identified by Trunk Access Code (TAC)**. The TAC can be prefixed in the called\_number field.

## Restrictions on Digit Collection

The Avaya restrictions that apply to digit collection include:

- Only incoming trunks of any type, including **ISDN**, **MFC**, and **R2MFC**, are eligible for ASAI/CTI-requested digit collection.
- Incoming disconnect supervision must be administered on the incoming trunk to allow a call prompter/tone detector to connect.

## Route Select Peripheral Variable Usage

The PG maps the Peripheral Variables received in the CallRouter's Route Select message as shown in Table 9: Route Request Peripheral Variable Map. All Peripheral Variable data types are ASCII. Peripheral Variables 1-4 and 6-10 are unassigned and can be used for the Route Select elements shown in Label Syntax table.

**Table 2: Route Select Peripheral Variable Map**

Peripheral Variable	Route Select element	Possible Values
1-4, 6-10	Call Priority	CP_ON, CP_OFF (default).
1-4, 6-10	Digit Collection/Dial Ahead	See the topic Digit Collection/Dial Ahead for more information.
1-4, 6-10	Trunk Access Code	See the topic Trunk Access Code for more information.
5	User-User Information	See the topic User-User Information for more information.

A Peripheral Variable can only be used for one Route Select element at a time. If a **Peripheral Variable** syntax is invalid or the **Peripheral Variable** is an empty string, the **Peripheral Variable** is ignored. The only fixed **Peripheral Variable** is PV 5, that is designated for UUI.

## Digit Collection/Dial Ahead

The Digit Collection/Dial Ahead peripheral variable string has the following syntax:

```
COLLECT NUMBER_OF_DIGITS_TO_COLLECT TIMEOUT DIGIT_COLLECTION_TIMEOUT
```

or

```
DIAL DIAL_AHEAD_DIGITS
```

COLLECT, TIMEOUT, and DIAL are keyword delimiters and must be specified as shown (case is not important). The fields *NUMBER\_OF\_DIGITS\_TO\_COLLECT*, *DIGIT\_COLLECTION\_TIMEOUT*, and *DIAL\_AHEAD\_DIGITS* are supplied by the customer. Some points to remember are:

- The number of digits to collect must be between one (1) and 24, inclusively.
- All fields are separated by spaces.
- Every # and \* count as one digit each.
- The digit collection timeout must be between one (1) and 31, inclusively.

The following example indicates that four digits are collected with a digit collection timeout of ten seconds:

```
COLLECT 4 TIMEOUT 10
```

The next example indicates that the digits 3, 2, 1 precedes the route selection:

```
DIAL 321
```

With proper configuration using translation routes, the DIAL syntax can allow you to provide the caller's ANI (or any set of digits) to the **Avaya**. Afterwards it is displayed on an agent's console.

## Trunk Access Code

The **Trunk Access Code Peripheral Variable** has the syntax:

```
TAC TRUNK_ACCESS_CODE
```

**TAC** is a keyword delimiter and must be specified as shown (case is not important). The **TRUNK\_ACCESS\_CODE** field specifies a valid **Trunk Access Code** extension for the **Peripheral**. The **TAC** can also be pre-pended in the Label. All fields must be space separated.

The following example indicates a **Trunk Access Code** of 111 for the route selection:

```
TAC 111
```

## User-user Information

This is a null-terminated ASCII character string. The **UUI** data is stored in **Peripheral Variable 5** for both the Route Request and Route Select messages only if the protocol format of the UUI data is C\_UU\_IA5. Therefore, unless modified, all UUI data received for a call are included when sent to the calls' destination. UUI data is limited to 40 bytes.

**Avaya PIM** was designed to support the User-to-User information (UUI) up to 32 bytes inline with the older switch version support, which was 32 bytes.

ASAI supports UUI up to 96 bytes for **Avaya CVLAN Server** Release 8, and link version 4 and beyond.

With this enhancement **Avaya PIM** supports 40 bytes for the UUI field.

## Label Syntax

The **Unified ICM Label** can be used to specify additional Route Select<sup>1</sup> functionality. Incorrect or incomplete Route Select data may result in the **Avaya** denying the Route Selection and proceeding with vector processing.

A special label type to support the incorporation of dial-ahead digits into the label is supported. The string **DTMF** within the label indicates the presence of these dial-ahead digits.

The format of this label type is as follows:

```
XXXXXDTMFYYYYY
```

The XXXXX is required and is the destination where the post-routed call are directed. YYYYY, maximum 16 digits (can include \* and #), are included as dial-ahead digits when the route response is sent to the switch for the post-routed call. This label type can be used for post-routed or translation-routed calls. A label using this special label type cannot use any of the other special label formatting capabilities listed in the following table Table 11: Label Identifiers and Capabilities. Peripheral Variables can still be used.

**Table 3: Label Identifiers and Capabilities**

Label Identifiers	Definition	Example
!	An exclamation point at the beginning of the label indicates that <b>Call Priority</b> are turned ON. The default is Call Priority OFF.  See Note 1	!1234 indicates that the call directed to extension 1234 has call priority ON.

Label Identifiers	Definition	Example
@	The “at” sign (@) at the beginning of the label indicates that this is a <b>DACD</b> call. The call destination must be an agent’s extension. The default is No DACD call. (See Note 1.)	@2345 indicates that the call directed to the agent at extension 2345 is a DACD call. Because no agent group or agent group extension was specified in this example, the PIM attempts to select the first known agent group login for the agent. Both the agent and the destination agent group must have been previously known to the PIM for this to be successful.
&	The ampersand (&) used within the Label is used to specify the <b>Agent Group Peripheral Number</b> . The Agent Group Peripheral Number must immediately follow the ampersand and must be configured in Unified ICM software. The <b>PIM</b> determines the correct Agent Group extension.	@2345 &11 indicates that the call directed to the agent at extension 2345 is a <b>DACD</b> call and the agents group number is 11. Using the Agent Group Peripheral number may be convenient if the agent group extension is changed anytime.
#	The pound sign (#) used within the Label is used to specify the <b>Agent Group Extension</b> number. The <b>Agent Group Extension</b> must immediately follow the pound sign. The Agent must be a logged-in member of that agent group.	@2345 #1000 indicates that the call directed to the agent at extension 2345 is a DACD call and the agents’ agent group extension is 1000.
%1 %2 ..... %10	The percent sign ‘%’ at the beginning of the label indicates that the call destination is contained in the specified <b>Peripheral Variable</b> number.  See Note 2	“%1” indicates that the call destination is contained in Peripheral Variable 1 (PV1). This is useful if you want to specify the destination in the PV’s or to place CEDs in a PV as a destination.



- Note**
1. All Label Identifiers can be used together unless otherwise noted. Label Identifiers designated to be at the beginning of the label cannot be preceded by any digits. For example, “!%1” indicates a Priority call to the agent specified in Peripheral Variable 1.
  2. Peripheral Variable 5 is reserved for User-User Information (UII) only

<sup>1</sup> ICM 5.0 SR13 supports star (\*) as a valid routing label for translation routing and post-routing in Avaya PIM. For example, \*173001 is a valid routing label where \*17 can be the Trunk Access Code and 3001 indicates the extension/VDN to which the call would be directed. The post-route label containing the star (\*) character is configured in Service explorer.

## Network Take-Back and Transfer Support

The Adjunct Switch Application Interface (ASAI) provides messages to enable an application (for example, the PG) to take advantage of the Network Take-Back and Transfer feature. The message set enables a host to generate a transfer call request to the carrier. Unified ICM customers currently perform the following actions when transferring inter-switch calls using Unified ICM Enterprise Routing:

1. An agent receives an inbound call.
2. The agent begins a consultative call (#8XXX or speed dial #), which results in a new call in a VDN that performs a Post-Route Request.
3. The Unified ICM response to the Post-Route request is either of the following:
  - a. A VDN that targets another Switch using tie lines between ACDs.
  - b. A VDN that targets 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.

The following steps are performed when transferring inter-switch calls using the Network Take-Back and Transfer feature:

1. An agent receives an inbound call.
2. The agent then starts a consultative call (#8XXX or speed dial #). A new call get initiated owing to the consult call, that runs a vector that performs a Post-Route Request.
3. Unified ICM response to the Post-Route request is a label of the form DTMF\*8xxxxxxx or DTMFD\*8xxxxxxx. The DTMF and DTMFD prefix in the label informs the PIM that it must perform a Carrier Call Transfer.

PIM performs the following steps for Carrier Call Transfer:

1. The PG terminates or clears the consultative call that performed the post-route request by issuing a ClearCall Request.
2. When the PG receives a Clear Call confirmation response for the consult call disconnecting, the PG connects back the initial call that was placed on HOLD with the customer, by issuing a Retrieve Call Request. The feature requires that the call stays in the connected state to run the Carrier Call Transfer.
3. When the PG receives the Retrieve Call Confirmation Response confirming that the call was retrieved and is in the connected state, the PIM issues the Send DTMF tone request with the digits received in the label from Unified ICM (the portion of the label string following the keyword DTMF / DTMFD).

The DTMFD is similar to the DTMF prefix, except that DTMFD instructs the PG to disconnect the original call when the Send DTMF tone processing completes. This enables the PIM to clear the agent's association with the call if the DTMFD prefix is used (similar to a blind transfer case where the network clears the original call with the associated agent).

The PIM currently uses the Clear Call Request and Retrieve Call Request for CTI Third-Party Call Control Interfaces. These enable hands-free transfer steps after initiating the consultative call.