



CHAPTER 3

IAD Residential Subscriber Provisioning

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This chapter describes how to provision the Cisco BTS 10200 Softswitch to communicate with a Cisco IAD2421 to support local subscriber on-net calls.

For a more detailed description of all Cisco BTS 10200 Softswitch tables, tokens, and value ranges, refer to the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide*.

Provisioning an IAD Subscriber

[Table 3-1](#) provides an example of the steps required to provision the Cisco BTS 10200 Softswitch to communicate with an internet access device (IAD) and provides example CLI commands with mandatory tokens. Click on each step for a complete description of the step.

Table 3-1 *Provisioning an IAD Subscriber*

	Description	CLI Command
Step 1	Add a Media Gateway Profile, page 3-2	add mgw-profile id=IAD2421; vendor=cisco;
Step 2	Add a Media Gateway, page 3-2	add mgw id=c2421.192; tsap-addr=c2421.192.trnglab.cisco.com; call-agent-id=CA101; mgw-profile-id=IAD2421; type=rgw;
Step 3	Add a Termination, page 3-3	add termination prefix=aaln/S1/; port-start=1; port-end=16; type=line; mgw-id=c2421.192;
Step 4	Add a Destination, page 3-3	add destination dest-id=local-call; call-type=local; route-type=sub;
Step 5	Add a Dial Plan Profile, page 3-4	add dial-plan-profile id=dp1; description=dialing plan profile id;
Step 6	Add a Dial Plan, page 3-4	add dial-plan id=sub; digit-string=469255; noa=national; dest-id=local_call;
Step 7	Add a Subscriber Profile, page 3-4	add subscriber-profile id=subpf1; dial-plan-id=dp1; pop-id=1;

Table 3-1 *Provisioning an IAD Subscriber (continued)*

	Description	CLI Command
Step 8	Add a Subscriber, page 3-4	add subscriber id=sub1; category=individual; name=Richardson1; term-id=aaln/S1/3/; mgw-id=c2421.192; dn1=4692551231; sub-profile-id=subpf1; Note Each subscriber must have a unique term-id.
Step 9	Change a DN to a Subscriber, page 3-5	add dn2subscriber office-code-index=1;dn=1321; status=assigned;
Step 10	Control a Media Gateway, page 3-6	control mgw id=c2421.192; target-state=INS; mode=forced;
Step 11	Equip a Subscriber Termination, page 3-6	equip subscriber-termination id=sub1;
Step 12	Control a Subscriber Termination, page 3-7	control subscriber-termination id=sub1;

Add a Media Gateway Profile

A media gateway (MGW) profile provides a template for provisioning one or more media gateways by vendor. It identifies the specifications and settings necessary for communications between the Call Agent and each type of media gateway.

Several tokens have values that can be overwritten after the Call Agent queries the media gateway for supported capabilities. If the media gateway returns a value different from the value you originally provisioned, the returned value automatically replaces the originally provisioned value.

Command	Purpose
add mgw-profile id=IAD2421; vendor=cisco;	Adds a media gateway profile
If necessary, change the value of other keepalive tokens in the mgw-profile table.	



Tip

The mgcp-max1-retries and mgcp-max2-retries tokens in the mgw-profile table can be adjusted, if necessary, to improve response if there are network bandwidth or reliability issues, or if an MGW is slow in responding to commands from the CA. For a detailed explanation of how these and other parameters affect the audit-endpoint and keepalive processes, see the applicable appendix ([Release 4.4.x Keepalive](#) or [Release 4.5.x Keepalive](#)) in the *Cisco BTS 10200 Softswitch Troubleshooting Guide*.

Add a Media Gateway

The Media Gateway (mgw) table holds information about each media gateway managed by the Call Agent. The media gateway can be uniquely addressed by domain name, an IP address, or the TSAP address.

The Media Gateway table has two associated commands: RGW and TGW. The RGW command provisions a gateway as only a residential gateway, with the type token automatically set to RGW. The TGW command provisions a gateway as a trunking gateway only, with the type token automatically set to TGW. Both of these commands provision the Media Gateway table, but a service provider can use these commands to provide user security to certain individuals based on their roles.

Command	Purpose
add mgw id=c2421.192; tsap-addr=c2421.192.trnglab.cisco.com; call-agent-id=CA101; mgw-profile-id=IAD2421; type=rgw;	Adds a media gateway

**Note**

The RGW command could also be used to provision the media gateway in this instance. Refer to the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide* for detailed information about the RGW and TGW commands.

Add a Termination

The Termination (termination) table holds information about each termination/endpoint managed by the Call Agent. Termination structure uniformly addresses analog ports, DS0 ports, ISDN circuits, and allows termination groupings for ISDN PRI and multiline hunt groups (MLHGs) for a single subscriber. Termination events and signals are grouped into packages, which are groupings of events and signals supported by a particular type of endpoint. For instance, one package supports a certain group of events and signals for analog access lines, while another package supports another group of events and signals for video lines. One or more packages can exist for a given endpoint type. The package type is determined by the gateway used.

This table can use commands that do not match command-to-field of the database. If the prefix token is used during provisioning, the termination ID is generated by concatenating prefix and port-start value and incrementing the termination port number until the port number value reaches port-end. The prefix, port-start, and port-end are not in the table as individual fields.

The user enters:

prefix: 1–32 ASCII characters

port-start: 0000–9999 (1–4 numeric characters) (default = 1)

port-end: 0000–9999 (1–4 numeric characters) (default = 24)

Command	Purpose
add termination prefix=aaln/S1/; port-start=1; port-end=16; type=line; mgw-id=c2421.192;	Adds a termination

Add a Destination

The Destination (destination) table defines the call type and the routing information for the dialed digits. Multiple digit strings in the Dial Plan table can use the same destination ID.

Command	Purpose
add destination dest-id=local-call; call-type=local; route-type=sub;	Adds a destination

Add a Dial Plan Profile

The Dial Plan Profile (dial-plan-profile) table creates dial-plan-profile-ids before they are assigned to subscribers or trunk groups. The dial-plan-profile-id links digit-string entries in the Dial Plan table within a dial plan. Different dial-plan-profile-ids are assigned to subscribers and trunk groups. A dial-plan-id must be created in this table before entries can be added to the Dial Plan table.

Command	Purpose
add dial-plan-profile id=dp1; description=dialing plan profile id;	Adds a dial plan profile

Add a Dial Plan

Dial plans analyze, screen, and route calls based on dialed digits. The Dial Plan (dial-plan) table holds dial plan information for a specific type of call. It defines valid dialing patterns and determines call routing. All records that share a common dial-plan-profile-id are considered a dial plan.

Command	Purpose
add dial-plan id=sub; digit-string=469-255; noa=national; dest-id=local_call;	Adds a dial plan

Add a Subscriber Profile

The Subscriber Profile (subscriber-profile) table groups properties that are shared by a group of subscribers. For example, a Centrex group consisting of several subscribers can share a subscriber profile. Because a Call Agent consists of several points of presence (POPs), and POP is one of the tokens in the subscriber profile, POP-specific subscriber profiles must be created.

Command	Purpose
add subscriber-profile id=subpf1; dial-plan-id=dp1; pop-id=1;	Adds a subscriber profile

Add a Subscriber

The Subscriber (subscriber) table defines the characteristics of a subscriber or group of subscribers in a Call Agent. All termination numbers reached by a directory number (DN) must be set up as a subscriber. Any termination that can originate in the primary Call Agent must be set up as a subscriber (residential, PBX, business, and Centrex). All terminations to customers, such as MLHG and Centrex, must be defined as well.

Command	Purpose
add subscriber id=sub1; category=individual; name=Richardson1; term-id=aaln/S1/3/; mgw-id=c2421.192; dn1=4692551231; sub-profile-id=subpf1;	Adds a subscriber

**Note**

Each subscriber must have a unique term-id.

**Note**

Do not use double quotation marks (""), single quotation marks ('), dashes (-), or underscores (_) in subscriber names. While dashes and underscores are allowed, using a dash causes errors when sending it as part of a caller name feature.

Change a DN to a Subscriber

The Element Management System (EMS) automatically generates the DN2Subscriber table. A user can show data or change the Status field to VACANT if it is in the disconnected (DISC) or connected (CN) state. The DN2Subscriber (dn2subscriber) table determines the subscriber ID of a DN during termination processing. The table is populated when a subscriber DN is added to the Subscriber table. It is queried when the called number is translated using the dial plan and the type of subscriber field indicates “Subscriber,” that is, it takes a DN and maps it to a subscriber.

The DN2Subscriber table also consists of the administrative status of the DN. [Table 3-2](#) lists the administrative states of the DN.

Table 3-2 Administrative States of the DN

State	Definition
VACANT	The DN is unassigned. An Unassigned DN announcement is played. A typical announcement is “The number you dialed is not in service. Please check the number and try again.” The cause code for this state is #1.
ASSIGNED	The DN is assigned to a subscriber.
CN	The DN status is marked as a changed number (CN) when the subscriber requests a new number. A Changed Number announcement is played in this state. A typical announcement is “The called number has changed. The new number is ...” The cause code for this state is #22.
DISC	The DN is disconnected. A Disconnected Number announcement plays. A typical announcement is “We’re sorry, you have reached a number that has been disconnected or is no longer in service...” The cause code for this state is #27.
LRN	The DN has been reserved as a Location Routing Number (LRN) on this Call Agent.
RACF-DN	The DN has been reserved for the remote activation of call forwarding (RACF) feature.
TEST-LINE	The DN has been assigned to a test line.

Table 3-2 Administrative States of the DN

State	Definition
ANNC	The DN points to an announcement (ANNC) ID.
PORTED-OUT	The subscriber ported (moved) out of the Call Agent and chose to keep their DN (local number portability).

To provision PBX-DID subscribers, the DN2Subscriber table must be manually provisioned. The DN2Subscriber table can support groups of 10, 100, 1000, or 10,000 directory numbers. The format of the DN is nnnn, where n = 0–9. To provide a range of DNs, replace n with a lowercase x. If the last digit is replaced with a lowercase x, it represents a group of 10 DNs. 100 DNs are represented by xx, 1000 DNs are represented by xxx, and 10,000 DNs are represented by xxxx.

Command	Purpose
change dn2subscriber office-code-index=1;dn=1321; status=assigned;	Assigns a DN to a subscriber

Control a Media Gateway

The control command sets the administrative state (OOS, INS) of media gateways, subscriber terminations, trunks, and trunk groups.

Command	Purpose
control mgw id=c2421.192; target-state=INS; mode=forced;	Places the MGW in-service

The status command displays the state of media gateways, subscriber terminations, trunks, and trunk groups.

Enter the following CLI command to verify that the media gateway is in-service:

```
status mgw id=<mgw id>;
```

Reply example:

```
Reply : Success:
```

```
MGW ID -> c2421.192
RESULT -> ADM configure result in success
REASON -> ADM executed successful
ADMIN STATE -> ADMIN_INS
OPER STATE -> Media gateway in working status
```

Equip a Subscriber Termination

The equip command enables the subscriber trunk termination to be placed in-service. [Table 3-3](#) lists and defines trunk termination states.

Command	Purpose
<code>equip subscriber-termination id=sub1;</code>	Enables a subscriber trunk termination to be placed in-service

Table 3-3 **Subscriber Trunk Termination States**

State	Definition
ADMIN-INS	In Service
ADMIN-OOS	Out of Service
ADMIN-MAINT	Maintenance Mode

Control a Subscriber Termination

The control command sets the administrative state (OOS, INS) of media gateways, subscriber terminations, trunks, and trunk groups.

Command	Purpose
<code>control subscriber-termination id=sub1;</code>	Places the subscriber termination in-service

Enter the following CLI command to verify that the subscriber termination is in-service:

```
status subscriber-termination id=<subscriber-termination id>;
```

Inter-LATA Option to Dial One

Prefix screening tokens provisioned in the Subscriber Profile table determine whether a subscriber must dial one when dialing local or long distance calls. LOCAL_PFX1_OPT controls calls with call type set to LOCAL, and TOLL_PFX1_OPT controls inter-LATA and toll calls. Valid values for these tokens are RQ (required, NR (not required), and OPT (optional).

Beginning with Cisco BTS 10200 Softswitch software Release 4.5, a new token, INTERLATA_PFX1_OPT, controls inter-LATA calls.

The following example turns on the inter_LATA option to dial one for Releases 4.5 and later:

```
change subscriber-profile ID=sp1; DIAL_PLAN_ID=cdp1; LOCAL_PFX1_OPT=NR; TOLL_PFX1_OPT=RQ;
INTERLATA_PFX1_OPT=RQ; POP_ID=69;
```



Note

For Service Access Code (SAC) calls such as 500, 700, 800, and 900, you must dial the 1. The flags LOCAL_PFX1_OPT, INTERLATA_PFX1_OPT, and TOLL_PFX1_OPT, do not affect these types of calls.

