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 IAD 2421 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 integrated access device (IAD) and provides examples of CLI commands with mandatory tokens. Click on each step for a complete description of the step.

Table 3-1 IAD Provisioning Steps

	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 Profile, 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 3-3	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 IAD Provisioning Steps

	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 the DN to a Subscriber, page 3-5	add dn2subscriber office-code-index=1;dn=1321; status=assigned;
Step 10	Control an MGW, 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 3-6	control subscriber-termination id=sub1;

Add a Media Gateway Profile

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

Several tokens have values that can be overwritten after the CA queries the media gateway for supported capabilities. If the MGW 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.

The MGW table holds information about each MGW managed by the CA. The MGW can be uniquely addressed by domain name, an IP address, or the TSAP address.

The MGW 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 MGW 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 MGW 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 or 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 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.

The termination 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 reach 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 number 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 or 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, but using a dash causes errors when you sent the name as part of a caller name feature.

Change the 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. The table is queried when the called number is translated by 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 states 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.
ANNC	The DN points to an announcement (ANNC) ID.
PORTED-OUT	The subscriber ported (moved) out of the Call Agent and chose to keep his or her DN (local number portability).

For PBX-DID subscribers to be provisioned, 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

To change the directory number of a subscriber, see the provisioning steps in the "Class of Service Screening" section on page 7-62.

Control an MGW

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

Enter the following CLI command to verify that the MGW 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 defines subscriber trunk termination states.

Command	Purpose
`equip subscriber-termination id=sub1;`	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
`control subscriber-termination id=sub1;`	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 1

Prefex screening tokens provisioned in the Subscriber Profile table determine whether a subscriber must dial 1 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).

The following example turns on the inter_LATA option to dial 1:

```
change subscriber-profile ID=sp1; DIAL_PLAN_ID=cdp1; LOCAL_RFX1_OPT=NR; TOLL_PFX1_OPT=RQ;
INTERLATA_PFX1_OPT=RQ; POP_ID=69;
```

Note For Service Access Code 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 such calls.