CHAPTER 4

ATA 18x Residential Subscriber Provisioning

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The Cisco Analog Telephone Adaptor (ATA) products are standards-based communication devices that deliver voice-over-IP (VoIP) terminations to businesses and residences. This chapter describes how to provision the Cisco ATA 186 and 188 residential gateways 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 ATA 18X Residential Subscriber

Table 4-1 provides the steps required to provision the Cisco BTS 10200 Softswitch to communicate with a Cisco ATA 18x residential gateway and support local subscribers. Click on each step for a description of the step.

Table 4-1 ATA 18X Residential Subscriber Provisioning

	Description	CLI Command
Step 1	Add a Media Gateway Profile, page 4-2	add mgw-profile id=ATA186; vendor=cisco; packet-type=IP; mgcp-version=mgcp_1_0; description=Cisco ATA186;
Step 2	Add an MGW, page 4-2	add mgw id=ATA1; tsap-addr=ATA1.trnglab.cisco.com; call-agent-id=CA101; mgw-profile-id=ATA186; type=rgw;
Step 3	Add a Termination, page 4-3	add termination prefix=aaln/; port-start=1; port-end=2; mgw-id=ATA-1; type=line;
Step 4	Add a Destination, page 4-3	add destination dest-id=local-call; call-type=local; route-type=sub;
Step 5	Add a Dial Plan Profile, page 4-3	add dial-plan-profile id=dp1; description=dialing plan profile id;
Step 6	Add a Dial Plan, page 4-4	add dial-plan id=sub; digit-string=469-255; noa=national; dest-id=local_call;
Step 7	Add a Subscriber Profile, page 4-4	add subscriber-profile id=subpf1; dial-plan-id=dp1; pop-id=1;
Step 8	Add a Subscriber, page 4-4	add subscriber id=sub2; category=individual; name=Richardson1; term-id=aaln/1; mgw-id=ATA-1; dn1=469-255-1231; sub-profile-id=subpf1; **Note** Each subscriber must have a unique term-id.

Table 4-1 ATA 18X Residential Subscriber Provisioning

	Description	CLI Command
Step 9	Generate a DN2Subscriber, page 4-5	The EMS automatically generates the DN2Subscriber table.
Step 10	Control an MGW, page 4-6	control mgw id=ATA-1; target-state=INS; mode=forced;
Step 11	Equip a Subscriber Termination, page 4-6	equip subscriber-termination ID=sub2;
Step 12	Control a Subscriber Termination, page 4-6	control subscriber-termination id=sub2; target-state=INS; mode=forced;

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 MGW.

Several tokens have values that can be overwritten after the Call Agent queries the MGW 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=ATA186; vendor=cisco; packet-type=IP; mgcp-version=mgcp_1_0; description=Cisco ATA186;	Provisions an MGW profile

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 Release 5.0 Keepalive in the *Cisco BTS 10200 Softswitch Troubleshooting Guide*.

Add an MGW

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 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=ATA1;
tsap-addr=ATA1.trnglab.cisco.com;
call-agent-id=CA101;
mgw-profile-id=ATA186; 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 CA. 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, and 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/;port-start=1; port-end=2;mgw-id=ATA-1;type=line;	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

A dial plan analyzes, screens, and routes a call 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 CA 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 CA. All termination numbers reached by a directory number (DN) must be set up as a subscriber. Any termination that can originate in the primary CA must be set up as a subscriber (residential, PBX, business, or Centrex). All terminations to customers, such as MLHG or Centrex, must be defined as well.

Table 4-2 lists the tokens required for each value.

Command	Purpose
`add subscriber id=sub2; category=individual; name=Richardson1; term-id=aaln/1; mgw-id=ATA-1; dn1=469-255-1231; sub-profile-id=subpf1;`	Adds a subscriber **Note** Each subscriber must have a unique term-id.

Table 4-2 Required Tokens

Value	Required Token
Individual	TERM-ID, MGW-ID
MLHG	MLHG-ID

Table 4-2 Required Tokens

Value	Required Token
MLHG-INDIVIDUAL	TERM-ID, MGW-ID, MLHG-ID
MLHG-PREF-INDIV	TERM-ID, MGW-ID, MLHG-ID, MLHG-PREF-LIST-ID
CTXG-MLHG	MLHG-ID, CTXG-ID
CTXG	CTXG-ID
CTXG-INDIVIDUAL	TERM-ID, MGW-ID, CTXG-ID
CTXG-TG	CTXG-ID, TGN-ID
PBX	TGN-ID

Generate a DN2Subscriber

The 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 includes the administrative states of the DN. Table 4-3 lists the possible administrative states of the DN.

Table 4-3 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 is played. 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 an 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 their 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.

Control an MGW

Control sets the administrative state (OOS, INS) of MGWs, subscribers terminations, trunks, and trunk groups.

Command	Purpose
`control mgw id=ATA-1; target-state=INS; mode=forced;`	Places a media gateway in-service

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

```
status mgw id=ATA-1;
```

Reply example:

```
Reply : Success:

MGW ID -> ATA-1
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 4-4 lists and defines trunk termination states.

Command	Purpose
`equip subscriber-termination ID=sub2;`	Enables a subscriber trunk termination to be placed in-service

Table 4-4 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 places the administrative state of a subscriber termination in-service.

Command	Purpose
`control subscriber-termination id=sub2; target-state=INS; mode=forced;`	Changes the administrative state of a subscriber termination to in-service

Verify that the subscriber termination is in-service by using a status command similar to the following:

```
status subscriber-termination id=sub2;
```