CHAPTER 7

Feature Provisioning

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This chapter describes the CLI provisioning commands necessary to offer supplementary features to a subscriber line and is limited to the Feature Server components of the Cisco BTS 10200 Softswitch. All the necessary steps required to provision the supplementary features offered by the Feature Servers are described in the recommended order; however, only the essential tokens are included in the examples.

The following sections constitute the structure of this chapter, the conventions used, and the assumptions that are made. The provisioning procedures are grouped as follows:

- Feature Provisioning—provisioning procedures to set up a feature server on the network.
- Subscriber Provisioning—provisioning procedures required to set up a subscriber in the network.
- Centrex Provisioning—provisioning procedures required to set up a Centrex group.
- MLHG Provisioning—provisioning procedures required to set up a multi-line hunt group (MLHG).
- Centrex-MLHG Provisioning—provisioning procedures required to set up a Centrex-MLHG.
- Feature Provisioning—provisioning procedures for features that might be applicable to a POTS subscriber, Centrex, MLHG, Centrex-MLHG, or trunks.

Note Related features may be grouped under one section. For example, the procedures for provisioning the CFU, CFUA, CFUD, and CFUI features are described in the same section.

Tip For a complete description of the features provisioned in this chapter, see the Network and Subscriber Feature Descriptions.

The individual procedures for provisioning each supplementary feature are structured as follows:

- **Office Provisioning**—Identifies provisioning requirements at the Office level.

  This is a one-time procedure performed during initial softswitch configuration and, under normal circumstances, it is not required at any other point during system operation.

- **Provisioning Resources**—Identifies provisioning requirements at the network resource level.

  Network resources include the Call Agent, Feature Servers, media gateways, trunks, and terminations. Resource provisioning, under normal circumstances, is done one time during the initial softswitch configuration and is not required at other points during system operation.

- **Provisioning Notes/Caveats**—Notes any other points related to provisioning not captured under previous sections.
- **Alternate Activation and Deactivation Method**—Identifies alternative methods to activate and deactivate a feature.

If any of these elements do not apply in any individual procedure, they are eliminated. Each provisioning task is presented in a procedural format, with a sequence of provisioning steps.

Conventions

This section outlines additional conventions used only within this chapter. Refer to the Preface of this guide for all other conventions.

1. In this chapter, the text "Refer to document R, section X, subsection Y" indicates a suggestion to refer to the text in the named reference document (R) in subsection Y of section X.
2. In the CLI command examples:
   - a word in italic represents the primary key.
   - token-names in bold represent mandatory tokens for the command.
   - token-values in bold represent the mandatory value for a token.
3. The alternative CLI commands, "add/change," specify an "add," if the record has not yet been added, or "change," if the record has already been added but needs to be changed. If the record is new, other parameters might be necessary with respect to implementing a basic call.

Assumptions

The following specific assumptions are made in this chapter:

- Basic network resource configuration and provisioning is done. Network resources include call-agents, feature-servers, media-gateways, trunks, and terminations.
- The feature behavioral aspects are known to the user.
- Basic call processing is provisioned and works for a subscriber. Basic call provisioning aspects like dial-plan are not discussed in this chapter.
- All CLI command examples are for illustrative purposes only and present only the necessary provisioning parameters specific to the feature.
  - The parameters presented should be sufficient for the switch to provide the service; however, some parameter values can differ and should be chosen based on the behavior required.
  - Parameter values themselves (like call-agent-id and vsc-code), might not be consistent from one example to another. All provisioning examples are only for stand-alone illustrative purposes.
- All steps in the procedures described here are mandatory unless specifically designated as optional.

Vertical Service Codes

Some features can be accessed and controlled by the subscriber using a handset and vertical service codes (VSCs). VSCs are provisionable by the service provider (any valid unique ASCII string up to five characters long), and the customary values are country specific.

For convenience, some VSC values are preprovisioned in the Cisco BTS 10200 Softswitch. The valid formats for VSC ASCII strings are listed in the VSC table specification in the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide*. The preprovisioned VSC values are listed in the Vertical Service Code appendix of the same document.

Note The regular digit pattern for North American VSCs is * followed by two digits (*XX). VSCs are provisionable by the service provider. The VSC values used throughout this chapter are for illustrative purposes only.

Vertical Service Code Provisioning

This section supplements the feature provisioning sections for features that can be invoked with a vertical service code (VSC).

VSC provisioning is dependent on the type of dial plan in effect, NANP or otherwise. Currently, there are two standard configurations based on the nature of dial plan associated with a subscriber. They are identified by the NANP-DIAL-PLAN token in the Dial-plan-profile table and are discussed in the following sections:

- NANP Dial Plan VSC Provisioning, page 7-3
- Non-NANP Dial Plan VSC Provisioning for Subscriber and Centrex, page 7-4

Note The following restriction applies to networks with SIP endpoints. Certain combinations of VSCs should not be deployed on networks with SIP endpoints. If you deploy a VSC longer than 2 digits, make sure that the longer VSC does not begin with the same sequence of characters as one of the shorter VSCs. In some cases, the system might match the shorter string even if the subscriber dialed the longer string.

Consider the following example, for which the subscriber is expected to dial a VSC followed by a DN. A SIP subscriber is provisioned with *93 for Feature1 and *938 for Feature2, and dials *938+2135551801 to invoke Feature2. The BTS 10200 receives *9382135551801 in the INVITE message. By default, it takes the first six characters, in this case *93821, and uses this string to look up the feature in the VSC table. There is no match for *93821, therefore the BTS 10200 proceeds as follows. First, it uses *9 to look for a match in the VSC table and it cannot be found. Then it uses *93, finds a match, and delivers Feature1. This is incorrect. The user's intention was to invoke Feature2 and not Feature1. The solution is for the service provider to change one of the two VSCs (either *93 or *938) in the VSC table.

NANP Dial Plan VSC Provisioning

Step 1 Provision the digit map with the digit pattern.

```
add/change digit-map; id=digit-map-1; DIGIT_PATTERN=[regular digit
pattern]|*xx|11xx|[regular digit pattern];
```

Note The [regular digit pattern] referred to is part of the subscriber digit map/digit pattern. The VSC digit patterns are embedded between the subscriber's digit map/digit pattern.

Step 2 Add the digit pattern to the digit map used for Centrex subscribers:

```
add/change digit-map; id=digit-map-ctx; DIGIT_PATTERN=[regular Centrex digit
pattern]|*xx|11xx|[regular Centrex digit pattern];
```

Note The [regular Centrex digit pattern] is part of the Centrex digit map/digit pattern. The VSC digit patterns are embedded between the Centrex digit map/digit pattern.

Step 3 Associate the digit maps in Steps 1 and 2 to the appropriate subscriber profiles:

```
add/change sub-profile id=plano1; digit-map-id=digit-map=1;
add/change sub-profile id=plano1; digit-map-id=digit-map-ctx;
```

Step 4 Associate the digman entry to the dial plan profile and update the NANP_DIAL_PLAN field in the Dial-plan-profile table to Y:

```
add/change dial-plan-profile ID=dpp1; DESCRIPTION=dialing plan profile ID2;
NANP_DIAL_PLAN=Y;
```

Step 5 Provision the VSC/CDP table with the VSC code. Shown is an example for CFUA for POTS and Centrex subscribers:

```
add/change vsc digit-string=*72;fname=CFUA;
add/change cdp digit-string=*72; fname=CFUA; cdp-id=cdp1; cat-string=11111111111; nod=VSC;
```

Non-NANP Dial Plan VSC Provisioning for Subscriber and Centrex

Step 1 Provision the digit map with the digit pattern. This CLI example of the digit map only highlights the pattern for the VSC codes to be reported:

```
add/change digit-map id=digit-map-1; DIGIT_PATTERN=[regular digit
pattern]|[*,#]xx{*,#]|[regular digit pattern];
```

Note The regular digit pattern referred to in this section is part of the subscriber digit map/digit pattern. The VSC digit patterns are to be embedded between the subscriber's digit map/digit pattern.

Note Only the following VSC signatures are applicable:
XX
*XX#
#XX#
#XX
*#XX#

Step 2 Add the digit pattern to the digit map used for Centrex subscribers:

```
add/change digit-map id=digit-map-ctx; DIGIT_PATTERN=[regular Centrex digit
pattern]|[*,#]xx[*,#]|*#xx[*,#]|[regular Centrex digit pattern];
```

Note The regular Centrex digit pattern referred to in this section is part of the Centrex digit map/digit pattern. The VSC digit patters are to be embedded between the Centrex digit map/digit pattern.

Step 3 Associate the digit maps in Steps 1 and 2 to the appropriate subscriber profiles:

```
add/change sub-profile id=plano1; digit-map-id=digit-map-1;

add/change sub-profile id=plano1; digit-map-id=digit-map-ctx;
```

Step 4 Add or change entries in the Digman table:

```
add/change digman id=pretrans; RULE=1; MATCH_STRING=^*; REPLACE_STRING=&;MATCH_NOA=ANY;
REPLACE_NOA=VSC;

add/change digman ID=pretrans; RULE=2; MATCH_STRING=^#; REPLACE_STRING=&; MATCH_NOA=ANY;
REPLACE_NOA=VSC;
```

Step 5 Associate the entries in the Digman table to the dial plan profile and update the NANP_DIAL_PLAN token in the Dial-plan-profile table to N:

```
add/change dial-plan-profile ID=dpp1; DESCRIPTION=dialing plan profile ID2;
NANP_DIAL_PLAN=N; DNIS_DIGMAN_ID=pretrans;
```

Step 6 After the feature tables are populated, provision the VSC/CDP table with a VSC code for all applicable features. The following is an example for CFUA for POTS and Centrex subscribers:

```
add/change vsc digit-string=*57*; fname=CFUA;

add/change cdp digit-string=*57*; fname=CFUA; cdp-id=cdp1; cat-string=11111111111;
nod=VSC;
```

Feature Provisioning

This section describes how to provision the following features:

- Temporary Disconnect, page 7-126
- Three-Way Calling (TWC), page 7-128
- Three-Way Calling Deluxe (TWCD), page 7-128
- Time and Weather Number, page 7-134
- Usage Sensitive Three-Way Calling (USTWC), page 7-129
- Voice Mail (VM), Voice Mail Always (VMA), A/D/I (VM_ACT, VM_DEACT, VMA_ACT, VMA_ACT, VMA_DEACT) and Voice Mail Access (VM_ACCESS), page 7-130
- Warmline (WARMLINE), page 7-133

Note The Feature table uses a type/value pair mechanism to define features. If you want to change feature values, enter them as follows:

change feature fname=OCB; type1=pin-len; value1=5; type2=to; value2=2-; type3=fail-cnt; value3=4; type4=lock-out; value4=60;

Note For a description of MGCP vs. SIP features, refer to the following documents as applicable:

Release 4.4.x:
http://www.cisco.com/univercd/cc/td/doc/product/voice/bts10200/bts4_4/sipdocs/sipuser/9uappa44.htm

Release 4.5.x:
http://www.cisco.com/univercd/cc/td/doc/product/voice/bts10200/bts4_5/sip/sipuser/9uappa45.htm

Note The following feature limitations apply if your network uses an ISUP variant other than ANSI ISUP:
--- For call-waiting features, the system supports CWD, but not CW or CIDCW
--- For three-way-calling features, the system supports TWCD, but not TWC or USTWC

8XX (Toll-Free Calling)

This section explains how to provision outbound toll-free calling for subscribers on the Cisco BTS 10200 Softswitch. Toll-free calling in North America usually involves an 8XX number.

Tip For a complete description of this feature, see the "8XX (Toll-Free Calling)" section in the *Cisco BTS 10200 Softswitch Network and Subscriber Feature Descriptions* document.

Office Provisioning

This section explains how to create the 8XX feature and apply it to a dial plan. It also shows how to provision the translation of an 8XX number to a local DN.

Step 1 Create the 8XX feature:

```
add feature fname=8XX; tdp1=COLLECTED_INFORMATION; tid1=SPECIFIC_DIGIT_STRING; ttype1=R;
description=toll-free; feature_server_id=FSAIN205;
```

Step 2 Add destination 800.

```
add destination dest-id=dest800; call-type=TOLL_FREE; route-type=SUB;
```

Step 3 Add the dial plan profile.

```
add dial-plan-profile ID=dp1;
```

Step 4 Add the digit string to the dial plan for the subscriber/trunk. The dial-plan ID must match the ID of the appropriate dial-plan-profile, and the dest-id must match the ID of the appropriate destination.

Caution For the 8XX feature, do *not* enter a value for the nature of address (NOA) parameter. You must allow the system to use the NOA default value (NATIONAL). This is true even if you have calls with a network-specific NOA.

Tip Enter this command as **add dial-plan** (not **change dial-plan**) even if the dial-plan already exists.

```
add dial-plan ID=dp1; digit-string=800; dest-id=dest800;
```

Step 5 Add the Dn2cust group. The system uses these provisioned values for local 8XX calls only, not for external calls or for calls that require an SCP database query.

```
add dn2cust-grp digit-string=8005550001; translated-dn=4695558724;
```

Add 8XX to the Office Service IDs

This section explains how to add the 8XX feature to the default-office-service-id (a switch-wide default service) and to the office-service-id (a POP-wide default service). If you provision an office-service-id for a POP, that office-service-id takes precedence over the default-office-service-id. However, if you do not provision an office-service-id for a POP, the system uses the default-office-service-id.

Step 1 Add this feature to the default office service ID (ABC in this example). This allows the system to provide this feature to all subscribers by default.

a. Enter the following command to display the ID of the default-office-service-id.

```
show ca-config type=DEFAULT-OFFICE-SERVICE-ID;
```

The system displays the value of the default-office-service-id. In this example, assume that the system displayed the value as ABC.

b. Use the following command to determine what number (N) should be used for **fnameN**.

```
show service id=ABC;
```

The system displays the features that are in this service table.

c. If 8XX is not already included in this service, add 8XX by entering the following command. Do not use a number for FNAMEn that is already being used for this service.

```
add/change service id=ABC; fname9=8XX;
```

Step 2 If you are using POP-specific office service IDs, you can add the 8XX feature. If you add this feature to the office service ID (XYZ in this example), all subscribers in this POP will be given the 8XX feature.

a. Enter the following command to display the ID of the office-service-id.

```
show pop id=pop1;
```

The system displays the value of the office-service-id, if it already exists for this POP. In this example, assume that the system displayed the value as XYZ.

Note If the display shows that there is no office-service-id provisioned for this POP, you must first use the **change pop** command to add an office-service-id.

b. Use the following command to determine what number (N) should be used for **fnameN**.

```
show service id=XYZ;
```

The system displays the features that are in this service table.

c. If 8XX is not already included in this service, add 8XX by entering the following command. Do not use a number for FNAMEn that is already being used for this service.

```
add/change service id=XYZ; fname9=8XX;
```

Provisioning Resources

These steps explain how to provision the resources to enable an SCP query.

Step 1 Provision the signaling gateway:

```
add sg id=sg_1; description=signaling gateway 1;
```

Step 2 Provision the signaling gateway group:

```
add sg-grp id=sg_grp1; sg1-id=sg_1; description=signaling gateway group 1;
```

Step 3 Provision the signaling gateway process:

```
add sgp id=itp_7507_1; sg-id=sg_1; description=ITP 7507 for sg_1;
```

Step 4 Provision the SCTP association profile:

```
add sctp-assoc-profile id=sctp_prof; bundle_timeout=500; max_assoc_retrans=5;
max_path_retrans=5; max_rto=6000; min_rto=301; sack_timeout=101; hb_timeout=1000;
```

Note The hb_timeout and max_path_retrans tokens are not configurable via the CLI change command. To configure or change these values, a new SCTP association profile must be added.

Step 5 Provision the SCTP association:

```
add sctp-assoc id=sctp_assoc1; sgp-id=itp_7507_1; sctp-assoc-profile-id=sctp_prof;
remote_port=14001; remote_tsap_addr1=10.89.232.9; remote_tsap_addr2=10.89.233.41;
dscp=NONE; ip_tos_precedence=FLASH; local_rcvwin=64000; max_init_retrans=5;
max_init_rto=1000; platform_id=FSAIN205;
```

Step 6 Add the DPC:

```
add dpc id=stp1; point-code=1-101-0; description=STP1 MGTS STP;
```

Step 7 Add the SCCP network:

```
add/change sccp-nw id=1; net-ind=NATIONAL; sub-svc=NATIONAL; hop-count=10;
```

Step 8 Add the subsystem profile (Release 4.4.x) or subsystem group (Release 4.5.x).

Release 4.4.x only:

```
add subsystem-profile id=SSN_TF; platform-id=FSAIN205;
```

Release 4.5.x only:

```
add subsystem-grp id=SSN_TF; platform-id=FSAIN205; tcap-version=ANS92;
```

Step 9 Add the subsystem:

Release 4.4.x only:

```
add subsystem id=SSN_TF; opc_id=opc; local-ssn=254; remote-ssn=254; sccp-nw-id=1;
sccp-version=ANS92; tcap-version=ANS92; application-version=AIN01; (if Toll-Free is an IN1
service, application-version=IN1);
```

Release 4.5.x only:

```
add subsystem id=SSN_TF; opc_id=opc; local-ssn=254; remote-ssn=254; sccp-nw-id=1;
sccp-version=ANS92; application-version=AIN01; (if Toll-Free is an IN1 service,
application-version=IN1);
```

Step 10 Add the routing key:

```
add routing-key id=rk_tf; opc-id=opc; sg-grp-id=sg_grp; si=SCCP; rc=201;
platform-id=FSAIN205; ssn-id=SSN_TF;
```

Step 11 Add the SCCP route:

```
add sccp-route opc_id=opc; dpc_id=stp1; ssn_id=SSN_TF; rk_id=rk_tf;
```

Step 12 Add the SLHR profile:

```
add slhr-profile id=slhr_tf;
```

Step 13 Add the service logic host route:

```
add slhr id=slhr_tf; opc_id=opc; dpc_id=stp1; rk_id=rk_tf; ssn_id=SSN_TF; gtt-req=Y;
tt=254; gtt-addr-type=CDPN; gtt-addr=3;
```

Step 14 Add the ca-config type DEFAULT-TOLL-FREE-SLHR-ID:

```
add ca-config type=DEFAULT-TOLL-FREE-SLHR-ID; datatype=string; value=slhr_tf;
```

Step 15 Place the SCTP association in service:

```
control sctp-assoc id=sctp_assoc1; mode=forced; target-state=INS;
```

Step 16 Place the subsystem group in service:

```
control subsystem-grp id=SSN_TF; mode=forced; target-state=INS;
```

Provisioning Notes/Caveats

If the toll free trigger is generated by trunk (SS7, CAS) calls and no calling party is received in the setup indication (IAM), ensure that the JIP field or LRN field in the POP table associated with the trunk group is set to the appropriate value. If not, the SCP query will fail.

911 Emergency

Emergency service is a public safety feature providing emergency call routing to a designated Emergency Service Bureau (ESB), normally called the public safety answering point (PSAP) in the United States.

Tip For a complete description of this feature, see Emergency Services in the *Network and Subscriber Feature Descriptions*.

The following section identifies the steps necessary to offer 911 Emergency Service.

Office Provisioning

Step 1 Create the 911 feature:

```
add/change feature; fname=911; tdp1=COLLECTED_INFORMATION; tid1=911_TRIGGER; ttype1=R;
description=Emergency Service; feature_server_id=FSPTC235;
```

Step 2 (Optional) Change the CA-config table entry for the default-office-service-id only if it is required to be different from ca-config-base:

```
change ca-config type=DEFAULT-OFFICE-SERVICE-ID; datatype=string; value=469;
```

Step 3 (Optional) Change the CA-config table entry for the called-party-hold-control as required by your network:

```
change ca-config type=E911-CALLED-PARTY-HOLD; datatype=boolean; value=Y;
```

Step 4 Add the destination:

```
add destination dest-id=dest911; CALL_TYPE=EMG; ROUTE_TYPE=ROUTE;
ROUTE_GUIDE_ID=opr911;zero-plus=y; CLDPTY_CTRL_REL_ALWD=Y;
```

Step 5 Add the service:

```
add service id=469; FNAME1=911;
```

Provisioning Resources

Step 1 Add the media server:

```
add mgw_profile id=cas_911;    packet-type=ip; aal1=n; aal2=n; aal5=n; pvc=n; svc=n;
spvc=n; ec_supp=n; sdp-origfield-supp=n; sdp-sessname-supp=n; sdp-email-supp=n;
sdp-phone-supp=n; sdp-bandwidth-supp=n; sdp-info-supp=n; sdp-time-supp=n;
sdp-attrib-supp=n; mgcp-erqnt-supp=n; mgcp-hairpin-supp=n; mgcp-qloop-supp=n;
mgcp-3way-hshake-supp=n; mgcp-conn-id-at-gw-supp=n; termination-prefix=NULL; port-start=1;
vendor=CISCO;  rbk-on-conn-supp=y; mgcp_max1_retries=3; mgcp-t-tran=1000;
MGCP_EP_SPECIFIC_CAP_SUPP=y;
```

Step 2 Add the media gateway:

```
add mgw id=224.14:2434; tsap-addr=10.89.233.74:2434; call-agent-id=CA146;
mgw_profile_id=cas_911; call-agent-control-port=2427; type=tgw;
```

Step 3 Add the CAS trunk group profile:

```
add cas_tg_profile id=cas_911; sig-type=MF-OSS;  mf-oss-type=MO-10II; oss-sig=n;
test_line=n; e911=y;
```

Step 4 Add the trunk group:

```
add trunk_grp id=911; tg_type=CAS; dial_plan_id=dpcas; sel-policy=LRU; direction=BOTH;
GLARE=SLAVE; tg_profile_id=cas_911; call-agent-id=CA146; mgcp-pkg-type=MO;
```

Step 5 Add the termination:

```
add termination prefix=cas/911/; mgw-id=224.14:2434; type=TRUNK; port-start=1;
port-end=24;
```

Step 6 Add a trunk:

```
add trunk cic-start=1; cic-end=4; tgn-id=911; termination-prefix=cas/911/;
mgw-id=224.14:2434; termination-port-start=1; termination-port-end=4;
```

Step 7 Add the route:

```
add route id=ops911; tgn1-id=911;
```

Step 8 Add the route guide:

```
add route-guide id=ops911; policy-type=route; policy-id=ops911;
```

Step 9 Add the destination:

```
add destination dest-id=ops911; call-type=EMG; route-type=ROUTE; route-guide-id=ops911;
zero-plus=y; CLDPTY_CTRL_REL_ALWD=Y;
```

Step 10 Add the dial plan:

```
add dial-plan id=dpcas; digit-string=911; dest-id=ops911odr; min-digits=3; max-digits=3;
```

Media Gateway Setup

The Cisco BTS 10200 Softswitch is connected to a media gateway supporting MGCP (MS, DT, and MO) through an IP network. Some examples of media gateways are Cisco MC3810 and Cisco C3660. Contact Cisco TAC for additional details on gateways supported for CAS trunk groups.

CAS Trunk Group Control Commands

Once the CAS trunk group is provisioned in the BTS10200, and the corresponding MGCP gateway is configured for CAS, the CAS trunk group and the CAS trunk circuits can be brought into service with control commands from the EMS.

At the EMS CLI> prompt, execute the following commands:

Step 1 Bring the MGW into service:

```
CLI> control mgw 224.14:2434; target_state=ins; mode=forced;
CLI>  status mgw id=224.14:2434;
```

After the above commands are executed, the status should show:

```
REPLY=CONFIGURATION COMMAND EXECUTED -> 224.14:2434
ADMIN STATUS -> ADMIN_INS
OPER STATUS -> MGW_STATUS_UP
```

Step 2 Bring the CAS trunk group into service

```
CLI> control trunk_grp id=911; target_state=ins; mode=forced;
CLI> status trunk_grp id=911;
```

After the above commands are executed, the status should show:

```
REPLY=CONFIGURATION COMMAND EXECUTED CAS_TRUNK_GROUP -> 911
ADMIN STATUS -> ADMIN_INS
OPER STATUS -> TG_INS
```

Step 3 Bring CAS trunk terminations into service:

```
CLI> control trunk-termination tgn-id=911; cic=all; mode=forced; target-state=ins;
CLI> status trunk-termination tgn-id=4005; cic=all;
```

After the commands are executed, the status should show:

```
CONFIGURATION COMMAND EXECUTED CAS_TRUNK_GROUP -> 911 -> CIC -> 1
TERM ADMIN STATUS -> ADMIN_INS
TERM OPER STATUS -> TERM_STATE_EQUIP
CIC STATIC STATE -> ACTV
CIC DYNAMIC STATE -> IDLE
CONFIGURATION COMMAND EXECUTED CAS_TRUNK_GROUP -> 911 -> CIC -> 2
TERM ADMIN STATUS -> ADMIN_INS
TERM OPER STATUS -> TERM_STATE_EQUIP
CIC STATIC STATE -> ACTV
CIC DYNAMIC STATE -> IDLE
…
CONFIGURATION COMMAND EXECUTED CAS_TRUNK_GROUP -> 911 -> CIC -> 24
TERM ADMIN STATUS -> ADMIN_INS
TERM OPER STATUS -> TERM_STATE_EQUIP
CIC STATIC STATE -> ACTV
CIC DYNAMIC STATE -> IDLE
```

This status should apply to all the corresponding circuits in the CAS trunk group (for example, 1 to 24).

At this point, the CAS trunk group circuits are ready to originate and receive calls.

Centrex Provisioning

The following two steps are mandatory for Centrex provisioning:

Step 1 Ensure that POTS access for the Centrex group is provisioned.

Step 2 Ensure that Call Agent provisioning of the digit-map has a digit-map for the emergency number (for example 911 for NANP).

MLHG provisioning is similar to subscriber provisioning as described above.

Alerting Notification to Third Party Feature Server

Beginning with Release 4.5, the Cisco BTS 10200 Softswitch delivers alerting notification and call data to a third-party feature server (3PTYFS). The service provider can use appropriately designed and configured feature servers to make use of this notification and data to provide value-added services to subscribers; for example, delivery of caller ID on a subscriber television or computer screen.

Tip For a complete description of this feature, refer to Alerting Notification to Third Party Feature Servers in the *Network and Subscriber Feature Descriptions*.

This section describes the steps required to provision support for Alerting Notification on Cisco BTS 10200 Softswitch. This includes provisioning the Cisco BTS 10200 Softswitch database with the TSAP address of the 3PTYFS, the feature trigger point, and the services with which the feature is offered.

Precedence for Provisioned Values

Alerting Notification can be assigned on a switch-wide, per-POP, or per-subscriber level (or all three levels). The system interprets the provisioned values as follows:

- Switch—If the office-service-id is not provisioned in the POP table and not provisioned for the individual subscriber, the system uses the default-office-service-id provisioned in the ca-config table. See Step 3.
- POP—If Alerting Notification is included in the office-service-id for the POP, then Alerting Notification applies to all subscribers in the POP, even if the feature is not assigned to an individual subscriber. See Step 4.
- Subscriber—If Alerting Notification is assigned to a specific subscriber, then Alerting Notification applies to the subscriber, regardless of whether Alerting Notification is provisioned in the office-service-id for the POP or in the default-office-service-id in the Call Agent Configuration (ca-config) table. See Step 5.

Step 1 Add the 3PTYFS to the database.The TSAP address can be an IP address (with port optional) or a DNS name. If the TSAP address is a domain name, then the domain name must be configured in the service provider DNS.

```
ADD FEATURE-SERVER ID=3PTYFS24; TSAP-ADDR=192.168.100.103:11024; TYPE=3PTY;
EXTERNAL-FEATURE-SERVER=Y;

ADD FEATURE-SERVER ID=3PTYFS23; TSAP-ADDR=SPECIALFS.cisco.com; TYPE=3PTY;
EXTERNAL-FEATURE-SERVER=Y;

ADD FEATURE-SERVER ID=3PTYFS22; TSAP-ADDR=INTERNALFS.cisco.com; TYPE=3PTY;
EXTERNAL-FEATURE-SERVER=N;
```

Note The following rules apply:

- If the 3PTYFS is deployed in the private management network of the Cisco BTS 10200 Softswitch, you must set EXTERNAL-FEATURE-SERVER to N.
- If the 3PTYFS is deployed in a public network, you must set EXTERNAL-FEATURE-SERVER to Y.
- To set EXTERNAL-FEATURE-SERVER to Y, you must also set TYPE to 3PTY.

Step 2 Add Alerting Notification and the associated TDP and trigger ID:

```
ADD FEATURE FNAME=ALERT_NOTIFY; TDP1=CALL_ACCEPTED; TID1=CALL_ACCEPTED_NOTIFY; TTYPE1=N;
FEATURE-SERVER-ID=3PTYFS24;
```

Note In the procedures included in this document, Alerting Notification is provisioned using the feature identifier FNAME=ALERT_NOTIFY. The feature identifier can be any unique string of up to 16 ASCII characters chosen by the service provider.

Step 3 (Optional) The commands in this step assign Alerting Notification globally (by default) to all subscribers on the switch.

```
SHOW CA-CONFIG TYPE=DEFAULT-OFFICE-SERVICE-ID;

SHOW SERVICE ID=999;

CHANGE SERVICE ID=999; FNAME8=ALERT_NOTIFY;
```

Step 4 (Optional) The commands in this step assign Alerting Notification to all subscribers in a specific POP.

```
SHOW POP ID=CITY007;

SHOW SERVICE ID=NOTIFY;

ADD/CHANGE SERVICE ID=NOTIFY; FNAME1-ALERT_NOTIFY;
```

Step 5 The commands in this step assign Alerting Notification to a specific subscriber.

```
ADD/CHANGE SERVICE ID=silverservice; FNAME1=CFU; FNAME2=CFB; FNAME3=CFNA; FNAME4=CW;
FNAME5=ALERT_NOTIFY;

ADD SUBSCRIBER-SERVICE-PROFILE SUB-ID=Subscriber77; SERVICE-ID=silverservice;
```

Anonymous Call Rejection (ACR) and A/D (ACR_ACT, ACR_DEACT)

The Anonymous Call Rejection (ACR) feature allows users to reject calls from parties that have set their privacy feature to prevent calling number delivery. When ACR is active, the called party receives no alert for incoming calls that are rejected. The incoming call is rerouted to a denial announcement indicating that private numbers are not accepted by the called party.

ACR has the following activation options:

- Activated permanently at subscription time by service provider
- Activated by user

The user lifts the handset and listens for a dial tone. The user presses *77. If ACR can be activated, the system returns a confirmation announcement. ACR is now activated and will stay active until it is deactivated using *87.

To complete a call to the party with ACR, the calling party must enter the vertical service code (*82) to activate calling identity delivery and then place a call to the party with ACR. Incoming calls to the called party with ACR are checked even if the called party is offhook.

Tip For a complete description of this feature, see Anonymous Call Rejection in the *Network and Subscriber Feature Descriptions*.

The following subsections identify the steps necessary to offer the ACR and A/D features.

Office Provisioning

Step 1 Create a feature for ACR_Activation:

```
add feature FNAME=ACR_ACT; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=ACR Activation; GRP_FEATURE=N;
```

Step 2 Create a feature for ACR_Deactivation:

```
add feature FNAME=ACR_DEACT; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=ACR Deactivation; GRP_FEATURE=N;
```

Step 3 Create a feature for ACR:

```
add feature FNAME=ACR; TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED; TTYPE1=R; FEATURE_SERVER_ID=FSPTC235;
DESCRIPTION=Anonymous Call Rejection; GRP_FEATURE=N;
```

Step 4 Create VSC codes in the VSC table:

```
add vsc DIGIT_STRING=*77; FNAME=ACR_ACT
add vsc; DIGIT_STRING=*87; FNAME=ACR_DEACT;
```

Subscriber Provisioning

Step 1 Create a service with these features:

```
add service id=1; fname1=ACR; fname2=ACR_ACT; fname3=ACR_DEACT;
```

Step 2 Assign the service to the subscriber:

```
add subscriber-service-profile; sub-id=sub1; service-id=1;
```

Centrex Provisioning

Step 1 Create an entry in the CDP table:

```
add cdp; id=cdp1; DIGIT_STRING=*77; NOD=VSC; FNAME=ACR_ACT; CAT_STRING=1111111111111111;
add cdp; id=cdp1; DIGIT_STRING=*87; NOD=VSC; FNAME=ACR_DEACT; CAT_STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning, as described above.

Alternate Activation and Deactivation Method

ACR can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate ACR:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=ACR;
```

Use a CLI command similar to the following to deactivate ACR:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=ACR;
```

Automatic Call Back (AC) and A/D (AC_ACT, AC_DEACT)

Automatic Callback (AC) allows you to perform an activation procedure to set up a call to the last party you called without having to redial the telephone number. If the called party is busy, you can hang up and activate AC; the call will be automatically connected when the called party becomes idle.

Tip For a complete description of this feature, see Automatic Callback in the *Network and Subscriber Feature Descriptions*.

The following sections identify necessary steps for the automatic call back feature.

Office Provisioning

Step 1 Create a feature for AC activation:

```
add feature fname=AC_ACT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=AC activation; feature_server_id=FSPTC235;
```

Step 2 Create a feature for AC deactivation:

```
add feature fname=AC_DEACT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=AC deactivation; feature_server_id=FSPTC235;
```

Step 3 Associate AC_ACT and AC_DEACT features into the AC feature:

```
add feature fname=AC; fname1=AC_ACT; fname2=AC_DEACT; feature_server_id=FSPTC235;
```

Step 4 Create VSC codes in the VSC table:

```
add vsc; DIGIT_STRING=*66; FNAME=AC_ACT;

add vsc; DIGIT_STRING=*86; FNAME=AC_DEACT;
```

Step 5 Create AC service with only the AC feature:

```
add service id=1; fname1=AC;
```

Step 6 Ensure the Call-Agent table has a TSAP_ADDR populated:

```
change call-agent ID=CA416; STATUS=FORCED_STANDBY_ACTIVE;
TSAP_ADDR_SIDEA=sim-SYS02CA.ipclab.cisco.com:9416; MGW_MONITORING_ENABLED=Y;
CLLI=HERNVADTDS1;
```

Step 7 Ensure office-code has call-agent id provisioned:

```
change office-code DIGIT_STRING=703432; OFFICE_CODE_INDEX=14; DID=N; CALL_AGENT_ID=CA416;
DIALABLE=Y; NDC=703; EC=432; DN_GROUP=xxxx;
```

Step 8 Verify if related ca-config parameters provide the desired configuration. If not, change parameters as required:

```
show ca-config TYPE=AC-ACTIVATION-LEVEL; DATATYPE=STRING; DEFAULT_VALUE=ONE;
show ca-config TYPE=ACAR-SLHR-ID; DATATYPE=STRING;
```

The ca-config values for the AR feature are common to the AC feature. Refer to the ca-config values for the AR feature.

Step 9 Add the feature to the default office service-id if it needs to be provided on an office basis.

```
change ca-config default-office-service-id=999;
```

Step 10 Assign the feature to the default office service id:

```
change service id=999; fname1=AC_ACT;
```

Provisioning Resources

Step 1 Provision the signaling gateway:

```
add/change sg id=sg_1; description=signaling gateway 1;
```

Step 2 Provision the signaling gateway group:

```
add/change sg-grp id=sg_grp1; sg1-id=sg_1; description=signaling gateway group 1;
```

Step 3 Provision the signaling gateway process:

```
add/change sgp id=itp_7507_1; sg-id=sg_1; description=ITP 7507 for sg_1;
```

Step 4 Provision the SCTP association profile:

```
add sctp-assoc-profile id=sctp_prof; bundle_timeout=500; max_assoc_retrans=5;
max_path_retrans=5; max_rto=6000; min_rto=301; sack_timeout=101; hb_timeout=1000;
```

Note The hb_timeout and max_path_retrans tokens are not configurable via the CLI change command. To configure or change these values, a new SCTP association profile must be added.

Step 5 Provision the SCTP association:

```
add sctp-assoc id=sctp_assoc1; sgp-id=itp_7507_1; sctp-assoc-profile-id=sctp_prof;
remote_port=14001; remote_tsap_addr1=10.89.232.9; remote_tsap_addr2=10.89.233.41;
dscp=NONE; ip_tos_precedence=FLASH; local_rcvwin=64000; max_init_retrans=5;
max_init_rto=1000; platform_id=FSPTC235;
```

Step 6 Add the DPC:

```
add dpc id=itp1; point-code=7-101-0; description=STP1, MGTS STP;
```

Step 7 Add the SCCP network:

```
add/change sccp-nw id=1; net-ind=NATIONAL; SUB_SVC=NATIONAL; HOP-Count=10;
```

Step 8 Add the subsystem profile:

```
add subsystem-profile id=SSN_ACAR; PLATFORM_ID=FSPTC235;
```

Step 9 Add the subsystem:

```
add subsystem id=SSN_ACAR; opc_id=opc; local-ssn=251; remote-ssn=251; sccp-nw-id=1;
SCCP_VERSION=ANS92; TCAP_VERSION=ANS92; APPLICATION_VERSION=IN1;
```

Step 10 Add the routing key:

```
add routing-key id=rk_acar; opc-id=opc; sg-grp-id=sg_grp; si=SCCP; rc=205;
PLATFORM_ID=FSPTC235; ssn-id=SSN_ACAR;
```

Step 11 Add the SCCP route:

```
add sccp-route opc_id=opc; dpc_id=itp1; ssn_id=SSN_ACAR; rk_id=rk_acar;
```

Step 12 Add the SLHR profile:

```
add slhr-profile id=slhr_acar;
```

Step 13 Add the Service Logic Host Route:

```
add slhr id=slhr_acar; opc_id=opc; dpc_id=itp1; ssn_id=SSN_ACAR; gtt-req=Y; tt=251;
GTT_ADDR_TYPE=CDPN; GTT_ADDR=3;
```

Step 14 Add the ca-config type ACAR-SLHR-ID:

```
Add ca-config type=ACAR-SLHR-ID; datatype=string; value=slhr_acar;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Step 2 Customize the feature denied flag for the subscriber according to individual requirements:

```
change subscriber-feature-data sub-id=subscriber_1; fname=AC_ACT; type1=DENIED; value1=Y;
```

Step 3 Customize the subscriber's Usage Sensitivity feature applicability flag:

```
change subscriber id=subscriber_1; USAGE-SENS=Y;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following step should be completed.

Step 1 Create the following entries in the CDP table:

```
add cdp id=cdp1; DIGIT_STRING=*66; NOD=VSC; FNAME=AC_ACT; CAT_STRING=1111111111111111;

add cdp id=cdp1; DIGIT_STRING=*86; NOD=VSC; FNAME=AC_DEACT; CAT_STRING=1111111111111111;
```

Provisioning Notes/Caveats

- The AC and AR features will not work for the subscriber with the category CTXG, MLHG, or CTXG_MLHG because these categories of subscriber do not give a unique DN.
- If the TSAP-Addr in Call-Agent table is incorrect, this feature will not work. It must have a specific UDP port number.

- Office-Code table entries must have the Call-Agent-Id for all the office-codes owned by the Call Agent. If the Call-Agent-Id is not configured in the Office-Code table, this feature will not work.

Automatic Recall (AR) and A/D (AR_ACT, AR_DEACT)

Automatic Recall (AR) is an incoming call management feature that allows you to perform an activation procedure to automatically set up a call to the last incoming number.

Tip For a complete description of this feature, see Automatic Recall in the *Network and Subscriber Feature Descriptions*.

The following subsections identify the steps necessary for provisioning the automatic recall (AR) feature.

Office Provisioning

Step 1 Create a feature for AR Activation:

```
add feature fname=AR_ACT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=AR activation; feature_server_id=FSPTC235;
```

Step 2 Create a feature for AR Deactivation:

```
add feature fname=AR_DEACT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=AR deactivation; feature_server_id=FSPTC235;
```

Step 3 Create VSC codes in the VSC table:

```
add vsc DIGIT_STRING=*69; FNAME=AR_ACT
add vsc DIGIT_STRING=*89; FNAME=AR_DEACT
```

Step 4 Create a service with these features:

```
add service id=1; fname1=AR_ACT; fname2=AR_DEACT;
```

Step 5 Add the AR two-level activation Audio-Sequence table. These commands must be entered in the order given, and all files specified in the sequence must be installed on the IVR system. If any file specified in the sequence is missing, and the IVR system does not return error, there is a possibility that no files will be played:

```
show ca-config type=AR%
Reply : Success:  Entries 1-24 of 24 returned.

TYPE=AR-ACTIVATION-LEVEL
DATATYPE=STRING
VALUE=ONE

TYPE=ARAC-ACTIVATION-TO-COIN
DATATYPE=BOOLEAN
VALUE=N

TYPE=ARAC-ACTIVATION-TO-ANONYMOUS-DN
DATATYPE=BOOLEAN
VALUE=N

TYPE=ARAC-ACTIVATION-TO-MLHG
DATATYPE=BOOLEAN
```

```
VALUE=Y

TYPE=ARAC-ACTIVATION-TO-NON-UNIQUE-DN
DATATYPE=BOOLEAN
VALUE=N

TYPE=ARAC-INITIAL-QUERY-RESPONSE-TIMER-T5
DATATYPE=INTEGER
VALUE=3

TYPE=ARAC-INTER-BUSY-IDLE-QUERY-DURATION-TIMER-T11
DATATYPE=INTEGER
VALUE=95

TYPE=ARAC-MAX-6SEC-RINGING-CYCLES
DATATYPE=INTEGER
FROM_VALUE=2
TO_VALUE=5
VALUE=4

TYPE=ARAC-MAX-CONCURRENT-ATTEMPTS
DATATYPE=INTEGER
VALUE=30

TYPE=ARAC-MAX-QUEUE-SIZE
DATATYPE=INTEGER
FROM_VALUE=10
TO_VALUE=20
VALUE=15

TYPE=ARAC-MAX-UNANSWERED-RING-APPLICATIONS
DATATYPE=INTEGER
FROM_VALUE=1
TO_VALUE=12
VALUE=2

TYPE=ARAC-MONITORING-TIMER-T6
DATATYPE=INTEGER
VALUE=30

TYPE=ARAC-ORIGINATING-SCAN-RATE
DATATYPE=INTEGER
VALUE=60

TYPE=ARAC-OSPCS-OVERALL-MONITOR-TIMER-T10
DATATYPE=INTEGER
VALUE=3

TYPE=ARAC-OUTSTANDING-NOTIFICATION-TIMER-T8
DATATYPE=INTEGER
VALUE=35

TYPE=ARAC-PERIODIC-SCAN-RATE
DATATYPE=INTEGER
FROM_VALUE=5
TO_VALUE=30
VALUE=30

TYPE=ARAC-QUEUING-SUPPORTED
DATATYPE=BOOLEAN
VALUE=Y

TYPE=ARAC-RESUME-SCANNING-THRESHOLD-TIME
DATATYPE=INTEGER
```

```
VALUE=5

TYPE=ARAC-RESUME-SCANNING-TIMER-T2
DATATYPE=INTEGER
VALUE=5

TYPE=ARAC-SUB-QUERY-RESPONSE-TIMER-T9
DATATYPE=INTEGER
VALUE=3

TYPE=ARAC-TERMINATING-SCANNING-MONITOR-TIMER-T7
DATATYPE=INTEGER
VALUE=30

TYPE=ARAC-TERMINATING-SPCS-SCAN-ALLOW
DATATYPE=BOOLEAN
VALUE=Y

TYPE=ARAC-TSPCS-OVERALL-MONITOR-TIMER-T10
DATATYPE=INTEGER
VALUE=3
```

CA-Config values for the AC feature are common to the AR feature. Refer to the CA-Config values for the AC feature.

Step 6 (Optional) Add the feature to the default office service-id if it needs to be provided on an office basis. To assign the feature to the default office service id, complete the following steps:

```
change ca-config type=default-office-service-id; value=999;
change service id=999; fname1=AR_ACT;
```

Provisioning Resources

Step 1 Provision the signaling gateway:

```
add sg id=sg_1; description=signaling gateway 1;
```

Step 2 Provision the signaling gateway group:

```
add sg-grp id=sg_grp1; sg1-id=sg_1; description=signaling gateway group 1;
```

Step 3 Provision the signaling gateway process:

```
add sgp id=itp_7507_1; sg-id=sg_1; description=ITP 7507 for sg_1;
```

Step 4 Provision the SCTP association profile:

```
add sctp-assoc-profile id=sctp_prof; bundle_timeout=500; max_assoc_retrans=5;
max_path_retrans=5; max_rto=6000; min_rto=301; sack_timeout=101; hb_timeout=1000;
```

Note The hb_timeout and max_path_retrans tokens are not configurable via the CLI change command. To configure or change these values, a new SCTP association profile must be added.

Step 5 Provision the SCTP association:

```
add sctp-assoc id=sctp_assoc1; sgp-id=itp_7507_1; sctp-assoc-profile-id=sctp_prof;
remote_port=14001; remote_tsap_addr1=10.89.232.9; remote_tsap_addr2=10.89.233.41;
dscp=NONE; ip_tos_precedence=FLASH; local_rcvwin=64000; max_init_retrans=5;
max_init_rto=1000; platform_id=FSPTC235;
```

Step 6 Add the DPC:

```
add dpc id=itp1; point-code=7-101-0; description=STP1, MGTS STP;
```

Step 7 Add the SCCP Network:

```
add sccp-nw id=1; net-ind=NATIONAL; SUB_SVC=NATIONAL; HOP-Count=10;
```

Step 8 Add the subsystem profile:

```
add subsystem-profile id=SSN_ACAR; PLATFORM_ID=FSPTC235;
```

Step 9 Add the subsystem:

```
add subsystem id=SSN_ACAR; opc_id=opc; local-ssn=251; remote-ssn=251 sccp-nw-id=1;
SCCP_VERSION=ANS92; TCAP_VERSION=ANS92; APPLICATION_VERSION=IN1;
```

Step 10 Add the routing key:

```
add routing-key id=rk_acar; opc-id=opc; sg-grp-id=sg_grp; si=SCCP; rc=205;
PLATFORM_ID=FSPTC235; ssn-id=SSN_ACAR;
```

Step 11 Add the SCCP route:

```
add sccp-route opc_id=opc; dpc_id=itp1; ssn_id=SSN_ACAR; rk_id=rk_acar;
```

Step 12 Add the SLHR profile:

```
add slhr-profile id=slhr_acar;
```

Step 13 Add the Service Logic Host Route:

```
add slhr id=slhr_acar; opc_id=opc; dpc_id=itp1; rk_id=rk_acar; ssn_id=SSN_ACAR; gtt-req=Y;
tt=251; GTT_ADDR_TYPE=CDPN; GTT_ADDR=3;
```

Step 14 Add the ca-config type ACAR-SLHR-ID if not added before:

```
add ca-config type=ACAR-SLHR-ID; datatype=string; value=slhr_acar;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Step 2 Customize the feature denied flag for the subscriber as per the individual requirement:

```
change subscriber-feature-data sub-id=subscriber_1; fname=AR_ACT; type1=DENIED; value1=Y;
```

Step 3 Change the subscriber's Usage Sensitivity feature applicability flag:

```
change subscriber id=subscriber_1; USAGE-SENS=Y;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following step must be completed.

Step 1 Create the following entries in the CDP table:

```
add cdp; id=cdp1; DIGIT_STRING=*69; NOD=VSC; FNAME=AC_ACT; CAT_STRING=1111111111111111;
add cdp; id=cdp1; DIGIT_STRING=*89; NOD=VSC; FNAME=AC_DEACT; CAT_STRING=1111111111111111;
```

Provisioning Notes/Caveats

- AC and AR features will not work for the subscriber with the category CTXG, MLHG, or CTXG_MLHG because this category of subscriber does not give a unique DN.
- If the TSAP-Addr in the Call-Agent table is incorrect, this feature will not work. It must have a specific UDP port number.
- Office-Code table entries must have the Call-Agent-Id for all the office-codes owned by the call-agent. If the Call-Agent-Id is not configured in the Office-Code table, this feature will not work.

Two-Level AR Activation

Beginning in Release 4.4, AR activation is also offered as a two-level procedure. When a subscriber dials the activation code, an announcement gives the last incoming calling party number, the date and time when the call was received, and instructions to dial 1 to activate the AR call to that party.

Provisioning two-level AR activation requires the following additional steps:

Step 1 Specify the AR activation level. To apply at the system basis, :

```
add ca-config type=AR-ACTIVATION-LEVEL; datatype=string; value=TWO;
```

To apply at the POP basis:

```
add pop id=pop1; ar-activation-level=TWO;
```

Step 2 Specify the AR two-level activation default Route-Guide to the IVR device.

```
add ca-config type=DEFAULT-IVR-ROUTE-GUIDE-ID; datatype=string; value=def_ivr_rg;
```

Step 3 Add the AR two-level activation IVR-Script-Profile table:

```
add ivr-script-profile fname=AR_ACT; ivr-access-mode=IVR;  ivr-route-guide-id=ar_ivr_rg;
ivr-script-pkg-type=BAU;
```

Step 4 Specify the default voice back language in the Language table:

```
add language id=def;
```

Step 5 Add the AR two-level activation Audio-Sequence table. These commands must be entered in the order given.

```
add audio-seq id=ar_vbk_dn_seq; language-id=def;
seq=ar_voice_back_dn,ar_var_dn,ar_voice_back_date,ar_var_date,ar_voice_back_time,ar_var_ti
me,ar_activation_prompt; description=The last incoming number was [ dn ].  This call was
received on [ date ] at [ time ].  To activate Automatic Recall, dial 1  otherwise, hang
up.

add audio-seq id=ar_vbk_anon_seq; language-id=def;
seq=ar_voice_back_dn,ar_voice_back_anonymous_dn,ar_voice_back_date,ar_var_date,ar_voice_ba
ck_time,ar_var_time,ar_activation_prompt; description=The last incoming number was an
anonymous number and cannot be announced.  This call was received on [ date ] at [ time ].
To activate Automatic Recall, dial 1 otherwise, hang up.
```

```
add audio-seq id=ar_act_seq; language-id=def; seq=ar_activation_prompt; description=To
activate Automatic Recall, dial 1  otherwise, hang up.

add audio-seq id=ar_inv_digit_seq; language-id=def;
seq=ar_dialing_error,ar_activation_prompt; description=We are sorry.  The digits dialed
are not a valid command.  To activate Automatic Recall, dial 1  otherwise, hang up.

add audio-seq id=ar_con_instr_seq; language-id=def; seq=ar_consult_instruction;
description=We are sorry.  The digits dialed are not a valid command.  To activate
Automatic Recall, dial 1  otherwise, hang up.
```

Step 6 Add the AR two-level activation Audio-Segment table. These commands must be entered in the order given.

```
add audio-segment id=ar_voice_back_dn; type=physical; url=file://ar_voice_back_dn.wav;
description=The last incoming number was

add audio-segment id=ar_voice_back_anonymous_dn; type=physical;
url=file://ar_voice_back_anynomous_dn; description=an anonymous number and cannot be
announced

add audio-segment id=ar_var_dn; type=variable; var-type=dig; var-subtype=ndn;

add audio-segment id=ar_voice_back_date; type=physical; url=file://ar_voice_back_date.wav;
description=This call was received on

add audio-segment id=ar_var_date; type=variable; var-type=dat; var-subtype=mdy;

add audio-segment id=ar_voice_back_time; type=physical; url=file://ar_voice_back_time.wav;
description=at

add audio-segment id=ar_var_time; type=variable; var-type=tme; var-subtype=t12;

add audio-segment id=ar_activation_prompt; type=physical;
url=file://ar_activation_prompt.wav; description=To activate Automatic Recall, dial 1
otherwise, hang up.

add audio-segment id=ar_dialing_error; type=physical; url=file://ar_dialing_error.wav;
description=We are sorry.  The digits dialed are not a valid command.

add audio-segment id=ar_consult_instruction; type=physical;
url=file://ar_consult_instruction.wav; description=We are sorry.  Please hang up now,
consult your written instructions, and try again later.
```

Busy Line Verification (BLV)

The Busy Line Verification (BLV) service allows you to obtain operator assistance to determine if a called line is in use.

Busy Line Interrupt (BLI) service allows the operator to interupt the called party line and relay a message. If the interrupted party hangs up, you can originate a new call unless the called party has prohibited BLI in advance. At your request, the operator also has the option to connect you directly to the called party.

Tip For a complete description of this feature, see Busy Line Verification in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the BLV feature.

Office Provisioning

Step 1 Add the default office service id:

```
change ca-config default-office-service-id=999;
```

Step 2 Add the BLV Service to the default-office-service:

```
change service id=999; fname1=BLV;
```

Step 3 Provision the feature in the office:

```
add feature fname=blv; tdp1=TERMINATION_ATTEMPT; tid1=BLV; ttype1=R;
feature_server_id=fsptc235; description=Busy-line verification; grp_feature=N;
```

Provisioning Resources

Step 1 Set the BLV CAS trunk group profile as "no-test" type:

```
add cas-tg-profile id=cas_blv; no-test-trunk=y;
```

Step 2 Set the MGCP package type associated with the CAS trunk termination to "MT" type:

```
add termination id=S0/DS1-1/1; mgw-id=c2421.1001; mgcp-package-type=MT;
```

Note For normal MGCP 1.0 CAS trunks, mgcp-package-type=MS should be used.

Step 3 Set the Quality of Service parameter of the trunk group:

```
add trunk-grp id=152; qos-id=pcm;
```

Note For the BLV barge-in feature to work, the CAS trunk quality of service (QoS) and subscriber QoS (next step, below) should match.

Subscriber Provisioning

Step 1 Set the Quality of Service parameter for a specific subscriber in the subscriber's profile:

```
add subscriber-profile id=plano-sub-prof; qos-id=pcm;
```

Step 2 Set access permissions for line verification on a subscriber line:

```
add subscriber-feature-data sub-id=plano_sub1; fname=BLV; type1=DENIED; value1=N;
```

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

Call Block - Reject Caller (CBLK)

The call block (reject caller) feature allows the user to block incoming calls from the DN of the last received call. For the call block feature to work, the user must be subscribed to the selective call rejection (SCR) feature. Once call block is activated against a specified DN, that DN remains in the SCR list of the subscriber. A subscriber who wants to block callers (like sales calls) but does not know the caller's DN, can use this feature. Call block can be provided to POTS, Centrex, and MLHG subscribers.

Tip For a complete description of this feature, see Call Block in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the feature to be offered.

Office Provisioning

Step 1 Create a feature for CBLK:

```
add feature FNAME=CBLK; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Call Block - Reject Caller; GRP_FEATURE=N;
```

Step 2 Create VSC codes in the VSC table:

```
add vsc; DIGIT_STRING=*97; FNAME=CBLK;
```

Subscriber Provisioning

Step 1 Create a service with this feature:

```
add service id=1; fname1=CBLK;
```

Step 2 Assign the service to the subscriber:

```
add/change subscriber-service-profile; sub-id=sub1; service-id=1;
```

Centrex Provisioning

Step 1 Create an entry in the CDP table:

```
add/change cdp; id=cdp1; DIGIT_STRING=*97; NOD=VSC; FNAME=CBLK;
CAT_STRING=1111111111111111;
```

MLHG Provisioning

MLHG provisioning is similar to Subscriber provisioning.

Provisioning Notes/Caveats

This feature works in conjunction with the SCR feature. Therefore, for the call to be rejected by Call Block, SCR should be assigned to the subscriber and activated. Refer to Screen List Editing: SCF, SCR, SCA, and DRCW, page 7-113, for directions for provisioning SCR.

Block All Inbound Calls (Release 4.5.x and Later)

If a subscriber has blocked all the inbound calls, the calling party hears an announcement stating that called party has chosen to deny all inbound calls. For the inbound DN, the DN2SUBSCRIBER entry is provisioned to route the call to ANNC=998, which plays an announcement stating the called party has chosen to deny inbound calls. Use the announcement ID 800 through 899 for custom announcements.

The following steps explain how to provision this feature:

Step 1 Create subscriber without DN1, but with billing DN.

```
add subscriber id=sub_1; sub-profile-id=subprof_1; BILLING_DN=4692550260;
```

Step 2 Add dn2subscriber entry for the billing DN assigned to the subscriber, but point it to an announcement ID.

```
add dn2subscriber FDN=4692550260; status=ANNC; ANNC_ID=998;
```

Call Forward Busy (CFB) and A/D/I (CFBA, CFBD, CFBI)

The Call Forwarding Busy service allows you to forward incoming calls to another telephone number when you are already on a call.

The following subsections identify necessary steps for the feature to be offered.

Tip For a detailed description of the call forwarding features, see Call Forwarding Features in the *Network and Subscriber Feature Descriptions*.

Perform the office provisioning steps for the software release you are running:

- Office Provisioning—Basic CFB (Release 4.5.0 and Earlier)
- Office Provisioning—Call Forwarding for Unreachable Condition (Release 4.5.1 and Later)

Office Provisioning—Basic CFB (Release 4.5.0 and Earlier)

Step 1 Create a feature for CFB-Activation:

```
add feature FNAME=CFBVA; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFB V Activation; GRP_FEATURE=N;
```

Step 2 Create a feature for CFB-Deactivation:

```
add feature FNAME=CFBVD; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC32; DESCRIPTION=CFB V Deactivation; GRP_FEATURE=N;
```

Step 3 Create a feature for CFB-Interrogation:

```
add feature FNAME=CFBI; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFB Interrogation; GRP_FEATURE=N;
```

Step 4 Create a feature for CFB:

```
add feature TDP1=T_BUSY; TID1=T_BUSY; TTYPE1=R; FNAME1=CFBVA; FNAME2=CFBVD; FNAME3=CFBI;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Call Forwarding Busy; GRP_FEATURE=N;
```

Step 5 Add a VSC code for CFB-A:

```
add/change vsc fname=CFBVA; digit-string=*40;
```

Step 6 Add a VSC code for CFB-D:

```
add vsc fname=CFBVD; digit-string=#40#;
```

Step 7 Add a VSC code for CFB-I:

```
add vsc fname=CFBI; digit-string=*#40;
```

Step 8 Add a service with these features:

```
add service id=1; FNAME1=CFB; FNAME2=CFBVA; FNAME3=CFBVD; FNAME4=CFBI;
```

Step 9 Customize the multiple call forwarding capability as required:

```
change feature fname=CFB; TYPE1=MCF; VALUE1=Y;
```

Step 10 Customize for International Call Forwarding as required. This should be applied to CFB and CFBVA:

```
change feature fname=CFB; TYPE1=INTL; VALUE1=Y;
change feature fname=CFBVA; TYPE1=INTL; VALUE1=Y;
```

Step 11 Customize for the second stage dial-tone (O):

```
change feature fname=CFBVA/CFBI; TYPE2=SDT; VALUE2=Y;
```

Beginning with Release 4.5, use the following CLI command:

```
change feature fname=CFBVA/CFBI; TYPE2=SDT; VALUE2=STUTTER-DIAL-TONE;
```

Step 12 Customize for the courtesy call. Accepted values: ANS, NOANS, N (O):

```
change feature fname=CFBVA; TYPE3=CC; VALUE3=ANS;
```

Step 13 Customize for the final-stage dial-tone:

```
change feature fname=CFBVA/CFBVD/CFBI; TYPE4=FDT; VALUE4=Y;
```

Beginning with Release 4.5, use the following CLI command:

```
change feature fname=CFBVA/CFBVD/CFBI; TYPE4=FDT; VALUE4=DIAL-TONE;
```

Step 14 Add the applicable NODs to be restricted for the CFB feature:

```
add nod-restrict-list fname=CFB; nod=EMG;
add nod-restrict-list fname=CFB; nod=FIRE;
```

Note See the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide* for a complete list of NODs.

Caution If you want to block call-forwarding to an emergency (EMG) DN, such as 911, you must provision NOD=EMG for the call-forwarding features (CFU, CFB, CFNA, and CFC) in the NOD-RESTRICT-LIST. This is necessary to comply with the rule in Telcordia document GR-580, which says that 911 should not be a permitted "forward to" number.

Office Provisioning—Call Forwarding for Unreachable Condition (Release 4.5.1 and Later)

The CFB feature can forward a call when the called-party line is unreachable or the MGW is down. This is the normal behavior when the keepalive-method token in the mgw-profile table is set to AUEP (this is the default value). If you chose to set the keepalive-method token to NONE, and you want CFB to forward a call when the called-party line is unreachable or down, you must provision an additional trigger for the CFB feature, and you must also refresh the service that contains the CFB feature. This additional trigger is available in Release 4.5.1 and later. Two cases are shown in this section:

- Fresh Installation
- Upgrade or Changes to Database

Caution We recommend that you keep the keepalive-method token set to the default value unless you have some other method of determining MGW connectivity status.

Fresh Installation

Step 1 Create a feature for CFB-Activation:

```
add feature FNAME=CFBVA; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFB V Activation; GRP_FEATURE=N;
```

Step 2 Create a feature for CFB-Deactivation:

```
add feature FNAME=CFBVD; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC32; DESCRIPTION=CFB V Deactivation; GRP_FEATURE=N;
```

Step 3 Create a feature for CFB-Interrogation:

```
add feature FNAME=CFBI; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFB Interrogation; GRP_FEATURE=N;
```

Step 4 Create a feature for CFB (note that the T_NOT_REACHABLE trigger is added):

```
add feature fname=CFB; TDP1=T_BUSY; TID1=T_BUSY; TTYPE1=R; TDP2=T_EXCEPTION;
TID2=T_NOT_REACHABLE; TTYPE2=R; FNAME1=CFBVA; FNAME2=CFBVD; FNAME3=CFBI;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Call Forwarding Busy; GRP_FEATURE=N;
```

Step 5 Add a VSC code for CFB-A:

```
add/change vsc fname=CFBVA; digit-string=*40;
```

Step 6 Add a VSC code for CFB-D:

```
add vsc fname=CFBVD; digit-string=#40#;
```

Step 7 Add a VSC code for CFB-I:

```
add vsc fname=CFBI; digit-string=*#40;
```

Step 8 Add a service with these features:

```
add service id=1; FNAME1=CFB; FNAME2=CFBVA; FNAME3=CFBVD; FNAME4=CFBI;
```

Step 9 Customize the multiple call forwarding capability as required:

```
change feature fname=CFB; TYPE1=MCF; VALUE1=Y;
```

Step 10 Customize for International Call Forwarding as required. This should be applied to CFB and CFBVA:

```
change feature fname=CFB; TYPE1=INTL; VALUE1=Y;
change feature fname=CFBVA; TYPE1=INTL; VALUE1=Y;
```

Step 11 Customize for the second stage dial-tone (O):

```
change feature fname=CFBVA/CFBI; TYPE2=SDT; VALUE2=Y;
```

Beginning with Release 4.5, use the following CLI command:

```
change feature fname=CFBVA/CFBI; TYPE2=SDT; VALUE2=STUTTER-DIAL-TONE;
```

Step 12 Customize for the courtesy call. Accepted values: ANS, NOANS, N (O):

```
change feature fname=CFBVA; TYPE3=CC; VALUE3=ANS;
```

Step 13 Customize for the final-stage dial-tone:

```
change feature fname=CFBVA/CFBVD/CFBI; TYPE4=FDT; VALUE4=Y;
```

Beginning with Release 4.5, use the following CLI command:

```
change feature fname=CFBVA/CFBVD/CFBI; TYPE4=FDT; VALUE4=DIAL-TONE;
```

Step 14 Add the applicable NODs to be restricted for the CFB feature:

```
add nod-restrict-list fname=CFB; nod=EMG;
add nod-restrict-list fname=CFB; nod=FIRE;
```

Note See the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide* for a complete list of NODs.

Caution If you want to block call-forwarding to an emergency (EMG) DN, such as 911, you must provision NOD=EMG for the call-forwarding features (CFU, CFB, CFNA, and CFC) in the NOD-RESTRICT-LIST. This is necessary to comply with the rule in Telcordia document GR-580, which says that 911 should not be a permitted "forward to" number.

Step 15 If you have decided to turn off MGW monitoring for a particular MGW, enter the following command:

```
add mgw-profile id=MTA_00777 keepalive-method=NONE;
```

Step 16 Add a MGW and reference the applicable mgw-profile:

```
add mgw id=mta12345; call-agent-id=CA146; mgw-profile-id=MTA_00777;
tsap-addr=mta12345.cisco.com:1819; type=rgw;
```

Note See the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide* for a complete list of mgw-profile and mgw tokens.

Upgrade or Changes to Database

Step 1 Change the CFB feature to add the T_NOT_REACHABLE trigger:

```
change feature TDP1=T_BUSY; TID1=T_BUSY; TTYPE1=R; TDP2=T_EXCEPTION; TID2=T_NOT_REACHABLE;
TTYPE2=R; FNAME1=CFBVA; FNAME2=CFBVD; FNAME3=CFBI; FEATURE_SERVER_ID=FSPTC235;
DESCRIPTION=Call Forwarding Busy; GRP_FEATURE=N;
```

Step 2 Use the **change service** command to refresh the service that contains the CFB feature:

```
change service id=1; FNAME1=CFB; FNAME2=CFBVA; FNAME3=CFBVD; FNAME4=CFBI;
```

Step 3 If you have decided to turn off MGW monitoring for a particular MGW, enter the following command:

```
change mgw-profile id=MTA_00777 keepalive-method=NONE;
```

Note See the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide* for a complete list of mgw-profile tokens.

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following steps are required.

Step 1 Add a feature into the custom-dial-plan table for the Centrex group:

```
add/change custom-dial-plan ID=cdp1; DIGIT-STRING=*40*; NOD=VSC; FNAME=CFBVA;
CAT-STRING=1111111111111111;

add custom-dial-plan ID=cdp1; DIGIT-STRING=#40#; NOD=VSC; FNAME=CFBVD;
CAT-STRING=1111111111111111;

add custom-dial-plan ID=cdp1; DIGIT-STRING=*#40*; NOD=VSC; FNAME=CFBI;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Provisioning Notes/Caveats

- Changing the second stage dial tone (SDT) option will have no effect on the delivery of the second dial tone for SIP subscribers. This option is available through the dial plan in the SIP phone.
- Changing the final stage dial tone (FDT) option will have no effect on the delivery of the final dial tone for SIP subscribers. For SIP phones, an announcement will always be delivered because provisioning to play a dial tone and collect further digits is not available.

Alternate Activation and Deactivation Method

This feature is deactivated by default when it is assigned to a subscriber. CFB can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate CFB:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=CFB; type1=FDN1;
value1=4692551001;
```

Note The value should be the forwarding-to DN.

Use a CLI command similar to the following to deactivate CFB:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=CFB;
```

Call Forwarding Combination (CFC) and A/D/I (CFC_ACT, CFC_DN_CHG_ACT, CFC_DEACT, CFCI, CFCI_NO_DN_VRFY)

The Call Forwarding Combination (CFC) feature allows a subscriber to combine and use various Call Forwarding features when the subscriber is either busy or does not answer their phone.

Note For a complete description of this feature, see Call Forwarding Combined in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CFC feature to be offered.

Office Provisioning

Step 1 Create a feature for CFC_ACT:

```
add/change feature FNAME=CFC_ACT; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC325;
```

Step 2 Create a feature for CFC_DEACT:

```
add/change feature FNAME=CFC_DEACT; TDP1=COLLECTED_INFORMATION;
TID1=VERTICAL_SERVICE_CODE; TTYPE1=R; FEATURE_SERVER_ID=FSPTC325;
```

Step 3 Create a feature for CFC_DN_CHG_ACT:

```
add/change feature FNAME=CFC_DN_CHG_ACT; TDP1=COLLECTED_INFORMATION;
TID1=VERTICAL_SERVICE_CODE; TTYPE1=R; FEATURE_SERVER_ID=FSPTC325;
```

Step 4 Create a feature for CFCI_NO_DN_VRFY:

```
add/change feature FNAME=CFCI_NO_DN_VRFY; TDP1=COLLECTED_INFORMATION;
TID1=VERTICAL_SERVICE_CODE; TTYPE1=R; FEATURE_SERVER_ID=FSPTC325;
```

Step 5 Create a feature for CFCI:

```
add/change feature FNAME=CFCI; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC325;
```

Step 6 Create a feature for CFC:

```
add/change feature FNAME=CFC; TDP1=T_BUSY; TID1=T_BUSY; TTYPE1=R; TDP2=CALL_ACCEPTED;
TID2=CALL_ACCEPTED; TTYPE2=R; FEATURE_SERVER_ID=FSPTC325;TYPE1=TO; VALUE1=30; TYPE2=MCF;
VALUE2=Y;
```

Step 7 Define VSC codes for these features:

```
add/change vsc; fname=CFC_ACT; DIGIT_STRING=*68;
add/change vsc; fname=CFC_DEACT; DIGIT_STRING=*88;
add/change vsc; fname=CFC_DN_CHG_ACT; DIGIT_STRING=*201;
add/change vsc; fname=CFCI_NO_DN_VRFY; DIGIT_STRING=*202
add/change vsc; fname=CFCI; DIGIT_STRING=*203
```

Step 8 Customize the FDT and SDT flags for these features, if necessary:

```
change feature; fname=CFC_ACT; TYPE1=FDT; VALUE1=STUTTER_DIAL_TONE;

change feature; fname=CFC_DEACT; TYPE1=FDT; VALUE1=STUTTER_DIAL_TONE;

change feature; fname=CFC_DN_CHG_ACT; TYPE1=FDT; VALUE1=DIAL_TONE;
TYPE2=FDT;VALUE2=STUTTER_DIAL_TONE;
```

Step 9 Combine the features defined above into a service:

```
add/change service id=cfc_dn_chg; FNAME1=CFC_DN_CHG_ACT; FNAME2=CFC_DEACT; FNAME3=CFC;
FNAME4=CFCI_NO_DN_VRFY; FNAME5=CFCI; add/change service id=cfc; FNAME1=CFC_ ACT;
FNAME2=CFC_DEACT; FNAME3=CFC; FNAME4=CFCI_NO_DN_VRFY;
```

Provisioning Resources

None.

Subscriber Provisioning

Step 1 Assign the service a subscriber:

```
add/change sub-service-profile; sub-id=[sub]; service-id=cfc_dn_chg;
add/change sub-service-profile; sub-id=[sub]; service-id=cfc;
```

Step 2 Set the FDN, if required:

```
add/change sub-feature-data; sub-id=sub1; fname=CFC; TYPE1=FDN1; VALUE1=<fdn>;
```

Centrex Provisioning

In addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber, In addition, the following steps are required:

Step 1 Define the star codes in the CDP table for Centrex subscribers:

```
add/change cdp; fname=CFC_ACT; DIGIT_STRING=*68; nod=VSC; CAT_STRING=1111111111111111;

add/change cdp; fname=CFC_DEACT; DIGIT_STRING=*88; nod=VSC; CAT_STRING=1111111111111111;

add/change cdp; fname=CFC_DN_CHG_ACT; DIGIT_STRING=*201; nod=VSC;
CAT_STRING=1111111111111111;

add/change cdp; fname=CFCI_NO_DN_VRFY; DIGIT_STRING=*202; nod=VSC;
CAT_STRING=1111111111111111;

add/change cdp; fname=CFCI; DIGIT_STRING=*203; nod=VSC; CAT_STRING=1111111111111111;
```

MLHG Provisioning

MLHG provisioning is similar to subscriber provisioning.

Provisioning Notes/Caveats

While provisioning CFC, TO in the feature table denotes the time-out that should

be used for reporting No-Answer. This TO can be changed to ‘N’ seconds by

using the following CLI command –

change feature; fname=CFC; TYPE1=TO; VALUE1=N;

- The following can be used to activate the feature or change the forwarding-dn for subscriber sub_1 via CLI –

add/change sub-feature-data; sub-id=sub_1; ACTIVE=Y; FNAME=CFC; TYPE1=FDN1; VALUE1=DN

- See effect of changing SDT above for SIP phones
- See effect of changing FDT above for SIP phones

Alternate Way to Activate and Deactivate CFC

Step 1 Activate CFC for a subscriber and modify the forwarding number:

```
add/change sub-feature-data; sub-id=sub1; fname=CFC; ACTIVE=Y; TYPE1=FDN1; VALUE1=<fdn>;
```

Step 2 Activate CFC for a subscriber and do not modify the forwarding number:

```
add/change sub-feature-data; sub-id=sub1; fname=CFC; ACTIVE=Y;
```

Step 3 Deactivate CFC for a subscriber:

```
add/change sub-feature-data; sub-id=sub1; fname=CFC; ACTIVE=N;
```

Call Forward No Answer (CFNA) and A/D/I (CFNAVA, CFNAVD, CFNAI)

The Call Forward No Answer (CFNA) feature permits you to instruct the network to forward calls when there is no answer of the subscriber phone. A typical forwarding address is voice mail. You can activate and deactivate this feature through the DTMF interface on the handset. Once the feature is activated, it remains active until you deactivates it. While activated, any incoming calls to the subscriber phone that are not answered in six rings are forwarded to the specified number.

Note If a call originates on a phone connected to Cisco CallManager toward a DN subscribed to the Cisco BTS 10200 Softswitch, the Cisco BTS 10200 Softswitch cannot forward that call over an H.323 network to a third party using the call forward no answer (CFNA) feature. (The Cisco BTS 10200 Softswitch can forward the Cisco CallManager-originated call over a SIP or MGCP-based network to a third party using CFNA.)

There is an interaction when a Centrex subscriber has all three of the following features assigned and active:

- Call hold—CHD
- Call waiting—CW or CIDCW or both
- Call forwarding on no answer—CFNA

In this case, the system does not invoke forwarding for any incoming calls. For the subscriber to have the call waiting features (CW or CIDCW) and CFNA active simultaneously, do not assign the CHD feature to the subscriber.

Tip For a complete description of this feature, see Call Forwarding No Answer in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CFNA feature to be offered.

Office Provisioning

Step 1 Create a feature for CFNA-Activation:

```
add feature FNAME=CFNAVA; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFNA Activation; GRP_FEATURE=N;
```

Step 2 Create a feature for CFNA-Deactivation:

```
add feature FNAME=CFNAVD; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFNA Deactivation; GRP_FEATURE=N;
```

Step 3 Create a feature for CFNA-Interrogation:

```
add feature FNAME=CFNAI; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFNA Interrogation; GRP_FEATURE=N;
```

Step 4 Create a feature for CFNA:

```
add feature FNAME=CFNA; TDP1=CALL_ACCEPTED; TID1=CALL_ACCEPTED; TTYPE1=R; FNAME1=CFNAVA;
FNAME2=CFNAVD; FNAME3=CFNAI; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Call Forwarding No
Answer; GRP_FEATURE=N;
```

Step 5 Add/change the VSC code for CFNA-A:

```
add/change vsc fname=CFNAVA; digit-string=*41;
```

Step 6 Add/change the VSC code for CFNA-D:

```
add/change vsc fname=CFNAVD; digit-string=#41#;
```

Step 7 Add/change the VSC code for CFNA-I:

```
add/change vsc fname=CFNAI; digit-string=*#41;
```

Step 8 Add the service with these features:

```
add service id=1; FNAME1=CFNA;
```

Step 9 If required, change the default no-answer timeout value:

```
change feature fname=CFNA; TYPE1=TO; VALUE1=45;
```

Step 10 Customize for International Call Forwarding as required. It should be applied to CFNA and CFNAVA:

```
change feature fname=CFNA; TYPE1=INTL; VALUE1=Y;
change feature fname=CFNAVA; TYPE1=INTL; VALUE1=Y;
```

Step 11 Customize for the second stage dial-tone:

```
change feature fname=CFNAVA/CFNAI; TYPE2=SDT; VALUE2=Y;
```

Beginning with Release 4.5, use the following CLI command:

```
change feature fname=CFNAVA/CFNAI; TYPE2=SDT; VALUE2=STUTTER-DIAL-TONE;
```

Step 12 Customize for the final-stage dial-tone:

```
change feature fname=CFNAVA/CFNAVD/CFNAI; TYPE4=FDT; VALUE4=Y;
```

Beginning with Release 4.5, use the following CLI command:

```
change feature fname=CFNAVA/CFNAVD/CFNAI; TYPE4=FDT; VALUE4=DIAL-TONE;
```

Step 13 Customize the multiple call forwarding capability as required:

```
change feature fname=CFNVA; TYPE1=MCF; VALUE1=Y;
```

Step 14 Customize for courtesy call. Possible values: ANS, NOANS, N:

```
change feature fname=CFNAVA; TYPE3=CC; VALUE3=N;
```

Step 15 Add the applicable NODs to be restricted for the CFNA feature:

```
add nod-restrict-list fname=CFNA; nod=EMG;
add nod-restrict-list fname=CFNA; nod=FIRE;
```

Note See the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide* for a complete list of NODs.

Caution If you want to block call-forwarding to an emergency (EMG) DN, such as 911, you must provision NOD=EMG for the call-forwarding features (CFU, CFB, CFNA, and CFC) in the NOD-RESTRICT-LIST. This is necessary to comply with the rule in Telcordia document GR-580, which says that 911 should not be a permitted "forward to" number.

Subscriber Provisioning

Step 1 Assign the service to the subscriber(M):

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following steps are required.

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
add/change  custom-dial-plan ID=cdp1;DIGIT-STRING=*72; NOD=VSC;FNAME=CFNAVA;
CAT-STRING=1111111111111111;
add/change  custom-dial-plan ID=cdp1;DIGIT-STRING=*73; NOD=VSC;FNAME=CFNAVD;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Provisioning Notes/Caveats

- While provisioning CFNA, TO in the feature table denotes the time-out that should be used for reporting No-Answer. This TO can be changed to ‘N’ seconds by using the following CLI command:

  ```
  change feature fname=CFNA;  TYPE1=TO; VALUE1=N;
  ```

- The following can be used to activate the feature or change the forwarding-dn for subscriber sub_1 via CLI:

  ```
  add/change sub-feature-data sub-id=sub_1; ACTIVE=Y; FNAME=CFNA; TYPE1=FDN1; VALUE1=DN;
  ```

- Changing the second stage dial tone (SDT) option will have no effect on the delivery of the second dial tone for SIP subscribers. This option is available through the dial plan in the SIP phone.
- Changing the final stage dial tone (FDT) option will have no effect on the delivery of the final dial tone for SIP subscribers. For SIP phones, an announcement will always be delivered because provisioning to play a dial tone and collect further digits is not available.

Alternate Activation and Deactivation Method

This feature is deactivated by default when it is assigned to a subscriber. CFNA can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate CFNA:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=CFNA; type1=FDN1;
value1=4692551001;
```

Note The value should be the forwarding-to DN.

Use a CLI command similar to the following to deactivate CFNA:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=CFNA;
```

Call Forwarding Unconditional (CFU) and A/D/I (CFUA, CFUD, CFUI)

Call Forwarding Unconditional is a service that lets you forward all your incoming calls to another telephone number until you explicitly deactivate it. When CFU is activated on your telephone line, you only hear a short reminder ring at your number, after which the forwarded telephone line is offered the call.

Tip For a complete description of the CFU feature, see Call Forwarding Unconditional in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the feature to be offered.

Office Provisioning

Step 1 Create a feature for CFU-Activation:

```
add feature FNAME=CFUA; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFU Activation; GRP_FEATURE=N;
```

Step 2 Create a feature for CFU-Deactivation:

```
add feature FNAME=CFUD; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFU Deactivation; GRP_FEATURE=N;
```

Step 3 Create a feature for CFU-Interrogation:

```
add feature FNAME=CFUI; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFU Interrogation; GRP_FEATURE=N;
```

Step 4 Create a feature for CFU:

```
add feature FNAME=CFU; TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED; TTYPE1=R; FNAME1=CFUA; FNAME2=CFUD; FNAME3=CFUI;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFU; MCF=multiple call forwarding allowed;
GRP_FEATURE=N;
```

Note The features assigned to FNAME1, FNAME2, and FNAME3 in this step become sub-features of FNAME and are automatically assigned to a subscriber when FNAME is assigned.

Step 5 Add/change a VSC code for CFU-A:

```
add/change vsc fname=CFUA; digit-string=*72;
```

Step 6 Add/change a VSC code for CFU-D:

```
add/change vsc fname=CFUD; digit-string=#72#;
```

Step 7 Add/change a VSC code for CFU-I:

```
add/change vsc fname=CFUI; digit-string=*#72;
```

Step 8 Add a service with these features:

```
add service id=1; FNAME1=CFU;
```

Step 9 Customize the reminder ring capability as required:

```
change feature fname=CFU; type1=RR; value1=N;
```

Step 10 Customize the multiple call forwarding capability as required:

```
change feature fname=CFU; TYPE1=MCF; VALUE1=Y;
```

Step 11 Customize for International Call Forwarding as required. This should be applied to CFU and CFUA:

```
change feature fname=CFU; TYPE1=INTL; VALUE1=Y;
change feature fname=CFUA; TYPE1=INTL; VALUE1=Y;
```

Step 12 Customize the second stage dial-tone:

```
change feature fname=[CFUA|CFUI]; TYPE2=SDT; VALUE2=Y;
```

Beginning with Release 4.5, use the following CLI command:

```
change feature fname=[CFUA|CFUI]; TYPE2=SDT; VALUE2=STUTTER-DIAL-TONE;
```

Step 13 Customize the courtesy call. Possible values: ANS, NOANS, N:

```
change feature fname=CFUA; TYPE3=CC; VALUE3=ANS;
```

Step 14 Customize the final-stage dial-tone:

```
change feature fname=[CFUA|CFUD|CFUI]; TYPE4=FDT; VALUE4=Y;
```

Beginning with Release 4.5, use the following CLI command:

```
change feature fname=[CFUA|CFUD|CFUI]; TYPE4=FDT; VALUE4=DIAL-TONE;
```

Step 15 Add the applicable NODs to be restricted for the CFU feature:

```
add nod-restrict-list fname=CFU; nod=EMG;
add nod-restrict-list fname=CFU; nod=FIRE;
```

Note See the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide* for a complete list of NODs.

Caution If you want to block call-forwarding to an emergency (EMG) DN, such as 911, you must provision NOD=EMG for the call-forwarding features (CFU, CFB, CFNA, and CFC) in the NOD-RESTRICT-LIST. This is necessary to comply with the rule in Telcordia document GR-580, which says that 911 should not be a permitted "forward to" number.

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following step is required.

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
add/change  custom-dial-plan ID=cdp1;DIGIT-STRING=*72; NOD=VSC;FNAME=CFUA;
CAT-STRING=1111111111111111;

add/change  custom-dial-plan ID=cdp1;DIGIT-STRING=#72#; NOD=VSC;FNAME=CFUD;
CAT-STRING=1111111111111111;

add/change  custom-dial-plan ID=cdp1;DIGIT-STRING=*#72; NOD=VSC;FNAME=CFUI;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Provisioning Notes/Caveats

- Changing the second stage dial tone (SDT) option will have no effect on the delivery of the second dial tone for SIP subscribers. This option is available through the dial plan in the SIP phone.
- Changing the final stage dial tone (FDT) option will have no effect on the delivery of the final dial tone for SIP subscribers. For SIP phones, an announcement will always be delivered because provisioning to play a dial tone and collect further digits is not available.

Alternate Activation and Deactivation Method

This feature is deactivated by default when it is assigned to a subscriber. CFU can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate CFU:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=CFU; type1=FDN1;
value1=4692551001;
```

Note The value should be the forwarding-to DN.

Use a CLI command similar to the following to deactivate CFU:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=CFU;
```

Call Forwarding Variable BBG (CFVBBG) and Activation (CFVABBG)

The following subsections identify necessary steps for the feature to be offered.

Tip For a complete description of the CFVBBG feature, see Call Forwarding Variable for Basic Business Groups in the *Network and Subscriber Feature Descriptions*.

Note CFVBBG and CFVABBG are Centrex only (BBG) features.

Office Provisioning

Step 1 Create a feature for CFVABBG-Activation:

```
add feature FNAME=CFVABBG; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFVBBG - activation;
GRP_FEATURE=N;
```

Step 2 Create a feature for CFVBBG:

```
add feature FNAME=CFVBBG; FNAME1=CFVABBG; FNAME2=CFUD; FNAME3=CFUI;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CFV BBG; GRP_FEATURE=N;
```

Step 3 Add a service with these features:

```
add service id=1; FNAME1=CFVBBG;
```

Step 4 (Optional) Customize the reminder ring capability as required:

```
change feature fname=CFVBBG; type1=RR; value1=N;
```

Step 5 (Optional) Customize the multiple call forwarding capability as required:

```
change feature fname=CFVBBG; TYPE1=MCF; VALUE1=Y;
```

Step 6 (Optional) Customize for International Call Forwarding as required.
This should be applied to CFU and CFUA:

```
change feature fname=CFVBBG; TYPE1=INTL; VALUE1=Y;
change feature fname=CFVABBG; TYPE1=INTL; VALUE1=Y;
```

Step 7 (Optional) Customize for the second stage dial-tone:

```
change feature fname=CFVABBG; TYPE2=SDT; VALUE2=Y;
```

Beginning with Release 4.5, use the following CLI command:

```
change feature fname=CFVABBG; TYPE2=SDT; VALUE2=STUTTER-DIAL-TONE;
```

Step 8 (Optional) Customize for the courtesy call:

```
change feature fname=CFVABBG; TYPE3=CC; VALUE3=N;
```

Step 9 (Optional) Customize for the final-stage dial-tone:

```
change feature fname=CFVABBG; TYPE4=FDT; VALUE4=Y;
```

Beginning with Release 4.5, use the following CLI command:

```
change feature fname=CFVABBG; TYPE4=FDT; VALUE4=DIAL-TONE;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following step is required.

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
add/change custom-dial-plan ID=cdp1; DIGIT-STRING=*99; NOD=VSC; FNAME=CFVABBG;
CAT-STRING=1111111111111111;
```

Note This is a randomly chosen digit-string.

MLHG provisioning is similar to subscriber provisioning as described above.

Provisioning Notes/Caveats

- Changing the second stage dial tone (SDT) option will have no effect on the delivery of the second dial tone for SIP subscribers. This option is available through the dial plan in the SIP phone.
- Changing the final stage dial tone (FDT) option will have no effect on the delivery of the final dial tone for SIP subscribers. For SIP phones, an announcement will always be delivered because provisioning to play a dial tone and collect further digits is not available.
- For CFVBBG on SIP phones, the reminder ring will not be played because of limited capability on the SIP phone.
- The value provisioned for the courtesy call option will apply only to internal (within the Centrex group) extensions. If a subscriber wants to activate CFVBBG to an external DN, a courtesy call will always be delivered.

Alternate Activation and Deactivation Method

This feature is deactivated by default when it is assigned to a subscriber. CFVBBG can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate CFVBBG:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=CFU; type1=FDN1;
value1=4692551001;
```

Note The value should be the forwarding-to DN.

Use a CLI command similar to the following to deactivate CFVBBG:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=CFU;
```

Call Hold (CHD)

The Call Hold feature allows you to temporarily shut-off an active call, use the telephone for making another call, and then return to the original call. You can alternate between two calls.

There is an interaction when a Centrex subscriber has all three of the following features assigned and active:

- Call hold—CHD
- Call waiting—CW or CIDCW or both
- Call forwarding on no answer—CFNA

In this case, the system does not invoke forwarding for any incoming calls. For the subscriber to have the call waiting features (CW or CIDCW) and CFNA active simultaneously, do not assign the CHD feature to the subscriber.

Tip For a complete description of this feature, see Call Hold in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the feature to be offered.

Office Provisioning

Step 1 Create a feature for CHD:

```
add feature fname=CHD; tdp1=O_MID_CALL; tdp2=T_MID_CALL;
tid1=O_SWITCH_HOOK_FLASH_IMMEDIATE; tid2=T_SWITCH_HOOK_FLASH_IMMEDIATE; ttype1=R;
ttype2=R; description=Call Hold; feature_server_id=FSPTC235;
```

Step 2 Add a service with these features:

```
add service id=1; fname1=CHD; description=For some Centrex subscribers;
```

Subscriber Provisioning

The CHD feature is applicable only to a Centrex group.

Centrex Provisioning

For the CHD feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires the following steps:

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Step 2 Add the feature into the custom-dial-plan table for the Centrex group:

```
add custom-dial-plan ID=cdp1; DIGIT-STRING=*52; NOD=VSC; FNAME=CHD;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to Centrex provisioning as described above.

Call Park, Call Park Retrieve (CPRK, CPRK_RET)

The Call Park feature allows a subscriber (parking party) to park an active call against its own DN or another DN within the Call Park subscriber group (CPSG). Once a call is parked, the parking party is free to make other calls, while the parked party remains parked. The parked party can be retrieved by any of the subscribers within the CPSG; otherwise, the call will be re-offered three times to the parking party.

The Call Park/Call Park Retrieve suite of features is available only to Centrex subscribers. The set of Centrex subscribers against a Centrex group are further subdivided into sets of Call Park Subscriber Groups (CPSGs).

Tip For a complete description of this feature, see Call Park and Call Retrieve in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CPRK amd CPRK_RET features to be offered.

Office Provisioning

Step 1 Create a feature for CPRK:

```
add feature FNAME=CPRK; TDP1=O_MID_CALL; TID1=O_SWITCH_HOOK_FLASH_IMMEDIATE; TTYPE1=R;
TDP2=T_MID_CALL; TID2=T_SWITCH_HOOK_FLASH_IMMEDIATE; TTYPE2=R; FEATURE_SERVER_ID=FSPTC235;
DESCRIPTION=Call Park; GRP_FEATURE=N;
```

Step 2 Create a feature for CPRK_RET:

```
add feature FNAME=CPRK_RET; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Call Park Retrieve;
GRP_FEATURE=N;
```

Step 3 Add a VSC code in the CDP table:

```
add cdp id=cdp1; DIGIT_STRING=*58; NOD=VSC; FNAME=CPRK; CAT_STRING=1111111111111111;
```

Step 4 Add a VSC code in the CDP table:

```
add cdp id=cdp1; DIGIT_STRING=*59; NOD=VSC; FNAME=CPRK_RET; CAT_STRING=1111111111111111;
```

Step 5 Create the CPSG table:

```
add cpsg ID=cpsg1; TCPRK=30; CTXG_ID=ctxg1; CPRK_FDN=414;
```

Note cpsg1 is the Call Park Subscriber Group id
TCPRK is the Timed Recall (Re-offer) Timer
CPRK_FDN is the Forward-To DN, in case all the re-offers are exhausted

Step 6 Add entries to the Ca-config table:

```
add ca-config TYPE=CPRK_ANN; DATATYPE=INTEGER; VALUE=901;
```

```
add ca-config TYPE=CPRK_CLEAR; DATATYPE=INTEGER; VALUE=902;
```

Step 7 Configure Ca-config defaults as required:

```
add ca-config; TYPE=CPRK-TIMER; DATATYPE=INTEGER; VALUE=60;
add ca-config; TYPE=CPRK-HC-T1; DATATYPE=INTEGER; VALUE=24;
```

Note CPRK will get the timer value configured against TCPRK from the CPSG table. If that value is 0, then this value (from the Ca-config table) will be used.

If the configured timer value in the Ca-config and CPSG tables are 0, then this value will be used. If this is also not configured, then a default value of 60 secs will be used.

Step 8 (Optional) If step #6 is performed, add corresponding announcements:

```
add annc ID=901; TYPE=SYSTEM; SEND_ANSWER=N; NUM_REPEAT=1; DURATION=20;
ANNOUNCEMENT_FILE=ann_id_901.au; ROUTE_GUIDE_ID=annc1; ANNOUNCEMENT_NUMBER=323;
add annc ID=902; TYPE=SYSTEM; SEND_ANSWER=N; NUM_REPEAT=1; DURATION=20;
ANNOUNCEMENT_FILE=ann_id_902.au; ROUTE_DE_ID=annc1; ANNOUNCEMENT_NUMBER=323;
```

Subscriber Provisioning

Step 1 Create a service with these features:

```
add service id=1; fname1=CPRK; fname2=CPRK_RET;
```

Step 2 Assign the service to the subscriber:

```
add/change subscriber-service-profile sub-id=sub1; service-id=1;
```

Step 3 Associate the subscriber to a CPSG:

```
change ext2subscriber CTXG_ID=CTXgroup1; EXT=412; SUB_ID=sub1; CPSG_ID=cpsg1;
```

The feature is only available for a Centrex group. Refer to above provisioning.

Provisioning Notes/Caveats

A call can be parked by a Centrex subscriber only against a subscriber in the same CPSG. Similarly, only a member of the same CPSG can retrieve a parked call.

Call Transfer (CT)

The Call Transfer (CT) service lets you transfer an active call to a third party, and your line exits the call.

Tip For a complete description of this feature, see Call Transfer in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CT feature to be offered.

Office Provisioning

Step 1 Provision the feature table:

```
add/change feature FNAME=CT; TDP1=O_MID_CALL; TID1=O_SWITCH_HOOK_FLASH_IMMEDIATE;
TTYPE1=R; TDP2=T_MID_CALL; TID2=T_SWITCH_HOOK_FLASH_IMMEDIATE; TTYPE2=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Call Transfer Feature;
```

Step 2 Provision the service table:

```
add service id=2; FNAME1=CT;
```

Subscriber Provisioning

Step 1 Provision the subscriber-service-profile:

```
add subscriber-service-profile sub_id=sub-1; service-id=2;
```

Centrex and MLHG provisioning is similar to subscriber provisioning.

Call Waiting (CW)

Call Waiting is a service that enables you to accept an incoming call, even when you are already involved in a call, and allows you to alternate between the two calls. Assuming you are already involved in a call, and a third person is trying to call you, then with the call waiting feature enabled you will be notified distinctly of the new incoming call, and you have the choice to accept the call or ignore it. This way you do not miss any incoming calls.

A separate feature of call waiting is cancel-call-waiting, which you can use easily to advise that you do not wish to get notified of a call waiting for the entire duration of the call you are about to make.

There is an interaction when a Centrex subscriber has all three of the following features assigned and active:

- Call hold—CHD
- Call waiting—CW or CIDCW or both
- Call forwarding on no answer—CFNA

In this case, the system does not invoke forwarding for any incoming calls. For the subscriber to have the call waiting features (CW or CIDCW) and CFNA active simultaneously, do not assign the CHD feature to the subscriber.

Tip For a complete description of this feature, see Call Waiting Features in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CW feature to be offered.

Office Provisioning

Step 1 Create a feature for CW-Activation:

```
add feature fname=CW; tdp1=T_BUSY; tid1=T_BUSY; ttype1=R; description=Call Waiting;
feature_server_id=FSPTC235;

add feature FNAME=CWDA; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Call Waiting Activation Feature;

add/change feature FNAME=CWDD; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Call Waiting-Deactivation Feature;
```

Step 2 Add a service with these features:

```
add service id=1; FNAME1=CW;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

For the CW feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber.

The CW feature is not applicable for subscriber category MLHG.

Alternate Activation and Deactivation Method

This feature is activated by default when it is assigned to a subscriber. CW can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate CW:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=CW;
```

Use a CLI command similar to the following to deactivate CW:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=CW;
```

Call Waiting Deluxe (CWD)

The following subsections identify necessary steps for the CWD feature to be offered.

Tip For a complete description of this feature, see Call Waiting Features in the *Network and Subscriber Feature Descriptions*.

Office Provisioning

Step 1 Provision the Feature table:

```
add/change feature FNAME=CWD; TDP1=T_BUSY; TID1=T_BUSY; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=China Residential Call Waiting Deluxe Feature;

add/change feature FNAME=CWDA; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=China Residential Call Waiting Deluxe
Activation Feature;

add/change feature FNAME=CWDD; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=China Residential Call Waiting Deluxe
Deactivation Feature;

add/change feature FNAME=CWDI; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=China Residential Call Waiting Deluxe
Interrogation Feature;
```

Step 2 Provision the Service table:

```
add service id=1; FNAME1=CWD; FNAME2=CWDA; FNAME3=CWDD; FNAME4=CWDI;
```

Step 3 Provision the VSC table:

```
add vsc FNAME=CWDI; DIGIT-STRING=*56;
add vsc FNAME=CWDA; DIGIT-STRING=*58;
add vsc FNAME=CWDD; DIGIT-STRING=*59;
```

Step 4 (Optional) Customize the call-waiting indication timeout period (in seconds):

```
change feature fname=CWD; type1=TO; value1=25;
```

Step 5 (Optional) Customize the RECONNECT-TMR used to time when controlling party goes on-hook but there is at least one party on hold:

```
change ca-config type=RECONNECT-TMR; datatype=INTEGER; value=20;
```

Step 6 (Optional) Customize the FEATURE-RECONNECT-TMR when invalid/timeout user-interaction:

```
change ca-config type=FEATURE-RECONNECT-TMR; datatype=INTEGER; value=20;
```

Subscriber Provisioning

Step 1 Provision the subscriber-service-profile:

```
add subscriber-service-profile sub_id=sub_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following step must be performed.

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
add custom-dial-plan ID=cdp1; DIGIT-STRING=*58*; NOD=VSC; FNAME=CWDA;
CAT-STRING=1111111111111111;
```

```
add custom-dial-plan ID=cdp1; DIGIT-STRING=#58#; NOD=VSC; FNAME=CWDD;
CAT-STRING=1111111111111111;

add custom-dial-plan ID=cdp1; DIGIT-STRING=*#58*; NOD=VSC; FNAME=CWDI;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Alternate Activation and Deactivation Method

This feature is deactivated by default when it is assigned to a subscriber. CWD can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate CWD:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=CWD;
```

Use a CLI command similar to the following to deactivate CWD:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=CWD;
```

Caller ID with Call Waiting (CIDCW)

Calling Identity Delivery on Call Waiting (CIDCW) enables you to receive caller ID information about a calling party while talking to another party. This feature allows call waiting and caller ID to work together. If you are talking to one party and are alerted that another call is coming in, you may want to see who is calling before deciding to put the current party on hold and take the call.

Tip For a complete description of this feature, see Caller Identity Delivery with Call Waiting in the *Network and Subscriber Feature Descriptions*.

The following subsections identify the necessary steps for the CIDCW feature to be offered.

Office Provisioning

Step 1 Create a feature for CW-Activation:

```
add feature fname=CIDCW; tdp1=T_BUSY; tid1=T_BUSY; ttype1=R; description=Caller Id with
Call Waiting; feature_server_id=FSPTC235;
```

Step 2 Add a service with these features:

```
add service id=1; FNAME1=CIDCW;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber.

MLHG provisioning is similar to subscriber provisioning as described above.

Provisioning Notes/Caveats

The CIDCW feature requires the subscriber to already have the CND or CNAM feature assigned. The CND or CNAM feature enables the subscriber to see the calling party's information while ringing on a basic call and is a prerequisite before subscribing to the CIDCW feature.

Alternate Activation and Deactivation Method

This feature is activated by default when it is assigned to a subscriber. CIDCW can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate CIDCW:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=CIDCW;
```

Use a CLI command similar to the following to deactivate CIDCW:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=CIDCW;
```

Caller Name Blocking (CNAB)

The following subsections identify necessary steps for the CNAB feature to be offered.

Note The CNAB feature is not supported over SIP trunks.

Office Provisioning

Step 1 Create a feature for CNAB:

```
add/change feature FNAME=CNAB; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CNAB;
```

Step 2 Add a VSC code for CNAB:

```
add vsc fname=CNAB; digit-string=*95;
```

Step 3 Add a service with the feature:

```
add service id=1; FNAME1=CNAB;
```

Step 4 Enable (or set as required) the LIDB query flag for Softswitch POPs.

```
change pop id=1; cnam_option=LOCAL_OR_LIDB;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following step is required.

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
add custom-dial-plan ID=cdp1; DIGIT-STRING=*95; NOD=VSC; FNAME=CNAB;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Calling Identity Delivery Suppression - Delivery(CIDSD)

Calling Identity Delivery Suppression allows the subscriber to explicitly specify on a per-call basis whether both calling name and calling number will be treated as private or public.

Tip For a complete description of this feature, see Calling Identity Deliver and Suppression in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CIDSD feature to be offered.

Office Provisioning

Step 1 Create a feature for CIDSD:

```
add feature FNAME=CIDSD; TDP1=COLLECTED_INFORMATION; TID1-VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CIDSD;
```

Step 2 Add the VSC for CIDSD:

```
add vsc FNAME=CIDSD; DIGIT-STRING=*82;
```

Step 3 Add the service with the feature:

```
add service ID=1; FNAME1=CIDSD;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile SUB_ID=SUBSCRIBER_1; SERVICE-ID=1;
```

Centrex Provisioning

In addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following step is required:

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
add custom-dial-plan ID=cdp1; DIGIT-STRING=*82; NOD=VSC; FNAME=CIDSD;
CAT-STRING=1111111111111111;
```

MLHG Provisioning

Provisioning is similar to Subscriber provisioning.

Caller Identity Delivery Suppression - Suppression (CIDSS)

The following subsections identify necessary steps for the CIDSS feature to be offered.

Office Provisioning

Step 1 Create a feature for CIDSS:

```
add feature FNAME=CIDSS; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CIDSS;
```

Step 2 Add a VSC for CIDSS;

```
add vsc FNAME=CIDSS; DIGIT-STRING=*96;
```

Step 3 Add a service with the feature:

```
add service ID=1; FNAME1=CIDSS;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile SUB_ID=SUBSCRIBER_1; SERVICE-ID=1;
```

Centrex Provisioning

In addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning to a POTS subscriber. In addition, the following step must be performed.

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
add custom-dial-plan ID=cdp1; DIGIT-STRING=*96; NOD=VSC; FNAME=CIDSS;
CAT-STRING=1111111111111111;
```

Calling Line Identity Presentation, Restriction (CLIP, CLIR)

Provisioning for the CLIP and CLIR features is identical to CND and CNDB respectively, except for the change in feature-name. (See provisioning for CND and CNDB).

Note The CLIP feature is associated with and must be provisioned in combination with CND or CNAM, depending on customer requirements.

Tip For a complete description of these features, see Calling Line Identification Presentation and Calling Line Identification Restriction in the *Network and Subscriber Feature Descriptions*.

Calling Name Delivery (CNAM)

Calling Name Delivery (CNAM) is a service that delivers the name of the calling person, the telephone number, and the local date and time when the call was delivered. Your telephone receiver must be equipped or attached to a caller-ID display device for you to view this information.

Tip For a complete description of this feature, see Calling Name Delivery in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CNAM feature to be offered.

Office Provisioning

Step 1 Create a feature for CNAM:

```
add feature FNAME=CNAM; TDP1=FACILITY_SELECTED_AND_AVAILABLE;
TID1=TERMINATION_RESOURCE_AVAILABLE; TTYPE1=R; FEATURE_SERVER_ID=FSPTC235;
DESCRIPTION=CNAM;
```

Step 2 Add a service with the feature:

```
add service id=1; FNAME1=CNAM;
```

Step 3 Set the LIDB query flag for the Softswitch POPs. Possible values are LOCAL, EXT_LIDB, LOCAL_OR_LIDB, NONE:

```
change pop id=1; cnam_option=LOCAL_OR_LIDB;
```

Note The value of the CNAM-OPTION token determines if a line information database (LIDB) query is performed for calls terminating within the Call Agent. LOCAL-OR-LIDB directs the BTS to display the calling name based on the entry in the Subscriber table, if available. Otherwise,the BTS displays the LIDB calling name entry.

Provisioning Resources

Step 1 Provision the signaling gateway:

```
add sg id=sg_1; description=signaling gateway 1;
```

Step 2 Provision the signaling gateway group:

```
add sg-grp id=sg_grp1; sg1-id=sg_1; description=signaling gateway group 1;
```

Step 3 Provision the signaling gateway process:

```
add sgp id=itp_7507_1; sg-id=sg_1; description=ITP 7507 for sg_1;
```

Step 4 Provision an SCTP association profile:

```
add sctp-assoc-profile id=sctp_prof; bundle_timeout=500; max_assoc_retrans=5;
max_path_retrans=5; max_rto=6000; min_rto=301; sack_timeout=101; hb_timeout=1000;
```

Note The hb_timeout and max_path_retrans tokens are not configurable via the CLI change command. To configure or change these values, a new SCTP association profile must be added.

Step 5 Provision an SCTP association:

```
add sctp-assoc id=sctp_assoc1; sgp-id=itp_7507_1; sctp-assoc-profile-id=sctp_prof;
remote_port=14001; remote_tsap_addr1=10.89.232.9; remote_tsap_addr2=10.89.233.41;
dscp=NONE; ip_tos_precedence=FLASH; local_rcvwin=64000; max_init_retrans=5;
max_init_rto=1000; platform_id=FSPTC235;
```

Step 6 Add a DPC:

```
add dpc id=stp1; point-code=1-101-0; description=STP1, MGTS STP;
```

Step 7 Add an SCCP Network:

```
add sccp-nw id=1; net-ind=NATIONAL; SUB_SVC=NATIONAL; HOP-Count=10;
```

Step 8 Add the subsystem group:

```
add subsystem-grp ID=SSN_CNAM;PLATFORM_ID=FSPTC235;TCAP_VERSION=ANS92;
```

Step 9 Add the subsystem:

```
add subsystem id=SSN_CNAM; opc_id=opc; local-ssn=232; remote-ssn=232; sccp-nw-id=1;
SCCP_VERSION=ANS92; TCAP_VERSION=ANS92; APPLICATION_VERSION=IN1;
```

Step 10 Add the routing key:

```
add routing-key id=rk_cnam; opc-id=opc; sg-grp-id=sg_grp; si=SCCP; rc=204;
PLATFORM_ID=FSPTC235; ssn-id=SSN_CNAM;
```

Step 11 Add the SCCP route:

```
add sccp-route opc_id=opc; dpc_id=stp1; ssn_id=SSN_CNAM; rk_id=rk_cnam;
```

Step 12 Add the SLHR profile:

```
add slhr-profile id=slhr_cnam;
```

Step 13 Add the Service Logic Host Route:

```
add slhr ID=slhr_cnam; OPC_ID=bts9-opc; DPC_ID=cap-itpa-b; SUBSYSTEM_GRP_ID=SSN_CNAM;
GTT_REQ=Y; TT=5; GTT_ADDR_TYPE=CLGN; GTT_ADDR=3;
```

Step 14 Add the ca-config type DEFAULT-LIDB-SLHR-ID:

```
Add ca-config type=DEFAULT-LIDB-SLHR-ID; datatype=string; value=slhr_cnam;
```

Step 15 Control the subsystem group in-service:

```
control subsystem-grp id=SSN_CNAM; mode=forced; target-state=UIS;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the CNAM feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber.

MLHG Provisioning

MLHG provisioning is similar to subscriber provisioning as described above.

Calling Number Delivery (CND)

Calling Number Delivery (CND) displays the telephone number of the calling person, along with the local date and time when the call was delivered to your phone line. You can then decide whether or not to accept the call.

Your telephone receiver must be equipped with or attached to a “Caller-ID” display device for you to view the information.

Tip For a complete description of this feature, see Calling Number Delivery in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CND feature to be offered.

Office Provisioning

Step 1 Create a feature for CND:

```
add feature FNAME=CND; TDP1=FACILITY_SELECTED_AND_AVAILABLE;
TID1=TERMINATION_RESOURCE_AVAILABLE; TTYPE1=R; FEATURE_SERVER_ID=FSPTC235;
DESCRIPTION=CND;
```

Step 2 Add a service with the feature:

```
add service id=1; FNAME1=CND;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex Office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber.

MLHG provisioning is similar to subscriber provisioning as described above.

Calling Number Delivery Blocking (CNDB)

The Calling Number Delivery Blocking (CNDB) service provides you with the ability to toggle the status of your number privacy. If you have number privacy, using CNDB you could make the next call number public. On the other hand, if do not have number privacy, you could make the next call number private.

- If a call number is public, your telephone number will be delivered to the person you are calling (the next dialed number) before you go on-hook.
- If a call number is private, your number is not displayed to the called party.

Since this service is on a per call basis, enable CNDB for each calling number when you do not want the called number displayed.

Tip For a complete description of this feature, see Calling Number Delivery Blocking in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps to activate the CNDB feature.

Office Provisioning

Step 1 Create a feature for CNDB:

```
add feature FNAME=CNDB; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CNDB;
```

Step 2 Add a VSC code for CNDB:

```
add vsc fname=CNDB; digit-string=*67;
```

Step 3 Add a service with the feature:

```
add service id=1; FNAME1=CNDB;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning to a POTS subscriber. In addition, the following step must be performed:

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
Add custom-dial-plan ID=cdp1; DIGIT-STRING=*67; NOD=VSC; FNAME=CNDB;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Caller Identity Delivery Suppression—Delivery (CIDSD)

Calling Identity Delivery and Suppression (CIDSD) allows a subscriber to explicitly specify on a per-call basis whether both calling name and calling number will be treated as private or public. There are separate star codes for delivery or suppression. If the user enters the code for delivery, then, regardless of the subscriber's default privacy, the name and number will be treated as public. If the user enters the code for suppression, then, likewise, regardless of the default privacy, the user's name and number will be treated as private.

Tip For a complete description of this feature, see Caller Identity Delivery Suppression—Delivery in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CIDSD feature to be offered.

Office Provisioning

Step 1 Create a feature for CIDSD:

```
add feature FNAME=CIDSD; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R;  FEATURE_SERVER_ID=FSPTC235;  DESCRIPTION=CIDSD;
```

Step 2 Add a VSC code for CIDSD:

```
add vsc fname=CIDSD; digit-string=*82;
```

Step 3 Add a service with the feature:

```
add service id=1; FNAME1=CIDSD;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex Office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, perform the following step.

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
Add custom-dial-plan  ID=cdp1; DIGIT-STRING=*82; NOD=VSC; FNAME=CIDSD;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Caller Identity Delivery Suppression—Suppression (CIDSS)

Tip For a complete description of this feature, see Caller Identity Delivery Suppression in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CIDSS feature to be offered.

Office Provisioning

Step 1 Create a feature for CIDSS:

```
add feature FNAME=CIDSS; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CIDSS;
```

Step 2 Add a VSC code for CIDSS:

```
add vsc fname=CIDSS; digit-string=*96;
```

Step 3 Add a service with the feature:

```
add service id=1; FNAME1=CIDSS;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following step must be performed.

Step 1 Add the feature into the Custom-dial-plan table for the Centrex group:

```
Add custom-dial-plan ID=cdp1; DIGIT-STRING=*96;  NOD=VSC; FNAME=CIDSS;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Cancel Call Waiting (CCW)

The Cancel Call Waiting service allows you to turn off your existing call waiting service for the entire duration of the current call or the next call you plan to make.

Tip For a complete description of this feature, see Cancel Call Waiting in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the CCW feature to be offered.

Office Provisioning

Step 1 Create the feature:

```
add feature FNAME=CCW; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE; TTYPE1=R;
TDP2=O_MID_CALL; TID2=O_SWITCH_HOOK_FLASH_IMMEDIATE; TTYPE2=R; TDP3=T_MID_CALL;
TID3=T_SWITCH_HOOK_FLASH_IMMEDIATE; TTYPE3=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=CCW;
```

Step 2 Add a VSC code:

```
add vsc fname=CCW;  digit-string=*70;
```

Step 3 Add the service with the feature:

```
add service id=1; FNAME1=CCW;
```

Subscriber Provisioning

Step 1 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following step must be performed.

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
Add custom-dial-plan ID=cdp1; DIGIT-STRING=*70; NOD=VSC; FNAME=CCW;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Class of Service Screening

The Class of Service (COS) Screening feature is a screening process based on Class of Service.

Tip For a complete description of this feature, see Class of Service Restrictions in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the COS feature to be offered.

Office Provisioning

Step 1 Register the feature in the Office:

```
Add feature FNAME=COS; tdp1=COLLECTED-INFORMATION; tid1=COS-TRIGGER; ttype1=R;
feature_server_id=FSPTC235; description=Class Of Service; grp_feature=N;
```

Step 2 Provision the feature into a service package:

```
Add service id=special-srv; fname1=COS;
```

Note This feature can be assigned to any of fnameN tokens

Step 3 (Optional) Provision a Class of Service restriction class:

```
Add/change cos-restrict id=basic-restrict; casual-restrict-type=<applicable-values>;
national-restrict-type=<applicable-values>; national-wb-list=<applicable-values>;
intl-restrict-type=<applicable-values>; ii-restrict=<applicable-values>;
nod-wb-list=<applicable-values>; acct-code-allow=<applicable-values>;
acct-code-length=<applicable-values>; auth-code-allow=<applicable-values>;
auth-code-length=<applicable-values>; auth-code-grp-id=<applicable-values>;
```

Step 4 (Optional) Provision cos-restrict related tables based on a given cos-restrict provisioning:

```
Auth-code-grp, Auth-code, Casual-wb-list, Intl-wb-list, Lata, Lata-map, National-wb-list;
```

Step 5 (Optional) Beginning in Release 4.4, the timer to play the prompt tone for account and authorization codes on the media gateway is configurable via CLI. The delayed request applies only to trunks without a main-subscriber or to trunks with a main-subscriber whose category is PBX.

```
change ca-config type=ACCT-CODE-PROMPT-DELAY; datatype=integer; value=200;
change ca-config type=AUTH-CODE-PROMPT-DELAY; datatype=integer; value=250;
```

Note Account codes and auth codes are not supported on ISDN trunks prior to R4.5 release

Provisioning Resources

Step 1 (Optional) Provision COS on a given trunk group (if required):

```
Add trunk-grp-feature-data tgn-id=isdn-1; tg=isdn-trunk-1; casual-call=Y/N;
cos-restrict-id=new-age-restriction;
```

Subscriber Provisioning

Step 1 Add the service to the subscriber's service profile:

```
add subscriber-service-profile sub-id=sub1_plano.com; service-id=special-srv;
```

Step 2 (Optional) Add cos-restrict-id to the subscriber table:

```
add subscriber sub-id=sub1_plano.com; cos-restrict-id=new-age-restriction;
```

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

Provisioning for IVR Collection of Account/Authorization Codes

Step 1 Verify ca-config-base entry for default IVR route guide:

Note The value for DEFAULT-IVR-ROUTE-GUIDE-ID must correspond to the entry in the ROUTE-GUIDE table that routes to the default IVR.

```
SHOW CA-CONFIG-BASE TYPE=DEFAULT-IVR-ROUTE-GUIDE-ID; DATATYPE=STRING; VALUE=def_ivr_rg;
```

Step 2 Define the IVR script profile for the COS feature:

```
add ivr-script-profile fname=COS; ivr-access-mode=IVR;  ivr-route-guide-id=cos_ivr_rg;
ivr-script-pkg-type=BAU; multiple-language-supp=N;
```

Step 3 Specify the COS default voice back language in the LANGUAGE table:

```
add language id=def;
```

Step 4 Add an audio segment for the Authorization code prompt:

```
add audio-segment; id=AUTH-PROMPT; type=PHYSICAL; url=http://cos/auth.au;
```

Step 5 Add an audio segment for the Account code prompt:

```
add audio-segment; id=ACCT-PROMPT; type=PHYSICAL; url=http://cos/acct.au;
```

Step 6 Add an audio sequence for the Authorization code prompt:

```
add audio-seq id=cos_auth_prm_seq; language_id=def; seq=AUTH-PROMPT;
```

Step 7 Add an audio sequence for the Account code prompt:

```
add audio-seq id=cos_acct_prm_seq; language_id=def; seq=ACCT-PROMPT;
```

Note The ID values in the audio-seq table should be cos_auth_prm_seq for authorization code prompt and cos_acct_prm_seq for account code prompt as shown in the above steps; otherwise the announcements are not played.

Step 8 Add/modify configurable timer values for IVR interaction:

```
add feature-config fname=COS; type=FDT_TIMER; datatype=INTEGER; value=100;

add feature-config fname=COS; type=IDT_TIMER; datatype=INTEGER; value=40;
```

Subscriber Provisioning

Step 1 Set prompt method as IVR based for the subscriber/group's COS restriction:

```
change COS-RESTRICT id=test; PROMPT-METHOD=IVR;
```

Step 2 Set the ALLOW-CALLS-ON-IVR-FAILURE parameter in the subscriber's effective cos-restrict:

```
change cos-restrict id=test; ALLOW-CALLS-ON-IVR-FAILURE=Y;
```

Centrex Provisioning

Provisioning is similar to subscriber provisioning and basic Centrex provisioning.

Codec Negotiation

Codec negotiation is a process that is used during call transition states to change from the selected codec to a different one. Codec negotiation allows calls to be started using a certain low speed codec (for example, on-net calls) and, depending on the features used, a different codec may be needed to complete the feature call. Thus the codec is first selected and then negotiated as necessary for transition states in the call.

Note Codec selection and negotiation work together.

Codec Selection

Codec selection allows calls to be established using a variety of encoding and decoding DSP devices (codec) to compress voice for transmission via the RTP. With the proper codec selection for calls, bandwidth can be conserved, allowing more calls to be carried on the same equipment and improving the economics of the VoIP solution.

Custom Dial Plan (CDP)

The following subsections identify necessary steps for the CDP feature to be offered.

Office Provisioning

Step 1 Provision the Feature table:

```
add feature FNAME=CDP; TDP1=COLLECTED_INFORMATION; TID1=CUSTOMIZE_DIALING_PLAN; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Custom Dial Plan Feature;
```

Step 2 Provision the Service table:

```
add service id=2; FNAME1=CDP;
```

Centrex Provisioning

Step 1 Provision the subscriber-service-profile:

```
add subscriber-service-profile sub_id=sub_1; service-id=2;
```

MLHG Provisioning

MLHG provisioning is only applicable for MLHG-CTX and is similar to Centrex provisioning.

Provisioning Notes/Caveats

The CDP feature should be assigned to every Centrex category user.

Customer Originated Trace

The Customer Originated Trace(COT) feature allows subscribers to generate a record of an incoming harassing call. The data that will be recorded is the date and time of the trace, the calling DN, the unique/non-unique nature of the calling DN, the customer's DN, the customer's termination id, answer indication, call-waited indication, and the date/time of the call. This feature works with announcements or tones to prompt the user to generate a trace.

Tip For a complete description of this feature, see Customer Originated Trace in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the COT feature to be offered.

Office Provisioning

Step 1 Create the feature:

```
add feature fname=COT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE; ttype1=R;
description=Customer Originated Trace; feature_server_id=FSPTC235;
```

Step 2 Add the VSC code:

```
add vsc fname=COT;  digit_string=*57;
```

Step 3 (Optional) For Usage-Sensitive COT behavior in the switch, add the ca-config table if your default office service id needs to be different from factory assigned defaults:

```
change ca-config type=DEFAULT-OFFICE-SERVICE-ID; datatype=string; value=467;
```

Step 4 (Optional) For Usage-Sensitive COT, add the COT feature to the default office service id:

```
Add service id=467; FNAME1=COT;
```

Subscriber Provisioning

Step 1 Add the COT feature to a service set:

```
Add service id=special-srv; fname=COT;
```

Step 2 Add the service to the subscriber's service profile:

```
add subscriber-service-profile sub-id=sub1_plano.com; service-id=special-srv;
```

Step 3 (Optional) The operator may optionally deny originating a COT service on a subscribers line:

```
add subscriber-feature-data sub-id=sub1_plano.com; type1=DENIED; value1=Y;
```

Step 4 (Optional) Change the subscriber's Usage Sensitivity feature applicability flag (if required):

```
change subscriber id=sub1_plano.com; USAGE-SENS=Y;
```

Centrex Provisioning

Step 1 Add an entry in the CDP table:

```
add cdp id=cdp1; DIGIT_STRING=*57; NOD=VSC; FNAME=COT;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Direct Call Pickup Without Barge-In (DPN)

Directed Call Pick-Up allows a user in a basic business group (BBG) to answer a call to a telephone from another telephone within the business group.

Directed Call Pickup has two versions, with and without barge-in capability.

Tip For a complete description of this feature, see Direct Call Pickup in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the DPN feature to be offered:

Office Provisioning

Step 1 Provision the feature table:

```
add feature FNAME=DPN; FEATURE_SERVER_ID=FSPTC235; GRP_FEATURE=N; DESCRIPTION=Direct Call
Pickup Without Barge-In Feature;
```

Step 2 Provision the service table:

```
add service ID=2; FNAME1=DPN;
```

Centrex Provisioning

Step 1 Provision the subscriber-service profile:

```
add subscriber-service-profile SUB_ID=SUB_1; SERVICE-ID=2;
```

Step 2 Add the feature into the custom-dial-plan table for the Centrex group:

```
add custom-dial-plan ID=cdp1; DIGIT-STRING=*23; NOD-VSC; FNAME=DPN;
CAT-STRING=1111111111111111;
```

MLHG Provisioning

Applicable for MLHG_CTX only; provisioning is similar to Centrex provisioning.

Direct Call Pickup With Barge-In (DPU)

The following subsections identify necessary steps for the feature to be offered:

Office Provisioning

Step 1 Provision the feature table:

```
add feature FNAME=DPU; FEATURE_SERVER_ID=FSPTC235; GRP_FEATURE=N; DESCRIPTION=Direct Call
Pickup With Barge-In Feature;
```

Step 2 Provision the Service table:

```
add service ID=2; FNAME1=DPU;
```

Centrex Provisioning

Step 1 Provision the subscriber-service-profile:

```
add subscriber-service-profile SUB_ID=SUB_1; SERVICE-ID=2;
```

Step 2 Add the feature into the custom-dial-plan table for the Centrex group:

```
add custom-dial-plan ID-cdp1; DIGIT-STRING=*24; NOD-VSC; FNAME-DPU;
CAT-STRING=1111111111111111;
```

MLHG Provisioning

Applicable for MLHG_CTX only; provisioning is similar to Centrex provisioning.

Distinctive Alerting/Call Waiting Indication (DA/CWI)

The Distinctive Alerting/Call Waiting Indication (DA/CWI) feature provides Centrex users special ringing and CW tones on DID calls. This feature is available only to Centrex subscribers.

Note For the distinctive call-waiting tones to be played, either the Call Waiting (CW) feature or the Call Waiting Deluxe (CWD) feature must also be assigned and active on the subscriber line.

Tip For a complete description of this feature, see Distinctive Alerting/Call Waiting Indication in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps to offer the DA/CWI feature.

Office Provisioning

Step 1 Provision the Feature table:

```
add feature  FNAME=DACWI;  TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED;  TTYPE1=R;  FEATURE_SERVER_ID=FSPTC235;
GRP_FEATURE=N; DESCRIPTION=Distinctive Alerting / Call Waiting Indication Feature;
```

Step 2 Provision the Service table:

```
add service id=2; FNAME1=DACWI;
```

Subscriber Provisioning

The DA/CWI feature applies only to a Centrex group.

Centrex Provisioning

Step 1 Provision the subscriber-service-profile:

```
add subscriber-service-profile  sub_id=sub-1;  service-id=2;
```

MLHG Provisioning

This feature is only applicable to MLHG-CTX. MLHG provisioning is similar to Centrex provisioning.

Do Not Disturb (DND)

The Do Not Disturb (DND) feature, based on the Telcordia document SR-504, SPCS Capabilities and Features (FSD-01-02-0750), routes incoming calls either to a special do not disturb announcement or to a special tone.

A single flash ring, called a reminder ring, can be played to the DND user. This feature option is provisioned in the feature table. See Office Provisioning, Step 5.

Note The reminder ring option is not supported for SIP endpoints.

Tip For a complete description of this feature, see Do Not Disturb in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps to provision the DND feature.

Office Provisioning

Step 1 Create a feature for DND-Activation:

```
add feature FNAME=DND_ACT; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
FEATURE_SERVER_ID=FSPTC235; TTYPE1=R; DESCRIPTION=DND Activation; GRP_FEATURE=N;
```

Step 2 Create a feature for DND-Deactivation:

```
add feature FNAME=DND_DEACT; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=DND Deactivation; GRP_FEATURE=N;
```

Step 3 Create a feature for DND:

```
add feature FNAME=DND; TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED; TTYPE1=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Do
not disturb; GRP_FEATURE=N;
```

Step 4 Create the VSC codes in the VSC table:

```
add vsc DIGIT_STRING=*78;  FNAME=DND_ACT
add vsc DIGIT_STRING=*79;  FNAME=DND_DEACT;
```

Step 5 Provision the reminder ring option:

```
add/change subscriber_feature_data fname=DND; sub_id=<sub id>; type1=RR; value1=Y;
```

Subscriber Provisioning

Step 1 Create the service with these features:

```
add service id=1; fname1=DND;  fname2=DNDA;  fname3=DNDD;
```

Step 2 Assign the service to the subscriber:

```
add/change subscriber-service-profile; sub-id=sub1; service-id=1;
```

Centrex Provisioning

Step 1 Create an entry in the CDP table:

```
add/change cdp;  id=cdp1;  DIGIT_STRING=*78;  NOD=VSC; FNAME=DND_ACT;
CAT_STRING=1111111111111111

add/change cdp;  id=cdp1;  DIGIT_STRING=*79;  NOD=VSC;  FNAME=DND_DEACT;
CAT_STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Alternate Activation and Deactivation Method

This feature is deactivated by default when it is assigned to a subscriber. DND can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate DND:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=DND;
```

Use a CLI command similar to the following to deactivate DND:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=DND;
```

Group Speed Call: 1-Digit and 2-Digit (GSC1D, GSC2D)

Tip For a complete description of this feature, see Group Speed Call in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the GSC1D and GSC2D features to be offered.

Office Provisioning

Step 1 Add the Group 1 digit speed call feature:

```
add feature fname=GSC1D; tdp1=COLLECTED_INFORMATION; tid1=SC1D_TRIGGER; ttype1=R;
description=Group One Digit Speed Call Activation; feature_server_id=FSPTC235;
```

Step 2 Add the Group 2 digit speed call feature:

```
add feature fname=GSC2D;     tdp1=COLLECTED_INFORMATION;     tid1=SC2D_TRIGGER;
ttype1=R; description=Group Two Digit Speed Call Activation;
feature_server_id=FSPTC235;
```

Step 3 Create a service with all the Group speed call features:

```
Add service id=499; fname1=GSC1D; fname2=GSC2D;
```

Subscriber Provisioning

Step 1 Provision the Subscriber-service-profile table Add the service to the subscriber:

```
Add sub-service-profile sub-id=sub_1_4; service-id=499;
```

Centrex Provisioning

In addition to subscriber provisioning, the following entries are required:

Step 1 Provision the Custom-dial-plan table:

```
add custom-dial-plan    ID=cdp1;    DIGIT-STRING=2;    NOD=SPEED-CALL;    FNAME=SC1D;
CAT-STRING=1111111111111111;
add custom-dial-plan    ID=cdp1;    DIGIT-STRING=3;    NOD=SPEED-CALL;    FNAME=SC1D;
CAT-STRING=1111111111111111;
add custom-dial-plan      ID=cdp1;     DIGIT-STRING=4;     NOD=SPEED-CALL;
FNAME=SC1D;     CAT-STRING=1111111111111111;
add custom-dial-plan      ID=cdp1;     DIGIT-STRING=5;     NOD=SPEED-CALL;
FNAME=SC1D;     CAT-STRING=1111111111111111;
add custom-dial-plan      ID=cdp1;     DIGIT-STRING=6;     NOD=SPEED-CALL;
FNAME=SC1D;     CAT-STRING=1111111111111111;
add custom-dial-plan      ID=cdp1;     DIGIT-STRING=7;     NOD=SPEED-CALL;
FNAME=SC1D;     CAT-STRING=1111111111111111;
add custom-dial-plan     ID=cdp1;     DIGIT-STRING=2x;     NOD=SPEED-CALL;
FNAME=SC2D;     CAT-STRING=1111111111111111;
add custom-dial-plan      ID=cdp1;     DIGIT-STRING=3x;     NOD=SPEED-CALL;
FNAME=SC2D;     CAT-STRING=1111111111111111;
add custom-dial-plan      ID=cdp1;     DIGIT-STRING=4x;     NOD=SPEED-CALL;
FNAME=SC2D;     CAT-STRING=1111111111111111;
add custom-dial-plan      ID=cdp1;     DIGIT-STRING=2x;     NOD=SPEED-CALL;
FNAME=SC2D;     CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Alternate Provisioning Method

GSC1D can alternately be provisioned or removed by creating an entry in the SC1D table.

Use a CLI command similar to the following to provision the GSC1D code:

add sc1d sub-id=sub_1; dnx=4692551001;

Use a CLI command similar to the following to remove provisioning for the GSC1D code:

add sc1d sub-id=sub_1; dnx=NULL;

Note dnx can be one of {dn1, dn2, dn3, …, dn9}. For a Centrex subscriber, it can only be one of {dn2, dn3, …, dn7}

Note For a Centrex user, the sub-id should be the main subscriber id defined in the Centrex-grp table.

GSC2D can alternately be provisioned or removed by creating an entry in the SC2D table.

Use a CLI command similar to the following to provision the GSC2D code:

add sc2d sub-id=sub_1; dnx=4692551001;

Use a CLI command similar to the following to remove provisioning for the GSC2D code:

add sc2d sub-id=sub_1; dnx=NULL;

Note dnx can be one of {dn20, dn21, …, dn49}.

Note For a Centrex user, the sub-id should be the main subscriber id defined in the Centrex-Grp table.

Hotline (HOTLINE)

The Hotline feature enables you to get connected to a pre-defined telephone user by lifting the handset. The hotline feature can be used as a special high priority line or for a frequently called number.

Tip For a complete description of this feature, see Hotline in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the Hotline feature to be offered.

Office Provisioning

Step 1 Register the feature in the Office:

```
Add feature FNAME=HOTLINE; tdp1=O_ATTEMPT_AUTHORIZED; tid1=O_ATTEMPT_AUTHD; ttype1=R;
feature_server_id=FSPTC235; description=Hotline; grp_feature=N;
```

Step 2 Provision the feature into a service package:

```
Add service id=special-srv; fname1=HOTLINE;
```

Note This feature may be assigned to any of fnameN tokens

Provisioning Resources

Step 1 The mgw-profile of the media gateway to which subscriber line is associated must have its MGCP version set as “non-0.1”:

```
add/change mgw-profile id=plano-iad; mgcp-version=MGCP_1_0;
```

Note MGCP 0.1 version does not support TO signal completion report.

Step 2 Set the Dial-Tone timeout as a supported feature by the MGW:

```
add/change mgw-profile id=plano-iad; mgcp-dialtone-to-supp=Y;
```

Subscriber Provisioning

Step 1 Add the service to the subscriber’s service profile:

```
add subscriber-service-profile sub-id=sub1_plano.com; service-id=special-srv;
```

Step 2 Add the Hotline target DN to the subscriber’s feature data:

```
add subscriber-feature-data sub-id=sub1_plano.com; fname=HOTLINE; type1=FDN1;
value1=9726712355;
```

Centrex Provisioning

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

Hotline—Variable (HOTV) and ADI (HOTVA, HOTVD, HOTVI)

Tip For a complete description of this feature, see Hotline—Variable in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the HOTV feature to be offered.

Note Provisioning the HOTV (invocation) feature is exactly the same as the Warmline feature except for the feature name.

Office Provisioning

Step 1 Register the features in the Office:

```
Add feature FNAME=HOTVx; tdp1=COLLECTED-INFORMATION; tid1=VERTICAL-SERVICE-CODE; ttype1=R;
feature_server_id=FSPTC235; description=Hotline-Variable Act / Deact; grp_feature=N;
```

Note HOTVx is interchangeably referred to here for HOTVA, HOTVD, and HOTVI features.

Step 2 Add the VSC code for HOTVA:

```
add vsc fname=HOTVA;  digit-string=*52*;
```

Step 3 Add the VSC code for HOTVD:

```
add vsc fname=HOTVD;  digit-string=#52#;
```

Step 4 Add the VSC code for HOTVI:

```
add vsc fname=HOTVI; digit-string=*#52*;
```

Step 5 Add a service with these features:

```
add service id=special-srv;  FNAME1=HOTV;  FNAME2=HOTVA;  FNAME3=HOTVD;  FNAME4=HOTVI;
```

Step 6 (Optional) Provision an exception call-type list for the Hotline service. Multiple call types can be entered:

```
Add nod-restrict-list fname1=HOTV; call-type=EMG;
```

Note HOTVx is interchangeably referred to here for HOTVA, HOTVD, and HOTVI features.

Step 7 (Optional) Change the HOTV dial-tone timeout parameter (if need to customize):

```
Add/change feature FNAME=HOTV; type1=TO; value1=6;
```

Note The internal default is 4 seconds.

Provisioning Resources

Step 1 The mgw-profile of the media gateway to which the subscriber line is associated must have its MGCP version set as "non-0.1":

```
add/change mgw-profile id=plano-iad; mgcp-version=MGCP_1_0;
```

Note MGCP 0.1 version does not support TO signal completion report.

Step 2 Set the Dial-Tone timeout as a supported feature by the MGW:

```
add/change mgw-profile id=plano-iad; mgcp-dialtone-to-supp=Y;
```

Subscriber Provisioning

Step 1 Add the service to the subscriber's service profile:

```
add subscriber-service-profile sub-id=sub1_plano.com; service-id=special-srv;
```

Centrex Provisioning

For the feature, in addition to basic Centrex Office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following steps must be performed.

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
Add/change  custom-dial-plan  ID=cdp1;DIGIT-STRING=*52*; NOD=VSC;FNAME=HOTVA;
CAT-STRING=1111111111111111;

add/change  custom-dial-plan  ID=cdp1;DIGIT-STRING=#52#; NOD=VSC;FNAME=HOTVD;
CAT-STRING=1111111111111111;

add/change  custom-dial-plan ID=cdp1; DIGIT-STRING=*#52*;  NOD=VSC; FNAME=HOTVI;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Alternate Activation and Deactivation Method

This feature is deactivated by default when it is assigned to a subscriber. HOTV can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate HOTV:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=HOTV; type1=FDN1;
value1=4692551001;
```

Note The value should be the Hotline DN.

Use a CLI command similar to the following to deactivate HOTV:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=HOTV;
```

Incoming Simulated Facility Group (ISFG)

The following subsections identify necessary steps for the ISFG feature to be offered.

Office Provisioning

Step 1 Provision the Feature table:

```
add feature  FNAME=ISFG;  TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED;  TTYPE1=R;  FEATURE_SERVER_ID=FSPTC235;
GRP_FEATURE=N; DESCRIPTION=Incoming Simulated Facility Group Feature;
```

Step 2 Provision the Service table:

```
add service id=2; FNAME1=ISFG;
```

Centrex Provisioning

Step 1 Provision the subscriber-service-profile:

```
add subscriber-service-profile  sub_id=sub_1; service-id=2;
```

Step 2 Provision CTXG:

```
Change ctxg ID=ctxg1; SFG_CONTROL=Y; IN_SFG_COUNT=3; OUT_SFG_COUNT=3; BOTH_SFG_COUNT=4;
```

This feature is only applicable to MLHG-CTX. MLHG provisioning is similar to Centrex provisioning as described above.

Provisioning Notes/Caveats

SFG controls will be effective only if the subscriber(s) are assigned SFG features and the Centrex-grp table has the SFG-Control flag set to Y

Limited Call Duration (LCD)

The Cisco BTS 10200 Softswitch supports the Limited Call Duration (LCD) feature, including both prepaid and postpaid services. Supporting postpaid services is new in Release 4.5. This support includes interfaces to an authentication, authorization, and accounting (AAA) server. The LCD feature can be assigned to any Cisco BTS 10200 Softswitch subscriber with any phone type, including Media Gateway Control Protocol (MGCP)-based, Session Initiation Protocol (SIP)-based, and network-based call signaling (NCS)-based phones.

Note For a complete description of this feature, see Limited Call Duration in the *Network and Subscriber Feature Descriptions.*

Step 1 Create a NOD escape list for the LCD_TRIGGER so the system will allow certain types of calls (such as repair calls without AAA server authorization.

```
add trigger-nod-escape-list tid=LCD_TRIGGER; nod=REPAIR;
```

Step 2 Add a RADIUS profile with the appropriate TSAP address and server type (prepaid).

Note Two examples are shown—one using a domain name and one using an IP address.

```
add radius-profile id=rad-profile-prepd015; tsap-addr=central777.cisco.com:1819;
server-type=prepaid;

add radius-profile id=rad-profile-prepd777; tsap-addr=172.16.5.5:1819;
server-type=prepaid;
```

Step 3 Add an AAA server group that links to the appropriate RADIUS profile.

```
add aaa-server-grp id=aaa-server-grp1; radius-profile-id=rad-profile-prepd015;
```

Step 4 Provision the POP table to link to the appropriate AAA server group.

```
change pop id=londonpop3; aaa-server-grp-id=aaa-server-grp1;
```

Step 5 Create the LCD feature.

```
add feature fname=LCD; tdp1=COLLECTED_INFORMATION; tid1=LCD_TRIGGER; ttype1=R;
description=Limited Call Duration Feature; feature-server=FSPTC235; grp-feature=N;
```

Step 6 Add the LCD feature to a service.

```
add service id=5; fname1=LCD; description=Prepaid Service;
```

Step 7 Assign the service to a subscriber.

```
add sub-service-profile sub-id=nyc-sub1; service-id=5;
```

Step 8 (Optional) When the LCD_TRIGGER is invoked, but for some reason the LCD_TRIGGER fails, this flag is used to determine the action to be taken. If the flag is set to Y, the call is released, else the call is continued. By default, this value is set to Y. If required by your local business office, you can change this value to N.

Note Note If this parameter is set to N and the LCD_TRIGGER fails, the call will be given for free to the caller.

```
add ca-config type=RELEASE-CALL-ON-LCD-TRIGGER-FAILURE; datatype=BOOLEAN; value=N;
```

Local Number Portability (LNP) for ANSI/North America

Local Number Portability (LNP) enables subscribers to keep their phone numbers after changing service providers. LNP in North America performs SS7 ANSI TCAP queries to an external SCP database.

Tip For a complete description of this feature, see Local Number Portability in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the LNP feature to be offered in North America. See the"Local Number Portability (LNP) for ITU Local BTS Database Query" section on page 7-80 for the steps necessary for the LNP feature to be offered in the European market.

Office Provisioning

Step 1 Create a feature for LNP DB lookup:

```
add feature  fname=LNP; tdp1=COLLECTED_INFORMATION; tid1=LNP_TRIGGER; ttype1=R;
description=local number portability; feature_server_id=FSAIN205;
```

Step 2 Add this feature to the default office service Id (assuming the default-office-service id=999):

```
add/change service id=999; fname1=LNP;
add ca-config type=DEFAULT-OFFICE-SERVICE-ID; DATATYPE-STRING; VALUE=999;
```

Step 3 Add the ported-office-code:

```
add ported-office-code digits-string=NPA-NXX; in-call-agent=N;
```

Step 4 Add My-LRN and JIP in the POP table:

```
change pop id=1; my-lrn=NPA-NXX-XXXX; JIP=NPA;
```

Step 5 Verify the following table fields for appropriate values:

```
dn2subscriber.LNP_TRIGGER
dn2subscriber.status
trunk-grp.signal-ported-number
trunk-grp.remote-switch-lrn
```

Provisioning Resources

Step 1 Provision the signaling gateway:

```
add sg id=sg_1; description=signaling gateway 1;
```

Step 2 Provision the signaling gateway group:

```
add sg-grp id=sg_grp1; sg1-id=sg_1; description=signaling gateway group 1;
```

Step 3 Provision the signaling gateway process:

```
add sgp id=itp_7507_1;  sg-id=sg_1;  description=ITP 7507 for sg_1;
```

Step 4 Provision the SCTP association profile:

```
add sctp-assoc-profile id=sctp_prof; bundle_timeout=500; max_assoc_retrans=5;
max_path_retrans=5;  max_rto=6000; min_rto=301; sack_timeout=101;  hb_timeout=1000;
```

Note The hb_timeout and max_path_retrans tokens are not configurable via the CLI change command. To configure or change these values, a new SCTP association profile must be added.

Step 5 Provision the SCTP association:

```
add sctp-assoc  id=sctp_assoc1;  sgp-id=itp_7507_1;  sctp-assoc-profile-id=sctp_prof;
remote_port=14001; remote_tsap_addr1=10.89.232.9; remote_tsap_addr2=10.89.233.41;
local_rcvwin=64000; max_init_retrans=5; max_init_rto=1000; platform_id=FSAIN205;
```

Step 6 Add the DPC:

```
add dpc id=stp1; point-code=1-101-0;  description=STP1, MGTS STP;
```

Step 7 Add the SCCP network:

```
add sccp-nw id=1; net-ind=NATIONAL; SUB_SVC=NATIONAL;  HOP-Count=10;
```

Step 8 Add the subsystem group:

```
add subsystem-grp id=SSN_LNP; PLATFORM_ID=FSAIN205; TCAP_VERSION=ANS92;
```

Step 9 Add the subsystem:

```
add subsystem id=SSN_LNP; opc_id=opc; local-ssn=247; remote-ssn=247; sccp-nw-id=1;
SCCP_VERSION=ANS92; APPLICATION_VERSION=AIN01;
```

Step 10 Add the routing key:

```
add routing-key id=rk_lnp;  opc-id=opc;  sg-grp-id=sg_grp;  si=SCCP;  rc=202;
PLATFORM_ID=FSAIN205; ssn-id=SSN_LNP;
```

Step 11 Add an SCCP route:

```
add sccp-route opc_id=opc; dpc_id=stp1; rk_id=rk_lnp;subsystem_grp_id=SSN_LNP;
```

Step 12 Add the SLHR profile:

```
add slhr-profile id=slhr_lnp;
```

Step 13 Add the service logic host route:

```
add slhr id=slhr_lnp; opc_id=opc; dpc_id=stp1;  rk_id=rk_lnp;  ssn-id=SSN_LNP;  gtt-req=Y;
tt=11; GTT_ADDR_TYPE=CDPN; GTT_ADDR=3;
```

Step 14 Add the ca-config type DEFAULT-LNP-SLHR-ID:

```
Add ca-config type=DEFAULT-LNP-SLHR-ID; datatype=string; value=slhr_lnp;
```

Step 15 Add the ca-config type SCP-RESPONSE-TIMER:

```
Add ca-config type=SCP-RESPONSE-TIMER; datatype=integer; value=3;
```

Step 16 Place SCTP Association In Service:

```
control sctp-assoc id=sctp_assoc1; mode=FORCED; target-state=INS;
```

Step 17 Place the Subsystem Group In Service:

```
control subsystem-grp id=SSN_LNP; mode=FORCED; target-state=UIS;
```

Subscriber Provisioning

Step 1 below shows the LNP-TRIGGER usage during the porting transition. At the start of the porting process, the subscriber status remains assigned, and the LNP-TRIGGER indication will cause an LNP query. If the SCP database query result indicates that the porting has not occurred yet (no LRN is received), then the call is routed locally to the subscriber. Otherwise, if the SCP returns the LRN of another switch, the porting has occurred, and the call is routed onward to the recipient switch using the LRN.

Note The use of LNP-TRIGGER is optional. You may prefer to not use LNP-TRIGGER but instead mark the subscriber status as PORTED-OUT when porting occurs (see Step 2).

Step 2 shows the marking of a subscriber's DN as ported-out of this donor switch. After an LNP query, the call should be routed to the recipient switch using the Location Routing Number (LRN).

Step 1 (optional) Indicate that an LNP query should be performed to determine whether the subscriber has ported-out (or not):

```
change dn2subscriber dn=1522; office-code-index=15; lnp-trigger=Y;
```

Step 2 Mark subscriber ported-out (ported-out of this donor switch to the recipient switch):

```
change dn2subscriber dn=1522; office-code-index=15; status=ported-out;
```

Provisioning Notes/Caveats

- When the ported office code is served by the switch, then, in the provisioning command add ported -office-code, the value for in-call-agent should be Y. During the transition period, the Dn2subscriber table should be modified to status = PORTED-OUT if the subscriber is porting out. If the subscriber is porting in, the LNP-trigger should be changed to N once porting is complete.
- If the IN-CALL-AGENT field in the ported-office-table is set to Y, the BTS will check the Dn2subscriber table to see if the called number is in the BTS. If the IN_CALL_AGENT flag is set to N, the BTS omits the Dn2subscriber table check and performs a LNP query.

- If the LNP-TRIGGER field in the Dn2subscriber table is set to Y , then a query will be performed by the BTS even if the IN-CALL-AGENT field in the ported office code table is set to N.
- If the SUBSCRIBER-STATUS field in the Dn2subscriber table is set to PORTED-OUT, then a query will be performed by the BTS even if the LNP-TRIGGER field in the Dn2subscriber table is set to N.
- If the LNP trigger is generated by the trunk (SS7,CAS) calls and no calling party is received in the setup indication (IAM), ensure that the JIP field or LRN field in the POP table associated with the trunk group is set to the appropriate value. If not, the SCP query will fail.

Local Number Portability (LNP) for ITU Local BTS Database Query

This feature is offered beginning in Release 4.5. In ITU/European markets, the LNP feature performs a query of an internal Cisco BTS 10200 Softswitch database. Since an external SS7 TCAP query is not needed, SIGTRAN provisioning is not required. The following subsections identify necessary steps for the LNP feature to be offered in European markets.

Office Provisioning

Step 1 Create a feature for the LNP database lookup.

```
add/change feature fname=LNP; tdp1=COLLECTED_INFORMATION; tid1=LNP_TRIGGER; ttype1=R;
description=local number portability;feature_server_id=FSAIN205;
```

Step 2 Add this feature to the default office service Id (assuming default office service id=999):

```
add/change service id=999; fname1=LNP;
add ca-config type=DEFAULT-OFFICE-SERVICE-ID; datatype=string; value=999;
```

Step 3 Add one of the following LNP Profile examples:

a. Add switch-based LNP Profile for All Calls Query (ACQ):

```
add lnp-profile id=lnp_rn_acq; all-call-query=Y; external-lnp-db=n; internal-lnp-db=Y;
lnp-db-type=RN; rn-signaling-method=prefix-method;
```

b. Add switch-based LNP Profile for Query on Release (QoR):

```
add lnp-profile id=lnp_rn_qor; query-on-release=Y; external-lnp-db=n; internal-lnp-db=Y;
lnp-db-type=RN; rn-signaling-method=prefix-method; release-cause=14;
```

c. Add a switch-based LNP Profile for Combination of QoR and ACQ:

```
add lnp-profile id=lnp_rn_acq_qor; all-call-query=Y; query-on-release=Y;
external-lnp-db=n; internal-lnp-db=Y; np-db-type=RN; rn-signaling-method=prefix-method;
release cause=14;
```

d. Add a switch-based LNP Profile for Onward Call Routing (OCR) (also known as Onward Donor Based Routing (ODBR)):

```
add lnp-profile id=lnp_rn_odbr; onward-call-routing=Y; external-lnp-db=n;
internal-lnp-db=Y; lnp-db-type=RN; rn-signaling-method=prefix-method;
```

Step 4 Assign an LNP Profile to be used for the office. In this example, the QoR LNP Profile is used:

```
add/change ca-config type=DEFAULT-LNP-PROFILE-ID;DATATYPE=STRING; value=lnp_rn_acq_qor;
```

Subscriber Provisioning

The following sequence shows the marking of a subscriber's DN as ported-out of this donor switch. After an LNP query, the call should be routed to the recipient switch using the Routing Number (RN).

Step 1 Prepare to delete subscriber and mark as ported-out:

```
control subscriber-termination id=sub1; mode=graceful; target-state=oos;
```

Step 2 Delete the subscriber (see note for Step 3):

```
delete subscriber id=sub1;
```

Step 3 Mark deleted subscriber ported-out (ported-out of this donor switch to the recipient switch).

Note As soon as this command is executed, calls may be mis-routed unless this switch, and others in the network, have the correct RN and associated routing configured to the new recipient switch to which this DN has ported-in. It is expected that the recipient switch also has service subscribed and activated for this DN, which has ported-in to the recipient switch.

```
change dn2subscriber dn=1522; office-code-index=15; status=ported-out;
```

NOA Routing and Dial Plan Provisioning

Although it is not customary to include basic dial plan and related provisioning in this document, it must be understood to understand the provisioning of Local LNP for ITU/Europe.

The following example shows selected commands for the following scenario:

A subscriber's dial-plan-profile has a noa-route-profile specified, pointing to a destination, which in turn points to an "RN dial-plan", used to route the call using the Routing Number (RN) prefix.

The digit translation flow for a Called Party Number with NoA=8 (ported number with routing number contatenated with directory number) is as follows (note, the objects are added in reverse order in the provisioning example):

subscriber/trunk dial-plan "dp_sub_itu" -> noa-route "noa_rt" -> destination "dummy_rn_itu" -> RN dial-plan "dp_rn_itu" -> destination "dest_rn_sub_itu"

Example commands are included in the table below:

Step 1 Provision Digman-profile for RN dial-plan-profile to match RN of this BTS and ported NOA, strip RN, and replace NoA:

```
add digman-profile id=dm_dpp_rn; description=digman for RN dial-plan-profile after NOA
Routing (ITU);
```

Step 2 For a call terminating to a DN ported in to this switch, strip the RN prefix (of this switch, 4001), and replace the NoA:

```
add digman id=dm_dpp_rn; rule=1; match-string=^4001; match-noa=PORTED_NUMBER_WITH_RN;
replace-string=none; replace-noa=UNKNOWN;
```

Step 3 RN dial-plan-profile does not use NOA routing because this dial-plan-profile is only reached after NOA routing:

```
add dial-plan-profile id=dp_rn_itu; description=RN dial plan (ITU); nanp-dial-plan=N;
noa-based-routing=N;
```

Note For a non-North American dial plan, make sure nanp-dial-plan=N.

Step 4 If this digman was not added earlier, then add it now, if desired:

```
change dial-plan-profile id=dp_rn_itu; dnis-digman-id=dm_dpp_rn;
```

Step 5 Provision the Destination table. This destination, from the regular subscriber dial-plan, allows an LNP query:

```
add destination dest-id=dest_sub_itu; call-type=LOCAL; route-type=SUB;
ani-digman-id=dm_dest_sub_ani; dnis-digman-id=dm_dest_rn; acq-lnp-query=PERFORM-LNP-QUERY;
description=ITU Sub dest: Allow LNP query;
```

Step 6 This destination, from the RN dial-plan, does not allow an LNP query (NO-LNP-QUERY). Since an RN was used for routing to this destination, a second query should not be allowed:

```
add destination dest-id=dest_sub_rn_itu; call-type=LOCAL; route-type=SUB;
ani-digman-id=dm_dest_sub_ani; acq-lnp-query=NO-LNP-QUERY;
description=ITU Sub dest after RN routing: do not allow LNP query;
```

Step 7 NOA Route for ported NOA points to this destination. This destination in turn points to the RN dial-plan:

```
add destination dest-id=dummy_rn_itu; call-type=LOCAL; route-type=DP;
dial-plan-id=dp_rn_itu; description=dummy destination used for NOA Routing to point to RN
dial-plan;
```

Step 8 The RN dial-plan, after stripping the RN (of this switch), routes on the subscriber DN prefix 1150:

```
add dial-plan id=dp_rn_itu; digit-string=1150; noa=UNKNOWN; min-digits=8; max-digits=8;
dest-id=dest_sub_rn_itu;
```

Step 9 The RN dial-plan, after stripping RN (of this switch), routes to destination based on full digit string of ported in subscriber with DN 1-702-3001:

```
add dial-plan id=dp_rn_itu; digit-string=17023001; noa=UNKNOWN; min-digits=8;
max-digits=8; dest-id=dest_sub_rn_itu;
```

Step 10 Setup the ndc for DN 1-150-1xxx:

```
add ndc digit-string=1;
```

Step 11 Setup the exchange-code for DN 1-150-1xxx:

```
add exchange-code ec=150; ndc=1; max-dn-length=8; min-dn-length=8; office-code-index=15;
```

Step 12 Setup the dn-group for DN 1-150-1xxx:

```
add office-code call-agent-id=CA146; ndc=1; ec=150; dn-group=1xxx;
```

Step 13 Setup the exchange-code for ported-in DN 1-702-3001:

```
add exchange-code ec=702; ndc=1; max-dn-length=8; min-dn-length=8; office-code-index=5;
```

Step 14 Setup the office-code for ported-in DN 1-702-3xxx:

```
add office-code call-agent-id=CA146; ndc=1; ec=702; dn-group=3xxx;
```

Step 15 Add the regular subscriber dial-plan profile, with NOA routing:

```
add dial-plan-profile id=dp_sub_itu; ani-digman-id=dm_dpp_ani_itu;
```

```
dnis-digman-id=dm_dpp_sub_dnis; nanp-dial-plan=N; description=Subscriber Local dial-plan
(ITU);
```

Step 16 Add normal routing for non-ported DN terminating to local subscriber, e.g., 1-150-1511:

```
add dial-plan id=dp_sub_itu; digit-string=1150; min-digits=8; max-digits=8; noa=UNKNOWN;
dest-id=dest_sub_itu;
```

Step 17 Add the NOA route profile, if desired:

```
add noa-route-profile id=noa_rt; description=NOA Route profile (ITU) to RN dial-plan;
```

Step 18 Add the NOA route for logical ported number NoA (ITU NoA=8, RN concatenated with DN). The destination identified here will point to the RN dial-plan:

```
add noa-route id=noa_rt; noa=PORTED_NUMBER_WITH_RN; dest-id=dummy_rn_itu;
```

Step 19 Add NOA routing, if desired, if not done above:

```
change dial-plan-profile id=dp_sub_itu; noa-based-routing=Y; noa-route-profile-id=noa_rt;
```

Step 20 Add the dn2rn (Directory Number to Routing Number). All DNs that are ported in to this switch must have a dn2rn entry with the RN value associated with this switch:

```
add dn2rn dn=17023001; rn=4001;
```

Step 21 Add dn2rn entries with the RNs associated with all DNs that are ported out of this switch and all RNs needed to route calls to any ported DN in the network/country :

```
add dn2rn dn=11501522; rn=4101;
```

Step 22 Prepare to delete the subscriber and mark as ported-out:

```
control subscriber-termination id=sub1; mode=graceful; target-state=oos;
```

Step 23 Delete the subscriber (see note for Step 24):

```
delete subscriber id=sub1;
```

Step 24 Mark deleted subscriber ported-out.

Note As soon as this command is executed, calls may be mis-routed unless this switch, and others in the network, have the correct RN and associated routing configured to the new recipient switch to which this DN has ported-in (see add dn2rn above). It is expected that the recipient switch also has service subscribed and activated for this DN, which has ported-in to the recipient switch.

```
change dn2subscriber dn=1522; office-code-index=15; status=ported-out;
```

Allow ACQ or QoR Query on Incoming Trunk Calls

Usually, LNP queries for ACQ or QoR occur on the originating switch, in the originating network. However, in some cases the originating switch does not perform LNP queries, for example:

- Originating switch does not have LNP capability
- Originating switch is an International Gateway exchange which does not have access to the country specific LNP database

- At the point of interconnect (POI) between operators of separate networks (e.g., Telco and alternate service operator), a full, routable RN is not available. For example, in Denmark, a ported DN with NoA=112 does not supply the RN, and in Sweden, with NoA=8, the called party number digits may contain a partial RN (the RN indicates the recipient network operator but does not indicate the exact recipient switch ID). In this case, a second LNP query is required to obtain a full routable RN.

The following example shows how to allow queries on incoming calls for a particular trunk group.

Step 1 Allow queries on this trunk group:

```
change trunk-grp id=1; perform-lnp-query=Y;
```

Destination and Call Type ACQ Control

If desired, an All Calls Query (ACQ) can be selectively controlled in the destination obtained as a result of digit translation. In some cases, ACQ is desired for 100% of call originations, in which case all destinations may have ACQ-LNP-QUERY=PERFORM-LNP-QUERY, or NA. The NA value, meaning not applicable, indicates that either LNP is not applicable on this destination or that the destination should not be used as criteria on whether to perform an ACQ LNP query. LNP Profile and trunk group values will determine whether a query is performed or not.

For countries where two or more LNP queries are necessary, destinations with ACQ-LNP-QUERY=PERFORM-LNP-QUERY will allow the second query. For example, in Denmark an incoming call with NoA=112 and called party number contain a DN only requires another query, so destinations reached via NOA Routing for NOA=PORTED-NUMBER-WITHOUT-RN should allow have PERFORM-LNP-QUERY value. Likewise, in Sweden, a call with NoA=8 and a partial RN (indicating operator, but not identifying the exact recipient switch), uses a dial-plan entry with the partial RN (of this network) to select a destination with PERFORM-LNP-QUERY to force a second query for a call entering the recipient network.

ACQ-LNP-QUERY=NO-LNP-QUERY will prevent an ACQ query from being performed on this call. This may be used for certain calls for which a query should never be performed (e.g., outgoing calls to a carrier), or after an LNP query has been performed (on this switch, or another), such that NOA Routing and the RN dial-plan select destinations with NO-LNP-QUERY to prevent a second (unnecessary) query.

ACQ-LNP-QUERY=ACQ-BASED-ON-CALL-TYPE will use the call type table entry to determine whether a query will be performed (see examples below).

The destination ACQ criteria in this section only affects All Calls Query (ACQ). These values have no effect on decision criteria for ODBR or QoR queries.

The following examples demonstrate control over ACQ queries using the Destination table:

- Destination not used as LNP ACQ query criteria. LNP-Profile table ALL-CALL-QUERY (and trunk group table PERFORM-LNP-QUERY, for an incoming trunk call) determine whether a query is required.:

```
change destination dest-id=dest_sub_itu; ACQ-LNP-QUERY=NA;
```

- Destination explicitly allows ACQ:

```
change destination dest-id=dest_sub_itu; ACQ-LNP-QUERY=PERFORM-LNP-QUERY;
```

- Destination explicitly disallows ACQ:

```
change destination dest-id=dest_sub_itu; ACQ-LNP-QUERY=NO-LNP-QUERY;
```

In the following example, the destination defers to the call type entry for the LNP ACQ decision:

Step 1 Destination indicates that the call-type entry (or omission of call-type entry) determines whether ACQ occurs:

```
change destination dest-id=dest_sub_itu; call-type=PREMIUM;
ACQ-LNP-QUERY=ACQ-BASED-ON-CALL-TYPE;
```

Step 2

- Omission of call-type entry implicitly indicates that no query will be performed. For example, call-type=EMG need not be added to block queries on emergency calls.
- Call type explicitly prevents ACQ for this call type:

```
add call-type-profile call-type=PREMIUM; lnp-query=N;
```

- Call type allows ACQ on this call:

```
add/change call-type-profile call-type=PREMIUM; lnp-query=Y;
```

Outgoing Carrier Call LNP ACQ Query Control

Some operators may prefer to NOT perform ACQ LNP queries on subscriber originated outbound calls to a carrier, or alternatively, may desire to allow queries on all, or speficied, carrier calls. Outgoing carrier calls may be dialed explicitly by dialing a digit prefix which translates via the dial plan to a destination with route-type=carrier and a carrier ID specified. Or, for a destination with call-type of intralata or interlata, the default carrier from the calling party's subscriber table entry may be used (PIC1 or PIC2).

Regardless of the method for determining the carrier (and its associated carrier data), for an LNP ACQ query to be performed on a outbound carrier call, the destination arrived at via the dial plan translation must allow a query. If a query is allowed in the destination table (ACQ-LNP-QUERY=PERFORM-LNP-QUERY or NA, or ACQ-BASED-ON-CALL-TYPE with call-type table LNP-QUERY=Y), then the applicable carrier table is used to further determine whether a query is allowed or not.

If the carrier indicates USE-DIAL-PLAN=Y, then the carrier entry is not used as criteria for an LNP query. Otherwise, if USE-DIAL-PLAN=N, then the carrier entry LNP-QUERY=Y/N is used to determine whether or not a query is allowed on the carrier call. Note that , for an ACQ query to be allowed, ACQ must be allowed at all levels, including the LNP Profile table ALL-CALL-QUERY=Y, incoming trunk group PERFORM-LNP-QUERY=Y (if it is an incoming trunk call), destination, and carrier (if applicable, as described above).

Note For a call that uses a pre-subscribed PIC2 carrier, the caller must have a POP assigned (for example, in the Subscriber Profile table), and the associated Pop table entry must have ITP=Y.

Provisioning Notes/Caveats

- Ported-office-code is not currently used for ITU Local LNP.

- Subscriber dial-plan (used for subscriber originations), and associated digit-map normally should not allow a regular subscriber to dial a routing number prefix. The only exception is for countries where there is overlap between the RN and DN prefix (for example, RN may be 4001, and some DNs may start with 4001, such that the Nature of Address, or NoA, must be used to distinguish between the two).
- NOA routing is not required for LNP but is recommended for the following cases:
  - If the RN and min/max-digit length combination does not uniquely identify the routing. For example, in Hungary, some DNs start with a prefix that is the same as some NoA, so it is not possible to unambiguously identify the route. Therefore, NOA routing allows the Nature of Address value for ported numbers to be used to select a separate RN dial-plan with routes for RNs. The regular subscriber/trunk dial-plan has routes based on DNs, and for a ported number NoA, NOA routing selects an RN dial-plan with routes for RNs.
  - If All Call Query (ACQ) is required for some calls, but not others, then the Destination table (resulting from digit translation) ACQ-LNP-QUERY value controls whether a query is performed or not. The regular subscriber/trunk dial-plan for certain digit-string values routes to destinations that may allow an LNP query. However, for DNs that are ported, for which a database query has returned an RN, then NoA routing is used to select an RN dial-plan, and this dial-plan selects destinations that do not allow a (second) LNP query.
- All Call Query (ACQ) criteria: An ACQ will only result if a query is allowed at all applicable levels. That is, the LNP Profile must indicate ALL-CALL-QUERY-Y, and the destination obtained as a result of digit translation must allow a query (either in the Destination, or Call Type table entry, if applicable). Furthermore, if the call has a trunk origination, then ACQ must also be allowed by the incoming trunk group (PERFORM-LNP-QUERY-Y).
- If LNP criteria for a query is met, but a query to the FSAIN feature server is not requested (Service Switching Function, SSF, does not generate Invite with Notify towards FSAIN), check the ca-config type=DEFAULT-OFFICE-SERVICE-ID and its associated service, ca-config type=DEFAULT-LNP-PROFILE-ID, and LNP Profile values (see above).
- If digit translation fails to find a match in the dial-plan for a digit-string which is configured in the dial-plan, check the dial-plan-profile nanp-dial-plan=N (for non-North America dial-plans), and check that the dial-plan entry has noa=unknown.
- The ISUP hop count may be the only protection from routing loops in some cases. For example, with ODBR or QoR, during the transition period of the "porting window", it is possible that calls will be misrouted due to inconsistencies in the timing of provisioning changes in the donor switch, recipient switch, and central database (if applicable). Normally this situation will be temporary, until the appropriate changes are configured on all the network nodes. However, it is suggested that the ss7_q761_tg_profile hop-count be set to a relatively low value, such as 5 or less, which will minimize the consequences of routing loops.
- If a DN is allowed to port from one operator or exchange to another, and then port again, the dn2subscriber table status token should only be set to PORTED-OUT on the first exchange, that is, the exchange owning the DN number block prefix of the DN being ported. On an exchange for which the DN is porting out, which is not the original donor exchange, the following procedure is recommended for exchanges that perform ODBR or QoR queries. During the porting transition phase, the subscriber record can be set to status=TEMP_DISCONNECTED, or taken out of service, to prevent routing loops. After the porting window is over, the subscriber and dn2subscriber records can be deleted. Routing loops, although unlikely if proper procedures are used and the timing of changes on various networks nodes are synchronized, may be possible for example if two exchanges both mark the DN as ported-out, and each exchange does a query and retrieves the RN or the other switch.

Multi Line Hunt Group (MLHG)

Multi-line Hunt Group (MLHG) is a telecommunications channel between two points, such as a telephone company CO/switching center and a call center, PBX, or key system. Typically, a business has more stations (telephones) than lines, and hunting features allow sharing of a group of lines by many individual stations for both incoming and outgoing calls. A hunt group is a series of lines organized in such a way that if the first line is busy, the next line is hunted, and so on, until a free line is found. This arrangement is often used on a group of incoming lines.

Tip For a complete description of this feature, see *Multi Line Hunt Group* in the *Network and Subscriber Feature Descriptions*.

See Centrex, MLHG, and Voice Mail Provisioning, for directions for provisioning a MLHG.

Multiple Directory Number (MDN)

The Multiple Directory Number (MDN) feature allows 3 directory numbers (DN) to be assigned to your single telephone line. Each individual DN is recognized using a special alerting pattern. One DN of the three DNs is designated as a primary DN during subscription.

Tip For a complete description of this feature, see Multiple Directory Number in the *Network and Subscriber Feature Descriptions*.

Note When this feature is enabled for a subscriber, any CALEA provisioning should include both the main number and all virtual numbers to accomplish bi-directional (incoming and outgoing) surveillance.

The following subsections identify necessary steps for the MDN feature to be offered.

Office Provisioning

Step 1 Create a feature for MDN:

```
add feature  FNAME=MDN; TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED; TTYPE1=R;  FEATURE_SERVER_ID=FSPTC235;
DESCRIPTION=MDN;
```

Step 2 Add a service with the feature:

```
add service id=1; FNAME1=MDN;
```

Subscriber Provisioning

Step 1 Add a subscriber entry for the subscriber:

```
add subscriber id=sub_1; sub-profile-id=subprof_1; DN1=4692553008;
```

Step 2 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=1;
```

Step 3 Provision the subscriber-feature-data for MDN DNs:

```
add subscriber_feature_data sub_id=subscriber_1; fname=MDN; type2=FDN2; value2=4692553009;
type3=FDN3; value3=4692553010;
```

Note DN1 is provisioned through the Subscriber table.

Note The FDN number associates the corresponding ring-type number to the DN.

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber.

MLHG provisioning is similar to subscriber provisioning as described above.

Provisioning Notes/Caveats

One of the three FDN values assigned in sub-feature-data must be the subscriber's primary DN

No Solicitation Announcement (NSA)

Beginning with Release 4.5, the NSA feature allows subscribers to play a message telling callers that they do not accept solicitation (telemarketing) calls. The feature does not forcibly release the call, but the expectation is that any solicitation caller will hang up.

Tip For a complete description of this feature, see No Solicitation Announcement in the *Network and Subscriber Feature Descriptions*.

The following subsections explain how to provision the NSA feature.

Office Provisioning

Step 1 Create the NSA Activation (NSA_ACT) feature:

```
add feature fname=NSA_ACT; TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC325;
```

Step 2 Create the NSA feature, and include NSA_ACT as a subfeature:

```
add feature fname=NSA; TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED; TTYPE1=R; FEATURE_SERVER_ID=FSPTC325; FNAME1=NSA_ACT;
```

Step 3 Add a VSC for NSA_ACT:

```
add vsc fname=NSA_ACT; DIGIT_STRING=*94;
```

Step 4 Add a custom dial plan (CDP) if the feature is used for a Centrex group:

```
add cdp id=cdp1; fname=NSA_ACT; DIGIT_STRING=*94; nod=VSC; CAT_STRING=1111111111111111;
```

Step 5 Create or modify the Screen List Editing (SLE) feature:

```
add feature fname=SLE;
```

Step 6 Add the NSA feature to a service:

```
add service id=nsa; fname1=NSA;
```

Step 7 (Optional) Reset the limit of DNs that the subscriber can place on the NSA bypass list. The default value is 31.

```
add ca-config type=SLE-LIST-SIZE; datatype=INTEGER; value=25;
```

Provisioning Resources

This section explains how to provision the interface to the IVR server, the IVR announcement trunks, and route to the IVR server for the NSA feature.

Step 1 Add a media server:

```
add mgw-profile ID=ms_profile; VENDOR=Cisco; SILENT-SUPPRESS-SUPP=N; RBK-ON-CONN-SUPP=N;
PACKET-TYPE=IP; AAL1=N; AAL2=N; AAL5=N; PVC=N; SVC=N; SPVC=N; EC=N; SDP-ORIGFIELD-SUPP=N;
SDP-SESSNAME-SUPP=N; SDP-EMAIL-SUPP=N; SDP-PHONE-SUPP=N; SDP-URI-SUPP=N;
SDP-BANDWIDTH-SUPP=N; SDP-INFO-SUPP=N; SDP-TIME-SUPP=N; SDP-ATTRIB-SUPP=N;
MGCP-ERQNT-SUPP=N; MGCP-HAIRPIN-SUPP=N; MGCP-QLOOP-SUPP=N; MGCP-3WAY-HSHAKE-SUPP=Y;
MGCP-CONN-ID-AT-GW-SUPP=Y; MGCP-CMD-SEQ-SUPP=N; MGCP-VMWI-SUPP=N; TERMINATION-PREFIX=ann/;
PORT-START=0; MGCP-VERSION=MGCP_1_0; MGCP-RSVP-SUPP=N;
```

Note Not all fields in the mgw-profile table are noted in this section. However, fields pertaining to the feature are noted.

Step 2 Add a media gateway:

```
add mgw id=ipunity_ms; tsap-addr=<ip addr of  MS MGCP>; call-agent-id=CA166;
mgw-profile-id=ms_profile; rgw=n; tgw=y; call-agent-control-port=0; ans=n; ivr=y; nas=n;
pbx=n;
```

Step 3 Add IVR trunks:

```
add annc-tg-profile id=annc_tg_p; annc=N; ivr=Y; auto_answer=Y;
```

Step 4 Add a termination:

```
add termination prefix=ann/; port-start=0; port-end=30; type=trunk; mgw-id=ipunity_ms;
```

Step 5 Add a trunk group:

```
add trunk-grp id=1; call-agent-id=CA146; tg_type=annc; mgw-id=ipunity_ms;
tg-profile-id=annc_tg_p; mgcp-pkg-type=AUDIO;
```

Step 6 Add a trunk:

```
add trunk cic-start=1; cic-end=30; tgn-id=1; termination-prefix=ann/;
termination-port-start=0; termination-port-end=29; mgw-id=ipunity_ms;
```

Step 7 Add a route:

```
add route id=rt_annc; tgn1-id=1; tg-selection=LCR;
```

Step 8 Add a route guide:

```
add route id=rt_annc; tgn1-id=1; tg-selection=LCR;
```

Step 9 Add an IVR script profile for the NSA and NSA_ACT features:

```
add ivr-script-profile FNAME=NSA; IVR_ACCESS_MODE=IVR; IVR_ROUTE_GUIDE_ID=ivr_rg;
IVR_SCRIPT_PKG_TYPE=BAU;

add ivr-script-profile FNAME=NSA_ACT; IVR_ACCESS_MODE=IVR; IVR_ROUTE_GUIDE_ID=ivr_rg;
IVR_SCRIPT_PKG_TYPE=BAU;
```

Step 10 Place the trunks and other resources out of service (OOS):

```
control trunk-termination tgn-id=20; cic=all; mode=forced; target-state=OOS;

unequip trunk-termination tgn-id=20; cic=all;
control trunk-grp id=20; mode=forced; target-state=OOS;

control mgw id=ipunity_ms; mode=forced; target-state=OOS;
```

Step 11 Place the trunks and other resources in service (INS):

```
control mgw id=ipunity_ms; mode=forced; target-state=INS;

control trunk-grp id=20; mode=forced; target-state=INS;

equip trunk-termination tgn-id=20; cic=all;

control trunk-termination tgn-id=20; cic=all; mode=forced; target-state=INS;
```

Step 12 Verify the status of the resources:

```
status mgw id=ipunity_ms;
status trunk-grp id=20;
status tt tgn-id=20; cic=all;
```

Announcement Provisioning

This section explains how to specify the audio segments and audio sequences played by the IVR server.

Step 1 If not available, add the default language ID:

```
add language id=def;
```

Step 2 Add common audio segments:

```
add audio-segment; id=NSA; type=PHYSICAL; url=file://nsa.wav; description=No Solicitation;

add audio-segment; id=AGAIN; type=PHYSICAL; url=file://again.wav; description=again

add audio-segment; id=ANONYMOUS;type=PHYSICAL; url=file://anonymous.wav;
description=anonymous;
```

```
add audio-segment; id=ARE; type=PHYSICAL; url=file://are.wav; description=are;

add audio-segment; id=DIAL; type=PHYSICAL; url=file://dial.wav; description=dial;

add audio-segment; id=ENTRIES; type=PHYSICAL; url=file://entries.wav; description=entries;

add audio-segment; id=ENTRY; type=PHYSICAL; url=file://entry.wav; description=entry;

add audio-segment; id=EXTENSION; type=PHYSICAL; url=file://extension.wav;
description=extension;

add audio-segment; id=FROM; type=PHYSICAL; url=file://from.wav; description=from;

add audio-segment; id=INCLUDING; type=PHYSICAL; url=file://including.wav;
description=including;

add audio-segment; id=IS; type=PHYSICAL; url=file://is.wav; description=is;

add audio-segment; id=NEXT; type=PHYSICAL; url=file://next.wav; description=next;

add audio-segment; id=NO; type=PHYSICAL; url=file://no.wav; description=no;

add audio-segment; id=OFF; type=PHYSICAL; url=file://off.wav; description=off;

add audio-segment; id=ON; type=PHYSICAL; url=file://on.wav; description=on;

add audio-segment; id=REPEATING; type=PHYSICAL; url=file://repeating.wav;
description=repeating;

add audio-segment; id=THERE; type=PHYSICAL; url=file://there.wav; description=there;

add audio-segment; id=TO; type=PHYSICAL; url=file://to.wav; description=to;

add audio-segment; id=WILDCARD; type=PHYSICAL; url=file://wildcard.wav;
description=wildcard;

add audio-segment; id=YOUR; type=PHYSICAL; url=file://your.wav; description=Your;
```

Step 3 Add NSA audio segments:

```
add audio-segment; id=NSA_1; type=PHYSICAL; url=file://nsa_1.wav; description=You have
reached a number that does not accept solicitations. If you are a solicitor, please add
this number to your do-not-call list and hang up now. Otherwise, press;

add audio-segment; id=NSA_2; type=PHYSICAL; url=file://nsa_2.wav; description=or stay on
the line;

add audio-segment; id=var_digits; type=VARIABLE; var-type=dig; var-subtype=gen;
description=string;

add audio-segment; id=var_sign; type=VARIABLE; var-type=str; description=sign(*,#);

add audio-segment; id=var_number; type=VARIABLE; var-type=num; var-subtype=crd;
description=number;

add audio-segment; id=var_time; type=VARIABLE; var-type=tme; var-subtype=t24;
description=time;

add audio-segment; id=var_day; type=VARIABLE; var-type=wkd; description=weekday;

add audio-segment; id=var_audio; type=VARIABLE; var-type=str; description=audio file;
```

Step 4 Add NSA_ACT authentication audio segment:

```
add audio-segment; id=AUTH_1; type=PHYSICAL; url=file://auth_1.wav; description=Please
enter your password now;

add audio-segment; id=AUTH_2; type=PHYSICAL; url=file://auth_2.wav; description=We are
sorry, the password you entered is incorrect. Please hang up and try your call later;

add audio-segment; id=AUTH_3; type=PHYSICAL; url=file://auth_3.wav; description=You must
now change your password. Please enter a new password now

add audio-segment; id=AUTH_4; type=PHYSICAL; url=file://auth_4.wav; description=Your
password has been changed to

add audio-segment; id=AUTH_5; type=PHYSICAL; url=file://auth_5.wav; description=If you are
satisfied with this password please press

add audio-segment; id=AUTH_6; type=PHYSICAL; url=file://auth_6.wav; description=now. To
reenter the password, please press

add audio-segment; id=AUTH_7; type=PHYSICAL; url=file://auth_7.wav; description=Press <d>
to reset your password or dial
```

Step 5 .Add NSA_ACT SLE audio segment:

```
add audio-segment; id=SLE_1_1; type=PHYSICAL; url=file://sle_1_1.wav; description=service
is currently;

add audio-segment; id=SLE_1_2; type=PHYSICAL; url=file://sle_1_2.wav; description=on your
list;

add audio-segment; id=SLE_1_3; type=PHYSICAL; url=file://sle_1_3.wav; description=You may
dial during the announcements for faster service. When you have finished, hang up;

add audio-segment; id=SLE_3_1; type=PHYSICAL; url=file://sle_3_1.wav; description=To turn
this service;

add audio-segment; id=SLE_3_2; type=PHYSICAL; url=file://sle_3_2.wav; description=To add
an entry, press

add audio-segment; id=SLE_3_3; type=PHYSICAL; url=file://sle_3_3.wav; description=To
remove one or more entries, press

add audio-segment; id=SLE_3_4; type=PHYSICAL; url=file://sle_3_4.wav; description=To hear
the entries on your list, press

add audio-segment; id=SLE_3_5; type=PHYSICAL; url=file://sle_3_5.wav; description=To hear
these instructions repeated, dial

add audio-segment; id=SLE_3_6; type=PHYSICAL; url=file://sle_3_6.wav; description=Please
dial now.

add audio-segment; id=SLE_7; type=PHYSICAL; url=file://sle_7.wav; description=We are
sorry. The number you have dialed is incorrect;

add audio-segment; id=SLE_8; type=PHYSICAL; url=file://sle_8.wav; description=We are
sorry, the digits dialed are not a valid command;

add audio-segment; id=SLE_11_1; type=PHYSICAL; url=file://sle_11_1.wav;
description=service is now;

add audio-segment; id=SLE_11_2; type=PHYSICAL; url=file://sle_11_2.wav; description=Please
continue, dial;

add audio-segment; id=SLE_11_3; type=PHYSICAL; url=file://sle_11_3.wav; description=for
instructions or hang up;
```

```
add audio-segment; id=SLE_13_1; type=PHYSICAL; url=file://sle_13_1.wav; description=To
turn on this service, you must add an entry to your list. To add an entry, please press;

add audio-segment; id=SLE_13_2; type=PHYSICAL; url=file://sle_13_2.wav; description=If you
wish to hear this announcement repeated, please dial;

add audio-segment; id=SLE_14_1; type=PHYSICAL; url=file://sle_14_1.wav; description=Dial
the number to be added, then press;

add audio-segment; id=SLE_14_2; type=PHYSICAL; url=file://sle_14_2.wav; description=To add
the last calling party, press;

add audio-segment; id=SLE_14_3; type=PHYSICAL; url=file://sle_14_3.wav; description=then
press the

add audio-segment; id=SLE_14_4; type=PHYSICAL; url=file://sle_14_4.wav; description=To add
an extension, press

add audio-segment; id=SLE_14_5; type=PHYSICAL; url=file://sle_14_5.wav; description=To add
a wildcard, press

add audio-segment; id=SLE_15_1; type=PHYSICAL; url=file://sle_15_1.wav; description=Dial
the number to be removed, then press

add audio-segment; id=SLE_15_2; type=PHYSICAL; url=file://sle_15_2.wav; description=To
remove all entries, dial

add audio-segment; id=SLE_15_3; type=PHYSICAL; url=file://sle_15_3.wav; description=To
remove just the anonymous entries, dial

add audio-segment; id=SLE_15_4; type=PHYSICAL; url=file://sle_15_4.wav; description=To
remove an extension, press

add audio-segment; id=SLE_15_5; type=PHYSICAL; url=file://sle_15_5.wav; description=To
remove a wildcard, press

add audio-segment; id=SLE_16_1; type=PHYSICAL; url=file://sle_16_1.wav; description=We are
sorry. The number of the last calling party is not available;

add audio-segment; id=SLE_16_2; type=PHYSICAL; url=file://sle_16_2.wav; description=Please
start again, or dial;

add audio-segment; id=SLE_16_3; type=PHYSICAL; url=file://sle_16_3.wav; description=for
instructions;

add audio-segment; id=SLE_17; type=PHYSICAL; url=file://sle_17.wav; description=The number
you have added is an anonymous entry;

add audio-segment; id=SLE_18; type=PHYSICAL; url=file://sle_18.wav; description=The number
you have added is;

add audio-segment; id=SLE_19; type=PHYSICAL; url=file://sle_19_1.wav; description=We are
sorry. Your list is full. You must remove an entry before adding another. Please try other
options or dial;

add audio-segment; id=SLE_20_1; type=PHYSICAL; url=file://sle_20_1.wav; description=We are
sorry. Please try adding the number in a few minutes;

add audio-segment; id=SLE_20_2; type=PHYSICAL; url=file://sle_20_2.wav; description=Please
continue or dial;

add audio-segment; id=SLE_21_1; type=PHYSICAL; url=file://sle_21_1.wav; description=We are
sorry. The number you have dialed is not a valid number. Please try again later.;
```

```
add audio-segment; id=SLE_22; type=PHYSICAL; url=file://sle_22.wav; description=We are
sorry. There are no entries on your list. Please try other options or dial

add audio-segment; id=SLE_23; type=PHYSICAL; url=file://sle_23.wav; description=The number
you have removed is an anonymous entry;

add audio-segment; id=SLE_24; type=PHYSICAL; url=file://sle_24.wav; description=The number
you have removed is;

add audio-segment; id=SLE_25; type=PHYSICAL; url=file://sle_25.wav; description=There are
no more entries on your list. Please continue, dial;

add audio-segment; id=SLE_26; type=PHYSICAL; url=file://sle_26.wav; description=There are
no more anonymous entries on your list. Please continue, dial;

add audio-segment; id=SLE_27; type=PHYSICAL; url=file://sle_27.wav; description=on your
list. Please try other options, or dial;

add audio-segment; id=SLE_28_1; type=PHYSICAL; url=file://sle_28_1.wav; description=To
delete an entry, dial

add audio-segment; id=SLE_28_2; type=PHYSICAL; url=file://sle_28_2.wav; description=as
soon as you hear it

add audio-segment; id=SLE_29; type=PHYSICAL; url=file://sle_29.wav; description=This is
the end of your list;

add audio-segment; id=SLE_30; type=PHYSICAL; url=file://sle_30.wav; description=The first
entry on your list is;

add audio-segment; id=SLE_38; type=PHYSICAL; url=file://sle_38.wav; description=The number
is already on your list as an anonymous entry;

add audio-segment; id=SLE_39; type=PHYSICAL; url=file://sle_39.wav; description=This
number is already on your list;

add audio-segment; id=SLE_40; type=PHYSICAL; url=file://sle_40.wav; description=The number
to be removed is not on your list. Please start again, dial

add audio-segment; id=SLE_41; type=PHYSICAL; url=file://sle_41.wav; description=This is
the end of your list. Your list is now empty;
```

Step 6 Add NSA_ACT Time of Day Schedule audio segments:

```
add audio-segment; id=SLE_TOD; type=PHYSICAL; url=file://sle_tod.wav; description=To
schedule this service, press;
add audio-segment; id=SLE_TOD_ON; type=PHYSICAL; url=file://sle_tod_on.wav; description=on
based on the time-of-day schedule;
add audio-segment; id=SLE_TOD_OFF; type=PHYSICAL; url=file://sle_tod_off.wav;
description=off based on the time-of-day schedule;
add audio-segment; id=TIME_MGMT_01; type=PHYSICAL; url=file://time_mgmt_01.wav;
description=Now is;
add audio-segment; id=TIME_MGMT_02; type=PHYSICAL; url=file://time_mgmt_02.wav;
description=service is scheduled to be on;
add audio-segment; id=TIME_MGMT_03; type=PHYSICAL; url=file://time_mgmt_03.wav;
description=If you are satisfied with this schedule, please press;
add audio-segment; id=TIME_MGMT_04; type=PHYSICAL; url=file://time_mgmt_04.wav;
description=now. To set a different time-of-day-schedule, press;
add audio-segment; id=TIME_MGMT_05; type=PHYSICAL; url=file://time_mgmt_05.wav;
description=Please dial now;

add audio-segment; id=TIME_MGMT_06; type=PHYSICAL; url=file://time_mgmt_06.wav;
description=Please enter the start time in 24 hour format;
```

```
add audio-segment; id=TIME_MGMT_07; type=PHYSICAL; url=file://time_mgmt_07.wav;
description=Please enter the end time in 24 hour format;

add audio-segment; id=TIME_MGMT_08; type=PHYSICAL; url=file://time_mgmt_08.wav;
description=Please enter the start weekday, 0 stands for Sunday, 6 stands for Saturday;

add audio-segment; id=TIME_MGMT_09; type=PHYSICAL; url=file://time_mgmt_09.wav;
description=Please enter the end weekday, 0 stands for Sunday, 6 stands for Saturday;

add audio-segment; id=TIME_MGMT_10; type=PHYSICAL; url=file://time_mgmt_10.wav;
description=That is not a valid time, the time value should be between 0 to 2359, the end
time must be later than the start time;

add audio-segment; id=TIME_MGMT_11; type=PHYSICAL; url=file://time_mgmt_11.wav;
description=That is not a valid day, the day value should be between 0 to 6;

add audio-segment; id=TIME_MGMT_12; type=PHYSICAL; url=file://time_mgmt_12.wav;
description=The new schedule is now applicable;
```

Step 7 Add the NSA audio sequence:

```
add audio_seq id=NSA_INVOCATION; language_id=def; seq=NSA_1,var_digits,NSA_2;
description=You have reached a number that does not accept solicitations. If you are a
solicitor, please add this number to your do-not-call list and hang up now. Otherwise,
press <d> or stay on the line;
```

Step 8 Add NSA_ACT Authentication audio sequence:

```
add audio_seq id=AUTH_START; language_id=def; seq=AUTH_1; description=Please enter your
password now;

add audio_seq id=AUTH_INVALID_PIN; language_id=def; seq=AUTH_2; description=We are sorry,
the password you entered is incorrect. Please hang up and try your call later;

add audio_seq id=AUTH_NEW_PIN; language_id=def; seq=AUTH_3; description=You must now
change your password. Please enter a new password now;

add audio_seq id=AUTH_REPLAY_PIN; language_id=def;
seq=AUTH_4,var_digits,AUTH_5,var_digits,AUTH_6,var_digits; description=Your password has
been changed to <ds>. If you are satisfied with this password please press <d> now. To
reenter the password, please press <d>;

add audio-seq id=AUTH_END; language_id=def; seq=AUTH_4,var_digits; description=Your
password has been changed to <d>;
```

Step 9 Add NSA_ACT SLE audio sequence:

```
add audio_seq id=GR220_1_ALL_PUB; language_id=def;
seq=YOUR,var_audio,SLE_1_1,var_audio,THERE,var_audio,var_number,var_audio,SLE_1_2,SLE_1_3;
description=Your <NSA> service is currently <on/off/tod-on/tod-off>. There <is/are>
<no/num> <entry/entries> on your list. You may dial during the announcements for faster
service. When you have finished, hang up;

add audio_seq id=GR220_1_ALL_ANM; language_id=def;
seq=YOUR,var_audio,SLE_1_1,var_audio,THERE,var_audio,var_number,ANONYMOUS,var_audio,SLE_1_
2,SLE_1_3; description=Your <NSA> service is currently <on/off/tod-on/tod-off>. There
<is/are> <num> anonymous <entry/entries> on your list. You may dial during the
announcements for faster service. When you have finished, hang up;

add audio_seq id=GR220_1_MIXED; language_id=def;
seq=YOUR,var_audio,SLE_1_1,var_audio,THERE,var_audio,var_number,var_audio,SLE_1_2,INCLUDIN
G,var_number,ANONYMOUS,var_audio,SLE_1_3; description=Your <NSA> service is currently
```

```
<on/off/tod-on/tod-off>. There <is/are> <no/num> <entry/entries> on your list, including
<num> anonymous <entry/entries>. You may dial during the announcements for faster service.
When you have finished, hang up;

add audio_seq id=GR220_3; language_id=def;
seq=SLE_3_1,var_audio,DIAL,var_digits,SLE_3_2,var_sign,SLE_3_3,var_sign,SLE_3_4,var_digits
,SLE_3_5,var_digits,SLE_3_6; description=To turn this service <on/off>, dial <d>. To add
an entry, press <sign>. To remove one or more entries, press <sign>. To hear the entries
on your list, press <d>. To hear the instructions repeated, dial <d>. Please dial now;

add audio_seq id=GR220_3_TOD; language_id=def;
seq=SLE_3_1,var_audio,DIAL,var_digits,SLE_TOD,var_digits,SLE_3_2,var_sign,SLE_3_3,var_sign
,SLE_3_4,var_digits,SLE_3_5,var_digits,SLE_3_6; description=To turn this service <on/off>,
dial <d>. To schedule this service, press <d>, To add an entry, press <sign>. To remove
one or more entries, press <sign>. To hear the entries on your list, press <d>. To hear
the instructions repeated, dial <d>. Please dial now;

add audio_seq id=GR220_7_OTHER; language_id=def;
seq=SLE_7,SLE_16_2,var_digits,SLE_16_3; description=We are sorry. The number you have
dialed is incorrect. Please start again or dial <d> for instructions.;

add audio_seq id=GR220_7_ACTV; language_id=def;
seq=SLE_7; description=We are sorry. The number you have dialed is incorrect;

add audio_seq id=GR220_8; language_id=def;
seq=SLE_8; description=We are sorry, the digits dialed are not a valid command;

add audio_seq id=GR220_11; language_id=def;
seq=YOUR,var_audio,SLE_11_1,OFF,SLE_11_2,var_digits,SLE_11_3; description=Your <NSA>
service is now off. Please continue, dial <d> for instructions or hang up;

add audio_seq id=GR220_12; language_id=def;
seq=YOUR,var_audio,SLE_11_1,ON,SLE_11_2,var_digits,SLE_11_3; description=Your <NSA>
service is now on. Please continue, dial <d> for instructions or hang up;

add audio_seq id=GR220_13; language_id=def; seq=SLE_13_1,var_sign,SLE_13_2,var_digits;
description=To turn on this service, you must add an entry to your list. To add an entry,
please press <sign>. If you wish to hear this announcement repeated, please dial <d>;

add audio_seq id=GR220_14; language_id=def;
seq=SLE_14_1,var_sign,AGAIN,SLE_14_2,var_digits,SLE_14_3,var_sign,AGAIN,SLE_14_5,var_digit
s,SLE_14_1,var_sign,AGAIN,SLE_3_6; description=Dial the number to be added, then press
<sign> again. To add the last calling party, press <d>, then press the <sign> again. To
add a wildcard, press <d>, dial the number to be added, then press <sign> again. Please
dial now;

add audio_seq id=GR220_14_EXT; language_id=def;
seq=SLE_14_1,var_sign,AGAIN,SLE_14_2,var_digits,SLE_14_3,var_sign,AGAIN,SLE_14_4,var_digit
s,SLE_14_1,var_sign,AGAIN,SLE_14_5,var_digits,SLE_14_1,var_sign,AGAIN,SLE_3_6;
description=Dial the number to be added, then press <sign> again. To add the last calling
party, press <d>, then press the <sign> again. To add an extension, press <d>, dial the
number to be added, then press <sign> again. To add a wildcard, press <d>, dial the number
to be added, then press <sign> again. Please dial now;

add audio_seq id=GR220_15; language_id=def;
seq=SLE_15_1,var_sign,SLE_15_2,var_digits,SLE_14_3,var_sign,AGAIN,SLE_15_3,var_digits,SLE_
14_3,var_sign,AGAIN,SLE_15_5,var_digits,SLE_14_3,var_sign,AGAIN,SLE_3_5,var_digits,SLE_3_6
; description=Dial the number to be removed, then press <sign>. To remove all entries,
dial <dd>, then press the <sign> again. To remove just the anonymous entries, dial <dd>,
then press the <sign> again. To remove a wildcard, dial <dd>, then press <sign> again. To
hear these instructions repeated, dial <d>. Please dial now;
```

```
add audio_seq id=GR220_15_EXT; language_id=def;
seq=SLE_15_1,var_sign,SLE_15_2,var_digits,SLE_14_3,var_sign,AGAIN,SLE_15_3,var_digits,SLE_
14_3,var_sign,AGAIN,SLE_15_4,var_digits,SLE_14_3,var_sign,AGAIN,SLE_15_5,var_digits,SLE_14
_3,var_sign,AGAIN,SLE_3_5,var_digits,SLE_3_6; description=Dial the number to be removed,
then press <sign>. To remove all entries, dial <dd>, then press the <sign> again. To
remove just the anonymous entries, dial <dd>, then press the <sign> again. To remove an
extension, dial <dd>, then press <sign> again. To remove a wildcard, dial <dd>, then press
<sign> again. To hear these instructions repeated, dial <d>. Please dial now;

add audio_seq id=GR220_16_OTHER; language_id=def;
seq=SLE_16_1; description=We are sorry. The number of the last calling party is not
available.

add audio_seq id=GR220_16_ACTV; language_id=def;
seq=SLE_16_1,SLE_16_2,var_digits,SLE_16_3; description=We are sorry. The number of the
last calling party is not available. Please start again or dial <d> for instructions.

Add audio_seq id=GR220_17_OTHER; language_id=def; seq=SLE_17; description=The number you
have added is an anonymous entry.

add audio_seq id=GR220_17_ACTV; language_id=def;
seq=SLE_17,SLE_11_2,var_digits,SLE_11_3; description=The number you have added is an
anonymous entry. Please continue, dial <d> for instruction, or hang up.

add audio_seq id=GR220_18_OTHER; language_id=def;
seq=SLE_18,var_audio,var_digits; description=The number you have added is
<silence/extension> <d>;

add audio_seq id=GR220_18_ACTV; language_id=def;
seq=SLE_18,var_audio,var_digits,SLE_11_2,var_digits,SLE_11_3; description=The number you
have added is <silence/extension> <d>. Please continue, dial <d> for instructions, or hang
up.;

add audio_seq id=GR220_19; language_id=def; seq=SLE_19,var_digits,SLE_16_3; description=We
are sorry. Your list is full. You must remove an entry before adding another. Please try
other options or dial <d> for instructions;

add audio_seq id=GR220_20_OTHER; language_id=def;
seq=SLE_20_1; description=We are sorry. Please try adding the number in a few minutes;

add audio_seq id=GR220_20_ACTV; language_id=def;
seq=SLE_20_1,SLE_20_2,var_digits,SLE_16_3; description=We are sorry. Please try adding the
number in a few minutes. Please continue, or dial <d> for instructions;

add audio_seq id=GR220_21_OTHER; language_id=def;
seq=SLE_21_1; description=We are sorry. The number you have dialed is not a valid number.
Please try again later.;

add audio_seq id=GR220_21_ACTV; language_id=def;
seq=SLE_21_1,SLE_20_2,var_digits,SLE_16_3; description=We are sorry. The number you have
dialed is not a valid number. Please try again later. Please continue, or dial <d> for
instructions;

add audio_seq id=GR220_22; language_id=def;
seq=SLE_22,var_digits,SLE_16_3; description=We are sorry. There are no entries on your
list. Please try other options or dial <d> for instructions;

add audio_seq id=GR220_23; language_id=def;
seq=SLE_23,SLE_11_2,var_digits,SLE_11_3; description=The number you have removed is an
anonymous entry. Please continue, dial <d> for instructions, or hang up;

add audio_seq id=GR220_24; language_id=def;
seq=SLE_24,var_audio,var_digits; description=The number you have removed is
<silence/wildcard/extension> <ds>;
```

```
add audio_seq id=GR220_25; language_id=def;
seq=SLE_25,var_digits,SLE_11_3; description=There are no more entries on your list. Please
continue, dial <d> for instructions, or hang up;

add audio_seq id=GR220_26; language_id=def;
seq=SLE_26,var_digits,SLE_11_3; description=There are no more anonymous entries on your
list. Please continue, dial <d> for instructions, or hang up;

add audio_seq id=GR220_27; language_id=def;
seq=THERE,var_audio,var_number,ANONYMOUS,var_audio,SLE_27,SLE_16_3; description=There
<is/are> <one/num> anonymous <entry/entries> on your list. Please try other options, or
dial <d> for instructions;

add audio_seq id=GR220_28_PUB; language_id=def;
seq=THERE,var_audio,var_number,var_audio,SLE_1_2,SLE_28_1,var_digits,SLE_28_2;
description=There <is/are> <one/num> <entry/entries> on your list. To delete an entry,
dial <dd> as soon as you hear it;

add audio_seq id=GR220_28_ANM; language_id=def;
seq=THERE,var_audio,var_number,var_audio,SLE_1_2,INCLUDING,var_number,ANONYMOUS,var_audio,
SLE_28_1,var_digits,SLE_28_2; description=There <is/are> <one/num> <entry/entries> on your
list, including <one/num> anonymous <entry/entries>. To delete an entry, dial <dd> as soon
as you hear it;

add audio_seq id=GR220_29; language_id=def; seq=SLE_29; description=This is the end of
your list;

add audio_seq id=GR220_30; language_id=def; seq=SLE_30,var_audio,var_digits;
description=The first entry on your list is <silence/extension> <ds>;

add audio_seq id=GR220_31; language_id=def; seq=NEXT,var_audio,var_digits;
description=Next, <silence/extention> <ds>;

add audio_seq id=GR220_38; language_id=def; seq=SLE_38,SLE_11_2,var_digits,SLE_11_3;
description=The number is already on your list as an anonymous entry. Please continue,
dial <d> for instructions, or hang up;

add audio_seq id=GR220_39; language_id=def;
seq=SLE_39,var_audio,var_digits,SLE_11_2,var_digits,SLE_11_3; description=This number is
already on your list. <silence/extension> <ds>. Please continue, dial <d> for
instructions, or hang up;

add audio_seq id=GR220_40; language_id=def; seq=SLE_40,var_digits,SLE_11_3;
description=The number to be removed is not on your list. Please start again, dial <d> for
instructions, or hang up;

add audio_seq id=GR220_41; language_id=def; seq=SLE_41; description=This is the end of
your list. Your list is now empty;

add audio_seq id=GR220_42; language_id=def; seq=REPEATING,var_audio,var_digits;
description=Repeating, <silence/extension>, <ds>;
```

Step 10 Add NSA_ACT time of day schedule audio-sequence:

```
add audio_seq id=TOD_START; language_id=def;
seq=TIME_MGMT_01,var_day,var_time,YOUR,var_audio,TIME_MGMT_02,FROM,var_day,var_time,TO,var
_day,var_time,TIME_MGMT_03,var_digits,TIME_MGMT_04,var_digits,TIME_MGMT_05;
description=Now is <day><time>. Your <fname> service is scheduled to be on from <day>
<time> to <day> <time>. If you are satisfied with this schedule, please press <d> now. To
set a different time-of-day schedule, press <d>. Please dial now.

add audio_seq id=TOD_START_TIME; language_id=def; seq=TIME_MGMT_06; description=Please
enter the start time in 24 hour format;
```

```
add audio_seq id=TOD_STOP_TIME; language_id=def; seq=TIME_MGMT_07; description=Please
enter the end time in 24 hour format;

add audio_seq id=TOD_START_DAY; language_id=def; seq=TIME_MGMT_08; description=Please
enter the start weekday, 0 stands for Sunday, 6 stands for Saturday;

add audio_seq id=TOD_STOP_DAY; language_id=def; seq=TIME_MGMT_09; description=Please enter
the end weekday, 0 stands for Sunday, 6 stands for Saturday;

add audio_seq id=TOD_INVALID_TIME; language_id=def; seq=TIME_MGMT_10;
description=That is not a valid time, the time value should be between 0 to 2359, the end
time must be later than the start time;

add audio_seq id=TOD_INVALID_DAY; language_id=def; seq=TIME_MGMT_11; description=That is
not a valid day, the day value should be between 0 to 6;

add audio_seq id=TOD_CONFIRM; language_id=def;
seq=TIME_MGMT_12,SLE_11_2,var_digits,SLE_11_3; description=The new schedule is now
applicable.Please continue, dial <d> for instructions, or hang up;
```

Provisioning Feature Control Options for the IVR Interactions

This section explains how to provision certain controls for the interactions between the subscriber and the IVR server.

Step 1 Add feature configuration for NSA:

```
add feature-config; fname=NSA; type=INVOKE-DIGITS; datatype=digits; value=1;
add feature-config; fname=NSA; type=REESTART-KEY; datatype=string; value="*";
add feature-config; fname=NSA; type=RETURN-KEY; datatype=string; value="#";
add feature-config; fname=NSA; type=FDT-TIMER; datatype=digits; value=50;
add feature-config; fname=NSA; type=IDT-TIMER; datatype=digits; value=50;
```

Step 2 Add feature configuration for NSA_ACT:

```
add feature-config; fname=NSA_ACT; type=RESTART-KEY; datatype=string; value="*";
description=restart key;
add feature-config; fname=NSA_ACT; type=RETURN-KEY; datatype=string; value="#";
description=return key;
add feature-config; fname=NSA_ACT; type=NUM-ATTEMPTS; datatype=integer; value=1;
description=number of attempts;
add feature-config; fname=NSA_ACT; type=T-SESSION; datatype=integer; value=600;
description=session timer in 1/10 second;
```

Step 3 Add feature configuration for NSA_ACT authentication:

```
add feature-config; fname=NSA_ACT; type=AUTH-ENABLED; datatype=string; value="Y";
description=whether to enable authentication for NSA_ACT or not;

add feature-config; fname=NSA_ACT; type=AUTH-REPLAY-PIN-OP-CONFIRM; datatype=digits;
value=1;
add feature-config; fname=NSA_ACT; type=AUTH-REPLAY-PIN-OP-REENTER; datatype=digits;
value=2;
```

Step 4 Add feature configuration for NSA_ACT time management:

```
add feature-config; fname=NSA_ACT; type=TOD-ENABLED; datatype=string; value="Y";
description=whether to enable TOD for NSA_ACT or not;
```

```
# audio-sequence LE_MS_ON/LE_MS_OFF
add feature-config; fname=NSA_ACT; type=TOD-SET-OLD; datatype=digits; value=1;
add feature-config; fname=NSA_ACT; type=TOD-SET-NEW; datatype=digits; value=2;
```

Step 5 Add feature configuration for SLE:

```
add feature-config; fname=SLE; type=T1-TIMER; datatype=integer; value=40; description=T1
defines how long the SPCS waits for the customer to confirm an existing remote DN or
indicate that the remote DN should be changed. T1 shall be settable between 2 and 10
seconds with an interval of 1 second and a suggested value of 4 seconds;

add feature-config; fname=SLE; type=T2-TIMER; datatype=integer; value=40; description=T2
defines how long the SPCS waits for the customer to specify a new remote DN. T2 defines
how long the SPCS waits for the customer to specify a new remote DN;

add feature-config; fname=SLE; type=T3-TIMER; datatype=integer; value=40; description=T3
defines how long the SPCS waits for the customer to specify "#", "12", or "0" when a DN
must be added to the list during feature activation. T3 shall be settable between 2 and 10
seconds with an interval of 1 second and a suggested value of 4 seconds;

add feature-config; fname=SLE; type=T4-TIMER; datatype=integer; value=40; description=T4
defines how long the SPCS waits for the customer to specify a DN when adding or deleting
an entry. T4 shall be settable between 2 and 10 seconds with an interval of 1 second and a
suggested value of 4 seconds;

add feature-config; fname=SLE; type=T5-TIMER; datatype=integer; value=30; description=T5
specifies the time the originating SPCS waits for a response to the initial query sent to
the Screened DN.s SPCS. T5 shall be settable between 2 and 4 seconds with an interval of 1
second and a suggested value of 3 seconds.

add feature-config; fname=SLE; type=T6-TIMER; datatype=integer; value=25; description=T6
defines how long the SPCS waits for the customer to specify an option after an entry on
the list has been voiced back during list review. For DTMF customers, T6 shall be settable
between 2 and 3 seconds with an interval of 0.5 second and a suggested value of 2.5
seconds. For dial pulse customers, it shall be settable between 3 and 4 seconds with an
interval of 0.5 second and a suggested value of 3.5 seconds;

add feature-config; fname=SLE; type=IDT-TIMER; datatype=integer; value=40;
description=Interdigit timer, the interdigit timing shall be settable between 2 and 9
seconds with an interval of 1 second and a suggested value of 4 seconds;

add feature-config; fname=SLE; type=REPEAT-INSTRUCTION; datatype=digits; value=0;
add feature-config; fname=SLE; type=LIST-REVIEW; datatype=digits; value=1;
add feature-config; fname=SLE; type=TOD; datatype=digits; value=2;
add feature-config; fname=SLE; type=CHANGE-STATUS; datatype=digits; value=3;
add feature-config; fname=SLE; type=ADD-ENTRY; datatype=string; value="#";
add feature-config; fname=SLE; type=DELETE-ENTRY; datatype=string; value="*";
add feature-config; fname=SLE; type=ADD-ENTRY-RETURN-KEY; datatype=string; value="*";
add feature-config; fname=SLE; type=DELETE-ENTRY-RETURN-KEY; datatype=string; value="#";
add feature-config; fname=SLE; type=LAST-CALLING-PARTY; datatype=digits; value=01;
add feature-config; fname=SLE; type=INTERCOM-DIALING-CODE; datatype=digits; value=02;
add feature-config; fname=SLE; type=WILDCARD; datatype=digits; value=03;
add feature-config; fname=SLE; type=DELETE-VOICED-BACK-ENTRY; datatype=digits; value=07;
add feature-config; fname=SLE; type=DELETE-ALL-ENTRIES; datatype=digits; value=08;
add feature-config; fname=SLE; type=DELETE-ALL-ANONYMOUS-ENTRIES; datatype=digits;
value=09;
add feature-config; fname=SLE; type=LIST-EDITING-RETURN-KEY; datatype=digits; value="#*";
add feature-config; fname=SLE; type=NUM-ATTEMPTS; datatype=integer; value=1;
description=number of attempts, not in GR-220;
add feature-config; fname=SLE; type=T-SESSION; datatype=integer; value=600;
description=default session timer, not in GR-220;
```

Subscriber Provisioning

This section describes the steps required to provision subscribers, assign the NSA service, and perform initial setup of the PIN.

Step 1 If not available, add a subscriber entry for subscriber:

```
add subscriber id=sub_1; sub-profile-id=subprof_1; DN1=4692553008;
```

Step 2 Assign the service to the subscriber:

```
add subscriber-service-profile sub_id=subscriber_1; service-id=nsa;

add subscriber-feature-data sub-id=sub_1_1; fname=NSA_ACT; type1=PINTYPE; value1=NEWPIN;
```

Caution You must enter the following command after turning on authentication. Otherwise, the customer will be prompted for the PIN, but will always be denied access to the management menu. (Authentication for NSA_ACT is turned on by default and is provisionable using the add/change feature-config command as described in the "Provisioning Feature Control Options for the IVR Interactions" section on page 7-99.)

Step 3 Add subscriber-feature-data for initial setup of the PIN:

```
add subscriber-feature-data sub-id=sub_1_1; fname=NSA_ACT; type1=PINTYPE; value1=NEWPIN;
```

Step 4 Add subscriber-tod-schedule to set options for scheduling when the NSA feature will be active:

```
add subscriber-tod-schedule sub-id=johnsmith; fname=nsa;

add subscriber-tod-schedule sub-id=johnsmith; fname=nsa; begin-dow=THU; end-dow=FRI;
begin-tod=14:00; end-tod=17:00;
```

Centrex Provisioning

In addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber.

MLHG Provisioning

MLHG provisioning is similar to pubscriber provisioning.

Provisioning Notes/Caveats

- One of the three FDN values assigned in sub-feature-data must be the subscriber's primary DN.

Outgoing Call Barring (OCB)

Outgoing Call Barring is a superset of Class Of Service screening and includes all provisioning steps of COS. However, COS functionality itself in OCB is optional and need not be provisioned.

Tip For a complete description of this feature, see Outgoing Call Barring in the *Network and Subscriber Feature Descriptions*.

Use the following procedures to provision OCB in versions prior to Release 4.4.1:

Office Provisioning

Step 1 Register the feature in the Office:

```
add feature FNAME=OCB; tdp1=COLLECTED-INFORMATION; tid1=COS-TRIGGER; ttype1=R;
feature_server_id=FSPTC235; description=Outgoing Call Barring; grp_feature=N;
```

Step 2 Register the COS feature in the Office.

Note See the provisioning notes for COS screening. This step is optional and is required only under two circumstances:
- COS screening functionality is required as a subset of OCB.
- BW-list screening functionality of OCB needs to be offered to the subscriber even if OCB is in a deactivated state.

Step 3 Provision the feature into a service package:

```
add service id=special-srv; fname1=OCB;
```

Note This feature can be assigned to any of the fnameN tokens.

Step 4 Provision the call-type screening exception list. Enter as many call-types (records) against OCB as desired.

```
add/change nod-restrict-list fname1=OCB; call-type=EMG;
```

Note This feature can be assigned to any of the fnameN tokens.

Subscriber Provisioning

Step 1 Add the service to the subscriber's service profile:

```
add/change subscriber-service-profile sub-id=sub1_plano.com; service-id=special-srv;
```

Further provisioning is by handset provisioning using feature activation/deactivations, OCBA and OCBD.

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

OCB

Use the following procedure for OCB Office Provisioning from Release 4.4.1 forward. All other provisioning sections remain the same.

Office Provisioning

The following office provisioning example for OCB is new beginning with Release 4.4.1.

Step 1 Register the OCB feature in the office:

```
add feature FNAME=OCB; tdp1=COLLECTED-INFORMATION; tid1=COS-TRIGGER; ttype1=R;
feature_server_id=FSPTC235; description=Outgoing Call Barring; grp_feature=N;
```

Step 2 Register the OCB activation, deactivation, and interrogation features into the office:

```
add feature FNAME=OCBx; tdp1=COLLECTED-INFORMATION; tid1=VERTICAL-SERVICE-CODE; ttype1=R;
feature_server_id=FSPTC235; description=OCB act/deact/interr; grp_feature=N;
```

Note For the steps of this procedure, OCB activation (OCBA), OCB deactivation (OCBD), and OCB interrogation (OCBI) are referred to interchangeably as OCB*x*.

Step 3 Register the COS feature in the office.

Note See the provisioning notes for COS screening. This step is optional and is required only under two circumstances:
- COS screening functionality is required as a subset of OCB.
- BW-list screening functionality of OCB needs to be offered to the subscriber even if OCB is in a deactivated state.

Step 4 Add/change the vsc code for OCBA.

```
add vsc fname=OCBA; digit-string=*54*;
```

Step 5 Add/change the vsc code for OCBD.

```
add vsc fname=OCBD; digitstring=#54*;
```

Step 6 Add/change the vsc code for OCBI.

```
add vsc fname=OCBI; digit-string=#54#;
```

Step 7 Provision the OCB features as a service package.

```
add service id=ocb; FNAME1=OCB; FNAME2=OCBA; FNAME3=OCBD; FNAME4=OCBI
```

Step 8 Provision feature parameters if required.

```
add feature fname=OCB; type1=pin-len; value1=5; type2=to; value2=20; type3=fail-cnt;
value3=4; type4=lock-out; value4=60;
```

Step 9 Provision a nature-of-dial screening exception list. Enter as many nature-of-dial records for OCB as required.

```
add nod-restrict-list fname=OCB; call-type=local;
```

Step 10 Provision OCB feature parameters using the OCB-PROFILE if required.

```
add ocb-profile Id=ocb_prof; Max-k-values=5; All-calls-restrict-k-value=5; Fail-cnt=3;
Pin-len=5; Lock-out=30; Time-out=30; Deactivation-option=K-VALUE-MATCH; Free-select-pin=Y;
```

Step 11 Provision the OCB-K-VALUE if required.

```
add ocb-k-value Ocb-profile-id=ocb_prof; k-value=1; call-type=local, call-type=intl;
```

Note For the call-type option, you can specify multiple call types.

Step 12 Provision base OCB behavior for the office.

```
add ca-config Type=DEFAULT-OCB-PROFILE-ID; Datatype=STRING; Value=ocb_prof;
```

Step 13 Provision OCB behavior for the POP level.

```
add pop Id=<subscriber corresponding pop id>; Ocb-profile-id=ocb_prof;
```

Subscriber Provisioning

The following subscriber provisioning example is new beginning with Release 4.4.1:

Step 1 Add the service to the subscriber's service profile:

```
add subscriber-service-profile sub-id=sub1_plano.com; service-id=ocb;
```

Step 2 Add an initial password for the subscriber. This step is optional.

```
add subscriber-feature-data sub-id=sub1_plano.com; fname=OCB; type1=PASSWD; value1=1234;
```

Alternate Activation and Deactivation Method (Release 4.4.1)

This feature is deactivated by default when it is assigned to a subscriber. OCB can be activated and deactivated alternately by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate OCB:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=OCB; type1=K_VALUE;
value1=1; type2=PASSWD; value2=1234;
```

Note The value can be in the range 1 through 9.

Use a CLI command similar to the following to deactivate OCB:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=OCB;
```

Provisioning Notes and Caveats (Release 4.4.1)

- The K-VALUE for the subscriber in the Subscriber-feature-data table will be recorded by the system when the subscriber uses the OCBA feature.

- The COUNT and TIME fields in the Subscriber-feature-data table are used by the operator to manually reset a locked-out subscriber. To unlock a locked-out subscriber, set both fields to '0'.
- The PASSWD provisioned in the Subscriber-feature-data table can be optional if FREE-SELECT-PIN=Y.

Outgoing Call Barring—A/D/I (OCBA, OCBD, OCBI)

The following subsections identify necessary steps for the OCBA, OCBD, and OCBI features to be offered.

Note In this section, OCB activation (OCBA), deactivation (OCBD), and interrogation (OCBI) are interchangeably referred to as OCBx.

Office Provisioning

Step 1 Register the feature in the Office:

```
add feature FNAME=OCBx; tdp1=COLLECTED-INFORMATION; tid1=VERTICAL-SERVICE-CODE; ttype1=R;
feature_server_id=FSPTC235; description=OCB act/deact/interr; grp_feature=N;
```

Step 2 Add the VSC code for OCBA:

```
add vsc fname=OCBA;  digit-string=*54*;
```

Step 3 Add the VSC code for OCBD:

```
add vsc fname=OCBD; digit-string=#54*;
```

Step 4 Add the vsc code for OCBI:

```
add vsc fname=OCBI; digit-string=*#54*;
```

Step 5 Add the service with these features:

```
add service id=1;  FNAME1=OCB;  FNAME2=OCBA;  FNAME3=OCBD;  FNAME4=OCBI;
```

Step 6 Provision feature parameters, if required.

```
add/change feature fname=OCB; pin-len=5; to=20; fail-cnt=4; lock-out=60
```

Subscriber Provisioning

Step 1 Add the service to the subscriber's service profile:

```
add/change subscriber-service-profile sub-id=sub1_plano.com; service-id=special-srv;
```

Step 2 Add the initial password for the subscriber:

```
add/change subscriber-feature-data sub-id=sub1_plano.com; fname=OCB; type1=PASSWD;
value1=1234;
```

Centrex Provisioning

For the feature, in addition to basic Centrex office provisioning, the Centrex subscriber requires similar provisioning as a POTS subscriber. In addition, the following step must be performed.

Step 1 Add the feature into the custom-dial-plan table for the Centrex group:

```
add/change  custom-dial-plan  ID=cdp1; DIGIT-STRING=*54*;  NOD=VSC; FNAME=OCBA;
CAT-STRING=1111111111111111;

add/change  custom-dial-plan  ID=cdp1; DIGIT-STRING=#54*;  NOD=VSC; FNAME=OCBD;
CAT-STRING=1111111111111111;

add/change  custom-dial-plan ID=cdp1; DIGIT-STRING=*#54*;  NOD=VSC; FNAME=OCBI;
CAT-STRING=1111111111111111;
```

MLHG provisioning is similar to subscriber provisioning as described above.

Provisioning Notes/Caveats

- The K-VALUE for the subscriber in the Subscriber-feature-data table will be recorded by the system when the subscriber uses the OCBA and OCBD feature.
- The COUNT and TIME fields in the Subscriber-feature-data table are system internal and should not be manipulated by the Operator.

Alternate Activation and Deactivation Method

This feature is deactivated by default when it is assigned to a subscriber. OCB can alternately be activated and deactivated by creating an entry in the Subscriber-feature-data table.

Use a CLI command similar to the following to activate OCB:

```
add subscriber-feature-data sub-id=sub_1; active=Y; fname=OCB; type1=K_VALUE;
value1=1; type2=PASSWD; value2=1234;
```

Note The value can equal 1, 2, or 3 as necessary.

Use a CLI command similar to the following to deactivate OCB:

```
add subscriber-feature-data sub-id=sub_1; active=N; fname=OCB;
```

Outgoing Simulated Facility Group (OSFG)

The following subsections identify necessary steps for the OSGF feature to be offered.

Office Provisioning

Step 1 Provision the Feature table:

```
add feature  FNAME=OSFG;  TDP1=ROUTE_SELECTED; TID1=ROUTE_SELECTED; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC235;  GRP_FEATURE=N; DESCRIPTION=Outgoing Simulated Facility Group
Feature;
```

Step 2 Provision the Service table:

```
add service id=2; FNAME1=OSFG;
```

Centrex Provisioning

Step 1 Provision the subscriber-service-profile:

```
add subscriber-service-profile
sub_id=sub_1; service-id=2;
```

Step 2 Change the CTXG to facilitate OSFG:

```
change ctxg ID=ctxg1; SFG_CONTROL=Y; IN_SFG_COUNT=3; OUT_SFG_COUNT=3; BOTH_SFG_COUNT=4;
```

This feature is only applicable to MLHG-CTX. MLHG provisioning is similar to Centrex provisioning as described above.

Privacy Screening

The Privacy Screening feature enables a subscriber to accept or reject an anonymous call based on a short message recorded by the caller. The following subsections enable the feature to be offered.

Office Provisioning

Step 1 Create a feature for Privacy Screening:

```
add/change feature FNAME=PS; TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED; TTYPE1=R; FEATURE_SERVER_ID=FSPTC325;
```

Step 2 Create a feature for the Privacy Screening Manager:

```
add/change feature FNAME=PS_MANAGE;  TDP1=COLLECTED_INFORMATION;
TID1=VERTICAL_SERVICE_CODE; TTYPE1=R; FEATURE_SERVER_ID=FSPTC325;
```

Step 3 Create a feature for the PS_O feature:

```
add/change feature FNAME=PS_O; TDP1=COLLECTED_INFORMATION; TID1=PS_TRIGGER; TTYPE1=R;
FEATURE_SERVER_ID=FSPTC325;
```

Step 4 Do the SIP trunk provisioning, and assign this feature to the subscriber:

```
add softsw-tg-profile id=10;protocol-type=SIP;

add trunk-grp id=21;softsw-tsap-addr=<ip address of the PS AS IPUnity box>:5060;
call-agent-id=CA146;tg-type=softsw; tg-profile-id=10; dial-plan-id=dp1;
```

```
add subscriber id=PS_AS;category=PBX;dn1=469-255-2001; tgn-id=21; sub-profile-id=sp1;
term-type=TG;
```

Note This should match the APP_SERVER_DN in the app-server table for PS.

```
add service; id=PS_O; fname1=PS_O;

add trunk-grp-service-profile; tgn-id=21; service-id=PS_O ;

add trunk-grp id=22;softsw-tsap-addr=<domain name of the PS AS IPUnity Box>:5060;
call-agent-id=CA146;tg-type=softsw; tg-profile-id=10;dial-plan-id=dp1;

add subscriber id=PS_MANAGE_AS;category=PBX; dn1=469-255-2002; tgn-id=22;
sub-profile-id=sp1; term-type=TG;
```

Note This should match the APP_SERVER_ACCESS_DN in the app-server table for PS.

Step 5 Define VSC codes for these features:

```
add/change vsc; fname=PS_MANAGE; DIGIT_STRING=*94;
```

Step 6 Combine the features defined above into a service:

```
add/change service id=PS; FNAME1=PS; FNAME2=PS_MANAGE;
```

Step 7 Specify in the feature-config table whether the calls with privacy as UNKNOWN should be treated as anonymous or not. The default is not anonymous.

```
Add/change feature_config Fname=PS; TYPE=PRIVACY_UNKNOWN_TREATMENT;
VALUE=[ANONYMOUS|PUBLIC];
```

Provisioning Resources

Create the PS table and assign to the subscriber, sub-profile, pop, and ca-config.

Step 1 Create the APP_SERVER Table:

```
add/change app-server id=PS; APP_SERVER_DN=469-255-2001;
APP_SERVER_ACCESS_DN=469-255-2002; DESCRIPTION=PS AS; APP_SERVER_TYPE=PM;
```

Step 2 Assign PS to the subscriber via the Subscriber table:

```
Change sub; id=<sub>; PRIVACY_MANAGER_ID=PS;
```

Step 3 Assign PS to the subscriber via the sub-profile table:

```
Change sub-profile; id=<sub-profile>; PRIVACY_MANAGER_ID=PS;
```

Step 4 Assign PS to the subscriber via the pop table:

```
Change pop; id=<pop>; PRIVACY_MANAGER_ID=PS;
```

Step 5 Assign PS to the subscriber via the office (ca-config) table:

```
Add ca-config; TYPE=default-privacy-manager-id; VALUE=PS;
```

Subscriber Provisioning

Step 1 Assign the service a subscriber:

```
add/change sub-service-profile sub-id=[sub]; service-id=PS;
```

Centrex Provisioning

Step 1 Define the star codes in the CDP table for Centrex subscribers:

```
add/change cdp; fname=PS_MANAGE; DIGIT_STRING=*94; nod=VSC; CAT_STRING=1111111111111111;
```

MLHG Provisioning

The same as subscriber provisioning.

Refer

The following subsections identify necessary steps for the feature to be offered.

Office Provisioning

Step 1 Provision the Feature table:

```
add feature FNAME=REFER; TDP1=O_MID_CALL; TID1=REFER_TRIGGER; TTYPE1=R; TDP2=T_MID_CALL;
TID2=REFER_TRIGGER; TTYPE2=R; FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=SIP REFER;
```

Step 2 Provision the Service table:

```
add/change service id=999; FNAME1=REFER;
```

Step 3 Provision the CA-config table:

```
add/change ca-config TYPE=DEFAULT-OFFICE-SERVICE-ID; DATATYPE=STRING; VALUE=999;
```

Provisioning Notes/Caveats

The Refer feature is applicable only for SIP subscribers.

Remote Activation of Call Forwarding and PIN_Change (RACF, RACF_PIN)

Remote Call Forwarding Activation (RACF) allows you to manipulate your CFU (Call Forwarding - Unconditional) feature remotely. This feature ensures you can always be reached regardless of your location and movements, provided RACF is used at your location.

Tip For a complete description of this feature, see Remote Activation of Call Forwarding in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the feature RACF and RACF PIN change to be offered.

Office Provisioning

Step 1 The IVR DN value here must be the same number as the IVR virtual subscriber. It is used for this and SLE activation features:

```
add ca-config TYPE=IVR-DN; DATATYPE=DIGITS; VALUE=9727892000;
```

Resource Provisioning (IVR)

Step 1 Add the media server:

Follow the steps in the **IVR Provisioning** section for Screen List Editing: SCF, SCR, SCA, and DRCW, page 7-113.

Step 2 Add the RACF Virtual Subscriber. All RACF subscribers will call 972-789-1000 for remote access to call forwarding. Subscribers will interact with the IVR subscriber when using the RACF PIN change feature:

```
add subscriber ID=racf_annc_sub; CATEGORY=RACF; NAME=racf_annc_sub; STATUS=ACTIVE;
dn1=972-789-1000; PRIVACY=NONE; RING-TYPE-DN1=1; TGN-ID=1; USAGE-SENS=N;
SUB-PROFILE-ID=sp; TERM-TYPE=ROUTE; POLICY-ID=rt_annc;
```

Feature Provisioning

Step 1 Define the RACF feature:

```
add feature fname=RACF; description=Remote Activation of Call Forwarding;
feature_server_id=<feature server ID>;
```

Step 2 Define the internal IVR feature:

```
add feature fname=IVR; tdp1=T_ANSWER; tid1=T_ANSWER; ttype1=R; description=Internal IVR
feature; feature_server_id=<feature server ID>;
```

Step 3 Define the RACF PIN change feature:

```
add feature fname=RACF_PIN; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=RACF PIN change; feature_server_id=<feature server ID>;
```

Note Do not provision T_Answer.

Step 4 Add the RACF service for subscribers with a non-unique PIN:

```
add service id=1; fname1=RACF;
```

Step 5 Assign the RACF_PIN to the IVR virtual subscriber:

```
add service id=2; fname1=RACF_PIN;
```

Step 6 Add the RACF and Pin Change service for subscribers with a unique PIN:

```
add service id=3; fname1=RACF; fname2=RACF_PIN;
```

Step 7 Add the service for the subscribers of IVR and RACF categories:

```
add service id=IVR_SVC; fname1=IVR;
```

Step 8 Add a VSC for subscribers changing their PIN:

```
add vsc digit_string=*98; fname=RACF_PIN;
```

Provisioning Notes/Caveats

- The RACF_PIN feature should only be assigned to those RACF subscribers who have unique PINs.
- A unique PIN is identified in the subscriber feature data entry for RACF as PINTYPE=PIN or PINTYPE=NEWPIN. (The NEWPIN type indicates that the subscriber has not yet changed his PIN from the default one assigned by the service provider. To be able to use the RACF feature, the subscriber must first change his PIN at least once from his home number. Once he does this, the PINTYPE in feature data will be changed to PIN).
- If a subscriber has a non-unique PIN, he is not allowed to change it. It can only be changed through the CLI. For non-unique PIN validation, an authcode should be provisioned, and the PINTYPE should be set to AUTHCODE.
- Non-unique PINs are typically assigned to a group of subscribers sharing the same PIN, that is, in a Centrex environment.

Subscriber Provisioning

Step 1 Assign the RACF feature to the RACF virtual subscriber:

```
add sub-service-profile sub-id=racf_annc_sub; service-id=3;
```

Step 2 Assign the IVR feature to the RACF virtual subscriber. Only the RACF virtual subscriber has this service assigned:

```
add sub-service-profile sub-id=racf_annc_sub; service-id=IVR_SVC;
```

Step 3 The RACF_PIN feature must be assigned to the IVR virtual subscriber. Only this feature and SCA_ACT, SCR_ACT DRCW_ACT, and SCF_ACT features are assigned to this subscriber:

```
add sub-service-profile sub-id=ivr_annc_sub; service-id=3;
```

Step 4 Assign the IVR feature to the IVR virtual subscriber. Only the IVR virtual subscriber has this service assigned:

```
add sub-service-profile sub-id=ivr_annc_sub; service-id=IVR_SVC;
```

Step 5 This is for regular subscribers with RACF having non-unique PIN so the authcode is used. RACF_PIN change feature is not assigned to this subscriber (sub1):

```
add sub-service-profile sub-id=sub1; service-id=1;

add subscriber-feature-data sub-id=sub1; fname=RACF; type1=PINTYPE; value1=AUTHCODE;
```

Step 6 This subscriber (sub2) has a unique PIN. The pintype of "NEWPIN" indicates that he is required to change it from his home/base phone before he can use the RACF feature:

```
add sub-service-profile sub-id=sub2; service-id=3;

add subscriber-feature-data sub-id=sub2; fname=RACF; type1=PINTYPE; value1=NEWPIN;
type2=PIN; value2=99999;
```

Auth Code Provisioning

Use the following subsections to provision the auth code group and auth code for non-unique PIN subscribers.

Step 1 Add an auth code group:

```
add auth-code-grp id=DEFAULT_ACGROUP; description=authorization codes;
```

Step 2 Add an auth code:

```
add cos-restrict id=NO_RESTRICTION; casual-restrict-type=ALL-CICS ALLOWED;
national-restrict-type=ALL-NANP-CALLS; national-wb-list=NONE;
intl-restrict-type=ALL-CC-ALLOWED; ii-restrict=NONE; block-900=N; block-976=N; block-da=N;
block-nanp-oper-assist=N; block-intl-oper-assist=N; acct-code-allow=Y; acct-code-length=4;
auth-code-allow=Y; auth-code-length=5; auth-code-grp-id=DEFAULT_ACGROUP;
```

Step 3 Assign AUTH-CODE 12345 to be used as PIN for RACF access by non-unique PIN subscribers:

```
add auth-code  auth-code-grp-id=DEFAULT_ACGROUP; id=12345; active=Y;
```

Remote Call Forwarding (RCF)

RCF allows incoming calls to be routed automatically to a remote DN.

Tip For a complete description of this feature, see Remote Call Forwarding in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the RCF feature to be offered.

Note By default, the multiple call forwarding (MCF) flag is set to Y for both CFU and RCF. For illustration purposes, this flag is included in the CFU and RCF examples below. The flag must be set to Y for both CFU and RCF to allow multiple calls to be forwarded simultaneously by the RCF feature.

Office Provisioning

Step 1 Create a feature for CFU:

```
add feature FNAME=CFU; TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED; TTYPE1=R; FNAME1=CFUA; FNAME2=CFUD; FNAME3=CFUI;
FEATURE_SERVER_ID=FSPTC235; TYPE1=MCF; VALUE1=Y; DESCRIPTION=CFU; GRP_FEATURE=N;
```

Step 2 Add the RCF feature:

```
add feature FNAME=RCF; TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED; TTYPE1=R; FNAME1=CFU; FEATURE_SERVER_ID=FSPTC235;
TYPE1=MCF; VALUE1=Y; DESCRIPTION=Remote Call Forwarding;
```

Step 3 Add a service with these features:

```
add service id=1; FNAME1=RCF;
```

Subscriber Provisioning

Step 1 Add the subscriber:

```
add subscriber id=subscriber_1; sub-profile-id=profile2; dn1=972-555-2222;
billing-dn=972-555-2222; term-type=NONE;
```

Note The subscriber phone number (dn1 in the above command) must be assigned to the subscriber, but it does not need to be associated with a physical telephone.

Step 2 Assign the service to the subscriber:

```
add subscriber-service-profile sub-id=subscriber_1; service-id=1;
```

Step 3 Set the CFU feature as permanently active for the subscriber along with the call forwarding number:

```
add subscriber-feature-data sub-id=subscriber_1; fname=CFU; active=Y; type1=FDN1;
value1=4692550000; type2=RR; value2=N;
```

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

Screen List Editing: SCF, SCR, SCA, and DRCW

The following subsections identify necessary steps for the features Selective Call Forwarding (SCF), Selective Call Rejection (SCR), Selective Call Acceptance (SCA), and Distinctive Ringing Call Waiting (DRCW) to be offered with the ability for a subscriber to provision them through IVR.

Note The DRCW feature is only for playing a distinctive ringing or distinctive call-waiting tone and does not affect the activation of the call-waiting features (CW, CWD, or CIDCW). A subscriber must have CW, CWD, or CIDCW provisioned and activated in order to receive call-waiting treatment.

Tip For a complete description of these features, see Subscriber-Controlled Services and Screening List Editing in the *Network and Subscriber Feature Descriptions*.

Office Provisioning

Step 1 The IVR DN value here must be the same number as the IVR virtual subscriber:

```
add ca-config TYPE=IVR-DN; DATATYPE=DIGITS; VALUE=9727892000;
add ca-config TYPE=SLE-LIST-SIZE; DATATYPE=INTEGER; VALUE=31;
add ca-config TYPE=SLE-DE-THRESHOLD; DATATYPE=INTEGER; VALUE=3
add ca-config TYPE=SLE-TO-THRESHOLD; DATATYPE=INTEGER; VALUE=3
add ca-config TYPE=SLE-TIMER-T1; DATATYPE=INTEGER; VALUE=4
add ca-config TYPE=SLE-TIMER-T2; DATATYPE=INTEGER; VALUE=4
add ca-config TYPE=SLE-TIMER-T3; DATATYPE=INTEGER; VALUE=4
add ca-config TYPE=SLE-TIMER-T4; DATATYPE=INTEGER; VALUE=4
add ca-config TYPE=SLE-TIMER-T5; DATATYPE=INTEGER; VALUE=3
add ca-config TYPE=SLE-TIMER-T6; DATATYPE=INTEGER; VALUE=25
add ca-config TYPE=SLE-TIMER-T7; DATATYPE=INTEGER; VALUE=4
```

Resource Provisioning (IVR)

Step 1 Add the media server:

```
add mgw-profile ID=ms_profile; VENDOR=Cisco; SILENT-SUPPRESS-SUPP=N; RBK-ON-CONN-SUPP=N;
PACKET-TYPE=IP; AAL1=N; AAL2=N; AAL5=N; PVC=N; SVC=N; SPVC=N; EC=N; SDP-ORIGFIELD-SUPP=N;
SDP-SESSNAME-SUPP=N; SDP-EMAIL-SUPP=N; SDP-PHONE-SUPP=N; SDP-URI-SUPP=N;
SDP-BANDWIDTH-SUPP=N; SDP-INFO-SUPP=N; SDP-TIME-SUPP=N; SDP-ATTRIB-SUPP=N;
MGCP-ERQNT-SUPP=N; MGCP-HAIRPIN-SUPP=N; MGCP-QLOOP-SUPP=N; MGCP-3WAY-HSHAKE-SUPP=Y;
MGCP-CONN-ID-AT-GW-SUPP=Y; MGCP-CMD-SEQ-SUPP=N; MGCP-VMWI-SUPP=N; TERMINATION-PREFIX=ann/;
PORT-START=0; MGCPVERSION=MGCP_0_1; MGCP-RSVP-SUPP=N;
```

Step 2 Add the media gateway:

```
add mgw id=ipunity_ms; tsap-addr=<ip addr of  MS MGCP>; call-agent-id=CA166;
mgw-profile-id=ms_profile; rgw=n; tgw=y; call-agent-control-port=0; ans=n; ivr=y;
nas=n; pbx=n;
```

Step 3 Add IVR trunks:

```
add annc-tg-profile id=annc_tg_p; annc=N; ivr=Y; auto_answer=Y;
```

Step 4 Add the termination:

```
add termination prefix=ann/; port-start=0; port-end=30; type=trunk; mgw-id=ipunity_ms;
```

Step 5 Add the trunk group:

```
add trunk-grp id=1; call-agent-id=CA146; tg_type=annc; tg-profile-id=annc_tg_p;
mgcp-pkg-type=AUDIO; qos-id=qos123;
```

Note The qos-id token must be provisioned to match the qos-id for the trunk in the Quality of Service table. If two MGWs are involved in a call, there are additional QoS requirements applicable for the trunk groups on each MGW. See the hptime and lptime token descriptions in the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide* Quality of Service table.

Step 6 Add the trunk:

```
add trunk cic-start=1; cic-end=30; tgn-id=1; termination-prefix=ann/;
termination-port-start=0; termination-port-end=29; mgw-id=ipunity_ms;
```

Step 7 Add the IVR virtual subscriber:

```
add ndc digit-string=972;
```

Step 8 Add the exchange code:

```
add exchange-code ndc=972; ec=789;
```

Step 9 Add the office code:

```
add office-code ndc=972; ec=789; dn-group=xxxx; call-agent-id=CA146;
```

Step 10 Add the destination:

```
add destination dest-id=ivr; call-type=LOCAL; route-type=sub;
```

Step 11 Add the dial plan:

```
add dial-plan id=dp; digit-string=972-789; reqd-digits=10; dest-id=ivr;
```

Step 12 Add the POP:

```
add pop id=1; state=tx; country=usa; timezone=CST;
```

Step 13 Add the subscriber profile:

```
add subscriber-profile id=sp; dial-plan-id=dp; pop-id=1;
```

Step 14 Add the route:

```
add route id=rt_annc; tgn1-id=1; tg-selection=LCR;
```

Step 15 Add the subscriber:

```
add subscriber ID=ivr_annc_sub; CATEGORY=IVR; NAME=ivr_annc_sub; STATUS=ACTIVE;
dn1=972-789-2000; PRIVACY=NONE; RING-TYPE-DN1=1; TGN-ID=1; USAGE-SENS=N;
SUB-PROFILE-ID=sp; TERM-TYPE=ROUTE; POLICY-ID=rt_annc;
```

Step 16 Change the trunk group:

```
change trunk_grp id=1; call-agent-id=CA146; main-sub-id=ivr_annc_sub;
```

Step 17 Add the route guide:

```
add route-guide id=rg_annc; policy-type=ROUTE; policy-id=rt_annc;
```

Feature Provisioning

Step 1 Define the SCF feature:

```
add feature fname=SCF; tdp1=TERMINATION_ATTEMPT_AUTHORIZED;
tid1=TERMINATION_ATTEMPT_AUTHORIZED; ttype1=R; description=Selective Call Forwarding;
feature_server_id=<feature server ID>;
```

Step 2 Define the SCF Activation feature:

```
add feature fname=SCF_ACT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=Selective Call Fwd Activation; feature_server_id=<feature server
ID>;
```

Step 3 Define the SCR feature:

```
add feature fname=SCR; tdp1=TERMINATION_ATTEMPT_AUTHORIZED;
tid1=TERMINATION_ATTEMPT_AUTHORIZED; ttype1=R; description=Selective Call Rejection;
feature_server_id=<feature server ID>;
```

Step 4 Define the SCR Activation feature:

```
add feature fname=SCR_ACT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=Selective Call Rejection Act; feature_server_id=<feature server ID>;
```

Step 5 Define the SCA feature:

```
add feature fname=SCA; tdp1=TERMINATION_ATTEMPT_AUTHORIZED;
tid1=TERMINATION_ATTEMPT_AUTHORIZED; ttype1=R; description=Selective Call Acceptance;
feature_server_id=<feature server ID>;
```

Step 6 Define the SCA Activation feature:

```
add feature fname=SCA_ACT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=Selective Call Acceptance Act; feature_server_id=<feature server
ID>;
```

Step 7 Define the DRCW feature:

```
add feature fname=DRCW; tdp1=TERMINATION_ATTEMPT_AUTHORIZED;
tid1=TERMINATION_ATTEMPT_AUTHORIZED; ttype1=R; description=Distinctive Ring CW;
feature_server_id=<feature server ID>;
```

Step 8 Define the DRCW Activation feature:

```
add feature fname=DRCW_ACT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=Distinctive Ring CW Act; feature_server_id=<feature server ID>;
```

Step 9 Define the internal IVR feature:

```
add feature fname=IVR; tdp1=T_ANSWER; tid1=T_ANSWER; ttype1=R; description=Internal IVR
feature; feature_server_id=<feature server ID>;
```

Step 10 Add full SLE features with activation ability for regular subscribers:

```
add service id=1; fname1=SCF; fname2=SCF_ACT; fname3=SCR; fname4=SCR_ACT; fname5=SCA;
fname6=SCA_ACT; fname7=DRCW; fname8=DRCW_ACT; description=Full SLE features for
subscriber;
```

Step 11 Add SLE activation services to the IVR virtual subscriber only:

```
add service id=2; fname1=SCF_ACT; fname2=SCR_ACT; fname3=SCA_ACT; fname4=DRCW_ACT;
description=SLE activations for IVR virtual sub;
```

Step 12 Add the Internal IVR feature service ID to be assigned to IVR category subscribers:

```
add service id=IVR_SVC; fname1=IVR;
```

Step 13 Add vertical service codes for SLE activation features:

```
add vsc digit_string=*63; fname=SCF_ACT;
```

```
add vsc digit_string=*60; fname=SCR_ACT;
add vsc digit_string=*64; fname=SCA_ACT;
add vsc digit_string=*61; fname=DRCW_ACT;
```

Subscriber Provisioning

Step 1 Add SLE activation features to the IVR virtual subscriber. Only these features and RACF_PIN can be assigned to this subscriber:

```
add sub-service-profile sub-id=ivr_annc_sub; service-id=2;
```

Step 2 Add the IVR feature to the IVR virtual subscriber only:

```
add sub-service-profile sub-id=ivr_annc_sub; service-id=IVR_SVC;
```

Step 3 Add SLE features to a local subsriber (for example, sub1):

```
add sub-service-profile sub-id=sub1; service-id=1;
```

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

Provisioning Notes/Caveats

Subscribers who are assigned DRCW will need CW, CIDCW, or CWD for the Call-Waiting portion of DRCW to work.

Alternate Activation and Deactivation Method

The following procedure provides an alternative method for activating, deactivating, and provisioning the SCF, SCR, SCA, and DRCW features. The example below activates DRCW:

Step 1 Add a service for the feature, for example, DRCW:

```
add service id=10; fname1=DRCW
```

Step 2 Add the service to the local subscriber:

```
Add sub-service-profile sub-id=sub1; service-id=10;
```

Step 3 Activate/deactivate the feature:

```
Add sub-feature-data sub-id=sub1; fname=DRCW; active=Y/N;
```

Step 4 Add the feature associated DN to the Sle table:

```
add sle sub-id=sub1; fname=DRCW; dn=9726712355;
```

Step 5 (Optional) For SCF, change the subscriber feature data to define the forward-to number:

```
change sub-feature-data sub-id=sub1; fname=SCF; type1=FDN1; value1=469-575-4567;
```

Speed Call (1-Digit and 2-Digit) and Activation (SC1D_ACT, SC2D_ACT)

Speed Dialing allows you to dial selected numbers by assigning either a one digit or two digit abbreviated code to frequently called numbers. One-digit speed dialing accomodates eight numbers (2 through 9) for POTS and basic business group (BBG) customers, while two-digit speed dialing accomodates thirty numbers (20 through 49) for long distance, local, international, or emergency numbers.

Tip For a complete description of these features, see Speed Call in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the Speed Call feature to be offered.

Office Provisioning

Step 1 Provision the Feature table. Add the 1 Digit Speed Call Activation feature.

```
add feature fname=SC1D_ACT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=One Digit Speed Call Activation; feature_server_id=FSPTC235;
```

Step 2 Provision the Feature table. Add the 2 Digit Speed Call Activation feature.

```
add feature fname=SC2D_ACT; tdp1=COLLECTED_INFORMATION; tid1=VERTICAL_SERVICE_CODE;
ttype1=R; description=Two Digit Speed Call Activation; feature_server_id=FSPTC235;
```

Step 3 Provision the Feature table: Add the 1 Digit Speed Call feature.

```
add feature fname=SC1D; tdp1=COLLECTED_INFORMATION; tid1=SC1D_TRIGGER; ttype1=R;
description=One Digit Speed Call; feature_server_id=FSPTC235;
```

Step 4 Provision the Feature table: Add the 2 Digit Speed Call feature.

```
add feature fname=SC2D; tdp1=COLLECTED_INFORMATION; tid1=SC2D_TRIGGER; ttype1=R;
description=Two Digit Speed Call; feature_server_id=FSPTC235;
```

Step 5 Provision the VSC table for 1- Digit Activation:

```
add vsc digit_string=*74;fname=SC1D_ACT;
```

Step 6 Provision the VSC table for 2-Digit Activation:

```
add vsc digit_string=*75;fname=SC2D_ACT;
```

Step 7 Provision the Service table. Create a service with all the speed call features:

```
add service id=499; fname1=SC1D_ACT; fname2=SC2D_ACT; fname3=SC1D; fname4=SC2D;
```

Step 8 Provision the Digit Map table. Add [2-9]#|[24]x#|[29]T|[2-4]xT to the existing Digit Map:

```
change digit-map id=default; digit-pattern=0T|00|[2-9]11|[2-9]xx[2-9]xxxxxx|
1[2-9]xx[2-9]xxxxxx|0[2-9]xx[2-9]xxxxxx|011xxxxxx.T|01xxxxxx.T|101xxxx|#|*xx|11xx|
xxxxxxxxxxxxxxxxxx|[2-9]#|[24]x#|[29]T|[2-4]xT;
```

Subscriber Provisioning

Step 1 Provision the Subscriber Service Profile table. Add the service to the subscriber:

```
add sub-service-profile sub-id=sub_1_4; service-id=499; priority=4;
```

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

Alternate Provisioning Method

SC1D can alternately be provisioned or removed by creating an entry in the SC1D table.

Use a CLI command similar to the following to provision the SC1D code:

add sc1d sub-id=sub_1; dnx=4692551001;

Use a CLI command similar to the following to remove provisioning for the SC1D code:

add sc1d sub-id=sub_1; dnx=NULL;

Note dnx can be one of {dn1, dn2, dn3, …, dn9}. For a Centrex subscriber, it can only be one of {dn2, dn3, …, dn7}

Note For a Centrex user, the sub-id should be the main subscriber id defined in the Centrex-grp table.

SC2D can alternately be provisioned or removed by creating an entry in the SC2D table.

Use a CLI command similar to the following to provision the SC2D code:

add sc2d sub-id=sub_1; dnx=4692551001;

Use a CLI command similar to the following to remove provisioning for the SC2D code:

add sc2d sub-id=sub_1; dnx=NULL;

Note dnx can be one of {dn20, dn21, …, dn49}.

Note For a Centrex user, the sub-id should be the main subscriber id defined in the Centrex-grp table.

Split NPA

This feature allows the conversion of a specific NPA (Numbering Plan Area) or a NPA-NXX to a new NPA via a series of 4 command steps, as described below. This feature was designed to facilitate the operation of dividing an area served by one NPA into smaller areas served by different NPAs (such action is required when an area is running out of telephone numbers based on a particular NPA and new NPAs are introduced).

For the Split NPA procedure to be initiated, first a permissive period is established. During this period, the numbers that are scheduled to be served by a new NPA should be able to be reached using both the old NPA and the new NPA. Once the permissive period ends, these numbers should be reached only through the new NPA (these numbers cannot be reached via the old NPA, and the old NPA dialing plan becomes vacant and available for assignment to different subscribers).

Tip For a complete description of this feature, see Split NPA in the *Network and Subscriber Feature Descriptions*.

In the following example, we split 972-516 to 214-516:

Step 1 Add the split NPA into the system, and give start and end dates for the split.

```
add split-npa old-npa=972-516; new-npa=214-516; start-date=2003-10-01;
end-date=2003-12-01;
```

Step 2 Perform the duplicate_records action on the NPA. Tables that contain records whose digit strings are like the old NPA have an additional record created.

```
change split-npa old-npa=972-516; duplicate_records=Y;
```

Step 3 After the start date, perform the update-ani action to change duplicate records to reflect the new NPA:

```
change split-npa old-npa=972-516; update-ani=Y;
After the end date, perform the cleanup action to delete records with the old NPA.
change split-npa old-npa=972-516; cleanup=Y;
```

T.38 Fax Relay

The T.38 Fax Relay feature provides standards-based fax relay protocol support on Cisco 3600 series, and Cisco MC3810 series and C5850 multiservice gateways. The Cisco proprietary fax relay solution is sometimes not an ideal solution for enterprise and service provider customers who have implemented a mixed vendor network. Because the T.38 Fax Relay protocol is standards based, Cisco gateways and gatekeepers will not be able to interoperate with third-party T.38-enabled gateways and gatekeepers in a mixed vendor network where realtime fax relay capabilities are required.

Use the T.38 fax provisioning procedure applicable to the software release you are using:

- T.38 Fax Relay for Release 4.4.x, page 7-120
- T.38 Fax Relay for Release 4.5.x, page 7-122

T.38 Fax Relay for Release 4.4.x

Table 7-1 shows the different fax configuration types.

Table 7-1 Fax Configuration Types

Fax Type	CA (MGW profile)	MGCP (GW profile)
Passthru Using a Cisco proprietary modem—passthru NSE	FAX-INBAND=y	#mgcp modem passthrough VOIP mode NSE
T 38 Relay • t38 (CA controlled) mgcp preferred • t38 (GW controlled) proprietary	 FAX-CA mode=y FAX-GW mode=y	 #mgcp package fxr-package #mgcp fax t38
QoS—fax preferred mode • MGW/IOS pref=gw controlled		

Note An MGCP to MGCP T.38 CA configuration requires an MGW configuration.

Tip For a complete description of this feature, see T.38 Fax Relay in the *Network and Subscriber Feature Descriptions*.

To provision T.38 Fax Relay for an MGCP-to-MGCP scenario, perform the following steps:

Step 1 Add an H323 trunk group profile:

add H323-tg-profile id=trunk-profile-1; ras=Y; H323-tcp-timer=10; dtmf-cisco-rtp-supp=N; dtmf-H245-alpha-supp=Y; dtmf-H245-signal-supp=N; dtmf-RFC2833=N; dtmf-pref-mode=dtmf-H245-alpha; fax-T38-gwmode-supp=N; fax-T38-camode-supp=Y; fax-inband-supp=N; fax-pref-mode=fax-T38-camode; H245-session-mode=H245-flowaround; call-connect-mode=auto; H245-tunneling=auto; send-call-proceeding=auto;

Step 2 If you are using Release 4.2 or later of the Cisco BTS 10200 Softswitch, add an H.323 terminal profile:

add H323-term-profile id=term-profile-1; ras=Y; H323-tcp-timer=10; dtmf-cisco-rtp-supp=N; dtmf-H245-alpha-supp=Y; dtmf-H245-signal-supp=N; dtmf-RFC2833=N; dtmf-pref-mode=dtmf-H245-alpha; fax-T38-gwmode-supp=N; fax-T38-camode-supp=Y; fax-inband-supp=N; fax-pref-mode=fax-T38-camode; src-circuit-id-supp=Y; dst-circuit-id-supp=Y; video-supp=Y; H245-session-mode=H245-flowaround; call-connect-mode=auto; H245-tunneling=auto; send-call-proceeding=auto; use-sub-dn=Y;

Step 3 Add T.38 fax relay to the media gateway profile:

```
change mgw-profile id=iad2421; mgcp-variant=none; fax_T38_camode_supp=Y;
```

Step 4 Add T.38 fax relay to the Quality of Service table:

```
change qos id=PCMU; fax_pref_mode=fax_T38_camode;
```

T.38 Fax Relay for Release 4.5.x

This section explains how to configure T.38 fax relay call agent mode across several interfaces.

Note These tasks include examples of CLI commands that illustrate how to provision the specific feature. Most of these tables have additional tokens that are not included in the examples. For a complete list of all CLI tables and tokens, see the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide*.

Configuring T.38 Fax Relay

This section describes the steps required to configure T.38 fax relay for different trunk groups, gateways and tables.

Administrator may configure profile information on the Cisco BTS 10200 for each managed MGCP/NCS endpoint to:

- Handle fax using existing audio media (fax pass-through).
- Handle fax using Cisco-proprietary Gateway mode. (Only if supported on the endpoint. Cisco currently does not support this in context of the FXR Package).
- Handle fax using T.38-Loose mode for fax handling, as defined by the MGCP FXR package.
- Allow Cisco BTS 10200 to determine the fax procedure to apply based on the capabilities of the two remote endpoints involved in the fax.

CLI Examples

	Command or Action	Purpose
Step 1	For the MGCP / NCS / TGCP Interface T38_ FXR _LOOSE _SUPP, if the Ternary flag in MGW-PROFILE table is 'Y': • Cisco BTS 10200 indicates to endpoint during call setup to use T.38 CA-control mode with 'T.38 Loose' procedure. • Cisco BTS 10200 requests notification of T.38 fax events. If 'N': • Endpoints pre-configured to handle fax using pass-through or some local gateway mode outside of FXR. • Cisco BTS 10200 is unaware of fax transmission. FUTURE USE: FAX_INBAND_METHOD flag will define what to do in this case. T.38 fax transmission is still possible if the fax-detection occurred at the other endpoint.	Provisioning MGCP / NCS / TGCP Interface T38_ FXR _LOOSE _SUPP
Step 2	For the MGCP / NCS / TGCP Interface T38_ FXR _LOOSE _SUPP: • 'Auto' (default) internally sets 'Y' or 'N' depending if endpoint supports T.38 fax as indicated by audit endpoint acknowledgement. • If endpoint supports T.38 FXR package, but does not support advertising this in audit acknowledgement, the Cisco BTS 10200 assumes it is not supported.	Provisioning MGCP / NCS / TGCP Interface T38_ FXR _LOOSE _SUPP

	Command or Action	Purpose
Step 3	For the MGCP / NCS / TGCP Interface, SDP-CAP-ENCODE-TYPE: • In MGW Profile table: – This parameter enables selection of what format to encode the SDP capabilities attributes towards the endpoint when the attributes are received. • 'Cisco' – Cisco proprietary method of encoding SDP capability parameters using "x-" extension prefix. • 'STD' – Encode using the format detailed in RFC-3407. • 'Auto' (default) – Encode the format that was received from the remote end. Therefore, no changes. Cisco BTS 10200 SIP interface always encodes using RFC-3407.	For the MGCP / NCS / TGCP Interface, SDP-CAP-ENCODE-TYPE.
Step 4	QOS Table FAX_T38_ENABLED Binary flag (Y/N) with default = 'Y'. QOS is optional for endpoints and trunks. If no QOS, or this flag set all 'Y' (default), then this flag does not change T.38 Fax feature behavior. MGCP/TGCP/NCS/H.323 endpoints: If either endpoint in the call (including SIP) has a QOS entry and this flag set to 'N', then BTS will indicate to each MGCP/H.323 endpoint to NOT use T.38 procedures regardless of T.38 loose flag set in MGW profile. MGCP type endpoints may still perform T.38 fax transmission if the other end is detecting fax and is off-net SIP. SIP-to-SIP and H.323-to-H.323 calls ignore this flag.	

Provisioning the MGCP / NCS / TGCP Interface T38_ FXR _LOOSE _SUPP

Step 1 In MGW Profile table:

- This parameter enables selection of what format to encode the SDP capabilities attributes towards the endpoint when the attributes are received.

Step 2 'Cisco'

- Cisco proprietary method of encoding SDP capability parameters using “x-” extension prefix.

Step 3 ‘STD’

- Encode using the format detailed in RFC-3407.

Step 4 ‘Auto’ (default)

- Encode the format that was received from the remote end. Therefore, no changes.
- ‘Auto’ (default) internally sets ‘Y’ or ‘N’ depending if endpoint supports T.38 fax as indicated by audit endpoint acknowledgement.
- If endpoint supports T.38 FXR package but does not support advertising this in audit acknowledgement, the Cisco BTS 10200 assumes it is not supported.

Cisco BTS 10200 SIP interface always encodes using RFC-3407.

Provisioning the MGCP / NCS / TGCP Interface SDP-CAP-ENCODE-TYPE

Step 1 In MGW Profile table:

- This parameter enables selection of what format to encode the SDP capabilities attributes towards the endpoint when the attributes are received.

Step 2 ‘Cisco’

- Cisco proprietary method of encoding SDP capability parameters using “x-” extension prefix.

Step 3 ‘STD’

- Encode using the format detailed in RFC-3407.

Step 4 ‘Auto’ (default)

- Encode the format that was received from the remote end. Therefore, no changes.

Cisco BTS 10200 SIP interface always encodes using RFC-3407.

Provisioning the QoS Table

Step 1 FAX_T38_ENABLED

Step 2 Binary flag (Y/N) with default = ‘Y’.

Step 3 QOS is optional for endpoints and trunks.

Step 4 If no QOS, or this flag set all ‘Y’ (default), then this flag does not change T.38 Fax feature behavior.

Step 5 MGCP/TGCP/NCS/H.323 endpoints:

- If either endpoint in the call (including SIP) has a QOS entry and this flag set to ‘N’, then BTS will indicate to each MGCP/H.323 endpoint to NOT use T.38 procedures regardless of T.38 loose flag set in MGW profile.
- MGCP type endpoints may still perform T.38 fax transmission if the other end is detecting fax and is off-net SIP.

Step 6 SIP-to-SIP and H.323-to-H.323 calls ignore this flag.

Provisioning H.323 Interface

Step 1 To provision the H.323 Interface, use the REMOTE_FAX_PORT_ RETRIEVAL_MSG Field in H323-TG-Profile and H323-TERM-Profile.

- H.323 gateway can report UDP port for T.38 fax transmission in either H.245 OLC (default) or OLC ACK.
- Indicates which field BTS should look into for this value.
- Cisco IOS H323 GW report in OLC.

Provisioning H.323 Interface: CA-CONFIG Table

Step 1 Cisco BTS 10200 global values are used by H.323 interface to negotiate the T.38 fax connection during voice call establishment when inter-working with a non-H323 endpoint.

Step 2 T38_MAX _BIT_RATE:

Default 14.4

Step 3 T38_MAX _BUFFER_SIZE:

Default 200

Step 4 T38_MAX _DATAGRAM_SIZE:

Default 72

Provisioning CA-CONFIG Table

Step 1 CODEC-T38-PTIME

T.38 codec packetization period.

Default = 20.

Temporary Disconnect

Beginning with Release 4.5, the Temporary Disconnect (TDISC) feature allows a service provider to temporarily disconnect a subscriber from the phone service for non-payment or other special reasons.

Note For a complete description of this feature, see Temporarily Disconnected Subscriber Status and Soft Dial Tone in the *Network and Subscriber Feature Descriptions*.

The following procedure performs a TDISC for a subscriber.

Step 1 Add a cos-restrict table entry and customize restriction behavior as needed:

```
add/change cos-restrict id=tdisc-restricts;
```

Step 2 Associate cos-restrict to a POP.

```
add/change pop id=new; temp-disc-cos-restrict-id=tdisc-restricts;
```

Step 3 Configure service-denial behavior as needed.

```
add/change pop id=new; temp-disc-service-allowed=N;
```

Step 4 Optionally, apply any additional call-types for which COS feature should not be triggered/invoked.

Note This behavior applies to COS feature in general, independent of subscribers operational status.

```
add/change trigger-nod-escape-list tid=COS-TRIGGER; nod=EMG;
```

Step 5 Setup release-cause to announcement mappings

```
add release-cause id=1270; annc-id=570;
add release-cause id=151; annc-id=20;
```

Step 6 Setup announcements for TDISC:

```
add announcement ID=570; TYPE=SYSTEM; SEND_ANSWER=N; NUM_REPEAT=1;
ANNOUNCEMENT_FILE=ann_id_570.au; ROUTE_GUIDE_ID=annc1; ANNOUNCEMENT_NUMBER=20;
ANNOUNCEMENT_TIMER=180;

add announcement ID=20; TYPE=SYSTEM; SEND_ANSWER=N; NUM_REPEAT=1;
ANNOUNCEMENT_FILE=ann_id_20.au; ROUTE_GUIDE_ID=annc1; ANNOUNCEMENT_NUMBER=20;
ANNOUNCEMENT_TIMER=180;
```

Step 7 In general for TDISC feature capability at switch level, configure the COS feature as part of default Office service ID.

If "office-service" is the name for the default office-service configured in CA-CONFIG, ensure availability of the COS feature in the default office service.

```
change service id=office-service; fname1=COS;
```

Subscriber Provisioning

Step 1 Set subscriber status as necessary. To achieve a TDISC on a subscriber, set the status field as TEMP-DISCONNECTED. To undo the TDISC status, change the TDISC status to another appropriate permissible value.

```
Add/change subscriber id=sub1; status=TEMP-DISCONNECTED;
```

Centrex Provisioning

Centrex provisioning is similar to subscriber provisioning and basic Centrex provisioning.

MLHG Provisioning

MLHG provisioning is similar to subscriber provisioning

Three-Way Calling (TWC)

Three-Way Calling(TWC) is a service that permits three people at three different locations to talk together at the same time. Whether you make or receive the initial call, you can use TWC to add a third person to the call. You can continue the call if either of the other parties hangs up. However, when you hang up, the other two people will be disconnected because you control the TWC service.

Once a TWC is initiated, all the parties in the call can simultaneously hear what the other parties are communicating.

Tip For a complete description of this feature, see Three-Way Calling in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the TWC feature to be offered.

Office Provisioning

Step 1 Provision the Feature table:

```
add feature FNAME=TWC; TDP1=O_MID_CALL; TID1=O_SWITCH_HOOK_FLASH_IMMEDIATE;  TTYPE1=R;
TDP2=T_MID_CALL; TID2=T_SWITCH_HOOK_FLASH_IMMEDIATE; TTYPE2=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Three-Way Calling Feature;
```

Step 2 Provision the Service table:

```
add service id=2; FNAME1=TWC;
```

Subscriber Provisioning

Step 1 Provision the subscriber-service-profile:

```
add subscriber-service-profile  sub_id=sub_1; service-id=2;
```

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

Three-Way Calling Deluxe (TWCD)

TWCD allows a user to add a third party to an existing two party conversation without operator assistance. The user subscribed to TWCD can use this feature regardless of which party originated the two-party call.

Tip For a complete description of this feature, see Three-Way Calling Deluxe in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the TWCD feature to be offered.

Office Provisioning

Step 1 Provision the Feature table:

```
add feature FNAME=TWCD; TDP1=O_MID_CALL; TID1=O_SWITCH_HOOK_FLASH_IMMEDIATE;  TTYPE1=R;
TDP2=T_MID_CALL; TID2=T_SWITCH_HOOK_FLASH_IMMEDIATE; TTYPE2=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Residential Three-Way Calling Deluxe Feature;
```

Step 2 Provision the Service table:

```
add service id=2; FNAME1=TWCD;
```

Subscriber Provisioning

Step 1 Provision the subscriber-service-profile:

```
add subscriber-service-profile  sub_id=sub_1; service-id=2;
```

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

Unified Messaging

This feature allows voice mail calls to be routed to a Unified Messaging System. The user can also activate the call forward feature to the UM system.

Usage Sensitive Three-Way Calling (USTWC)

USTWC allows a user to add a third party to an existing two party conversation. It provides all the functionality of TWC without requiring the user to subscribe to the service.

Tip For a complete description of this feature, see Usage Sensitive Three-Way Calling in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the USTWC feature to be offered.

Office Provisioning

Step 1 Provision the Feature table:

```
add feature FNAME=USTWC; TDP1=O_MID_CALL; TID1=O_SWITCH_HOOK_FLASH_IMMEDIATE;  TTYPE1=R;
TDP2=T_MID_CALL; TID2=T_SWITCH_HOOK_FLASH_IMMEDIATE; TTYPE2=R;
FEATURE_SERVER_ID=FSPTC235; DESCRIPTION=Usage Sensitive Three-Way Calling Feature;
```

Step 2 Provision the Service table:

```
add service id=999; FNAME1=USTWC;
```

Step 3 Provision the CA-config table:

```
add ca-config TYPE=DEFAULT-OFFICE-SERVICE-ID; DATATYPE=STRING; VALUE=999;
```

Subscriber Provisioning

Step 1 Change the subscriber's Usage Sensitivity feature applicability flag:

```
change subscriber id=sub_1@abcd; USAGE-SENS=Y;
```

Step 2 (Optional) Customize the feature denied flag for the subscriber as per individual requirements:

```
change subscriber-feature-data sub-id=subscriber_1; fname=USTWC; type1=DENIED value1=Y;
```

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

Voice Mail (VM), Voice Mail Always (VMA), A/D/I (VM_ACT, VM_DEACT, VMA_ACT, VMA_ACT, VMA_DEACT) and Voice Mail Access (VM_ACCESS)

The stand-alone call redirection to voice mail feature forwards calls when a subscriber is either busy, away from the phone, or sends calls directly to voice mail where the caller can record a message. The subscriber may later retrieve the message from the voice mail server.

Note For a complete description of this feature, see Voice Mail and Voice Mail Always in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for this feature to be offered

Office Provisioning Voice Mail A/D/I

Step 1 Create a feature for VM_ACT:

```
add/change feature FNAME=VM_ACT;  TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235;
```

Step 2 Create a feature for VM_DEACT:

```
add/change feature FNAME=VM_DEACT;  TDP1=COLLECTED_INFORMATION;
TID1=VERTICAL_SERVICE_CODE; TTYPE1=R; FEATURE_SERVER_ID=FSPTC235;
```

Step 3 Create a feature for VM_ACCESS:

```
add/change feature FNAME=VM_ACCESS;  TDP1=COLLECTED_INFORMATION;
TID1=VERTICAL_SERVICE_CODE; TTYPE1=R; FEATURE_SERVER_ID=FSPTC235;
```

Step 4 Create a feature for VM:

```
add/change feature FNAME=VM;  TDP1=T_BUSY; TID1=T_BUSY; TTYPE1=R; TDP2=CALL_ACCEPTED;
TID2=CALL_ACCEPTED; TTYPE2=R;TYPE1=TO; VALUE1=30; TYPE2=MCF; VALUE2=Y; FNAME1=VM_ACT;
FNAME2=VM_DEACT; FEATURE_SERVER_ID=FSPTC235;
```

Step 5 Define VSC codes for these features:

```
add/change vsc; fname=VM_ACT; DIGIT_STRING=*210;

add/change vsc; fname=VM_DEACT; DIGIT_STRING=*211;

add/change vsc; fname=VM_ACCESS; DIGIT_STRING=*222;
```

Step 6 Combine the features defined above into a service:

```
add/change service id=vm_busy_na; FNAME1=VM; fname2=VM_ACCESS;
```

Office Provisioning Voice Mail Always A/D/I

Step 1 Create a feature for VMA_ACT:

```
add/change feature FNAME=VMA_ACT;  TDP1=COLLECTED_INFORMATION; TID1=VERTICAL_SERVICE_CODE;
TTYPE1=R; FEATURE_SERVER_ID=FSPTC235;
```

Step 2 Create a feature for VMA_DEACT:

```
add/change feature FNAME=VMA_DEACT;  TDP1=COLLECTED_INFORMATION;
TID1=VERTICAL_SERVICE_CODE; TTYPE1=R; FEATURE_SERVER_ID=FSPTC235;
```

Step 3 Create a feature for VMA:

```
add/change feature FNAME=VMA;  TDP1=TERMINATION_ATTEMPT_AUTHORIZED;
TID1=TERMINATION_ATTEMPT_AUTHORIZED; TTYPE1=R; TYPE1=MCF; VALUE1=Y; FNAME1=VMA_ACT;
FNAME2=VMA_DEACT; FEATURE_SERVER_ID=FSPTC235;
```

Step 4 Define VSC codes for these features:

```
add/change vsc; fname=VMA_ACT; DIGIT_STRING=*220;

add/change vsc; fname=VMA_DEACT; DIGIT_STRING=*221;
```

Step 5 Combine the features defined above into a service:

```
add/change service id=vm_always;
FNAME1=VMA; fname2=VM_ACCESS;
```

Provisioning Resources

The following table shows how to create the app-server table for a subscriber. The next step shows the multiple ways by which this can be associated to the subscriber. The app-server can be associated to the subscriber through four tables:

- Subscriber table: by populating the VOICE_MAIL_ID with the app-server id.
- Subscriber-profile table: by populating the VOICE_MAIL_ID with the app-server id
- Pop table: by populating the VOICE_MAIL_ID with the app-server id
- Ca-config table

Step 1 Created the VM table entry:

```
add app-server; id=vm_as; APP_SERVER_TYPE=VM; APP_SERVER_DN=9722331287;
APP_SERVER_ACCESS_DN=9722331287; DESCRIPTION=VM App Server;
```

Step 2 Associate the app-server to the sub via the subscriber table:

```
change sub; id=<sub>; VOICE_MAIL_ID=vm_as;
```

Step 3 Associate the app-server to the sub via the sub-profile table:

```
change sub-profile; id=<sub-profile>; VOICE_MAIL_ID=vm_as;
```

Step 4 Associate the app-server to the sub via the pop table:

```
change pop; id=<pop>; VOICE_MAIL_ID=vm_as;
```

Step 5 Associate the app-server to the sub via the ca-config table:

```
Add ca-config; type=default-voice-mail-id; value=vm-as;
```

Subscriber Provisioning

Step 1 Assign the service to a subscriber:

```
add/change sub-service-profile; sub-id=[sub]; service-id=vm_always;
```

Step 2 Assign the service to a subscriber:

```
add/change sub-service-profile; sub-id=[sub]; service-id=vm_busy_na;
```

Centrex Provisioning

Step 1 Define the star codes in the CDP table for Centrex subscribers:

```
add/change cdp; id=[cdp-id]; fname=VM_ACT; DIGIT_STRING=*210; nod=VSC;
CAT_STRING=1111111111111111;

add/change cdp; id=[cdp-id]; fname=VM_DEACT; DIGIT_STRING=*211; nod=VSC;
CAT_STRING=1111111111111111;

add/change cdp; id=[cdp-id]; fname=VM_ACCESS; DIGIT_STRING=*222; nod=VSC;
CAT_STRING=1111111111111111;
```

Step 2 Define the star codes in the CDP table for Centrex subscribers:

```
add/change cdp; fname=VMA_ACT; DIGIT_STRING=*220; nod=VSC; CAT_STRING=1111111111111111;

add/change cdp; fname=VMA_DEACT; DIGIT_STRING=*221; nod=VSC; CAT_STRING=1111111111111111;
```

Alternate Way of Activating and Deactivating VM and VMA

Step 1 Activate VM (Busy, No Answer) for the subscriber:

```
add/change sub-feature-data; sub-id=sub1; fname=VM; ACTIVE=Y;
```

Step 2 Deactivate VM (Busy, No Answer) for the subscriber:

```
add/change sub-feature-data; sub-id=sub1; fname=VM; ACTIVE=N;
```

Step 3 Activate VM (Always) for the subscriber:

```
add/change sub-feature-data; sub-id=sub1; fname=VMA; ACTIVE=Y
```

Step 4 Deactivate VM (Always) for the subscriber:

```
add/change sub-feature-data; sub-id=sub1; fname=VMA; ACTIVE=N;
```

Warmline (WARMLINE)

The Warmline feature is a combination of a hotline and a regular telephone line.

Tip For a complete description of this feature, see Warmline Services in the *Network and Subscriber Feature Descriptions*.

The following subsections identify necessary steps for the Warmline feature to be offered.

Office Provisioning

Step 1 Register the feature in the Office:

```
add feature FNAME=WARMLINE; tdp1=O_ATTEMPT_AUTHORIZED; tid1=O_ATTEMPT_AUTHD; ttype1=R;
feature_server_id=FSPTC235; description=Warmline; grp_feature=N;
```

Step 2 Provision the service in the Office:

```
add service id=special-srv; fname1=WARMLINE;
```

Note This feature may be assigned to any of the fnameN tokens

Step 3 Change the warmline dial-tone timeout parameter, if required.

```
change feature FNAME=WARMLINE; type1=TO; value1=6;
```

Provisioning Resources

Step 1 The mgw-profile of the media gateway to which the subscriber line is associated must have its MGCP version set as “non-0.1”:

```
add mgw-profile id=plano-iad; mgcp-version=MGCP_1_0;
```

Note MGCP 0.1 version does not support TO signal completion report.

Step 2 Set the dial tone timeout as a supported feature by the MGW:

```
Add/change mgw-profile id=plano-iad; mgcp-dialtone-to-supp=Y;
```

Subscriber Provisioning

Step 1 Add the service to the subscriber's service profile:

```
add subscriber-service-profile sub-id=sub1_plano.com; service-id=special-srv;
```

Step 2 Add the warmline timeout target DN to the subscriber's feature data:

```
add subscriber-feature-data sub-id=sub1_plano.com; fname=WARMLINE; type1=FDN1;
value1=9726712355;
```

Centrex and MLHG provisioning is similar to subscriber provisioning as described above.

Time and Weather Number

To set up a time and weather number, complete the following steps:

Step 1 A time and weather dial plan must be created for the feature to work. To add a dial plan for time and weather, enter the following command:

```
add dial-plan id=dp1; digit-string=301=844; REQD_DIGITS=10; DEST_ID=inter-rte-3333;
```

Note A dial plan profile must be added before you can add a dial plan. See Add a Dial Plan Profile, page 3-4 for the procedures for adding a dial plan and dial plan profile.

Step 2 To add a special call type for time and weather (TW), enter the following command:

```
add special-call-type digit-string=844; call-type=TW; description=Time and Weather;
```

Step 3 Verify that a digit-string for time and weather was added with a call type of TW by entering the following command:

```
CLI> show special-call-type digit_string=844;

Reply: Success: 1 entry found.

DIGIT_STRING=844;
CALL_TYPE=TW
DESCRIPTION=Time and Weather
```

Provision an Office Service ID for a POP (Release 4.5)

Beginning in Release 4.5, it is possible to provision the office-service-id in the POP table. If office-service-id is not provisioned in the POP table, the system uses the default-office-service-id provisioned in the Ca-config table.

Tip For a complete description of this feature, see Office Service ID and Default Office Service ID in the *Network and Subscriber Feature Descriptions*.

Use the following procedure to provision a specific office service ID for an individual POP:

Step 1 Add the service ID by entering a command similar to the following:

```
add service id=noLNP; fname1-8xx; fname2=911; fname3=USTWC;
```

Step 2 Add the office service ID to the POP:

```
change pop id=pop1; office-service-id=noLNP;
```