



Cisco BTS 10200 Softswitch Account and Authorization Codes, Speed Call, and MLHG for SIP Endpoints Feature Module

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This document describes the business and commercial features for SIP endpoints in Release 6.0 of the Cisco BTS 10200 Softswitch and explains how to provision them.

The features described in this document are available to Centrex subscribers only, including subscribers that are members of both a Centrex group and a multiline hunt group (MLHG).

How to Use This Document

In Release 6.0 and later, the following business and commercial functions are supported for SIP-based endpoints. This support is similar to the existing support that is provided for network-based call signaling (NCS) and MGCP endpoints. Go to each section for feature descriptions and provisioning procedures.

- [Collection of Account and Authorization Codes, page 2](#)
- [1-Digit and 2-Digit Speed Call and Group Speed Call, page 4](#)
- [Multiline Hunt Group, page 5](#)



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Collection of Account and Authorization Codes

For a description of the account code and authorization code features, see the [Class of Service \(CoS\) section](#) in the *Cisco BTS 10200 Softswitch Network and Subscriber Feature Descriptions* document.

For SIP endpoints, the system uses only the *Interactive Voice Response (IVR)-based* method of prompting, not the tone-based method. For account codes and authorization codes, the system applies IVR-based prompts for SIP endpoints, regardless of the values you provision for the PROMPT_METHOD parameter in the cos-restrict table.

To provision these features, see the [“Class of Service Screening” provisioning procedure](#) in the *Cisco BTS 10200 Softswitch Provisioning Guide*. In addition, review the examples below.

Account Code Provisioning Example

In this example, note that ACCT_CODE_ALLOW is set to Y. This causes the system to prompt the caller for an account code.

```
add cos_restrict ID=Acct_Code; 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=N;
BLOCK_INFO=N;
BLOCK_TW=N;
BLOCK_INTL=N;
NOD_WB_LIST=NONE;
PROMPT_METHOD=TONE; <<< For SIP endpoints, the system ignores this value.
ALLOW_CALLS_ON_IVR_FAILURE=N;
```

```
Change subscriber id=212-555-1206; cos_restrict_id=Acct_Code;
```

Authorization Code Provisioning Example

In this example, note that AUTH_CODE_ALLOW is set to Y. This causes the system to prompt the caller for an authorization code.

```
add cos_restrict ID=Auth_Code;
CASUAL_RESTRICT_TYPE=ALL_CICS_ALLOWED;
NATIONAL_RESTRICT_TYPE=LOCAL_ONLY;
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=N;
AUTH_CODE_ALLOW=Y;
AUTH_CODE_LENGTH=23;
AUTH_CODE_GRP_ID=ivr23d;
BLOCK_INFO=N;
BLOCK_TW=N;
```

```
BLOCK_INTL=N;  
NOD_WB_LIST=NONE;  
PROMPT_METHOD=TONE; <<< For SIP endpoints, the system ignores this value.  
ALLOW_CALLS_ON_IVR_FAILURE=N;
```

```
Change subscriber id=212-555-1207; cos_restrict_id=Auth_Code;
```

1-Digit and 2-Digit Speed Call and Group Speed Call

This section describes speed call 1-digit (SC1D), speed call 2-digit (SC2D), group speed call 1-digit (GSC1D) and group speed call 2-digit (GSC2D). Speed call features for SIP endpoints behave in a manner similar to that for MGCP and NCS endpoints. The specific similarities and differences are as follows:

- Feature invocation for SIP endpoints is identical to invocation for MGCP and NCS endpoints.
- For MGCP and NCS endpoints, subscriber data provisioning (speed call digits and DN) is performed by the end user on the handset. However, for SIP endpoints, handset provisioning is not supported; therefore the service provider should perform this provisioning through CLI commands. The examples below show you how to do this.

```
add sc1d sub-id=406-555-1805; dn2=654-555-1222;
(Repeat as needed for DN3–DN9.)
```



Caution

For Centrex groups, use only DN2–DN7. Otherwise there could be a conflict with other features that begin with dialing 8 or 9. However, if you have provisioned the multiline variety package (MVP) feature for the Centrex group, and you are *not* using digit 8 for extension dialing and *not* using digit 9 for PSTN access, you can use DN8 and DN9 for speed call.

```
add sc2d sub-id=406-555-1806 dn20=654-555-1333;
(Repeat as needed for DN21–DN49.)
```



Note

You can use the same command, **add sc1d**, to provision the 1-digit speed call DN for either individual or group speed call; similarly, use **add sc2d** to provision the 2-digit speed call DN for either individual or group.

For a general description of the speed call and group speed call features, see [Chapter 3, “Subscriber Features,”](#) in the *Cisco BTS 10200 Softswitch Network and Subscriber Feature Descriptions* document. For the general provisioning procedure see [Chapter 7, “Features,”](#) in the *Cisco BTS 10200 Softswitch Provisioning Guide*.

Multiline Hunt Group

Feature Description

This section describes multiline hunt group (MLHG) capabilities for SIP endpoints in Release 6.0.

MLHG Support for SIP Endpoints

Beginning with Release 6.0, the BTS 10200 supports the multiline hunt group (MLHG) feature for SIP endpoints. It continues to support MLHG for NCS and MGCP endpoints as in prior releases. A MLHG can contain a combination of SIP, NCS, and MGCP phones, and you can provision any of these phone types for the main subscriber.

If a SIP endpoint in the MLHG is not registered, the BTS 10200 performs a hunt and delivers the incoming call to an idle line in the MLHG. This treatment is the same for calls to SIP-based individual members of the MLHG as well as calls to the pilot number associated with a SIP-based main subscriber.

You can provision a SIP endpoint as a nonhunt terminal through the `mlhg_non_hunt_terminal` parameter in the Subscriber table. By default, this option is disabled (`mlhg_non_hunt_terminal=N`). If you set `mlhg_non_hunt_terminal=Y`, incoming calls to the individual subscriber's DN do not invoke hunting. (This is a new feature for Release 6.0, and it is *applicable to MGCP and NCS endpoints as well as SIP endpoints.*)

Some SIP endpoints can handle multiple calls through the call processing capability on the phone itself (for example, the call waiting feature on the phone). The system tracks the presence of calls on each AOR associated with the SIP subscriber in the MLHG. A provisionable parameter (`mlhg_sip_deliver_if_busy` in the Subscriber table) allows a call to be delivered to a busy SIP endpoint when all MLHG lines are busy. This feature is invoked in the following situation:

- The BTS 10200 receives an incoming call, and the dialed DN is the DN of a SIP-based subscriber (the called party). The subscriber could be either the main subscriber or an individual group member.
- The `mlhg_sip_deliver_if_busy` parameter is set to Y for this subscriber.
- This subscriber is already on a call (busy).
- The system performs a hunt in the normal manner, but all of the lines in the MLHG are currently busy.
- The system attempts to deliver the call to the original called party with the expectation that the call can be connected as an additional call to the busy SIP phone.

By default, the delivery of calls to a busy SIP endpoint is disabled (`mlhg_sip_deliver_if_busy=N`). For SIP endpoints, you can enable it by setting `mlhg_sip_deliver_if_busy=Y`. If the busy SIP endpoint rejects the incoming call (with a non-200 response to the initial INVITE), the system fails the call with a BUSY cause.

Limitations

If you want an individual MLHG member to inherit all the features of the MLHG main subscriber, you should set the parameter `grp=Y` for this MLHG member in the Subscriber table. However, feature inheritance works only if the `term_type` of the individual MLHG subscriber and the MLHG main subscriber are the same, either `term_type=term` or `term_type=sip` (that is, both are NCS/MGCP or both are SIP). Otherwise the system treats the subscriber as `grp=N`, even if you have provisioned `grp=Y`.

General MLHG Information

For a general description of MLHG features, see [Chapter 3, “Subscriber Features,”](#) in the *Cisco BTS 10200 Softswitch Network and Subscriber Feature Descriptions* document.

MLHG Provisioning for SIP Endpoints

This section demonstrates how to provision SIP subscribers to be members of a MLHG. It is similar to the procedure for [provisioning MGCP and NCS subscribers in a MLHG](#), but includes several values specific to SIP subscribers.

-
- Step 1** Office provisioning—If you have not already provisioned the following office parameters on your system, enter commands similar to those in the following examples.
- ```
add call_agent id=CA146; tsap_addr=prica88;

add dial_plan_profile id=BASIC_DPP;

add pop id=1; state=TX; country=USA; timezone=CST;


add serving_domain_name domain_name=prica88; auth_reqd=N;

add destination dest_id=DEST_LOCAL; call_type=LOCAL; route_type=SUB;

add subscriber_profile id=SUB_PROFILE; pop_id=1; dial_plan_id=BASIC_DPP;
```
- Step 2** Office code and dial plan provisioning—If you have not already provisioned office code and dial plan parameters on your system, enter commands similar to those in the following examples.
- ```
add ndc digit_string=777;

add exchange_code ndc=777; ec=555;

add office_code ndc=777; ec=555; dn_group=xxxx; call_agent_id=CA146;

add dial_plan id=BASIC_DPP; digit_string=777555; min_digits=10;
dest_id=DEST_LOCAL;
```
- Step 3** Add the main subscriber for the MLHG (the subscriber associated with the pilot number for the MLHG). This command example is for a SIP-based main subscriber.
-  **Note** Enter term_type=SIP if you want to have a physical SIP endpoint associated with the pilot number. Enter term_type=NONE if you do not want a physical endpoint associated with the pilot number. Enter category=mlhg to identify this subscriber as the main subscriber for the MLHG. (The system does not allow you to enter the MLHG ID yet. This will be done in a later step.)
- ```
add subscriber id=7775559900; name=7775559900; billing_dn=7775559900;
dn1=7775559900; sub_profile_id=SUB_PROFILE; term_type=SIP; policy_id=NULL;
aor_id=7775559900@prica88; category=MLHG;
```
- Step 4** Add an individual subscriber for the MLHG. This command example is for a SIP-based MLHG individual subscriber. Repeat this command as needed to provision additional subscribers.



**Note** Enter `category=mlhg_individual` to identify this subscriber as a member of the MLHG. (The system does not allow you to enter the MLHG ID yet. This is done in a later step.)

```
add subscriber id=7775559901; name=7775559901; billing_dn=7775559901;
dn1=7775559901; sub_profile_id=SUB_PROFILE; term_type=SIP; policy_id=NULL;
aor_id=7775559901@prica88; category=MLHG_INDIVIDUAL;
```

**Step 5** Enter the following command to create the MLHG and identify the main subscriber as the subscriber you provisioned in [Step 3](#).

```
add mlhg id=MLGROUP0; call_agent_id=CA146; main_sub_id=7775559900;
```

**Step 6** Link the main subscriber record and all of the individual subscriber records to the MLHG.

```
change subscriber id=7775559900; mlhg_id=MLGROUP0;
```

```
change subscriber id=7775559901; mlhg_id=MLGROUP0;
```

**Step 7** If the main subscriber is associated with a physical endpoint (and you entered `term_type=SIP` in [Step 3](#)), add the terminal. You must enter `term_type=SUB_ID` and include the specific subscriber ID for the SIP endpoint. (However, if you entered `term_type=NONE` in [Step 3](#), the main subscriber is virtual and cannot be a terminal; in that case, omit this step and do not add a `mlhg-terminal` for the main subscriber.)

```
add mlhg_terminal mlhg_id=MLGROUP0; terminal=1; term_type=SUB_ID;
sub_id=7775559900;
```

**Step 8** Add a terminal for each MLHG individual. If you entered `term_type=SIP` in [Step 4](#), you must enter `term_type=SUB_ID` and include the specific subscriber ID for the SIP endpoint.

```
add mlhg_terminal mlhg_id=MLGROUP0; terminal=2; term_type=SUB_ID;
sub_id=7775559901;
```



**Note** If you entered `term_type=TERM` in [Step 4](#) (applicable to MGCP and NCS endpoints but not to SIP endpoints), you can enter either `SUB_ID` or `TERM` as the `term_type`, along with appropriate additional parameters, in the `mlhg_terminal` table.

**Step 9** (Optional) If you want to provision a specific subscriber as a nonhunt line (so that calls to this DN do not invoke a hunt under any conditions), enter a command similar to this:

```
change subscriber id=7775559901; mlhg_id=MLGROUP0; mlhg_non_hunt_terminal=Y;
```



**Tip** The `mlhg_non_hunt_terminal` parameter is valid for MGCP, NCS, and SIP subscribers.

**Step 10** (Optional) If you want the system to deliver calls to a SIP endpoint even when all MLHG lines are busy, enter a command similar to this:

```
change subscriber id=7775559901; mlhg_id=MLGROUP0; mlhg_sip_deliver_if_busy=Y;
```

**Step 11** For each SIP subscriber, place the AOR in service.

```
change aor2sub aor_id=7775559900@prica88; status=INS;
```

```
change aor2sub aor_id=7775559901@prica88; status=INS;
```

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