Database Tables

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This chapter addresses only the changed or new database tables used for Cisco BTS 10200 Release 4.5 SIP support. The chapter does not include information on any other Cisco BTS 10200 tables.

For information on how to provision the SIP devices, or how to map the configuration parameters to the Cisco BTS 10200 provisioning tables, refer to the Cisco BTS 10200 Softswitch Phone Mapping in the *Cisco BTS 10200 Softswitch SIP Protocol Provisioning Guide*.

The following tables were updated for Release 4.5:

- Softswitch Trunk Group Profile
- Trunk Group
- Subscriber
- Trigger ID
- Activity and Activity-Base

Additionally, there are new tables in Release 4.5, including:

- Address of Record to Subscriber
- Authentication Realm
- MAC to Subscriber
- Serving Domain Name
- User Authentication
- SIP Timer Profile
- SIP Adaptor Configuration Parameters (CA-CONFIG)

For more information on the changed or new tables, refer to the *Cisco BTS 10200 CLI Guide*. Also refer to the Cisco BTS 10200 Softswitch Phone Mapping section of the *Cisco BTS 10200 SIP Protocol Provisioning Guide*.

Changed Tables

The following two tables were in use by prior releases of Cisco BTS 10200 Softswitch. However, changes were made to the tables.

Softswitch Trunk Group Profile

The Softswitch Trunk Group Profile (SOFTSW-TG-PROFILE) table holds all the information specific to a Softswitch trunk, such as ID, protocol, indicators and echo suppression. Multiple softswitch trunk groups can share the softsw-tg-profile record. An ID must be created in this table before adding entries for SIP trunks to the Trunk Group table.

The following fields were modified for the SOFTSW-TG-PROFILE table:

- SIPT-ISUP-VER
- VOICE-MAIL-TRUNK-GRP
- TRUNK-SUB-GRP-TYPE

Several tokens are obsolete as of Release 4.5.x. See the details in Table 1 below.

Rules

- If PROTOCOL-TYPE=SIP-T, then SIPT-ISUP-VER must be specified. (Release 4.5)
- The SIPT-ISUP-VER token must be defined in the SIPT ISUP Version Base table. (Release 4.5)

Table 1 SOFTSW-TG-PROFILE Table Requirements

Table Name	SOFTSW-TG-PROFILE
Table Containment Area	Call Agent, EMS
Command Line Actions	Show, add, change, and delete

`show softsw-tg-profile id=softprf1;`
`add softsw-tg-profile id=softprf1; protocol-type=sip-t;`
`change softsw-tg-profile id=softprf1; send-cpn=n;`
`delete softsw-tg-profile id=softprf1;`	

Primary Key Token(s)	ID
Add Rules	See Rules, above
Change Rules	None
Delete Rules	ID cannot exist in any TRUNK-GRP::TG-PROFILE-ID where TG-TYPE=SOFTSW.

Table 2 SOFTSW-TG-PROFILE Syntax Description

ID	Primary Key. Unique ID for this trunk group profile. VARCHAR(16): 1 – 16 ASCII characters.
PROTOCOL-TYPE	Specifies the type of signaling for this trunk group. It controls the message type sent between two Cisco BTS 10200 Softswitches. For example, if the protocol-type is SIP-T, then the Cisco BTS 10200 Softswitch sends a SIP-T message, which is a normal SIP ASCII message plus an ISUP MIME attachment. In this case, the origination type can be ISDN, SS7, CAS, MGCP, and so forth. The origination type does not matter. However, if the protocol-type is SIP, then the Cisco BTS 10200 Softswitch sends only an ASCII SIP message without an ISUP MIME attachment. VARCHAR(9): 1–9 ASCII characters. Permitted values are: SIP Signaling via SIP. [1] multimedia sessions across the Internet. SIP_T Signaling using SIP-T protocol. SIP-T is an inter Call Agent protocol; SIP-GTD protocol is a normalized inter Call Agent protocol. CMSS Not supported. CMSS stands for Call Management System Signaling. It is the protocol used for communication between PacketCable Cable (CMS) switches when a call spans across them (similar to Cisco BTS 10200 calls to Cisco BTS 10200 over SIP). CMSS trunk types are used exclusively for CMS switches.
APPLY-USER-PRIVACY (Release 4.5)	Specifies whether to apply user privacy. CHAR(1): Y/N (Default = N). Y—If the originator requested privacy, aspects of the calling party information (such as the calling name and number in the From:header) in the initial outbound SIP INVITE is hidden. Privacy is requested when either the calling party name or number have presentation restrictions. N—User level privacy is not applied.
AUTO-REFRESH	Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable.
DESCRIPTION (EMS-only field)	Described by the service provider. VARCHAR(64): 1–64 ASCII characters.

DISPLAY	Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
DIVERSION-HEADER-SUPP	Indicates if SIP Diversion Header is supported or not. This header conveys diversion information from other SIP user agents and proxies to the called user agent. This information can be used for enhanced features, including Unified Messaging, Third-Party voice mail, and Automatic Call Distribution (ACD). The most common use of the Diversion Header in the Cisco BTS 10200 Softswitch is for call forwarding features. Both tokens can be no (N) but only one can be yes (Y). Not applicable to Release 4.5. CHAR(1): Y/N (Default = N).
DNS-SRV-ADV-ON-RETRANS-TIMEOUT (Release 4.5)	Controls whether the Cisco BTS 10200 Softswitch advances to the next server entry associated with the server (SVR) TSAP address on the trunk, for subsequent retransmission, when a timeout occurs. **Note** This token applies if dns-srv-supp = dns-srv-supp-rfc2782-labels. It does not apply to non-SRV trunks. CHAR(1): Y/N (Default = Y). N—RFC3263 compliant behavior prevails. All retransmissions go to the same server within the list associated with an SRV record. Y—Existing Cisco BTS 10200 Softswitch behavior prevails. Each retransmission goes to a different server in the list associated with the SRV record.
DNS-SRV-SUPP	DNS service (SRV) resolution needed flag. VARCHAR(16): 1–16 ASCII characters. Permitted values are: NONE (Default) RFC2782-LABELS—Prepend the protocol and service labels with an underscore.

DTMF-RELAY-METHOD	Specifies which way to send an out-of-band DTMF Relay. VARCHAR(8): 1–8 ASCII characters. Permitted values are: NONE (DEFAULT) Unsolicited DTMF Relay – Not supported. NOTIFY DTMF Relay supported based on Subscribe / Notify Method. INFO DTMF Relay supported based on INFO Method.
ECHO-SUPP-REQUIRED (Obsolete as of Release 4.5)	Echo Suppression Required indicator. CHAR(1) Y/N (Default = N)
ES-SUPP (Release 4.4.1)	Specifies whether to send CALEA information on a SIP CMSS interface. Used only for a CMSS type trunk group. Set to Y in case the equipment on the other side of a CMSS SIP interface supports CALEA requirements. CHAR(1): Y/N (Default = N). N— Disable sending of CALEA information on SIP CMSS interface. Y— Enable sending of CALEA information on SIP CMSS interface.
ES-SUPP (Release 4.5)	Used for CALEA. When this token is enabled, surveillance information as defined in Section 8 of RFC 3603 is sent when surveillance is required on the call, and surveillance cannot be performed on this switch. This requires the remote SIP entity interfacing the SIP trunk to support surveillance procedures. CHAR(1): Y/N (Default = N). N— Disable sending of CALEA information on SIP interface. Y— Enable sending of CALEA information on SIP interface.
GTD-MODE (Release 4.5)	Specifies whether to use the compact (default) or verbose mode to encode messages for the SIP-T/GTD trunk group. VARCHAR(8): 1–8 ASCII characters. Permitted values are: COMPACT (Default) VERBOSE

HOP-COUNTER-MAX (Release 4.5)	Applies only to received SIP Invite messages contain a max-forwards value in which down to build the hop counter. If the hop max-forwards is greater than this value, value acts as a ceiling for the derived hop. INTEGER: 10–20 (Default = 20).
HOP-COUNTER-SUPP (Release 4.5)	Used for received SIP Invite messages that are not SIP-T and contain a max-forwards value. The default sets the hop counter based on the received max-forwards value. If this flag is set to N, the hop counter field is not populated using the max-forwards value. CHAR(1): Y/N (Default = Y).
INBAND-TONE-AVAILABLE	Send release or provide tone/announcement. CHAR(1)Y/N (Default = Y)
LIMIT	Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1–100000000 (Default = 100000000). **Note** **Note** The actual maximum number of rows displayed is currently lower than 100000000 due to software limitations.
MAX-FORWARDS (Release 4.5)	Specifies when an outbound SIP Invite message requires an initial maximum forwards value. INTEGER: 4–80 (Default = 70).
NON-SRV-TRANSPORT **Note** This parameter will only have meaning when DNS-SRV-SUPP is set to NONE.	Specifies the transport mechanism to use for signaling. This token is used only when dns-srv-supp=none. VARCHAR(8): 1–8 ASCII characters. Permitted values are: UDP (Default)— Use UDP unless message size requires TCP as described in RFC 3261 and RFC 3263. TCP— Use TCP. UDP-ONLY— Use UDP. Does not attempt TCP even if message size exceeds limits described in RFC 3261 and RFC 3263.

ORDER	Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
PRACK-FLAG	Specifies if an Invite messages sent on this trunk group require reliable provisional responses. If yes, provisional responses like alerting are delivered. Used with SIP-T. CHAR(1): Y/N (Default = N).
REDIRECT-SUPPORTED	Specifies if the Cisco BTS 10200 Softswitch honors a 3xx class, such as a redirection response for an Invite message sent by the Cisco BTS 10200 Softswitch. VARCHAR(32): 1–32 ASCII characters. Permitted values are: VALID-DOMAINS-ONLY (Default)— If the host name field in the SIP URI of a 3XX contact used for call redirection does not represent this Cisco BTS 10200 Softswitch or a Cisco BTS 10200 Softswitch SIP trunk, then the call is redirected using the SIP trunk used on the previous call redirection. If there was not a previous call redirection, then the SIP trunk that sent the initial Invite is used. If the profile of the selected SIP trunk restricts redirection to only valid domains, then this redirection is blocked and the next contact is tried. Otherwise, it is redirected and the contact URI is used as the request URI of the redirected call. ALL-DOMAINS— Redirects to any allowed domain. NONE— No redirects allowed.
REFER-ALLOWED	Call Transfer allowed on an SS trunk. CHAR(1): Y / N (Default = N).
SATELLITE-CIRCUIT **(Obsolete as of Release 4.5)**	CHAR(1)Y/N (Default = N)
SCALE-FACTOR (Release 4.5)	Used for conversions between hop counter and max-forwards values; allows no-conversion, one-half, one-third, and one-quarter conversion factors. The default provides a scale relative to the maximum values: if the hop counter is 20, a scale factor of 4 converts to a max-forwards value of 80. Using the default means no conversion. INTEGER: 1–4 (Default = 1).
SEND-ATP **(Obsolete in Release 4.5)**	Send Access Transport Parameter indicator. CHAR(1)Y/N (Default = Y)

SEND-CIC-PARAM (Release 4.5)	Specifies whether the CIC parameter is included in the request URL for outbound SIP calls. CHAR(1): Y/N (Default = Y)
SEND-CPN **(Obsolete in Release 4.5)**	Send Calling Party Number indicator. CHAR(1)Y/N (Default = Y)
SEND-FULL-E164 (Release 4.5)	When enabled, all SIP phone numbers contained in SIP messages sent from the Cisco BTS 10200 Softswitch that have an NOA of national significance are represented as fully qualified E.164 numbers prefixed with the local country code and plus sign. This conforms to IETF RFC 3398 Section 12.1. When disabled, national numbers are sent without a country code and plus sign prefix. Numbers of international significance are always sent with a plus sign and country code regardless of this flag setting. CHAR(1): Y/N (Default = N). **Note** The Home Country code is defined in the Call Agent Configuration table.
SEND-GAP **(Obsolete in Release 4.5)**	Send Generic Address Parameter indicator. CHAR(1)Y/N (Default = Y)
SEND-GN **(Obsolete in Release 4.5)**	Send Generic Name indicator. CHAR(1)Y/N (Default = Y)
SEND-JIP **(Obsolete in Release 4.5)**	Send Jurisdiction Information Parameter indicator. CHAR(1)Y/N (Default = Y)
SEND-GAP **(Obsolete in Release 4.5)**	CHAR(1)Y/N (Default = Y)
SEND-OCN **(Obsolete in Release 4.5)**	CHAR(1)Y/N (Default = Y)
SEND-REDIR-NUM **(Obsolete in Release 4.5)**	CHAR(1)Y/N (Default = Y)
SEND-SIP-181-RESP (Release 4.5.1)	Specifies whether the Cisco BTS 10200 Softswitch transmits a 181 response message to a UAC when the terminating side of the Cisco BTS 10200 Softswitch forwarded the call. CHAR(1): Y/N (Default = N)
SESSION-TIMER-ALLOWED	Specifies whether a session timer is allowed. CHAR(1)Y / N (DEFAULT=N)

SIP-SIG-LOWDELAY	Specifies whether to set low delay. Low delay refers to the waiting time, or latency involved in sending and receiving a packet. You can set various options on the TCP socket to tune or optimize for certain performance parameters. CHAR(1): Y/N (Default = Y). **Caution** Cisco does not recommend using any value other than the specified default. Changing this value from its default may significantly impact network performance. Contact Cisco TAC for further information. If you prefer to use DSCP values instead of TOS values, derive the appropriate TOS values using the DSCP/TOS mapping information in the CLI Guide, Appendix F, "Data Values for TOS, DSCP, and PHB Parameters."
SIP-SIG-PRECEDENCE	Specifies the designation assigned to a phone call by the caller to indicate the relative urgency (and thus the order of handling) of a call. It also sends an indication to the called party of the order in which the call is answered. VARCHAR(16): 1–16 ASCII characters. Permitted values are: FLASH (Default = 3) NETCONTROL (= 7) INTERNETCONTROL (= 6) CRITICAL (= 5) FLASHOVERRIDE (= 4) IMMEDIATE (= 2) PRIORITY (= 1) ROUTINE (= 0) **Caution** Cisco does not recommend using any value other than the specified default. Changing this value from its default may significantly impact network performance. Contact Cisco TAC for further information. **Note** If you prefer to use DSCP values instead of TOS values, derive the appropriate TOS values using the DSCP/TOS mapping information in Appendix F, "Data Values for TOS, DSCP, and PHB Parameters."

SIP-SIG-RELIABILITY	Specifies whether to set reliability. Reliability refers to the dependability of packet delivery. CHAR(1): Y/N (Default = N). **Note** Cisco does not recommend using any value other than the specified default. Changing this value from its default may significantly impact network performance. Contact Cisco TAC for further information. **Note** If you prefer to use DSCP values instead of TOS values, derive the appropriate TOS values using the DSCP/TOS mapping information in the CLI Guide, Appendix F, "Data Values for TOS, DSCP, and PHB Parameters."
SIP-SIG-THROUGHPUT	Specifies whether to set throughput. Throughput refers to the actual amount of useful and nonredundant information that is transmitted or processed. The relationship between what went in one end of the network and what came out the other is a measure of the efficiency of that communications network. Throughput is a function of bandwidth, error performance, congestion, and other factors. CHAR(1): Y/N (Default = N). **Caution** Cisco does not recommend using any value other than the specified default. Changing this value from its default may significantly impact network performance. Contact Cisco TAC for further information. **Note** If you prefer to use DSCP values instead of TOS values, derive the appropriate TOS values using the DSCP/TOS mapping information in the CLI Guide, Appendix F, "Data Values for TOS, DSCP, and PHB Parameters."
SIP-TIMER-PROFILE-ID (Release 4.5)	Foreign key: Softswitch Trunk Group Profile table. Specifies the Timer Profile ID for the Softswitch Trunk Group Profile. VARCHAR(16): 1–16 ASCII characters.

SIPT-ISUP-VER	Mandatory if protocol-type=SIP-T. Defines the SIP-T or SIP-GTD version. Used only if protocol-type=SIP-T. Defined in the SIPT ISUP Version Base table. If the value defined in the SIPT ISUP Version Base table has a base value of sip-gtd, then the version is a SIP-GTD type. Otherwise, the version is a SIP-T type. VARCHAR(32): 1–32 ASCII characters. Permitted value is: GR317. **Note** Values other than GR317 are permitted as of Release 4.4.1.
START-ROW	Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1–100000000 (Default = 1).
TRUNK-SUB-GRP-TYPE	Specifies the parameter to be populated when trunk-sub-grp is defined in the Trunk Group table. VARCHAR(16): 1–16 ASCII characters. Permitted values are: NONE (Default)— Trunk-sub-grp is not used. BGID— Encode trunk-sub-grp in the BGID field of SIP-URI. BGID is a numeric field.
USE-PAI-HDR-FOR-ANI (Release 4.5)	Controls the p-asserted-id (PAI) header used to send and receive calling party information. **Note** When this token is set to Y, the calling party information is derived from the PAID header on inbound calls. If a SIP INVITE arrives at the Cisco BTS 10200 Softswitch without a PAID header, the Cisco BTS 10200 Softswitch treats the call as though it does not have calling party number. Features that rely on the calling number, such as Customer Originated Trace (COT, *57), may not work properly with use-pai-hdr-for-ani=Y if the incoming SIP INVITE does not have the PAID header. CHAR(1): Y/N (Default = N). Y— Calling party information is derived exclusively from the PAI header on inbound calls. For outbound calls, a PAI header is sent with the calling party information if provided. N— Calling party information is sent or received using the From:header.

VOICE-MAIL-TRUNK-GRP	Specifies whether the Softswitch trunk group is used for the voice-mail application. CHAR(1)Y/N (Default = N)
TRUNK-SUB-GRP-TYPE	VARCHAR(16): 1 – 16 ASCII characters NONE (Default) Trunk-Sub-Grp is not used. BGID Encode TRUNK-SUB-GRP in the BGID field of SIP-URI. BGID is a numeric field. TGID (Future) Encode TRUNK-SUB-GRP in the TGID field of SIP-URI

Trunk Group

The Trunk Group (trunk-grp) table identifies the trunk group and maps it to the associated media gateway. Table 3 indicates optional tokens that are required during provisioning based on the trunk group type.

The Cisco BTS 10200 Softswitch supports the following trunk group types: announcement, CAS, ISDN, SS7 and SOFTSW. The Trunk Group table defines common information based on the trunk group type. The Cisco BTS 10200 Softswitch supports announcement, CAS, ISDN, SS7 and SOFTSW trunk group profiles.

Table Name: TRUNK-GRP

Table Containment Area: Call Agent

The following fields were modified for the Trunk Group table:

- MGCP-PKG-TYPE
- SOFTSW-TSAP-ADDR
- TRUNK-SUB-GRP
- TG-PROFILE-ID
- SEL-POLICY

For more information about the Trunk Group table, refer to Trunk Group section of the *Cisco BTS 10200 Softswitch Command Line Interface Reference Guide*.

Modifications

- Add TRUNK-SUB-GRP token.
- Add MGCP-PKG-TYPE – move MGCP-PKG-TYPE from TG-PROFILE to the TRUNK-GROUP Table.

Rules

- If TG_TYPE=SOFTSW, the combination of SOFT-TSAP-ADDR and TRUNK-SUB-GRP must be unique.

- If TG_TYPE=SS7, MGCP_PKG_TYPE should be either T OR IT.
- TG_TYPE=CAS, MGCP_PKG_TYPE should be one of DT, MS, MT, MO, MD.
- TG_TYPE=ANNC, MGCP_PKG_TYPE should be either TCL_CISCO, ANNC_CABLE_LABS.
- TG_TYPE=ISDN, MGCP_PKG_TYPE should be T.
- ELSE TYPE = NA
- If CAS-TG-PROFILE->SIG-TYPE is MF_OSS, then MGCP-PKG-TYPE should be MO.
- CSCEB32199
- DIAL-PLAN-ID is not requiredIF TG-TYPE=ANNC OR
- MAIN-SUB-ID ? NULL OR,
- DIRECTION=OUT.

Table 3 SOFTSW-TG-PROFILE Table Requirements

Table Name	TRUNK-GRP
Table Containment Area	Call Agent
Command Line Actions	Show, add, change, and delete
show trunk-grp id=101; **add trunk-grp id=101; call-agent-id=CA146; tg-type=ss7; dial-plan-id=tg-dp;** **dpc=101-55-103; tg-profile-id=SS71;call-ctrl-route-id=ccr1;** **change trunk-grp id=101; cost=200;** **delete trunk-grp id=101;;**	
Primary Key Token(s)	ID
Add Rules	ID exists in the carrier table; ID exists in the subscriber table. DIAL-PLAN-ID is required except if tg-typ=ANNC or if main-sub-id is not equal to NULL.
Change Rules	Ensure that the ID exists in the Subscriber table if entered; ensure the id exists in the Media Gateway table if entered. The DPC field cannot be changed.
Delete Rules	ID cannot exist in any subscriber::term-id; ID cannot exist in any trunk::term-id. ID cannot exist in any mlhg-terminal::term-id. Trunk group status must be OOS.
Transit Network Selection (TNS) Rules	If a call is interLATA and going to an access tandem (AT), the TNS parameter is sent. This is also known as direct distance, or domestic, dialing (DDD). If a call in international, the TNS parameter is sent. If a carrier ID is not assigned to a trunk group, the TNS parameter is sent. If a carrier ID is assigned to a trunk group, the TNS parameter is not sent.

Trunk/CIC Selection Rules	• Ascending—Whenever a outgoing call is needed, the Cisco BTS 10200 Softswitch always selects the trunk with the lowest available CIC. For example: – 3 trunks, CICs 1, 2 and 3 – outgoing call A uses CIC 1 – outgoing call B uses CIC 2 (call A has not released) – call A releases CIC 1 • outgoing call-C uses CIC 1 again since it is now available. • Descending—the reverse of ascending. The highest available CIC is always selected. • Cyclic Ascending (CASC)—when processing outgoing calls, the Cisco BTS 10200 Softswitch loops through all the trunks based on the ascending CIC sequence. For example: – 3 trunks, CICs 1, 2 and 3 – outgoing call A uses CIC 1 – outgoing call B uses CIC 2 (call A has not released) – call A releases CIC 1 – outgoing call C uses CIC 3 even though CIC 1 is idle and available. • Cyclic Descending (CDSC)—when processing outgoing calls, the Cisco BTS 10200 Softswitch loops through all the trunks based on the descending CIC sequence. For example: – 3 trunks, CICs 1, 2 and 3 – outgoing call A uses CIC 3 – outgoing call B uses CIC 2 (call A has not released) – call A releases CIC 3 – outgoing call C uses CIC 1 even though CIC 3 is idle and available.

MGCP-PKG-TYPE/TG-TYPE Rules	If mgcp-pkg-type = DT | MS | MT | MO, then it is valid only for CAS tg-type. If mgcp-pkg-type = MO, then MF-OSS-TYPE in the Channel Associated Signaling Trunk Group Profile table is required. If mgcp-pkg-type = CISCO-TCL | ANNC-CABLE-LABS, then it is valid only for ANNC tg-type. Mgcp-pkg-type=line allowed only when tg-type=cas and the corresponding CAS Trunk Group Profile has sig-type=line. (Release 4.5) If mgcp-pkg-type=mt, then direction=IN. (Release 4.5) If mgcp-pkg-type=mo, then direction=OUT. (Release 4.5) If tg-type=ISDN; then glare=ALL. If tg-type=ISDN, the mgcp-pkg-type is T or IT. If tg-type=SS7, the mgcp-pkg-type is T or IT. If tg-type=CAS, the mgcp-pkg-type is one of DT, MS, MT, or MO. If tg-type=CAS; then glare=SLAVE. If tg-type=ANNC, the mgcp-pkg-type is either tcl-cisco or annc-cable-labs. If tg-type=SOFTSW | H323, the mgcp-pkg-type is NA. If sig-type in the cas-tg-profile=mf-oss, then the mgcp-pkg-type=MO.
MO and MT Rules	When configuring a trunk group, set the direction token to OUT when the MGCP-PKG-TYPE is MO. When configuring a trunk group, set the direction token to IN when the MGCP-PKG-TYPE is MT.

Table 4 TG Syntax Description

* ID	Primary key. Trunk group number. INTEGER: 1-99999999.
* CALL-AGENT-ID	Foreign key: Call Agent table. Call Agent ID. Same as ID in Call Agent table. VARCHAR(8): 8 ASCII characters. Format is CAnnn or cannn where nnn = 001–999. 3 characters are reserved for Not Used use.

* TG-TYPE	Trunk group type. VARCHAR(6): 1–6 ASCII characters. Permitted values are: ANNC—Announcement. SOFTSW—Softswitch trunk group. CAS—Channel associated signaling. ISDN—Integrated Services Digital Network. SS7—Signaling System 7. H323—H.323 trunk group.
ALT-ROUTE-ON-CONG	Specifies whether to use an alternate route when there is traffic congestion. CHAR(1): Y/N (Default = N). Y—SKIP N—BLOCK
ANI-BASED-ROUTING	Used when there are multiple subscribers homing on the same trunk group. The ANI is used to determine the subscriber ID associated with the call. CHAR(1): Y/N (Default = N). Y—Determine subscriber ID based on the ANI. N—Use normal routing.
ANI-DIGMAN-ID	Foreign key: Digman Profile table. ANI (calling party number) digit manipulation ID. VARCHAR(16): 1–16 ASCII characters.
AUTO-REFRESH	Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable.
CALL-CTRL-ROUTE-ID	Mandatory if tg-type = SS7. Foreign key: Call Control Route table. The Call Control Route ID. VARCHAR(16): 1–16 ASCII characters. **Note** This token cannot be changed.
CARRIER-ID	Carrier ID if direct trunk group to a carrier. Used during incoming call processing. Same as carrier-id in Carrier table. CHAR(4): 4 numeric characters—leading zeros count.
CAUSE-CODE-MAP-ID	Foreign key: Cause Code Map table. The cause code map ID. VARCHAR(16): 1–16 ASCII characters.
CLLI	Common Language Location Identifier for the remote switch. CHAR(11): Eleven ASCII characters.

COST	Relative cost value; used if TG selection is based on least cost routing (LCR). SMALLINT: 0–999.
DEFAULT-CHG	Default charge number. VARCHAR(16): 1–16 numeric digits.
DEL-DIGITS	Specifies the number of digits to delete. SMALLINT: 0–14 numeric characters. (Default = 0).
DESCRIPTION (EMS-only field)	Described by the service provider. VARCHAR(64): 1–64 ASCII characters.
DIAL-PLAN-ID	Foreign key: Dial Plan table. Specifies which dial plan ID to use. For trunk groups with a Main subscriber ID (CAS, ISDN), the Call Agent uses the dial-plan-id assigned to the trunk group (if available), else it uses the dial-plan-id assigned to the subscriber profile. VARCHAR(16): 1–16 ASCII characters.
DIRECTION	Direction of the trunk group. Can be incoming only, outgoing only, or both incoming and outgoing. If bothway, the glare parameter is required. VARCHAR(4): 1–4 ASCII characters. Permitted values are: BOTH (Default)—Bothway trunk group (used for both incoming and outgoing calls). OUT—Used for outgoing calls only. IN—Used for incoming calls only.
DISPLAY	Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
DNIS-DIGMAN-ID	Foreign key: Digman Profile table. DNIS (called party number) digit manipulation ID. VARCHAR(16): 1–16 ASCII characters.
DPC	Not provisionable. Mandatory if tg-type=SS7. Destination Point Code if SS7. The DPC is automatically provisioned from the call-ctrl-route-id. VARCHAR(16): 1–16 ASCII characters.

GLARE	Used in bothway trunks: Defines how to resolve a glare condition—a bothway (simultaneous) trunk seizure. For example, an incoming and an outgoing call on the same endpoint. For ISDN trunk groups, glare *must* be set to ALL. Setting glare to SLAVE can cause CIC/trunk instability. VARCHAR(5): 1–5 ASCII characters. Permitted values are: SLAVE (Default)—This trunk group yields any trunk in glare condition. ALL—This trunk group is master of all trunks. EVEN—This trunk group is master of even numbered trunks. ODD—This trunk group is master of odd numbered trunks. PC—Not used. Point code driven. The higher point code is the master. Is allowed only for an SS7 trunk group.
H323-GW-ID	Mandatory if tg-type=h323. Foreign key: H.323 Gateway table. Specifies the gateway ID for this trunk group. VARCHAR(16): 1–16 ASCII characters.
LIMIT	Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1–100000000 (Default = 100000000). **Note** The actual maximum number of rows displayed is currently lower than 100000000 due to software limitations.
MAIN-SUB-ID	Foreign key: Subscriber table. Used for PBX subscribers. VARCHAR(30): 1–30 ASCII characters.
MGCP-PKG-TYPE	Determines the MGCP Package type for the announcement server. VARCHAR(16): 1–16 ASCII characters. Permitted values are: NA—(Default) For SIP and H.323 trunk groups. ANNC-CABLE-LABS—Announcement signaling type based on the Cable Labs package. AUTO—Used for CAS signaling on a combined trunk group (not supported). DT—DTMF package. IT—ISUP trunk package. LINE—Line package used for Test Line Access. MD—MF FGD package (Release 4.5) (Not supported). MO—MF operator trunks. MS—MF package. MT—MF terminating package. TCL-CISCO (Default)—Announcement signaling type for the Cisco AS5350/AS5400. T—Trunk package.

NUM-OF-TRUNKS (System generated)	Not provisionable. EMS provisions this field when trunks are provisioned for this trunk group. SMALLINT: 1–9999.
OPER-STATUS	Operational status. VARCHAR(5). Permitted values are: NF (Default)—Nonfaulty. FA—Faulty. NF-RB—Nonfaulty remotely blocked. FA-RB—Faulty remotely blocked.
ORDER	Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
PERFORM-LNP-QUERY (Release 4.5)	Specifies whether to perform an LNP query. This token applies only to incoming calls (for ITU local LNP, when the LNP Profile lnp-db-type is RN). CHAR(1): Y/N (Default = N). Y —Perform an LNP Query if required based on the LNP Profile table and the acq-lnp-query token in the Destination table. This applies to both LNP Types: ACQ and QOR. Set this token to Y when the remote switch is not LNP-capable. N—An LNP query is not required as originating switch is LNP-capable or LNP is not required.
PFX-DIGITS	Specifies what digits to prefix. Digits are prefixed after the specified number of digits are deleted. VARCHAR(10): 1–10 ASCII characters.
POP-ID	Foreign key: POP table. Defines the number of POPs in a Call Agent; used for incoming trunk groups. VARCHAR(16): 1–16 ASCII characters.
QOS-ID	Foreign key: QOS table. Specifies whether or not to use QOS index for codec selection. VARCHAR(16): 1–16 ASCII characters. ⚠ **Caution** This 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 Quality of Service table.

REGION	Region of the incoming trunk group. VARCHAR(16): 1–16 ASCII characters.
REMOTE-SWITCH-LRN	LRN of the previous switch used for billing. VARCHAR(10): 1–10 numeric digits, in the format NPA-NXX-XXXX. (Default = 0).

Subscriber

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

The following fields have been modified for the Subscriber table:

- TERM-TYPE
- TERM-ID
- MGW-ID
- TGN-ID (or TG)
- POLICY_ID
- AOR_ID
- MAC-ID (EMS ONLY)

For more information about the Subscriber table, refer to the *Cisco BTS 10200 Softswitch Release Command Line Interface Reference Guide*.

Modifications to the table

- Add new TERM-TYPE=SIP and NONE.
- Add AOR index to the Subscriber Table (case insensitive)
- Add MAC Address for IP Phone Devices (supported for SIP)

Note In Release 4.5, the user portion of the AOR-ID must match the DN1 value for the subscriber.

Add Subscriber

1. If MAC-ID is specified, add an entry in the MAC2SUB Table
2. Provision Subscriber Table
3. Add sub-id to the aor2sub Table (if AOR-ID is NOT NULL)
4. Add sub-id to the mac2sub table (if MAC-ID is NOT NULL)

Change Subscriber AOR

The following tokens can not be changed via change subscriber command:

- AOR-ID (instead use change SUBSCRIBER-AOR command)
- MAC-ID (instead use change SUBSCRIBER-MAC-ID command)
- TERM-ID, MGW-ID (instead use change SUBSCRIBER-TERMINATION command)
- TERM-TYPE
- DN1 (instead use change SUBSCRIBER-DN command)

Table 5 SUBSCRIBER Table Requirements

Table Name	SUBSCRIBER
Table Containment Area	Call Agent, EMS, POTS Feature Server
Command Line Actions	Show, add, change, and delete
show subscriber id=cisco-main-number; **add subscriber id=cisco main number; name=wilmerwabash; dn1=972-671-2000;** **sub-profile-id=richardson;** **change subscriber id=cisco-main-number; category=ctxg-individual;** **name=wilmerwabashjr; status=temp-disconnected; privacy=full;** **delete subscriber id=cisco-main-number;**	
Primary Key Token(s)	ID
Add Rules	• term-id, mgw-id are required if category=mlhg-pref-indiv | ctxg-individual | mlhg-individual | individual. • no term-id, mgw-id if category= pbx | ctxg-tg; term-id, mgw-id optional if category=mlhg | ctxg-mlhg | ctxg. • mlhg-pref-list-id is required if category=mlhg-pref-indiv. • mlhg-id is required and exists if category=mlhg | mlhg-pref-indiv | mlhg-individual | ctxg-mlhg; ctxg-id is required and exists if category=ctxg | ctxg-individual | ctxg-mlhg | ctxg-tg; tgn-id is required and exists if category=pbx | ctxg-tg. • During split-npa, if ani-update-status=completed, subscriber provisioning should not allow dn1, dn2, dn3 that are in the old-npanxx.

Change Rules	• term-id, mgw-id are required if category=mlhg-pref-indiv | ctxg-individual | mlhg-individual | individual no term-id, mgw-id if category=ctxg-tg | pbx term-id, mgw-id optional if category=mlhg | ctxg-mlhg | ctxg. • mlhg-id is required and exists if category=mlhg | mlhg-pref-indiv | mlhg-individual | ctxg-mlhg mlhg-pref-list-id is required if category=mlhg-pref-indiv. • ctxg-id is required and exists if category=ctxg | ctxg-individual | ctxg-mlhg | ctxg-tg tgn-id is required and exists if category=pbx | ctxg-tg. • During split-npa, if ani-update-status=completed, subscriber provisioning should not allow a dn1 that is in the old-npanxx.
Delete Rules	ID does not exist in any ctxg::main-sub-id if category=ctxg. ID does not exist in any mlhg::main-sub-id if category=mlhg. ID does not exist in any tgn-id::main-sub-id if category=pbx | ctxg-tg. ID does not exist in any subscriber-service-profile::sub-id. ID does not exist in any subscriber-feature-data::sub-id.

Note Modified fields are in bold type.

Table 6 SUBSCRIBER Syntax Description

ID	Primary key. VARCHAR(30): 1 - 30 ASCII characters.
CATEGORY	VARCHAR(15). INDIVIDUAL (Default) Individual Subscriber. MLHG Main subscriber ID of a MLHG. MLHG-INDIVIDUAL Individual Subscriber within a MLHG. MLHG-PREF-INDIV Main subscriber ID of a preferential hunt list. CTXG Assigned to the main subscriber ID of a Centrex Group. CTXG-INDIVIDUAL Assigned to a Centrex Subscriber. CTXG-MLHG Assigned to a Centrex MLHG (e.g., attendant). CTXG-TG Assigned to Centrex Trunk Group. PBX Assigned to the main subscriber ID of a PBX. RACF Access DN for remote activation of Call Forwarding IVR Access DN for IVR.
NAME	VARCHAR(16): 1 - 16 ASCII characters.

STATUS	VARCHAR(17) ACTIVE (Default) Subscriber is active. TEMP-OOS Temporarily Out of Service. TEMP-DISCONNECTED Temporarily Disconnected. TEMP-UNAVAILABLE Temporarily Unavailable.
ADDRESS1	VARCHAR(32): 1 - 32 ASCII characters.
ADDRESS2	VARCHAR(32): 1 - 32 ASCII characters.
CITY	VARCHAR(16): 1 - 16 ASCII characters.
STATE	VARCHAR(16):1 - 16 ASCII characters.
COUNTRY	VARCHAR(16) Default = USA1 - 16 ASCII characters.
ZIPCODE	VARCHAR(10): 1 - 10 ASCII characters.
LANGUAGE	VARCHAR(16): 1 - 16 ASCII characters.
BILLING-DN	VARCHAR(14): 1 - 14 Numeric digits in the following format: NDC-EC-XXXX
DN1	UK VARCHAR(14):14 numeric digits in the NDC-EC-XXXX format.
PRIVACY	CHAR(4) NONE (Default) Display Name and Number. FULL Do not display name or number. NAME Do not display name. USER Use user-provided privacy information. Applies only to SIP endpoints that can include privacy information. If information is not received for either name or number, then privacy is indicated as “unspecified.”
RING-TYPE-DN1	CHAR(1)1, 2, OR 3Default = 1
MLHG-PREF-LIST-ID	FK MLGH-PREF-LIST TABLE.VARCHAR(16): 1 - 16 ASCII characters.
CTXG-ID	FK CENTREX-GRP TABLE. VARCHAR(16): 1 - 16 ASCII characters.
MLHG-ID	FK MLHG TABLE. VARCHAR(16): 1 - 16 ASCII characters.

TERM-TYPE	**VARCHAR(5): 1 – 5 ASCII characters** **TERM (Default):** **MGCP** **Termination ID** **TG** **Trunk Group** **ROUTE** **Route ID** **RG** **Route Guide ID** **SIP** **SIP Termination** **NONE** **There is no termination associated with the Subscriber.**
TERM-ID	**The TERM-ID and MGW-ID are used as a Termination ID. Use as a combined Foreign Key to the TERMINATION Table.** **FK TERMINATION TABLE.** **VARCHAR(32): 1 - 32 ASCII characters.**
MGW-ID	**VARCHAR(32): 1 - 32 ASCII characters.**
TGN-ID (or TG)	**FKTRUNK GROUP TABLE.** **INTEGER1 - 99999999**
POLICY_ID	**VARCHAR(16): 1 – 16 ASCII characters**
AOR_ID	**FK AOR2SUB TABLEVARCHAR(64)** **Use DOMAIN NAME** **PARSER RULES: Domain Name portion of AOR-ID exists in the Serving Domain Name Table**
MAC-ID (EMS ONLY)	**FK MAC2SUB TABLE** **VARCHAR(16): 1 – 16 ASCII Characters** **Only allowed if TERM-TYPE=SIPUSE UPPER CASE.**
PIC1	CHAR(4)NONE (Default) NPICXXXX (Numeric Digits)
PIC2	CHAR(4)NONE (Default) NPICXXXX (Numeric Digits)
PIC3	CHAR(4)NONE (Default) NPICXXXX (Numeric Digits)
GRP	CHAR(1)Y = GroupN (Default) = Individual
USAGE-SENS	CHAR(1) Y (Default) Allowed. N (NO) Usage sensitive features not allowed.

SUB-PROFILE-ID	FK SUBSCRIBER-PROFILE TABLE VARCHAR(16): 1 - 16 ASCII characters.
COS-RESTRICT-ID	FK COS-RESTRICT TABLE VARCHAR(16): 1 – 16 ASCII characters.
QOS-ID	FK VARCHAR(16): 1 - 16 ASCII characters.
IMMEDIATE-RELEASE	CHAR(1)Y / N (DEFAULT = N)
TERMINATING-IMMEDIATE-REL	CHAR(1)Y / N (DEFAULT = N)

Trigger ID

There is a new Trigger ID, REFER-TRIGGER.

Note New fields are in bold type.

Table 7 Trigger ID Table

Trigger ID	Description
ORIGINATION_ATTEMPT	
O_ATTEMPT_AUTHD	Origination Attempt Authorized.
VERTICAL_SERVICE_CODE	
CUSTOMIZE_DIALING_PLAN	
COS_TRIGGER	
911_TRIGGER	
LNP_TRIGGER	
SPECIFIC_DIGIT_STRING	
ROUTE_SELECT_FAILURE	
O_CALLED_PARTY_BUSY	
O_NO_ANSWER	
O_ANSWER	
O_SUSPEND	
O_REANSWER	
O_DISCONNECT	
O_ABANDON	
O_NOT_REACHABLE	
O_EXCEPTION	
O_SWITCH_HOOK_FLASH_IMMEDIATE	

Trigger ID	Description
REFER-TRIGGER	**REFER-TRIGGER is used by SIP for the Call Transfer feature.**
ROUTE_SELECTED	
TERMINATION_ATTEMPT	
TERMINATION_ATTEMPT_AUTHORIZED	
TERMINATION_RESOURCE_AVAILABLE	
CALL_ACCEPTED	
T_BUSY	
T_ANSWER	
T_NO_ANSWER	
T_SUSPEND	
T_REANSWER	
T_SWITCH_HOOK_FLASH_IMMEDIATE	
T_DISCONNECT	
T_ABANDON_DP	
T_NOT_REACHABLE	
T_EXCEPTION	
D_OF_TRIGGER	Not Used
ACCOUNT_CODE	Not Used
CNAM	
BLV	Busy Line Verification Trigger
SC1D-TRIGGER	1 Digit Speed Call Trigger
SC2D-TRIGGER	2 Digit Speed Call Trigger

Activity and Activity-Base

This section explains the changes to the activity table and the activity-base table for Release 4.5.x

Activity Table

In Release 4.5.x, the default value for the ENABLED token in the activity table is Y. Use the **delete activit**y command to disable the activities.

Activity-Base

Table 8 lists the ID token values for the activity-base table. The tokens related to SIA and SIM are new for Release 4.5.x.

Table 8 Activity Base ID Token Values Characteristics

ID	Valid-Freq	Fixed-Time Interval	So-Enabled	Restart-Enabled	Description
MEDIA- ALIVE-EM	6H, 8H, 12H, DAILY	N	N	N	Controls EM generation for long duration calls.
MGCP-TERM	30M, DAILY	N	Y	Y	Controls the trunking gateway MGCP-side CIC audit.
SIA-MEMORY-PERIODIC-AUDIT (Release 4.5)	15M, 30M, 1H, 2H, 3H,4H, 6H, 8H, 12H	N	Y	Y	SIA memory audit.
SIA-MEMORY-SCHEDULED-AUDIT (Release 4.5)	DAILY	N	N	N	Schedules an SIA memory audit daily at a fixed time.
SIM-MEMORY-PERIODIC-AUDIT (Release 4.5)	15M, 30M, 1H, 2H, 3H,4H, 6H, 8H, 12H	N	Y	Y	SIM memory audit.
SIM-MEMORY-SCHEDULED-AUDIT (Release 4.5)	DAILY	N	N	N	Schedules an SIM memory audit daily at a fixed time.
SS7-CIC		N	Y	Y	Controls the SS7-side CIC audit. Can be scheduled at any time.

New Tables

Address of Record to Subscriber

The Address of Record (AOR) to Subscriber (aor2sub) table is automatically provisioned when a subscriber is created. If a URL-based AOR is required, it can be manually provisioned using this table. This table is used for provisioning SIP telephones as subscribers.

Table 9 AOR2SUB Table Requirements

Table Name	AOR2SUB
Table Containment Area	Call Agent, EMS
Command Line Actions	Show, add, change, and delete

```
show aor2sub aor-id=joe@cisco.com;
change aor2sub aor-id=joe@cisco.com; sub-is=sub2;
change aor2sub status=INS; aor-id=4167940001@sia-SYS21CA146.ipclab.cisco.com;
```

Note In Release 4.5, the change command is used to control an aor2sub status. The control command is not supported.

Primary Key Token(s)	AOR-ID
Add Rules	None
Delete Rules	Can only be deleted if STATUS=OOS
Number of Instances	25,000

Table 10 AOR2SUB Syntax Description

* AOR-ID	Primary key. The AOR ID for the subscriber. VARCHAR(64): 1–64 ASCII characters.
AUTO-REFRESH	Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable.
DISPLAY	Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
LIMIT	Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1–100000000 (Default = 100000000). **Note** The actual maximum number of rows displayed is currently lower than 100000000 due to software limitations.
ORDER	Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.

SECURE-FQDN (Release 4.5)	Unique key. Specifies the secure-fqdn assigned to the AOR. Use a secure-fqdn to resolve an IP address and compare it with the IP address received from an endpoint during registration or during call setup (INVITE). VARCHAR(64): 1–64 ASCII characters. **Note** A static contact cannot be specified for a SECURE-FQDN subscriber. Any existing static contact record for an AOR must be deleted before the subscriber can be made a SECURE-FQDN SIP endpoint.
START-ROW	Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1–100000000 (Default = 1).
STATUS (System generated)	Status of the AOR. VARCHAR(16): 1–16 ASCII characters. INS—The AOR is in service. OOS—(Default) The AOR is out of service. **Note** This field is not provisionable. Use the status or control commands to change AOR status to INS or OOS. In Release 4.5, use the change command instead of the control command.
SUB-ID	Foreign key: Subscriber table. Subscriber ID. VARCHAR(30): 1–30 ASCII characters.

Authentication Realm

The Authentication Realm (auth-realm) table defines the authentication realm IDs supported by the Cisco BTS 10200 Softswitch. An auth-realm-id is assigned to subscribers using the Serving Domain Name table. All subscribers in a specific serving domain share a common auth-realm-id. This table is used primarily for SIP provisioning.

Table 11 AUTH-REALM Table Requirements

Table Name	AUTH-REALM
Table Containment Area	Call Agent
Command Line Actions	Show, add, change, and delete

`show auth-realm id=rcdn-cisco;`
`add auth-realm id=rcdn-cisco; description=This realm id is for rcdn5 cisco.`
`change auth-realm id=rcdn-cisco; description=This realm id is for all of cisco in Richardson.`
`delete auth-realm id=rcdn-cisco;`	

Primary Key Token(s)	ID
Add Rules	None
Change Rules	None
Delete Rules	FK constraints
Number of Instances	Equal to number of Centrex groups.

Table 12 AUTH-REALM Syntax Description

* ID	Primary key. The realm ID. VARCHAR(64): 1–64 ASCII characters.
AUTO-REFRESH	Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable.
DESCRIPTION	Described by the service provider. VARCHAR(64): 1–64 ASCII characters.
DISPLAY	Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
LIMIT	Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1–100000000 (Default = 100000000). **Note** The actual maximum number of rows displayed is currently lower than 100000000 due to software limitations.
ORDER	Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
START-ROW	Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1–100000000 (Default = 1).

MAC to Subscriber

Note Provisioning this table is not required for phones without GUI capability.

For multi-line SIP phones like the Cisco 7960, the MAC2SUB table is provisioned for only one of the lines. The GUI feature for controlling call forwarding is provided only for that line.

The MAC to Subscriber (mac2sub) table links the MAC Address of a device to a subscriber ID. This table is automatically provisioned when a MAC device is associated with a subscriber. This table is used primarily for SIP provisioning.

Table 13 MAC2SUB Table Requirements

Table Name	MAC2SUB
Table Containment Area	PTC Feature Server
Command Line Actions	Show, add, change, and delete

`show mac2sub mac-id=SIP0002B9A74E4C;`
`add mac2sub mac-id=SIP0002B9A74E4C; sub-id=sub1;`
`delete mac2sub mac-id=SIP0002B9A74E4C;`
`change mac2sub MAC_ID=SIP000BBE3718A0; sub-id=sub9`	

Primary Key Token(s)	MAC-ID
Add Rules	None
Delete Rules	None
Number of Instances	25,000

Table 14 MAC2SUB Syntax Description

* MAC-ID	Primary key. MAC ID (Mac Address) of the IP Phone or device. VARCHAR(16): 1–16 ASCII characters.
AUTO-REFRESH	Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable.
DISPLAY	Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
LIMIT	Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1–100000000 (Default = 100000000). **Note** The actual maximum number of rows displayed is currently lower than 100000000 due to software limitations.

ORDER	Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
START-ROW	Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1–100000000 (Default = 1).
SUB-ID	Foreign key: Subscriber table. Subscriber ID. Assigned by service provider. VARCHAR(30): 1–30 ASCII characters.

Serving Domain Name

The Serving Domain Name (serving-domain-name) table defines serving domain names supported by the Cisco BTS 10200 Softswitch. This table is also used to define authentication requirements for subscribers served by the serving domain. This table is used primarily for Session Initiation Protocol (SIP) provisioning.

Note The domain name value must resolve in the DNS to the logical IP addresses, designated for use by the SIP adaptor during installation of the Cisco BTS 10200 system. The resolution for the serving domain must be identical to the resolution of the FQDN specified as the Cisco BTS 10200 contact.

Table 15 SERVING-DOMAIN-NAME Table Requirements

Table Name	SERVING-DOMAIN-NAME
Table Containment Area	Call Agent, EMS
Command Line Actions	Show, add, change, and delete
show serving-domain-name; **add serving-domain-name domain-name=rcdn.cisco.com; auth-realm-id=rcdn-cisco; auth-reqd=Y;** **change serving-domain-name domain-name=rcdn.cisco.com; auth-realm-id=" "; auth-reqd=N;** **delete serving-domain-name domain-name=rcdn.cisco.com;**	
Primary Key Token(s)	domain-name
Add Rules	AUTH-REALM-ID IS REQUIRED IF AUTH-REQD=Y AUTH-REALM-ID IS NULL IF AUTH-REQD=N
Change Rules	Same as add rules.
Delete Rules	FK constraints
Number of Instances	Equal to number of Centrex groups.

Table 16 SERVING-DOMAIN-NAME Syntax Description

* DOMAIN-NAME	Primary key. The domain name supported by the Cisco BTS 10200 Softswitch. This field is case insensitive. VARCHAR(64): 1–64 ASCII characters.
AUTH-REALM-ID	Foreign key: Authentication Realm table. Specifies the Auth Realm ID to be used if authentication is required. VARCHAR(64): 1–64 ASCII characters. **Note** auth-realm-id is required if auth-reqd=Y auth-realm-id is null if auth-reqd=N
AUTH-REQD	Specifies whether SIP messages from the serving domain must be authenticated or not. CHAR(1): Y/N (Default = Y).
AUTO-REFRESH	Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable.
DESCRIPTION	Described by the service provider. VARCHAR(64): 1–64 ASCII characters.
DISPLAY	Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
LIMIT	Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1–100000000 (Default = 100000000). **Note** The actual maximum number of rows displayed is currently lower than 100000000 due to software limitations.
ORDER	Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
START-ROW	Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1–100000000 (Default = 1).

User Authentication

The User Authentication (user-auth) table identifies the subscriber address of record (AOR) based on the authentication credentials supplied by the user during registration or call setup. When a SIP user attempts to register or set up a call, the Cisco BTS 10200 Softswitch challenges the SIP subscriber based on information from the Serving Domain Name table. If the Serving Domain Name Table indicates that authentication is required, the Cisco BTS 10200 Softswitch challenges the SIP user to send a user ID and password (HA1) based on the auth-realm-id. If the Cisco BTS 10200 Softswitch receives a valid user ID and password, the AOR in this table is used to identify the subscriber based on the AOR to Subscriber table.

Table 17 USER-AUTH Table Requirements

Table Name	USER-AUTH
Table Containment Area	Call Agent, EMS
Command Line Actions	Show, add, change, and delete
show user-auth auth-user=joe; auth-realm-id=rcdn-cisco; **add user-auth auth-user=joe; auth-realm-id=rcdn-cisco; password=mhallwfmesw;** **aor-id=joe@rcdn.cisco.com** **change user-auth auth-user-joe;password=joe2seven;** **delete user-auth auth-user=joe; auth-realm-id=rcdn-cisco;**	
Primary Key Token(s)	AUTH-USER, AUTH-REALM-ID
Add Rules	None
Delete Rules	None
Number of Instances	25,000

Table 18 USER-AUTH Syntax Description

* AUTH-USER	Primary key. The authentication user name. VARCHAR(32): 1–32 ASCII characters.
AOR-ID	Foreign key: AOR to Subscriber table. The aor-id. VARCHAR(64): 1–64 ASCII characters.
AUTH-REALM-ID	Primary key. The authentication realm id. VARCHAR(64): 1–64 ASCII characters.
AUTO-REFRESH	Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable.
DISPLAY	Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.

HA1	Represents a Hashed Password–MD5 of USER:REALM:PASSWORD according to RFC 2617. This value is computed and automatically provisioned by the Element Management System. CHAR(32): 1–32 characters.
LIMIT	Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1–100000000 (Default = 100000000). **Note** The actual maximum number of rows displayed is currently lower than 100000000 due to software limitations.
ORDER	Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
PASSWORD	The password for this auth-user. VARCHAR(64): Not stored.
START-ROW	Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1–100000000 (Default = 1).

Note For SIP phone Authentication:
The Auth-Realm table must be provisioned and authentication_reqd set to Y in the Serving Domain Table. The user-auth table must be provisioned with the same user/password as specified in the linex specification inside the config file for the phone.

SIP Timer Profile

The Session Initiation Protocol (SIP) Timer Profile (sip-timer-profile) table defines a SIP timer profile for a Softswitch Trunk Group Profile or a default SIP timer profile at the system level.

Caution Deviation from default timer values can significantly influence system performance and reliability. Exercise great caution and consult with Cisco TAC prior to making changes.

Table 19

* ID (Release 4.5)	Primary key. Identifies the primary key of the records in this table. VARCHAR(16): 1–16 ASCII characters.
AUTO-REFRESH	Specifies whether to display cached data on the screen. Valid only for the show command. CHAR(1): Y/N (Default = Y). Y—Queries the database for the most current data. N—Queries the database for the most current data only if the cached data is unavailable.
DISPLAY	Specifies what token information to display on the screen. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all tokens are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
INVITE-INCOMPLETE-TIMER-SECS	Specifies whether to clean up user agent client (UAC) invite transactions when a provisional response of less than 180 is received, but no ringing or final response is received within a reasonable period of time. INTEGER: 15–600 (Default = 40).
LIMIT	Specifies the number of rows to display on the screen. Valid only for the show command. INTEGER: 1–100000000 (Default = 100000000). **Note** The actual maximum number of rows displayed is currently lower than 100000000 due to software limitations.
MIN-SE (Release 4.5)	Specifies the minimum number of session-expires allowed, in seconds, to be sent or received. INTEGER: 100–1800 (Default = 900).
ORDER	Specifies whether to display data on the screen in a sorted order. Valid only for the show command. VARCHAR(1024): 1–1024 (Default = all rows are displayed). Permitted values are any valid token that can be shown for this command. Multiple tokens can be entered by separating with a comma.
SESSION-EXPIRES-DELTA-SECS (Release 4.5)	SIP session timer, in seconds, for SIP auditing purposes. Specifies when to send a periodic refresh for each session to check the liveness of the session. This conveys the session interval for a SIP call. INTEGER: 100–7200 (Default = 1800).
START-ROW	Specifies to begin displaying data on the screen at a specific row. Valid only for the show command. INTEGER: 1–100000000 (Default = 1).

Table 19

TIMER-A-MILLI (Release 4.5)	The SIP RFC3261 timer, in milliseconds, for the INVITE request retransmit interval, for User Datagram Protocol (UDP) only. INTEGER: 0, 100–5000 (Default = 0). **Note** A default value of zero means that values for those timers are computed automatically from TimerT1, TimerT2, and TimerT4.
TIMER-B-SECS (Release 4.5)	The SIP RFC3261 timer, in seconds, for INVITE transaction timeout. INTEGER: 0–3600 (Default = 0). **Note** A default value of zero means that values for those timers are computed automatically from TimerT1, TimerT2, and TimerT4.
TIMER-D-SECS (Release 4.5)	The SIP RFC3261 timer, in seconds, for the wait time for response retransmits. INTEGER: 33–65 (Default = 33).
TIMER-E-MILLI (Release 4.5)	The SIP RFC3261 timer, in milliseconds, for non-INVITE request retransmit interval, UDP only. INTEGER: 0, 100–5000 (Default = 0). **Note** A default value of zero means that values for those timers are computed automatically from TimerT1, TimerT2, and TimerT4.
TIMER-F-SECS (Release 4.5)	The SIP RFC3261 timer, in seconds, for non-INVITE transaction timeout. INTEGER: 0–3600 (Default = 0). **Note** A default value of zero means that values for those timers are computed automatically from TimerT1, TimerT2, and TimerT4.
TIMER-G-MILLI (Release 4.5)	The SIP RFC3261 timer, in milliseconds, for INVITE response retransmit interval. INTEGER: 0, 100–5000 (Default = 0). **Note** A default value of zero means that values for those timers are computed automatically from TimerT1, TimerT2 and TimerT4.
TIMER-H-SECS (Release 4.5)	The SIP RFC3261 timer in seconds for the wait time for ACK receipt. INTEGER: 0–3600 (Default = 0). **Note** A default value of zero means that values for those timers are computed automatically from TimerT1, TimerT2, and TimerT4.

Table 19

TIMER-I-SECS (Release 4.5)	The SIP RFC3261 timer in seconds for wait time for ACK retransmits. INTEGER: 0–10 (Default = 0) **Note** A default value of zero means that values for those timers are computed automatically from TimerT1, TimerT2, and TimerT4.
TIMER-J-SECS	The SIP RFC3261 timer in seconds for wait time for non-INVITE request retransmits. INTEGER: 0–3600 (Default = 0) **Note** NOTE: Default value of zero means that values for those timers will be computed automatically from TimerT1, TimerT2 and TimerT4.
TIMER-T1-MILLI (Release 4.5)	Specifies the SIP RFC3261 timer, in milliseconds, for RTT estimate. INTEGER: 100–5000 (Default = 500).
TIMER-T2-SECS (Release 4.5)	Specifies the SIP RFC3261 timer, in seconds, for the maximum retransmit interval for SIP non-INVITE requests and INVITE responses. INTEGER: 1–10 (Default = 4).
TIMER-T4-SECS (Release 4.5)	The SIP RFC3261 timer, in seconds, for the maximum duration a SIP message remains in the network. INTEGER: 1–10 (Default = 5).

SIP Adaptor Configuration Parameters (CA-CONFIG)

The CA-CONFIG table has parameters that users can specify in order to influence the behavior and features provided by Cisco BTS 10200. Table 20 contains the parameters and their description, for the Cisco BTS 10200 SIP Adaptor. Table 1 contains those parameters and their descriptions that are applicable to the SIP Adaptor in the Cisco BTS 10200.

The default values in Table 20 are implemented in the Cisco BTS 10200 software when the corresponding parameter is not provisioned in the CA-CONFIG table. The entries must be provisioned only if the values are required to differ from the default.

For more information about the CA-CONFIG table, refer to the Call Agent Configuration section in the *Cisco BTS 10200 Softswitch Command Line Interface* guide.

The following items were added in Release 4.x:

- REFER-ACCEPT-TIMER-SECS
- REFER-ABANDON-TIMER- SECS
- NONCE-LIFETIME
- MIN-SE
- MAX-SESSION-EXPIRES
- SESSION-EXPIRES
- SIA-REGISTER-DEFAULT- EXPIRES
- SIA-REG-MIN-EXPIRES-SECS
- SIA-REG-MAX-EXPIRES- SECS
- SUB-SESSION-TIMER- ALLOWED

Note The CHK-POS-VAL field in Table 20 is a new capability added to Release 4.1. If a token is defined as a “string,” you now can specify possible values for that string, and EMS checks the possible values before allowing change/add for the CA-CONFIG parameter.

Note New fields are in bold type.

Table 20 Configuration Parameters for the Cisco BTS 10200 SIP Adaptor

TYPE	DATA TYPE	FROM-VALUE	TO-VALUE	CHK-POS-VAL	DEFAULT	DESCRIPTION
MAX-3XX-COUNT	Integer	1	5	N	1	Maximum 3XX (Redirection) allowed.
MAX-SESSION-EXPIRES	Integer	1800	7200	N	7200	Maximum session expiry in seconds. This SIP feature session timer is for SIP auditing purposes. A periodic refresh is sent for each session to check the liveness of the session. This conveys the session interval for a SIP call.
MAX-SUBSCRIPTION-LEVEL	Integer			N	3600	The notifier can choose to limit/lower the duration of a subscription that is requested by the subscriber (in seconds).
MIN-SE	Integer	900	1800	N	900	In seconds. This is the minimum session-expires allows to be sent or received.
NONCE-LIFETIME	Integer	0		N	180	Limits replay attacks and masquerades by setting an upper limit for the duration of validity of a nonce sent out in a challenge. It is specified in seconds. A value of 0 implies one-time nonces should be used (for example, each request is challenged with a new nonce). No Upper Limit.
REFER-ABANDON-TIMER-SECS	Integer			N	180	Seconds to wait before giving up on a Transfer request and sending a failure Notification to the transferee. (No RANGE is specified.)
REFER-ACCEPT-TIMER-SECS	Integer			N	10	Seconds to wait for response from BCM/FS before rejecting a Refer request. (No RANGE is specified.)
SESSION-EXPIRES	Integer	1800	7200	N	1800	(In seconds) This SIP feature -Session timer is for SIP auditing purposes. A periodic refresh is sent for each session to check the liveness of the session. This conveys the session interval for a SIP call.
SIA-REGISTER-DEFAULT-EXPIRES	Integer	3600		N	3600	(In seconds) A register request may be received without any expires parameter. Cisco BTS 10200 uses this value to set the expires value for that Registration. No Upper Limit.

TYPE	DATA TYPE	FROM-VALUE	TO-VALUE	CHK-POS-VAL	DEFAULT	DESCRIPTION
SIA-REG-MAX-EXPIRES-SECS	Integer			N	7200	Used by the Registrar to restrict the Maximum value for Contact expiration.
SIA-REG-MIN-EXPIRES-SECS	Integer	1800		N		Registrar rejects the register request having a value less than 3600 and less than MIN_EXPIRES. There is no upper limit.
SIA-SIG-TOS-LOWDELAY	Boolean			N	Y	Specifies whether to set this socket option, signalling (SIG) type of service (ToS) low delay (LOWDELAY) to 1 (Y) or 0 (N). Low delay refers to the waiting time, or latency involved in sending and receiving a packet. You can set various options on the TCP socket to tune or optimize for certain performance parameters. **Note** Cisco does not recommend using any value other than the specified default. Changing this value from its default may significantly impact network performance. Contact Cisco TAC for further information.

TYPE	DATA TYPE	FROM-VALUE	TO-VALUE	CHK-POS-VAL	DEFAULT	DESCRIPTION
SIA-SIG-TOS-PRECEDENCE	Integer	0	7	N	3	Specifies the designation assigned to a phone call by the caller to indicate the relative urgency (and thus the order of handling) of a call. It also sends an indication to the called party of the order in which the call is answered. Values are: • NETCONTROL (=7) • INTERNETCONTROL (=6) • CRITICAL (=5) • FLASHOVERRIDE (=4) • FLASH (DEFAULT=3) • IMMEDIATE (=2) • PRIORITY (=1) • ROUTINE (=0) **Note** Cisco does not recommend using any value other than the specified default. Changing this value from its default may significantly impact network performance. Contact Cisco TAC for further information.
SIA-SIG-TOS-RELIABILITY	Boolean			N	N	Specifies whether to set this socket option, signalling (SIG) type of service (ToS) reliability (RELIABILITY) to 1 (Y) or 0 (N). Reliability refers to the dependability of packet delivery. **Note** Cisco does not recommend using any value other than the specified default. Changing this value from its default may significantly impact network performance. Contact Cisco TAC for further information.

TYPE	DATA TYPE	FROM-VALUE	TO-VALUE	CHK-POS-VAL	DEFAULT	DESCRIPTION
SIA-SIG-TOS-THROUGHPUT	Boolean			N	N	Specifies whether to set this socket option, media gateway adaptor (MGA) signaling (SIG) type of service (ToS) throughput (THROUGHPUT) to 1 (Y) or 0 (N). Throughput refers to the actual amount of useful and non-redundant information that is transmitted or processed. The relationship between what went in one end of the network and what came out the other is a measure of the efficiency of that communications network. Throughput is a function of bandwidth, error performance, congestion, and other factors. **Note** Cisco does not recommend using any value other than the specified default. Changing this value from its default may significantly impact network performance. Contact Cisco TAC for further information.
SIA-TRUNK-GRP-LEVEL-SIG-TOS	Boolean			N	N	The SIA SIG ToS values define the system level ToS used for SIP calls. If the flag is set to Y, the system reads the TG level SIG ToS values and overrides the system level ToS values if required. If this token is set to Y, system level ToS tokens are still set. System level ToS tokens are used when sending messages when the trunk group is not known.
SUB-SESSION-TIMER-ALLOWED	Boolean			N	N	This flag controls the session timer feature for all Cisco BTS 10200 SIP Subscribers. When TRUE, session timer is activated on every call to/from a SIP subscriber.