C H A P T E R 5

PCSP Rules and Mapping

Revised: May 14, 2012, OL-25013-02

This chapter describes the PacketCable schema defined for the "Pcsp…" object schema and the required Vendor-specific extensions for full subscriber provisioning execution.

The Extensible Markup Language (XML) syntax example is not displayed in depth here. The full XML schema is given in the Appendix A, "Cisco BTS 10200 Extensions for Pcsp Objects."

PcspService

The PcspService object is a base subscriber and a service object for the Cisco BTS 10200 Softswitch. The individual components map as follows:

- ServiceId
  - AdminStatus—This maps the subscriber status and dn2subscriber status into a single field.

    0 = SUBSCRIBER.TEMP_UNAVAILABLE or SUBSCRIBER.TEMP_DISCONNECT

    1 = SUBSCRIBER.ACTIVE

    2 = SUBSCRIBER.TEMP_OOS and SUBSCRIBER.SEASONAL_SUSPEND
  - BillingId—This maps to the subscriber's BILLING_DN.
  - ExternalId—This maps to the actual subscriber ID.
  - IsPrimary—This value is always set to true. (This would need to change on multiline subscribers.)
  - PrimaryRing—This maps to the subscriber's RING_TYPE_DN1.
  - Displayname—This maps to the subscriber's NAME.
  - DisplayNumber—This is the subscriber's DN1 by default.
  - Password
  - Announcements—This maps to the subscriber's LANGUAGE and TIMEZONE settings.
  - InterExchange—This maps to the subscriber's PIC1, PIC2 and PC3 settings.
  - LNP—This maps to the subscriber's PORTED_IN and PORTED_OUT flags and to true if neither is set.
  - List Of Call Features—This maps to the subscriber's LNP_TRIGGER flag.

- CfBase—Common feature object base.

    – Subscribed—Each instance of the CfBase extension is derived from the subscriber's service profile and associated features.

    BillingUsage—This is always set to true.

    AdminStatus derived from the feature activation, such as STATUS of the subscriber's feature data. TRUE is defined and FALSE is not.

    – CfCND—Base object.

    – CfCIDCW—Base object.

    – CfCW—Base object.

    – CfCFV—Base object.

    – CFCAR—Base object.

    – CfAC—Base object.

    – CfMWI—Simple reflection of stutter dial and message wait indicator from MGW.

    – CfCOT—Base object.

    – CfTWC—Base object.

    – CfRACF—Basic feature and activation status.

    – CfOCCC—Distinctive Ring might be compatible.

    – CfCIES—Enhanced call screening could be done through the Privacy SLE.

    – CfACR—Base object with feature activation status.

    – CfACRestrict—Not supported.

    – CfACB—Not supported.

    – CfCIDB—This makes use of CNDB with Public and Anonymous flags.

    – CfCFBL—Basic object for CFB. This provides an activation flag and the forward to DN derived from SUBSCRIBER_FEATURE_DATA.

    – CfCFDA—Basic object for CFNA. This provides an activation flag Ring Period and the forward to DN derived from SUBSCRIBER_FEATURE_DATA.

    – CfCFC—This is also the basic object for CFU. This provides an activation flag Ring Period and the forward to DN derived from SUBSCRIBER_FEATURE_DATA.

    – CfSCF—This is also the basic object for SCF. This provides an activation flag and a list of forward DNs derived from SUBSCRIBER_FEATURE_DATA.

    – CfSCA—This is also the basic object for SCA. This provides an activation flag and a list of forward DN(s) derived from SUBSCRIBER_FEATURE_DATA.

    – CfSCR—This is also the basic object for SCR. This provides an activation flag and a list of forward DN(s) derived from SUBSCRIBER_FEATURE_DATA.

    – CfCRDW—This is also the basic object for SCA. This provides an activation flag and a list of forward DN(s) derived from SUBSCRIBER_FEATURE_DATA. This data be provided by the Application Server (AS) and not stored on the EMS.

    – CfSPCALL—This is the basic object for SC1D and SC2D. It provides the list of numbers but with no limitation or an indication of location. The list of mumbers must include additional extensions.

– CfRDA—This is the basic object for the MDN.

BlkDomLongDist—This is derived from the COS_RESTRICT of the subscriber using NATIONAL_RESTRICT_TYPE.

BlkIntLongDist—This is derived from the COS_RESTRICT of the subscriber using BLOCK_INTL.

BlkPayPerView—This is derived from the COS_RESTRICT of the subscriber using BLOCK_900 and BLOCK_976.

BlkOperatorAssist—This is derived from the COS_RESTRICT of the subscriber using BLOCK_NAPA_ASSIST.

BlkDirAssist—This is derived from the COS_RESTRICT of the subscriber using BLOCK_INTL_ASSIST.

BlkTollFree—This could be derived from the COS_RESTRICT. The BlkTolFree object needs a deep dive into the BW list and NOD tables. These are less standard and could vary from SP to SP.

PIN—This is derived from the AUTH_CODE of COS_RESTRICT.

– CfDND—This is generally controlled by application servers. This is not supported in the Cisco BTS 10200.

– CdCOC—This is generally controlled by application servers. This is not supported in the Cisco BTS 10200.

– CfNSA—This basic object is derived from the NSA feature. The ACTIVE indications, StartTod (BEGIN_DOW/TOD) and EndTod (END_DOW/TOD) are all part of the SUBSCRIBER_FEATURE_DATA.

Table 5-1 lists the PacketCable-to-Cisco BTS 10200 translations for PcspService.

Table 5-1   PacketCable Element-to-Cisco BTS 10200 Translations for PcspService

PacketCable Element	Cisco BTS 10200 Translation
ServiceId	Table: subscriber; column: dn1
AdminStatus	• 0: suspended (that is, bill not paid)—Table: subscriber; column: status=TEMP_DISCONNECTED.
	• 1: enabled (normal state)—Table: subscriber; column: status=ACTIVE.
	• 2: number has changed—Table: changed_number; column: new_dn. AdminStatus is in this state if at least one entry is found.
	• 3: out of service—Table: subscriber; column: status=TEMP-OOS or TEMP_UNAVAILABLE or SEASONAL_SUSPEND.
	• 4: unassigned—Table: dn2subscriber; column: sub_id. AdminStatus is in this state if no entries are found.
BillingId	Table: subscriber; column: billing_dn
ExternalId	Table: subscriber; column: id
IsPrimary	Always TRUE
PrimaryRing	Table: subscriber; column: ring_type_dn1
DisplayName	Table: subscriber; column: name
DisplayNumber	Table: subscriber; column: dn1

Table 5-1   PacketCable Element-to-Cisco BTS 10200 Translations for PcspService (continued)

PacketCable Element	Cisco BTS 10200 Translation
Password	No Op
Announcements	—
Language	Table: language; column: id Current supported PC language to Cisco BTS 10200 language: EN=eng; FR=fra; SP=spa; DF=def
Timezone	Table: pop; column: id for GET Cmd No Op on PUT or DELETE Cmds
InterExchange	—
PIC	Table: subscriber; column: pic1
LPIC	Table: subscriber; column: pic2
IPIC	Table: subscriber; column: pic3
LNP	—
PortingStatus	• 0: not ported—Table: subscriber; column: ported_in=N • 1: ported in—Table: subscriber; column: ported_in=Y • 2: ported out—No Op; this state is not supported by Cisco BTS 10200
LNPT	Table: subscriber; column: lnpt

PcspMta

The multimedia terminal adapter (MTA) object maps to the media gateway (MGW) table for the Cisco BTS 10200.

- MtaFqdn—This maps to TSAP-ADDR.
- MtaPort—This maps to MGW_PORT.
- CmtsFqdn—This maps to CALL_AGENT_ID.
- MtaProfile—This maps to MGW)PROFILE_ID.
- Timezone—This maps to TIMEZONE of POP table for SUBSCRIBER_PROFILE for RGW or TRUNK_GRP for TGW.
- Protocol—MGCP 1.0 NCS 1.0.
- Codec—This maps to CODEC of QOS table for SUBSCRIBER for RGW or TRUNK_GRP for TGW.
- IPSecControl—True.

Table 5-2 lists the PacketCable elements-to-Cisco BTS 10200 translations for PcspMta.

Table 5-2   PacketCable Elements-to-Cisco BTS 10200 Translations for PcspMta

PacketCable Element	Cisco BTS 10200 Translation
MtaFqdn	Table: mgw; column: tsap_addr
MtaPort	Table: mgw; column: mgw_port
CmsFqdn	Table: call_agent; column: tsap_addr
MtaProfile	Table: mgw; column: mgw_profile_id
Timezone	No Op—Uses CMS default
Protocol	No Op—Uses default of "MGCP 1.0 NCS 1.0"
Codec	Table: qos; column: codec_type
IPSecControl	No Op—Uses default of true

PcspEndPoint

The endpoint object maps to the TERMINATION table for the Cisco BTS 10200.

- EndpointId—This maps to ID column.
- AdminStatus—This maps to STATUS of SUBSCRIBER_TERMINATION/TRUNK_TERMINATION.
- Protocol—MGCP 1.0 NCS 1.0.
- Codec—This maps to CODEC of QOS table for SUBSCRIBER for RGW or TRUNK_GRP for TGW.
- IPSecControl—True.

Table 5-3 lists the PacketCable elements-to-Cisco BTS 10200 translations for PcspEndPoints.

Table 5-3   PacketCable Elements-to-Cisco BTS 10200 Translations for PcspEndPoints

PacketCable Element	Cisco BTS 10200 Translation
EndpointId	Is in the form: <prefix><port>@<mgw-tsap-addr> • prefix—Table: termination; column: prefix • port—Table: termination; column: port_start, port_end • mgw-tsap-addr—Table: mgw; column: tsap_addr
AdminStatus	Table: termination; column: status • 0: endpoint is disconnected—Table: termination; column: status=OOS or OOS_PENDING • 1: normal—Endpoint is in service. Table: termination; column: status=INS • 2: test mode—Endpoint is under test. Table: termination; column: status=MAINT or MAINT_PENDING
Protocol	No Op—Uses MTA default setting
Codec	No Op—Uses MTA default setting
IPSecControl	No Op—Uses MTA default setting

PcspCms

The call management system (CMS) object maps to the CALL_AGENT table for the Cisco BTS 10200.

• CmsFqdn—This maps to TSAP_ADDR.

Table 5-4 lists the PacketCable elements-to-Cisco BTS 10200 translations for PscpCMS.

Table 5-4   PacketCable Elements-to-Cisco BTS 10200 Translations for PcspCms

PacketCable Element	Cisco BTS 10200 Translation
CmsFqdn	Table: call_agent; column: tsap_addr

Provisioning Rules

This section provides the subscriber and MTA provisioning rules.

Subscriber

This section provides the subscriber provisioning rules.

- On Put commands
  - PcspArg.key must be a valid dn.
  - PcspArg.key must match the PcspService.ServiceId within XML Encoding.
  - PcspArg.key must match the PcspService.displaynum within XML Encoding.
  - PcspService.isPrimary *cannot* be "false".
  - PcspService.Password is *not* used.
  - PcspService.Annoucements.language is mapped as follows in Cisco BTS 10200: EN=eng, SP=spa, FR=fra, DF=def.

    > **Note**   The Cisco BTS 10200 must have these entries preprovisioned or a failure occurs.

  - PcspService.InterExchange.PIC1/2/3 must have corresponding preprovisioned entries in bts.carrier table.
  - PcspService.LNP.PortingStatus cannot be 2 (ported out).
  - ListOfServicePkg:

    For Add: all the entries in PcspService.ext:ListOfServicePkg are added to bts.service table for this subscriber.

    For Modify: all the entries in bts.service table are removed for this subscriber and then all the entries in PcspService.ext:ListOfServicePkg are added to bts.service table for this subscriber.

- On Delete commands
  - PcspArg.key must be a valid DN.
- On Get commands
  - PcspArg.key must be a valid DN.
  - PcspService.Password is *not* used.
- Feature provisioning
  - LSR

    When BlkTollFree is *false*, then ListOfServicePkg must contain service id that contains Cisco BTS 10200 8XX feature.

    When BlkTollFree is *true*, then ListOfServicePkg must *not* contain any service that subscriber is subscribed to which contains Cisco BTS 10200 8XX feature.

MTA

This section provides the MTA provisioning rules.

- On Put commands

  - PcspArg.key is mapped to bts.mgw.tsap_addr.

  - PcspArg.key must match PcspMta.mtaFqdn within XML Encoding.

  - PcspMta.cmtsFqdn is mapped to bts.call_agent.tsap_addr and must exist.

  - PcspArg.key is mapped to bts.call_agent.tsap_addr.

  - PcspArg.key must match PcspCms.cmsFqdn within XML Encoding.

  - ListOfServicePkg: For any feature provisioned in the listOfCallFeatures, the extension ListOfServicePkg *must* be completed to include the services related to the feature in the XML listOfCallFeatures. If any feature in the XML listOfCallFeatures is not contained in any of the services, the add or modify fails unless the subscriber ID and service ID are provisioned in the bts.subscriber_service_profile table.

  - PcspEndpoint.EndpointId is non-NULL; if NULL the appropriate PC error is returned.

  - PcspEndpoint.EndpointId is of the form <prefix(string)><N(digits)>@<mgw-tsap-addr(string)>.

  - For ADD, PcspEndpoint.Extension.sub_id is a mandatory extension.

- On Delete commands

  - PcspArg.key is mapped to bts.call_agent.tsap_addr.

  - PcspArg.key is mapped to bts.mgw.tsap_addr.

  - PcspEndpoint.EndpointId is non-NULL; if NULL the appropriate PC error is returned.

  - PcspEndpoint.EndpointId is of the form <prefix(string)><N(digits)>@<mgw-tsap-addr(string)>.

- On Get commands

  - PcspArg.key is mapped to bts.mgw.tsap_addr.

  - CMS.

    PcspArg.key is mapped to bts.call_agent.tsap_addr.

  - Features.

    PcspArg.key must be a valid DN.

    PcspArg.key must match PcspService.ServiceId within XML Encoding.

    PcspArg.key must match PcspService.displaynum within XML Encoding.

  - Endpoint.

    For MODIFY, PcspEndpoint.Extension.sub_id is an optional extension, but if it is provided, it improves performance.

    PcspEndpoint.EndpointId is non-NULL; if NULL return appropriate PC Error.

    PcspEndpoint.EndpointId is of the form <prefix(string)><N(digits)>@<mgw-tsap-addr(string)>.

  - CiscoBtsCli.

- PcspObj.entityName must be equal to PcspCiscoBtsCli (case-insensitive).

- PcspObj.key must equal the bts.noun and be equivalent to the CLI noun.

- PcspObj.cmdStatus is ignored.

- XmlEncoding for Request is exactly the same as the generic Cisco BTS 10200 SOAP/XML and CORBA XML request.

- XmlEncoding for Response is exactly the same as the generic Cisco BTS 10200 SOAP/XML and CORBA XML response.

Endpoint

This section provides the Endpoint provisioning rules.

- On PUT commands.

    - Subscriber must be provisioned before Endpoint is provisioned.

PCSP Extensions Requirements

The following sections provide these PCSP extensions:

- PcspCms Extension

- PcspMta Extension

- PcspService Extension

- PcspEndpoint Extension

PcspCms Extension

Table 5-5 lists the parameter matrix for the PcspCms extensions.

Table 5-5   Parameter Matrix for PcspCms Extensions

Parameter	ADD (PUT cmdStatus=1)	MODIFY (PUT cmdStatus=2)	SHOW (GET)	DELETE (DELETE)
id	Request => Required Response => Mandatory	Request => Optional Response => Optional	—	—
clli	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
mgw_monitoring_enabled	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
host_ip_address	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
host_id	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
timestamp	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
reply_string	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
Key	Request => Required Response => Mandatory	Request => Required Response =>Mandatory	—	—

PcspMta Extension

Table 5-6 lists the parameter matrix for the PcspMta extensions.

Table 5-6   *Parameter Matrix PcspMta Extensions*

Parameter	ADD (PUT cmdStatus=1)	MODIFY (PUT cmdStatus=2)	SHOW (GET)	DELETE (DELETE)
id	Request => Required Response => Mandatory	Request => Optional Response => Optional	—	—
aggr_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
node	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
type	Request => Required Response => Mandatory	Request => Optional Response => Optional	—	—
host_ip_address	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
host_id	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
timestamp	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
reply_string	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
key	Request => Required Response => Mandatory	Request => Required Response =>Mandatory	—	—

PcspService Extension

Table 5-7 lists the parameter matrix for the PscpService extensions.

Table 5-7   Parameter Matrix PcspService Extensions

Parameter	ADD (PUT cmdStatus=1)	MODIFY (PUT cmdStatus=2)	SHOW (GET)	DELETE (DELETE)
account_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
address1	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
address2	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
aor_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
city	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
cos_restrict_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
country	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
ctxg_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
esrn	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
forced	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
grp	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
h323_term_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
immediate_release	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
mac_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
mgw_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
mlhg_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—

Table 5-7   Parameter Matrix PcspService Extensions (continued)

Parameter	ADD (PUT cmdStatus=1)	MODIFY (PUT cmdStatus=2)	SHOW (GET)	DELETE (DELETE)
mlhg_pref_list_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
policy_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
privacy_manager_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
qos_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
sdt_mwi	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
secure_fqdn	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
send_bdn_as_cpn	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
send_bdn_for_emg	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
state	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
static_contact_host	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
static_contact_port	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
static_contact_user	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
sub_profile_id	Request => Required Response =>Mandatory	Request => Optional Response => Optional	—	—
term_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
terminating_immediate_rel	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
tg	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
tgn_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—

Table 5-7   Parameter Matrix PcspService Extensions (continued)

Parameter	ADD (PUT cmdStatus=1)	MODIFY (PUT cmdStatus=2)	SHOW (GET)	DELETE (DELETE)
usage_sens	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
vmwi	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
voice_mail_id	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
zipcode	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
billing_type	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
category	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
cwt_type	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
offhook_trigger_type	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
ohd_timer	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
privacy	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
term_type	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
user_type	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
ListOfServicePkg	Request => Optional Response => Optional	Request => Optional Response => Optional	—	—
host_ip_address	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
host_id	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
timestamp	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—

Table 5-7   Parameter Matrix PcspService Extensions (continued)

Parameter	ADD (PUT cmdStatus=1)	MODIFY (PUT cmdStatus=2)	SHOW (GET)	DELETE (DELETE)
reply_string	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
Key	Request => Required Response => Mandatory	Request => Required Response =>Mandatory	—	—

PcspEndpoint Extension

Table 5-8 lists the parameter matrix for the PcspEndpoint estensions.

Table 5-8   Parameter Matrix PcspEndpoint Extensions

Parameter	ADD (PUT cmdStatus=1)	MODIFY (PUT cmdStatus=2)	SHOW (GET)	DELETE (DELETE)
sub_id	Request => Required Response => Mandatory	Request => Optional Response => Optional	—	—
host_ip_address	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
host_id	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
timestamp	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
reply_string	Request => Not Used Response => Optional	Request => Not Used Response => Optional	—	—
Key	Request => Required Response =>Mandatory	Request => Required Response =>Mandatory	—	—

PCSP Extensions Requirements