Cisco BroadWorks

Partner Configuration Guide

Ascom IP-DECT IPBS2-A3/1B1

September 2020
Document Version 1.2

Cisco® Guide

Notification

BroadSoft BroadWorks has been renamed to Cisco BroadWorks. You will begin to see the Cisco name and company logo, along with the new product name on the software, documentation, and packaging. During the transition process, you may see both BroadSoft and Cisco brands and former product names. These products meet the same high standards and quality that both BroadSoft and Cisco are known for in the industry.

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Document Revision History

Version	Reason for Change
1.1	Introduced document for Ascom IP-DECT IPBS2-A3/1B1 version 11.1.5
1.2	Completed document with comments

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1 Overview

This guide describes the configuration procedures required for connecting the Ascom IP-DECT IPBS2-A3/1B1 to the Cisco BroadWorks system. The IP-DECT IPBS2-A3/1B1 is designed for North American usage.

The Ascom IP-DECT device uses the Session Initiation Protocol (SIP) to communicate with Cisco BroadWorks for call control. The Ascom IP-DECT supports the following infrastructure with BroadWorks:

- IPBS1
- IPBS2
- IPBS3
- IPBL

The Ascom IP-DECT is comprised of the following IP-DECT handsets:

- d41/d62/d81 (Talker, Messenger and Protector variants)
- d63 (Talker, Messenger and Protector variants)

This guide describes the specific configuration items that are important for use with Cisco BroadWorks. It does not describe the purpose and use of all configuration items on the Ascom IP-DECT products. Throughout this guide, the term IP-DECT shall be used to refer to the device under test, or DUT.

2 Interoperability Status

This section provides the known interoperability status of the Ascom IP-DECT with Cisco BroadWorks. This includes the version(s) tested, capabilities supported and known issues.

Interoperability testing validates that the device interfaces properly with Cisco BroadWorks via the SIP interface. Qualitative aspects of the device or device capabilities not affecting the SIP interface such as display features, performance, and audio qualities are not covered by interoperability testing. Requests for information and/or issues regarding these aspects should be directed to Ascom.

2.1 Verified Versions

The following table identifies the verified Ascom IP-DECT and Cisco BroadWorks versions and the month/year the testing occurred. If the device has undergone more than one test cycle, versions for each test cycle are listed, with the most recent listed first.

Compatible Versions in the following table identify specific Ascom IP-DECT versions, which the partner has identified as compatible and they should interface properly with Cisco BroadWorks. Generally, maintenance releases of the validated version are considered compatible and are not specifically listed here. For any questions concerning maintenance and compatible releases, contact Ascom.

NOTE: Interoperability testing is usually performed with the latest generally available (GA) device firmware/software and the latest GA Cisco BroadWorks release and service pack at the time the testing occurs. If there is a need to use a non-verified mix of Cisco BroadWorks and device software versions, customers can mitigate their risk by self-testing the combination themselves using the *BroadWorks SIP Phone Interoperability Test Plan* [4].

Verified Versions

Date (mm/yyyy)	Cisco BroadWorks Release	DECT Verified Version	DECT Compatible Versions
9/2020	Release 23.0	Ascom IP-DECT Base Station IPBS2-A3/1B1 11.1.5	Any maintenance revision of the validated releases.

2.2 Interface Capabilities Supported

This section identifies interface capabilities that have been verified through testing as supported by Ascom IP-DECT Base Station.

The *Supported* column in the tables in this section identifies the Ascom IP-DECT support for each of the items covered in the test plan, with the following designations:

- Yes Test item is supported
- No Test item is not supported
- NA Test item is not applicable to the device type

- NT Test item was not tested

Caveats and clarifications are identified in the *Comments* column.

2.2.1 SIP Interface Capabilities

The Ascom IP-DECT Base Station has completed interoperability testing with Cisco BroadWorks using the *BroadWorks SIP Phone Interoperability Test Plan* [4]. The results are summarized in the following table.

The Cisco BroadWorks test plan is composed of packages, each covering distinct interoperability areas, such as “Basic” call scenarios and “Redundancy” scenarios. Each package is composed of one or more test items, which in turn are composed of one or more test cases. The test plan exercises the SIP interface between the device and Cisco BroadWorks with the intent to ensure interoperability sufficient to support the Cisco BroadWorks feature set.

NOTE: *DUT* in the following table refers to the *Device Under Test,* which in this case is the Ascom IP-DECT.

Cisco BroadWorks SIP Phone Interoperability Test Plan Support Table			
Test Plan Package	**Test Plan Package Items**	**Supported**	**Comments**
Basic	Call Origination	Yes	
	Call Termination	Yes	
	Session Audit	Yes	Must Disable ICE on DECT to function properly for Call HELD Session Audit.
	Ringback	No	DUT sending of PRACK causes issues with signaling process. (No 200 OK received)
	Forked Dialog	NT	
	181 Call Being Forwarded	Yes	
	Dial Plan	Yes	
	DTMF – Inband	No	DUT only supports SIP INFO or RFC 2833.
	DTMF – RFC 2833	Yes	Tested with G729 & G722.2
	DTMF – DTMF Relay	NT	
	Codec Negotiation	Yes	Tested with G729 & G722.2
	Codec Renegotiation	Yes	Tested with G729 & G722.2
Cisco BroadWorks Services	Third-Party Call Control – Basic	No	
	Third-Party Call Control – Advanced	No	
	Voice Message Deposit/Retrieval	Yes	

	Message Waiting Indicator	No	DUT does display message waiting, but does not increase count for every new message received.
	Voice Portal Outcall	NA	Can dial Voice Portal, but this test not applicable to case.
	Advanced Alerting – Ringing	No	
	Advanced Alerting – Call Waiting	No	
	Advanced Alerting – Ring Splash	No	
	Advanced Alerting – Silent Alerting	No	
	Calling Line ID	Yes	Must set “Display Calling Party Number Together with Name” on DUT software to ‘Yes’ on handset software.

Cisco BroadWorks SIP Phone Interoperability Test Plan Support Table			
Test Plan Package	**Test Plan Package Items**	**Supported**	**Comments**
	Calling Line ID with Unicode Characters	Yes	Must set “Display Calling Party Number Together with Name” on DUT software to ‘Yes’ on handset software.
	Connected Line ID	Yes	Must set “Display Calling Party Number Together with Name” on DUT software to ‘Yes’ on handset software.
	Connected Line ID with Unicode Characters	Yes	Must set “Display Calling Party Number Together with Name” on DUT software to ‘Yes’ on handset software.
	Connected Line ID on UPDATE	Yes	Must set “Display Calling Party Number Together with Name” on DUT software to ‘Yes’ on handset software.
	Connected Line ID on Re-INVITE	Yes	Must set “Display Calling Party Number Together with Name” on DUT software to ‘Yes’ on handset software.
	Diversion Header	Yes	Showed both user tags. Error in test case.
	Call Decline Policy	Yes	
DUT Services – Call Control Services	Call Waiting	Yes	R2 used to answer second incoming calls, R1 used to hang up individual calls. (Call button functionality configured on handset software)
	Call Hold	Yes	There is no MoH, so SDP sends INACTIVE across the board.
	Call Transfer	Yes	For attended transfers, Direct Route & Route List services MUST be disabled on user otherwise REFER is rejected.

	Three-Way Calling	No	DUT cannot initiate conference, but can be invited into a conference.
	Network-Based Conference	No	DUT cannot initiate conference, but can be invited into a conference
DUT Services – Registration and Authentication	Register Authentication	Yes	
	Maximum Registration	Yes	
	Minimum Registration	Yes	
	Invite Authentication	Yes	
	Re-Invite/Update Authentication	Yes	
	Refer Authentication	NT	
	Device Authenticating BroadWorks	Yes	
DUT Services – Emergency Call	Emergency Call	NT	
	Emergency Call with Ringback	NT	

Cisco BroadWorks SIP Phone Interoperability Test Plan Support Table			
Test Plan Package	**Test Plan Package Items**	**Supported**	**Comments**
DUT Services – Miscellaneous	Do Not Disturb	Yes	
	Call Forwarding Always	Yes	
	Call Forwarding Always Diversion Inhibitor	No	DUT does CFA internally, so 302 is not used. Diversion Inhibitor is ignored.
	Anonymous Call	No	DUT sends “User=phone” syntax, causing BroadWorks to search for caller when using Star Codes. BroadWorks sends 480 response.
	Remote Restart Via Notify	No	
Advanced Phone Services – Busy Lamp Field	Busy Lamp Field	No	
	Call Park Notification	No	
Advanced Phone	Do Not Disturb	No	

Services – Feature Key Synchronization, Private Line	Do Not Disturb Ring Splash	No	
	Call Forwarding	No	
	Call Forwarding Always Ring Splash	No	
	Call Forwarding Always Diversion Inhibitor	No	
	Call Center Agent Logon/Logoff	No	
	Call Center Agent Unavailable Code	No	
	Executive – Call Filtering	No	
	Executive-Assistant – Call Filtering	No	
	Executive-Assistant – Diversion	No	
	Call Recording	No	
	Security Classification	No	
Advanced Phone Services – Feature Key Synchronization, Shared Line	Do Not Disturb	No	
	Do Not Disturb Ring Splash	No	
	Call Forwarding	No	
	Call Forwarding Always Ring Splash	No	
	Call Forwarding Always Diversion Inhibitor	No	
Advanced Phone Services – Missed Calls Display Synchronization	Missed Calls Display Sync	No	
Advanced Phone Services – Shared Call Appearance using Call Info	Line-Seize	No	
	Call-Info/Lamp Management	No	
	Public Hold	No	
	Private Hold	No	
	Hybrid Key System	No	

Cisco BroadWorks SIP Phone Interoperability Test Plan Support Table			
Test Plan Package	**Test Plan Package Items**	**Supported**	**Comments**
	Multiple Call Arrangement	No	
	Bridge Active Line	No	
	Bridge Active Line – Silent Monitor	No	

	Call Park Notification	No	
Advanced Phone Services – Call Park Notification	Call Park Notification	No	
Advanced Phone Services – Call Center	Hold Reminder	No	
	Call Information	No	
	Hoteling Event	No	
	Status Event	No	
	Disposition Code	No	
	Emergency Escalation	No	
	Customer Originated Trace	No	
Advanced Phone Services – Call Recording Controls	Pause/Resume	No	
	Start/Stop	No	
	Record Local Conference	No	
	Record Network Conference	No	
Advanced Phone Services – Call Recording Video	Basic Call	No	
	Record Local Conference	No	
	Record Network Conference	No	
Advanced Phone Services – Security Classification	Security Classification	No	
Advanced Phone Services – Conference Event	Network-Based Conference Creator	No	
	Network-Based Conference Participant	No	
	Meet-Me Conference Participant	No	
SBC/ALG - Basic	Register	Yes	
	Outgoing Invite	Yes	
	Incoming Invite	Yes	
SBC/ALG – Failover/Failback	Register Failover/Failback	NT	
	Invite Failover/Failback	No	
Cisco BroadWorks SIP Phone Interoperability Test Plan Support Table			
Test Plan Package	**Test Plan Package Items**	**Supported**	**Comments**
Video – Basic Video Calls	Call Origination	No	
	Call Termination	No	

	Call Hold	No	
	Call Waiting	No	
	Call Transfer	No	
Video – BroadWorks Video Services	Auto Attendant	No	
	Auto Attendant – HD	No	
	Voice Messaging	No	
	Voice Messaging – HD	No	
	Custom Ringback	No	
Video – BroadWorks Video Conference	Network-based Conference	No	
	Network-based Conference – HD	No	
	Collaborate – Video	No	
	Collaborate – Video – HD	No	
Video – BroadWorks WebRTC Client	Call from WebRTC Client	No	
	Call to WebRTC Client	No	
IPV6	Call Origination	NT	
	Call Termination	NT	
	Session Audit	NT	
	Ringback	NT	
	Codec Negotiation/Renegotiation	NT	
	Voice Message Deposit/Retrieval	NT	
	Call Control	NT	
	Registration with Authentication	NT	
	Busy Lamp Field	NT	
	Redundancy	NT	
	SBC	NT	
	Video	NT	
	Dual Stack with Alternate Connectivity	NT	

2.2.2 Other Interface Capabilities

The Ascom IP-DECT may have implemented support for the following:

- Cisco BroadWorks Xtended Services Interface (Xsi)
- Extensible Messaging and Presence Protocol (XMPP) (BroadCloud/BroadWorks Collaborate Instant Messaging and Presence [IM&P])

Support for these interfaces is demonstrated by completing the *BroadWorks SIP Phone Functional Test Plan* [5]. Support for these interfaces is summarized in the following table.

Cisco BroadWorks Xtended Services Interface (Xsi) and BroadCloud IM&P Support Table			
Interface	**Feature**	**Supported**	**Comments**
Xsi Features – Authentication	Authenticate with SIP Credentials	Yes	Known limitation: Authentication credentials used by IP-DECT needs to correspond to BroadWorks credentials under "Passwords" within the Profile section of the User. Must be set to 'set web access password'.
	Authenticate with BroadWorks User Login Credentials	No	
	Authenticate with BroadWorks User Directory Number	No	
Xsi Features – User Service Configuration	Remote Office	No	
	BroadWorks Anywhere	No	
	Simultaneous Ringing	No	
	Caller ID Blocking	No	
	Call Forwarding Always	No	
	Call Forwarding Busy	No	
	Call Forwarding No Answer	No	
	Do Not Disturb	No	
Xsi Features – Directories	Enterprise Directory	Yes	Search options just as "Exact Match" or "Starts With", is configured on base station, ergo is done using System Tags.
	Enterprise Common Phone List	NT	
	Group Directory	Yes	Search options just as "Exact Match" or "Contains", is configured on base station, ergo is done using System Tags.
	Group Common Phone List	NT	
	Personal Phone List	NT	
	Search All Directories	No	

Xsi Features – Call Logs	Placed Calls	No	
	Received Calls	No	
	Missed Calls	No	
	All Calls	No	
	Sort by Name	No	
Xsi Features – Visual Voice Mail	View Messages	No	
	Listen to Audio Message	No	
	Watch Video Message	No	
	Mark Message Read/Unread	No	
	Delete Message	No	

Cisco BroadWorks Xtended Services Interface (Xsi) and BroadCloud IM&P Support Table			
Interface	**Feature**	**Supported**	**Comments**
	Mark All Messages Read/Unread	No	
Xsi Features – Push Notification	Register/Deregister for Push Notifications	No	
	Incoming Call via Push Notification	No	
	Call Update via Push Notification	No	
	Incoming Call via Push Notification; Second Incoming Call	No	
	MWI via Push Notification	No	
	Ring Splash via Push Notification	No	
Xsi Features – Call Recording Configurations	Call Record Mode Get	No	
	Set Record Mode	No	
	Set Play Call Recording to Start and Stop Announcement	No	
	Set Record Voice Messaging	No	
	Set Pause and Resume Notification	No	
	Set Recording Notification	No	

Xsi Features – Call Recording Controls	Record Mode set to Never	No	
	Record Mode set to Always	No	
	Record Mode set to Always with Pause/Resume	No	
	Start Recording Mid-Call with Record Mode set to On Demand	No	
	Start Recording During Call Setup with Record Mode set to On Demand	No	
	Perform User Initiated Start with Record Mode set to On Demand	No	
	Perform Mid-Call Start Recording after Placing Call on Hold	No	
	Perform Mid-Call Change to Call Recording Mode	No	
	Record Local Three-Way Call	No	
	Record Network Three-Way Call	No	
XMPP Features – Contact/Buddy List	Contacts	No	
	Favorites	No	
	Groups	No	
	Non-XMPP Contacts	No	
	Conferences	No	
XMPP Features – Presence	Login Invisible	No	
	Presence State	No	

Cisco BroadWorks Xtended Services Interface (Xsi) and BroadCloud IM&P Support Table

Interface	Feature	Supported	Comments
	Presence Status	No	
	Contact's Presence State	No	

2.3 Known Issues

This section lists the known interoperability issues between Cisco BroadWorks and specific partner release(s). Issues identified during interoperability testing and known issues identified in the field are listed.

The following table provides a description of each issue and, where possible, identifies a workaround. The verified partner device versions are listed with an "X" indicating that the issue occurs in the specific release. The issues identified are device deficiencies or bugs and are typically not Cisco BroadWorks release dependent.

The *Issue Number* is a tracking number for the issue. If it is an IP-DECT issue, the issue number is from IP-DECT's tracking system. If it is a Cisco BroadWorks issue, the issue number is from Cisco's tracking system.

For more information on any issues related to the particular partner device release, see the partner release notes.

Issue Number	Issue Description	Partner Version			
EV 208952	**Ascom IP-DECT does not support Allow-Events Hold** There is a partial implementation of advanced call control where the Hold event is un-available. This causes the 3rd party advanced call control functionalities to be broken. Further, the call hold scenario can only be invoked at the end point. Workaround: Call hold needs to be invoked on the device and cannot be perform through 3rd party call control.	X			

3 Cisco BroadWorks Configuration

This section identifies the required Cisco BroadWorks device profile type for the Ascom IP-DECT as well as any other unique Cisco BroadWorks configuration required for interoperability with the IP-DECT.

3.1 Cisco BroadWorks Device Profile Type Configuration

This section identifies the device profile type to use when deploying the IP-DECT with Cisco BroadWorks.

Create a device profile type for the IP-DECT as shown in the following example. A separate device profile type should be created for each IP-DECT model. The settings shown are recommended for use when deploying the IP-DECT with Cisco BroadWorks. Please note that the number of ports must be equal or greater than the number of handsets in the system. For an explanation of the profile parameters, see the *BroadWorks Device Management Configuration Guide* [1].

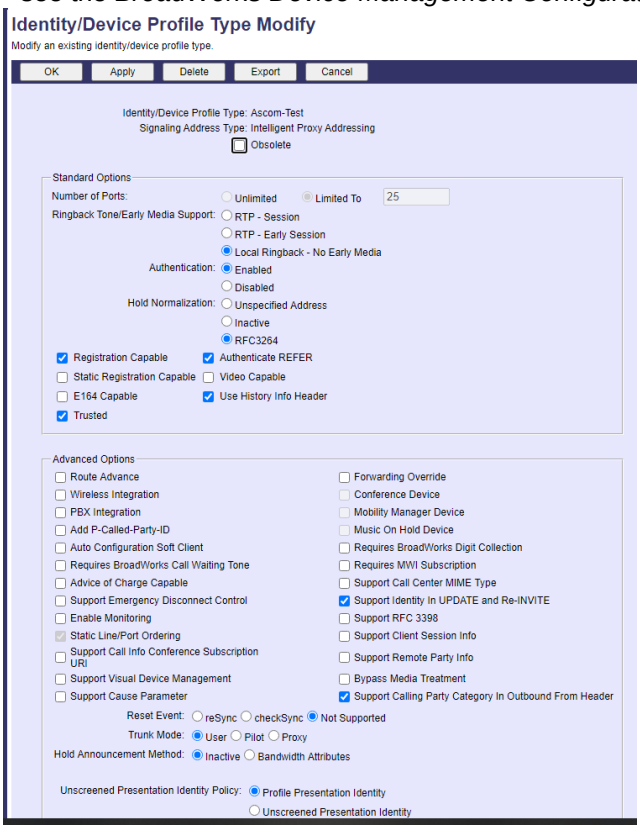

Figure 1 – Device Profile Type

3.2 Cisco BroadWorks Configuration Steps

Within Group Administrative mode, browse to *Resources → Identity/Device Profiles.* Click “Add” and give unique name. Choose the “Identity/Device Profile Type” created earlier and click “OK”. Browse to *Profile → Users* and choose the user assigned to the handsets configured on IP-DECT. When in User Administrative mode, browse to *Profile → Addresses* and choose the Identity/Device Profile Name given in earlier step in Group mode. Click “Apply” and “OK”.

Another example of this can be seen in Section 5.2.3 *Create Device Profile Instance.*

4 Ascom IP-DECT Configuration

The Ascom IP-DECT can be configured through its web server. The following examples describe how to configure users on the IP-DECT for use on BroadWorks. This configuration description assumes the DECT station uses the Dynamic Host Configuration Protocol (DHCP) to get an IP address, HTTP server, and other network settings, and that handsets have already been subscribed to the IP-DECT base station. Subscription in this sense has nothing to do between the IP-DECT and BroadWorks, but rather has to do with the inner workings and connection between the handsets and the base station.

The capabilities of the Ascom IP-DECT have been verified for use with Cisco BroadWorks based on the settings described in the following descriptions. For more information on the meaning, purpose, and applicability of the individual configuration items see the *IP-DECT Base Station IPBS IOM.*

On the IP-DECT Base Station Web UI, browse to *DECT → Master*. In the *IP-PBX* section, ensure that 'Protocol' is set to desired settings, like SIP/TCP, or SIP/TLS. For this test, 'SIP/UDP' was used. In 'Proxy', input the IP or FQDN of the BroadWorks SBC. Input the domain within 'Domain' field. Ensure that 'Allow DTMF Through RTP' is checked to use RFC 2833. All other settings can remain default.

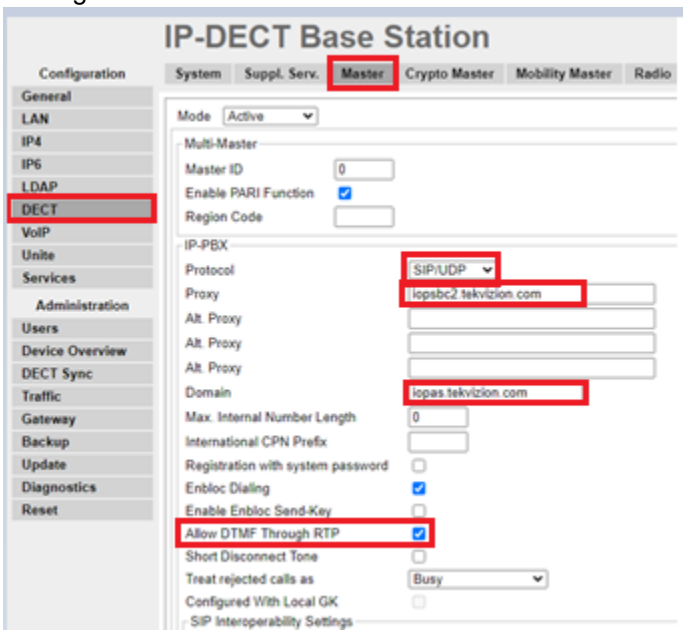

Figure 2 - DUT Configuration for BroadWorks Usage

Go to *Users → Users,* click 'Show' and then select one of the available users. Fill in the 'Number', 'Auth. Name', and 'Password' sections with the credentials and information created on BroadWorks end. 'IPEI/IPDI' is local information not dependent upon any BroadWorks configuration but necessary for operation. 'Display Name' and 'Idle Display' should be set to the unique first and last name given to the user in BroadWorks configuration.

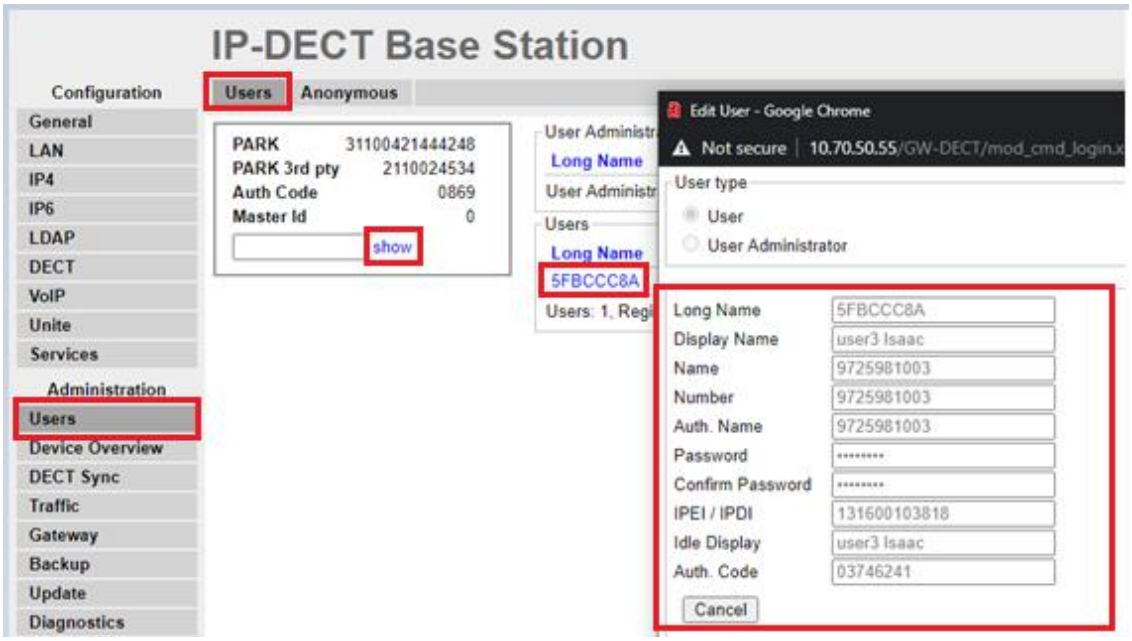

Figure 3 - DUT User Configuration

In order to change the codec, browse to *DECT → System,* and set the 'Coder' tab to desired setting. To set RTP encryption settings, in same area, set 'Secure RTP Key Exchange' to desired setting. See *Figure 4.*

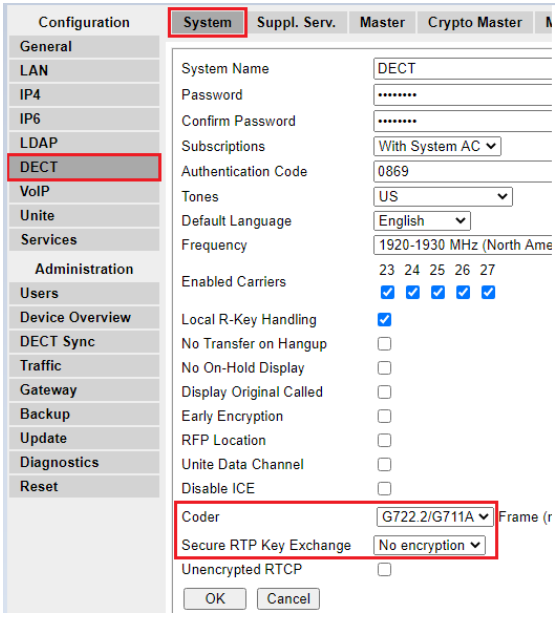

Figure 4 - Codec & SRTP Configuration

To set all necessary call functions such as CFA, Do Not Disturb, etc, browse to *DECT → Suppl. Serv.*. Uncheck the 'Disable box' and click 'OK'. Either use default script or configure script to use for Activation and Deactivation. See *Figure 5.*

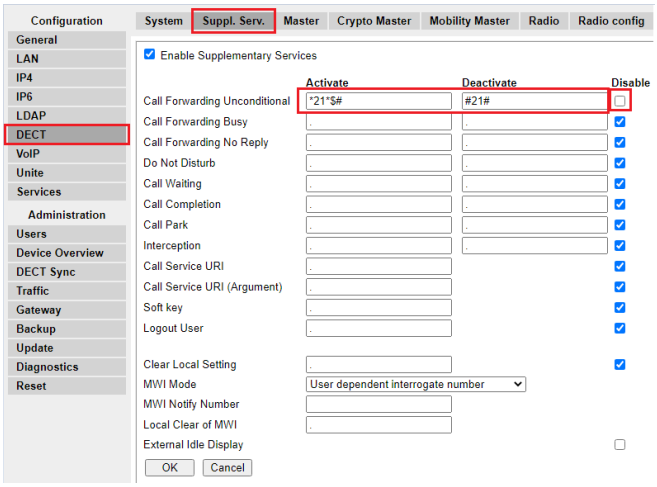

Figure 5 - Call Functionality Configuration

Note that the above image is an example for CFA. For other Supplementary Services refer to Ascom Configuration Manual.

5 Device Management

The Cisco BroadWorks Device Management feature provides the capability to automate generation of device configuration files to support mass deployment of devices. This section identifies the device management capabilities supported by the Ascom IP-DECT and the configuration steps required. For Device Management configuration details not covered here, see the *BroadWorks Device Management Configuration Guide* [1] and the *BroadWorks CPE Kit Usage Guide* [7].

5.1 Device Management Capabilities Supported

The Ascom IP-DECT has completed Device Management interoperability testing with Cisco BroadWorks using the *BroadWorks Device Management Interoperability Test Plan* [6]. The results are summarized in the following table.

The Cisco BroadWorks test plan is composed of packages, each covering distinct interoperability areas. Each package is composed of one or more test items, which in turn, are composed of one or more test cases. The test plan exercises the Device Management interface between the device and Cisco BroadWorks with the intent to ensure interoperability.

The *Supported* column in the following table identifies the Ascom IP-DECT support for each of the items covered in the test plan packages, with the following designations:

- Yes Test item is supported
- No Test item is not supported
- NA Test item is not applicable
- NT Test item was not tested
- No* Test item is supported only in limited capacity and does not fully comply with Cisco BroadWorks requirements.

Caveats and clarifications are identified in the *Comments* column.

NOTE: *DUT* in the following table refers to the *Device Under Test*, which in this case is the Ascom IP-DECT.

Cisco BroadWorks Device Management Interoperability Test Plan Support Table			
Test Plan Package	**Test Plan Package Items**	**Supported**	**Comments**
HTTP File Download	HTTP Download Using XSP IP Address	Yes	DMS settings input from DUT GUI. (Services > DMS) Can also be done by factory resetting device and setting DMS as operation.
	HTTP Download Using XSP FQDN	Yes	DMS settings input from DUT GUI. (Services > DMS) Can also be done by factory resetting device and setting DMS as operation.

	HTTP Download Using XSP Cluster FQDN	Yes	DMS settings input from DUT GUI. (Services > DMS) Can also be done by factory resetting device and setting DMS as operation.
	HTTP Download With Double Slash	No	Base station did not send GET request to broadworks for boot file. This situation happened with IP & with FQDN. DUT however does not require boot file to operate.
HTTPS File Download	HTTPS Download Using XSP IP Address	No	
	HTTPS Download Using XSP FQDN	No	
	HTTPS Download Using XSP Cluster FQDN	No	

Cisco BroadWorks Device Management Interoperability Test Plan Support Table			
Test Plan Package	**Test Plan Package Items**	**Supported**	**Comments**
HTTPS File Download with Client Authentication	HTTPS Download with Client Authentication Using XSP FQDN	NT	
	HTTPS Download with Client Authentication Using XSP Cluster FQDN	NT	
Time Zone Mapping	Inspect Time Zone Setting	NA	
Language Mapping	Inspect Language Setting	NA	
File Inspection	Inspect System Config File	NA	DUT only uses device-specific config files & tags. DUT master.cfg contains the tags necessary for operation. System tags not specific enough for DUT to use for functionality.
	Inspect Device-Specific Config File	Yes	
	Inspect Other Config Files	NA	
	Inspect Static Files	Yes	Used DUT specific means to verify (i.e. checked Device Overview > Firmware)
Device Inspection	Inspect SIP Settings	Yes	Proxy on device is the Outbound Proxy.
	Inspect Line Settings	Yes	
	Inspect Service Settings	No	
HTTP File Upload	HTTP Upload Using XSP IP Address	No	
	HTTP Upload Using XSP FQDN	No	
	HTTP Upload Using XSP Cluster FQDN	No	
Call Processing Sanity Tests	Register with Authentication	Yes	
	Call Origination	Yes	
	Call Termination	Yes	
	Remote Restart	No	
	Shared Line Origination	No	
	Shared Line Termination	No	

	Shared Line Status	No	
	Busy Lamp Field	No	
	Network-Based Conference	No	
Flexible Seating	Association via Voice Portal	No	
	Association via Phone	No	
No Touch Provisioning	Provision via DHCP Options Field	No	
	No Touch Provision via DM redirect	No	
	No Touch Provision via Vendor redirect	No	

5.2 Device Management Configuration

This section identifies the steps required to enable the IP-DECT for device management. For Device Management configuration details not covered here, see the *BroadWorks Device Management Configuration Guide* [1] and the *BroadWorks CPE Kit Usage Guide* [7].

5.2.1 Configure Cisco BroadWorks Tags

The template files in Device Management use tags to represent the data stored on Cisco BroadWorks. When a configuration changes for a user, Device Management parses the template files and replaces the Device Management tags with the associated data stored on Cisco BroadWorks. There are default tags defined in the Device Management software and there are custom tags that the service provider can create/define via the web portal for use by Device Management. There are two types of custom tags that can be defined: system-default tags are common to all phones on the system; device type specific tags are common to Ascom IP-DECT models only.

The IP-DECT makes use of dynamic tags, which may be configured by a Cisco BroadWorks administrator as either system default or device type-specific tags. This section identifies the required tags.

5.2.1.1 Create System Default Tags

Browse to *System → Resources → Device Management Tag Sets* and select the *System Default* tag set. Add the system default tags in the following table if they do not already exist.

Tag Name	Valid Settings	Description
%SNTP_SERVER_1%	IP address/FQDN	NTP server address.
%SNTP_SERVER_2%	IP address/FQDN	NTP server address alternate.
%DNS_SERVER_1%	IP address	DNS server address.
%DNS_SERVER_2%	IP address	DNS server address alternate.
%SBC_ADDRESS%	IP address/FQDN	SBC SIP address.

%SBC_PORT%	Port	SBC SIP port.

Example System Default Tag Settings

Figure 6 - System Default Tag Settings

5.2.1.2 Create Device Type-Specific Tags

When in Group Administrative mode, browse to *Utilities* → *Device Configuration* and select the Identity/Device Profile Type created at System level. Click the *Custom* Tags tab and click "Add". This is where you'll add all specific tags that are replaced in the master.cfg file.

NOTE: These tags shown below are only the tags used in testing. If other tags required, follow these same steps.

Tag Name	Valid Settings	Description
%IPDECT-DMS-VERSION-BOOT%	11.1.5	Version number of the bootfile.

%IPDECT-DMS-VERSION-d63%	2.9.6	Version number of the handset device.
%IPDECT-DMS-VERSION-FIRM%	11.1.5	Version number of the firmware.
Tag Name	**Valid Settings**	**Description**
%IPDECT-IPEI-1%	13 character numerical string.	Unique identifier for each handset device.
%IPDECT-NTP-SERVER1%	IP address.	NTP server.
%IPDECT-PHONEBOOK-NUMBER-MATCH%	Only 3 options: 'Contains', 'Exact-Match', 'Starts-with'.	Search method. How handsets are able to search in the phone directories
%IPDECT-SIP-DOMAIN%	FQDN address.	Domain of BroadWorks network, application server.
%IPDECT-SIP-PROXY%	IP or FQDN address.	SBC address
%IPDECT-SIP-PROXY-PROT%	VoIP Protocol (H323 or SIP)	VoIP Protocol being used in network.
%IPDECT-XSI-AUTH-DOMAIN%	FQDN address.	Domain of BroadWorks network, XSI server.
%IPDECT-XSI-FQDN%	FQDN address.	XSI FQDN.

5.2.2 Configure Cisco BroadWorks Device Profile Type

The device profile type is a system-level structure that defines how the device interfaces with Cisco BroadWorks. It also identifies the default configuration files and other files, such as firmware, which are required for the device to operate correctly. The device profile type is created by the system administrator. Group administrators use the device profile type to create a device profile. The device profile is an instance of the device profile type that is associated with a physical device.

There are two Cisco BroadWorks device profile configuration methods described: import and manual. The import method takes a DTAF as input and builds the Cisco BroadWorks device profile type(s) automatically. The manual method takes the administrator through the steps to manually add and configure the device profile type(s).

The import method should be used if all the following prerequisites are met:

- The Cisco BroadWorks Release is 17.0 or later.
- The device profile type(s) being imported do not already exist on the system. (If either a previous import or manual configuration was done, then the import fails.)
- There is a DTAF file available for import with a Cisco BroadWorks release level that is the same as or prior to the release to which it is being imported. If the DTAF file is at a release level later than the release being imported to, then the import can fail.

Otherwise, use the manual method.

For more detailed instructions, see the *BroadWorks CPE Kit Usage Guide* [7] and the *BroadWorks Device Management Configuration Guide* [1].

5.2.2.1 Configuration Method 1: Import

This section identifies the steps necessary to make use of the Device Management import feature to configure Cisco BroadWorks to add the IP-DECT as a Device Management-enabled device type. Also, see the *BroadWorks CPE Kit Usage Guide* [7].

If available, download the IP-DECT CPE kit from BroadSoft Xchange at xchange.broadsoft.com. Extract the DTAF file(s) from the CPE kit. These are the import files. Repeat the following steps for each model you wish to import.

1) Log in to Cisco BroadWorks as an administrator.
2) Browse to *System* → *Resources* → *Identity/Device Profile Types* and then click **Import**.
3) Select *Browse* to find the extracted DTAF file for the model and then click **OK** to start the import.

   After the import finishes, complete the following post-import configuration steps:

4) Browse to *System* → *Resources* → *Identity/Device Profile Types.*
5) Perform a search to find the imported Ascom IP-DECT device profile type.
6) Browse to the *Profile* page and change the Device Management Device Access FQDN to your Xtended Services Platform (Xsp) or Xtended Services Platform cluster address.

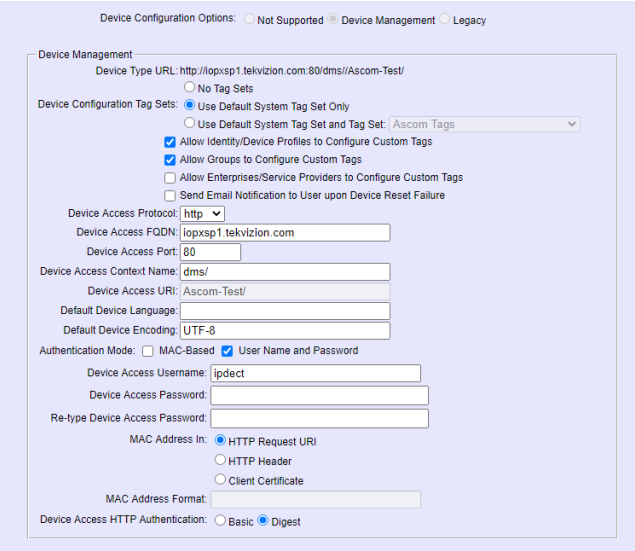

Figure 7 - Device Access FQDN

7) Click the **Files and Authentication** link and then select the option to rebuild all the system files.

   Firmware files must be obtained from Ascom. These files are not included in the import. Complete the steps in section *5.2.2.2.2 Define Device Profile Type Files* to define the static firmware files and to upload the firmware.

5.2.2.2 Configuration Method 2: Manual

This section identifies the basic steps necessary for an administrator to manually configure Cisco BroadWorks to add the IP-DECT as a Device Management enabled device type. This method should not be used except in special cases as described in the opening to section *5.2.2 Configure Cisco BroadWorks Device Profile* Type.

For more detailed instructions on the manual configuration, see the *BroadWorks CPE Kit Usage Guide* [7] and the *BroadWorks Device Management Configuration Guide* [1].

The steps in this section can also be followed to update previously imported or configured device profile type(s) with new configuration files and firmware.

If there are DTAFs for more than one device model, these steps must be completed for each model.

5.2.2.2.1 Create or Modify Device Profile Type

This section identifies the Cisco BroadWorks device profile type settings relevant to Device Management for the IP-DECT.

Browse to *System → Resources → Identity/Device Profile Types* and perform a search to find the IP-DECT device profile type(s) created in section *3.1 Cisco BroadWorks Device Profile Type* Configuration or add the device profile type for each model using the settings from section *3.1 Cisco BroadWorks Device Profile Type* Configuration if they do not exist.

Configure the device profile type *Signaling Address Type*, *Standard* and *Advanced* options settings to match the settings in section *3.1 Cisco BroadWorks Device Profile Type* Configuration.

Configure the device profile type *Device Management* options as shown in section *5.2.2.1 Configuration Method 1: Import*.

The following subsections identify the required settings specific to Device Management.

5.2.2.2.2 Define Device Profile Type Files

This section describes the Cisco BroadWorks Device Management configuration necessary to identify the configuration files and other files that the IP-DECT downloads.

Configuration templates, firmware, and other files the IP-DECT uses must be uploaded to Cisco BroadWorks. Obtain the firmware files directly from Ascom.

The following table identifies the Ascom IP-DECT configuration files used in this test:

File Name	File Type	Description
Examples		
master.cfg	Device-specific (Dynamic Per-Device)	In the DMS environment, this file contains user-related data and contains all custom tag information. This file has the bulk of all necessary configuration material for IP-DECT.
Boot_ipbs2.bin	Device-specific (Static)	This file contains the boot file.
Ipbs2.bin	Device-specific (Static)	This file contains the firmware.
d63.bin	Device-specific (Static)	This file contains the firmware of the d63 handset models. (Note, this can be uploaded to handset via individual software. Otherwise,

		once DECT base station downloads this file, it is sent OTA to handsets)
Dectusers.xml	Device-specific (Dynamic Per-Device)	This file contains handset/user specific info such as BWAuthPassword, IPEI system info, BWAuthUsername, & Time/Date info.
Hsparamters.xml	Device-specific (Dynamic Per-Device)	This file contains handset specific parameters such as Voice-Portal info, Language settings, Time Format settings, & Device ID.

Browse to *System → Resources → Identity/Device Profile Types → Files and Authentication* to add the files as described in the following subsections.

For additional configuration parameters, please refer to "*IP-DECT BroadWorks, Quick Reference Guide*".

5.2.2.2.2.1 Dynamic Per-Device File

This section identifies the dynamic per-device files used by IP-DECT and provides instructions for defining the files and uploading for Device Management.

Ascom IP-DECT downloads the file based on the user's name and passwords using the following file name format:

- Master.cfg
- Hsparamters.xml
- Dectusers.xml

Add the dynamic per-device files to the device profile type with the settings shown in *Figure 4.* Be sure to click **Apply** after uploading the file.

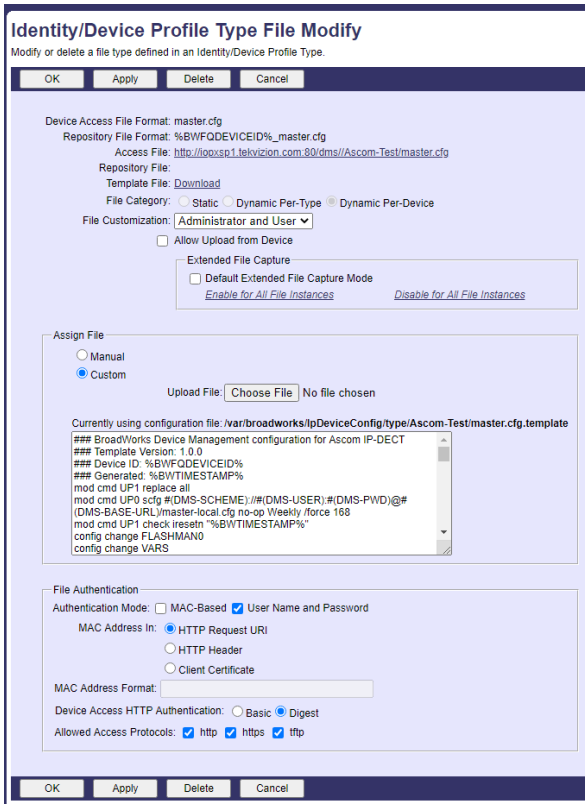

Figure 8 - Dynamic-Per Device file Example

5.2.2.2.2.2 Static Files

Add the Static files to the device profile type with the settings shown. Be sure to click **Apply** after uploading the file.

Figure 9 - Static File Example

5.2.3 Create Device Profile Instance

The previous sections defined the device profile type such that the system is ready to mass deploy device profiles. A device profile is an instance of the device profile type and defines the Cisco BroadWorks interface to an individual IP-DECT.

Browse to the Cisco BroadWorks *<group>* → *Resources* → *Identity/Device Profiles* page and then select **Add** to add a new IP-DECT device profile. Configure the device profile as shown in the *Figure 6 Device Profile Instance* example.

Another example of this can be seen in Section 3.2 *Cisco BroadWorks Configuration Steps*

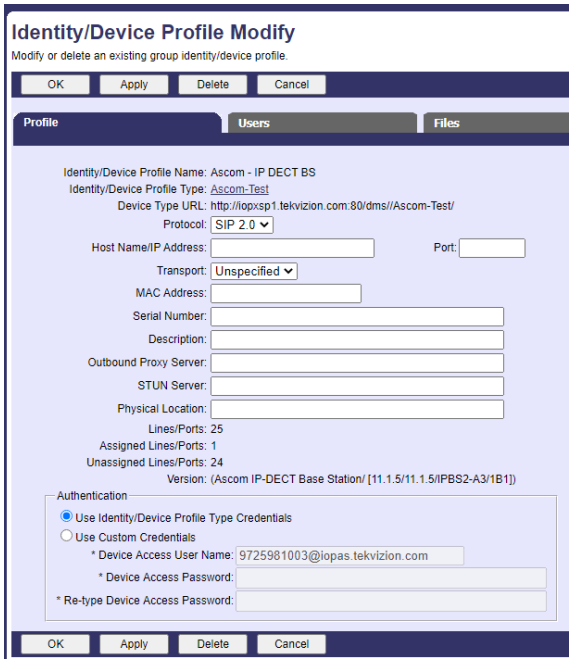

Figure 10 - Device Profile Instance

5.2.4 Configure Cisco BroadWorks User

Configure the user with the desired Cisco BroadWorks configuration and services. Any services that require a specific configuration on the device are managed via Device Management and are defined in the device configuration files, if the template files are created with the correct Device Management tags.

The device profile created in the previous section must be assigned to the Cisco BroadWorks user. Assigning the device profile to the user automatically causes the Device Management feature to generate the device configuration files for this user's device.

5.2.5 Configure Ascom IP-DECT

This section describes the steps necessary to configure the SIP DECT to integrate with Cisco BroadWorks Device Management when the configuration server is provisioned through the Web UI.

1) Under *Services* → *DMS* enter the following data as shown in the following figure.
2) Enter the XSP IP address or FQDN.
3) Enter the Username & Password configured at System level of BroadWorks Identity/Device Profile Type.
4) Click "OK". Go to *Reset* → *Reset* → *OK*

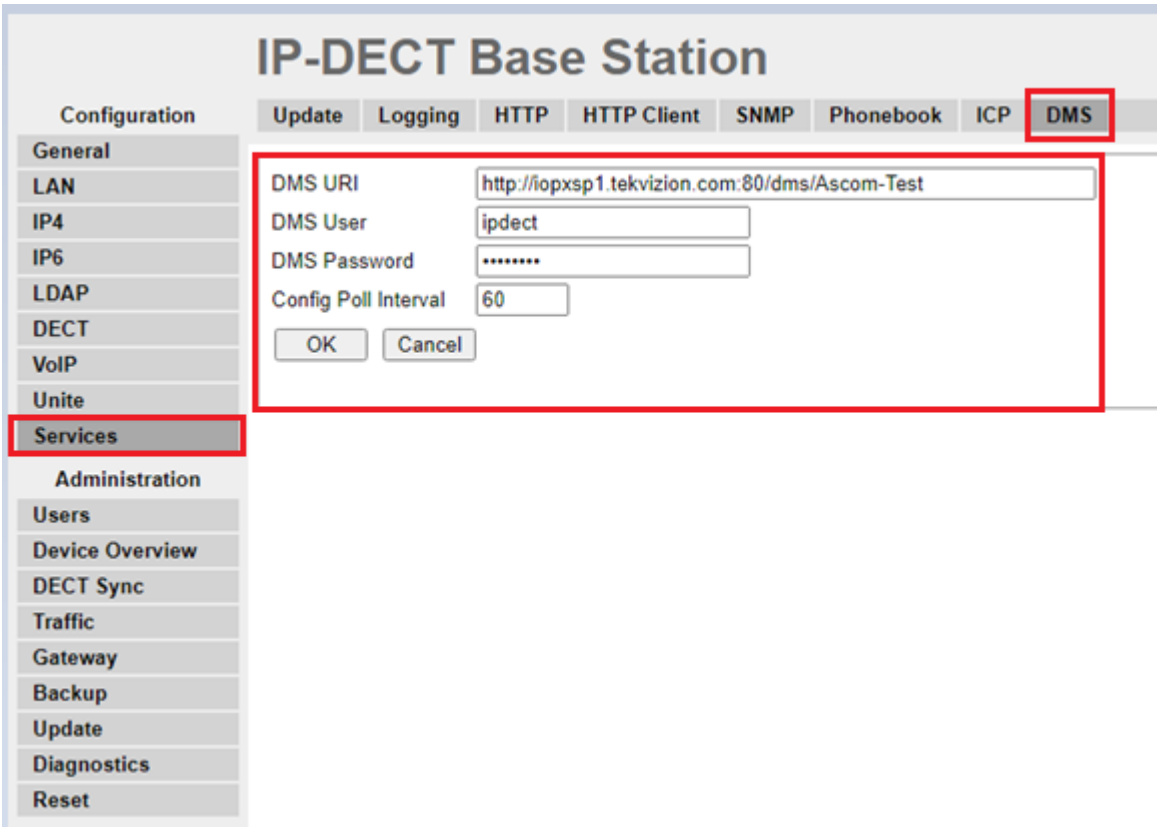

Figure 11 – DMS/XSI Configuration

Appendix A: Reference Ascom IP-DECT Configuration File

The following is a reference configuration for the IP-DECT configured for use with Cisco BroadWorks.

NOTE: The following samples are examples and should be used as a reference only. DO NOT CUT AND PASTE THESE EXAMPLES TO GENERATE YOUR CONFIGURATION FILES. Use the configuration files obtained from Ascom with the specific release to generate your configuration files.

Device-specific File: master.cfg

```
### BroadWorks Device Management configuration for Ascom IP-DECT
### Template Version: 1.0.0
### Device ID: %BWFQDEVICEID%
### Generated: %BWTIMESTAMP%
mod cmd UP1 replace all
mod cmd UP0 scfg #(DMS-SCHEME)://#(DMS-USER):#(DMS-PWD)@#(DMS-BASE-URL)/master-local.cfg no-op Weekly /force 168
mod cmd UP1 check iresetn "%BWTIMESTAMP%"
config change FLASHMAN0
config change VARS
config change SNMP0
config change ASC_SUBAGNT0
config change LOG0
config change LOG0 FAULT
config change LO0 CNT
config change CDR0
config change CDR1
config change CPU
config change ASC_LOGGING0
config change SER0
config change SER1
config change ETH0
config change IP0 /priority-tos 0xb8 /priority-tos1 0x68
config change IP0 ETH0 /addr 192.168.1.1 /mask 255.255.255.0 /dns 8.8.8.8
config change IP0 RT0 /gateway 192.168.1.254
config change IP0 RT1
config change IP0 RT2
config change IP0 RT3
config change IP6
config change IP6 ETH0
```

config change IP6 6TO4-00
config change IP6 6TO4-01
config change IP6 6TO4-02
config change IP6 6TO4-03
config change IP6 6TO4-04
config change IP6 6TO4-05
config change IP6 6TO4-06
config change IP6 6TO4-07
config change LLDP0
config change DNS0
config change KEYGEN
config change RSA
config change X509
config change TLS_CIPHER0
config change ENET1X0
config change TLS0
config change TLS6
config change CMD0 /logout 10 /no-native /no-native-except LOG0/FAULT
config change HTTPCLIENT0
config change WEBDAV0
config change HTTP0 /force-https /no-cache
config change TELNET0
config change PING0
config change PCAP
config change WEBMEDIA
config change MEDIA-FWD
config change MEDIA
config change NTP0 /offset CST6CDT5,M3.2.0/2,M11.1.0/2
config change DHCP-SYNC
config change DHCP0 /mode off
config change DHCP6-0 /mode disabled
config change FLASHDIR0
config change LDAPSRV0
config change LDAPDIR0
config change LDAPREP0
config change KERBEROS
config change KDB0
config change TESTIF0
config change RFP0
config change RFP0 RFPDWL
config change RFPSTAT0
config change RFPINIT0 /mode master
config change RFPINIT0 PRODPARAM
config change DECT /cipher

config change H323
config change SIP
config change TSIP /share-local-port
config change SIPS /share-local-port
config change TEST
config change TONE
config change HTTP
config change ECHO
config change SIG0
config change SIG1
config change WEBSOCKET0
config change UP0
config change UP1 /hide-credentials /arg-quotes
config change ASDP
config change ASDPSERVER
config change ASDPROUTER
config change UNITED
config change CUNITE
config change CUNITE FILEGET /no-http-range
config change CUNITE CALLINFO
config change CUNITE KEYVALUE
config change CUNITE SUPERVISION
config change DEVICELIC
config change UNITE
config change UNITE UTP
config change UNITE GROUPHANDLER
config change UNITE FAULTHANDLER
config change UNITE DEVMANSERVER /boot-label %IPDECT-DMS-VERSION-BOOT% /firm-label %IPDECT-DMS-VERSION-FIRM%
config change UNITE DEVMANHANDLER
config change UNITE SUPERVISIONHANDLER
config change MATP
config change DEVMANPP /firm-d43 %IPDECT-DMS-VERSION-d43% /firm-d63 %IPDECT-DMS-VERSION-d63% /firm-d81 %IPDECT-DMS-VERSION-d81%
config change CUTP
config change SMSRL
config change SMSC
config change AIRSYNCCTRL
config change PHONEBOOK_XSI /auth-domain %IPDECT-XSI-AUTH-DOMAIN% /fqdn %IPDECT-XSI-FQDN%
config change PHONEBOOK /enable /int-text %IPDECT-PHONEBOOK-TEXT-HEADING% /nores-text %IPDECT-PHONEBOOK-TEXT-NO-RESULT% /moreres-text %IPDECT-PHONEBOOK-MENU-ITEM-MORE-RESULTS% /bs-searchdir %IPDECT-PHONEBOOK-NUMBER-MATCH%

config change PHONEBOOK PHBFLASH0
config change PHONEBOOK-LDAP
config change ICP
config add GW-DECT /kp /disc-no-ct /coder G711u,20,
config change GW-DECT LOCALUSERS /kp
config change GW-DECT CRYPTOMASTER
config change GW-DECT MOBMASTER
config change GW-DECT MASTER /allow-rtp-dtmf /mode ACTIVE /pari-active /enbloc /auth-name /direct-sig /prot %IPDECT-SIP-PROXY-PROT% /proxy %IPDECT-SIP-PROXY1% /alt-proxy %IPDECT-SIP-PROXY2% /gk-id %IPDECT-SIP-DOMAIN% /int-num-len %IPDECT-DR-MAX-INTERNAL-LEN% /stun-srv %IPDECT-SIP-STUN-SERVER%
config change GW-DECT DYNCFG /ntp-srv1 %IPDECT-NTP-SERVER1% /ntp-srv2 %IPDECT-NTP-SERVER2% /ntp-interval %IPDECT-NTP-INTERVAL% /tz %IPDECT-NTP-TZ-STRING% /priority-tos %IPDECT-IP-TOS% /rtp-base %IPDECT-RTP-PORT-FIRST% /rtp-range %IPDECT-RTP-PORT-COUNT% /stun-server %IPDECT-RTP-STUN-SERVER% /turn-server %IPDECT-RTP-TURN-SERVER% /nat-detect %IPDECT-RTP-NAT-DETECT-INTERVAL%
config change GW-DECT DISPLAY
config add GW-DECT RADIO
config change GW-DECT SMSCLGA
config change GW-DECT MIHOTDESK
config change GW-DECT DATAFWD
config add GW-DECT DECTPARI
config change GW-DECT FTY /enable /pin . /lock . /lock0 . /dnd-int . /dnd-int0 . /dnd-ext . /dnd-ext0 . /pick . /pick-grp . /pick-dir . /park . /park0 . /park-to . /park-to0 . /grp . /grp0 . /cc . /cc0 . /nclir . /nclir0 . /clir . /clir0 . /suri . /suria . /ic . /ic0 . /softkey . /cfu . /cfu0 . /cfb . /cfb0 . /cfnr . /cfnr0 . /dnd . /dnd0 . /cw . /cw0 . /logout . /clr . /mwi-mode USER-INTERROGATE-NOTIFY /mwi-notify %IPDECT-MWI-VOICE-MAIL-NUMBER%
config change GW-DECT USERMANAGEMENT
config change SETUP
config change DEVMANBW /cfg-poll-interval %IPDECT-DMS-CONFIG-POLL-INTERVAL%
config write
config activate

References

[1] Cisco Systems, Inc. 2019. *BroadWorks Device Management Configuration Guide*, *Release 22.0*. Available from Cisco at xchange.broadsoft.com.

[2] Cisco Systems, Inc. 2019. *BroadWorks Redundancy Guide, Release 22.0*. Available from Cisco at xchange.broadsoft.com.

[3] Cisco Systems, Inc. 2019. *BroadWorks SIP Access Interface Interworking Guide, Release 22.0.* Available from Cisco at xchange.broadsoft.com.

[4] Cisco Systems, Inc. 2019. *BroadWorks SIP Phone Interoperability Test Plan, Release 22.0*. Available from Cisco at xchange.broadsoft.com.

[5] Cisco Systems, Inc. 2019. *BroadWorks SIP Phone Functional Test Plan, Release 22.0*. Available from Cisco at xchange.broadsoft.com.

[6] Cisco Systems, Inc. 2019. *BroadWorks Device Management Interoperability Test Plan*, *Release 22.0*. Available from Cisco at xchange.broadsoft.com.

[7] Cisco Systems, Inc. 2015. *BroadWorks CPE Kit Usage Guide*, *Release 22.0*. Available from Cisco at xchange.broadsoft.com.