

EXTENSION MOBILITY

EM (Extension Mobility)—Workers log into any phone to make it theirs. Version 8 of CUCM allows cross-cluster. Phones are subscribed to the Extension Mobility Service. A user selects that service on the phone and enters User ID and PIN at the prompt, using the phone keypad in alphanumeric mode (like texting on a cell phone). CUCM applies the user Device Profile settings and resets the phone. Different phone models need separate device profiles for the same user; the user needs to manually choose the right one—weird.

Multiple Logins—options for what to do if the same user logs into multiple phones at once

- Allow. Acts like a shared line; all phones ring
- Deny Login
- Auto-logout the first device

Devices that are logged out can also receive a profile, perhaps one that only allows emergency & free. Alternatively, the settings in the phone configuration page can be applied.

Device Profile Settings—Music on Hold source, phone button template, softkey template, user locale, Do Not Disturb, Privacy setting, service subscriptions, dialing name. A default profile allows users who don't have a profile for a particular type of phone to log in anyway.

CONFIGURING EXTENSION MOBILITY

Activating Extension Mobility

- Activate the Cisco EM Service

(Serviceability) Tools → Service Activation

- Select “Extension Mobility,” click “save”
- Configure EM Service Parameters

(Admin) System → Service Parameters

- Server drop-down—select the server(s) to be configured
- Service drop-down—select “Cisco Extension Mobility Service”
- In the Clusterwide Parameters section,
 - Choose whether to force logout after a maximum time
 - Choose how to handle multiple-logins (options explained above)
 - Choose between numeric-only or alphanumeric User IDs
 - Post-logout privacy settings—Display most recent user? Flush history on logout?

- Add the EM Service

(Admin) Device → Device Settings → Phone Services (click “add new”)

- Give the EM Service a name & description
- Type this URL into the service URL field:
http://<IP_address_of_Publisher>:8080/emapp/EMAppServlet?device=#DEVICENAME#
- Add the secure service URL too, if desired. Capable phones will prefer it.
- Make sure the “Enable” checkbox is checked. You can even click the “Enterprise Subscription” checkbox to affect all phones at once (if they support service subscription)

- Create a Default Device Profile for each phone model in use

(Admin) Device → Device Settings → Default Device Profile

- Click “Add New.” Select product type (phone model) and Device protocol

- Create Individual Device Profiles for the phone of an individual user

(Admin) Device → Device Settings → Device Profiles

- Click “Add New,” select the phone model & protocol *for a particular user's phone*
- Name the profile, Configure user-specific settings, including DN, button customizations, etc.

- Subscribe Device Profiles to the EM Service—Not needed if “Enterprise Subscription” was used above

- Still in the Device Profile page, choose “Subscribe / Unsubscribe Services” from the “Related Links” drop-down and click “Go”
- Choose the EM service added above & click “Next”
- Enter the display name for the EM service (& ASCII version for low-res phones)
- Click “Subscribe” and “Save”

- Create End Users and associate them with Device Profiles

(Admin) User Management → End User

- Select the user you want to create a profile association for (or create new user)
- In user profile, choose device profiles(s) to associate with the user (if more than one, user will choose after login. The default option puts that profile at the top of the list)

- Enable EM for phones

(Admin) Device → Phone

- Select the phone you want to configure for EM
- In the EM section, check “Enable Extension Mobility” checkbox
- On the “Log Out Profile” drop-down list, choose either a specific device profile or the currently configured device settings (recommended). This controls phone settings when no one is logged in.

- Subscribe phones to the EM service

- If “Enterprise Subscription” isn't in use, then open the Subscribed Cisco IP Phone Services window from the phone config page by choosing “Subscribe / Unsubscribe Services” from the “Related Links” pull-down
- Choose the EM service from the “Select a Service” pull down
- Name the service as you want it to appear on the phone

Interactions—Both device profiles and IP phones need to be subscribed to the EM service.

- Subscribing the phone allows a user to log in
- Subscribing the device profile to EM allows the logged in user (who has that device profile associated to themselves) to continue to have seamless access to the EM service (and be able to log out!)

C A L L C O V E R A G E

Call Coverage—a general term for several solutions to ensure that calls get answered by someone.

Call Forward—several configurable options (none of which are actually used if the Voice Mail checkbox is selected—then it just goes to the voice mail pilot):

- CFA (Call Forward All)—all calls forwarded; the original phone never rings. Destination can be defined by admin or user at the phone or in CUCM admin pages. The call forward search space is used; the line/device search spaces are ignored. Note: if the voice mail checkbox is selected, the above is ignored and the call goes to voicemail
- CFB (Call Forward Busy) Internal / External—to specified number or voicemail pilot. Separated handling possible for internal calls vs. calls coming in from off-net (PSTN)
- CFNA(Call Forward No Answer) Internal / External
- CFNC (Call Forward No Coverage) Internal / External—For calls on a hunt pilot where the hunt pilot timed out or all stations were busy and the checkbox “Use Personal Preference” is selected on the hunt pilot. The call is forwarded to the specified CFNC setting or to the voicemail pilot
- CFUR (Call Forward UnRegistered) Internal / External—Usually paired with SRST (Survivable Remote Site Telephony) for WAN failures (see Chapter 10). SRST allows branch phones to get to central using the PSTN; CFUR gives a central the CUCM a second (PSTN) number to reach a remote phone when it becomes unregistered in response to the WAN failure

S H A R E D L I N E S & B A R G E

Shared Lines—if two phones have the same DN, they both ring. The first to pick up locks out the other(s) unless they use barge (below).

Shared Lines Configuration—just add the same DN to more than one phone. This can be done in the DN configuration page or the phone button config within the Phone config.

Barge & Privacy—The second phone on a shared line can force a conference, hosted on the first phone's built-in conference bridge. All parties hear a beep when the barge happens (default). A privacy softkey can be configured to prevent barging. Barge & privacy can be enabled cluster-wide or on individual phones.

CONFIGURING SHARED LINES & BARGE

Shared lines—just put the same DN on two phones, either from the DN configuration page or on the phone configuration page (phone button configuration).

Barge Configuration—activate the built-in conference bridge (that most phones have). The privacy feature blocks barging and removes call info from all phones that share lines

(Admin) System --> Service parameters

- Choose the server you want to configure from the server drop-down
- Select Cisco CallManager service from the service drop down
- Under the "Clusterwide Parameters (Device-Phone)" section, set "Built-in Bridge Enable" to on—This can be overridden at the device pool or individual phone.
- Set the privacy setting to true (default)—This can be overridden at the device pool or individual phone.
- Under "Clusterwide Parameters (Feature-Join Across Lines And Single Button Barge Feature Set)," set "Single Button Barge / CBarge Policy." Options are { Off, Barge, CBarge }. This setting allows pressing the shared line button to cause a Barge onto the shared line when it is in use (instead of using the Barge softkey). Barge uses the built-in bridge; CBarge uses an external conference resource.

If you use a softkey for barge, that softkey needs to be configured in the softkey template of any involved phones. The single button barge method doesn't require this. If using CBarge, an external conference resource needs to be set up for the phones.

CALL PICKUP

Call Pickup—A DN can be part of a pickup group, allowing three kinds of pickup. All three can be set for audio/visual/both notification that another (perhaps out of earshot) phone is ringing.

- Call Pickup—when another phone in the group rings, answer with the "Call Pickup" softkey
- Group Call Pickup—when a phone in another group rings, hit the "Gpickup" softkey and dial the group number of the ringing DN. Directed Call Pickup allows you to type the number of the ringing DN instead of a group number to pick up a call
- Other Group Pickup—The OGroup softkey allows user to pickup a call in another group that has been associated with their group by the admin

CONFIGURING CALL PICKUP

Create and apply Call Pickup Groups to DNs that will pick up each others' calls.

(Admin) Call Routing --> Call Pickup Group, (click "Add New")

- Enter a name and a unique number (no wildcards)
- Select a partition. Normally same as DN partition. If different, admin can restrict access to the pickup group using the CSS of the phones.

If desired, during initial pickup group configuration (only), you can preconfigure associated call pickup groups so that the "Other Group Pickup" feature (described earlier) can be used.

Using the Pickup feature requires adding a softkey to the phone(s). To modify and add a softkey template:

Device → Device Settings → Softkey Template

- Select "add or copy a softkey template"
- From the "Related Tasks" pull-down, select "Configure Softkey Layout"
- Add desired softkey(s) (Pickup, Group Pickup, and/or Other Group Pickup). They can be selected in the off- or on-hook call states. Click [Save]
- Add the modified softkey template to phones or device profiles as desired

Individual DNs must be associated with a Call Pickup Group (above) in order to use the Call Pickup feature. DNs from the same Call Pickup Group can pick up each others calls with the "Pickup" feature. DNs in different groups can use the "Group Pickup" or "Other Group Pickup" if their groups are pre-associated.

C A L L H U N T I N G

Call Hunting—a single DN can distribute calls to several phones in sequence, e.g. small helpdesk. During a call hunt, the call forward config of line group members are ignored, i.e. the hunt continues rather than obeying the instructions of that one member (e.g. forwarding busy to voicemail). Composed of the following components:

- DNs and voicemail ports—(the ultimate targets of the hunt) assigned to line groups
- Line Groups—Assigned to Hunt Lists. Each can have top-down, circular, longest idle, or broadcast algorithm
- Hunt List—Top-down ordered list of line groups. A call is sent to the first line group. If no member of that line group can take the call, it returns to the hunt list and the next line group is tried.
- Hunt Pilot—Associated with a hunt list. May be a unique DN, a shared line, or a PSTN number

C O N F I G U R I N G C A L L H U N T I N G

Call Hunting Configuration Overview [almost verbatim from book, p310]

- Groups of DNs are associated with Line Groups that specify the hunting behavior
- Line Groups are added to Hunt Lists, which select the order of hunting through the Line Groups
- A Hunt Pilot number is associated with a Hunt List and triggers the hunting system when it is dialed

Create Line Groups

- Create DNs & associate them with phones
- (Admin) Call Routing → Route/Hunt → Line Group [Add New]
- Name the Line Group
 - Specify the RNA (Reversion No Answer) Timeout (time before the no answer trigger)
 - Choose a distribution algorithm:
 - Top Down—Each new call starts at the top of the DN list
 - Circular—Each call starts after the DN used by the previous call
 - Broadcast—All DNs in the line group
 - Longest Idle Time—on hook time
 - For each call state {No answer, Busy, Not Available}, choose a hunt option from its drop-down, telling it when and if a call will move from the current line group to the next line group in the list.
 - Add DNs to the line group—ordering matters if using top down or circular above
 - [Save]

Create Hunt Lists

- (Admin) Call Routing → Route / Hunt → Hunt List [Add New]
- Name the hunt list
 - Set the cucm Group in order to provide cucm redundancy for the Hunt List—verbatim
 - Click [Save]—Now hunt list configurations appear on the page
 - Add line groups to the hunt list. Order can be adjusted with arrows. Hunt list processing is always top-down. Click [Save]

Create Hunt Pilot

- (Admin) Call Routing → Route / Hunt → Hunt Pilot [Add New]
- Enter a hunt pilot number—like a route pattern, even a PSTN or DID number
 - Set a partition, if you want to control access to the Hunt Pilot
 - Choose which Hunt List that should be accessed by dialing this Hunt Pilot number
 - Specify an Alerting Name, to be displayed on phones receiving calls via the hunting system
 - Set "Hunt Forwarding" options for where to send calls that can't be handled by the hunting system. The Use Personal Preferences checkbox ignores the configured settings, instead using the CFNC setting of the station that forwarded the call to the Hunt Pilot. Click [save].

You can include the "HLog" key in a phone button template and/or softkey template, allowing a user to log in/out of a hunt group. The "Hunt Group Logoff Notification" CallManager service parameter can choose a ringtone to tell a user that their phone *would* ring if they weren't logged out of the hunt group (in case they forget to log back in after lunch).

C A L L P A R K

Call Park—a DN used as a holding spot and the intended recipient dials in to retrieve the call. The call park softkey puts the call in a slot and tells which one. The intended recipient dials that slot's extension to pick up the call. Directed Call Park is a variation where the retriever enters a prefix code (password) to retrieve.

C O N F I G U R I N G C A L L P A R K

Call Park Configuration

(Admin) Call Routing → Call Park (click "Add New")

- Specify a (range of) DN(s) as parking slots. Range wildcards are the same as route patterns. The number can be partitioned using a custom partition (huh?). Select a CUCM server from the pull down. You can have park slots on multiple servers; don't overlap number ranges between servers.
- [Save]

Reversion Timer—How long to leave a call parked before forwarding it to a "Reversion Number" (60 secs default).

Directed Call Park Configuration—Directed call park is like call park, but requires a prefix code to retrieve and has the ability to specify a different reversion number (huh?)

(Admin) Call Routing → Directed Call Park (click "Add New")

- Specify a unique (range of) number(s) and a partition (if desired)
- Specify the reversion number
- Specify the Reversion Calling Search Space to allow the phone to find the reversion number specified above, if it is not in the normal CSS of the phone or line
- Specify a Retrieval Prefix—code that must be dialed to retrieve the call. Click [Save]

I N T E R C O M

Intercom—Configures a button that calls an intercom line on another phone. Intercom lines are configured as auto-answer speakerphone with a beep and the microphone muted. Recipient can hear caller but not vice-versa, AKA "whisper intercom." When the recipient presses their intercom button, a second one-way audio stream is established back to the caller, with an auto-answer beep, then they can each hear the other.

Whisper intercom works during a call, too. The recipient can hear the intercom, the other party to the call cannot.

Intercom lines can't call DNs and DNs can't call intercom lines. Intercom lines have their own dial plan and permissions (Intercom Partition and CSS). An intercom button can be specific to one destination or require a target to be dialed.

Intercom Configuration

(Admin) Call Routing → Intercom → Intercom Route Partition [Add New]

- Enter name & comma-separated description of the new intercom partition (up to 75 can be created on this page at once). Click [Save]

Unnecessary—(Admin) Call Routing → Intercom → Intercom Calling Search Space [Find]

- An intercom CSS, named “<partition_name>_GEN,” was automatically created when the intercom partition was created. You can use/modify it or create a custom Intercom CSS. If you're just making point-to-point intercom lines, you don't need to customize it.

(Admin) Call Routing → Intercom → Intercom Directory Number [Add New]

- You'll need to create two because each is one-way and an intercom DN can't call a normal DN
- Assign an Intercom Partition and Intercom Calling Search Space to the Intercom DN

Add an intercom button to a Phone Button Template—you could modify the phone directly, but that doesn't scale well (not best-practice).

(Admin) Device → Device Settings → Phone Button Template

- Select the phone button template for the phone / protocol you want (stock profile can be copied and modified rather than starting from scratch or changing the stock)
- Add the intercom feature to a button. [Save]

Assign the template to the phone(s)

- On the phone's configuration page, select the modified template from the pull-down.

Configure a button on the phone with an intercom DN, intercom Route Partition, and intercom css

CUCM Native Presence—Presence = “signaling one's capability and willingness to communicate”—Things like IM status, off-hook, etc. CUCM can track on/off-hook status of a DN.

BLF (Busy Lamp Field) Speed Dial—lights up when the target is off-hook.

Presence-enabled call lists show an icon for

- On Hook (telephone over blank keypad)
- Off Hook (two handsets over blank keypad)
- Unregistered (blank phone keypad icon)—Entry not being watched or the device showing the list doesn't have permission to watch the presence status of that target

Limiting Presence Visibility

- Only admins can create BLF speed dials
- Subscribe CSS—The visibility of Presence-enabled call and directory lists can be limited by Partitions and subscribe CSSs (Calling Search Spaces). If a user has a DN in her subscribe css, presence indications are visible. Otherwise, she'll see the DN status as “unregistered.”

- Presence Groups—Watchers in one Presence Group can be given/denied permission to view the presence status of DNs in another presence group. By default, all users are in the standard presence group. Within a group, users can see each others' presence status, barring a Subscribe CSS that prevents the subscription. If both Subscribe CSS and Presence Group settings are in use, both must allow a subscription before a watcher can see the presence status of a DN. The ability of presence groups to see each others' status is broadly set with the “Inter-Presence Group Subscribe Policy” setting on the enterprise parameter configuration page and can be specifically overridden in the settings of each presence group
- Inter-Presence Group settings apply only to BLF Call Lists and Directories and do not affect BLF Speed Dials

Specifically, for Presence-Enabled Call Lists, [large chunk of verbatim here, see page 316]

- If the Subscribe CSS applied does not include the Partition of the DN being watched, Presence status is unavailable
- If the Inter-Presence Group Subscription setting is denied between the two groups, Presence status information is unavailable
- If both the Subscribe CSS and Presence Groups are used together, both must allow the subscription in order for Presence status to be watched

C O N F I G U R I N G C U C M N A T I V E P R E S E N C E

Two ways to do this: either BLF Speed Dial (simple) or Presence-Enabled Call Lists, using Presence Groups and a special Subscribe CSS.

Configure BLF Speed Dial—Best practice is to modify the phone button template, not the buttons on individual phones.

(Admin) Device → Device Settings → Phone Button Template

- Select / Copy / Create template for your phone model / protocol
- Add Speed Dial BLF feature to one+ available buttons
- Apply the template to the phone(s)—in phone config page, select one of the now available “Add a new BLF SD button,” entries and configure the destination DN and display label

Configure Presence-Enabled Call Lists

(Admin) System → Enterprise Parameters (Scroll down to the Enterprise Parameters Configuration)

- Set "Enable BLF for Call Lists" to "Enabled"
- If you want to use a custom Subscribe CSS, create new Subscribe CSSs. Best practice is to create custom Subscribe CSSs and use existing Partitions. Have a good plan for overall Class of Control first.
- Apply the CSS to phones and SIP trunks as required

Custom Presence Groups, Necessity (or lack thereof)—By default, all devices and DNs are part of the standard presence group. Since a device can watch all DNs in the same presence group, you may have enough control over presence subscriptions just by using the configured Subscribe CSS and existing partitions. But, if you really need more...

Configuring Custom Presence Groups—these are used by inter-presence group subscriptions

(Admin) System → BLF Presence Group (Click Add New & Give it a name)

- Choose "Allow Subscription" or "Disallow Subscription" to control whether this group can watch the Presence status of other groups. Each subscription is one way, e.g. bosses watching employees, but not vice versa. Setting it to "System Default" references the Default Inter-Presence Group Subscription Enterprise Parameter (explained 2 bullet points below)

(Admin) System → Service Parameters

- Choose the server to be configured and then the "Cisco CallManager Service." Scroll down to "Clusterwide Parameters (System-Presence)"
- Set default "Inter-Presence Group Subscription" policy to "allow" or "disallow" (as required above)
- Assign presence groups to DNs and Phones. (Phones watch DNs)
- Visibility is a mashup of:
 - The presence groups assigned to the phone and the DN
 - The Inter-Presence Group Subscription Setting
 - The Subscribe CSS of the watcher
 - The partition of the DN

Straight from the book (because I don't care any more):

Note: Phones are watchers that monitor the Presence status of Presence entities (such as DNs and SIP trunks). The Presence Group assignment and Inter-Presence Group Subscription Setting control whether or not the watcher can see the Presence status of the Presence entity. A SIP trunk, however, is both a watcher and a Presence entity, but only one Presence Group can be assigned to a SIP trunk. This single Presence Group is applied to both sending and receiving Presence subscriptions. Keeping that in mind, make sure that the Presence Group assigned to a SIP trunk has the correct permissions to watch and be watched by (or not) the other Presence Groups in the system.