Constructs / Concepts

A CUCM Server that provides redundancy & load balancing, replicating the database of the primary server, which is treated as authoritative	Subscriber
Working with a list of primary / secondary / tertiary CUCM servers, what messages does the phone send to each?	Primary: Primary Registration Message Secondary: Backup Registration Message Tertiary: Nothing
Where does the phone get its list of primary / secondary / tertiary CUCM servers from?	Config file via TFTP (SEP\<mac\>.cnf.xml)
Buttons along the side of a phone display	Line Buttons
Buttons along bottom of phone display	Softkeys
How to get to configuration screen for buttons along the bottom of phone display when making a template	Related Links dropdown
Port used by CUCM	8443
How and when is the IP phone config file (SEP\<mac\>.cnf.xml) created and uploaded to the TFTP server	CUCM does it when the phone is created / modified
How does a phone learn the IP addresses & ports of servers to register with?	TFTP download file SEP\<mac\>.cnf.xml
What softkey is used to insert a blank? For example, to right justify the buttons	Undefined (Undefined)
How many data file & template pairs are needed to import phones for 2 locations with two phone models each, where one of the phone models needs half the phones to have 2 line buttons, and half 3?	6—Think of it as 2 locations with 3 phone models (model A, model B with 2 line buttons, and model B with 3 lines buttons).
What two end-user fields are required AND don't default	• User ID • Last Name

Bandwidth Control

Tag / Grouping to control bandwidth use per call, indirectly selecting the codec	Region
Grouping to limit bandwidth use in/out of an entire site.	Location
By default, calls exceeding the bandwidth limits in/out of an entire site (above construct) are dropped. What configuration can be enabled to send them to the PSTN instead?	AAR (Automated Alternate Routing)

Templating Phone Configs

Construct that names an ordered list of CUCM servers (primary / secondary / tertiary) for phone registration, irrespective of location. Optionally, includes an SRST reference	CUCM Group aka Call Manager Group
A named time zone & date format pair that can be assigned to phones	Date / Time Group
Name of the Template concept used to apply settings to a group of phones at once, settings include the three constructs above, i.e. • Grouping that controls bandwidth in/out of entire site (middle answer of the "Bandwidth Control" section) • Primary / secondary / tertiary ordering of CUCM servers for phone registration • Time Zone & Date format settings	Device Pool
New in CUCM v9, Templates used for phone autoregristration that can have variables, like #LastName# that get filled in once a user exists, for things like button labels	• Universal Device Template (UDT) • Universal Line Template (ULT)

Phone Boot & Registration Order

Phone Boot & Registration Order	SCCP	SIP
Phone makes a DHCP request for IP, mask, gateway, TFTP server, …	4	4
Phone downloads any dial rules configured for that phone	never	7
Phone downloads softkey configs & ringtones from TFTP	never	9
Phone learns voice VLAN from CDP	3	3
Phone receives power from PoE or adapter (brick)	1	1
Phone gets the Certificate Trust List via TFTP (secured clusters only)	never	5
Phone registers with primary CUCM server mentioned in its config file (SEP<mac>.cnf.xml)	6	8
Phone loads local firmware image (from within itself)	2	2
CUCM server sends messages to phone with DNs, softkeys, and speed dials	7	never
Phone downloads its own customized config from TFTP in file SEP<mac>.cnf.xml	5	6

Admin Automation

Tool to add/modify/delete large numbers of phones, users, etc. For input, it merges a template and a .csv of specifics	BAT (Bulk Administration Tool—not "Batch…")
What are the three components of the above	• Excel Template downloaded from CUCM • Server-side templates • Web page interface to schedule operations with above two
Tool for HUGE deployments that combines the above with autoregistration and IVR (interactive voice response).	TAPS
How does the tool at the top of this section prepare for the tool directly above	Bat is used to create many phone entries with correct extensions and settings (from device template + .csv specifics) and wrong MAC addresses. The MAC addresses are fixed when the user calls (or is PLAR'd to) the IVR system.
What role does autoregistration play?	Gives the phone a temporary extension number so it can call the IVR system
Similar to above, but integrated within CUCM as of version 10.x. Uses variables like #LastName#	Self-Provisioning

LDAP

What users are never authenticated via LDAP?	• Application Users (used by software to login) • The principal admin account, created during CUCM install
What attribute in an LDAP record must be unique	Whatever LDAP field is mapped to the CUCM User ID field
What attribute in an LDAP record can't be blank	"sn" (surname / last name)
Name for the "service" that performs LDAP synchronization	DirSync
What kind of CUCM users are listed as inactive "LDAP Sync Status"	Not found in LDAP; marked for delete in 24 hrs.
During LDAP synchronization, what happens to CUCM users not found in LDAP?	Deactivated & purged 24 hours later

LDAP Integration

	Synchronization	Authenticaion
Can create / delete user accounts from LDAP in CUCM?	No	No
CUCM can maintain additional CUCM-only accounts	Yes (CUCM v9+)	Yes (CUCM v9+)
Password in CUCM	Yes (separate)	No
Password in LDAP	Yes	Yes
Some data only in CUCM	Yes	Yes

Underlying Services

Tells the phone which VLAN is used for voice	CDP
Tells the phone the IP address of its TFTP server	DHCP
Electrically powers the phone (if not using a brick)	PoE
Provides firmware and phone-specific configuration	TFTP
Avoid reliance on because CUCM cannot provide	DNS
Ensures Accurate timestamps for Call Detail Records	NTP

Shortcomings / Limitations with CUCM's DHCP server	• Phones only; no PCs • No redundancy
How do SCCP phones learn what time it is?	SCCP messages
How do SIP phones learn what time it is?	NTP server directly
Where does phone learn firmware name/version?	Config file via TFTP (SEP<mac>.cnf.xml)

Applying Config (Beginning with CUCM v8, this choice is made for you)

Completely reboots phone, reloading firmware; good if you've updated the firmware	Reset
How can you cause a phone to completely reboot and reload its firmware, from the phone	• Keypad: * * # * * • Under the "Settings" menu
Unregisters the phone (so that it will immediately re-register). Quicker because no firmware startup	Restart
What items are not in a phone's TFTP config file, allowing them to be updated simply by causing the phone to re-register.	• Buttons • Forwarding settings

Associating Names with DNs

The name seen by a **calling** phone during ringing.	Alerting Name
Where set it	Phone button DN configuration near top
Caller ID that another internal phone (**called** phone) sees when called by this phone line (DN).	Display Field
Where set it	Phone button DN configuration 80% of the way down under (e.g.) "Line 1 on Device SEP…"
Name shown for a DN line button on user's own phone	Line Text Label
Where set it	Phone button DN configuration
Entry that changes the Calling Line ID (CLID) to a full PSTN number for calls to PSTN	External Phone Number Mask

Notes

LDAP menus questions are in 92_CUCM_Menus and 93_CUCM_Menus_Hierarchy

ToDo

Resume at Lab 9-4 page 1 (on first page near region, location, etc.)