

3 Phones

How Cisco phone learns voice vlan	
How phone learns TFTP server	
What phone gets from TFTP	<ul style="list-style-type: none"> • •
How phone learns IP of call processing agent	
How phone learns default gateway	
Two possible call processing agents	
How phone gets DNS server	
How phone gets CUCM/CME TCP port	
Vendor neutral signaling protocol	
Cisco session signaling protocol	
L4 protocol atop UDP for audio stream	
Automatic side-effect of voice vlan	
Name of phone's config file on TFTP	
Name of file used if above not found	
# of hops an NTP server is from atomic	
Protocol for phone to get operating config from CUCM / CME	

Standards

802.3 af	
802.1 q	
Option 150	

Config Sources

TFTP

CUCM/CME

Config Sources	TFTP	CUCM/CME
Ring Tones		
DN (directory numbers)		
Call Proc Server IP+port#		
Softkey layout		
Phone language		
Phone firmware version		

Acronyms

SCCP	
SIP	
CME	
CUCM	

Do it

Create a VLAN <ul style="list-style-type: none">• Number it 10• Name it Voice	
Set up a switch interface for ip phone. <ul style="list-style-type: none">• Data on vlan 50• Phone audio on vlan 10• Interface ready quickly for fast-booting phones.	
DHCP on router <ul style="list-style-type: none">• 172.16.1.10 / 24 - .255• gateway .1• DNS 4.2.2.2• TFTP 172.16.1.1	
Command to forward DHCP requests to a non-local DHCP server	
where above command placed	
Set router's timezone to Pacific standard	
Tell router to use ntp server 64.209.21.2	
Tell to use Daylight Saving automatic	
Display NTP sources & statuses	
Make router an NTP master, stratum 4	

QoS Command Line

Tell switchport to use Auto-QoS for an IP phone	
Tell switchport to use Auto-QoS for a PC with IP Communicator software	
Tell switchport to trust QoS markings coming in from a router uplink	

Quality of Service

QoS Goals—Delay	
QoS Goals—Jitter	
QoS Goals—Loss	
Type of QoS that reserves bandwidth end-end w/ scalability and waste problems	
Type of QoS with traffic Classes—Commonly used.	
Default QoS handling for ≥ 2 Mbps (ethernet)	
L2 QoS Classification Markings	
L3 QoS Classification Markings	
Queueing Algorithm that balances between queues, thus discriminating against chatty senders whose whole stream ends up in same queue. Tail drop is per-queue. Default for < 2 Mbps (serial)	
Queueing Algorithm that guarantees a bandwidth % to various classes of traffic, with rest balanced between senders. User can define classes. Can have unacceptable jitter.	
Queueing Algorithm that is preferred for voice, adds a priority queue, with the rest receiving the above handling	
Dropping packets to enforce a bandwidth limit	
Delaying packets to enforce a bandwidth limit	