

# CCIE Voice Technology Lab Workbook

for the CCIE Voice Lab Exam version 3.0

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# CCBOOTCAMP's CCIE Voice Technology Lab Workbook

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## **A note from the Author:**

*"I know the price of success: dedication, hard work, and a devotion to the things you want to see happen." -- Frank Lloyd Wright*

I want to be the first to congratulate you on the decision to pursue your CCIE. The journey in which you are about to partake has been ventured by many and achieved by few. It is this dedication, hard work, and devotion that separates those who achieve their number and those who do not.

Here at CCBOOTCAMP we believe in helping students achieve one of the greatest accomplishments in our industry: becoming a Cisco Certified Internetwork Expert. All the instructors at CCBOOTCAMP have been down the same path you are about to take and know what hard work and sacrifice you are about to endure. It is the commitment of CCBOOTCAMP to help you in every step of your journey.

As with any test process, you should always prepare in the manner in which you will be taking the test. You should structure your lab time so that tasks can be accomplished within an eight hour timeframe. A good time management strategy is the key to success in the CCIE lab. Also, how you study is critical to your success. Many students tend to shy away from topics in which they are weak or have little knowledge. However, it is crucial that you concentrate on these areas. Most times you will find that

the specific topic is quite simple once you understand the basics of that technology.

Last, but certainly not least, have fun in this endeavor. The journey to becoming a CCIE is long and hard for a reason but the moment you get your number, all the hard work will undoubtedly seem worth the effort. Best of luck!

Chris Fortner - CCIE #18065  
CCIE Voice Program Manager

## **General Information:**

### ***CCIE Voice Blueprint 3.0:***

Listed below is the current published 3.0 hardware and software blueprint from Cisco Systems. The CCBOOTCAMP remote racks features a hardware, where relevant, and software match based on the published blueprint.

#### **Lab Equipment:**

- Cisco MCS-7845 Media Convergence Servers
- Cisco 3825 Series Integrated Services Routers (ISR)
- Cisco 2821 Series Integrated Services Routers (ISR)
- ISR Modules and Interface Cards
  - VWIC2-1MFT-T1/E1
  - PVDM2
  - HWIC-4ESW-POE
  - NME-CUE
- Cisco Catalyst 3750 Series Switches
- IP Phones and Soft Clients

#### **Software Versions:**

Any major software release which has been generally available for six months is eligible for testing in the CCIE Voice Lab Exam.

- Cisco Unified Communications Manager 7.0
- Cisco Unified Communications Manager Express 7.0
- Cisco Unified Contact Center Express 7.0
- Cisco Unified Presence 7.0

- Cisco Unity Connection 7.0
- All routers use IOS version 12.4T Train.
- Cisco Catalyst 3750 Series Switches uses 12.2 Main Train
- Network Interfaces
  - Fast Ethernet
  - Frame Relay
- Telephony Interfaces
  - T1
  - E1

### ***Pre Configuration:***

The pre configuration files for the voice racks at CCBOOTCAMP can be downloaded from the link provided below and will contain the base information for the start of all labs.

<http://www.ccbootcamp.com/download/!Voice/Files-For-NLIs-CCIE-Voice-Tech-Workbook/V3/configs.zip>

### ***VPN Access Information:***

In order to access the voice racks at CCBOOTCAMP you will first need to download the Cisco VPN client from [www.cisco.com](http://www.cisco.com). Once installed you can then download the appropriate VPN profile from the link provided below for the rack you have scheduled.

<http://www.ccbootcamp.com/download/!Voice/voice-rack-vpn-profiles/>

***Tips for the initial setup:***

- Define under the console (line con 0) the command "no exec-timeout" in order to avoid inactivity logout.
- Define some useful shortcuts that may save precious time with aliases. Some common commands: "show call active voice brief", "show gatekeeper call status" and any command you feel might be used heavily throughout your lab.
- Think ahead and try not to touch any page more than once or twice.

### ***Cisco's Non-Disclosure Agreement:***

This book was written in high respect for the CCIE certification and is not intended to violate Cisco's Non-Disclosure Agreement. We will not answer questions regarding things that relate to the actual LAB exam and will not take part in any activities that stand against the CCIE NDA in any regards. Please visit the link below for the complete NDA specification.

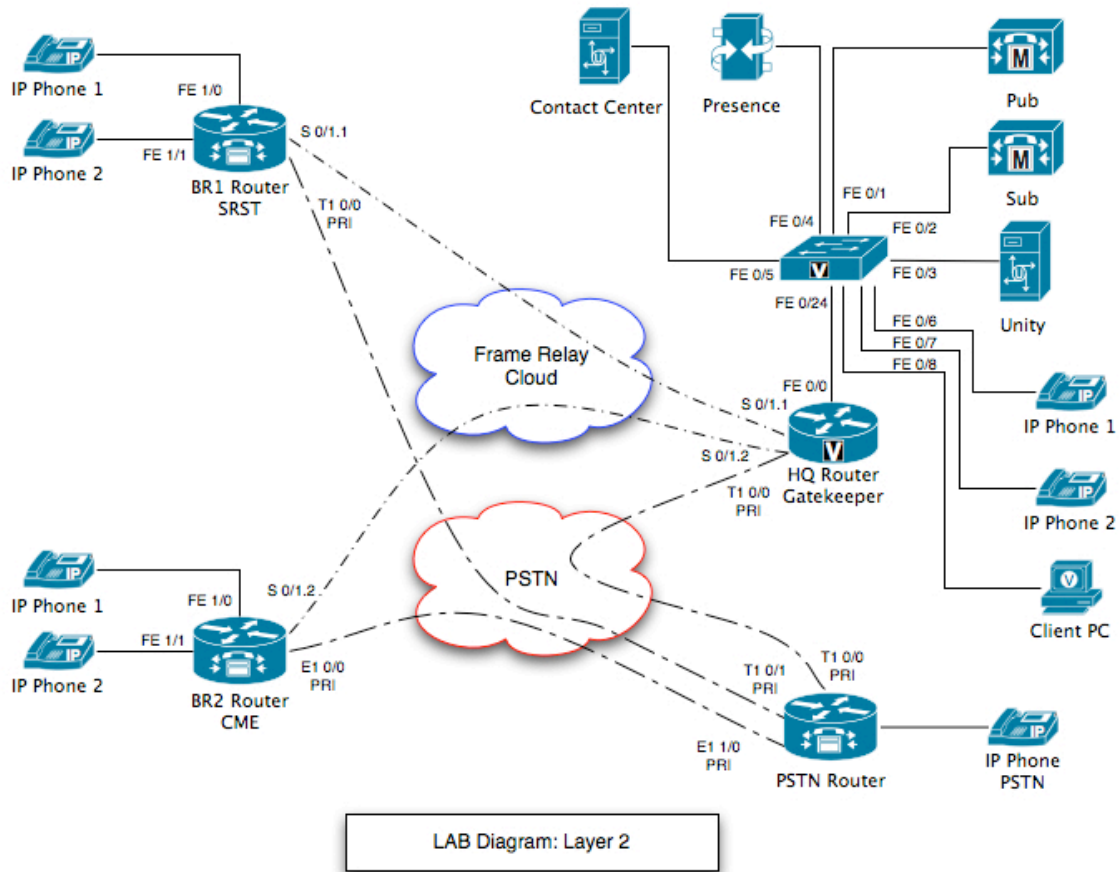
[http://www.cisco.com/web/learning/le3/ccie/exam/violation\\_rules.html](http://www.cisco.com/web/learning/le3/ccie/exam/violation_rules.html)

### ***Read Before Start:***

Here are some simple rules to follow during your lab which should be taken into consideration before you configure any devices.

1. All devices should register to the subscriber and then the publisher.
2. All usernames and passwords for devices are "admin" and "cisco5796" unless specified in your lab.
3. Where you see "YY" that is your rack number.
4. All devices should pull NTP from the HQ1 router and should be set to the appropriate time zone.
5. Credit in the lab will only be given for working solutions. This should be taken into consideration throughout your lab.

**Lab Topology :**



**Note:** Please note that ports may vary on different racks so please check your connections with "show cdp neighbors".

**Lab Dial Plan and Addressing:**

Phone	Number	Protocol	Class of Service
HQ Phone 1	1001	SCCP	International
HQ Phone 2	1002	SIP	Long Distance
BR1 Phone 1	2001	SCCP	International
BR1 Phone 2	2002	SIP	Internal
BR2 Phone 1	3001	SCCP	International
BR2 Phone 2	3002	SCCP	Local

Site	PSTN E.164 Address	PSTN Number
HQ	7029461...	7029465000
BR1	7023332...	7023335000
BR2	442076303...	442076305000
ALL	911	911

Server	IP Address	Login
Publisher	10.1.200.21	admin:cisco5796
Subscriber	10.1.200.25	admin:cisco5796
Unity Connections	10.1.200.22	admin:cisco5796
Presence	10.1.200.23	admin:cisco5796
Contact Center	10.1.200.24	administrator:enableme

## Chapter 1 - Basic Campus Design

### **Topics included in this chapter:**

- A. DHCP, TFTP
- B. Catalyst voice and data VLAN configuration
- C. Catalyst VTP configuration

### **Tasks to accomplish:**

1. Configure VLANS and IP networks in all three sites according to the following two tables:

VLAN	HQ	BR1	BR2
Servers	10	N/A	N/A
Data	20	120	220
Voice	30	130	230

Network	HQ	BR1	BR2
Servers	10.1.200.0/24	N/A	N/A
Data	10.YY.20.0/24	10.YY.120.0/24	10.YY.220.0/24
Voice	10.YY.30.0/24	10.YY.130.0/24	10.YY.230.0/24

2. Make sure you set all voice traffic to use the voice VLAN for all sites.
3. Configure phones on HQ site to have IP addresses 120-130. Use IOS DHCP on the HQ Catalyst 3750 to accomplish this task.

4. Configure BR1 phones to have IP addresses of 130–140 using the IOS DHCP on the HQ Router.
5. Configure BR2 phones to have IP addresses 210–220 using the IOS DHCP on the BR2 router.
6. Configure HQ router as an NTP master clock with stratum 2 for local time zone in Los Angeles and configure BR1 and BR2 to synchronize their clocks to HQ. BR1 is in New York time zone and BR2 is in India.