

TOMORROW starts here.



Cisco *live!*

CCIE Service Provider

BRKCCIE-9163

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Product Manager

Agenda

Section	Topic
1	CCIE and CCDE Program Overview
2	CCIE Service Provider Written Exam
3	CCIE Service Provider Practical Exam
4	CCIE Service Provider Sample Lab
5	Preparation Resources and Test-Taking Tips

Disclaimer

- Not all the topics discussed today appear on every exam.
- For time reasons, we're unable to discuss every feature and topic possible on the exam; rather, we will try to cover the most important ones.



Section 1: CCIE[®] and CCDE[®] Program Overview

CCIEs and CCDEs Worldwide

- Most highly respected IT certification for more than 15 years
- Industry standard for validating expert skills and experience
- More than 30,000 CCIEs / CCDEs worldwide
 - less than 3% of all professionals certified by Cisco
- Demonstrate strong commitment and investment to networking career, life-long learning, and dedication to remaining an active CCIE / CCDE



Overview: CCIE and CCDE Tracks

Routing & Switching

- Expert level knowledge of networking across LAN and WAN interfaces and variety of routers and switches
- Solve complex connectivity problems to increase bandwidth, improve response times, maximize performance, and support global

Security

- Expert level knowledge of security and VPN solutions
- Demonstrate in-depth understanding of Layer 2 and 3 network infrastructure; Solid understanding of Windows, Unix, Linux and HTTP, SMTP, FTP and DNS

Voice

- Expert level knowledge of Cisco Voice over IP (VoIP) products and solutions
- Capable of building and configuring complex end-to-end telephony network, troubleshooting and resolving VoIP-related problems

Design

- Expert level knowledge of network design principles for the Layer 2 and 3 network infrastructure
- Capable of assessing and translating network business requirements into technical designs

Data Center

- Expert level knowledge of Data Center Technologies, including DC infrastructure, storage, compute and virtualization
- Capable of building, configuring, and troubleshooting an end-to-end virtualized Data Center using Cisco DC technologies

Service Provider

- Expert level knowledge of IP fundamentals and technologies
Expertise in building an extensible service provider network
- Expert level knowledge to troubleshoot and maintain complex service provider networks

SP Operations

- Expert level knowledge of SP IP NGN technologies
- Capable of troubleshooting SP networks, managing SP processes (incident, fault, change, configuration, and performance), and knowledge of NMS technology

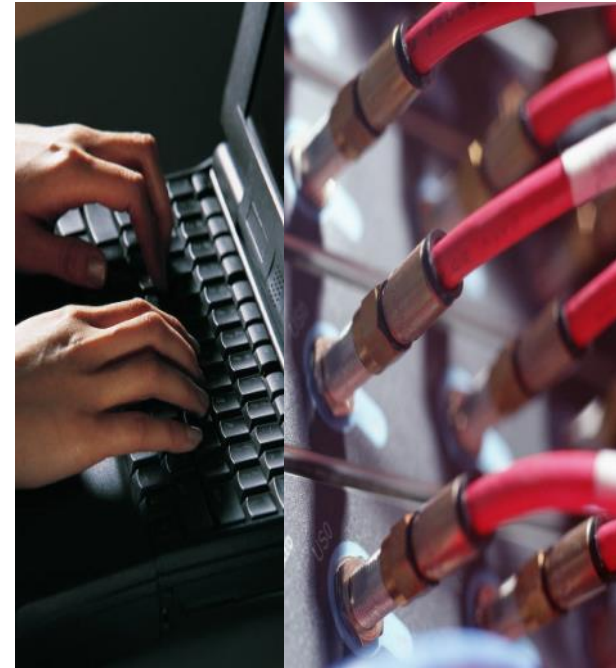
Wireless

- Expert level knowledge of WLAN technologies
- Provides next step for individuals interested in a career in managing or working with Cisco wireless technologies

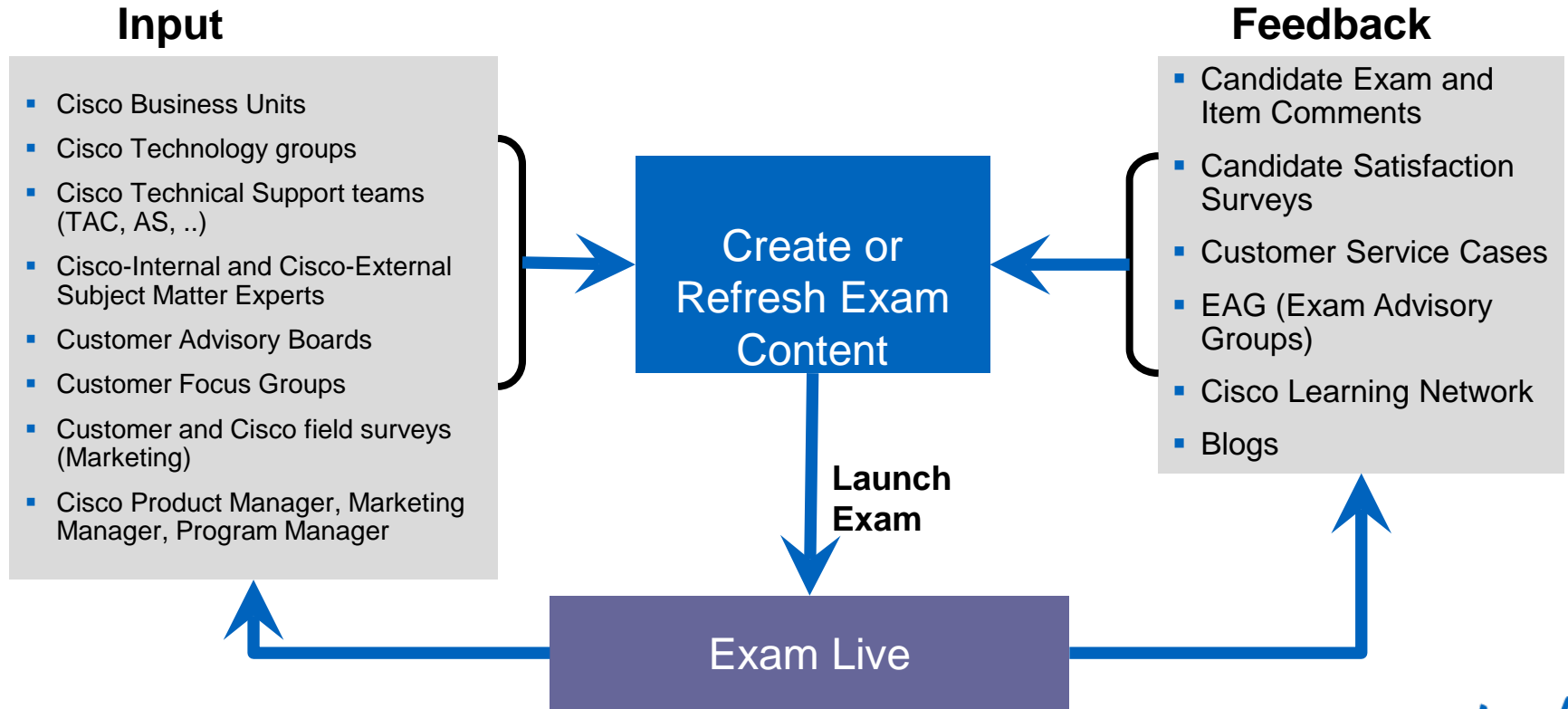
Certification Process

CCIEs / CCDEs must pass two exams:

- The written qualification exam has approximately 100 questions. Most items are multiple-choice.
- The lab / practical exam format is what makes CCIE / CCDE different.
 - For CCIE exams, the full-day, hands-on lab exam tests the ability to configure and troubleshoot equipment
 - NOTE: These exams are offered at specific Cisco Lab locations. Not all lab exams are offered at all lab locations.
 - For the CCDE exam, the full-day practical situation-based exam tests the ability to design networks;
 - NOTE: These exams are offered at specific Pearson Professional Center locations on specific days.



Proactive and Holistic Candidate Feedback Process



CCIE Information Worldwide

Total of Worldwide CCIEs:	38,005*
Total of Routing and Switching CCIEs:	27,552
Total of Security CCIEs:	4,264
Total of Service Provider CCIEs:	3,142
Total of Voice CCIEs:	2,341
Total of Wireless CCIEs:	64

*Updated 2-Mar-2013

Multiple Certifications

Many CCIEs Have Gone on to Pass the Certification Exams In Additional Tracks, Becoming a “Multiple CCIE.” Below Are Selected Statistics on CCIEs Who Are Certified in More Than One Track

Total with Multiple Certifications Worldwide:	3,547*
Total of Routing and Switching and Security CCIEs:	1026
Total of Routing and Switching and Service Provider CCIEs:	1053
Total of Routing and Switching and Voice CCIEs:	502
Total with 3 Certifications	511
Total with 4 Certifications	110
Total with 5 or More Certifications	25

Become a Cisco Subject Matter Expert

- If you consider yourself a Subject Matter Expert AND would like to lend your expertise to the Cisco Certification Program, send your resume and tell us which Certification Exams you are interested in contributing. We'll contact you about opportunities as they come up and based on the information you provide us!
- sme-interest@external.cisco.com

Exam Design	Item Development	Item Review
Standard Setting	Topics(Blueprint) Validation	

Step 1: CCIE Written Exam

- Available worldwide at any Pearson VUE testing facility for ~\$350 USD. Costs may vary due to exchange rates and local taxes (VAT, GST)
- Two-hour exam with around 100 multiple-choice questions
- Closed book; no outside reference materials allowed
- Pass/fail results are available immediately following the exam; the passing score is set by statistical analysis and is subject to periodic change
- Waiting period of 5 calendar days to retake the exam
- Candidates who pass a CCIE written exam must wait a minimum of 6 months before taking the same number exam
- From passing written, candidate “must” take first lab exam attempt within 18 months
- No “skip-question” functionality

Step 2: CCIE Lab Exam

- Available in select Cisco locations for \$1,500 USD, adjusted for exchange rates and local taxes where applicable, not including travel and lodging
- **Eight-hour** exam requires working configurations and troubleshooting to demonstrate expertise
- Cisco documentation available via Cisco Web; no personal materials of any kind allowed in lab
- Minimum score is **around 80%** to pass
- Scores can be viewed normally online within 48 hours and failing score reports indicate areas where additional study may be useful

CCIE Service Provider Overview

- CCIE Service Provider certification recognizes experts with the highest level of technical knowledge and hands-on experience in configuring, optimizing and troubleshooting extensible **Service Provider infrastructure** to deliver **rich services**
- There is an **ever-growing demand** for Service Provider experts in the industry
- The CCIE Service provider certification was introduced in 2002
- CCIE Service provider migrated to Version 3 from April 18th 2011
- Around **3,000** CCIE Service Provider worldwide





Section 2: CCIE Service Provider Written Exam

CCIE SP Written Exam (350-029): What's new

- SP engineer job role oriented rather than technology oriented
- Emphasize on emerging widely deployed SP technology like IPv6, MPLS, Traffic Engineering, L3/L2 VPN, Multicast VPN, CSC, Carrier Ethernet , SP Security, SP QoS, etc.
- Weaken but include traditional access technology like ATM, Frame-relay, DSL, Cable, etc.
- Exclude transport and access technology which have unique essential/certification like Optical, Wireless.

CCIE SP Written Exam: Topics

1 Describe, Implement, Optimize and Troubleshoot Core IP Technologies

- 1.1 Describe, Implement, Optimize and Troubleshoot Packet over SONET
- 1.2 Describe, Implement, Optimize and Troubleshoot IP over DWDM
- 1.3 Describe, Implement, Optimize and Troubleshoot GE/10GE in the core
- 1.4 Describe, Implement, Optimize and Troubleshoot SP High end Product
- 1.5 Describe, Implement, Optimize and Troubleshoot IGP routing
- 1.6 Describe, Implement, Optimize and Troubleshoot MPLS and LDP
- 1.7 Describe, Implement, Optimize and Troubleshoot MPLS Traffic Engineering
- 1.8 Describe, Implement, Optimize and Troubleshoot BGP
- 1.9 Describe, Implement, Optimize and Troubleshoot Multicast
- 1.1 Describe, Implement, Optimize and Troubleshoot High availability
- 1.11 Describe, Implement, Optimize and Troubleshoot Convergence
- 1.12 Describe, Implement, Optimize and Troubleshoot SP QoS
- 1.13 Describe, Implement, Optimize and Troubleshoot Security in the core

2 Describe, Implement, Optimize and Troubleshoot Access/Edge Connection Technologies

- 2.1 Describe, Implement, Optimize and Troubleshoot FE/GE, Serial and Ethernet Trunk connections
- 2.2 Describe, Implement, Optimize and Troubleshoot PPP connections
- 2.3 Describe, Implement, Optimize and Troubleshoot SONET/SDH connections
- 2.4 Describe, Implement, Optimize and Troubleshoot Frame-relay connections
- 2.5 Describe, Implement, Optimize and Troubleshoot ATM connections
- 2.6 Describe, Implement, Optimize and Troubleshoot T1/T3 and E1/E3 services.

<https://learningnetwork.cisco.com/docs/DOC-10123>

CCIE SP Written Exam: Topics

3 Describe, Implement, Optimize and Troubleshoot Remote Access Technologies

- 3.1 Describe, Implement, Optimize and Troubleshoot IP over DSL to the customer
- 3.2 Describe, Implement, Optimize and Troubleshoot IP over wire line to the customer
- 3.3 Describe, Implement, Optimize and Troubleshoot IP over Cable to the customer

4 Describe, Implement, Optimize and Troubleshoot L3VPN Technologies

- 4.1 Describe, Implement, Optimize and Troubleshoot Intra-AS L3VPN
- 4.2 Describe, Implement, Optimize and Troubleshoot Inter-AS L3VPN
- 4.3 Describe, Implement, Optimize and Troubleshoot Carrier Supporting Carrier (CSC)
- 4.4 Describe, Implement, Optimize and Troubleshoot L2TPv3 for L3VPN
- 4.5 Describe, Implement, Optimize and Troubleshoot VPN extranet , Internet access
- 4.6 Describe, Implement, Optimize and Troubleshoot VRF Service
- 4.7 Describe, Implement, Optimize and Troubleshoot Multicast VPN
- 4.8 Describe, Implement, Optimize and Troubleshoot L3VPN GRE

5 Describe, Implement, Optimize and Troubleshoot L2VPN Technologies

- 5.1 Describe, Implement, Optimize and Troubleshoot AToM
- 5.2 Describe, Implement, Optimize and Troubleshoot Carrier Ethernet
- 5.3 Describe, Implement, Optimize and Troubleshoot L2TPv3 for L2 VPN
- 5.4 Describe, Implement, Optimize and Troubleshoot L2VPN QoS
- 5.5 Describe, Implement, Optimize and Troubleshoot L2VPN GRE

CCIE SP Written Exam: Topics

6 Describe, Implement, Optimize and Troubleshoot Managed Services Traversing the Core

- 6.1 Describe, Implement, Optimize and Troubleshoot Managed Voice/Video services
- 6.2 Describe, Implement, Optimize and Troubleshoot Managed Security services
- 6.3 Describe, Implement, Optimize and Troubleshoot Service Level Agreements for managed services traversing the core

7 Describe Service Provider Network implementing principle

- 7.1 Given a Service Provider network design change or new service, identify the success criteria
- 7.2 Given a Service Provider network design change or new service, identify appropriate routing protocol
- 7.3 Given a Service Provider network design change or new service, identify appropriate tunneling protocol
- 7.4 Given a Service Provider network design change or new service, identify improving convergence method
- 7.5 Given a Service Provider network design change or new service, identify improving scalability method
- 7.6 Given a Service Provider network design change or new service, identify improving reliability method
- 7.7 Given a Service Provider network design change or new service, identify improving management method
- 7.8 Given a Service Provider network design change or new service, identify improving QOS method
- 7.9 Given a Service Provider network design change or new service, identify improving security method

CCIE SP Written Exam: Checklist

The screenshot shows a web browser window displaying the document "CCIE Service Provider Written Exam Checklist v3.0 (back-up)" on the Cisco Learning Network. The browser's address bar shows the URL <https://learningnetwork.cisco.com/docs/DOC-10124>. The page content includes a left-hand navigation menu with categories like "Certifications", "PROFESSIONAL", and "EXPERT". The main content area features the document title, a "Detailed Checklist of Topics to Be Covered", and a list of topics under the heading "1. Implement, Optimize and Troubleshoot Core IP Technologies". The right-hand side of the page contains a sidebar with options for "操作" (Actions), "书签" (Bookmarks), and "其他同类内容" (Other similar content).

CCIE Service Provider Written Exam Checklist v3.0 (back-up)

创建者: 2010-10-19 上午11:56 作者: Adri: Certifications Community Mgr. - 评论: f b l i n + f t w
最后修改: 2010-10-21 上午10:23 作者: Adri: Certifications Community Mgr.

CCIE Service Provider Written Exam v3.0 Checklist

Expansion of the Written Exam Topics (Blueprint)

Detailed Checklist of Topics to Be Covered

Please be advised that this topic checklist is not an all-inclusive list of Cisco CCIE Service Provider written exam subjects. Instead, we provide this outline as a supplement to the existing written exam topics (blueprint) to help candidates prepare for their exams. Other relevant or related topics may also appear in the actual exam.

We would like to get your feedback please comment and/or rate this document.

1. Implement, Optimize and Troubleshoot Core IP Technologies

- 1.1. Packet over SONET
 - 1.1.01. Cisco HDLC encapsulation
 - 1.1.02. PPP encapsulation
 - 1.1.03. Frame Relay encapsulation
 - 1.1.04. Maximum transmission unit (MTU)
 - 1.1.05. Cyclic redundancy check (CRC)
 - 1.1.06. Keepalive timer
 - 1.1.07. Frame Relay DLCI on point to point sub-interface
 - 1.1.08. SONET Controller
 - 1.1.09. POS channel
 - 1.1.10. Channelized SONET
 - 1.1.11. SONET AFS
- 1.2. IP over DWDM
 - 1.2.1. Optical channel payload unit (OPU)
 - 1.2.2. Optical channel data unit (ODU)
 - 1.2.3. Optical channel transport unit (OTU)
 - 1.2.4. Optical channel (OCh)
 - 1.2.5. Shared Risk Link Group (SRLG)
 - 1.2.6. Virtual Transponder (VTXP)
 - 1.2.7. FEC-FRR Triggering
 - 1.2.8. Optical Parameters- Rx-loss-threshold, Wavelength and Transmit-power
 - 1.2.9. O 705 Parameters

<https://learningnetwork.cisco.com/docs/DOC-10124>

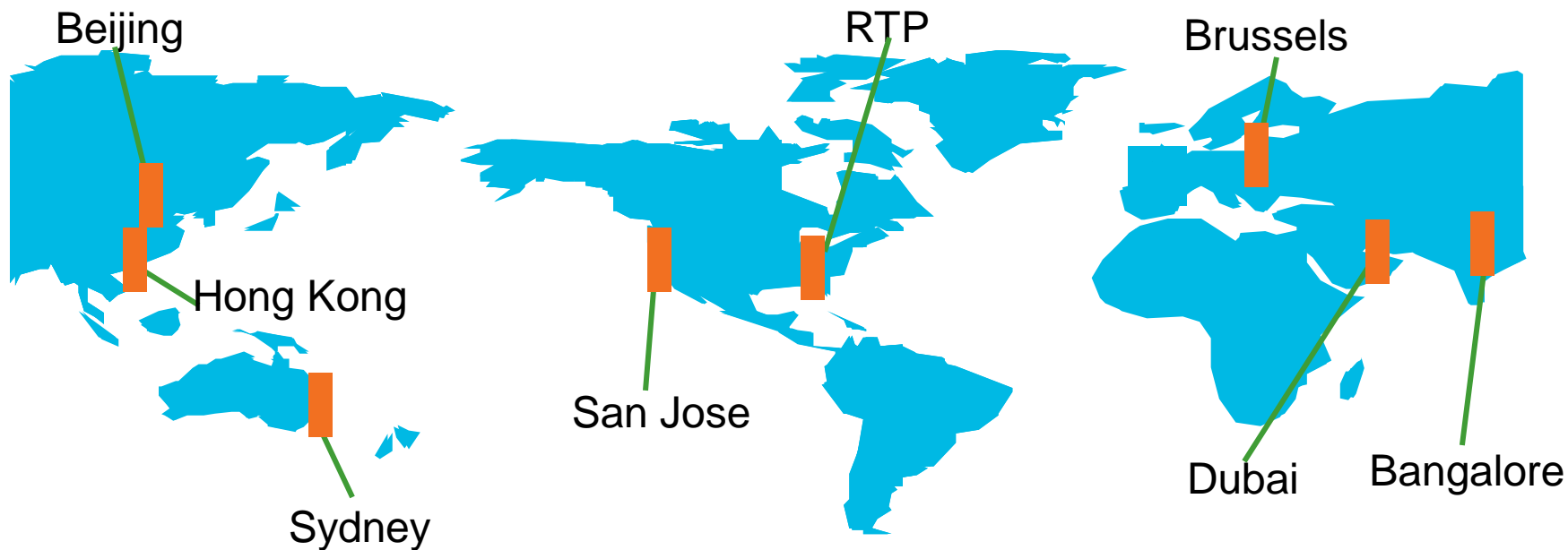


Section 3: CCIE Service Provider Practical Exam

CCIE Service Provider Lab Exam

- Candidates build a service provider network to a series of supplied specifications
- The point values for each question are shown on the exam
- Some questions depend upon completion of previous parts of the network
- It's not a design test, nor is a test of “best practices” for use in field

Service Provider Lab Exam: Locations



Eight fixed CCIE Lab Locations for Service Provider
Mobile labs happen worldwide

Service Provider Lab Exam: Changes

- The CCIE Service provider Lab exam content was revised and implemented worldwide on April 2011, to include some of the current trends and technologies in the SP industry
- New topics and hardware and software upgrades have been introduced
- End-of-Life devices were also removed and replaced
 - 3700, 3600 and 2600 were removed
 - Routers were replaced with XR12000 and Cisco7200/7600
 - Catalyst 3550 Switches were replaced with ME3400

SP Lab Exam: Equipment and Software Versions

- Cisco XR12000 series router running 3.9.1
- Cisco 7200/7600 series router running 12.2-33.SRE
- Cisco ME3400E series running version 12.2-54.SE

Lab **May Test Any Feature** That Can Be Configured on the Equipment and Cisco IOS-XR/IOS Versions Listed above, or on the CCIE Website; More Recent Versions **May** Be Installed in the Lab, But You Won't Be Tested on Them

<https://learningnetwork.cisco.com/docs/DOC-10121>

SP Lab Exam: What's new

- IOS-XR integrating with IOS
- IPv6 routing
- Enhanced MPLS TE: Inter-Area and Inter-AS, FRR, DS-TE
- Enhanced L3VPN: 6VPE, CSC
- Enhanced L2VPN: VPLS on IOS-XR, Inter-AS L2VPN, Redundancy
- Enhanced Multicast VPN: Inter-AS MVPN

SP Lab Exam: Topics

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- 2.1 Implement, Optimize and Troubleshoot FE/GE, Serial and Ethernet Trunk connections
- 2.2 Implement, Optimize and Troubleshoot Frame-relay connections
- 2.3 Implement, Optimize and Troubleshoot IP over wire line to the customer

<https://learningnetwork.cisco.com/docs/DOC-9991>

SP Lab Exam: Topics

3 Implement, Optimize and Troubleshoot L3VPN Technologies

- 3.1 Implement, Optimize and Troubleshoot Intra-AS L3VPN
- 3.2 Implement, Optimize and Troubleshoot Inter-AS L3VPN
- 3.3 Implement, Optimize and Troubleshoot Carrier Supporting Carrier (CSC)
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- 4.1 Implement, Optimize and Troubleshoot AToM
- 4.2 Implement, Optimize and Troubleshoot Carrier Ethernet
- 4.3 Implement, Optimize and Troubleshoot L2TPv3 for L2 VPN
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CCIE Service Provider Lab Exam v3.0 Checklist

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 - 1.1.5. Cyclic redundancy check (CRC)
 - 1.1.6. Keepalive timer
 - 1.1.7. Frame Relay DLCI on point to point sub-interface
 - 1.1.8. SONET Controller
 - 1.1.9. FOS channel
- 1.2. GE/10GE in the Core
 - 1.2.1. MAC accounting
 - 1.2.2. Speed
 - 1.2.3. Duplex mode
 - 1.2.4. Carrier Delay
 - 1.2.5. MTU
 - 1.2.6. Flow control
 - 1.2.7. 802.1Q VLAN sub-interface
- 1.3. IGP routing
 - 1.3.1. IS-IS Multi topology
 - 1.3.2. IS-IS Multi instance
 - 1.3.2. IS-IS System Type
 - 1.3.3. IS-IS Metric Type
 - 1.3.4. IS-IS Area
 - 1.3.5. IS-IS Designated Intermediate Systems
 - 1.3.6. IS-IS Interface Circuit Type
 - 1.3.7. IS-IS Interface Metric
 - 1.3.8. IS-IS Retransmission Throttle Interval
 - 1.3.9. IS-IS LSP Interval and Lifetime

<https://learningnetwork.cisco.com/docs/DOC-10145>

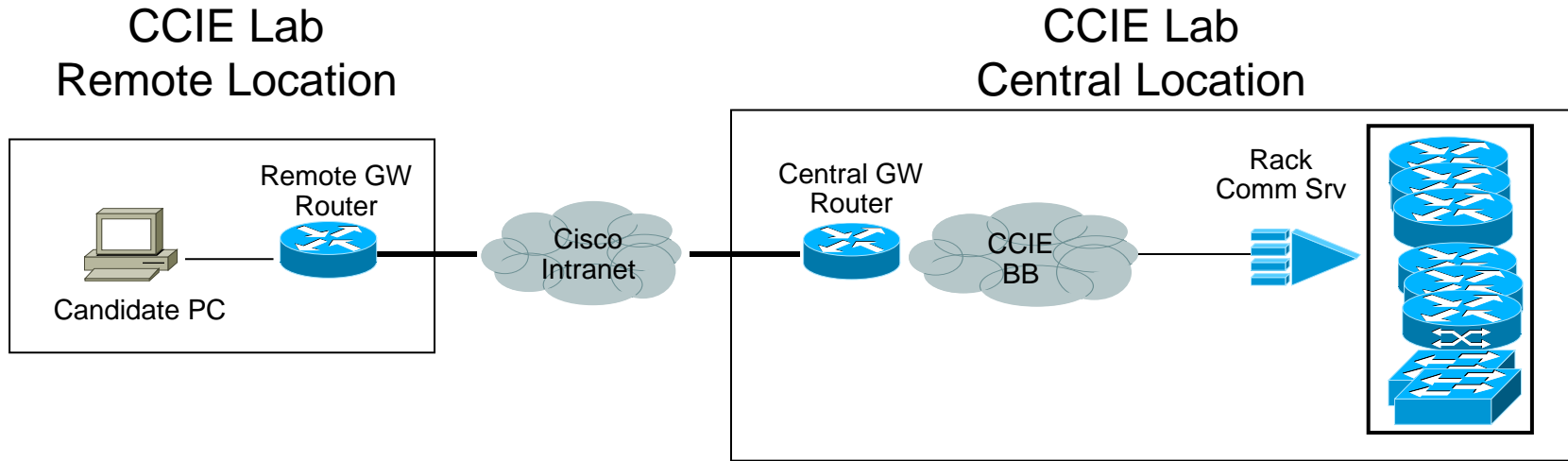
SP Lab Exam: Pre-Configuration

The Routers and Switches in Your Topology Are Preconfigured With:

- Basic IPv4/IPv6 addressing, hostname, passwords
- Switching: Trunking, VTP, VLANs
- WAN: Frame Relay DLCI mappings, HDLC, PPP
- Routing Basic: IS-IS, OSPFv2/v3, RIPv2, EIGRP, BGP
- VPN Basic: VRF, MP-BGP
- All pre-configured passwords are 'cisco' or with username/password of 'cisco/cisco'
- Occasionally, security devices may also have some pre-configuration. If not, candidate is required to initialize all security devices

Do Not Change Any Pre-Configuration on Any Devices Unless Explicitly Stated in a Question

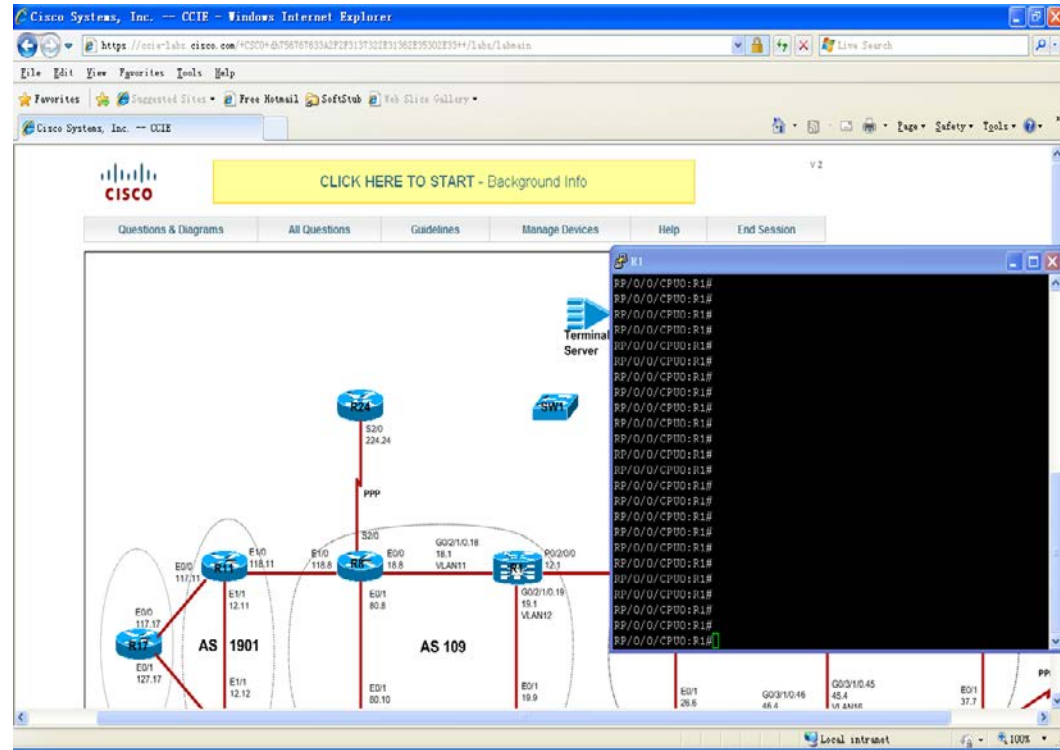
SP Lab Exam: Rack and PC Access



- The candidate PC has browsers to read lab exam content and access all devices consoles by clicking correspondent device icons

SP Lab Exam: Lab Delivery System

- Web GUI delivering all the exam content (questions, diagrams, guidelines, access to devices, documentation)
- Transparent servers backend managing the user sessions and holding the IOU instances for each user
- Benefits:
 - Flexibility in content delivery format
 - Content updates effective globally immediately
- No printed exam workbook



Service Provider Lab Exam: Grading

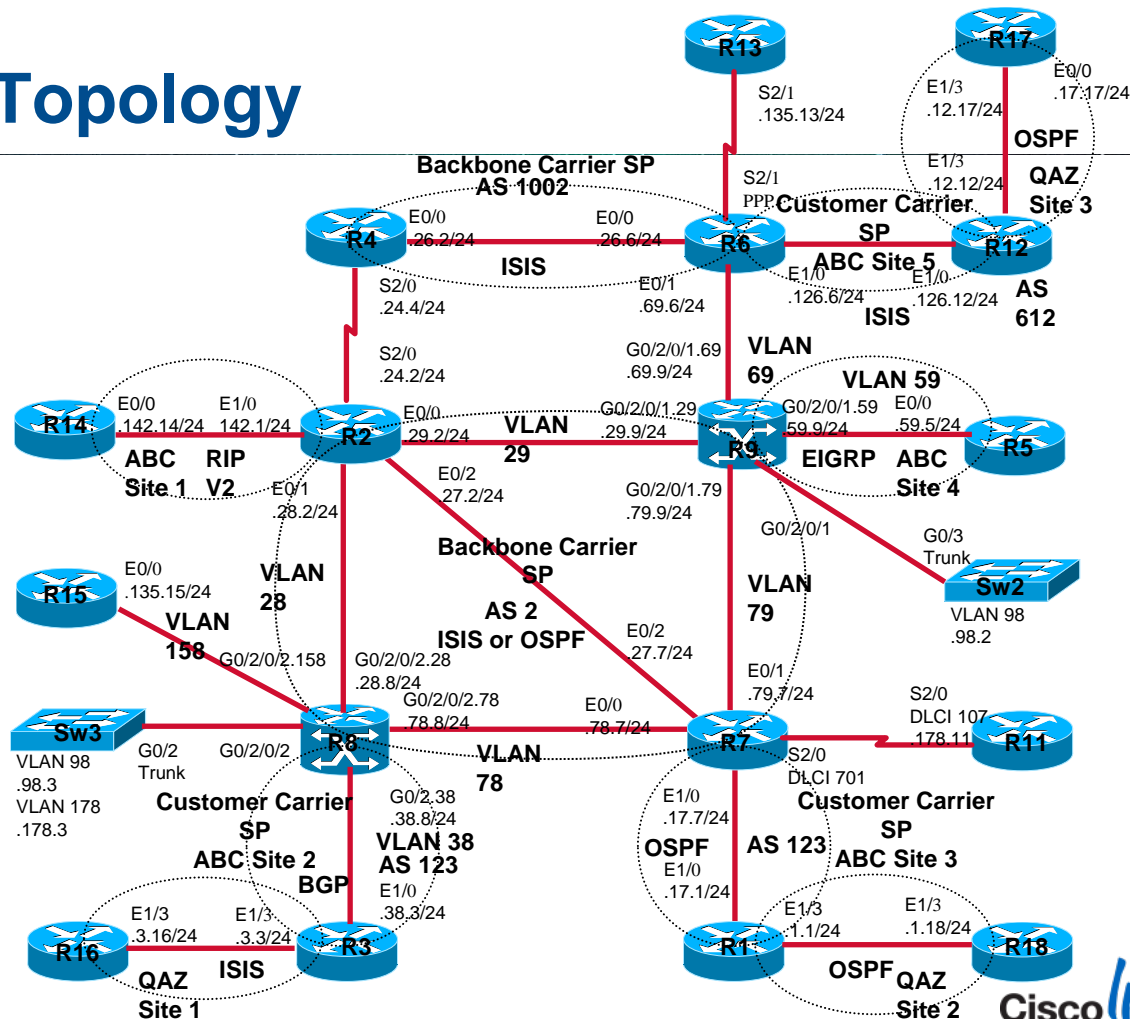
- Proctors grade all lab exams
- Automatic tools aid proctors with simple grading tasks
- Automatic tools are never solely responsible for lab exam grading—proctors are
- Proctors complete grading of the exam and submits the final score within 48 hours
- No Partial credit awarded on questions
- Points are awarded for working solutions only
- Some questions have multiple solutions



Section 4: CCIE Service Provider Sample Lab

SP Sample Lab: Topology

- IS-IS IPv4/IPv6
- OSPF IPv4/IPv6
- BGP unicast IPv4/IPv6
- MPLS LDP
- MPLS TE
- MPLS TE FRR
- MP-BGP Intra-AS VPNv4
- MP-BGP Inter-AS VPNv4
- CSC
- MP-BGP VPNv6 - 6VPE
- Multicast VPN
- AToM
- VPLS
- L2TPv3



SP Sample Lab: Addressing Scheme

- Backbone Carrier SP network Prefix: 2.2.0.0/24, 2002:2:2::/64
- Backbone Carrier SP router Loopback0: 2.2.0.Z/32, 2002:2:2::Z/128
- Customer Carrier SP/VPN network Prefix: 172.2.0.0/24, 2002:172:2::/64
- Customer Carrier SP/VPN router Loopback0: 172.2.0.Z/32, 2002:172:2::Z/128
- End Customer VPN network Prefix: 192.2.0.0/24
- End Customer VPN router Loopback0: 192.2.0.Z/32
- L2 VPN Customer network Prefix: 172.2.0.0/24
- L2 VPN Customer router Loopback0: 172.2.0.Z/32

- “Z” is router number, for example “Z” value for R12 is “12”

SP Sample Lab: Setup

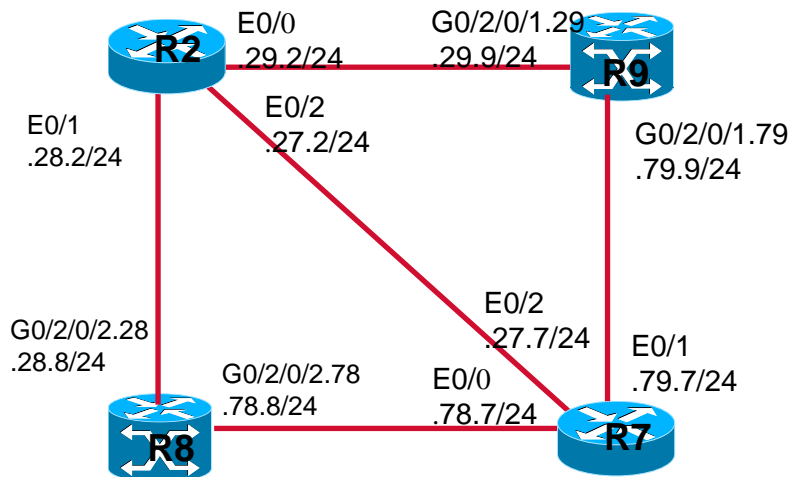
- **Hardware**

- Two XR-12404 with two GigabitEthernet interfaces or equivalent
- Thirteen Cisco 7200 series routers with Ethernet interfaces or equivalent
- Three Cisco 3560G series or equivalent

- **Software Operating System**

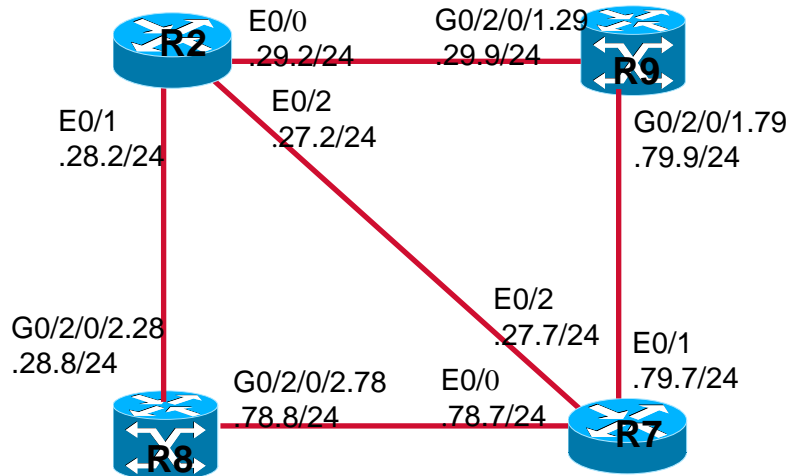
- XR12000-iosxr-k9-3.9.1.tar
- c7200-spservices-mz.122-33.SRE3.bin
- c3560-advipservicesk9-mz.122-46.SE.bin

IS-IS IPv4/IPv6 Sub Topology and Question



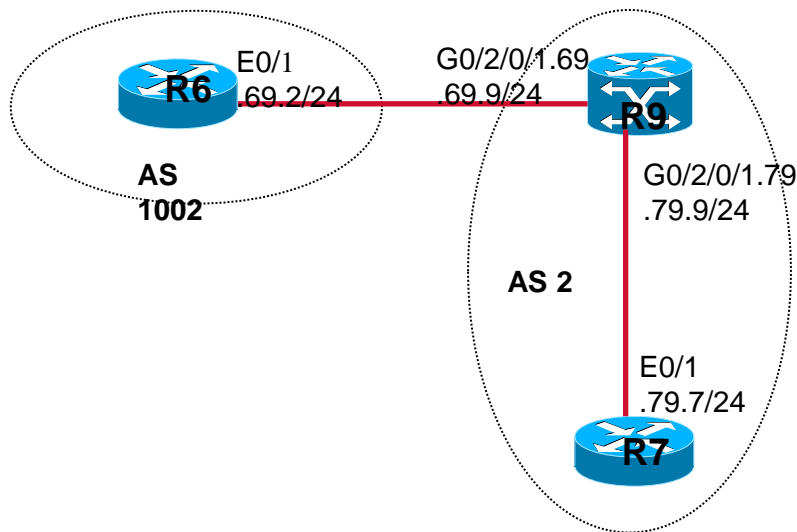
- Configure IS-IS on above routers into area of 47.0002 and put all routers into level-1
- Ensure all routers have IS-IS IPv4 and IPv6 routes and can ping each other

OSPF IPv4/IPv6 Sub Topology and Question



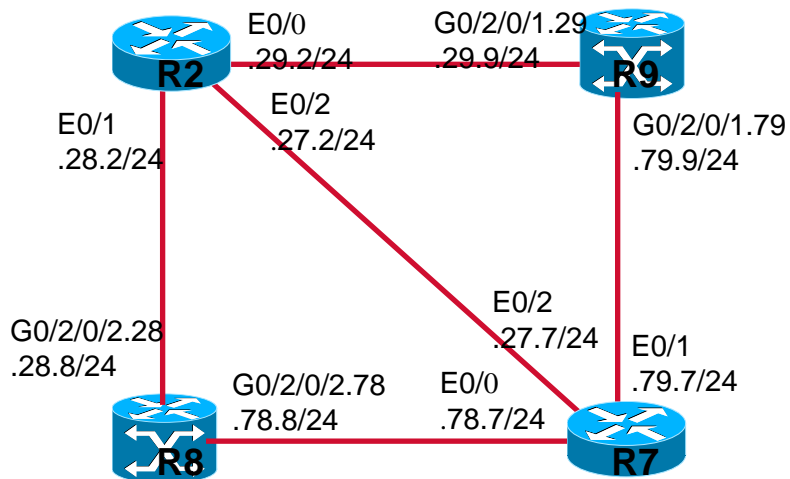
- Configure OSPFv2 and OSPFv3 on above routers in area 0
- Ensure all routers have OSPF IPv4 and IPv6 routes and can ping each other

BGP Unicast IPv4/IPv6 Sub Topology and Question



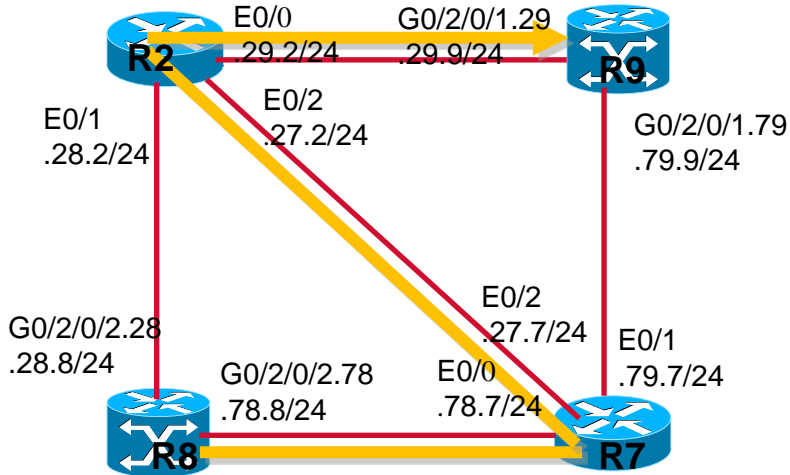
- Configure IBGP IPv4/IPv6 unicast between R7 and R9
- Configure EBGP IPv4/IPv6 unicast between R6 and R9
- Ensure Loopback0 IPV4/IPv6 network is seen as BGP routes and they can ping each other

MPLS LDP Sub Topology and Question



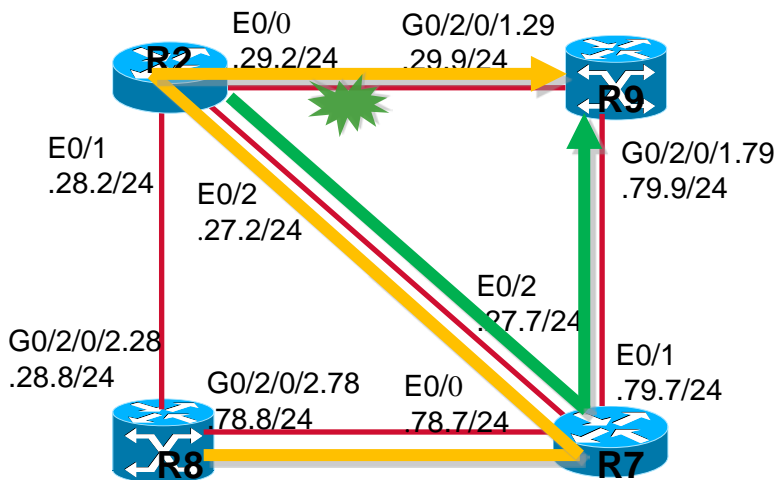
- Enable MPLS LDP on above routers, use loopback 0 IP address as router-id
- IS-IS is acting as unicast routing protocol

MPLS TE Sub Topology and Question



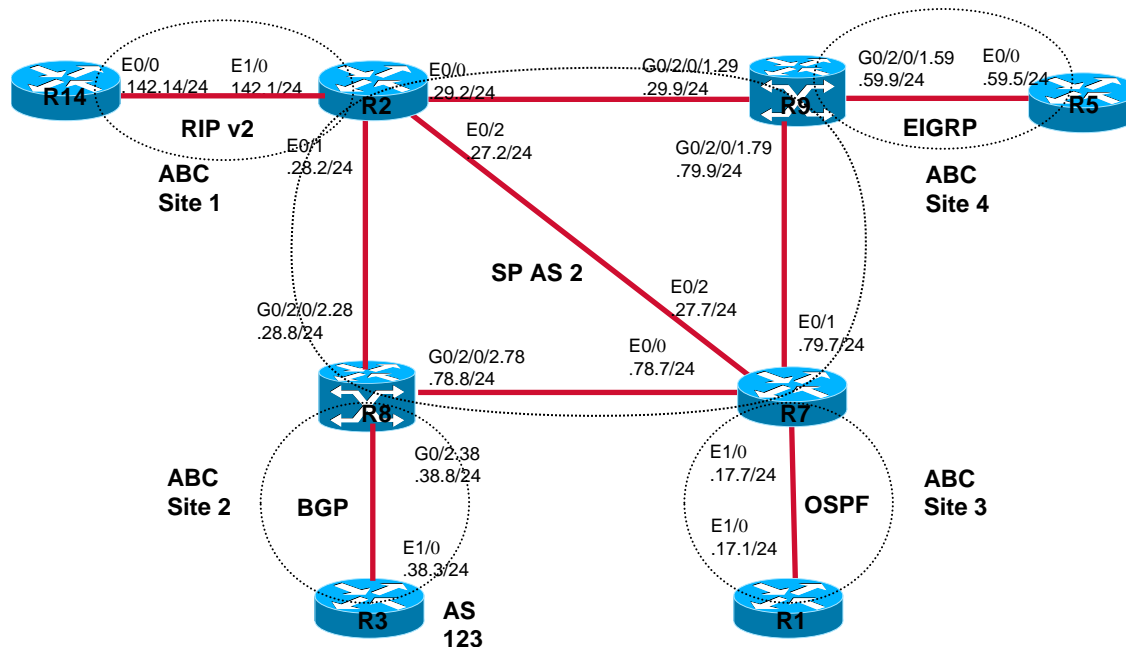
- Configure MPLS TE tunnel 89 on R8, the tunnel path follows through R7 and R2 to reach R9
- Configure Tunnel bandwidth of 2Mbps
- Configure static route so that traffic from R8 to R9 loopback0 follow the tunnel 89

MPLS TE FRR Sub Topology and Question



- The Primary tunnel 89 on R8 has configured in last question
- Configure Backup tunnel 279 on R2 to protect the Ethernet link between R2 and R9, tunnel 279 is from R2 to R9 through R7. If R2 Eth0/2 detect link problem, it switches Tunnel 89 traffic into tunnel 279

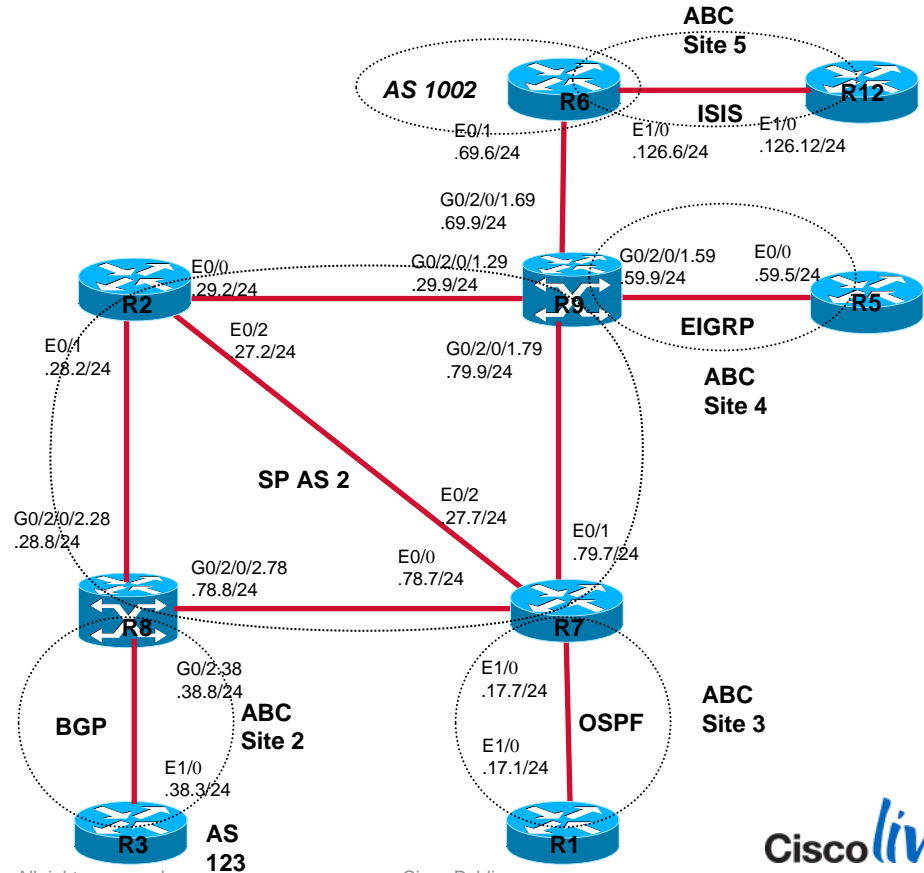
MP-BGP Intra-AS VPNv4 Sub Topology and Question



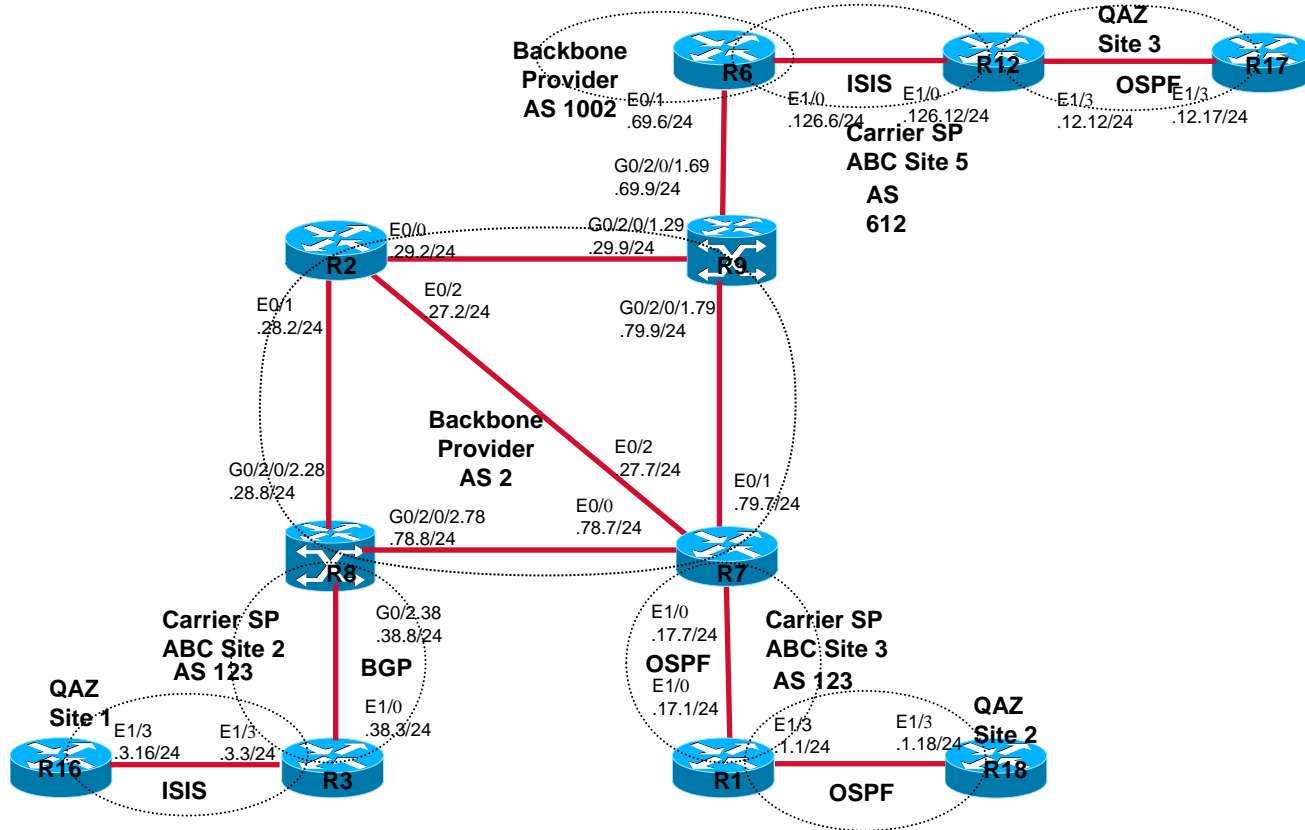
- Configure BGP VPNv4 on R2, R7, R8 and R9, configure R9 as VPNv4 Route Reflector for R2, R7 and R8
- Configure ABC VPN sites 1, 2, 3 and 4, ensure the four sites can reach each other

MP-BGP Inter-AS VPNv4 Sub Topology and Question

- Configure Inter-AS BGP VPNv4 unicast on R6 and R9, ensure they can exchange VPNv4 unicast information
- Configure VPN site 2, 3, 4 and 5. Ensure these sites have full reachability between each other
- You are permitted to define static host route on R9



CSC Sub Topology

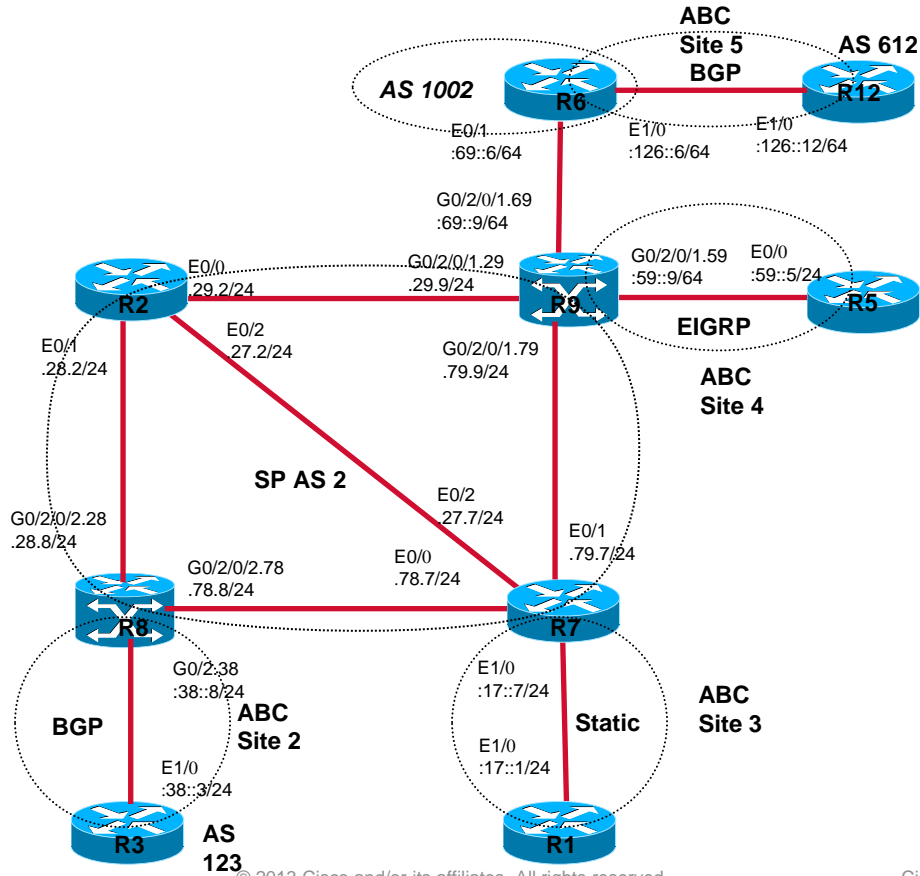


CSC Question

- R2, R7, R8 and R9 form Backbone Provider at AS 2. R6 is another Backbone Provider at AS 1002
- Configure EBGPv4+labels on R8 and R3 at ABC site 2
- Configure IGP+LDP on R7 and R1 at ABC site 3
- Configure R1 and R3 to establish IBGP VPNv4 to distribute VRF QAZ VPN information
- Ensure R16 and R18 can ping each other

- Configure IGP+LDP on R6 and R12 at ABC site 5
- Configure R3 and R12 to establish EBGP VPNv4 to distribute VRF QAZ VPN information, R1 and R12 are not be permitted to establish EBGP VPNv4 session
- Ensure R16, R17 and R18 can ping each other

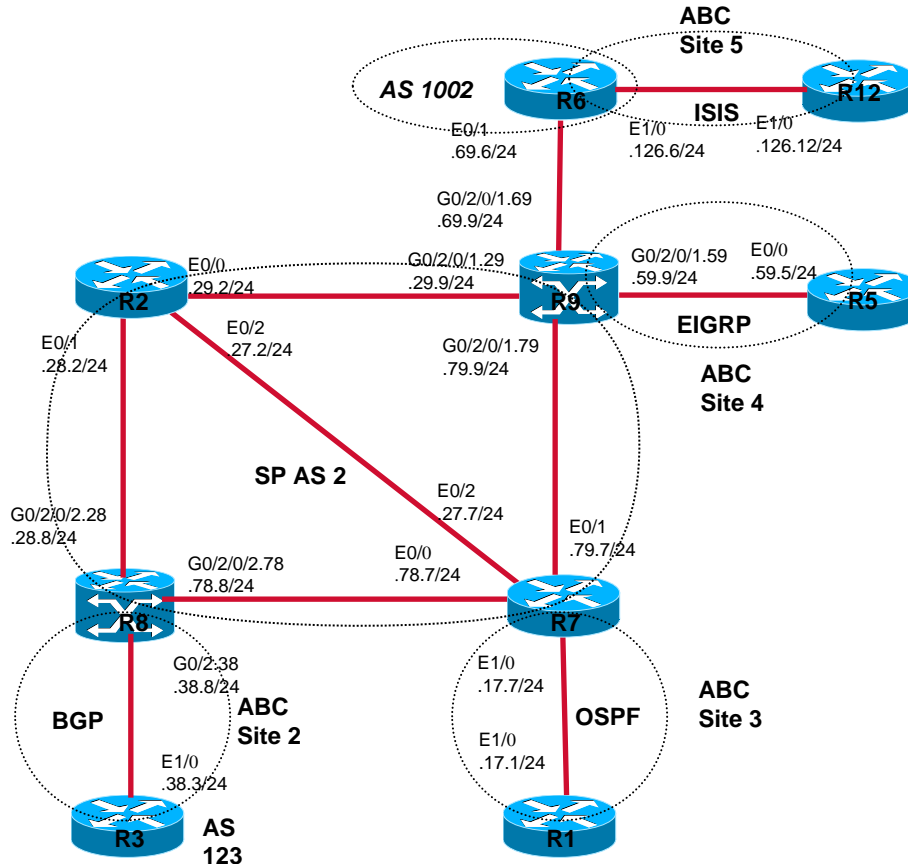
MP-BGP VPNv6 6VPE Sub Topology



MP-BGP VPNv6 6VPE Question

- Configure R2, R7, R8 and R9 to support MP-BGP intra AS VPNv6 (6VPE) information exchange. R9 is VPNv6 route-reflector to R2, R7 and R8.
- Ensure R1, R3 and R5 can ping each other via IPv6
- Configure MP-BGP Inter-AS VPNv6 (6VPE) on R6 and R9
- Ensure R1, R3, R5 and R12 can ping each other via IPv6.

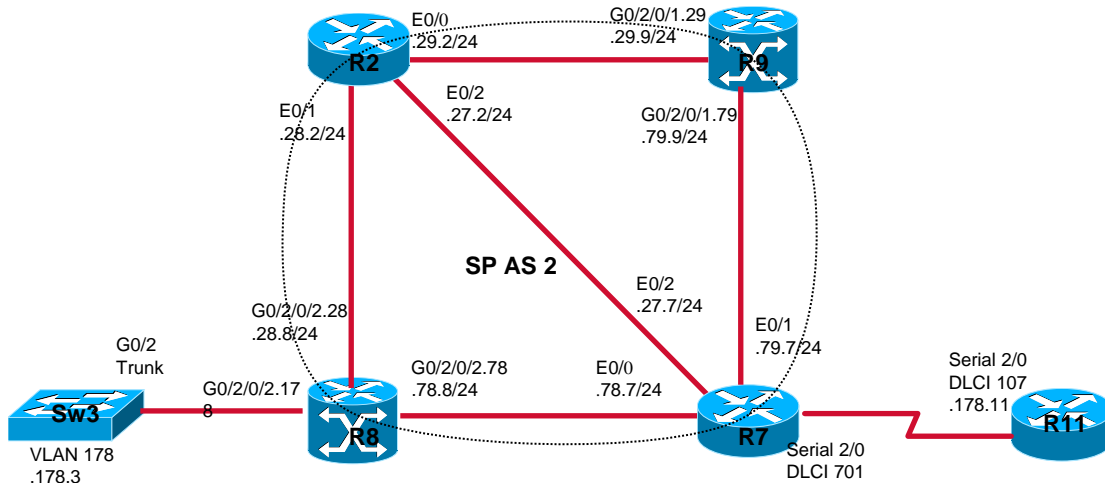
Multicast VPN Sub Topology



Multicast VPN Question

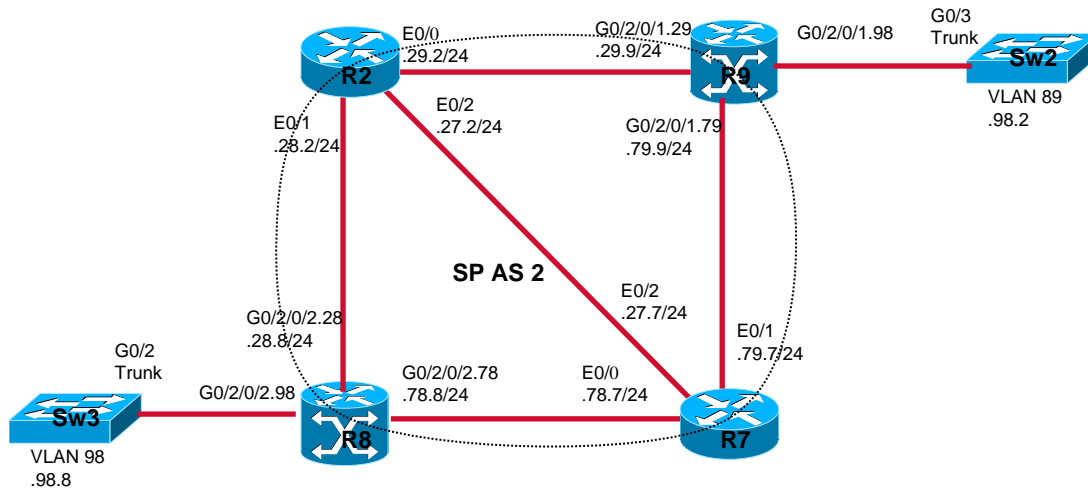
- Configure default MDT address 239.255.13.27
- Configure R2 loopback 0 as RP for AS 2 , use BSR method to distribute RP. Configure R6 loopback0 is RP for AS 1002
- Configure MSDP between R2 and R6, use loopback 0 IP address as source IP
- Configure R1 loopback0 as RP for ABC site 2, 3, 4 and 5. Use static method to define RP
- Configure R1, R3, R5 and R12 loopback0 to join multicast group of 239.255.X.X (X is router number). Ensure R1, R3, R5 and R12 can ping these multicast group
- Configure MP-BGP IPv4 MDT between R2, R7, R8 and R9, R9 is route-reflector
- Configure MP-BGP IPv4 MDT between R6 and R9
- Ensure multicast VPN source and group information be distributed among R2, R7, R8, R9 and R6

AToM Sub Topology and Question



- Configure R7 and R8 to support VLAN and Frame-Relay interworking of AToM
- Ensure R11 and VLAN 178 can ping each other

VPLS Sub Topology and Question

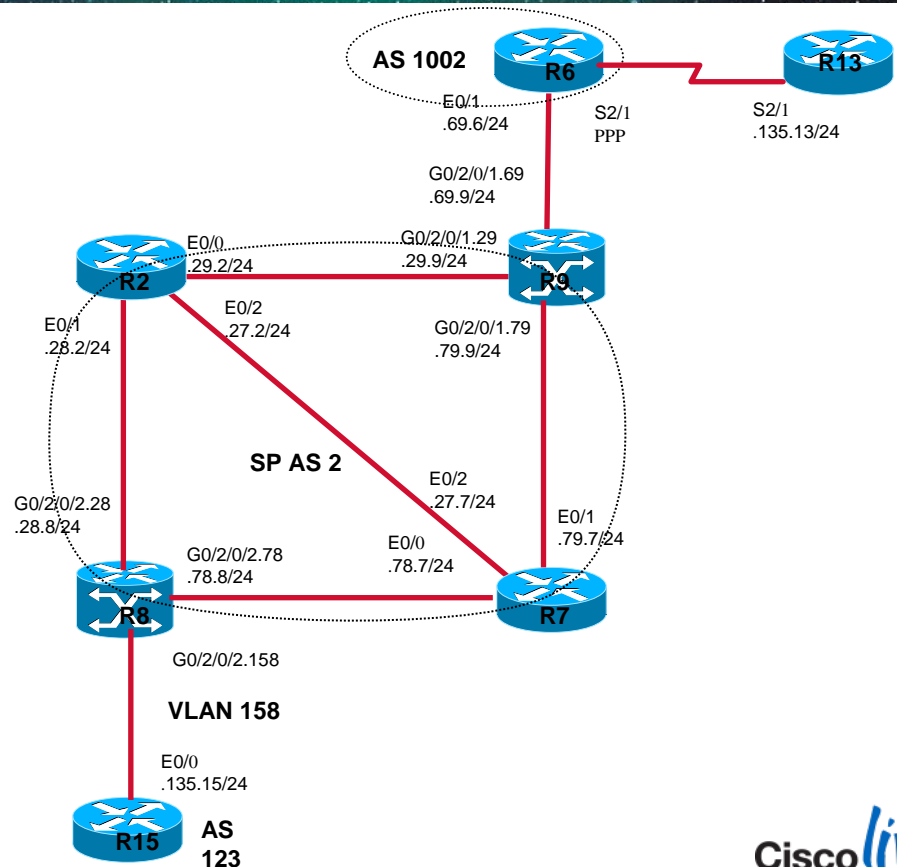


- Configure R8 and R9 to provide VPLS service to connect VLAN 98
- Change VLAN spanning tree priority on Sw2 so that Sw2 is root for VLAN 98

Note: VPLS on IOS-XR supports only Bridge group mode on current version

L2TPv3 Sub Topology and Question

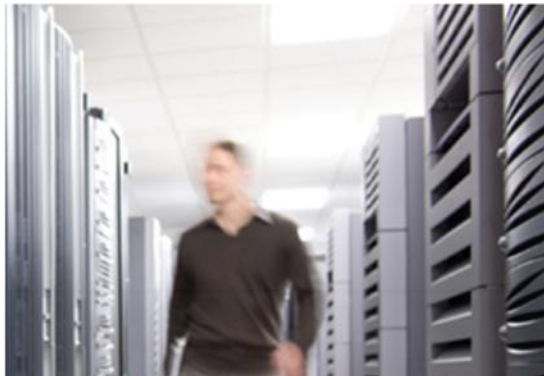
- Configure R6 and R8 to establish a L2TPv3 session
- Configure L2TPv3 to support ipv4 interworking
- Ensure VLAN 158 on R15 connects with PPP on R13 and they can ping each other



Configuration and Verification

Refer to below URL for configuration and verification

- <https://learningnetwork.cisco.com/thread/30106>
- <https://learningnetwork.cisco.com/thread/30107>
- <https://learningnetwork.cisco.com/thread/30108>
- <https://learningnetwork.cisco.com/thread/30109>
- <https://learningnetwork.cisco.com/thread/30110>
- <https://learningnetwork.cisco.com/thread/30111>
- <https://learningnetwork.cisco.com/thread/30112>



Section 5: Preparation Resources and Test-Taking Tips

Planning Resources

- There is an abundance of material available to prepare for the CCIE certification. However, you have to be **very selective** of the material you choose to use
- Choose materials that offer configuration examples and take a “**hands-on**” approach
- Look for materials **approved or provided by Cisco** and its Learning Partners
- **Customize your study plan** to reflect your own personal strengths and weaknesses

Assessing Strengths

- Evaluate your experience and knowledge in the major topic areas listed on blueprint
- Using the content **blueprint**, determine your experience and knowledge level in the major topic areas
- For areas of **strength**: practice for speed
- For **weaker** areas: boost knowledge with training or book study first, then practice

Books

The screenshot shows a Windows Internet Explorer browser window with the address bar containing <https://learningnetwork.cisco.com/docs/DOC-10002>. The page title is "CCIE Service Provider Reading List - The Cisco Learning Network". The main content area is titled "CCIE Service Provider Reading List" and includes a sub-header "Suggested Cisco Press titles for written and lab exams v3.0". Below this, there is a long list of book titles and authors, such as "MPLS Fundamentals" by Luc De Ghein and "MPLS and Next-Generation Networks: Foundations for NGN and Enterprise Virtualization" by Azhar Sayeed and Monique J. Morrow. The left sidebar contains a navigation menu with categories like "Routing & Switching (CCNA)", "PROFESSIONAL", "EXPERT", and "ARCHITECT". The right sidebar features a "Bookmarks" section with two icons and a "Other Content" section with several links to related documents and exams.

<https://learningnetwork.cisco.com/docs/DOC-10002>

On-line Resources

The screenshot shows a web browser window with the following content:

- Browser Title:** CCIE Service Provider v3.0 Online Resources (back up) - The Cisco Learning Network - Wi...
- Address Bar:** <https://learningnetwork.cisco.com/docs/DOC-10144>
- Page Title:** CCIE Service Provider v3.0 Online Resources
- Main Content:**
 - Routing & Switching (CCNA)**
 - Security (CCNA Security)**
 - SP Operations (CCNA SP Ops)**
 - Service Provider (CCNA SP)**
 - Voice (CCNA Voice)**
 - Wireless (CCNA Wireless)**
 - PROFESSIONAL**
 - Design (CCDP)**
 - Routing & Switching (CCNP)**
 - Security (CCSP) Retired**
 - Security (CCNP Security)**
 - Service Provider (CCIP)**
 - SP Operations (CCNP SP Ops)**
 - Voice (CCNP Voice)**
 - Wireless (CCNP Wireless)**
 - EXPERT**
 - CCDE Design Expert**
 - CCIE Routing & Switching**
 - CCIE Security**
 - CCIE Service Provider**
 - Syllabus
 - Written Exam
 - Lab Exam
 - CCIE SP Operations**
 - CCIE Storage Networking**
 - CCIE Voice**
 - CCIE Wireless**
 - ARCHITECT**
 - Cisco Certified Architect**
 - SPECIALIST**
 - Advanced Routing & Switching**
 - Collaboration**
 - Data Center**
 - Foundation for Channel Partners**
- CCIE Service Provider v3.0 Online Resources**

This list includes articles, white papers, and documentation on topics covered in the CCIE SP exams.

 - Asymmetric Digital Subscriber Line (ADSL)
 - ATM Signaling
 - ATM to Frame Relay Interworking
 - Border Gateway Protocol (BGP)
 - Cisco 7200 Series Routers
 - Cisco 7600 Series Routers
 - Cisco Carrier Routing System
 - Cisco IOS Software Releases 12.2 SE
 - Cisco IOS Software Releases 12.2 SR
 - Cisco IOS XR Software
 - Cisco ME 3400E Series Ethernet Access Switches
 - Cisco XR 12000 Series Router
 - Data-over-Cable Service Interface Specifications (DOCSIS)High Availability
 - Dense Wavelength Division Multiplexing (DWDM)
 - Enhanced Interior Gateway Routing Protocol (EIGRP)
 - EtherChannel
 - Frame Relay
 - High availability
 - Integrated Intermediate System-to-Intermediate System (IS-IS)
 - Inverse Multiplexing over ATM (IMA)
 - IP Multicast
 - IP over ATM
 - IP to ATM Class of Service
 - IP version 6
 - Layer 2 VPNs
 - LDP
 - Metro Ethernet Switches
 - MPLS
 - MPLS Management
 - Multicast
 - Multiprotocol BGP (MBGP)
 - Multiprotocol Label Switching over ATM (MPLS over ATM)
 - NetFlow
 - Open Shortest Path First (OSPF)
 - Permanent Virtual Circuits (PVC) and Switched Virtual Circuits (SVC)
 - Point-to-Point Protocol (PPP)
 - PPPoE/PPPoA (PPP over Ethernet / PPP over ATM)
 - Remote Monitoring (RMON)
- Right Side Widgets:**
 - 书签簿加入 (2)**
 - 其他同类内容**
 - ATM Technology
 - Guide to ATM Technology
 - Preparing for the CCIE SP Lab Exam - Part I
 - Stateful Switchover
 - 640-578 SPNGN2 Exam Topics
 - Adrie: Certifications Community Mgr. 的更多内容**
 - CCIE Service Provider Lab Exam Overview
 - CCIE Service Provider Lab Exam Study/Learn
 - Start Here: CCIE Service Provider
 - News & Announcements - CCIE Service Provider
 - CCIE Service Provider Written & Lab Exam Updated

<https://learningnetwork.cisco.com/docs/DOC-10144>

Training

CCIE Service Provider Suggested Training v3.0

No formal training requirement exists for CCIE certification. The list below contains Service Provider related training courses that may enhance your personal knowledge of the topics on the written and lab exam topics.

To find your nearest Cisco authorized training partner, please view our complete list of [worldwide training partners](#).

- [A New Exclusive: MPLS ENT - Enterprise Networks over Service Provider MPLS\(DRV-GENM-9K-US - 1.0\)](#)
- [Advanced Services: Advanced Implementing and Troubleshooting MPLS VPN Networks \(AMPLS\)\(TRN-AMPLS - 4\)](#)
- [Advanced Services: Building Core Networks with OSPF, IS-IS, BGP, and MPLS Bootcamp \(BCN\)\(TRN-BCN - 6\)](#)
- [Advanced Services: Cisco IOS XR IPv6 Routing for Service Providers \(XIPv6R\)\(TRN-XIPv6R - 3.5.2\)](#)
- [Advanced Services: Cisco IOS XR Software Fundamentals for Network Operations\(TRN-XRFUND - 1\)](#)
- [Advanced Services: Cisco XR 12000 Series Essentials \(XR12K\)\(TRN-XR12K - 1.0\)](#)
- [Advanced Services: Implementing Advanced Cisco IP Multicast \(MCAST\)\(MCAST - 2\)](#)
- [Advanced Services: Integrating IPv6 in Service Provider and Enterprise Networks\(TRN-IP6AD - 2.0\)](#)
- [CISCO CRS-1 ESSENTIALS \(CRS-1\)\(TRN-CRS-1 - 1.0\)](#)
- [DEPLOY, MAINTAIN, & TROUBLESHOOT CISCO IOS XR SOFTWARE ON THE CISCO CRS & CISCO XR 12000 ROUTER\(TRN-CRS12 - 1.0\)](#)
- [Deploying Cisco 12000 Series Routers \(GSR\)\(TRN-GSR - 3.0\)](#)
- [IPv6 Fundamentals, Design and Deployment \(IP6FD\)\(TRN-IP6FD - 2.0\)](#)
- [Implementing Cisco MPLS Traffic Engineering & Other Features \(MPLST\)\(TRN-MPLST - 2.0\)](#)

5740 浏览 | 标签: ccie_sp_training

平均用户评价: ★★★★★ (0 评价) | 我的评价: ★★★★★

评论 (0) | [Add a comment](#)

此文档没有评论。

其他同类内容

- CCIE SP Operations Practical Exam - Study/Learn
- CCIE SP Operations Written Exam - Study/Learn
- OFCN Study/Learn
- BRKCCIE-4200_Lopes3.pdf
- Cisco CRS-1 Carrier Routing System Essentials (CRS) v2

Adrie: Certifications Community Mgr. 的更多内容

- CCIE Service Provider Lab Exam Overview
- CCIE Service Provider Lab Exam Study/Learn
- Start Here: CCIE Service Provider
- News & Announcements - CCIE Service Provider
- CCIE Service Provider Written & Lab Exam Updated

<https://learningnetwork.cisco.com/docs/DOC-10088>

SP Study Group

The screenshot shows a web browser window displaying the CCIE SP Study Group page. The browser title is "CCIE SP Study Group - The Cisco Learning Network - Windows Internet Explorer". The address bar shows the URL "https://learningnetwork.cisco.com/groups/ccie-sp-study-group". The page content includes a sidebar with a "群组简介" (Group Introduction) section, a main content area with a "CCIE SP Study Group" header and a list of recent posts, and a right sidebar with "Group Guidelines", "操作" (Actions), "通知" (Notifications), and "Certifications" sections.

群组简介

Welcome to the CCIE Service Provider Study Group, the place on the Cisco Learning Network where you can ask questions and share ideas with other members as you prepare for your CCIE SP Certification. Your Study Group Leader will address questions and lead study sessions using discussion forums, document sharing, and other interactive features within a focused Group structure. Groups are a valuable support resource as you take your career to the next level.

所有者:
Adrie, Certifications Community Mgr.
Shankar T.Rajan
Vincent Zhou
Rachel D, Community Mgr.

CCIE SP Study Group

Overview 会员 (323) 讨论 (29) 文档 (2) 投票

公告: Don't miss the next webinar: Best Practices for Exam Preparation 显示详情

最近内容

- Re: GNS3 + InternetworkExpert Lab workbook for CCIE SP lab
作者 Frank Geldner
2012-2-29 下午10:17
- Re: Cisco 360 for CCIE SP
作者 Kim Pedersen
2012-2-29 上午3:50
- Re: study plan
作者 Zhongda
2012-1-17 下午9:48
- sample_lab_R9_config.cfg
作者 Leon van Dongen
2011-12-30 上午12:26
- sample_lab_R8_config.cfg
作者 Leon van Dongen
2011-12-30 上午12:24
- Re: What are you doing to prepare for the CCIE Service Provider Lab Exam?
作者 Scott Morris - CCDE/4xCCIE/2xJNCIE
2011-12-10 下午1:16
- Re: CCIE SP v3.0 Sample Lab Part - 6 of 7
作者 Leon van Dongen
2011-12-10 上午4:31
- Re: Running IOS XR on 7600rsp720
作者 Leon van Dongen
2011-12-10 上午4:30
- Re: CCIE SP v3.0 Sample Lab Part - 5 of 7

Group Guidelines

Welcome! Your participation in this group and the Cisco Learning Network is bound by the **Posting Guidelines and Acceptable Use Agreement**.

Please take a moment to review these guidelines.

Join this group to contribute and ask questions.

操作

通知

群组资源

Certifications

CCIE © Service Provider

For more information on certification requirements and additional study materials, go to the **CCIE Service Provider Landing Page**.

- ▶ CCIE Service Provider Landing Page
- ▶ View Syllabus

<https://learningnetwork.cisco.com/groups/ccie-sp-study-group>

Practice Labs

- Practice lab exercises with a high level of complexity will assist you in making improvements in your exam strategy and identifying areas requiring extra study. Practice labs can be used to **gauge your readiness** and help identify your **strengths and weaknesses**. This will help you refocus and revise your study plan and adjust it according to your findings
- Technical skill is not the only thing you need to work on; **time management** and your **exam-taking strategy** is also important to succeed in the CCIE exam. Practice labs also assist you in improving your time management and test-taking approach

Lab Exam Tips

- Reduce stress—arrive early
- Leave yourself time—exam can run over
- Read entire exam
- Redraw topology to clarify scenario
- Manage your time
- Make no assumptions
- Keep a list
- Work questions as a unit
- Test your work
- Save configurations often
- Minimize last-minute changes

Lab Exam Proctors

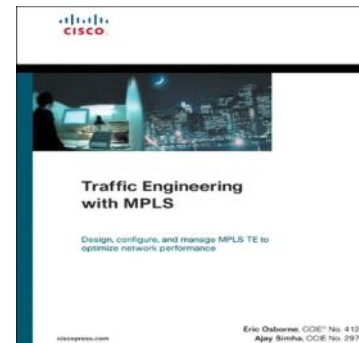
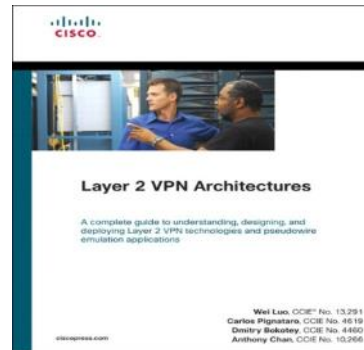
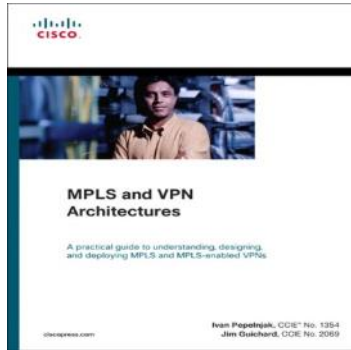
- Proctor's role is to keep exam fair
- Talk to proctor if you don't understand a question
- Ask the proctor clarifying questions
- Report any equipment or technical problems to the proctor as soon as it occurs

Ask the Proctor Questions

For More Information

- Beware of Rumors
- Visit the Cisco Learning Network for more on CCIE Service Provider certification and interaction with other candidates
www.cisco.com/go/learningnetwork
- Contact support:
www.cisco.com/go/certsupport
- Report cheating:
ccie-nda-enforcement@cisco.com

Recommended Reading



Source: Cisco Press

Questions?



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