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Straight from the Source: Getting your CCNP Service Provider Certification

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BRKCRT-2006

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CCIE SP,W,DC

Cisco *live!*
June 9-13, 2019 • San Diego, CA

#CLUS



Who we are



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Cisco Global Certifications
CCIE SP



Rafael Ceara
Systems Engineer
3xCCIE SP,DC,W

Cisco Webex Teams

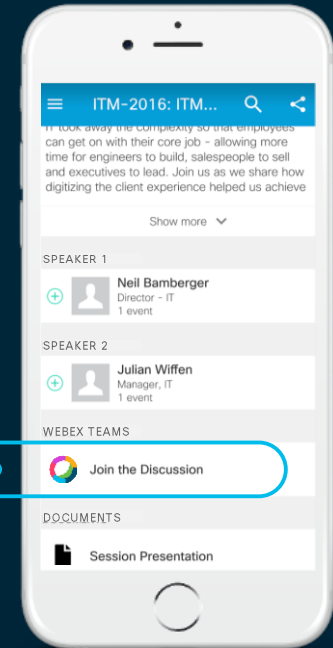
Questions?

Use Cisco Webex Teams to chat with the speaker after the session

How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install Webex Teams or go directly to the team space
- 4 Enter messages/questions in the team space

Webex Teams will be moderated by the speaker until June 16, 2019.



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Agenda

- Introduction to SP Cert 2.0 Portfolio
- SP Cert 2.0 Architecture Framework
- Program Roadmap evolution SP Cert 2.0
- SP Cert 2.0 Badges
- SP Cert 2.0 Migration & Recertification
- SPCORE Blueprint
- How to prepare for SP Cert 2.0
- Resources and Trainings
- SP Cert 2.0 Lablet & Practical Exam Experience
- Real Use Cases
- Takeaways

Introduction to Service Provider Cert 2.0 Portfolio



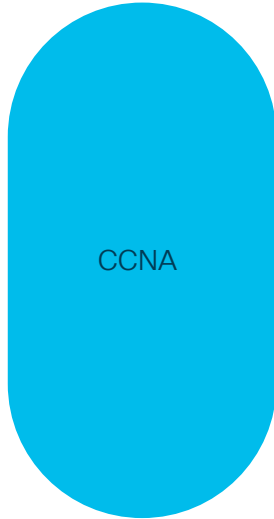
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Today's Certification Portfolio

	Entry	Associate	Professional	Expert
Architect				CCAr Architect
Cloud		CCNA Cloud	CCNP Cloud	
Collaboration		CCNA Collaboration	CCNP Collaboration	CCIE Collaboration
Cybersecurity Operations		CCNA CyberOps		
Data Center		CCNA Data Center	CCNP Data Center	CCIE Data Center
Design	CCENT	CCDA	CCDP	CCDE
Industrial / IoT		CCNA Industrial		
Routing & Switching	CCENT	CCNA Routing & Switching	CCNP Routing & Switching	CCIE Routing & Switching
Security	CCENT	CCNA Security	CCNP Security	CCIE Security
Service Provider		CCNA SP	CCNP SP	CCIE SP
Wireless	CCENT	CCNA Wireless	CCNP Wireless	CCIE Wireless
Other Certifications	Certified Technician			
Technical Specialists	Collaboration	Data Center	Internet of Things	Network Programmability
	Operating System Software	Security	Service Provider	
Digital Transformation Specialists	Business Architecture	Customer Success		
AppDynamics	ACIP			

Tomorrow's Certification Portfolio

Associate



Professional

CCNP Enterprise

CCNP Service Provider

CCNP Data Center

CCNP Collaboration

CCNP Security

Expert

CCIE Enterprise Infrastructure

CCIE Enterprise Wireless

CCIE Service Provider

CCIE Data Center

CCIE Collaboration

CCIE Security

How our program is evolving



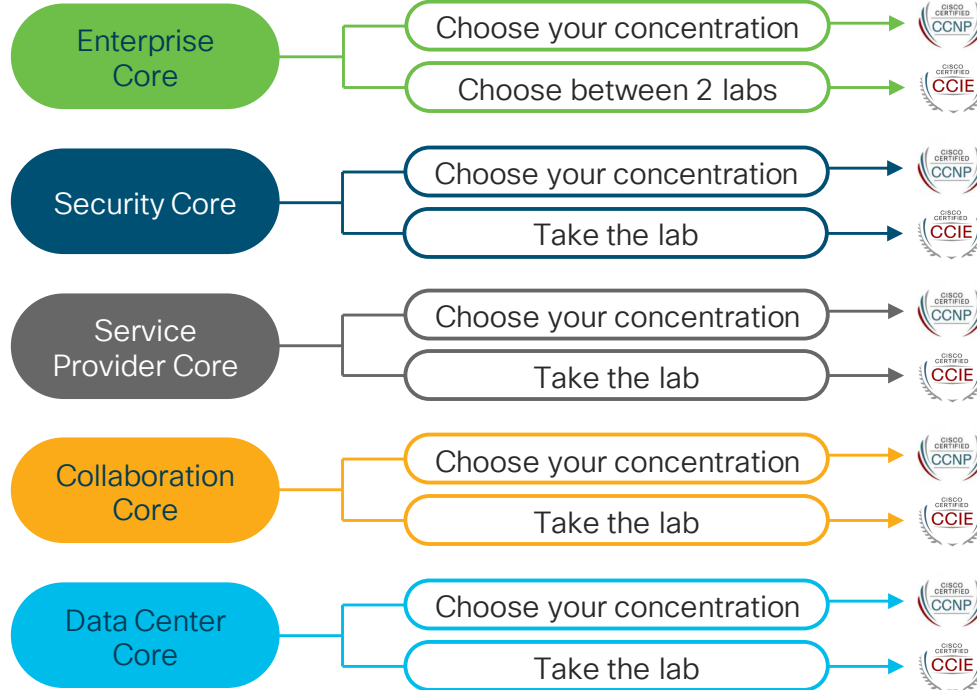
Single Exam

Network foundation exam.
Covers Key components like
IP fundamentals, Network
access, IP Connectivity,
Automation, Security.

Technology Core Exam 1



Concentration or Lab Exam 2



Concentration Exam

Choose one concentration exam
in your technology.
Concentration covers products,
solutions, and/or roles.



Lab

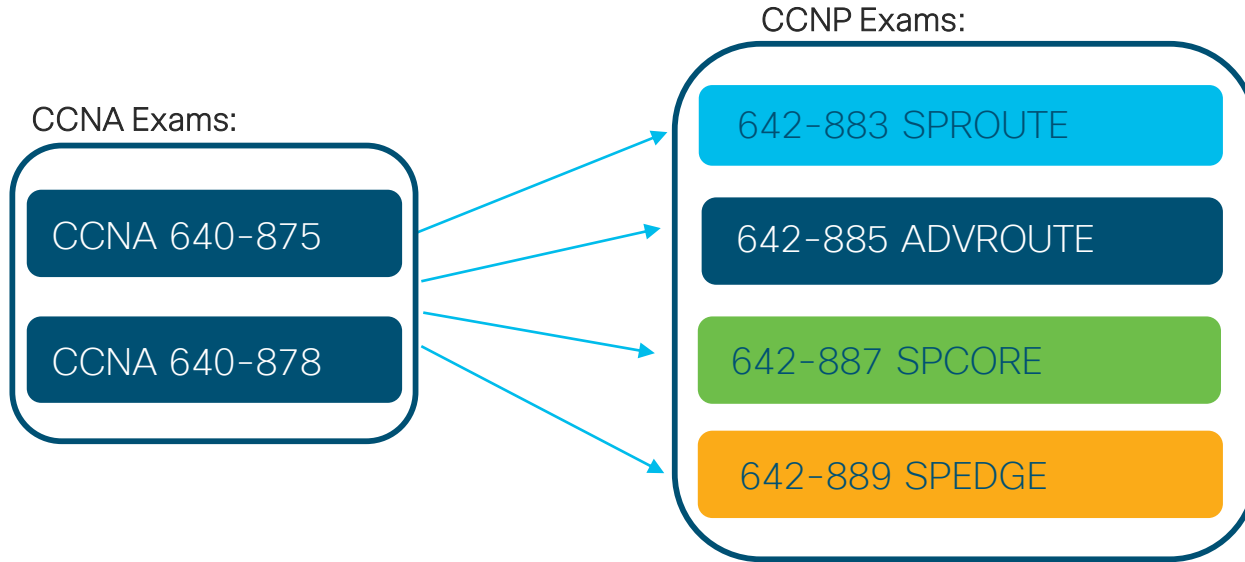
Choose one, 8hr lab
focusing on full lifecycle.
Lab exam covers design, deploy,
automate, operate, and optimize.

Service Provider Cert 2.0 Architecture Framework



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Current SP Architecture Framework



New Service Provider Framework

SP Core Exam:

SPCORE 300-501

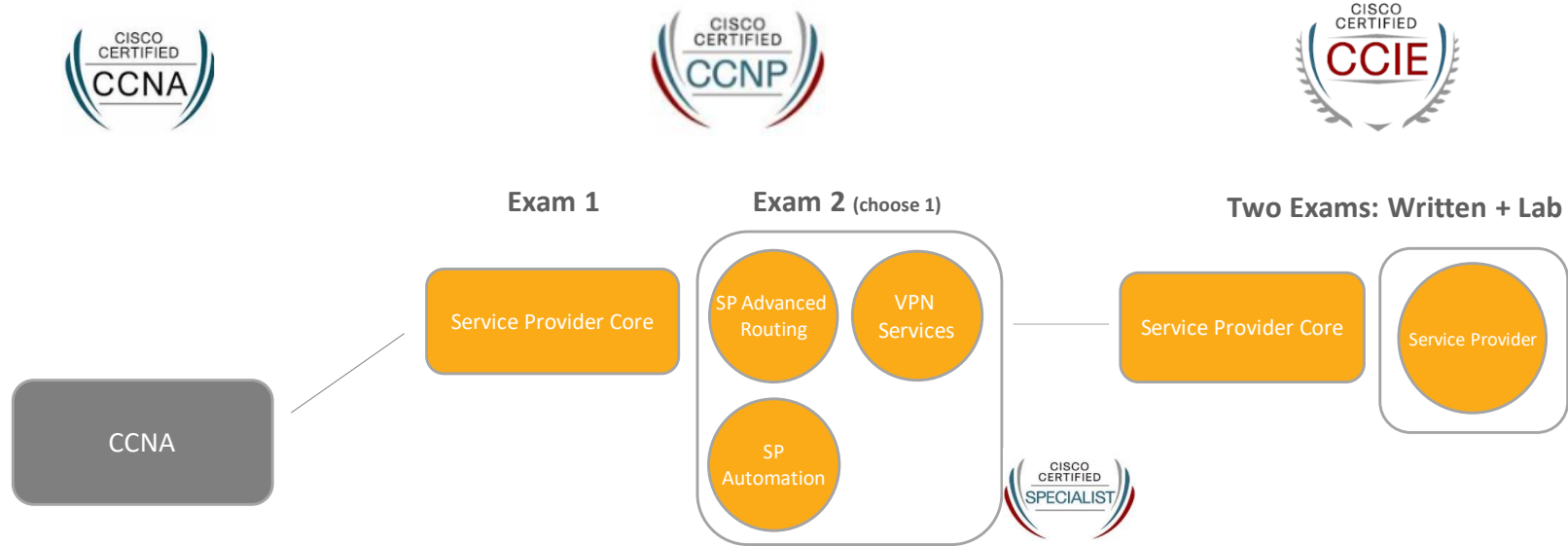
Concentration Exams: Pick 1

SPRI 300-510

SPVI 300-515

SPAUTO 300-535

New SP Cert 2.0 Architecture Framework



Service Provider Cert 2.0 Badges



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Personalized credential dashboard

Certifications

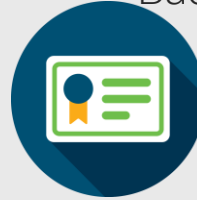


Service Provider 2.0

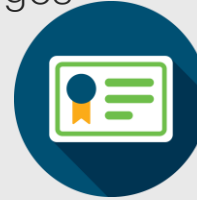
Badges



Advance
Routing
12/8/17



SP VPN
1/18/18



Automation
3/1/18



Mobility
7/20/18

Skills

BGP

SRv6 VPN

EVPN

MPLS

Automation

Multicast

QOS


Traffic Engineering



VPN Services


Network Services

SP Security

Acclaim profile sample







John Smith

Network Architect

I am obsessed with technology. Since a young age, I have been exploring the boundaries of technology and human interactions. The majority of my professional career has involved pursuing this passion through constant learning. I take pride in my ability to quickly learn and develop skills.

Analytical Thinking

Collaboration

Decision Maker

Exceptional Communication

Leadership













Strategic Thinking

Subject Matter Expertise

Featured

Earned

Collections

 <p>Cisco Certified Network Associate</p> <p>Cisco</p>	 <p>Cisco Certified Internetworking Expert Service Provider</p> <p>Cisco</p>	 <p>Cisco Certified Network Professional Collaboration</p> <p>Cisco</p>	 <p>Cisco Certified Internetworking Expert Collaboration</p> <p>Cisco</p>
 <p>Cisco Certified Internetworking Expert Routing and Switching</p> <p>Cisco</p>	 <p>Cisco Certified Internetworking Expert Security</p> <p>Cisco</p>	 <p>Cisco Certified Expert Data Center</p> <p>Cisco</p>	 <p>Cisco Certified Network Professional Data Center</p> <p>Cisco</p>
 <p>Cisco Certified Network Professional Security</p> <p>Cisco</p>	 <p>Cisco Certified Network Professional Service Provider</p> <p>Cisco</p>	 <p>Cisco Certified Internetworking Expert Wireless</p> <p>Cisco</p>	 <p>Cisco Certified Network Professional Enterprise Network</p> <p>Cisco</p>

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SP Cert 2.0 Migration & Recertification



You make the power of data **possible**

CCNP Service Provider (current certification holder migration path)



Current Version:

Version 2.0:



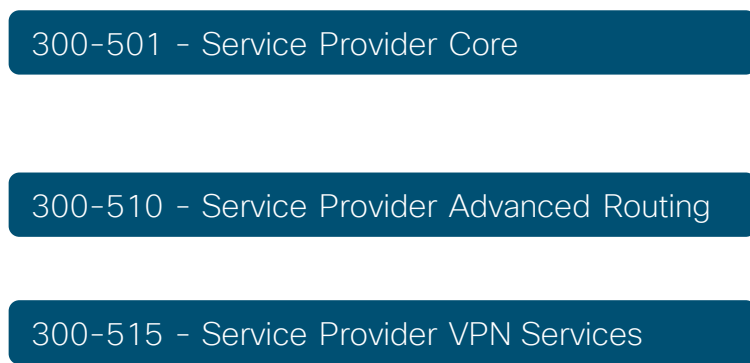
CCNP Service Provider (candidates in-flight migration path)



Current Version:



Version 2.0:



How our recertification policies are changing

Today

- Different recertification period depending on certification type
- Continuing education for CCIEs only
- Credits required for recertification:
 - CCIE: 100

February 24, 2020

- 3 year recertification period for all certified individuals, beginning at the recertifying event date
- Continuing education for all levels of certification
- Credits required for recertification:
 - CCNA: 30
 - CCNP: 80
 - CCIE: 120

Recertification

We offer recertification, **your way!**

Certified individuals at every level can now recertify by earning points within 3 years by completing continuing education activities.



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Attend Cisco Live
Training Courses



Complete Cisco
Instructor-led Training



Author
Cisco Content



And More...

SPCORE Blueprint



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SPCORE – Implementing and Operating Cisco Service Provider Network Core

300-501

120-minute exam associated with the CCNP and CCIE Service Provider Certifications. This exam tests a candidate's knowledge of implementing core service provider network technologies.

Launches 2.24.2020

Domains

1.0	Architecture	15%
2.0	Networking	30%
3.0	MPLS and Segment Routing	20%
4.0	Services	20%
5.0	Automation and Assurance	15%

SPCORE – Implementing and Operating Cisco Service Provider Network Core

Domain

1.0 Network Architecture

Tasks

- 1.1 Describe service provider architectures
- 1.2 Describe Cisco network software architecture
- 1.3 Describe service provider virtualization
- 1.4 Describe QOS architecture
- 1.5 Configure and verify control plane security
- 1.6 Describe management plane security
- 1.7 Implement data plane security

SPCORE – Implementing and Operating Cisco Service Provider Network Core

Domain

2.0 Networking

Tasks

- 2.1 Implement IS-IS (IPv4 and IPv6)
- 2.2 Implement OSPF (v2 and v3)
- 2.3 Describe BGP path selection algorithm
- 2.4 Implement BGP (v4 and v6 for IBGP and EBGP)
- 2.5 Implement routing policy language and route maps (BGP, OSPF, IS-IS)
- 2.6 Troubleshoot routing protocols
- 2.7 Describe IPv6 transition (NAT44, NAT64, 6RD, MAP, and DS Lite)
- 2.8 Implement high availability

SPCORE – Implementing and Operating Cisco Service Provider Network Core

Domain

Tasks

3.0 MPLS and Segment Routing

- 3.1 Implement MPLS
- 3.2 Describe traffic engineering
- 3.3 Describe Segment Routing

SPCORE – Implementing and Operating Cisco Service Provider Network Core

Domain

4.0 Services

Tasks

- 4.1 Describe VPN services
- 4.2 Configure L2VPN and Carrier Ethernet
- 4.3 Configure L3VPN
- 4.4 Implement multicast services
- 4.5 Implement QoS services

SPCORE – Implementing and Operating Cisco Service Provider Network Core

Domain

5.0 Automation and Assurance

Tasks

- 5.1 Describe the programmable APIs used to include Cisco devices in network automation
- 5.2 Interpret an external script to configure a Cisco device using a REST API
- 5.3 Describe the role of Network Services Orchestration (NSO)
- 5.4 Describe the high-level principles and benefits of a data modelling language, such as YANG
- 5.5 Compare agent vs. agentless configuration management tools, such as Chef, Puppet, Ansible, and SaltStack
- 5.6 Describe data analytics and model-driven telemetry in service provider
- 5.7 Configure dial-in/out telemetry streams using gRPC
- 5.8 Configure and verify NetFlow/IPFIX
- 5.9 Configure and verify NETCONF and RESTCONF
- 5.10 Configure and verify SNMP (v2c/v3)

How to prepare for new SP Cert 2.0



You make multi-cloud **possible**

Don't be scared...Be prepared



How to prepare for new SP Cert 2.0

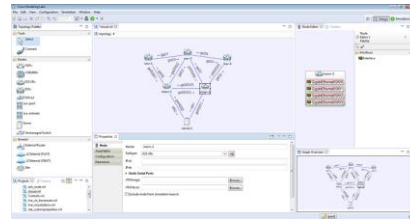
Books:

- Ciscopress.com
- Safaribooks.com



Labs:

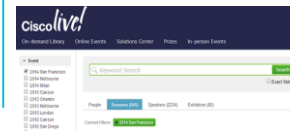
- Cisco Modeling Labs (CML)
- Cisco VIRL
- Hypervisors for: ISRv/XRv



Trainings:



Platinum Learning Partner



Study Groups:



Cisco Community



Community Groups Program
Cisco Press

ciscopress.com/groups



The Cisco Learning Network



Resources and training



You make customer experience **possible**

Resources and Training

Cisco Platinum Learning Library

Implementing Cisco MPLS v3.0

Cisco IOS XR IPv6 Routing (XIPv6R) v3.0

Configuring BGP on Cisco Routers (BGP) v4.0

BGP Bootcamp (BGP)

OSPF: Implement, Troubleshoot and Optimize OSPF Convergence and Scalability

Implementing Segment Routing on Cisco IOS XR (SEGRTE201)

Advanced Implementing and Troubleshooting MPLS VPN Networks (AMPLS)

Introduction to MPLS-VPN Bootcamp (MPLS-VPN)

Quality of Services (QoS)

L2VPNs – VPWS / EoMPLS

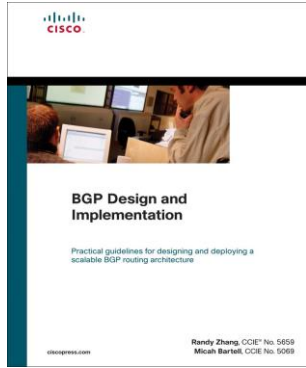
IOS XR MPLS Traffic Engineering– TE Explicit Tunnels

NSO Essentials for Programmers and Network Architects (NSO201) v3.0

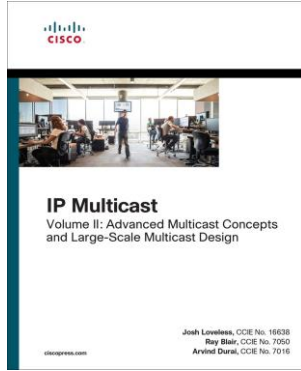
More trainings coming soon!!!!

Resources and Training

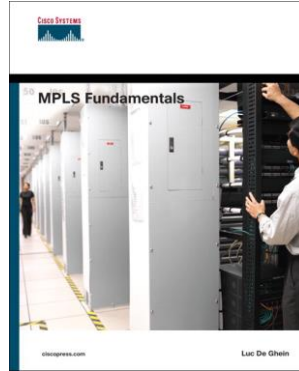
CiscoPress Books



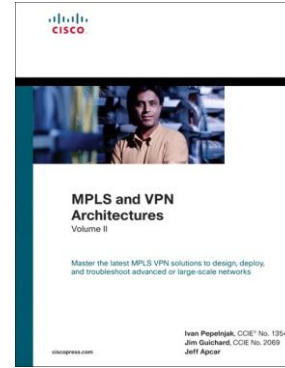
BGP Design and Implementation



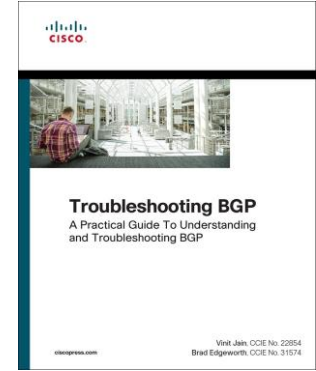
IP Multicast



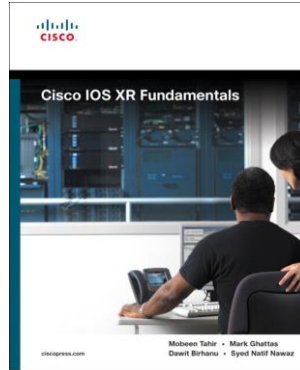
MPLS Fundamentals



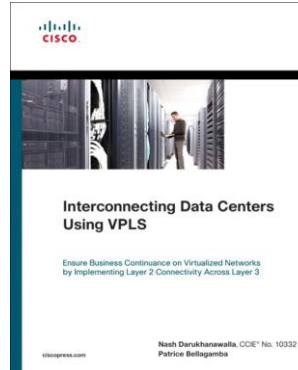
MPLS and VPN Architectures



Troubleshooting BGP



Cisco IOS XR Fundamentals



Interconnecting Data Centers Using VPLS

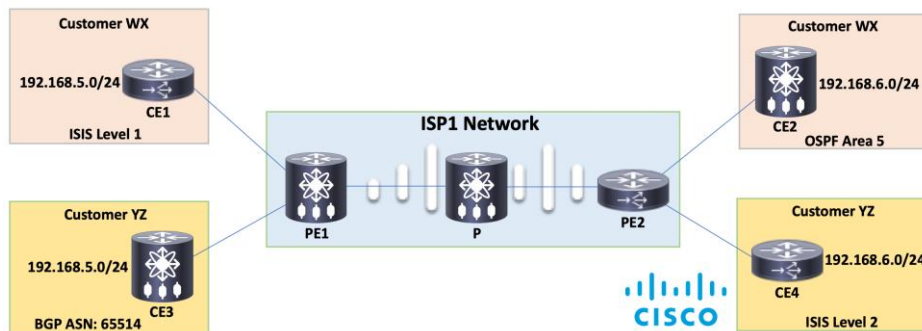
SP Cert 2.0 Lablet and Practical Exam Experience



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Practical Exam Experience (Exam: 300-501, Domain: Services, Task: Configure L3VPN)

L3VPN Lablet

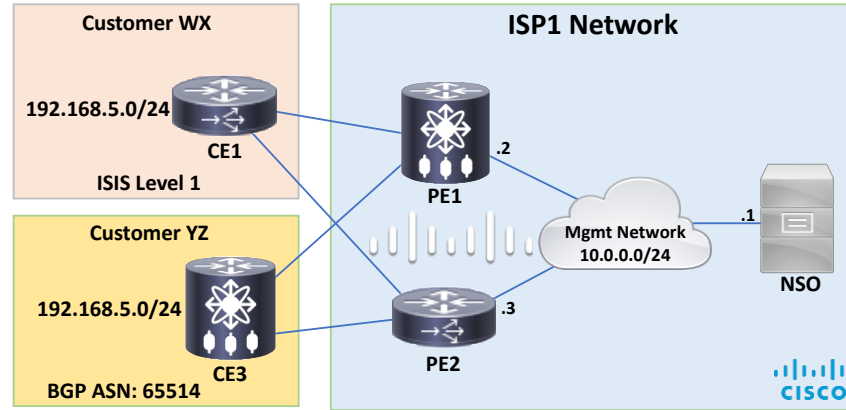


LABS!!
LABS!!
LABS!!
LABS!!
LABS!!
LABS!!

- In the following diagram we have two customers connected to ISP1 network. Customer WX and YZ have two different sites and you can see they are using the same IP ranges.
- Customer WX is using ISIS and OSPF between their sites and customer YZ is using BGP and ISIS between their remote sites. Everything from these customers should be completely separated by the service provider ISP1 Network.
- ❖ Do not modify/change the existing configurations on PE1, P, PE2.
- ✓ Build the L3VPN tunnels for vrf WXtoWX on PE1 for CE1, CE2 and vrf YZtoYZ on PE2 for CE3, CE4.
- ✓ The routing protocol between PE1 <-> CE1 is: ISIS and between PE2 <-> CE2 is: OSPF.
- ✓ The routing protocol between PE1 <-> CE3 is: BGP and between PE2 <-> CE4 is: ISIS.
- ✓ The customer is advertising multiple subnets. Make sure to only allow the subnet listed by the customers in the diagram for each L3VPN tunnel.

Practical Exam Experience (Exam: 300-501, Domain: Automation and Assurance, Task: Configure and verify NETCONF and RESTCONF)

NSO Lablet



LABS!!
LABS!!
LABS!!
LABS!!
LABS!!
LABS!!

- In the following diagram we have two customers connected to ISP1 network. Customer WX and YZ have two different sites and you can see they are using the same IP ranges.
- Customer WX and YZ are using OSPF between all their sites to interconnect with the service provider ISP1 Network.
- Native SSH CLI connectivity is disabled on PE1 and PE2. Only Netconf is enabled on both devices. The credentials for the device are username: admin, password: CiscoSystems1. Create the device group XR for PE1 and XE for PE2 and use the Netconf protocol to push the following configuration on PE1 and PE2.

PE1: router bgp 66514
neighbor 2.2.2.2 remote-as 66515
neighbor 1.1.1.1 remote-as 66516
address-family vpnv4
neighbor 2.2.2.2 activate
neighbor 1.1.1.1 activate

PE2: router bgp 66514
neighbor 2.2.2.2 remote-as 66515
neighbor 1.1.1.1 remote-as 66516
address-family vpnv4
neighbor 2.2.2.2 activate
neighbor 1.1.1.1 activate

Real Exam Experience



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Real Exam Experience

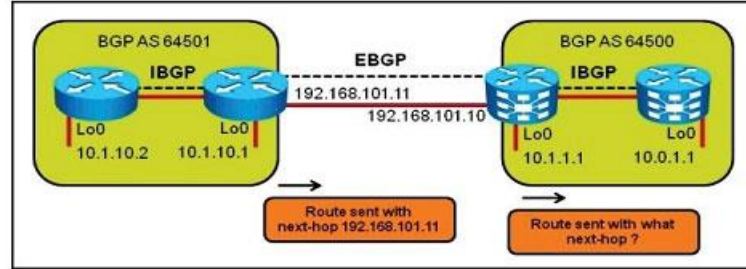
Select the right answer/s

Exam: 300-501

Domain: 2.0 Networking

Task: 2.4 Implement BGP (v4 and v6 for IBGP and EBGP)

Refer to the exhibit



- Assuming the IBGP session within AS 64500 was established using the loopback 0 interface between the two routers, by default, what will be the next hop of the routes from AS 64501 when the routes appear on the router running IBGP only in AS 64500?

- A. 192.168.101.11
- B. 192.168.101.10
- C. 10.1.1.1
- D. 10.0.1.1

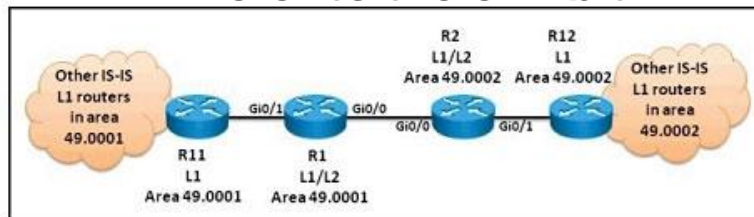
Explanation: BGP next hop: BGP is an autonomous system by autonomous system routing protocol, and next hop value of BGP network updates that leave an AS, is the IP address of the router at the exit point from AS. Further, that advertisement is sent through iBGP to neighbors, but next hop attribute remains the same.

Exam: 300-501

Domain: 2.0 Networking

Task: 2.1 Implement IS-IS (IPv4 and IPv6)

Refer to the exhibit



- Which two configuration options can be used to optimize the IS-IS network scenario? (Choose two.)
 - A. Change the R1 and R2 IS type to Level 2.
 - B. Change the R1 and R2 IS type to Level 1.
 - C. Change the gi0/0 interface IS-IS circuit type on R1 and R2 to Level 2 only.
 - D. Change the gi0/1 interface IS-IS circuit type on R1 and R2 to Level 1.
 - E. Change the IS type for all the routers to Level-1-2.

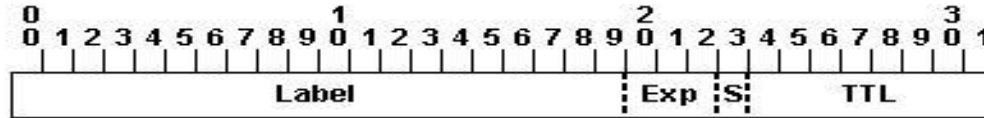
Explanation: A device in Open Systems Interconnection (OSI) terminology is referred to as an Intermediate System (IS). An IS may operate at Level 1, Level 2, or both. ISs that operate at Level 1 exchange routing information with other Level-1 ISs in the same area. ISs that operate at Level 2 exchange routing information with other Level-2 devices regardless of whether they are in the same Level-1 area.

Exam: 300-501

Domain: 3.0 MPLS and Segment Routing

Task: 3.1 Implement MPLS

Refer to the exhibit



• What does the following image represent?

- A. MPLS info in data frame
- B. MPLS TCP process
- C. MPLS Logical algorithm
- D. MPLS Decapsulation
- E. MPLS Time to Live

Explanation: A label is a short, four-byte, fixed-length, locally-significant identifier which is used in order to identify a Forwarding Equivalence Class (FEC). The label which is put on a particular packet represents the FEC to which that packet is assigned.

- **Label** - Label Value (Unstructured), 20 bits.
- **Exp** - Experimental Use, 3 bits; currently used as a Class of Service (CoS) field.
- **S** - Bottom of Stack, 1 bit.
- **TTL** - Time to Live, 8 bits.

Real Exam Experience

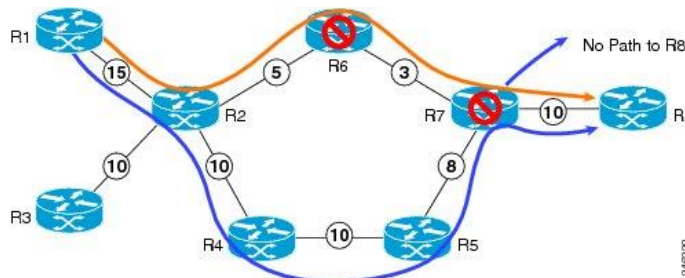
Select the right answer/s

Exam: 300-501

Domain: 3.0 MPLS and Segment Routing

Task: 3.2 Describe Traffic Engineering

Refer to the exhibit



- Based on the diagram, which routing protocols support MPLS Traffic Engineering (TE)?
- A. RIP and Static Route
 - B. OSPF and IS-IS
 - C. IGRP and EIGRP
 - D. H323 and SIP
 - E. EIGRP and OSPF

Explanation: MPLS uses extensions to a link-state based Interior Gateway Protocol (IGP), such as Intermediate System-to-Intermediate System (IS-IS) or Open Shortest Path First (OSPF). MPLS calculates TE tunnels at the LSP head based on required and available resources (constraint-based routing). If configured, the IGP automatically routes the traffic onto these LSPs.

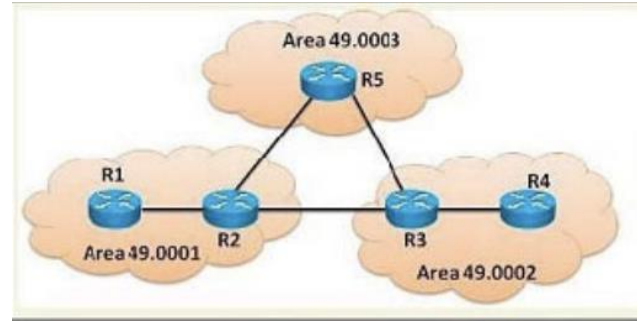
Real Exam Experience

Select the right answer/s

Exam: 300-501

Domain: 2.0 Networking

Task: 2.1 Implement IS-IS (IPv4 and IPv6)



- Refer to the IS-IS topology above. You are engaged with some troubleshooting configurations errors. Drag and drop the routers on the left to match the most optimal IS-IS router type it should be on the right.

A.	R1	<u>Level 1</u>	R1
B.	R2		R4
C.	R3	<u>Level 2</u>	R5
D.	R4		
E.	R5	<u>Level 1/2</u>	R2
			R3

Explanation: A device in Open Systems Interconnection (OSI) terminology is referred to as an Intermediate System (IS). An IS may operate at Level 1, Level 2, or both. ISs that operate at Level 1 exchange routing information with other Level-1 ISs in the same area. ISs that operate at Level 2 exchange routing information with other Level-2 devices regardless of whether they are in the same Level-1 area.

Real Exam Experience

Select the right answer/s

Exam: 300-501

Domain: 4.0 Services

Task: 4.4 Implement multicast services

Refer to the exhibit

```
Router1 Config:
interface loopback1
 ip address 10.100.1.1/32
 ip pim sparse-mode
 ip pim bsr bsr-candidate loopback0
 ip pim bsr rp-candidate loopback0 group-list 224.0.11.0/24
 ip pim bar forward listen

Router2 Config:
interface loopback1
 ip address 10.100.2.1/32
 ip pim sparse-mode
 ip pim bsr bsr-candidate loopback0
 ip pim bsr rp-candidate loopback group-list 224.0.0.0/16
 ip pim bar forward listen
```

- Which description of the result is true?
 - A. Router2 is the RP for all of the multicast addresses specified in the 224.0.11.0/24 group list.
 - B. Router1 is the RP for all of the multicast addresses specified in the 224.0.11.0/24 group list.
 - C. Router2 is the RP for all of the multicast traffic on the network.
 - D. Router1 is the RP for all of the multicast traffic on the network.

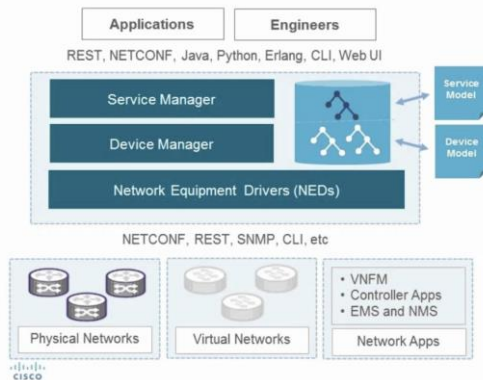
Explanation: Administratively scoped multicast addresses are locally assigned, and hence are not required to be unique across administrative boundaries. The administratively scoped IP version 4 (IPv4) multicast address space is the range from 239.0.0.0 through 239.255.255.255.

Exam: 300-535

Domain: 4.0 Automation and Orchestration Platforms

Task: 4.2 Describe NSO Architecture

Refer to the exhibit NSO at high level



- **Which channel does NSO use for communication with the Forwarding Layer?**
 - A. NSO CDB manager.
 - B. ESC Management Cycle.
 - C. SNMP and Netconf communication.
 - D. NEDs for southbound communication.

Explanation: The device manager passes on the required changes to the NEDs, Network Element Drivers. A NED needs to be installed for every type of device OS, like Cisco XE NED, Cisco XR NED, Cisco NXOS NED etc. The NEDs communicate through the native device protocol southbound.

Exam: 300-501

Domain: 5.0 Automation and Assurance

Task: 5.9 Configure and verify NETCONF and RESTCONF



- **What are the three main advantages of NETCONF? (Choose Three)**

- A. Network-wide transactions.
- B. Encrypted transport.
- C. Use of UDP/PDP/SIP for consequently increase in speed..
- D. It's SNMP like but better.
- E. Extensibility.

Explanation: Netconf support network-wide transaction to each device, push out the changes, do a confirmed commit in parallel, and if any device fails, revert all sessions, otherwise commit all in parallel. SSH provides transport encryption and it provides extensibility with confirmation hello messages for each data model exchanged.

Real Exam Experience

Select the right answer/s

Exam: 300-501

Domain: 3.0 MPLS and Segment Routing

Task: 3.3 Describe segment routing

0
...
15,999
16,000
...
23,999
24,000
...
1,048,575



- Based on the image on the left, what is the Default range for Segment Routing Global Block (SRGB)?

- A. 15,999-24,000.
- B. 0-15,999.
- C. 16,000-23,999.
- D. 54,000-1,048,575.
- E. 24,000-54,000.

Explanation: On SR-capable routers, the default starting value of the dynamic label range is increased from 16000 to 24000, so that the default SRGB label values (16000 to 23999) are available when SR is enabled on a running system.

Real Exam Experience

Drag and drops

Exam: 300-501

Domain: 2.0 Networking

Task: 2.4 Implement BGP

Place the BGP attributes in the correct order used for determining a route.

Originate Route	Weight
AS-Path	Local Preference
Weight	Originate Route
Local Preference	AS-Path
MED	MED

BGP tries to narrow its path selection down to one best path; it does not load balance by default. To do so, it examines the path attributes of any loop-free, synchronized (if synchronization is enabled) routes with a reachable next-hop in the following order:

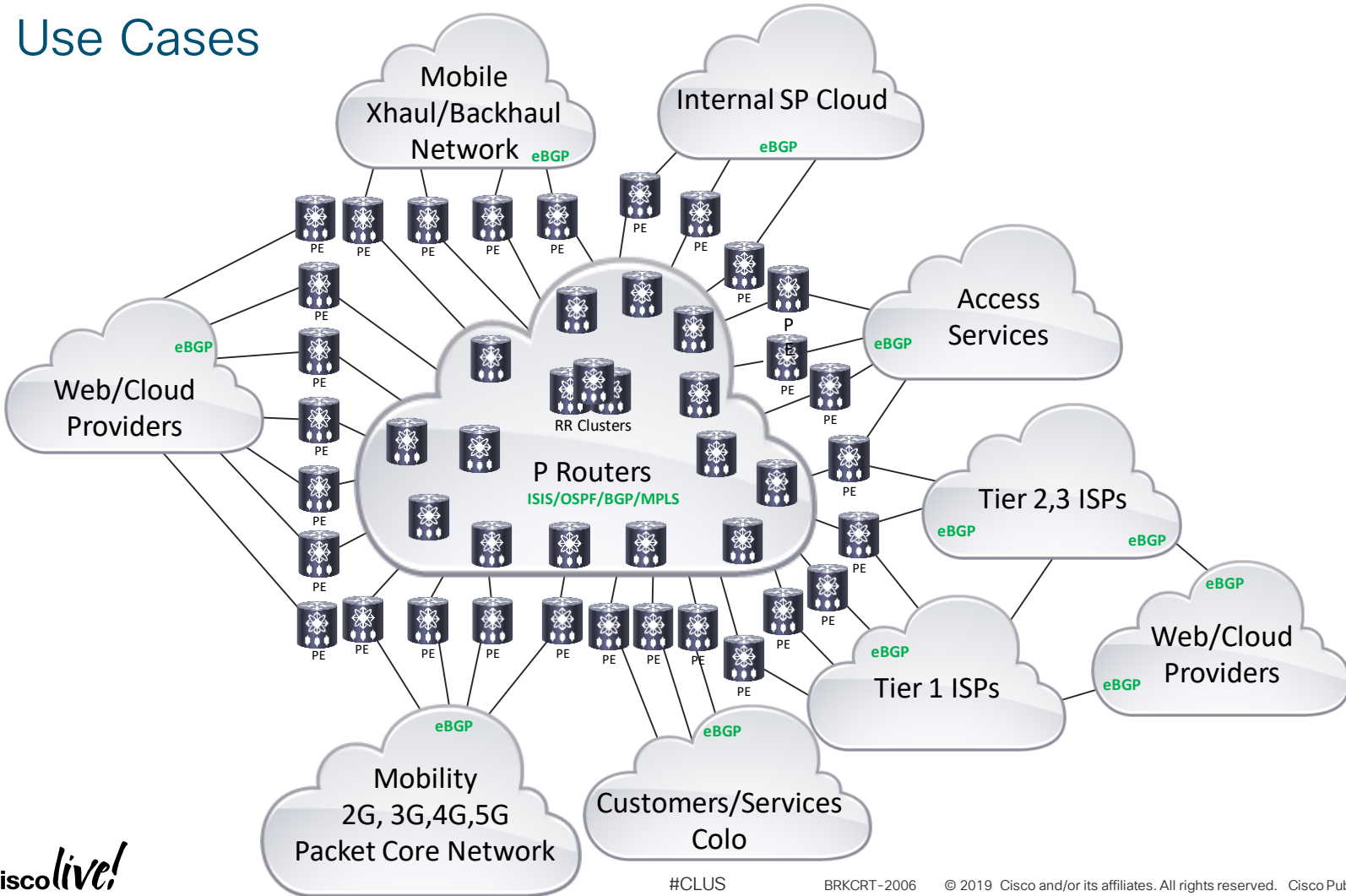
1. Choose the route with the highest weight.
2. If weight is not set, choose the route with the highest local preference.
3. Choose routes that this router originated.
4. Choose the path with the shortest Autonomous System path.
5. Choose the path with the lowest origin code (i is lowest, e is next, ? is last).
6. Choose the route with the lowest MED, if the same Autonomous System advertises the possible routes.
7. Choose an EBGp route over an IBGP route.
8. Choose the route through the nearest IGP neighbor as determined by the lowest IGP metric.
9. Choose the oldest route
10. Choose a path through the neighbor with the lowest router ID.
11. Choose a path through the neighbor with the lowest IP address.

Real Use Cases

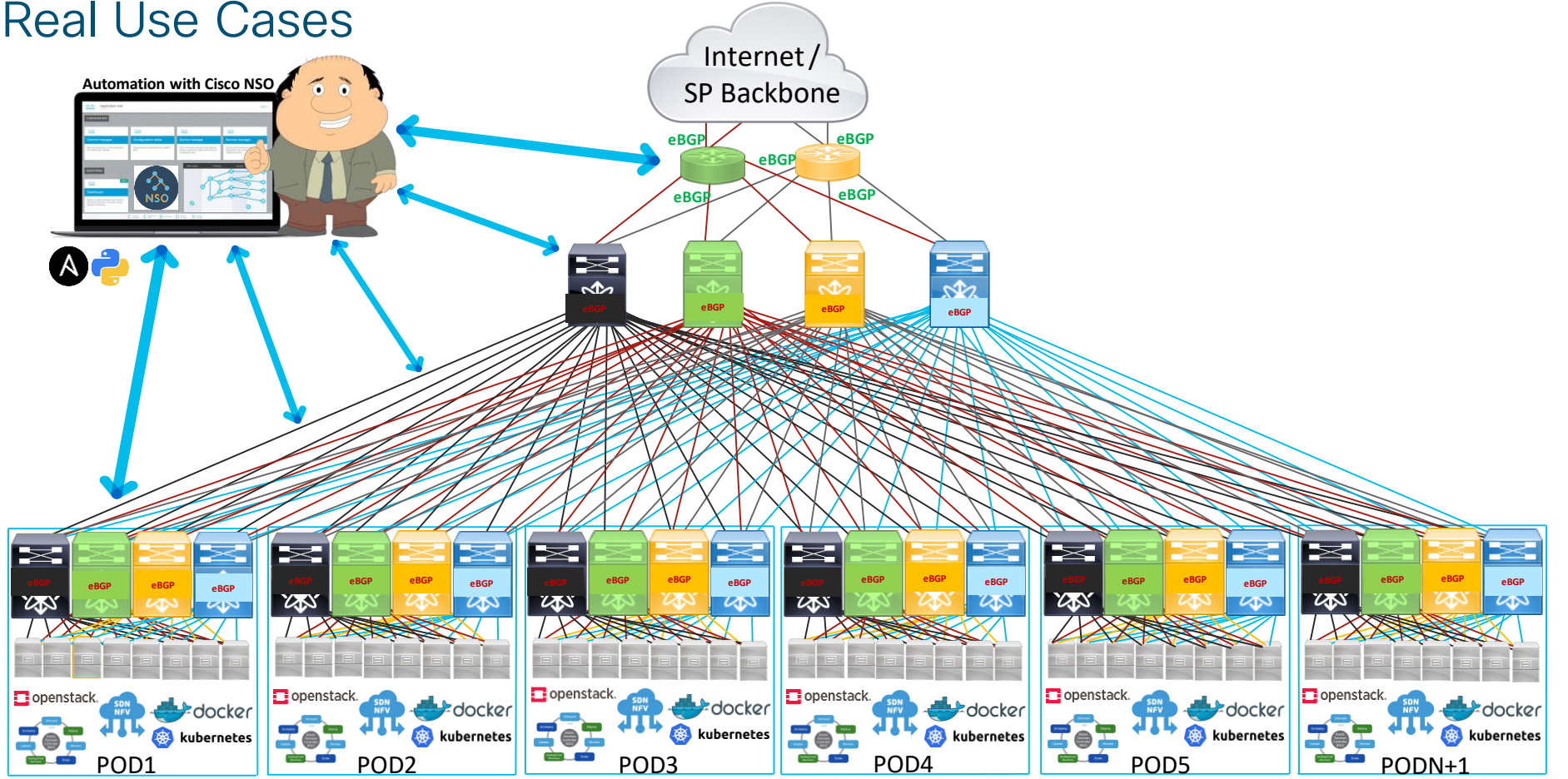


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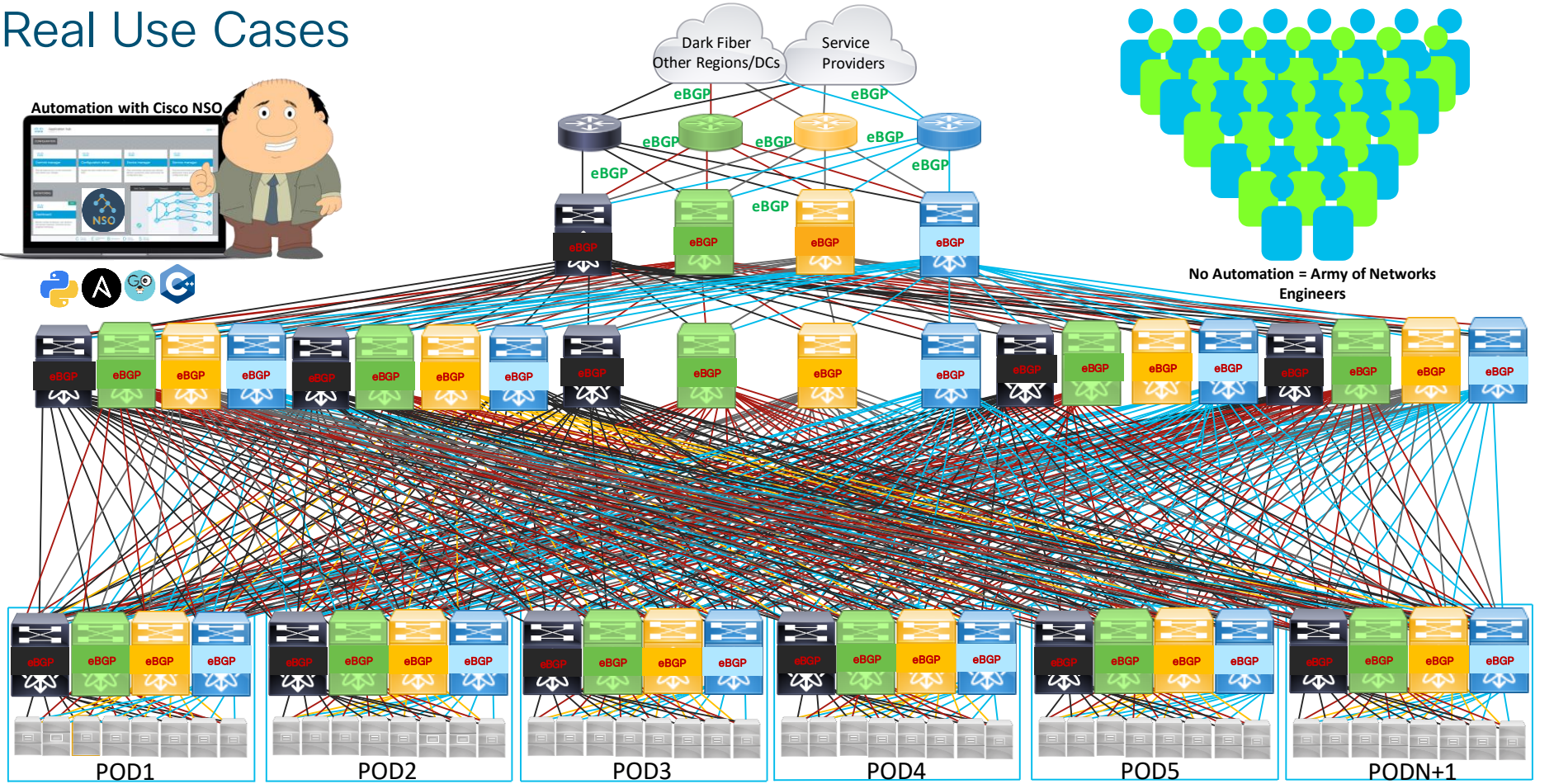
Real Use Cases



Real Use Cases



Real Use Cases

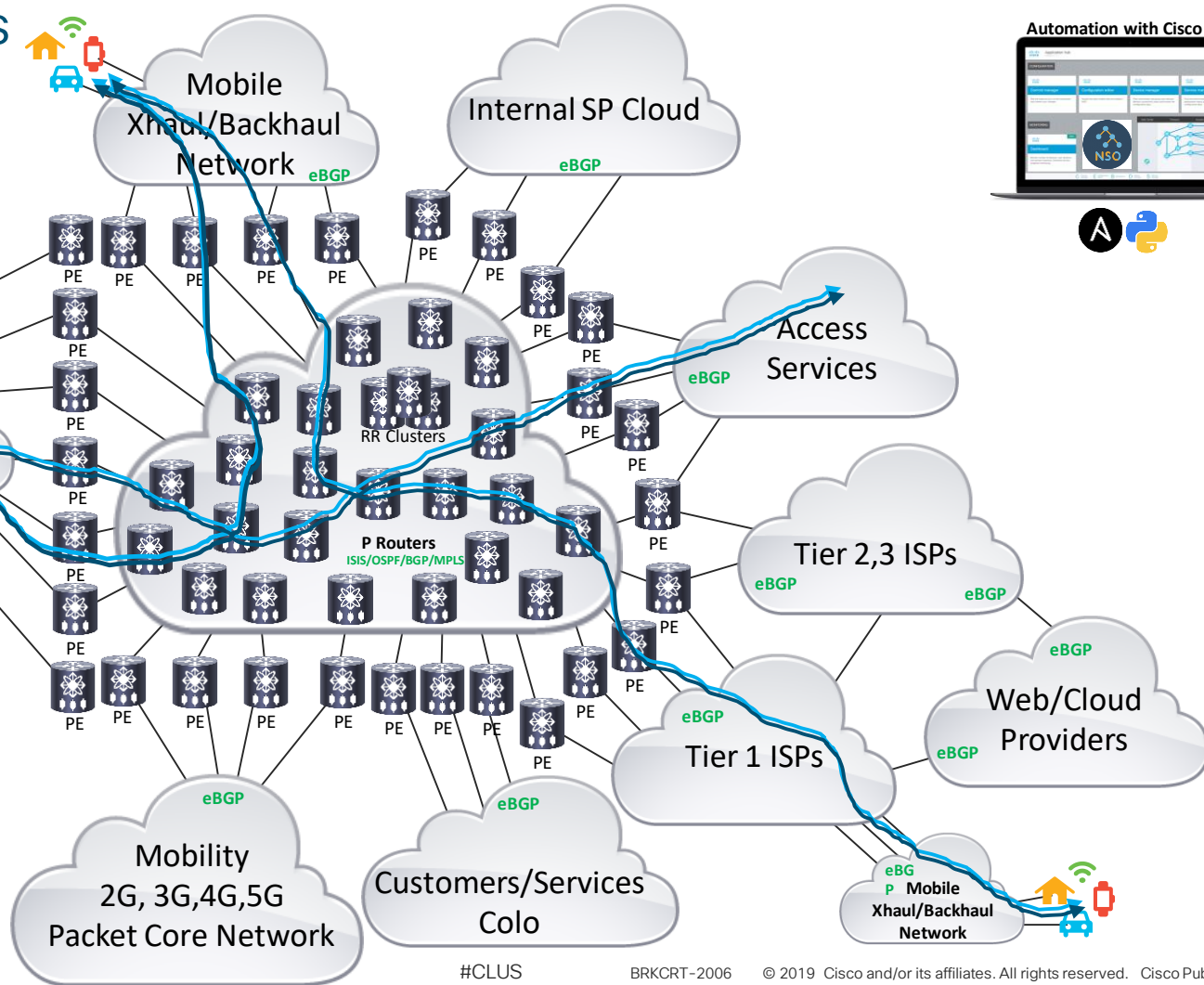


Real Use Cases



- 1 MPLS-Traffic Engineer (TE)
- 2 Segment Routing (SR)
 - Node ID
 - Segment ID
 - Segment Label Stack
 - Incoming Seg ID
 - Outgoing Seg ID
 - Interface/Dest IP

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Takeaways



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Takeaways

Cisco is evolving the CCNP Service Provider to adapt more to the new industry standard and challenges.

Study Hard

Review blueprints

Join the Community

Be focused

Don't Give UP

Gain Exam badges

Ask Questions

Be prepared

Go for trainings

Gain Knowledge

Read books

Practice

Do Labs

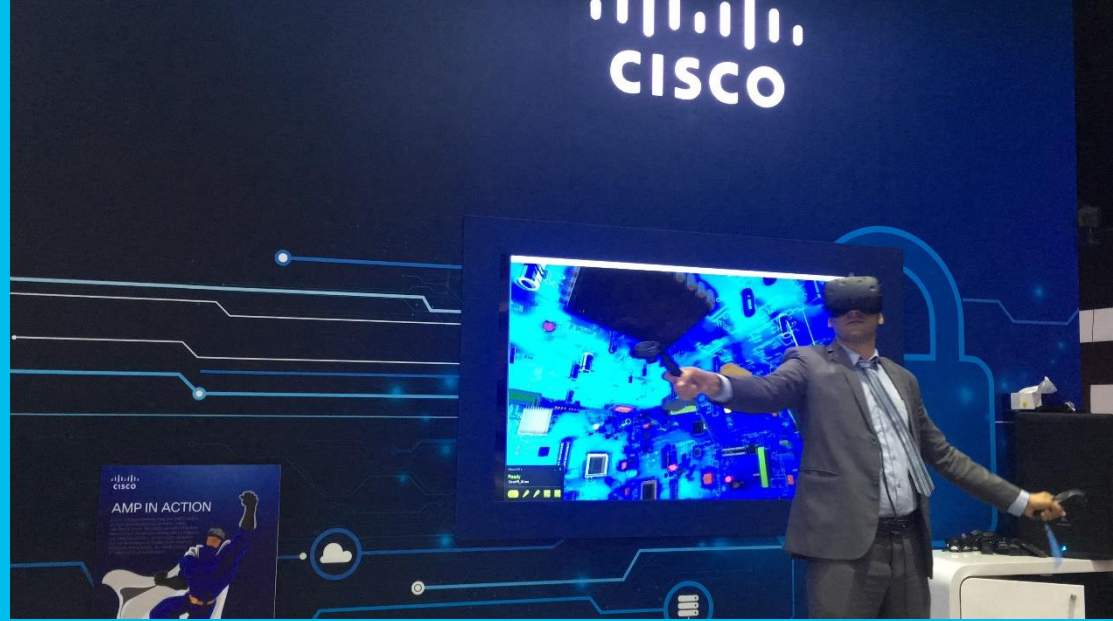
Be Confident

Call to Action



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App Store



GET IT ON
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Step 2: Follow the on-screen instructions

Step 3: Complete the challenges!



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1:1 meetings



Related sessions



Thank you





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SPRI – 300-510



You make the power of data **possible**

SPRI – Implementing Cisco Service Provider Routing Solutions

300-510

Domains

Launches 2.22.2020

1.0 Unicast Routing	35%
2.0 Multicast Routing	15%
3.0 Routing Policy and Manipulation	25%
4.0 MPLS and Segment Routing	20%

SPRI – Implementing Cisco Service Provider Routing Solutions

Domain

1.0 Unicast Routing

Tasks

- 1.1 Compare OSPF and IS-IS routing protocols
- 1.2 Troubleshoot OSPF multi-area operations (IPv4 and IPv6)
- 1.3 Troubleshoot IS-IS multilevel operations (IPv4 and IPv6)
- 1.4 Describe the BGP scalability and performance
- 1.5 Troubleshoot BGP
- 1.6 Describe IPv6 tunneling mechanisms
- 1.7 Implement fast convergence

SPRI – Implementing Cisco Service Provider Routing Solutions

Domain

2.0 Multicast Routing

Tasks

- 2.1 Compare multicast concepts
- 2.2 Describe multicast concepts
- 2.3 Implement PIM-SM operations
- 2.4 Troubleshoot multicast routing

SPRI – Implementing Cisco Service Provider Routing Solutions

Domain

Tasks

3.0 Routing Policy and Manipulation

- 3.1 Compare routing policy language and route maps
- 3.2 Describe conditional matching
- 3.3 Troubleshoot route manipulation for IGP
- 3.4 Troubleshoot route manipulation for BGP

SPRI – Implementing Cisco Service Provider Routing Solutions

Domain

Tasks

4.0 MPLS and Segment Routing

- 4.1 Troubleshoot MPLS
- 4.2 Implement segment routing
- 4.3 Describe segment routing traffic engineering
- 4.4 Describe segment routing v6 (SRv6)

SPVI – 300-515



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SPVI - Implementing Cisco Service Provider VPN Services (300-515)

300-515

Domains

Launches 2.22.2020

1.0 VPN Architecture	25%
2.0 Layer 2 VPNs	30%
3.0 Layer 3 VPNs	35%
4.0 IPv6 VPNs	10%

SPVI - Implementing Cisco Service Provider VPN Services (300-515)

Domain

1.0 VPN Architecture

Tasks

- 1.1 Compare VPN architecture
- 1.2 Troubleshoot underlay
- 1.3 Describe Layer 2 service architecture
- 1.4 Describe the L3VPN control plane operation
- 1.5 Describe the L3VPN data plane operation

SPVI - Implementing Cisco Service Provider VPN Services (300-515)

Domain

2.0 Layer2 VPNs

Tasks

- 2.1 Troubleshoot L2VPN Services
- 2.2 Describe EVPN concepts
- 2.3 Implement Ethernet Operations, Administration, and Maintenance (E-OAM)
- 2.4 Implementing EVPN

SPVI - Implementing Cisco Service Provider VPN Services (300-515)

Domain

Tasks

3.0 Layer2 VPNs

- 3.1 Describe routing requirements
- 3.2 Troubleshoot Intra-AS L3VPNs
- 3.3 Implement multicast VPN
- 3.4 Implement extranet/shared services
- 3.5 Describe Inter-AS L3VPNs
- 3.6 Describe CSC concepts

SPVI - Implementing Cisco Service Provider VPN Services (300-515)

Domain

Tasks

4.0 IPv6 VPNs

- 4.1 Describe routing requirements
- 4.2 Troubleshoot IPv6 VPN provider edge