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CCIE Enterprise Wireless v1.0

Real Labs

Deploy Operate and Optimize Module

Lab Workbook Policy

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2. The workbook does not have print access; kindly do not request to enable to print access. However you will have perpetual access to the workbook which you have purchased.

3. One will be provided with free updates up to 120 days from the date of purchase, post that one need to renew his/her account to access the latest update. However one will continue to have access to their existing workbooks. If you pass the lab within 120 days, you are not eligible for further updates.

4. If one wish to renew their subscription/account, you need to renew within 120 days or before the account gets expired. Post 120 days one can renew their account however the renewal will be considered has a new purchase. Hence we encourage one to renew within 120 days of the purchase.

5. The renewal cost is 999 USD if one pay within 120 days, if one fail to renew then the cost will be equivalent of a new purchase. (The renewal price can be changed at any time, without informing the client)

6. Every workbook is uniquely identified for each user with hidden words. If one shares his/her workbooks with others, and if the system detects the share, the account will be banned and we will not entertain any explanation of any sort.

7. For any queries regarding Questions/Solutions, you can contact us on email: support@chinesedumps.com or skype @ chinesexams@gmail.com. Response time to any of the queries is 24 hours.

8. We do require CISCO ID and Official email id for security purposes. We do not sell without these details. We do background verification of the details provided, so request to give us the correct CISCO ID and official email id.

9. The workbooks are in secured pdc format and delivered via email within 24 hours after payment is received.

10. License is provided for only one Device. And we don’t give license again if the device crashes or company security policies. Please install license on the device cautiously as the license will not be provided again.

11. We do support devices running Windows OS, Mac OS, Android and Mac iOS only

12. We do not provide Refund in any circumstances once the product is sold.

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14. If there is any update, one will receive the update automatically on their registered email id.

15. Design Module will be given only 3 days before the CCIE exam

16. For any future update you can check our 'updates' page.

17. Labs are always published in phases. For e.g. if there is a new lab we publish it as First, Second, Third ... till Final release.

18. Client who have purchased our worbooks and services and wishes to attempt the lab, need to consult our experts before their CCIE Lab.

Deploy, Operate and Optimize Guidelines

Before you begin, please read these guidelines:

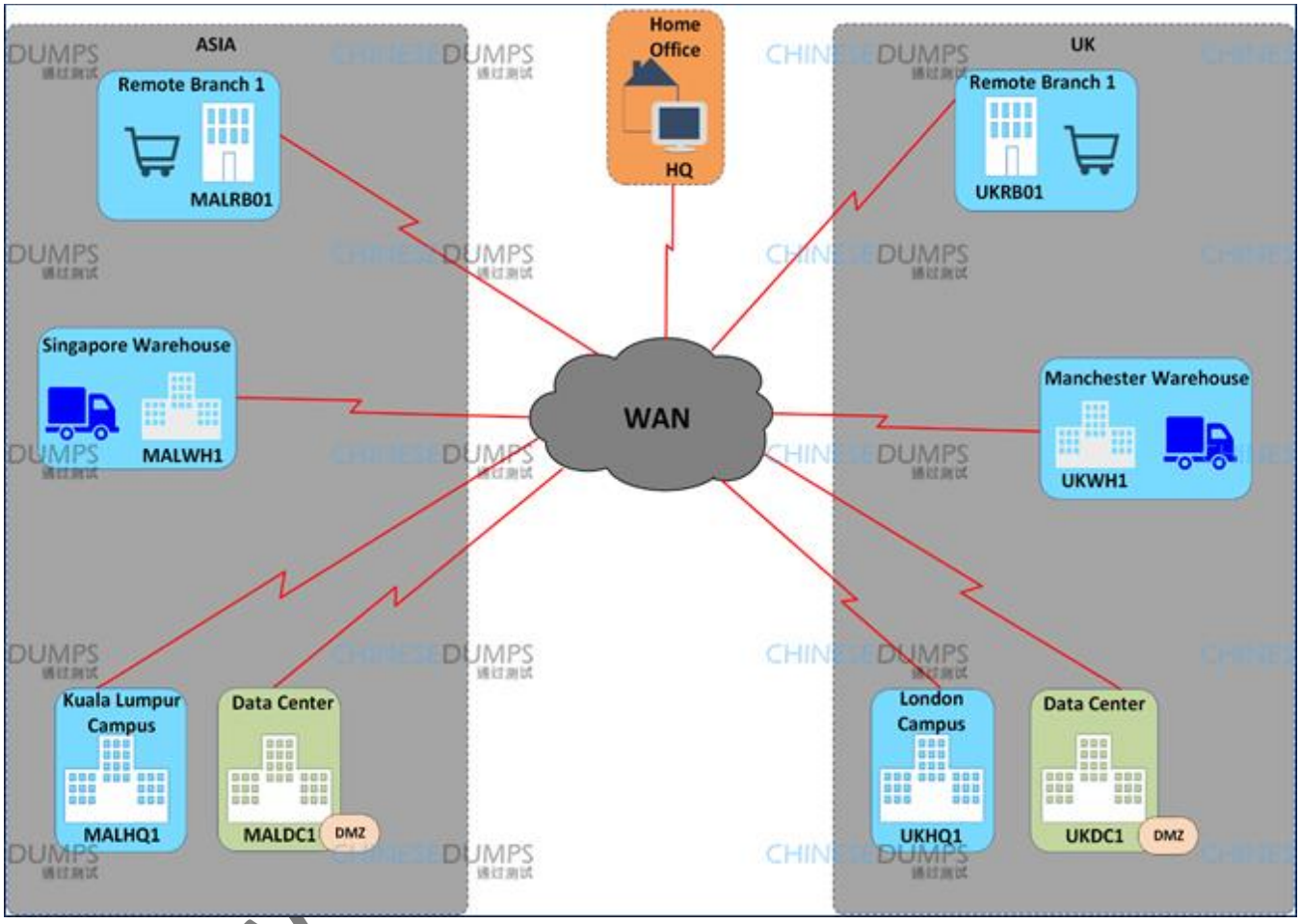
Overall module guidelines:

1. The network that you will deploy, operate and optimize in this module will be similar, but not necessarily identical, to the network designed in the previous module. All relevant information that is needed to successfully complete this module can be found in this module itself and overrides any information that was provided in the previous module.
2. Before you start, confirm that all devices in your rack are accessible. During the exam, if any device becomes locked or inaccessible, you must recover it.
3. Your equipment is partially preconfigured. Do not change any of the preconfigured parameters unless you are specifically told to.
4. The partial configuration on the devices may deliberately contain mistakes and errors which may need to be corrected, or workarounds applied, in order to complete specific taks. Therefore, consider troubleshooting as an integral part of this module.
5. Points are awarded only for fully working configurations. No partial scoring is provided. It is recommended that toward the end of the exam, you go back and test the functionality as per all question requirements.
6. If you need clarification on any of the questions, or if you suspect that there might be an issue with your equipment or exam environment, contact the lab proctor as soon as possible.
7. Item-level feedback can be provided at the question level. Feedback will be processed, but Cisco will not reach out to you to discuss any feedback provided. You will not be compensated for the time you spend while providing the feedback.
8. Access to select Cisco online documentation is available from your desktop. Access to select 3rd party product documentation (such as Python) is available from the Resources window under the “External Documentation” category.
9. When you finish the lab exam, make sure that all devices are accessible for the grading proctor by having them in EXEC mode and closing the console windows. A device that is not accessible for grading cannot be graded and this may cause you to lose substantial points.
10. You have 5 hours to complete this module. Upon finishing the exam, ensure that all device are accessible. Any device that is not accessible for grading purposes may cause you to lose substantial points.

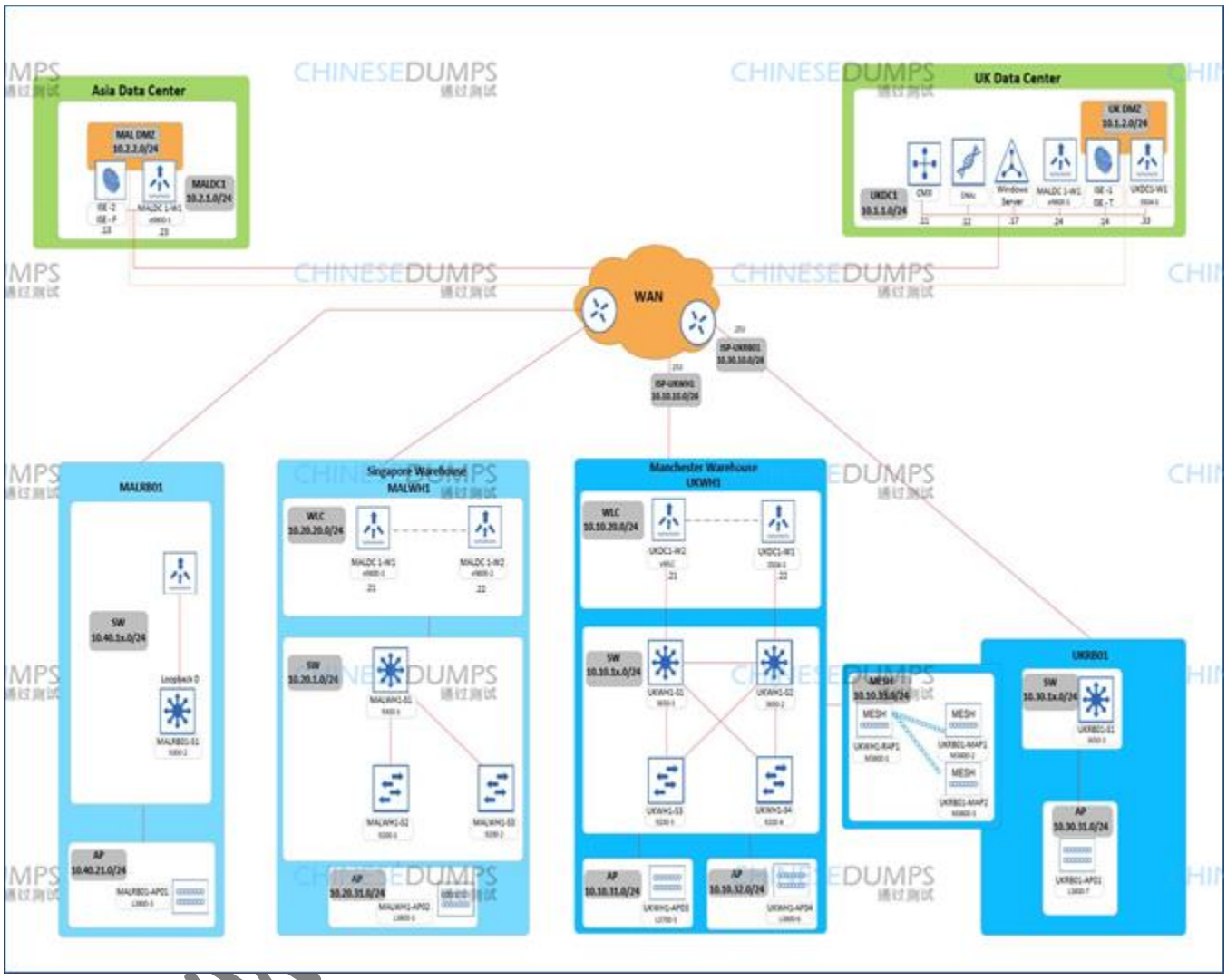
Task specific guidelines:

1. There are several end hosts present in the lab topology, named hostXY (for example, host11). They are all identical and they can all be used at your full discretion, including accessing the GUI of DNA Center, vManage and ISE through Firefox, performing IP connectivity tests, generating or capturing traffic, and performing coding in Python or C.
2. All hostXY devices are configured as DHCP clients. Should it be necessary to force the host to release and renew its DHCP lease, right-click on the icon of the network manager located between CPU utilization and check applets in the bottom task bar, then unselects "Enable Networking", right-click on it again and select "Enable Networking".
3. The web-based GUI of DNA center, vManage and ISE can only be accessed from the hostXY end hosts, using firefox installed on these end hosts. These servers cannot be accessed directly from the desktop you are just now working with. You must always connect to hostXY as a jump host and access the DNA center, vManage or ISE from there. Always ignore any SSL/TLS certificate warnings in Firefox that may be displayed.
4. Devices in the top ology may have more interfaces, addresses and routes configured than what is shown in the diagrams and accompanying tables. Ignore such interfaces addresses and routes entirely, unless a task explicitly requires you to use or modify them.
5. Changing or removing parts of initial running configuration on devices, as opposed to adding new configuration, is allowed only if the task allows or requires it explicitly, or if there is no other way of accomplishing the task.

Conceptual Diagram



Logical Diagram



L2/L3 Information

VLAN Name	VLAN ID	Network/Mask	Default GW	
London Data Centre(UKDC1)				
Servers	11	10.1.1.0/24	10.1.1.253	
DMZ	12	10.1.2.0/24	10.1.2.253	Infrastructure
Manchester Warehouse(UKWH1)				
Infrastructure		10.10.1x.0/24		
Infrastructure Lo0		10.10.127.x/24		
WLC MGMT	20	10.10.20.0/24	10.10.20.253	
AP1	31	10.10.31.0/24	10.10.31.253	Win Server
AP2	32	10.10.32.0/24	10.10.32.253	Win Server
Internal	101	10.10.101.0/24	10.10.101.253	Win Server
IoT	102	10.10.102.0/24	10.10.102.253	Win Server
UK Remote Branch (UKRB01)				
AP	31	10.30.31.0/24	10.30.31.253	Infrastructure
Internal	101	10.30.101.0/24	10.30.101.253	Infrastructure
IoT	102	10.30.102.0/24	10.30.102.253	Infrastructure
Kuala Lumpur Data Centre(MALDC1)				
Servers	21	10.2.1.0/24	10.2.1.253	
DMZ	22	10.2.2.0/24	10.2.2.253	Infrastructure
Singapore WareHouse (MALWH1)				
Underlay		10.20.1x.0/24		
Underlay Lo0		10.20.127.x/24		
WLC MGMT		10.20.20.0/24	10.20.20.253	
WLC Redundancy Port		169.254.20.0/24		
AP		10.20.31.0/24	10.20.31.253	Win Server
Internal		10.20.101.0/24	10.20.101.253	Win Server
IoT		10.20.102.0/24	10.20.102.253	Win Server
Guest		10.20.103.0/24	10.20.103.253	Win Server
Asia Remote Branch (MALRB01)				
Underlay		10.40.1x.0/24		
Underlay Lo0		10.40.127.x/24		
AP		10.40.31.0/24	10.40.31.253	Win Server
Internal		10.40.101.0/24	10.40.101.253	Win Server
IoT		10.40.102.0/24	10.40.102.253	Win Server
Guest		10.40.103.0/24	10.40.103.253	Win Server

VMs Info.

As part of your lab setup, the below VMs will be available to you

- **CMX 10.6**
- **DNA Center 1.3**
- **Identity Services Engine (ISE) 2.4**
- **Windows Server 2016**- this server is preconfigured. No candidate configuration is required here.
    - If a task requires to join ISE to Active Directory, use the following credentials:
        - Username Administrator
        - Password CC!ewir4
- **Windows 10 (Client PC)** with:
    - **Cisco AnyConnect** the AnyConnect configuration .xml profile is fully preconfigured and locked down. Please note, If at any point during your exam no SSIDs can be seen in AnyConnect consider these two troubleshooting techniques before you contact the proctor.
    1. Disable/Enable the wireless adapter (can be done through AnyConnect)
    2. Reboot the Client PC (shutdown -r).
    - **Cisco Jabber**
    - **FTP server**
    - **Putty & MTPuTTY**- for SSH access from the Client PC.
    - **TFTP server**
    - **Web browsers**- Chrome, Firefox, and Internet Explorer are all available.
        - Chrome and Firefox have preconfigured tabs.

Device	IP address	Username	Password	Reachable via
CMX	10.1.1.11	Admin (GUI)	CC!ewir4	GUI- via Client PC
		Cmxadmin (SSH)		SSH- via clickable icon on map.
DNAc	10.1.1.12	Admin (GUI)	CC!ewir4	GUI and SSH-via Client PC.
		Maglev (SSH port 2222)		
ISE	10.1.1.13/.14	Admin	CC!ewir4	GUI and SSH- via Client PC.
Windows 10 (Client PC)	10.1.1.16	cciecandidate	CC!ewir4	VNC- clickable icon on map.

Deploy, Operate and Optimize Guidelines

Before starting, please read the below guidelines:

- The network you will be deploying, operating and optimizing in this module will be similar, but not necessarily identical to the network designed in the previous module. All relevant information that is needed to successfully complete this module can be found in this module itself and overrides any information that was provided in the previous module
- Before you start, confirm that all devices in your rack are accessible. During the exam, if any device becomes locked or inaccessible, you must recover it.
- Note that some of the VMs may not be accessible from the start. If this is the case, you will be required to configure/troubleshoot some other part of the network before you can gain access to those devices.
- Note that there are global and item specific resources. Item specific resources are clearly mapped to the specific item in the resource name.
- Points are awarded for working configurations only. No partial scoring is provided. It is recommended that towards the end of the exam, you go back and test the functionality as per all question requirements.
- If you need clarification on any questions, or if you suspect that there might be an issue with your equipment or exam environment, contact the lab proctor as soon as possible.
- Item-level feedback can be provided at the question level. Feedback will be processed, but Cisco will not reach out to you to discuss any feedback provided. You will not be compensated for time you spend providing feedback.
- Access to select Cisco online documentation is available from your desktop.
- Upon finishing the lab exam, make sure that all the devices are accessible for the grading proctor by having them in EXEC mode and close the console windows. A device that is not accessible for grading cannot be marked and this may cause you to lose substantial points.
- You have 5 hours to complete this module.

1.1: Introduction

Welcome to the final module of the **MALEN** scenario

Please read all available documents within the Resources pane. They contain valuable information needed to complete this module.

Once you are ready to start with the first question, click on **"Next Item"**, on the top navigation bar.

1.2: Traditional L2/L3 Infrastructure

There have been reports of suboptimal path selection and connectivity issues at the Manchester warehouse.

Troubleshoot these issues to restore proper network operation.

- UKWH1-S3 (9200-3) should use the connection to UKWH1-S1 (3650-1) as its primary link, and the link towards UKWH1-S2 (3650-2) for the redundancy.
- UKWH1-S4 (9200-4) should use the connection to UKWH1-S2 (3650-2) as its primary link, and the link towards UKWH1-S1 (3650-1) for redundancy.
- Do not add any additional SVIs to complete this task.
- For all the switches located at UKWH1, traffic sources from their Loopback0 interface must be able to reach both Data Centers.
- For all the infrastructure equipment at this location, fault tolerance, and higher throughput should be achieved where possible.

3 Points

1.2: Traditional L2/L3 Infrastructure

```
chinese-dumps-UKWH1-S3-9200-3#sh spanning-tree vlan 31

VLAN0031
  Spanning tree enabled protocol rstp
  Root ID     Priority    8223
              Address     a0ec.f9ab.eb00
              Cost        4
              Port        15 (GigabitEthernet1/0/15)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32799  (priority 32768 sys-id-ext 31)
              Address     bce7.124d.d000
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  300 sec

Interface           Role Sts Cost      Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Gi1/0/13            Altn BLK 4         128.13   P2p
Gi1/0/15            Root FWD 4         128.15   P2p
```

Solution:-

```
chinese-dumps-UKWH1-(config)#int gigabitEthernet 1/0/15
chinese-dumps-UKWH1-(config-if)#spann
chinese-dumps-UKWH1-(config-if)#spanning-tree vla
chinese-dumps-UKWH1-(config-if)#spanning-tree vlan 31 cost 50
chinese-dumps-UKWH1-(config-if)#
```

Verification:-

```
chinese-dumps-UKWH1-S3-9200-3#show spanning-tree vlan 31

VLAN0031
  Spanning tree enabled protocol rstp
  Root ID     Priority    8223
              Address     a0ec.f9ab.eb00
              Cost        8
              Port        13 (GigabitEthernet1/0/13)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32799  (priority 32768 sys-id-ext 31)
              Address     bce7.124d.d000
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  300 sec

Interface           Role Sts Cost      Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Gi1/0/13            Root FWD 4         128.13   P2p
Gi1/0/15            Altn BLK 50        128.15   P2p
```

```
chinese-dumps-UKWH1-S4-9200-4#sh spann vla 32

VLAN0032
  Spanning tree enabled protocol rstp
  Root ID     Priority    8224
              Address     3c57.31fb.2800
              Cost        4
              Port        15 (GigabitEthernet1/0/15)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32800  (priority 32768 sys-id-ext 32)
              Address     40b5.c161.0580
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  300 sec

Interface           Role Sts Cost      Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Gi1/0/13            Desg FWD 4         128.13   P2p
Gi1/0/15            Root FWD 4         128.15   P2p
```

Solution:-

```
chinese-dumps-UKWH1-(config)#interface gigabitEthernet
chinese-dumps-UKWH1-(config)#interface gigabitEthernet 1/0/15
chinese-dumps-UKWH1-(config-if)#spann
chinese-dumps-UKWH1-(config-if)#spanning-tree vlan 32 cos
chinese-dumps-UKWH1-(config-if)#spanning-tree vlan 32 cost 50
```

Verification:-

```
chinese-dumps-UKWH1-S3-9200-3#show spanning-tree vlan 31

VLAN0031
  Spanning tree enabled protocol rstp
  Root ID     Priority    8223
              Address     a0ec.f9ab.eb00
              Cost        8
              Port        13 (GigabitEthernet1/0/13)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32799  (priority 32768 sys-id-ext 31)
              Address     bce7.124d.d000
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  300 sec

Interface           Role Sts Cost      Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Gi1/0/13            Root FWD 4         128.13   P2p
Gi1/0/15            Altn BLK 50        128.15   P2p
```

On UKWH1-S3-9300-1

```
chinese-dumps-UKWH1-(config)#
chinese-dumps-UKWH1-(config)#ip routing
chinese-dumps-UKWH1-(config)#ip route 0.0.0.0 0.0.0.0 10.10.31.1
chinese-dumps-UKWH1-(config)#
```

On UKWH1-S4-9300-4

```
chinese-dumps-UKWH1-(config)#
chinese-dumps-UKWH1-(config)#ip routing
chinese-dumps-UKWH1-(config)#ip route 0.0.0.0 0.0.0.0 10.10.32.2
chinese-dumps-UKWH1-(config)#
```

On UKWH1-S1-3650-1

```
Chinese-Dumps-UKWH1-(config)#
Chinese-Dumps-UKWH1-(config)#
Chinese-Dumps-UKWH1-(config)#ip route 10.10.127.2 255.255.255.255 10.10.12.2
Chinese-Dumps-UKWH1-(config)#ip route 10.10.127.3 255.255.255.255 10.10.31.3
Chinese-Dumps-UKWH1-(config)#ip route 10.10.127.4 255.255.255.255 10.10.32.4
Chinese-Dumps-UKWH1-(config)#
```

Verification:-

On UKWH1-S1-3650-1

```
Chinese-Dumps-UKWH1-S1-3650-1#
Chinese-Dumps-UKWH1-S1-3650-1#ping 10.1.1.12 source 10.10.127.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.12, timeout is 2 seconds:
Packet sent with a source address of 10.10.127.1
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/2 ms
Chinese-Dumps-UKWH1-S1-3650-1#
```

On UKWH1-S2-3650-2

```
Chinese-Dumps-UKWH1-S2-3650-2#
Chinese-Dumps-UKWH1-S2-3650-2#ping 10.1.1.12 source 10.10.127.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.12, timeout is 2 seconds:
Packet sent with a source address of 10.10.127.2
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/3 ms
Chinese-Dumps-UKWH1-S2-3650-2#
Chinese-Dumps-UKWH1-S2-3650-2#
```

On UKWH1-S4-9200-3

```
chinese-dumps-UKWH1-S3-9200-3#
chinese-dumps-UKWH1-S3-9200-3#
chinese-dumps-UKWH1-S3-9200-3#ping 10.1.1.12 source 10.10.127.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.12, timeout is 2 seconds:
Packet sent with a source address of 10.10.127.3
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/4 ms
chinese-dumps-UKWH1-S3-9200-3#
```

On UKWH1-S4-9200-4

```
chinese-dumps-UKWH1-S4-9200-4#
chinese-dumps-UKWH1-S4-9200-4#
chinese-dumps-UKWH1-S4-9200-4#ping 10.1.1.12 source 10.10.127.4
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.1.1.12, timeout is 2 seconds:
Packet sent with a source address of 10.10.127.4
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
chinese-dumps-UKWH1-S4-9200-4#
```

On UKWH1-W1

```
(Cisco Controller) config>lag enable

Enabling LAG will map your current interfaces setting to LAG interface,
All dynamic AP Manager interfaces and Untagged interfaces will be deleted
All WLANs will be disabled and mapped to Mgmt interface
Max speed of ports 1-5 will be set to 1 Gbps
 !!! You MUST reboot the system after updating the LAG config. !!!
 !!! After Applying the LAG config, you would still need to    !!!
 !!! reboot the system and reconfigure LAG to revert back      !!!
Are you sure you want to continue? (y/n) y


You MUST now save config and reset the system.
```

```
(Cisco Controller) >save config

Are you sure you want to save? (y/n) y
```

On UKWH1-W2

```
(Cisco Controller) config>lag enable

Enabling LAG will map your current interfaces setting to LAG interface,
All dynamic AP Manager interfaces and Untagged interfaces will be deleted
All WLANs will be disabled and mapped to Mgmt interface
Max speed of ports 1-5 will be set to 1 Gbps
 !!! You MUST reboot the system after updating the LAG config. !!!
 !!! After Applying the LAG config, you would still need to    !!!
 !!! reboot the system and reconfigure LAG to revert back      !!!
Are you sure you want to continue? (y/n) y


You MUST now save config and reset the system.
```

```
(Cisco Controller) >save config

Are you sure you want to save? (y/n) y
```

On UKWH1-S1-3650

```
Chinese-Dumps-UKWH1-(config)#
Chinese-Dumps-UKWH1-(config)#int range g1/0/11-12
Chinese-Dumps-UKWH1-(config-if-range)#channel-group 10 mode on
Creating a port-channel interface Port-channel 10
```

On UKWH1-S2-3650

```
Chinese-Dumps-UKWH1-(config)#
Chinese-Dumps-UKWH1-(config)#int range g1/0/11-12
Chinese-Dumps-UKWH1-(config-if-range)#channel-group 10 mode on
Creating a port-channel interface Port-channel 10
```

Verification:-

```
Chinese-Dumps-UKWH1-S1-3650-1#show etherchannel summary
Flags:  D - down        P - bundled in port-channel
        I - stand-alone s - suspended
        H - Hot-standby (LACP only)
        R - Layer3      S - Layer2
        U - in use      f - failed to allocate aggregator

        M - not in use, minimum links not met
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

        A - formed by Auto LAG


Number of channel-groups in use: 1
Number of aggregators:           1

Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------
10     Po10(SU)         -          Gi1/0/11(P)     Gi1/0/12(s)

Chinese-Dumps-UKWH1-S1-3650-1#
```

Verification:-

```
Chinese-Dumps-UKWH1-S2-3650-2#sh etherchannel summary
Flags:  D - down        P - bundled in port-channel
        I - stand-alone s - suspended
        H - Hot-standby (LACP only)
        R - Layer3      S - Layer2
        U - in use      f - failed to allocate aggregator

        M - not in use, minimum links not met
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

        A - formed by Auto LAG


Number of channel-groups in use: 1
Number of aggregators:           1

Group  Port-channel  Protocol    Ports
------+-------------+-----------+-----------------------------------------------

10     Po10(SU)         -          Gi1/0/11(P)     Gi1/0/12(P)
```

Thank You for choosing www.chinesedumps.com Workbooks.