Creating, Changing, and Deleting DHCP Scope

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Formal Review

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Table of Contents

OBJECTIVE(S)	1
DOCUMENT PURPOSE	1
PREREQUISITES	1
ASSUMPTION(S)	2
IMPLEMENTATION CHECKLIST	2
SPECIAL INSTRUCTION(S)	4
Processes & Procedures	5
1. Add a new DHCP Scope using the DHCP Console	5
2. Configure Failover for New Scopes	14
3. Modify DHCP Scope Address Pool and/or Lease Duration	18
4. Modify DHCP Scope Options (Router, DNS Servers, Domain Name)	20
5. Add a DHCP Reservation	23
6. Delete DHCP Scope	25
WATCH ITEMS LESSONS LEARNED	26
DEFINITIONS, ABBREVIATIONS, ACRONYMS	27
Microsoft DHCP Server - Overview	28
DHCP Scope	28
TECHNICAL DESIGN LINK(S)	29
Access Provisioning Policy Link(s)	29
REQUEST FOR ACCESS LINK(S)	29
APPENDIX A –	29
APPENDIX B –	29

Objective(s)

This SOP provides the procedures to add, edit and delete a DHCP scope.

Applies to: Windows Server 2019, Windows Server 2016, Windows Server 2012.

Document Purpose

This document covers the current process to add, modify, and/or delete a DHCP scope as well as reserve a DHCP address for specific devices. This document is intended for an AD Engineer who has received a request from the Network, Active Directory, or Security teams to add, modify or delete a DHCP scope.

Prerequisites

- A change request was submitted, and a ServiceNow CTask has been assigned to the engineer performing the change.
- An IP Schema document has been provided through the change request or by email with the • scope details. Network static and shared static ranges will be added to the DHCP exclusions list.

		01	02	2 0	3	04	CIDR					
Assigned /19 range	j	10	1	0		0	/19					
							<site id=""></site>	/ <site< th=""><th>e Name></th><th></th><th></th><th></th></site<>	e Name>			
Vlan Name	01	02	03	04		CIDR	VLAN	GW	Network Static Range	Shared Static Range	DHCP Range	Subnet Mask
Wired_Office	10	1	0	0	/	22	10	.1	10.1.0.1 – 10.1.0.50	10.1.0.51 – 10.1.0.255	10.1.1.0 – 10.1.3.254	255.255.252.0
Wired_Warehouse	10	1	4	0	/	22	20	.1	10.1.4.1 – 10.1.4.50	10.1.4.51 – 10.1.4.255	10.1.5.0 – 10.1.7.254	255.255.252.0
Wireless_Office	10	1	8	0	/	22	30	.1	10.1.8.1 – 10.1.8.50	n/a	10.1.8.51 – 10.1.11.254	255.255.252.0
Wireless_Warehouse	10	1	12	0	/	22	40	.1	10.1.12.1 – 10.1.12.50	n/a	10.1.12.51 – 10.1.15.254	255.255.252.0
Access_Points	10	1	16	0	/	24	50	.1	10.1.16.1 – 10.1.16.50	n/a	10.1.16.51 – 10.1.16.254	255.255.255.0
Video	10	1	17	0	/	24	60	.1	10.1.17.1 – 10.1.17.50	10.1.17.51 – 10.1.17.254	n/a	255.255.255.0
Voice	10	1	18	0	/	23	70	.1	10.1.18.1 – 10.1.18.50	n/a	10.1.18.51 – 10.1.19.254	255.255.254.0
Physical_Security	10	1	20	0	/	23	80	.1	10.1.20.1 – 10.1.20.50	10.1.20.51 – 10.1.21.254	n/a	255.255.254.0
Scada	10	1	22	0	/	23	90	.1	10.1.22.1 – 10.1.22.50	10.1.22.51 – 10.1.23.254	n/a	255.255.254.0

IP Schema Example: ٠

DI	HCP Servers - ONE Domair	<u>1</u>
10.201.200.215	MS247ONEDHCP0	01.One.com
10.201.232.215	MS248ONEDHCP0	01.One.com
DNS	Servers - NA Domain LD	AP
10.253.70.52	ldapchi.net	Primary
10.253.134.52	ldapash.net	Secondary

- The engineer has the appropriate access to utilize the toolbox server(s) and access DHCP to add, edit, or delete DHCP scopes from the servers.
- DHCP Options will be configured for Aruba, following the Standard listed below:

Option Name	Vendor	Value	Policy Name
003 Router	Standard	10. <mark>X.X</mark> .1	None
006 DNS Servers	Standard	10.220.50.145, 10.201.17.148	None
015 DNS Domain Name	Standard	na.net	None
042 NTP Servers	Standard	135.89.142.66, 135.89.142.100	None
043 Vendor Specific Info	Standard	6e 6f 6e 65 2c 31 30 2e 32 34 30 2e 33 38 2e 32 30 31 2e 73 79 73 63 6f 61 72 75 62 61	None
060 ClassID	Standard	ArubaInstantAP	None

Assumption(s)

- DHCP Services Role has been deployed and can be used to **add**, **edit**, **or delete** one, or more, new DHCP Scopes using the DHCP Management Console.
- The engineer has been assigned a ticket, change request, etc. with specific data/information. The data within the assigned 'ticket' is to be used in place of any data/information within the SOP that is used to describe the step-by-step procedure(s) to complete that assigned task.
- The engineer assigned is using the appropriate IP Schema information to create the scopes.
- DHCP failover peers are already configured.

Implementation Checklist

- <u>Change Requirements:</u>
 - □ A normal change request was submitted in Service Now with the appropriate scope template attached.
 - If the template is not attached, the engineer will reach out to the requester to ask for the DHCP scope documentation that needs to be provided for the change.
 - A time is scheduled for the DHCP scope to be activated by the AD Platform Team.
- <u>Procedure Checklist Create a new scope</u>

□ An IP Schema document has been provided and a change request submitted

- □ Log into the Toolbox server
- □ Access the DHCP server application and add the correct DHCP servers
 - ms247onedhcp01.one..com
 - ms248onedhcp01.one..com
- □ Create a new DHCP scope based on the IP Schema document and change request details
 - Ensure proper range of IP addresses have been excluded
 - Add the correct DNS servers
- □ Confirm option configurations
 - If this scope is related to Access Points, the appropriate options will need to be configured. These options will be provided in the change request; however, standard settings can be found in the Procedure section of this document.
- □ Save changes
- □ Replicate changes to the failover peer
- □ Reconcile to ensure both peers are updated
- □ Ensure the new scope is deactivated until the change allows it to be activated
- <u>Change Window Completion Checklist Create a New Scope</u>
 - □ Activate DHCP scope
 - □ Add notes and comments to change on errors or issues that occurred
 - □ Notify requestor and validate the change was completed as expected
 - □ Close task in change record and update necessary documentation
 - □ Knowledge transfer with the team as needed to discuss issues/errors/automation or other discoveries during your procedure that might improve our processes.
- <u>Procedure Checklist Modify a DHCP Scope</u>
 - □ Log into the Toolbox server
 - □ Access the DHCP server application and add the correct DHCP servers
 - ms247onedhcp01.one..com
 - ms248onedhcp01.one..com
 - □ Find the DHCP scope and right click on < Scope [xx.xx.xx.xx] [Description]>
 - □ Select Properties
 - □ Update the appropriate configurations based on the change request
 - Scope Name
 - Start & End IP address
 - Lease Duration

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- DNS
- Exclusions
- □ Click Okay
- <u>Change Window Completion Checklist Modify a DHCP Scope</u>
 - □ Add notes and comments to change on errors or issues that occurred
 - □ Notify requestor and validate the change was completed as expected
 - □ Close task in change record and update necessary documentation
 - □ Knowledge transfer with the team as needed to discuss issues/errors/automation or other discoveries during your procedure that might improve our processes.
- <u>Procedure Checklist Add a reservation</u>
 - □ Log into the Toolbox server
 - □ Access the DHCP server application and add the correct DHCP servers
 - ms247onedhcp01.one..com
 - ms248onedhcp01.one..com
 - □ Find the DHCP scope and click expand
 - □ Right click on reservations
 - □ Enter the following details:
 - Reservation name
 - IP address
 - MAC address
 - Device description (Optional)
 - Supported Types: Both
 - □ Click Add
- Change Window Completion Checklist Add a reservation: [Work with Jules + Jaime]
 - □ Add notes and comments to change on errors or issues that occurred
 - □ Notify requestor and validate the change was completed as expected
 - □ Close task in change record and update necessary documentation
 - □ Knowledge transfer with the team as needed to discuss issues/errors/automation or other discoveries during your procedure that might improve our processes.

Special Instruction(s)

The details listed under the procedure section of this document are used for examples only. Reference the IP Schema document and change request details to execute the change. Do not copy any specific information from this document unless it is explicitly stated in the procedure.

Processes & Procedures

1. Add a new DHCP Scope using the DHCP Console

1. Log into the **Toolbox Server** associated with the One Domain.

<u>Note</u>: Ms247adtools01.one..com is being used as an example for the purposes of documenting this procedure. The engineer assigned the task is responsible for ensuring that the appropriate server is being used to make the change.

Nerro	ote Desktop Connec	tion		×
0	o you trust this rea	note connection?		
	te connection could hi before you connect.	arm your local or remote co	mputer. Make sure that yo	ou trust the remote
-	Type: Remote computer:	Remote Desktop Conn ms247adtoois01.one.s		
Don't a	astron more	ections to this computer	Con	nect 👌 Cancel
	These credent ms247adtools Username	credentials lals will be used to con 01.one.sysco.com.	mect to	×
	More choices	ок р	Cancel	

2. Go to Start->Windows Server Administrative Tools and open the DHCP Management Console.

≡ D		Windows Server		
Datadog		E.		-
G Google Chrome		Server Manager	Windows PowerShell	Windows PowerShell ISE
м				
Microsoft Network Monitor 3.4		Windows N		<u>91</u>
Microsoft Silverlight	~	Administrativ	Task Manager	Control Panel
Active Directory Administrative Center		9/15/2018 3:13	AM Shortcut	2 KB
Active Directory Domains and Trusts		9/15/2018 3:14	AM Shortcut	2 KB
2 Active Directory Module for Windows PowerShell		9/15/2018 3:13	AM Shortcut	2 KB
Active Directory Rights Management Services		9/15/2018 3:13	AM Shortcut	2 KB
Active Directory Sites and Services		9/15/2018 3:13	AM Shortcut	2 KB
Z Active Directory Users and Computers		9/15/2018 3:14	AM Shortcut	2 KB
ADSI Edit		9/15/2018 3:13	AM Shortcut	2 KB
Certification Authority		9/15/2018 3:13	AM Shortcut	2 KB
2. Component Services		9/15/2018 3:12	AM Shortcut	2 KB
S Computer Management		9/15/2018 3:12	AM Shortcut	2 KB
S Connection Manager Administration Kit		9/15/2018 3:13	AM Shortcut	2 KB
Defragment and Optimize Drives		9/15/2018 3:12	AM Shortcut	2 KB
DHCR.		9/15/2018 3:13	AM Shortcut	2 KB
🚝 Disk Cleanup		9/15/2018 3:12	AM Shortcut	2 KB
🚴 DNS		9/15/2018 3:13	AM Shortcut	2 KB

3. Right-click **DHCP** on the **Welcome to DHCP** page and choose **Add Server**.



4. On the next screen enter or select your Authorized DHCP Servers and click OK.

 Add Server		? ×
Select a server you want to add to your o	console.	
C This server:		Browse
This authorized DHCP server:		
Name	IP Address	
ms247onedhcp01.one.sysco.com ms248onedhcp01.one.sysco.com	10.201.200.215 10.201.232.215	
ms595onedhcp01.one.sysco.com ms596onedhcp01.one.sysco.com		
	OK	Cancel

Note: The two servers used to create DHCP scopes in the One..com domain are *ms247onedhcp01.one..com* and *ms248onedhcp01.one..com*, as shown above. The first server will automatically replicate settings to the second server.

5. Expand the DHCP server, verify that the Scope(s) specified in the ServiceNow CTask are not yet present in list, then right-click on **IPv4** and choose **New Scope** to start the **New Scope Wizard**.

DHCP	View Help		
DHCP	7 01 01		^
v 🗐 ms24	7onedhcp01.one.sysco.com		
·	Display Statistics	fired-Office	
5	New Scope	fired-Warehouse	
>	New Superscope	fireless-Office	
> 🗐		/ireless-Warehouse	
>	New Multicast Scope	ccess Points	
> 🗐	Configure Failover	pice	
>	Replicate Failover Scopes	-Office	
>		d-Warehouse	
>	Define User Classes	less-Office	
> =	Define Vendor Classes	less-Warehouse	
2	Reconcile All Scopes	ss Points	
2	Reconcile All Scopesia	omerset - Wired-Office	
- 11	Set Predefined Options	omerset - Wired-Warehouse	
1	Refresh	omerset - Wireless-Office	
5	NEITEST	omerset - Wireless-Warehouse	
51	Properties	omerset - Access Points	

- 6. Click **Next** on the Introduction screen.
- 7. On the **Scope Name** page, specify the Scope Name and Description. List the Opco#, followed by name of location and the location as specified in the requisition (Wireless Office, Warehouse, etc.), duplicate in the description, then click **Next**.

Scope Name		New Scope Wizard		
	ovide an ide	ntifying scope name. You also have	the option of providing	Ľ
		n for this scope. This information he d on your network.	lps you quickly identify	
Name:	OPCO#	Name of Location - Wired Office		
Description:	OPCO#	Name of Location - Wired Office		

Example:

	rovide an identifying scope name. Tou also have the option of providing
a description.	
	nd description for this scope. This information helps you quickly identify is to be used on your network.
Name:	079 - Buckhead & Seafood of Ohio - Wired_Office
Description:	079 - Buckhead & Seafood of Ohio - Wired_Office

8. On the **IP Address Range** page, type in the IP addresses and Subnet Mask which will be assigned to all clients as given in your requisition, then **Next**.

Configuration settings	for DHCP Server	
Enter the range of add	dresses that the scope distributes.	
Start IP address:	10 . 25 . 192 . 1	
End IP address:	10 . 25 . 195 . 254	
Length:	that propagate to DHCP Client	

Note: The screen above shows an IPv4 class C subnet scope with 252 available addresses.

9. Per the IP Schema, set IP addresses in the scope to be excluded from`` DHCP clients on the **Add Exclusions and Delay** page.

Note: Network static and shared static ranges in the IP Schema should be added to the DHCP exclusions list. For instance, you may set an exclusion range beginning at *xxx.xxx.1* continuing through *xxx.xxx.xxx.50*, click **Add**.

addres	he IP address s, type an ad	dress in	Start IP	address		. If you war	nt to excl	ude a single	•
	address:		End IP a		2 50	N.	. í		
1 10	25 . 192 .		10.	25 . 13	2. 54	3	1		
Exclud	ed address ra	ange							
						Remo	9V6		
						Subnet d	elay in m	li second:	
							0 +		
1						1	-		

Click **Next** when done with this page.

10. On the **Lease Duration** screen, enter the length of time a **client** should be assigned an IP address. When done, click **Next**.

Lease Duration				10
The lease duration specifies how long a	a client can use an	IP address from	m this scope.	
Lease durations should typically be equ connected to the same physical networ portable computers or dial-up clients, sh Likewise, for a stable network that com locations, longer lease durations are no	k. For mobile netwo norter lease duration sists mainly of deskt	orks that consists can be useful	st mainly of ul.	
Set the duration for scope leases when	distributed by this t	erver.		
Limited to:				
Days: Hours: Minutes:				

Note: Standards for Lease durations are listed below:

Device Types	Lease Days	Lease Hours	Lease Minutes
Wireless Warehouse	8	0	0
Access Points (APs)	8	0	0
All devices - Excluding APs & Wireless Warehouse	0	8	0

11. The **Configure DHCP Options** screen will **appear**. Select Yes, I want to configure these options now, and then click **Next**.

Configure DHCP Options You have to configure the most common DHCP options before clients can use the scope.
When clients obtain an address, they are given DHCP options such as the IP addresses of routers (default gateways), DNS servers, and WINS settings for that ecope. The settings you select here are for this scope and override settings configured in the Server Options folder for this server.
Do you want to configure the DHCP options for this scope now?
C No, I will configure these options later
< Back Next > Sack Cancel

12. On the **Router** (Default Gateway) screen, enter the IP address of the gateway that the subnet will use as specified in your requisition. Click **Add** and then **Next**, when done.

IP address:	address for a	router used by cli	ents, enter the	address below	
10 . 25 .	192 . 1	A			
		Remove			
		Up			
		Down			
1					

13. On the **Domain Name and DNS Servers** screen, **enter na..net** as the **Parent Domain** followed by the IP addresses of all DNS servers the client should use, then click **Next**.

Notation 1: The default DNS server addresses are **10.253.70.52** and **10.253.134.52**. Any additional IP addresses should be removed.

The Domain on your net		and translates domain names used	by clients
You can specify ONS name reso		the client computers on your netwo	rk to use for
Parent domain:	na.sysco.net		
fo configure so ervers. Server name:	ope clients to use DNS serve	rs on your network, enter the IP add	iresses for those
		10 . 253 . 134 . 52	Add
	Resolve	10 253 70.52	Remove
			Up
			Down

Notation 2: If you encounter an error message when validating the new DNS server, click **No** when asked whether you want to add the server anyway. Then review your change request ticket to confirm the correct IP address for the DNS server you are directed to add.

	Scope Options	? ×
	General Advanced	
	Available Options	Description A
	Ø03 Router	Array of rout
	004 Time Server	Array of time
Office	005 Name Servers	Array of nam
Nareho	006 DNS Servers	Array of DN V
s-Offic	1	>
нср	The IP Address 10.21.21.21 is not a valid DNS a still want to add it ?	address, do you
нср <u></u>		1
нср <u></u>		1
нср <u>(</u>	still want to add it ?	address, do you
нср <u>А</u>	still want to add it ?	address, do you
нср <u>(</u>	still want to add it ? Yes	address, do you

- 14. On the **WINS Servers** screen, click **Next**. **does** not use WINS servers.
- 15. On the **Activate Scope** page, select *No, I will activate this scope later*. Click **Next** and then **Finish** to complete scope activation.

New Scope	e Wizard		
Activate Scope Clients can obtain address leases only if a scop	e is activated.		S
Do you want to activate this scope now?			
C Yes, I want to activate this scope now			
No. I will activate this scope later			
	< <u>B</u> ack	Next	Cancel

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NOTE: When a scope is created it will not be activated immediately. When a scope is not active, there will be a small red symbol next to it as shown here:

) 📑 Scope [10.25.200.0] 079 - Buckhead & Seafood of Ohio - Wireless_Office

- > 📑 Scope [10.25.196.0] 079 Buckhead & Seafood of Ohio Wired_Warehouse
- > 📑 Scope [10.25.192.0] 079 Buckhead & Seafood of Ohio Wired_Office
- 16. When the scope(s) is scheduled to be activated, open the DHCP server by repeating the steps above. Then **right click** on the scope(s) needed to be activated and select **Activate**.

Y ID IPv	4		
> 00	Scope [10.25 3		-+ Ohio - Access_Points
> 10	Scope [10.2	Display Statistics	10 - Wireless_Warehouse
> 6	Scope [10.2	Deconfigure Failover	nio - Wireless_Office
> 3	Scope [10.2		nio - Wired_Warehouse
> 12	Scope [10.2	Replicate Scope	hio - Wired_Office
> 📫	Scope [10.1	Replicate Relationship	
> 10	Scope [10.1	Reconcile	ouse
> 🔂	Scope [10.1	Reconcileat	ce
>	Scope [10.1	Activate 💦	ehouse
19	Scone [10.1	1A3 ³	

17. The selected Scope(s) are now activated, as shown below:

>		Scope [10.25.192.0] 079 - 1	Buckhead & Seafood of Ohio - Wired_Office
2	n'i	Scope [10.25.196.0] 079 - 1	Buckhead & Seafood of Ohio - Wired_Warehouse
5	1	Scope [10.25.200.0] 079 - 1	Buckhead & Seafood of Ohio - Wireless_Office
>	1	Scope [10.25.204.0] 079 - 1	Buckhead & Seafood of Ohio - Wireless_Warehouse
5	n°	Scope [10.25.208.0] 079 - 1	Buckhead & Seafood of Ohio - Access_Points

18. The new scope is **created** and activated.

2. Configure Failover for New Scopes

1. From within the **DHCP console**, expand the primary DHCP server, expand **IPv4** on the left side, right-click **IPv4** and click **Configure Failover** from the context menu.



2. When the **Configure Failover** dialog box appears, select from the available scopes that you wish to add. If you want to include all of them, check the **Select all** box as shown below. Then click **Next**.

Introduction to DHCP Fallover DHCP Fallover enables high avail synchronizing IP address lease inf servers. DHCP fallover also provid requests. This wizard will guide you through Select from the following list of soc configured for high availability. So configured for high availability are	ormation between two DHCP les load balancing of DHCP setup of DHCP failover. spes which are available to be opes which are already
Available scopes:	Select all.
< Back	Next N Cancel

3. Click Add Server to add the DHCP partner server. Alternatively, you can enter its IP address or fully qualified domain name into the text field.

Note: You can create multiple partner relationships with other DHCP servers by clicking the dropdown arrow.

Provide the host name or IP address should be configured.	of the partner DI	ICP server v	with which failover
You can select from the list of servers browse and select from the list of auti	with an existing horized DHCP se	failover con rvers.	figuration or you can
Alternatively, you can type the host n	ame or IP addres	is of the part	tner server.
Partner Server: ms248onedhcp01.or	ne sysco.com	-	Add Server
Reuse existing falover relationshi Validating partner ser			r (fanyexist).
-			r (f any exist).
-			r (f any exist).

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4. Click **Next** and then **Finish** on the following screen and your Scope will be replicated on the Partner Server(s).

10.25.208.079 Petetionship Name: ms247oxedhcp01 one syscolor Maximum Clent Lead Time: This 0 mins Vode: Sate Switchover Interval Dasbied Load Balance Percentage Local Server: 50 % Patiner Server: 50 % Cancel Cancel onfigure Failover ? Add scopes on pather server Successful Dasble scopes on pather server Successful Creation of failover configuration on host server Successful Creation of failover configuration on pather server Successful Configure failover successful. Successful	(A)	Falover will be set up between and ms24Bonedhop01 one ays Scopes		
Maximum Client Leed Time: 1 his Dimins Mode: Load Sublence State Switchover Interval: Disabled < Load Balance Percentage Load Balance Percentage Load Balance Load Balance Percentage S0 % Load Balance Percentage Load Balance Load Balance Percentage Load Balance Load Server: 50 % Pather Server: 50 % Cancel Cancel onfigure Failover ? Y Y Progress of failover configuration. The log below shows the progress of the various tasks for configuring failover including any errors encountered. Add scopes on pather server Successful Deable coopes on pather server Deable coopes on pather server Successful Creation of failover configuration on host server Creation of failover configuration on pather server Successful Activate scopes on pather server		10.25.208.079		
Local Server: 50 % Patner Server: 50 % So % Patner Server: So % Fm () Cancel Cancel onfigure Failover ? Yeagress of failover configuration. * The log below shows the progress of the various tasks for configuring failover including any errors encountered. * Add scopes on patner server Successful Deable scopes on patner server Successful Creation of failover configuration on host server Successful Creation of failover configuration on patner server Successful Advate scopes on patner server Successful Activate scopes on patner server Successful		Maximum Clent Lead Time: Mode:	1 hrs 0 mins Load balance	y s co.ci
Local Server: 50 % Patner Server: 50 % So % Patner Server: So % Fm () Cancel Cancel onfigure Failover ? Yeagress of failover configuration. * The log below shows the progress of the various tasks for configuring failover including any errors encountered. * Add scopes on patner server Successful Deable scopes on patner server Successful Creation of failover configuration on host server Successful Creation of failover configuration on patner server Successful Advate scopes on patner server Successful Activate scopes on patner server Successful		¢	and the second second	3
Patner Server: 50 % < Back		· · · · · · · · · · · · · · · · · · ·	1201	
Cancel Cancel		Construction of the second		
onfigure Failover ? × Progress of failover configuration. The log below shows the progress of the various tasks for configuring failover including any errors encountered. Add ecopes on partner server Successful Deable scopes on partner server Successful Creation of failover configuration on host server Successful Creation of failover configuration on partner server Successful Activate scopes on partner server Successful		Partner Server:	50 %	
Progress of failover configuration. The log below shows the progress of the various tasks for configuring failover including any errors encountered. Add scopes on partner serverSuccessful Deable scopes on partner serverSuccessful Creation of failover configuration on host serverSuccessful Activate scopes on partner serverSuccessful		< Back	Fm() Car	ncel
Add scopes on partner server	onfigure Failover	< Back		
Disable scopes on partner serverSuccessful Creation of failover configuration on host serverSuccessful Creation of failover configuration on partner serverSuccessful Activate scopes on partner serverSuccessful	Progress of failover co	onfiguration.	?	×
	Progress of failover co The log below shows	onfiguration.	?	×
	Progress of failover or The log below shows including any errors er Add scopes on partr Disable scopes on p Creation of failover o Creation of failover o Activate scopes on p	anfiguration. the progress of the various to nocuntered. her server	? ssks for configuring failo Successful Successful Successful rSuccessful	>

5. Right click on IPv4 or the newly added scope and click Reconcile...



6. Failover for the new scopes is complete.

3. Modify DHCP Scope Address Pool and/or Lease Duration

- 1. Go to Start->Windows Server Administrative Tools and open the DHCP Management Console.
- 2. Expand the domain that contains the scope you wish to edit, then expand the **IPv4** scope list. Find the scope that requires modification.



3. Right click on the DHCP Scope you wish to edit and choose Properties.

*	Scope [10 25 Addre	Display Statistics_	sefood of Ohio - Wired_Office
	Addre Resen	Deconfigure Failover	
	Scope	Replicate Scope_	
	Policie	Replicate Relationship	e
- E	Scope [10	A 10	>hio - Wired_Warehouse
a 🖆	Scope [10	Reconcile_	hio - Wireless_Office
, 🖺	Scope [10	Deactivate	>hio - Wireless_Warehouse
. 2	Scope [10		hio - Access_Points
	Scope [10	Delete	2
> 🖀	Scope [10	Refresh	ce
· 8	Scope [10		rehouse
. 1	Scope [10	Properties 3	office
1	Scope [10	Help	Varehouse
. 12	Conne (10		and the second sec

Scope [10.20.144.0] OPCO 001 - Carolina_Access Points

4. On the Scope **Properties** page, update the configurations as needed. Then click **OK** to close the window.

Scope name:	079 - Buckhead & Seatoo	d of Ohio - Wired_Offic	a d
Start IP address:	10 . 25 . 192 . 1		
End IP address:	10 . 25 . 195 . 254		
Subnet mask:	255 . 255 . 252 . 0	Length 22	
Lease duration f	or DHCP clients		
Days:	Hours: Minutes:		

NOTE: For details on how to configure the settings under DNS, Failover, Advanced, or update lease durations, refer to the steps under **Add a new DHCP Scope using the DHCP Console.**

4. Modify DHCP Scope Options (Router, DNS Servers, Domain Name)

4.1.1 Change Network Router

- 1. Go to Start->Windows Server Administrative Tools and open the DHCP Management Console.
- 2. Expand the domain that contains the scope you wish to edit, then expand the IPv4 scope list.
- 3. **Right-click Scope Options** and **choose Configure Options from the popup context menu,** then double-click on **003 Router** in the **Option Name** pane.

Address Pool		
0	2	
> Reservations		
Scope Option		
2 Policies	Configure Options	
Scope [10.25.2	View	Phio - Wireless_Office
Address P	VIEW	
Address Le	Refresh	
> Reservatio	Export List	
Scope Opt	colorin entrum	
Policies	Help	

4. On the **Genera**l tab of the Scope Options page click **Remove** to delete the current Router's Server Name and IP address.

		2	cope Optior	IS	?
ieneral	Advanced	1			
Availa	able Options			C	escription ^
00 [2 Time Offse	t		L	TC offset i
☑ 00	3 Router			A	rray of rout
1000	4 Time Serve			A	rray of time
	5 Name Serv	/ers		A	rray of narr 🗸
<					>
Arrest	rver1 ddress:	2	A <u>d</u> d		Resolve
17	2.30.2.1		Remove	1	
			1000000	1	
			Up		
				1	
			Down		
			Down		

5. On the **General** tab of the **Scope Options** page enter the new server name (if specified) and IP address. Then click **Add** followed by **OK**.

		Descriptior ~
002 Time Offset		UTC offset
003 Router		Array of ro
004 Time Server		Array of tin
C 005 Name Servers		Array of na ∽
IP address:		
IP address:	Add	
	Add Remove	

4.1.2 Change DNS Server

1. In the **DHCP Management Console** expand IPv4, select the-**Scope Options** for your Scope and in the **Option Name** panel double-click **006 DNS Servers**.



2. If you wish to delete an existing DNS Server, click **Remove**. To add a DNS Server enter the Server Name and IP address, then click **Add**, followed by **Resolve**. Click **Apply followed by OK** to close the window.

eneral	Advanced	1			
				0	
Avai	DNS valid	lation		- Dessed	-
20 1	-	Valdating f	DNS Server serv	rice is running on	
	£13	to Network		can take some tim	e que
-	-				
Data					
Sen	ver name:			Reso	
				Heso	IVE
_	ddress:				
_	ddress: 0 . 220 . 5	0.145	Add N		
1	0 . 220 . 5 253 70 52	-	Add N		
1		-			
1	0 . 220 . 5 253 70 52	-	Remove		

Note: See **Procedure 1, Step 13**, **Notations 1 and 2** if an error occurs when validating the DNS Server.

- 4.1.3 Change Domain Name for DHCP Scope
 - 1. In the DHCP Management Console expand IPv4, select the-Scope Options for your Scope and in the Option Name panel double-click 015 DNS Domain Name.
 - On the General Tab of the Scope Options, with 015 DNS Domain Name selected, enter the new DNS Domain Name under "String Value." Then click Apply followed by OK to close the window.

Available Options	Description A
012 Host Name	Host name f
013 Boot File Size	Size of boot
014 Merit Dump File	Path name f
☑ 015 DNS Domain Name	DNS Domai 🗸
<	>

Note: Standards for DHCP Scope Options are listed below.

Confidential Information: Please handle accordingly.

Option Name	Vendor	Value	Policy Name
003 Router	Standard	10. <mark>X.X</mark> .1	None
006 DNS Servers	Standard	10.220.50.145, 10.201.17.148	None
015 DNS Domain			
Name	Standard	nanet	None
042 NTP Servers	Standard	135.89.142.66, 135.89.142.100	None
043 Vendor Specific Info	Standard	6e 6f 6e 65 2c 31 30 2e 32 34 30 2e 33 38 2e 32 30 31 2e 73 79 73 63 6f 61 72 75 62 61	None
060 ClassID	Standard	ArubaInstantAP	None

5. Add a DHCP Reservation

1. In the **DHCP Management** Console expand your server, expand **ipv4**, expand your scope, then right-click on **Reservations** and choose **New Reservation**.

9 DHCP			
File Action View Help			
+ + 2 = 0 2 = 1	*		
 DHCP ms247onedhcp01.one.sysco. IPv4 Scope [10.25.208.0] 07 Address Pool Address Leases Reservations Scope Options Policies Scope [10.25.204.0] 07 Address Pool Address Pool Address Leases Scope Options Policies Scope Options Scope Options Policies Scope Options Policies Beservations Scope Options Policies Policies 	com 9 - Buckhead & Seafo 9 - Buckhead & Seafo	od of Ohio - Access_Points od of Ohio - Wireless_Warehouse	*
Scope Options Policies Scope [10.25.196.0] 07 Address Pool Address Leases	'9 - Buckhead & Seafo	od of Ohio - Wired_Warehouse	
Cope New Co	Reservation >	d of Ohio - Wired_Office	

2. On the **New Reservation** screen enter a name for the computer or device you wish to set up (in the case of a printer, use its model information), its **IP address**, **MAC address** provided to you, and a description of the device. Set **Supported Types** to **Both** and click **Add**.

New Reservation		7	×	1
	1.00		~	
Provide information for	a reserved client.			
Reservation name:	(Device Name)			- Access_Points
IP address:	10 . 25 . 196 . 65			
MAC address:	123456789		_	
Description:	(Device Name)		_	Wireless_Warehouse
- Supported types				wireless_warehouse
Both				
C DHCP				
C BOOTP				
				Wireless_Office
	Add	Clo	se	

3. Click **Close** on the next screen to close the Reservation Wizard. Modification of a DHCP scope is now complete.

6. Delete DHCP Scope

- 1. Go to Start->Windows Server Administrative Tools and open the DHCP Management Console.
- 2. Expand your DHCP server, then right-click on **IPv4** and select the Scope you wish to delete.
- 3. Right-click on the Scope and choose **Delete** to remove it. Answer **Yes** to the question asking if you're sure you want to delete the scope.

Address Pool	Display Statistics	
Address Leases	Deconfigure Failover	
> Reservations	Replicate Scope	
Scope Options	Replicate Relationship	
Scope [10.1.64.0] 490 - Inc	Reconcile	
Address Leases	Deactivate	
> Reservations	View	>
Dolicies	Delete N	
Scope [10.1.68.0] 490 - Inc	Refresh	
Scope [10.1.72.0] 490 - Inc		
Scope [10.1.76.0] 490 - Inc	Export List	
Scope [10.1.80.0] 490 - Inc	Properties	
Scope [10.1.82.0] 490 - Inc	Help	
Scope [10.1.96.0] 490 - No	THEP	
	DHCP	×
This scope is current scope?	dy active. Are you sure you want to	delete the
	Yes	No

Note: If the scope is currently active, notify users logged in with a DHCP address that they may need to log out and log in again to re-establish network connectivity on a new or different scope.

4. Close the **DHCP Management Console.** DHCP scope deletion is complete.

Watch Items | Lessons Learned

- If an error occurs while adding the DNS servers, ensure that the IP addresses provided are accurate. This error occurs when the DHCP server makes a call out to the DNS server and does not receive the correct response.
- Do not activate a scope until the change request specifies the scope should be activated or during an approved change window. This is to ensure various teams (Network, Security, AD, etc) have set up what's needed before the DHCP servers begins providing IP Addresses.

xMatters Details

xMatters	Parent Incident	Issue	Resolution
XM0014122	INC000002420704	RF devices are not receiving IP address.	Replicate the DHCP servers to ensure lease times match.
XM0022592	INC000002573115	WorkConnect SSID is mapped to VLAN30 on 10.4.230.x network and it is not working.	DHCP scope needed to be enabled.
N/A	INC000002322141	Request to add new DNS servers to a DHCP scope.	New DNS Servers were added.
XM0035443 XM0035444 XM0035446 XM0035447 XM0035449	INC000002737689	008-Northern New England is without internet, all desk locations and all warehouse RF is down.	The issue was caused due to DHCP Servers not issuing the correct IPs. AD (Active Directory) Team restarted the DHCP Services which fixed this issue. Services have been restored and associates can resume normal business operations.
XM0034550	INC000002726964	Recent site visit revealed none of the AP's are working at site 311.	AD team activated the DHCP scope and caller confirmed access.
N/A	INC000002813272	Charlotte Opco 048 experiencing a problem setting up a new time clock using 10.5.246.51.	Informed user that the IP asking to reserve does not have DHCP scope for OPCO 048.
N/A	INC000002633390	Laptop devices are not able to connect to WorkConnect (in office).	DHCP Scope was updated.
4534719000	INC000003071940	IP-4-DUPADDR: Duplicate address 10.5.246.1 on Vlan90, sourced by 0027.901d.96a7.	Updated DHCP exclusions.
N/A	INC000002960146	We are unable to RDP to MS047IMAGE2.	The Server in question is and old Windows 2008 Server which is incorrectly configured causing the issue. Configure the server with a static IP address and set DNS settings to "Obtain DNS Server Address Automatically".

Definitions, Abbreviations, Acronyms

Term	Definition	Abbrev. / Acronym
IP Address	A unique string of numbers or alphabet characters that identifies each computer using the Internet Protocol to communicate over a network	IP
Dynamic Host Configuration Protocol	A client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway.	DHCP
DHCP Scope	An administrative grouping of IP addresses for a network subnet	DHCP Scope
DNS Server	DNS servers translate domain names into IP addresses, making it possible for DNS clients to reach the origin server.	DNS
Domain Name	A sequence of usually alphanumeric characters (such as .net) that specifies a group of online resources (as of a particular organization) and that forms part of the corresponding Internet addresses	Domain Name
Gateway	A network gateway connects local computers or devices to other networks. When a local device wants to send information to a device at an IP address on another network, it first sends its packets to the gateway, which then forwards the data on to its destination outside of the local network.	Gateway
IPv4	Internet Protocol version 4 (IPv4) is the fourth version of the Internet Protocol (IP). It is one of the core protocols of standards-based internetworking	IPv4
Reservation	A reservation ensures that a DHCP client (such as a printer) is always assigned the same IP address	Reservation
Router	A router is a networking device that forwards data packets between computer networks. Routers perform the traffic directing functions on the Internet.	Router
Subnet Mask	A subnet mask is a 32-bit number created by setting host bits to all 0s and setting network bits to all 1s. In this way, the subnet mask separates the IP	Subnet Mask

	address into the network and host addresses.	
Microsoft DHCP Server - Overview	A Microsoft DHCP server is a machine on a network that hands out IP addresses to clients. It ensures all clients receive IP addresses so they can communicate on the network. It does this through DHCP scopes.	DHCP Server
DHCP Scope	 A DHCP scope is an administrative grouping of IP addresses for a network subnet. With scopes you can configure common network settings for all clients receiving addresses, such as DNS servers and network gateways. Scopes can filter hosts by name, MAC address, and operating system to either allow them or disallow them from receiving an IP address. Scope policies can be configured to assign different options to hosts based on their name, MAC address, or operating system. For example, we can create a policy that configures the NIS server for a Linux host in addition to options set at the scope level. A DHCP scope represents contains various components such as: Assignable IP addresses for a particular group of devices (address pools) A client's DNS server and default gateway IPs to only assign to certain devices (DHCP reservations) Address pools (groups of assignable IP addresses) The DHCP scope is a core element on a network and that allows you to configure network settings common to all of the clients on that network. 	Scope

Technical Design Link(s)

Document Title	URL

Access Provisioning Policy Link(s)

Policy Document Title	URL

Request for Access Link(s)

Procedure Document Title	URL

Appendix A – Appendix B –