

Deployment Guide

Cisco ISE PxGrid 2.0 Deployment Guide

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Executive Summary

Cisco ISE stands for Cisco Identity Services Engine. It is a centralized security policy management platform that automates and enforces security access to network resources. In other words, it is a network access controller (NAC) that can be automated to allow or restrict network access to devices based on certain rules/policies.

Cisco <u>pxGrid</u> (platform exchange grid) Controller is a layer on top of Cisco ISE. It is the layer that communicates with other third-party vendors (i.e. Infoblox) to get specific information to allow or restrict the network access in addition to the static rules/policies configured on ISE and the dynamic rules/policies discovered by Cisco. It is also the grid that we will be connecting to in order to send and get information to and from the ISE server.

Infoblox NIOS acts as a client to the pxGrid Controller and will be subscribing to information from the Cisco ISE box such as usernames, domain names, SSID, VLANs, etc. NIOS also publishes information that it has acquired via DHCP to Cisco ISE. NIOS also publishes events triggered as a result of ADP/DNS Firewall rules being hit.

This document goes over the steps to configure NIOS 8.5 to integrate with Cisco ISE 2.4 and above using PxGrid 2.0. The integration is different in that NIOS 8.5 uses outbound API to communicate with Cisco ISE.

Features of integrating with Cisco ISE/pxGrid include:

- The ability to get (i.e., subscribe) to session notifications from the Cisco ISE server.
- The ability to publish RPZ, IPAM, and DHCP data to the Cisco ISE server.
- · Quarantining clients when an RPZ entry is hit.

Supported Platforms

Cisco ISE integration is supported on the following Infoblox appliances:

- IB-1415
- IB-1425
- IB-2215
- IB-2225
- IB-4015
- IB-4025

Prerequisites

The following are prerequisites for the Infoblox and Cisco ISE/pxGrid integration:

- NIOS 8.5 or later
- Grid master and Grid Master Candidate

Licenses

- VNIOS license if using VNIOS
- DNS license
- DHCP license
- RPZ license
- Security Ecosystem license
- MS Management license if using Grid to manage MS servers
- Threat protection license if using Advanced DNS Protection services

Certificate

- Client certificate created by the Cisco ISE administrator
- CA Root Certificate from the Customer and it is already in the Cisco ISE trusted certificate store
- Grid Master, Grid Master Candidate, MS AD Server, and Cisco ISE appliance must be in the same domain name

NOTE: Usually Cisco ISE is deployed in multiple nodes in a production environment with separate nodes for primary admin node (PPAN), primary monitoring node (PMNT), secondary admin node (SPAN), secondary monitoring node (SMNT), primary pxGrid node (pxGrid1), and secondary pxGrid node (pxGrid2)—with policy service nodes (PSN). The certificates come from the primary monitoring node. However, if the ISE server is limited to one server, then client certificate and CA certificate come from the ISE server at the following ISE GUI path: Administration --> pxGrid Services --> Certificates.

Assumptions

- Cisco ISE and pxGrid are installed properly.
- Cisco ISE certificates are installed properly.
- Root Certificate is installed properly on Cisco ISE.
- Auto registration must be turned on or clients must be explicitly approved on the Cisco ISE side.
- When DHCP/IPAM data is published to Cisco ISE, the dynamic topic (Infoblox_DHCP or Infoblox_IPAM) must be authorized.
- Time must be synchronized between the Cisco ISE server and the managing Infoblox member.
- You are running Active Directory authentication and have added the AD server to Cisco ISE. This means the Cisco ISE appliances are in the main DNS zone as A records.
- You have a Cisco ISE expert configuring the ISE appliance.
- Ethernet switch is configured correctly to communicate with the Cisco ISE appliance.

The Information Exchange from Cisco ISE to NIOS Grid

Data	Infoblox Object	Value
Device OS	Discovery	Compliments DHCP Fingerprinting and Network Insight.
Security Group	Discovery	Important security state information now available to the network admin.
Session State	Discovery	Important security state information now available to the network admin.
SSID	Discovery	Currently not discovered via Network Insight.
VLAN	Discovery	Compliments Network Insight.

TrustSEC Tag	Discovery	Important security state information now available to the network admin.	
User Name	Network User	Compliments MSFT Identity Management.	
Domain Name	Network User	Compliments MSFT Identity Management.	
Account Session ID	Extensible Attribute	Important security state information now available to the network admin.	
Audit Session ID	Extensible Attribute	Important security state information now available to the network admin.	
EPS Status	Extensible Attribute	Important security state information now available to the network admin.	
IP Address	Extensible Attribute	Published by Cisco, but most likely not used.	
MAC Address	Extensible Attribute	Published by Cisco, but most likely not used.	
NAS IP Address	Extensible Attribute	Important security state information now available to the network admin.	
NAS Port ID	Extensible Attribute	Important security state information now available to the network admin.	
Posture Status	Extensible Attribute	Important security state information now available to the network admin.	
Posture Time Stamp	Extensible Attribute	Important security state information now available to the network admin.	

Information Published by Infoblox for Action (ie notifications) by Cisco ISE

Event	Filter	Filter	Filter	Filter
DNS RPZ	RPZ Name	Rule Name	Action Policy	Source IP
Security - ADP	Rule Severity	SID	Rule Message	Source IP
DHCP Leases	Lease State			

Information Published by Infoblox to Cisco ISE

Data	IPAM Source
Attached Device Name	Network Insight
Attached Device Port	Network Insight
Attached Device Model	Network Insight
Attached Device Type	Network Insight
Attached Device Vendor	Network Insight
First Discovered	Network Insight
NetBIOS Name	Network Insight
Port Link	Network Insight
Port Speed	Network Insight
Port Status	Network Insight
VLAN Description	Network Insight
State	Network Insight
Client ID	DHCP

Fingerprint	DHCP
Infoblox Member	DHCP
Lease Start Time	DHCP
Lease State	DHCP
IP Address	IPAM and DHCP
MAC or DUID	IPAM and DHCP
Host Name	DNS

Configuring Extensible Attributes

You need to create extensible attributes and values for all of the subscribed attributes and map these to the data types in the subscription process during the initial ISE Ecosystem configuration. To make it easier to distinguish attributes for ISE subscribed data, preface each name with the name "ISE."

1. On the grid master, navigate to Administration \rightarrow Extensible Attributes.

ł	nfoblox 📚	Dashboards	Deta Manage	ement S	Smart Folders	Grid	Administration				Q Search	admin	
		Administrators	Workflow	Logs	Network Views	Extensi	ble Attributes	Authentication Server Groups	Named ACLs				
	Extensible Attributes	s 📮									Toolbar	≫	0
~	Quick Filter None	• Off 5	Filter On	Show Filter							+ Add		
	+12111418								Go to	Go	Delete	-	
	NAME -		TYPE	COMMENT	r REQUIR	ED	RESTRICTED TO O	INHERITANCE ENABLED			2 IDN Converter		
	ISE_Account_Session_ID		String		No			Yes					
	ISE_Audit_Session_ID		String		No			Yes					
	ISE_IP		String		No			Yes					
	ISE_MAC		String		No			Yes					
	ISE_NAS_IP_Address		String		No			Yes					
	ISE_NAS_Port_ID		String		No			Yes					
	ISE_Posture_ID		String		No			Yes					
	ISE_Posture_Status		String		No			Yes					
	ISE_Posture_Timestamp		String		No			Yes					
	ISE_Quarantine		String		No		IDud Naturals ID	Yes					
	ReportingSite		List		No		Member	No					
			Otrina		Ma			Min					

2. Add each extensible attribute that is prefaced by 'ISE'. Attribute 'ISE_Quarantine' will be assigned to the data type EPS_status later in this document. Here are examples of the extensible attributes:

- ISE_Account_Session_ID
- ISE_Audit_Session_ID
- ISE_IP
- ISE_MAC
- ISE_NAS_IP_Address
- ISE_NAS_Port_ID

- ISE_Posture_ID
- ISE_Posture_Status
- ISE_Posture_Timestamp
- ISE_Quarantine

Configuring Certificates using a Certificate Authority

In this example, we will use a Microsoft Certificate Authority. The summary of instructions are:

- Configuring a pxgrid template for CA-signed operation.
- Configuring the Infoblox Grid Master for CA-signed certificates.
- Signing the certificate.
- Configuring ISE ecosystem settings on the grid master.

Configuring a pxgrid template for CA-signed operation

1. Select Administrative Tools->Certificate Authority-> "+" dropdown next to CA server->Right-Click on Certificate Templates->Manage.

certsrv - [Certification Aut	ority (Local)\lab7-WIN-LTE115BAK	M-CA\Certificate Templates]	
File Action View Help			
🗢 🔿 🙎 🖪 👔	Certificate Templates Console		
Certification Authority (Local)	File Action View Help		
🖃 🧂 lab7-WIN-LTE11SBAKTM-C	♦ ♦ 1		
Revoked Certificates	Certificate Templates (WIN-I TE11S	Template Display Name	Minimum Supported CAs
Pending Requests		Administrator	Windows 2000
Failed Requests		Authenticated Session	Windows 2000
Certificate Templates		Basic EFS	Windows 2000
		Reference CA Exchange	Windows Server 2003 Ent

2. Right-Click and Duplicate User template->Windows 2003 Enterprise->OK.

Certificate Templates (WIN-BG7GPC	Template Display Name	Minimum Supported CAs	Ver 🔺		
	Domain Controller Authentication	Windows Server 2003 Ent	110		
	EFS Recovery Agent	Windows 2000	6.1		
	Enrollment Agent	Windows 2000	4.1		
	Enrollment Agent (Computer)	Windows 2000	5.1		
	Duplicate Template	×	4.1		
	You can create certificate templates with advanced properties. However, not all Windows CAs support all certificate template properties.Select the version of Windows Server (minimum supported CAs) for the duplicate certificate template. Windows Server 2003 Enterprise C Windows Server 2008 Enterprise Learn more about <u>Certificate Template Versions.</u> OK Cancel				
	Register Subordinate Certification Authority	Windows 2000	5.1		
	ITrust List Signing	Windows 2000	3.1		
	Juser (Jacobian Contraction Co	Windows 2000	3.1		
	Illuser Signature Only	Windows 2000	4.1		
	Web Server	Windows 2000	4.1		
	Workstation Authentication	Windows Server 2003 Ent	101		
• • •	•		•		

3. Enter name of certificate template, uncheck "Publish certificate in Active Directory", and provide validity period and renewal period.

Certificate Templates Console			_ <u>_ </u> _ ×
File Action View Help	Properties of New Template		
	Issuance Requirements Superseded Templates Extensions Security		
Certificate Templates (WIN-BG7GPC)	General Request Handling Subject Name Server	Ver 🔺	Actions
	Template display name:	110	Certificate Templa 🔺
	pxGrid	6.1	More Actions
	Minimum Supported CAs: Windows Server 2003 Enterrise	4.1	
	Minimum Supported C/s, Windows Server 2003 Enterprise	4.1	User 🔺
	Template name:	6.1	More Actions
	pxGrid	7.1	
		8.1	
	Veter and a second second	7.1	
	Validity period: Henewal period:	110	
	5 years 52 weeks	101	
		100	
	Publish certificate in Active Directory	101	
	Do not automatically reeprol if a duplicate certificate exists in Active	5.1	
	Directory	4.1	
		6.1	
	For automatic renewal of smart card certificates, use the existing key if a new key cannot be created	5.1	
		3.1	
		3.1	
		4.1	
		4.1	
		101	
• •	OK Cancel Apply Help		<u> </u>

4. Click on Extensions->Add->Server Authentication->Ok->Apply.

Certificate Templates Console			
File Action View Help	Properties of New Template	×	
	General Request Handling Subject Name Ser Issuance Requirements Superseded Templates Extensions Se	ver curity 7	
Certificate Templates (WIN-bG/GPC	To an Management and all and the shell Fills	1	Ver Actions
	To modify an extension, select it, and then click Edit.		6.1 Certificate Templa A
	Extensions included in this template:		4.1 More Actions
	Application Policies		5.1 User 🔺
	Basic Constraints		4.1 More Actions
	Certificate Template Information		7.1
	Ssuance Policies		8.1
	Ney Usage		7.1
			110
	·	_ 11	105
	Edit		101
	Description of Application Policies		101
	Client Authentication		5.1
	Encrypting File System		4.1
	Secure Email		6.1
			11.
		-	3.1
			3.1
			4.1
			4.1
			101
x	OK Cancel Apply He	lp	

5. Click on Subject name, enable "Supply in the request".

🖳 Certificate Templates Console	
File Action View Help Properties of New Template	
Issuance Requirements Superseded Templates Extensions Security	
Certificate Templates (WIN-LTE11S	Ver Actions
Supply in the request	4.1 Certificate Templa 🔺
Use subject information from existing certificates for autoenrollment renewal requests.	6.1 More Actions
C Build from this Active Directory information	4.1 5.1 User
Select this option to enforce consistency among subject names and to simplify certificate administration. Subject game format: None Include e-mail name in subject name Include this information in alternate subject name: E-mail name DNS name User principal name (UPN) Sergice principal name (SPN)	4.1 More Actions ► 6.1 7.1 8.1 7.1 110 105 101 101 5.1 4.1 6.1 3.1 3.1 4.1 4.1 4.1
OK Cancel Apply Help	

6. Click on Extensions->Issuance Policies->Edit->All Issuance Policies.

🚇 Certificate Templates Console		_ [X
File Action View Help	Properties of New Template	×
	General Request Handling Subject Name Server	1
Certificate Templates (WINH TE11S	Issuance Requirements Superseded Templates Extensions Security	Ver A Actions
	To modify an extension select it and then click Edit	4.1 Certificate Templa
	Edit Issuance Policies Extension	110
	Extens An issuance policy describes the conditions under which	6.1 More Actions
	At a certificate is issued.	4.1 User A
		4.1 More Actions
	Issuance policies:	6.1
	All issuance policies	7.1
		8.1
		110
		105
		101
	Descri	101
	Certifi	4.1
	Add Edit Remove	6.1
	Make this extension critical	11.
	OK Creat I	5.1
	OK Cancel	3.1
		4.1
		4.1
		101
	OK Cancel Apply Help	

7. Leave the defaults for request handling.

🖳 Certificate Templates Console		
File Action View Help	Properties of New Template	
Certificate Templates (WIN-LTE11S	Issuance Requirements Superseded Templates Extensions Security General Request Handling Subject Name Server	Ver A
	Signature and encryption Delete revoked or expired certificates (do not archive) Include symmetric algorithms allowed by the subject Archive subject's encryption private key Minimum key size: 2048	4.1 Certifical Templa ▲ 110 More Actions ▶ 4.1 User ▲ 5.1 More Actions ▶ 6.1 More Actions ▶ 7.1 8.1
	 Allow private key to be exported Do the following when the subject is enrolled and when the private key associated with this certificate is used: Enroll subject without requiring any user input Prompt the user during enrollment Prompt the user during enrollment and require user input when the private key is used To choose which cryptographic service providers (CSPs) should be used, click CSPs. 	7.1 11C 105 101 101 5.1 4.1 6.1 11. 5.1 3.1 3.1 4.1 4.1 4.1 4.1 5.1 3.1 3.1 5.1
•	OK Cancel Apply Help	

8. Right-click on Certificate Templates.

9. Select New Template to issue and select pxGrid.

📴 certsrv - [Certification Authority ()	Local)\lab7-WIN-LTE119	5BAKTM-CA\Cert	ificate Templates]	_ 🗆 ×
File Action View Help				
🗢 🔿 🙎 🧕 🔒			A	
Certification Authority (Local)	Name		Intended Purpose	
🖃 🚽 lab7-WIN-LTE11SBAKTM-CA	CEP Encryption		Certificate Request Agent	
Revoked Certificates	Rechange Enrollment Ag	ent (Offline req	Certificate Request Agent	
Issued Certificates	PSec (Offline request)		IP security IKE intermediate	
Pending Requests		2423		v
Failed Requests	able Certificate Templat	es		×
All of For m	nation about this template ha the certificate templates in t nore information, see <u>Certifica</u>	as been replicated to he organization may ate Template Conce	all domain controllers. not be available to your CA. ptsi	
Nar	me	Intended Purpose	1	
	Exchange User	Secure Email		
모	IPSec	IP security IKE int	ermediate	
	Kerberos Authentication	Client Authenticat	ion, Server Authentication, Smart Card Logo	n, KDC Authent
	Key Recovery Agent	Key Recovery Ag	ent	
	OCSP Response Signing	OCSP Signing		2 2 5 1 L
	pxGrid	Server Authentica	tion, Secure Email, Encrypting File System, (Client Authentica
	RAS and IAS Server	Client Authenticat	ion, Server Authentication	
	Router (Offline request)	Client Authenticat	ion	
<u></u>	Smartcard Logon	Client Authenticat	ion, Smart Card Logon	-1
<u></u>	Smartcard User	Secure Email. Clie	ent Authentication. Smart Card Logon	
			OK	Cancel
			OK	Carloor

10. You should see the pxGrid template.

🙀 certsrv - [Certification Authority (Local)\lab7-WIN-LTE115BAKTM-CA\Certificate Templates]										
Eile Action View Help										
🗢 🔿 🙎 🧟 🗟 👔										
🙀 Certification Authority (Local)	Name	Intended Purpose								
🖃 🛃 lab7-WIN-LTE11SBAKTM-CA	🗵 pxGrid	Server Authentication, Secure Email, Encry								
Revoked Certificates	CEP Encryption	Certificate Request Agent								
Issued Certificates	Result of the second se	Certificate Request Agent								
Pending Requests	IPSec (Offline request)	IP security IKE intermediate								
Failed Requests	Directory Email Replication	Directory Service Email Replication								
Certificate Templates	Domain Controller Authentication	Client Authentication, Server Authenticatio								
	BEFS Recovery Agent	File Recovery								
	Basic EFS	Encrypting File System								
	Domain Controller	Client Authentication, Server Authentication								
	R Web Server	Server Authentication								
	@ Computer	Client Authentication, Server Authentication								
	🖳 User	Encrypting File System, Secure Email, Clien								
	Bubordinate Certification Authority	<all></all>								
	Administrator	Microsoft Trust List Signing, Encrypting File	~							

Configuring Infoblox Grid Master (GM) for CA-signed certificates

This section provides instructions for configuring the Infoblox GM for CA-signed certificate operation.

The instructions are:

1. Generating a public-private key pair and CSR request for the Infoblox GM. You must use the name of the Grid Master during the creation of the key pair and CSR.

- 2. Generating the certificate from the Microsoft CA server.
- 3. Uploading the root CA certificate into the Infoblox trusted store.

4. Configuring ISE ecosystem parameter settings with the Infoblox concatenated certificate and ISE pxGrid node IP address.

Generating a public-private key pair certs for Infoblox

The private key pair and CSR request were created on a MAC with Oracle JDK installed. Once the CSR request was signed by the CA server using the customized pxGrid template, the Infoblox public certificate and private key were concatenated to a PEM file and uploaded to the Infoblox GM.

Note: The following commands are executed on a MAC or Linux system.

1. Execute the following command to generate the private key: openssl genrsa -out <key filename> 4096.

2. Execute the following command to generate the CSR request: openssl req -new -key <key filename> -out <CSR filename>. Answer all of the prompts. The most important prompt is Common Name. This has to be the name of the grid master or grid member. Ensure all of the components in this ISE deployment (ie grid master, CA server, and ISE environment) all have the same domain name.

3. Open the CSR file in an editor and highlight and copy the CSR information including the header and footer or upload this file to the Microsoft CA server.

4. Bring up the CA server from a browser in the Microsoft GUI.



5. Click on 'Request a certificate'.



6. Click on 'advanced certificate request'.



7. Click on 'Submit a certificate request'.

Microsoft Active Directory Certificate Services - testlab-WIN-USIKMPOCUVE-CA	Home	^
Submit a Certificate Request or Renewal Request		
To submit a saved request to the CA, paste a base-64-encoded CMC or PKCS #10 certificate request or PKCS #7 renewal request g by an external source (such as a Web server) in the Saved Request box.	enerated	
Saved Request:		
Base-64-encoded contlicate request (CMC or PKCS #10 or PKCS #7): <		
Certificate Template: pagetd		
Additional Attributes:		
Attributes:		
Submit >		~

- 8. Paste the information in the CSR into the 'Saved Request' box. Select the newly created certificate template. Click Submit.
- 9. Select Base 64-encoded.



- 10. Select 'Download certificate'.
- 11. Download the root certificate. This root certificate should be in the ISE certificate trusted store.

12. Download the certificate in Base 64 format.

Microsoft Active Directory Certificate Services - lab10-WIN-N3OR1A7H9KL-CA								
Jownload a CA Certificate, Certificate Chain, or CRL								
o trust certificates issued from this certification authority, install this CA certificate.								
o download a CA certificate, certificate chain, or CRL, select the certificate and encoding metho	bd.							
A certificate: Current (lab10/W204000R1Abrests(c04))								
ncoding method:								
DER Base 64								
stall CA certificate								
ownload CA certificate								

- 13. Select 'Download CA certificate'.
- 14. Concatenate the private key and public certificate into one file with the following command: cat <signed certificate filename from CA server> <key filename> > <filename.pem>. You must concatenate in this order.
- 15. Upload this certificate to the ISE server trusted store.

Configuring ISE ecosystem settings on the grid master or grid master candidate.

1. Navigate to Grid \rightarrow Ecosystem \rightarrow Templates.

nfoblox 📚	Dashboards Data Mana	igement Smart	Folders Grid	Administration			Q Search	admin
Outbound Endpoint N	Grid Manager Upgrade	Licenses H	SM Group Ecosy	ystem			Toolbar	»
Templates Image: Complex	✓ Off Filter On	Show Filter					Add Template Edit Delete Export Template	ŀ
+ C m 1 2	n	Vendor Type	Event Type	Template Type	Go to Outbound Type CISCO ISE	Go Added On 2019-12-04 14:54:20 PST	Converter Schema	
Pxgrid DHCF Pxgrid IPAM	° Event	pxgrid	DHCP Lease	Event	CISCO ISE	2019-12-04 14:53:30 PST 2019-12-04 14:53:46 PST		
Pxgrid Quara	antine Event	pxgrid	DNS RPZ, Sec	Event	CISCO ISE	2019-12-04 14:54:01 PST		

2. Create the following outbound notification templates in a text file .:

```
PxgridSession
      "version": "6.0",
      "vendor identifier": "pxgrid",
      "name": "PxgridSession",
      "type": "PXGRID ENDPOINT",
       "comment": "Pxgrid session template",
      "path": "/wapi/v2.9/",
      "override_path": true,
      "timeout": 123,
      "keepalive": true,
      "retry": 4,
      "retry template": 2,
      "rate_limit": 200
}
Pxgrid DHCP Event
      "version": "6.0",
      "name": "Pxgrid DHCP Event",
      "type": "PXGRID EVENT",
      "event type": ["LEASE"],
      "action_type": "Pxgrid Action IPAM",
      "comment": "Pxgrid template",
      "content type": "application/json",
      "vendor_identifier": "pxgrid",
      "headers": {
      "User-Agent": "Outbound API 0.1 rrtest"
      },
      "transport": {
      "path": "/wapi/v2.9",
      "content_type": "application/json",
      "override_path": true
      },
       "steps":
      [
      {
             "name": "DHCP event",
             "operation": "PX_SEND_DHCP_LEASES"
      }
Pxgrid IPAM Event
      "version": "6.0",
      "name": "Pxgrid IPAM Event",
      "type": "PXGRID_EVENT",
```

```
"event_type": ["IPAM"],
"action_type": "Pxgrid Action IPAM",
"comment": "Pxgrid template",
"content type": "application/json",
"vendor_identifier": "pxgrid",
"headers": {
"User-Agent": "Outbound API 0.1 rrtest"
},
"transport": {
"path": "/wapi/v2.9",
"content_type": "application/json",
"override_path": true
},
"steps":
[
{
      "name": "IPAM event",
       "operation": "PX_SEND_IPAM"
1
Pxgrid Quarantine Event
{
"version": "6.0",
"name": "Pxgrid Quarantine Event",
"type": "PXGRID EVENT",
"event_type": ["RPZ","ADP"],
"action_type": "Pxgrid Action IPAM",
"comment": "Pxgrid template",
"content_type": "application/json",
"vendor_identifier": "pxgrid",
"headers": {
"User-Agent": "Outbound API 0.1 rrtest"
},
"transport": {
"path": "/wapi/v2.9",
"content type": "application/json",
"override_path": true
},
"steps":
[
{
       "name": "Quarantine",
      "operation": "PX SEND QUARANTINE"
}
1
```

- }
- 3. Click on the '+' button to add the templates.

Add Template)	×
Filename:	Select	? «
Close		View Results Add

4. Navigate Grid --> Grid Manager --> Members --> Toolbar -->Certificates.

ifoblox 💲	•	0	ashboards	Data Manage	ment	Smart Folders	Grid	Administra	rtion						Q Search	admi
		G	irid Manager	Upgrade	Licenses	HSM Group	Micr	osoft Servers	Device Support	Ecosystem						
Infoblox	(💶 🧪	R												Тос	lbar)
DHCP	DNS	TETP	HTTP (File Dist)	ETP 1		Tools Canth	e Portal	Discovery	Subscriber Colle	action TAXII				+	Add	-
UTION I						unions output		Distortery						ß	Edit	
Members	Servic	Ces													Delete	
Quick Filte	None		Off Filter	On Sho	ow Filter	Off Replication	Status Vi	ew							Extensible Attributes	
Group	Results	Group	By Choose on		~	•								۶	License	
														C	Restart Services	
+ I 🛛 I	首日日	1 🔤 🖽	🕹 • 🖨								Go to		Go	٥	Control	•
=	NAM	E	НА	STATUS		IPV4 ADDRESS	IPV6 A	DDRESS	DENTIFY	DHCP	DNS	TFTP	HTTP	=	Grid Properties	·
=		84gm.testla	b.o No	Runni	ing	10.60.22.230			Unsupported	•				3	Backup	•
=	•	84nd.testlat	a.oc No	Runni	ing	10.60.22.231		i	Unsupported					1	Snapshot	
														ø	Configure Captive Portal	
														±	Download	
															Certificates	-

5. From the Certificates drop down menu, select 'Manage Certificates'.

CA	Certificates					
					+====	0
	SUBJECT	ISSUER	SERIAL	VALID	USED BY	4
	CN+*hestlab-WIN- U39KMPOCUVE-CA*	CN+*testab-WIN- U39KMPOCUVE-CA*	63ee3cebbb5eb	2018-10-18 13:05:01 PDT - 2023-10-18 13:15:01 PDT	SSL/TLS	

6. Click on the '+' button to add the root certificate.

Upload			×
File	Select	Upload	@ «
Close			

- 7. Click on the 'Select' button to file the root certificate. Click 'Upload'.
- 8. Click 'Close'.
- 9. Navigate to Grid \rightarrow Ecosystem \rightarrow Outbound Endpoint.

In	foblox 💲	\$	Dashboards	Data Management	Smart Folders	Grid Admini	stration		Q Search	admin	•	
			Grid Manager	Upgrade Licen	ses HSM Group	Ecosystem						
.	Outbound	I Endpoint No	tification Templ	ates						₩	8	
Outbound Endpoint												
	Quick Filte	None	✓ Off Filte	er On Show Filte	er							
	+ • 0	2 1 1 1	B					Go to	Go			
		Name 🔺	Endpoint Type	URI	Vendor Type	Outbound Mem	Comment	Client Certificate Valid From	Client Certificate Valid To			
		pxgrid_ep	CISCO ISE			Grid Master		2019-09-09 09:49:02 PDT	2021-09-08 09:49:02 PDT			

10. Click on the '+' button and select 'Add Cisco ISE Endpoint

Ini	foblox 📚 🛛 🕫	Dashboards D	ata Management	Smart Folders	Grid Admin	stration		Q Search	admin	•
	G	Grid Manager U	Upgrade License	s HSM Group	Ecosystem					
	Outbound Endpoint Notifica	tion Templates	5						≞ ≪	8 «
(Outbound Endpoint	A								
	Quick Filter None	✓ Off Filter O	On Show Filter							
	+	_					Go to	Go		
	Add REST API Endpoint	Endpoint Type	URI	Vendor Type	Outbound Mem	Comment	Client Certificate Valid From	Client Certificate Valid To		
	Add DXL Endpoint	CISCO ISE			Grid Master		2019-09-09 09:49:02 PDT	2021-09-08 09:49:02 PDT		
	Add Cisco ISE Endpoint									

11. You will see the following screen.

Add Cisco ISE End	point Wizard > Step 1 of 5	×
*Server Address	10.196.6.53	? «
*Name	cisco_ise_ep	
Subscribing Member	 Selected Grid Master Candidate gmc1.infoblox.com \$ Current Grid Master 	
Vendor Type	pxgrid 🗘	
*Client Certificate	rk.cer Select	
*Manage Certificates	CA Certificates	
WAPI Integration Username		
WAPI Integration Password	Clear Password	
	Test Connection	
Comment		
	Disable	
Cancel	Previous Next Save & Cl	ose 🔹

- 12. Add the Cisco ISE server IP address or host name. If you are running a multi-node pxgrid, then the IP address of the ISE server will be the primary pxGrid node. Enter the name of this entry. Selected member will be responsible for subscribing/publishing information from/to Cisco ISE server. Client certificate should be uploaded accordingly. Select 'pxgrid' as 'Vendor Type'. Upload the client certificate. Enter the WAPI Integration Username. Enter the WAPI Integration Password. Note: if you have included at least one "wapi" related field in your action template, you must configure WAPI integration; otherwise the WAPI step fails due to an authorization error. Enter the username of the admin user you want to designate for Cisco ISE outbound notifications. The appliance ignores the Auth Username and Auth Password for WAPI related steps in any action templates if WAPI integration is configured.
- 13. You can now click 'Test Credentials' button. It should come back as successful. If not, then check that you have uploaded the client certificate and root certificate to the ISE server certificate trusted store. Leave the timeout section and log level at default or change it. Click on 'Select

Template' button. Click Next.

Add Cisco ISE En	dpoint Wizard >	Step 2 of 5		×
Timeout Log Level Template Vendor Type Template Type Parameters	30 So Warning PxgridSession pxgrid Session Manago	econds \$ Select Template Clear ement	r	€ ≪
Name	Valu	le	Туре	
No data				
Cancel		Previous	Next	Save & Close 🔹

14. Select the Data Types that you want to subscribe and map any or all data types to extensible attributes. These extensible attributes can be used in the IPAM GUI. Click Next.

o view subscription data	in Grid Manager, enable the Ne	twork Users	feature in the General -> Advanced tab	o of the Grid Properties Editor.
ubscription Settings	Available Data Types		Selected Data Types	
	Domain Name End Point Profile Security Group Session State SSID User Name VLAN	> <		
P OTHER DATA TYPE	S TO EXTENSIBLE ATTRIBUT	ES		+ 1 亩
AP OTHER DATA TYPE	S TO EXTENSIBLE ATTRIBUT	ES		+ =
Data Type	S TO EXTENSIBLE ATTRIBUT Extensible Attributes	ES		+ 1 📾
Data Type	S TO EXTENSIBLE ATTRIBUT	ES		+ 🖮
Data Type	S TO EXTENSIBLE ATTRIBUT Extensible Attributes	ES		+ =
Data Type	S TO EXTENSIBLE ATTRIBUT Extensible Attributes	ES		+ 1 🖬
Data Type Data Type Account Session ID Audit Session ID EPS Status IP Address	S TO EXTENSIBLE ATTRIBUT	ES		+ 🖮
Data Type Data Type Account Session ID Audit Session ID EPS Status IP Address MAC	S TO EXTENSIBLE ATTRIBUT	ES		+ 💼
Data Type Data Type Account Session ID Audit Session ID EPS Status IP Address MAC NAS IP Address	S TO EXTENSIBLE ATTRIBUT Extensible Attributes	ES		+ 1 10
Data Type Data Type Account Session ID Audit Session ID EPS Status IP Address MAC NAS IP Address NAS Port ID	S TO EXTENSIBLE ATTRIBUT Extensible Attributes	ES		+ 1
AP OTHER DATA TYPES Data Type Account Session ID Audit Session ID EPS Status IP Address MAC NAS IP Address NAS Port ID Posture Status	S TO EXTENSIBLE ATTRIBUT Extensible Attributes	ES		+ 1 🗰

15. Select the items that you want to publish to the PxGrid. Click 'Save & Close'.

Add Cisco ISE Endp	point Wizard > Step 4 of	5		×
Publication Settings	Atached Device Model Atached Device Name Atached Device Port Atached Device Vendor Cient ID Finger Print Tist Discovered	>	Selected	
Cancel		Previous	Next	Save & Close •

16. Click on the Notification tab.

lr	nfoblox 📚	•	Dashboards [Data Management	Smart Folders	Grid Administration		Q Search	admin	•
			Grid Manager	Upgrade License	s HSM Group	Ecosystem				
1 >	Outbound E	Endpoint No	tification Template	S				Toolbar	»	? «
	Notificat	tion 🖪						+ Add Notification Rule		
	Quick Filter	None	• Off Filter 0	On Show Filter				Delete		
	+ 🖉	🗊 🖨					Go to Go			
	\square \equiv	Name	Target	Action	Comment	Disabled				
	No data									
	₩ ◀ ▶	N I₿								

17. Click on '+' button to add a notification. Type in the name. Select the endpoint. Click Next.

Add Notification V	Vizard > Step 1 of 4	×
*Name *Target	notif_ep cisco_ise_ep Select Endpoint	? «
	Notification rules will be reset when you change the endpoint type.	
Target Type	CISCO ISE	
Vendor Type	pxgrid	
Comment		
	Disable	
Cancel	Previous Next S	ave & Close 🔻

18. Select the event type. The actions and rule template will change accordingly. Fill in the actions or rules. Click Next

Add Notification V	Vizard > Step 2 of 4		×
It may take up to a min	ute to apply the new rules.		? «
*Event	DNS RPZ Security ADP DHCP Leases		
Action	IPAM te		
Match the following ru	le:	Reset	
Choose Filter	Choose Operator		
Cancel	Previous Next	Save & Close	•

19. Enable event deduplication if you wish. It is only relevant for DNS RPZ, Security ADP events, Click Next.

Add Notification Wizard >	Step 3 of 4	×
Enable event deduplication Log all dropped events of	due to deduplication	? «
Select the fields to use for o	deduplication	
Available	Selected	
RPZ Policy RPZ Type Query Type Network Network View Lookback Interval 10	Source IP Query Name	
Cancel	Previous Next	Save & Close

20. Click on Select Template. Click 'Save and Close'.

Add Notification	Wizard > Step	4 of 4			E	×
*Template Vendor Type Template Type Parameters	Pxgrid Quar pxgrid Event	antine Event Select Te	mplate Cle	ar		3 «
Name		Value		Туре		
No data						
Cancel		Previous	Next		Save & Close 🔻)

Enabling Data Management Network Users

This section steps through enabling the Data Management Network Users View on the Grid Master so the Infoblox administrator can view the active users from the authenticated ISE sessions.

1. Navigate to Grid \rightarrow Grid Manager--> Members.

Infoblox 📚	Dashboards Da	ta Management	Smart Folders	Grid Admini	stration					Q Search	admin 🚽
	Grid Manager U	pgrade Licenses	HSM Group	Microsoft Server	rs Device Suppo	rt Ecosystem					
🚆 Infoblox 😐 🥒 📮										Toolbar	» «
DHCP DNS TETE	HTTP (File Dist)	ETP NTP bk	Tools Captive F	Portal Discove	ry Subscriber Col	lection TAXII				🕂 Add	
			oupare i	DISCOTO	.,					📝 Edit	
Members Services										 Delete Permissions 	
Quick Filter None	Filter On	Show Filter	Off Replication St	atus View						Extensible	
										License	
Group Results	Choose one	*	•							C Restart Services	
+ 2 8 = =	🖽 🕹 • 🖶						Go to		Go	💠 Control	•
NAME	НА	STATUS	IPV4 ADDRESS	IPV6 ADDRESS	IDENTIFY	DHCP	DNS	TFTP	HTTP	Grid Properties	•
📰 📄 🧄 84gm	testlab.ci No	Running	10.60.22.230		Unsupported					Backup	•
🔄 📃 🔥 84nd.	testlab.cc No	Running	10.60.22.231		Unsupported					Snapshot	•
						1				Configure	
										2 Download	
										Certificates	•
										Z Traffic Capture	
										Capacity Report	
										Test SNMP	
										Manage GSS-TSIG Keys	
MADNIC										BFD Templates	
N Y Y Y IN										🔑 Data Connector	

2. Navigate to Toolbar --> Grid Properties à Edit.

Infoblox (Grid Properties	Editor)		×
Toggle Basic Mode	Basic Advance	d	Ø
General Security	*Grid Name	Infoblox	《
Password Proxy Settings	*Shared Secret		
DNS Resolver	*Shared Secret Retype	••••••	
Monitoring Syslog Backup	Time Zone	(UTC - 8:00) Pacific Tim 🗸	
SNMP SNMP Threshold	Date	2019-01-27	
 Notification Email 	Time	10:58:29 AM	
LOM	*VPN Port	1194	
Customer Improvement NAT Groups	Enable Recycle Bin	2	
Object Change Tracking	Audit Logging	O Brief	
ActiveTrust Cloud Integration		• Detailed	
Microsoft Integration		WAPI Detailed	
Extensible Attribute Inheritance		Selecting WAPI Detailed will make the logs roll-over faster as it records WAPI details in addition to the Detailed log information. It is recommended to copy the audit log messages to syslog and to an external server for longer retention.	
	*Token usage timeout	10	
Cancel		S	ave & Close 🔹

3. Click on the 'Advanced' tab.

Infoblox (Grid Properties	Editor)		×
C Toggle Basic Mode	Basic Advance	ed .	G
General Security Password • Proxy Settings DNS Resolver Monitoring Syslog Backup SNMP • SNMP Threshold	Enable GUI Redirect from Member Enable GUI/API Access via both MGMT and LAN1/VIP Enable Network Users Feature Enable Updates Of RIR Registrations Enable Informational		. «
Notification Email LOM Customer Improvement NAT Groups Object Change Tracking	GUI Banner	Banner Color Green Message	
ActiveTrust Cloud Integration Microsoft Integration Extensible Attribute Inheritance	Present the option of recursive deletion of networks or zones to Enable DNS Object Permissions in Networks and Ranges DSCP Value	All Users Superuser Nobody	
Cancel		Save & Close	•

- 4. Ensure the 'Enable Network Users Feature' button is enabled. Click 'Save and Close'.
- 5. Navigate to Data Management à Network Users. This screen shows the ISE authenticated users.

In	foblox 📚		Dashboards	Di	ata Management	Smart Fo	olders	Grid	Administration							Q Search a	dmin	•
			IPAM VI	ANs	Super Host	Devices	Networ	rk Users	DHCP D	NS File (Distributi	on						
	Active User	rs User History	1												Toolbar		>>	0
11	default	Network View	9												1 Export			11
	Quick Filter	None	v 01	Filter Or	Show Filter	r												
	±10											Go	to	Go				
	=	USER NAME 🔺			DOMAIN	FIRST SEEM	N		IP ADDRESS	DATA SOURC	Е	DATA SOURCE IP	LAST SEEN	LAST UPD				
		🛓 TESTLABU	ser2		testlab.com	2019-01-2	5 22:14:3	9 PST	10.60.22.241	Cisco ISE		10.60.22.15	2019-01-27 19:07:19 PST	2019-01				
	=	▲ host/tmelab	-pc001.testlab.	:om	N/A	2019-01-2	5 22:28:3	2 PST	10.60.22.241	Cisco ISE		10.60.22.15	2019-01-27 19:07:11 PST	2019-01				

Configuring DNS Services

This section documents enabling DNS services on the Grid Master and creating and configuring DNSzones. A dynamic zone will be created for updating user records dynamically. In addition, an RPZ zone will be created for blocking the yahoo domain, which will be used later on for demonstrating a RPZ zone violation and quarantining an endpoint.

Enabling DNS Service on the Grid Master

1. On the Infoblox GUI, navigate to Grid à Grid Manager à DNS . Select the Grid Master and then click on the play button.

Infoblox 📚	Dashboards Da	sta Management	Smart Folders	Grid	Administrati	on			Q Search	admin 👻
	Grid Manager	Upgrade Licens	es HSM Group	Microse	oft Servers	Device Support	Ecosystem			
🐂 Infoblox 😐 🧨 📮										∄ 0
DHCP DNS TFTP	HTTP (File Dist)	FTP NTP	bloxTools Capti	ve Portal	Discovery	Subscriber Collectio	n TAXII			
Members Services										
DNS 🗕 🧪										
Quick Filter None	• Off Filter (On Show Filt	er Toggle Restar	t Groups Vie	w					
Group Results Gr	oup By Choose one	~	٠							
⊘ ▶ ■ ± • 0								Go to	Go	
NAME SERVI	CE STATUS IPV4 ADDR	GEOIP DAT	TABASE VERSION	EA DATABASE	E VERSIÓN	COMMENT	SITE			
<table-cell> 🚸 84gm.testlab.cx DNS</table-cell>	Service is wor 10.60.22.	.230								

Creating DNS Zone

1. Navigate to Data Management --> DNS --> Zones.

Ir	fobl	ox 📚		Dashboards	Data Management	Smart Folders	Grid Adm	inistration					Q Search	admin 👻
				IPAM VLAN	s Super Host	Devices Netw	ork Users DHC	P DNS F	le Distribution					
	Zon	es	Members/Servers	Name Serve	Groups Shared	Record Groups	Response Policy Zor	nes Subscriber	Services Deploymen	t Blacklist Rule	sets DNS64 (Groups Query Monit	toring	A O
11	defa	ault	/ R											
	Quic	k Filter	None	• Off F	Iter On Show F	Filter 🔠 Toggle fi	at view							
	÷	÷-	 	t · I Ə								Go to	Go	
	•		NAME -	MS SYNC SERVER	MS ZONE SYNC	GRID PRIMARY SE	TYPE	COMMENT	MULTI-MASTER Z	MONITORED SINCE	LAST QUERIED	RECORDS MONITOR	SITE	
			1.0.0.0.0.0.0.0.				Auto-created		No	Not Monitored	Not Monitored	N/A		
			0.0.127.in-addr				Auto-created		No	Not Monitored	Not Monitored	N/A		
		=	11.in-addr.arpa				Authoritative		No	Not Monitored	Not Monitored	No		
			16.60.10.in-add.				Authoritative		No	Not Monitored	Not Monitored	No		
		_	testlab.com				Authoritative		No	Not Monitored	Not Monitored	No		
	-		net			84gm.testlab.com	Authoritative		No	Not Monitored	Not Monitored	No		

2. Click on the '+' button to add an authoritative forward mapping zone. Click Next.

Add	Add Authoritative Zone Wizard > Step 1 of 6							
0	Add an authoritative forward-mapping zone	0 «						
0	Add an authoritative IPv4 reverse-mapping zone							

Add an authoritative IPv6 reverse-mapping zone

	Cancel	Previous Next	Schedule for Later Save & Close	•
3.	Type in the name of	the zone. Add a comment. Click Next.		
	Add Authoritative Zon	ne Wizard > Step 2 of 6		×
	*Name	testlab.com		? «
	Comment			
	Disable	0		
		Disabling large amounts of data may take a longer time to execute.		
	Lock	0		
	Cancel	Previous Next	Schedule for Later Save & Cl	ose 🔻

4. Add the name server by clicking on the '+' button and select 'Grid Primary'. Click Save and Close.

Ad	d Authoritativ	ve Zone Wizar	d > Step 3 of 0	6					×
0	None Use this Name Use this set of	Server Group	Choose One					• 🕑 💼	?
	NAME 🔺	IPV4 ADDRESS	IPV6 ADDRESS	TYPE	STEALTH	TSIG			
N	o data								
		C C							
C	ancel		Previous	Next			Schedule for Later	Save & Close	•

5. At this point, you can enable zone transfer to transfer the zone information from the AD server. Refer to the Infoblox NIOS Administrator Guide to enable zone transfer. The Cisco ISE appliances A records will be transferred in addition to the SRV records needed to point the

oblox	×\$	Dashboards I	Data Management	Smart Folders	Grid	Administration					QS	earch	adm
		IPAM VLANs	Super Host	Devices Net	work Users	DHCP DNS P	ile Distribution						
Zones	Members/Server	Name Server G	iroups Shared R	ecord Groups	Response Polic	y Zones Subscriber	Services Deployment	Blacklist Rulese	ts DNS64 Gr	oups Query Mo	nitoring		
Mault actic	h com	ative Zama											
stia	ID.COM Authori	ative Zone	6 /	R									
Hecor	rds Subzones												
uick F	Filter None	• Off Filte	r On Show Filt	ter 🖽 Toggle	flat view								
£16	Ð								(Go to		Go	
] =	NAME	TYPE	DATA		ACTIVE USER	S RECORD SOURCE	PRINCIPAL	PROTECTED	COMMENT	MONITORED SINCE	LAST QUERIED	REC	2
		A Record	10.60.16.50		N/A					Not Monitored	Not Monitored	No	
		NS Record	84gm.testlab.com.		N/A					Not Monitored	Not Monitored	No	
		NS Record	gm.testlab.com.		N/A					Not Monitored	Not Monitored	No	
		NS Record	win-u39kmpocuve.	testlab.com.	N/A					Not Monitored	Not Monitored	No	
] =		SOA Record	Serial MNAME RNAME Refresh Retry Expire Negative Caching	5435 win-u39kmpo hostmaster.te 900 600 86400 TTL 3600	N/A Dur sti					Not Monitored	Not Monitored	No	
1 =	84gm	A Record	10.60.22.230		N/A					Not Monitored	Not Monitored	No	
] =	_gctcp	SRV Record	Priority Weight Port	0 100 3268	N/A					Not Monitored	Not Monitored	No	

6. Click on Subzones. Create a subzone for dynamic addresses.

l	nfobl	ox 📚		Dashboa	rda C	Data Management	Smart Fold	ers Grid	Administ	ration					Q Search	admin	
				IPAM	VLANs	Super Host	Devices 1	Network Users	DHCP	DNS FI	le Distribution						
8 >>	Zon	06	Members/Servers	Name	Server G	roups Shared R	lecord Groups	Response P	olicy Zones	Subscriber	Services Deployment	t Blacklist Ruler	iets DNS64 C	Broups Query Monitorin	10	a	0
	defaul	t .														0.80	
	test	lab.co	OM Authorita	ive Zone		🔒 🥒	A										
	Re	cords	Subzones													_	
	Quic	k Filter	None	•	Off Filto	r On Show Fi	iter 🐮 Tog	gle flat view									
	→	+ ·	e a - 4											Go to	Go		
	:		NAME -	MS SYNC	SERVER	MS ZONE SYNC	GRID PRIMARY	SE TYPE	co	MMENT	MULTI-MASTER Z	MONITORED SINCE	LAST QUERIED	RECORDS MONITOR SI	TE		
			dhcp.testlab.com				84gm.testlab.	com Authoritat	tive dy	namic addres	No	Not Monitored	Not Monitored	No			
			_msdcs.testlab					Authoritat	tive		No	Not Monitored	Not Monitored	No			

7. Click on the '+' button to add an authoritative forward mapping zone. Click 'Next'.

Add Authoritative Zone Wizard > Step 1 of 6							
 Add an authoritative forward-mapping zone Add an authoritative IPv4 reverse-mapping zone 	8 «						

O Add an authoritative IPv6 reverse-mapping zone

	Cancel	Previous Next	Schedule for Later	Save & Close	•
8.	Type in the name of	the zone. Click 'Next'.			
	Add Authoritative Zo	ne Wizard > Step 2 of 6			×
	*Name	dhcp.testlab.com			? «
	Comment				
	Disable				
		Disabling large amounts of data may take a longer time to execute.			
	Lock				
	Cancel	Previous Next	Schedule for Later	Save & Close	•

9. Add the name server. Click 'Save and Close'.

Add Authoritative	e Zone Wizar	d > Step 3 of 6	6					×
 None Use this Name \$ Use this set of r 	Server Group name servers	Choose One					•• © =	? «
NAME 🔺	IPV4 ADDRESS	IPV6 ADDRESS	ТҮРЕ	STEALTH	TSIG			
No data								
	3							
Cancel		Previous	Next			Schedule for Later	Save & Close	•

Configure DNS Properties

This section provides instructions on configuring forwarder address and recursion.

1. Navigate to Grid --> Grid Manager --> DNS.

Infoblox 📚 Dashboards Data Management Smart Folders Grid Administration	Q Search	admin	-
Grid Manager Upgrade Licenses HSM Group Microsoft Servers Device Support Ecceystem			
🐃 Infoblox = 🧪 📮	Toolbar	>>	0
DHCP DNS TFTP HTTP/File Dath FTP NTP bloxTools Castly Portal Discovery Subscriber Collection TAXII	🕂 Add		
	C Restart Services		
	Edit	•	
Quick Filter None Ciffer On Show Filter Toggle Restart Groups View	Stop		
	Backup		
Group Results Group By Choose one	2 Download		
∅ ▶ ■ ± + ⊕ Go to Go to	Manage Dynamic		
NAME SERVICE STATUS IPV4 ADDRESS GEOIP DATAINASE VERSION & A DATABASE VERSION COMMENT SITE	1 Export		
Begin testata or pure server a me to 00.22.230	Print		
	CSV Import CSV Job Manager		
	₽ IDN Converter		
K < ▶ NIØ			

2. Click on Toolbar --> Edit \rightarrow Grid DNS Properties.

Infoblox (Grid DNS Prope	erties)			×
Toggle Basic Mode	Basic Advanced	d		0
General Forwarders	Zone Defaults			«
Updates Queries	*Refresh	3 Hours	•	
Zone Transfers	*Retry	1 Hours	•	
Sort List	*Expire	4 Weeks	•	
Blackhole Logging	*Default TTL	8 Hours	•	
Host Naming	*Negative-caching TTL	15 Minutes		
• DNSSEC	Email Address (for SOA RNAME field)]	
Blacklist DNS64	,			
RRset Order				
Restart Security				
DNS Scavenging				

Cancel

Save & Close -

3. If you wish to forward queries to another DNS server, click on the 'Forwarders' tab and add a forwarding address.

Infoblox (Grid DNS Pro	operties)	E
C Toggle Basic Mode	Basic	
General Forwarders Updates Queries Zone Transfers Root Name Servers Sort List Blackhole Logging Host Naming GSS-TSIG DNSSEC Blacklist DNS64 Raset Order Restart Security DNS Scavenging	FORWARDERS ADDRESSES I 10.603.2 Use Forwarders Only Add client IP, MAC addresses, and DNS View name to outgoing recursive queries Copy client IP, MAC addresses, and DNS View name to outgoing recursive queries	
Cancel		Save & Close -

4. Click on Zone Transfers to transfer zone information from the AD DNS Server. Click on 'Set of ACEs' and add the Grid Master or Grid Member that will accept a zone transfer.

Infoblox (Grid DNS Pr	roperties)	
C Toggle Basic Mode	Basic Advanced	0
General Forwarders Updates Queries Zone Transfers • Root Name Servers	Allow zone transfers to None Named AGL Select Named ACL Clear Set of ACEs	+• ∞ ≓ ■
Sort List Blackhole	PERMISSION TYPE VALUE	•
Logging Host Naming OSS-TSIG DNSSEC Blacklist DNS64	No data	*
RRset Order		
 Hestart Security DNS Scavenging 	Add allowed IP addresses to also-notify	
Cancel		Save & Close •

5. Click on Logging and click on RPZ to enable logging of RPZ events in the syslog.

C Toggle Basic Mode	Basic Advar	nced				0
General Forwarders Updates Queries	Logging Facility	DAEMON	ł			
Zone Transfers	🕑 general		client	2	resolver	
Root Name Servers		V	config		responses	
Sort List			database		rpz	
Blackhole			dnssec		security	
Logging			name servers		transfer-out	
Host Naming			network		undate	
GSS-TSIG			queries		update-security	
DNSSEC			query rewrite		DTC load balancing	
Blacklist			rate-limit		DTC health monitors	
DNS64						
RRset Order						
Restart						
Security						
DNS Scavenging						

6. Click on Queries and Click on 'Allow Recursion' to enable recursion. Click 'Save and Close' .

Toggle Basic Mode	Basic Advanced	
General	Resolver queries 0 Seconds	
Forwarders	timeout	
Opdates	Allow quarter from	
Zono Transfore	Allow queries irolli	
Zone transiers	O Any	
Sort List	Named ACL Select Named ACL Clear	
Blackhole	Set of ACEs	
Logging		+- ♂ ≓ @
Host Naming	PERMISSION TYPE VALUE	
GSS-TSIG	No data	
DNSSEC	NO GOLD	
Blacklist		
DNS64		
RRset Order		
Restart		
Security		
DNS Scavenging		
	Allow recursion	
	Allow recursive queries from	
	None	

7. Navigate to Data Management \rightarrow DNS--> Zones --> <ISE zone> --> Subzones <DHCP subzone>.

Infoblox 💲	:	Dashboards	Data Management	Smart Folders	Grid Admi	inistration					Q Search	admin	
		IPAM VLAN	s Super Host	Devices Netwo	ork Users DHC	P DNS FI	e Distribution						
Cones	Members/Serve	ers Name Se	rver Groups Shar	ed Record Groups	Response Policy	Zones Subscrit	ber Services Deployn	nent Blacklist F	Aulesets DNS6	4 Groups 🕞	Toolbar	>>	
default											🕂 Add	•	5
testlab.o	COM Authoritat	tive Zone	🔒 🥒	R							→ Open		
Records	Subzones										🗭 Edit		
Quick Filte	ar None	• Off Fi	ter On Show F	ilter 🔚 Toggle fla	at view						Extensible Attributes	Ŧ	
→ + •	· @ = - 1	- I 0						Go to		Go	Permissions		
=	NAME –	MS SYNC SERVER	MS ZONE SYNC	GRID PRIMARY SE	TYPE	COMMENT	MULTI-MASTER Z	MONITORED SINCE	LAST QUERIED	RECORDS MOI	Te MS Zone Sync	*	
= 3	dhcp.testlab.com			84gm.testlab.com	Authoritative	dynamic addres	No	Not Monitored	Not Monitored	No	Copy Records		
	_msdcs.testlab				Authoritative		No	Not Monitored	Not Monitored	No	Hostname Compliance		
											🛟 Scavenge Records		
											Protect Records	÷	
											Manage Dynamic Update Groups		
											DNSSEC	-	
											Import Zone		
											Directory		
											Grid DNS Properties		
44	NIC										C Restart Services		

8. Select the newly created subzone and edit the subzone. Select 'Extensible Attributes' and add all of the extensible attributes that were created earlier in this document. Click 'Save and Close'.

dhcp.testlab.com (Aut	thoritative Zon	e)	
💽 Toggle Basic Mode	Basic		
General Name Servers	Extensible	Uritules	+1=
Settings		ATTRIBUTE N VALUE	REQUIRED
Zone Transfers		ISE_Accou Seed1	No
Updates		ISE_Audt Seed2	No
Active Directory		ISE_P Seed	No
hared Record Groups		ISE_MAC Seed4	No
NSSEC	8	ISE_NAS_1 Seed5	No
NS Scavenging	8	ISE_NAS Seeds	No
emissions	8	ISE_Postur Seed?	No
		ISE_Postur Seed8	No
Cancel			Save & Close

Add Response Policy Zone

These instructions show you how to create a response policy zone. The response policy zone contains a list of known bad sites. The list can be generated manually or by a zone transfer from a threat feed source like Infoblox's BloxOne Threat Feeds. When a workstation tries to resolve one of these domains, the Infoblox appliance will block if configured to do so and then send a notification to ISE appliance to quarantine the workstation. For this document, we will create a local response policy zone to block www.yahoo.com.

1. Navigate to Data Management à DNS à Response Policy Zones

Ir	foblox 📚		Dashboar	de De	ita Management	Smart Folders	Grid A	dministratio					Q Sear	h admin	-
			IPAM	VLANs	Super Host	Devices Netwo	ork Users C	DHCP D	NS File Distrib	ution					
8 >>	Zones	Members/Ser	vers N	ame Server	Groups Share	ed Record Groups	Response Po	nicy Zones	Subscriber Servi	ces Deployment	Blacklist Rulesets	DNS64 Groups	Toolbar	>>	0
	default	🖉 🖪											🕂 Add		
	Quick Filter	None	-	Filter On	Show Filter	r							Open Edit		
	→ I + I	e 1 a - 1 ±	- 1 🖶								Go to	Go	i Delete	-	
	=		NAME		TYPE	SEVERITY	PRIMARY NAME	S LAST UP	DATED	COMMENT	MULTI-MASTER Z	SITE	Extensible Attributes		
	No data												Order Response Projet Zones Organization Organization		
	K 4 Þ	NIS											C ² Restart Services CSV Import CSV Job Manager CSV Job Manager		

2. Click on the '+' button to add an RPZ. Click Next.

Add Response Policy Zone Wizard > Step 1 of 5	×
 Add Local Response Policy Zone Add Response Policy Zone Feed 	? «
Add FireEye-Integrated Response Policy Zone	
Cancel Previous Next Schedule for Later Sa	ave & Close 🕞

3. Type in the name of the RPZ. Click Next.

Add Response Policy Zone Wizard > Step 2 of 5								
*Name	blockyahoo	? «						
Policy Override	None (Given)							
Severity	Major 💌							
Comment								
Disable								
	Disabling large amounts of data may take a longer time to execute.							
Lock								
Cancel	Previous Next Schedule for Later Save & Clos	e •						

4. Add the name server. Click 'Save and Close'

,	Add Response Policy Zone Wizard > Step 3	3 of 5				×	
	 None Use this Name Server Group Choose One Use this set of name servers 	1				? «	
	NAME A IPV4 ADDRESS IPV6 ADDRESS	TYPE	TSIG	.	• 🗹 🛄		
	84gm.testlab 10.60.22.230	Grid Primary	No				
	Cancel	Next		Schedule for Later	Save & Close	•	
ħ	is brings you back to the main RPZ	screen.					
In	foblox 💲 Dashboards Data Management Smart Folders	Grid Administration			Q Search	admin	
	IPAM VLANs Super Host Devices Network	Users DHCP DNS	File Distribution				
. »	Cones Members/Servers Name Server Groups Shared Record Groups	Response Policy Zones S	ubscriber Services Deployment Blac	klist Rulesets DNS64 Groups	Toolbar	>>	-
	default 🥒 📮				+ Add	•	
	Quick Filter None V Off Filter On Show Filter				Open Edit		

5. T

oblox📚		Dashboards	Deta Management	Smart Folders	Grid Adm	inistration					Q Search	adr
		IPAM VLAN	s Super Host	Devices Netw	ork Users DHC	P DNS File Distri	bution					
Zones	Members/Serv	ers Name Se	rver Groups Shar	red Record Groups	Response Policy	Zones Subscriber Serv	vices Deployment	Blacklist Rulesets	DNS64 Groups		Toolbar	
efault	/ R										🕂 Add	
Juick Filter	None	V Off Filter	r On Show Filte	к							→ Open	
.	z18.14							Go to	G	0	Delete	
] =	ORDER .	NAME	TYPE	SEVERITY	PRIMARY NAME S	LAST UPDATED	COMMENT	MULTI-MASTER Z	SITE		Extensible Attributes	
1 =	0	blockyahoo	Local	Major	84gm.testlab.com			No			E Permissions	
											Order Response Policy Zones Copy Rules	
											Threat Insight in the Cloud Client	
											Manage Dynamic Update Groups	
											Limport Zone	
											Grid DNS Properties	
											C Restart Services	
											L CSV Import	
											🔑 CSV Job Manager	
	NLC										Z IDN Converter	

6. Click on the RPZ name and then click on the drop-down arrow for the '+' button.

Infoblox 💲 🛛 🕞	hboerds [Data Management	Smart Folders	Grid	Administratio	n			Q Search	admin
IPA	M VLANs	Super Host	Devices Netwo	ork Users	DHCP	NS File Distribution				
Zones Members/Servers	Name Serve	er Groups Sha	red Record Groups	Respons	se Policy Zones	Subscriber Services Deployment	Blacklist Rulesets	DNS64 Groups	Toolbar	>>
Response Policy Zones Home									🕂 Add	
blockyahoo 🔒 🧪	8								→ Open	
Quick Filter None	Off Filter (On Show Filte	er						🗭 Edit	
									Delete	٣
+	_						Go to	Go	Attributes	
Passthru Rule 🕨	CY	DATA			COMMENT	SITE			Permissions	
Block (No Such Domain) Rule 👂									Order Response Policy Zones	
Block (No Data) Rule									Copy Rules	
Substitute (Domain Name) Rule Substitute (Record) Rule									Threat Insight in the Cloud Client	
									Manage Dynamic Update Groups	
									🛓 Import Zone	
									E Move DNS View	
									Grid DNS Properties	
									C Restart Services	
									🛓 CSV Import	
									🔑 CSV Job Manager	
									2 IDN Converter	
R () N I C										

7. Select 'Block (No Such Domain) Rule'. Type in 'www.yahoo.com'. Click 'Save and Close'.

Configuring DHCP

These instructions show you how to create a DHCP range for the clients that will be authenticated by AD via Cisco ISE.

1. If the discovery appliance has not discovered your networks, then you need to manually add networks for DHCP use. Navigate to Data Management --> DHCP --> Networks --> '+'

-->IPv4 Network.

Add IPv4 Network Wizard > Ste	p 1 of 9	×
 Add Network Add Network using Template 	Select Template	? «
Cancel	Previous Next	Schedule for Later Save & Close +

- 2. Click Next.
- 3. Adjust the Netmask bar accordingly to your IP address scheme. Click on the left '+' button to add a network and then input the IP subnet. Click to add a reverse mapping zone. Click 'Next'

Add IF V4 Net	work wizard > Step 2 of 9	
*Netmask	1 4 8 12 16 20 24 28 32 1	
*Networks	+ + =	
	 NETWORK 192.168.0.0 	
Comment		
	 Automatically Create Reverse-Mapping Zone 	

4. Click on the '+' button to assign the grid member to provide DHCP services. In this case it is the grid master. Click 'Next'.

dd IPv4 Network Wizard > Step 3 of 10										
Members/Servers + -										
NAME IPV4 ADDRESS IPV6 ADDRESS COMMENT										
84gm.testlab.com 10.60.22.230										

Schedule for Later	Next	Previous	Cancel

5. Click Next.

7.

6. Ensure the lease time, routers, domain name, and DNS server configurations are correct. Otherwise, click on the respective override button to override the setting. Click 'Next'

Hours Hours Unlimited Lease Time	Override
Inadvertently selecting the Unlimited Lease Time check box or using this option	
incorrectly could cause a serious network outage in the future when all available leases are allocated	
Inherited from Grid Infoblox	
+ =	Override
IP ADDRESS	
10.60.22.1	
Inherited from Grid Infoblox	
testlab.com	Override
Inherited from Grid Infoblox	
Previous Next Schedule	for Later Save & Close
	Inherited from Grid Infobiox IP ADDRESS I0.60.22.1 Inherited from Grid Infobiox Itestlab.com Inherited from Grid Infobiox Previous Next Schedule

8. Enable discovery. Select the discovery member. Click 'Next'.

Add IPv4 Network	izard > Step 7 of 10	×
Enable Discovery	٥	0
Discovery Member	84nd.testlab.com Select Member Clear	
Enable Immediate Discovery	After the network is created, a discovery of the network will be performed unless Immediate Discovery is disabled. Enabling Immediate Discovery is recommended.	
Polling Options	Basic Polling Settings SNMP Collection Override	
	CLI Collection	
	Port Scanning	
	Profile Device	
	Smart IPv4 Subnet Ping Sweep	
	Complete Ping Sweep	
	NetBIOS Scanning	
Cancel	Previous Next Schedule for Later Save & Close	•

- 9. Click 'Save and Close'.
- 10. Click on the newly created network.

1	nfoblox	\$	Dashboards	Data Manageme	nt Smart Fo	olders Grid	Administration					Q Search	admin	
			IPAM VL	ANs Super Host	Devices	Network Users	DHCP DN	S File Distributi	on					
a »	Networ	rks Members/Se	rvers Lease	s IPv4 Filters	Option Spaces	Fingerprints	Templates						₽ ≪	0
	Netwo	orks Shared Net	tworks IPv4	Microsoft Superscope	16									
	Networks 192.1	68.0.0/24 😒 I	Pv4 Network 🥜	Go to IPAM V	ow									
	Quick I	Filter None	• 01	Filter On Sho	w Filter									
	→ •	• @ = -	+1±+16	•							Go to	Go		
		IP ADDRESS A		TYPE N	AME	IPV4 DHCP UTILIZ	ACTIVE USERS	DISCOVER NOW	COMMENT	SITE				
	10.001	a												
	H 4) <i>B</i>												

11. Click on the '+' to add a DHCP range. This is the range of addresses that the DHCP server will distribute. Click 'Next'

Add IPv4 Range Wizard > Step 1	of 6		×
Add Range Add Range Using Template	Select Template		? «
Cancel	Previous	Schedule for Later	Save & Close •

12. Configure the starting and ending addresses. 'Click Next'.

Add IPv4 Range Wi	zard > Step 2 of 7			×
*Network	192.168.0.0/24 (255.255.255.0) Select Network Clear			8 «
*Start	192.168.0.2			
*End	192.168.0.100			
Name				
Comment				
Disable for DHCP				
Cancel	Previous Next	Schedule for Later	Save & Close	•
Assign the Grid Me	mber to serve the DHCP range. Click 'Next'.			
Add IPv4 Range Wi	zard > Step 3 of 7			×

Add IPV4 Hange Wizard > Step 3 of 7			×
Served by	None (Reserved Range)		8 «
	Grid Member IBv4 DHCB Follower Association	84gm.testlab.com	
		Select Association	
Cancel Previous	Next	Schedule for Later Save &	Close -

13.

14. Verify the lease time, routers, domain name, and DNS servers. Click 'Next'

Add IPv4 Range Wiz	zard > Step 4 of 7	×
Lease Time	12 Hours Override Unlimited Lease Time	₹ ≪
	Inadvertently selecting the Unlimited Lease Time check box or using this option incorrectly could cause a serious network outage in the future when all available leases are allocated	
	Inherited from Grid Infoblox	
Routers	- I iii Override	
	IP ADDRESS 10.60.22.1	
	Inherited from Grid Infoblox	
Domain Name	testlab.com Inherited from Grid Infoblox	
Cancel	Previous Next Schedule for Later S	ave & Close 🔹

15. Click Save and Close.

16. Navigate to Grid à Grid Manager à DHCP. Click on the pencil. Click on IPv4 DDNS. Enable DDNS. Click 'Save and Close'.

Infoblox (Grid DHCP P	Properties)		×
Toggle Basic Mode	Basic Advanc	ed .	Ø
General Fingerprinting IPv4 DHCP Options IPv4 DDNS IPv4 DHCP Thresholds IPv4 Filters IPv4 BOOTP/PXE IPv6 DHCP Options IPv6 DDNS IPv6 Global Prefixes Logging	DDNS Updates DDNS Domain Name DDNS Update TTL DDNS Update Method GSS-TSIG	 Enable DDNS Updates Seconds Interim Enable GSS-TSIG Updates Manage GSS-TSIG keys	
IF-MAP Restart		Domain Controller (KDC)	
		VERSION ENCRYPTION TYPE LAST UPDATE	
		No data	
Cancel		Save & Close	•

Configuring the display of the IPAM table

This section provides instructions on how to configure the display to show subscribed ISE specific information.

1. Navigate to Data Management --> IPAM

IPAM VLANs Super Host Devices Network Users DHCP DNS File Distribution default Network View Comparison Comparison Comparison Comparison Comparison duck Filter None Comparison Show Filter Trapping filt view Comparison Comparison Piter Comparison Show Filter Trapping filt view Comparison Comparison Comparison Comparison Comparison None Discovering examine Discovering examine Discovering examine Discovering examine Comparison Commany Commany Commany Commany Discovering examine Discovering examine Discovering examine Comparison Commany Commany Commany Commany Discovering examine Discovering examine Discovering examine Commany Commany Commany Commany Commany Discovering examine Discovering examine Discovering examine Discovering examine Commany Commany Commany Commany Commany Discovering examine Discovering examine Discovering examine Commany Commany Commany Commany Commany Discovering examine Discovering exam	VLANs Super Host Devices Network Users DHCP DNS File Distribution Image: File On Show Filer Image: Toggle filet view Image: Commerci	ODIOX 🗞	Des	shboards Da	sta Management	Smart Folders	Grid	Administration					Q Search	adm
Oulde Filter None Image: Filter On Show Filter Image: Filter On I	Image: Filter On Show Filter Toggle filt view Image: Go D Go D Go Image: Go D Image: Go D Go Image: Go D DISCOVERY ENGINE DISCOVERED LA ASSIGNED VLAN VIRF NAME Image: Go D Image: Go D None Image: Go D Image: Go D Image: Go D None Image: Go D Image: Go D Image: Go D None Image: Go D Image: Go D Image: Go D None Image: Go D Image: Go D Image: Go D None Image: Go D Image: Go D Image: Go D None Image: Go D Image: Go D Image: Go D None Image: Go D Image: Go D Image: Go D None Image: Go D Image: Go D Image: Go D None Image: Go D Image: Go D Image: Go D None Image: Go D Image: Go D Image: Go D		IPA	MVLANs	Super Host	Devices Net	work Users	DHCP DNS	File Distributio	1				
Quick Filter None Image: Filter On Show Filter Image: Toggle filts View → + - 12 + 12 + 12 + 12 + 12 + 12 + 12 +	Off Filter On Show Filter Toggle flat view Go to Go Go COMMENT IPAM UTILIZATION ACTIVE USERS DISCOVER NOW DISCOVERED DISCOVERED VI.A ASSIGNED VI.A.N. ID ASSIGNED VI	default	Network View 📮											40 ×
Go to Go to <t< td=""><td>COMMENT IPAN UTILIZATION ACTIVE UBERS DISCOVER NOW DISCOVERY ENGINE DISCOVERED. DISCOVERED VI.A. ASSIGNED VI.AN ID ASSIGNED VI.AN. VIRP NAME V 15.0% 2 None 0.0% 0 None 0.0% 0 None</td><td>Quick Filter</td><td>None</td><td>- On Filter (</td><td>On Show F</td><td>ilter 🗄 Toggle</td><td>flat view</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	COMMENT IPAN UTILIZATION ACTIVE UBERS DISCOVER NOW DISCOVERY ENGINE DISCOVERED. DISCOVERED VI.A. ASSIGNED VI.AN ID ASSIGNED VI.AN. VIRP NAME V 15.0% 2 None 0.0% 0 None 0.0% 0 None	Quick Filter	None	- On Filter (On Show F	ilter 🗄 Toggle	flat view							
NETWORK _ COMMENT IPAM UTILIZATION ACTIVE USERS DISCOVERY ENGINE DISCOVERED DISCOVERED DISCOVERED VLA. ASSIGNED VLA. ASSIGNED VLA. VIPF NAME Image: Instrument of the state of t	comment ipam utilization active users discover now discover nome discover nome discover nome discover nome ipam utilization assigned vian in assigned vian in viet name	→ I + • I /	⊠ ≣- ∳	1 • I 🖶							Go to		Go	
Image: Second	15.0% 2 None 0.0% 0 None 0.0% 0 None		ETWORK	COMME	NT IPAM	UTILIZATION ACT	VE USERS	DISCOVER NOW	DISCOVERY ENGINE	DISCOVERED DISCOVERED VLA	ASSIGNED VLAN ID	ASSIGNED VLAN	VRF NAME	٨
□ = + 11.0.0.08 0.0% 0 None	0.0% 0 None 0.0% 0 None		10.60.0.0/16			15.0% 2			None					
	0.0% 0 None		i 11.0.0.0/8			0.0% 0			None					
192.168.0.024 0.0% 0 None			4 192.168.0.0/24			0.0% 0			None					

2. In this example, click on the 192.168.0.0 subnet. Click on List tab. A list of IP addresses will appear.

Infoblox 📚	Deshboarde Data Management	Smart Folders Grid	Administration			Q Search	admin 👻
	IPAM VLANs Super Host	Devices Network Users	DHCP DNS File Distribu	tion			
IPAM Home 192.168.0.0/24 \$ IP IP Map List	V4 Network 🥜 🎗 Go to DHCP View	Y					₽ ≪ ≪
Quick Filter None	Filter On Show	Filter					
■ → + • ♂ ∂	3 ♥ ⊠ + ≓ + ▲ ●				Go to	Go	
IP ADDRESS +	NAME MAC	ADDRESS DHCP CLIENT IDENT	TIFIER PORT RESERVATION	STATUS TYPE	ACTIVE USERS	DISCOVER NOW USAGE	
192.168.0.0				Used IPv4 Network	0		
192.168.0.1				Unused	0		
192.168.0.2				Unused	0		
192.168.0.3				Unused	0		
192.168.0.4				Unused	0		
192.168.0.5				Unused	0		
192.168.0.6				Unused	0		
192.168.0.7				Unused	0		
192.168.0.8				Unused	0		
192.168.0.9				Unused	0		
192.168.0.10				Unused	0		
N A D N B							

3. Click on any address

nfoblox 📚	Dashboar	da De	ta Management	Smart Fol	Iders	Grid /	Administr	ation					Q Searc	sh ed
	IPAM	VLANs	Super Host	Devices	Network U	lsers	DHCP	DNS	File Distribution					
IPAM Home > 192.1 192.168.0.0	68.0.0/24 IPv4 Address													
Type: IPv4 Comment: Lease State:	Network				MAC Nam DHC Fing	Address: e: p erprint:								
Discovered Data													¢	
NetBIOS Name: Discovered MAC Ad Task Name: Cisco ISE Session S	dress: Itale:							OS: Last Disco Cisco ISE Cisco ISE	rered: End Point Profile: Security Group:					
Related Objects	Audit History	Ð												
	TYPE		ACTIVE USERS	COMMENT	SI	TE	ISI	_ACCOUNT_S	ISE_AUDIT_SESSI.	ISE_IP	ISE_MAC	ISE_NAS_IP_ADD	ISE_NAS_PORT_ID	ISE
No data														

4. In the 'Discovered Data' section, you can configure which items discovered data items to display by clicking on the right side wheel and then move items from Available column to Selected column. Click on the wheel again to collapse.

In	foblox 📚	Dashboards	Data Management	Smart Folders	Grid	Administra	ation		Q Search	admin	
		IPAM VLAN	s Super Host	Devices Netw	ork Users	DHCP	DNS	File Distribution			
ull >	PAM Home > 192.168.0.0	192.168.0.0/24 0 IPv4 Address 📮								48≪	0 «
	Type: Comment: Lease State:	IPv4 Network			MAC Addres: Name: DHCP Fingerprint:	K.					
	Discovered Dat	a							¢0		
	Available	First Discovered Discovered Name Bridge Domain Tenant EPG Discoveren Attached Device Address Attached Device Conflaton Attached Device Location Attached Device Location Attached Device Notel Attached Device Name Attached Device Name	> C	ietBIOS Name IS liscovered MAC Addr ast Discovered ask Name lisco ISE End Point P lisco ISE security Gro	rofile le iup	Selecte	ed				
	NetBIOS Name Discovered MA	a: IC Address:					OS: Last Di	scovered:			
	Task Name: Cisco ISE Sest	sion State:					Cisco II Cisco II	SE End Point Profile: SE Security Group:			
	Related Object	ts Audit History									
	m (4 - 1)	x ≡+ ±+ ∆								-	

5. In the Related Objects area, you can add or delete columns. There is where you add the ISE related extensible attribute columns. Click on a column name \rightarrow Columns \rightarrow Edit Columns.

foblox 📚	Dashboards	Data Management	Smart Fol	iders Grid	Administ	ation					Q Seard	zh ac
	IPAM VLA	Ns Super Host	Devices	Network Users	DHCP	DNS Fik	Distribution					
PAM Home > 192.168.0 192.168.0.0 IP	0.0/24 v4 Address 👤											
Type: IPv4 Net Comment: Lease State:	twork			MAC Addres Name: DHCP Fingerprint:	s:							
Discovered Data											0	
NetBIOS Name: Discovered MAC Addres Task Name: Clsco ISE Session State	18: :					OS: Last Discovere Cisco ISE End Cisco ISE Sec	ed: Point Profile: urity Group:					
		•										
No data	TYPE	ACTIVE USERS	COMMENT	SITE	V IS So Co	E_ACCOUNT_SE t Ascending t Descending umns	ISE_AUDIT_SESSI Edit Columns	ISE_IP	RE_MAC	ISE_NAS_IP_ADD	ISE_NAS_PORT_ID	ISE

Edit Columns				×
COLUMN		WIDTH	SORTA	VISIBLE
Site		100	Yes	V
ISE_Account_Session_ID		100	Yes	V
ISE_Audit_Session_ID		100	Yes	V
ISE_IP		100	Yes	V
ISE_MAC		100	Yes	V
ISE_NAS_IP_Address		100	Yes	v
ISE_NAS_Port_ID		100	Yes	v
ISE_Posture_ID		100	Yes	V
ISE_Posture_Status		100	Yes	v
ISE_Posture_Timestamp		100	Yes	v
ISE_Quarantine		100	Yes	v
DNS View		100	No	
	Apply	Cancel	Re	set

6. Click on Edit Columns and click 'Visible' box on each column you wish to display. Click on 'Apply'

7. This is an example of an IPAM entry with ISE specific attributes.

		Dashboa	rds D	ata Management	Smart Folder	ns Grid	Administre	tion					Q Searc	
		IPAM	VLANs	Super Host	Devices N	etwork Users	DHCP	DNS Fik	e Distribution					
M Home 0.60.2	> 10.60.0.0/16 2.241 IPv4	> 10.60.2	1.0/24											
ype: comment: ease State	IPv4 Fixed A	ddress				MAC Address Name: DHCP Fingerprint:	dell mini	:e0:c8:7b pc						
Discovere	d Data												0	
NetBIOS Discovero Task Nam Cisco ISE	Name: ed MAC Address: ne: E Session State: ST	ARTED						OS: Last Discover Cisco ISE End Cisco ISE Sed	ed: 2019-01-29 23:5 I Point Profile: Wind curity Group: Employ	5:33 PST ows8-Workstation yees				
Related	Objects Audit	History ≓ - 1												
=	NAME	TYPE		ACTIVE USERS	COMMENT	SITE	196	ACCOUNT_SE	ISE_AUDIT_SESSI	ISE_IP	ISE_MAC	ISE_NAS_IP_ADD	ISE_NAS_PORT_ID	15
		IDv4 E	and Adde	0			00	00009E	0A3C1E350000	10.60.22.241	74:E6:E2:E0:C8	10.60.22.30	GigabitEthernet	Se

Adding an ISE EPS Quarantine Authorization Rule

This rule will be used to quarantine a client when the Infoblox grid member sends a notification to the ISE appliance when an RPZ entry has been hit by the client. For testing purposes, we will set the action to be permit access. However the status of the client will be in quarantine mode. Note: Please have your Cisco ISE expert configure this section.

. Or	n the	e ISI	E GUİ, ı	naviga	te to Polic	$cy \rightarrow Pc$	olicy S	Sets						
(1) C1	ndh Ide	entity Se	rvices Engine	Home	Context Visibility	Operations	▼ Policy	Administration	• Work Centers		License Warning	્	0	o 0
	Policy Se	ts Pro	filing Posture	Client Provisio	oning	ints								
P	olicy S	Sets												Savo
	•	Status	Policy Set Nan	ne	Description		Conditions	J		Allowed Protocols / S	Server Sequence	Hits	Actions	View
	Search													
								+						
		0	Default		Default policy set					Default Network Acce	s × +	1552	¢	>
													Reset	Save

2. Click on the arrow on the right side and the following screen will appear

cisco I	dentity S	ervices Engine	Home	Context Visibility	Operations	▼ Policy	Administration	• Work Centers	•	License Warning 🔺	0,	Θ	•	0
Policy	Sets P	rofiling Posture	Client Provisi	ioning Policy Eleme	ints									
Policy	Sets -	 Default 									R	osot	Sa	ve
	Status	Policy Set Na	me	Description		Conditions				Allowed Protocols / Se	rver Se	quence	н	lits
Search	h													
	ø	Default		Default policy set						Default Network Access	*	- +	1	552
> Aut	henticat	ion Policy (3)												
≯ Au	horizatio	on Policy - Local	Exceptions (1)										
> Au	horizatio	on Policy - Globa	Exceptions											
> Au	horizatio	on Policy (13)												

Reset Save

3. Add a Local Exception rule like the following

dentity S	ervices Engine	Home)	Context Visibility	Operations	▼ Policy	Administration	• Work Centers		1	License Warni	ng 🔺	۹	0	0
Policy Sets Pr	ofiling Posture	Client Provisionin	ng I Policy Elen	nents										
olicy Sets -	Default													Save
Status	Policy Set Nam	0	Description		Conditions				A	llowed Protoc	ols / Serv	ver Sequenc	9	Hits
Search														
0	Default		Default policy se	rt						Default Network	Access	x v 4	•	1552
> Authenticati	on Policy (3)													
✓ Authorizatio	n Policy - Local E	xceptions (1)												
						Results								
+ Statu	s Rule Name		Conditions			Profiles		Sec	urity Gro	ups		Hits	Ac	ctions
Search														
Ø	EPS Quarantine		د د Sessio	on-EPSStatus EQU	IALS Quaranti	PermitAcc	0655	+ Qu	arantined	_Systems	x = 4	• •		¢
> Authorizatio	n Policy - Global I	Exceptions												
> Authorizatio	n Policy (13)													

4. Go down to regular Authorization Policy and create an external group like Employees

alla Ide	entity Se	rvices Engine Home	Contex	d Visibility	Operations	▼ Policy	Administration	Work Centers			License Warning 🔺	Q,	0	0
Policy Se	ets Pro	filing Posture Client Provision	ning 🕨	Policy Eler	ments									
+	Status	Rule Name	Co	onditions			Results Profiles		Sec	curity Grou	ups		Hits	Acti
Search	1													
					Wireless_Access									
	Ø	Wireless Black List Default	AND	48-	IdentityGroup·Name Identity Groups:Blac	e EQUALS End; cklist	× Black	hole_Wireless_Access	+	Select fro	im list	· +	0	
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Testing

Here are the instructions for testing quarantining of a client that hits an RPZ entry.

1. After authenticating your client, run nslookup on Windows command window against <u>www.yahoo.com</u> or dig on Linux against <u>www.yahoo.com</u>. The commands are:

- a. Windows: nslookup <u>www.yahoo.com</u>.
- b. Linux: dig <u>www.yahoo.com</u>.
- 2. You should get an error indicating a non-existent domain.
- 3. The client should now be in quarantine state but it will not appear in the RADIUS Live Logs until the client is rebooted and the Infoblox IPAM entry for the client will update to quarantine state in the security group and EPS status.

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4. To unquarantined the client on the ISE GUI, navigate to Operations à Adaptive Network Control à Endpoint Assignment. Click on EPS unquarantine and type in the MAC address of the client. Click 'Unquarantine'.

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5. Reboot the client.

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6. The RADIUS authentication states for the client return to normal.

Troubleshooting

Please note that all Infoblox Grid Master, Grid Master Candidate, and ISE pxGrid must be FQDN resolvable.

Adaptive Network Control (ANC) Mitigation Quarantine Mitigation Actions Not Showing Up in ISE

If the endpoint quarantine mitigation actions do not appear in ISE, ensure the DNS response policy zone is set to logging under enable logging on Adding Policy Response Zone in this document. No Active User are Displayed under Infoblox Grid Master Network Users

- Ensure that Infoblox Grid Master Cisco ISE Ecosystem status is Running
- Verify that Infoblox has registered to the ISE pxGrid node and subscribed to the Core and Session Topics.
- Reboot the Infoblox Grid Master

Infoblox published Dynamic Topics do not Appear in ISE Capabilities Menu

The DHCP and IPAM dynamic topics need admin approval. Select Administration->pxGrid Services-> View by Capabilities and approve the pending topics.



Infoblox is the leader in modern, cloud-first networking and security services. Through extensive integrations, its solutions empower organizations to realize the full advantages of cloud networking today, while maximizing their existing infrastructure investments. Infoblox has over 12,000 customers, including 70 percent of the Fortune 500.

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Corporate Headquarters | 2390 Mission College Boulevard, Ste. 501 | Santa Clara, CA | 95054 +1.408.986.4000 | info@infoblox.com | www.infoblox.com

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