

CA Enterprise Management – Deployment Guide

CA UIM with NFA for Managed Service Providers (MSPs)



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Executive Summary

CA Network Flow Analysis (NFA) is a network traffic monitoring solution that can help you optimize your network infrastructure for better application performance. With enhanced visibility into your network's applications, hosts, conversations and QoS information, you can proactively manage your network to reduce outages, solve problems faster and ensure efficient and cost-effective operations. When NFA is combined with CA Unified Infrastructure Management (UIM) for Network, the total solution provides complete visibility into Network Health for IT infrastructure.

For MSPs to leverage this solution, a foundational element to success is tenancy. The two components of the solution (UIM/NFA) have different mechanisms for leveraging tenancy and bringing these two products together to offer a holistic multi-tenant solution is not straightforward. With that in mind, the steps below explain the process for deploying CA UIM with CA NFA to offer a complete solution in a multi-tenant configuration.

Sample Environment

The following diagram depicts a sample architecture for deploying UIM/NFA with Multi-tenancy. The deployment consists of the core UIM/NFA infrastructure deployed at a MSP (ForwardInc), managing two customers (Nordole and VoonAir). Nordole and VoonAir are running UIM Components (Secondary Hub and SNMPCollector) and NFA Components (Harvester) on premise to monitor their network and systems infrastructure.



Tested Versions

The following versions were used to create this deployment guide:

- Unified Infrastructure Management (UIM) 8.4
- Network Flow Analysis (NFA) 9.3.3
- NFA_Inventory Probe 1.30
- NQ_Services Probe 1.20
- SNMPCollector 3.11

To enabled UIM with NFA with Multi-tenancy the minimum supported versions are UIM 8.31, NFA 9.3.2, NFA Inventory Probe 1.10 and NQ_Services Probe 1.0.

NFA Sizing:

NFA is sold per device, and scales horizontally by adding additional harvesters to support the devices sending flow data. The rule of thumb is 1000 devices per harvester with ~24 harvesters per NFA console. However, the metric that truly drives performance and scale for NFA is flow rate. Each harvester can handle a max of ~9million flows per minute. The flow rate per harvester can be viewed from the NFA UI – Administration – Flow Statistics page. More information on NFA sizing can be found at

https://docops.ca.com/display/NFA933/System+Recommendations+and+Require ments.

Alerting:

NFA has the capability to send SNMP traps when application traffic exceeds a threshold for an interface or group of interfaces. To support this capability with UIM, you must deploy and configure the snmptd probe to support NFA. The configuration will require uploading the NFA mib file stored on the NFA console at [NFA INSTALL DIRECTORY]\REPORTER\MIB to the snmptd probe.



Caveats:

Overlapping Router IPs:

The current GA version of NFA (9.3.3) does not support routers that have overlapping management addresses. Management addresses consist of those addresses that are known to the system. In NFA's case that would be the Export Source, in UIM's case that would be the Polled IP. So given that NFA does not support this capability, neither does the UIM/NFA integration. Again, this does not mean that the hosts/conversations i.e. traffic flows cannot have overlapping IP addressing, just that the router management IPs cannot. This capability is expected to be addressed in a future release of NFA.

Custom NFA Interface QOS Enrichment:

NFA has interface types that are specific to NFA only. Examples of these are Broadcast/Multicast Interface, Interface Aggregations, and Custom Virtual Interfaces(CVIs). Since these interfaces are specific to only NFA and not able to be monitored via SNMPCollector, QOS enrichment cannot be completed for these interface types. Which also means that you will not see these interfaces show up under the customer views in USM. However, they will be in NFA for the devices that they are associated with.

Deployment Process:

The following pre-requisites should be completed prior to following the deployment process:

- UIM 8.4 base installation has been successfully completed.
- Remote Hubs are installed and successfully communicating over a tunnel back to the primary hub.
- Remote Hubs are configured with the appropriate customer origin.
- SNMPCollector and all dependent probes are installed (but not configured) at each customer location.
- NFA two-tier install with harvesters at each customer location has been completed and Netflow data is successfully being shown in the NFA UI.

Discovery Steps (ForwardInc MSP):

Step 1. Deploy discovery_agent to Nordole and VoonAir's on premise hub.

A. Open Admin Console – Select Archive – Select Nordole-Hub & VoonAir-Hub – then select discovery_agent package and click deploy.

Admini Console Infrastructuru Archive Search HubbRobos Ocal Archive Distribution Activity Search HubbRobos Ocal Archive Distribution Activity Search HubbRobos Ocal Archive Wet Archive Distribution Activity Import file Group Import file Group Ocal gory Description Import file Group Import file Group Ocal gory Description Import file Group Import file Group Ocal gory Description Import file Group Import file Group Ocal gory Description Import file Group Import file Group Ocal gory Description Import file Group Import file Group Service Service Foot Admini for Statutions Explore Import file Group Service Service Foot Admini for Statutions Explore Service Service Foot Admini for Service Import file Group Service Service Service Service Service Foot Admini for Service Import file Group Service Service <th>10.238.80.216:8080/adminconsole/</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	10.238.80.216:8080/adminconsole/								
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La deta_engine 0.40 Sun beta Engine				ata_engine		8.	.40	SLM	Data Engine
			-			0	40	Convico	Discourse Conver

B. Validate discovery_agent has successfully started on both Nordole and VoonAir hubs.

Ca Hame - UMP × Ca	Admin C	Console × +						
Admin Console								
Infrastructure Archive	۲	The nordala hub						
forwardinc_domain (3)		Tiordole-Hub						
ି 🥑 🚓 forwardinc_hub	\$	Туре	Regular					
1 Sin nordole-hub (3)	\$	Address	/forwardinc	_domain/	nordole-hu	b/nordole-hub		
🥏 君 nordole-hub	=		1010111211					
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4 🛇 🏥 voonair-hub (3)	\$	Group						
🤣 😂 voonair-hub		Probe ~	Port	PID	Version	Description	Category	Last Start
Son ar-tixchange-web		 automated_deployment 	t 48011	4076	8.40	Cross-platform Probe and Robot	Service	Mon Feb 15 2016 06:33:47 PM
Noonair-tixchange-ws_db		✓ v baseline_engine	48009	1804	2.71	Baseline Engine	SLM	Mon Feb 15 2016 06:33:45 PM
		😔 👻 controller	48000	1716	7.80	Robot process and port controller	Infrastructure	Mon Feb 15 2016 06:33:40 PM
		 discovery_agent 	48008	1812	8.40	Discovery Agent	Service	Mon Feb 15 2016 06:33:44 PM
		🤣 👻 hdb	48007	3248	7.80	Robot database server	Infrastructure	Mon Feb 15 2016 06:33:43 PM
		🥪 👻 hub	48002	3920	7.80	Message concentrator and redistr	Infrastructure	Mon Feb 15 2016 06:33:40 PM
		😒 👻 ppm	48010	3376	3.30	Probe Provisioning Manager	Service	Mon Feb 15 2016 06:33:46 PM
		 prediction_engine 	48012	796	1.33	Prediction Engine	SLM	Mon Feb 15 2016 06:33:54 PM
		😔 👻 snmpcollector	48014	2220	3.11	SNMP Collector Engine Probe	Network	Mon Feb 15 2016 07:09:41 PM
		😔 👻 spooler	48001		7.80	Robot message spooler	Infrastructure	

Step 2. Configure and Execute a Discovery for both Nordole and VoonAir.

- A. Login to UMP and Click on the Discovery Wizard for Nordole.
- B. (Minimally) Add SNMP Credentials and Network Range Scope for the desired network devices that will be monitored via SNMPCollector and will be sending flow data.
- C. Run the discovery now, and reschedule discovery to detect changes at the desired interval.



D. Validate devices have successfully been discovered.

Home Unified Dashboards X Reports Design Configuration									
UnifiedServiceManager								¢.	- + x
🔚 🏭 📰 🕖 🖉 🔙 Alias 🗸							Search	Actions •	?
	Inve	entory for nordole-hub/no	ordole-hub	Device Type SwitchRoute Virtual Serve	r (4) rr (4)	Recent (last day) Recent (last week) No response (one week) Quick Filter			
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	8	pittsburgh-iosv	pittsburgh-iosv	172.19.27.9	SwitchRouter	2/15 7:45 PM	Cisco IOS	forwardinc_hub	,e
	Ť	NORDOLE-HARVEST	NORDOLE-HARVEST	10.238.81.248	Virtual Server	2/15 6:43 PM	WindowsServer-2012-R2	forwardinc_hub	æ
	Ť	nordole-tixchange-ws_db	nordole-tixchange-ws_db	10.0.11.231	Virtual Server	2/15 6:43 PM	Linux	forwardinc_hub	هر

E. Execute same process for VoonAir.

NFA Steps (ForwardInc MSP):

Step 1. Download NQ_Services 1.20 and NFA_Inventory 1.30 from the Web Archive.

A. Open Admin Console – Click Archive – Web Archive – Select NFA_Inventory and NQ_Services and Click Download

۲	Local Archive	Web Archive	Distrib	ution Activity	
	💽 Deploy 🛛 📥 Dow	vnload Group	P 🚔	2	
\$	Package -	Vers	ion	Category	Description
\$	jre_aix		1.70	Infrastructure	Java Runtime for Solaris
=	jre_solaris		1.71	Infrastructure	Java runtime for Solaris
	jre_zlinux		1.71	Infrastructure	Java runtime for zLinux
	jvm_monitor		1.47	Application	JVM_Monitor probe
	Idap_response		1.35	Network	Nimsoft LDAP response watcher
\$2	logmon		3.55	System	Log monitoring probe
	Iync_monitor		2.20	Application	lync_monitor Probe
	mgr		4.04	Installation	Infrastructure Manager
	mongodb_monito	or	1.00	Marketplace	MongoDB Monitoring Probe
	mps_language_p	ack	8.38	Service	mps_language_pack
	mysql		1.48	Database	MySQL Server monitor
	📄 ndg		2.68	SDK	Nimsoft Dashboard Generator.
	netapp		1.38	Storage	NetApp Storage Monitoring
	net_traffic		1.43	Network	Network traffic analyzer
	nexec		1.35	Service	Configure a set of commands to be executed by operator
	☑ nfa_inventory		1.10	Network	NFA Inventory Probe
	nimldr		3.57	Infrastructure	Utility to install Nimsoft infrastructure on UNIX platforms
	notes_response		2.32	Application	Lotus Notes client response
	notes_server		1.53	Application	Lotus Notes server watcher
	v nq_services		1.00	Network	NetQoS Services Probe
	 	Local Archive Local Archive Local Archive Dopioy ADo Package Package	Image: Second secon	Image: Control of the system Vest Archive Distribution Image: Control of the system Image: Control of the system Image: Control of the system Image: Control of the system Image: Control of the system Image: Control of the system Image: Control of th	Occal Archive Web Archive Distribution Activity Package * Download E Group Package * Version Category jre_aix 1.70 Infrastructure jre_solaris 1.71 Infrastructure jre_zinux 1.71 Infrastructure jre_solaris 1.71 Infrastructure jre_solaris 1.71 Infrastructure jre_nonitor 1.47 Application Idap_response 1.35 Network Iogmon 3.55 System Mnc_monitor 1.00 Marketplace mysql 1.48 Database ndg 2.68 SDK netapp 1.38 Storage netapp 1.35 Service y nf_a_inventory 1.10 Network nimidr 3.57 Infrastructure notes_response 2.32 Application notes_response 2.32 Application y ng_services 1.00

Step 2. Deploy nq_services probe to the primary hub where trellis is located.

A. Open Admin Console – Select Archive – Select the primary hub – then select nq_services package and click deploy.

Search Hubs/Robots	\odot	Local Archive	Web Archive	Distrib	ution Activity	
forwardinc_domain (3)		Deploy Deploy	Group		2	
⁴ 🔲 🔗 🚓 forwardinc_hub (5)	\$	Package -	Ve	rsion	Category	Description
🔲 🔿 뛽 ada		i nas_api_service		0.40	Service	IVAD API DELVICES
		net_connect		3.21	Network	Monitor network connectivity (ICMP / TCP)
		nfa_inventory		1.30	Network	Collects NFA inventory of routers and associated interfaces.
🔲 🗹 🖉 nfa-capc		nisapi_wasp		8.40	Service	NIS Restful API (Wasp Edition)
🔲 👽 🚝 spectrum-mk		nis_server		3.51	Infrastructure	NIS Server
🗹 🛃 uim	=	v nq_services		1.2.0	Service	NetQoS Services
🗖 🖸 📩 nordole-hub (3)	¢	ppm		3.30	Service	Probe Provisioning Manager
		pp_defaults		2.12	Service	Probe Provisioning Default Templates
i v v v v v v v v v v v v v v v v v v v		prediction_engine		1.33	SLM	Prediction Engine
🔲 🥑 👰 nordole-tixchange-web		gos_processor		8.40	SLM	QoS Processor
🔲 📀 👰 nordole-tixchange-ws_db		relationship_services	5	1.72	Service	Relationship Maintenance and Access Services
イロマ 品 voonair-hub (3)	\$	robot_aix		7.80	Infrastructure	Native AIX installer
🗆 🗢 📾 yoonair-hub		robot_deb		7.80	Infrastructure	Native Ubuntu/Debian installers
		robot_exe		7.80	Infrastructure	Native Windows Robot Packages
woonair-uxchange-web		robot_hpux		7.80	Infrastructure	Native HPUX installers
📖 🍼 🎘 voonair-tixchange-ws_db		robot_rpm		7.80	Infrastructure	Native Linux RPM installers for SLES, SUSE, RHEL, and Cent

B. Validate nq_services probe is active. Open Admin Console – Select Infrastructure
– Select the primary hub –Select Trellis Probe – Select Probe Utility – Choose List
Services – Click Green Arrow – Look for NQ Origin Service and Active = True.

Probe Utility - /forwardinc_dom	ain/forwardinc_hub/uim	ı/trellis	×
list_services	Name	Value	
Name Value	deployments		
	⊡ 0		
	active	true	
	description	Data Access Services	
	key	das	
	name		
	version	8.4.0	
	⊒1		
	active	true	
	description	NFA Origin Service	
	key	nq_services	
	name		
	version	1.2.0	
	⊒ 2		
	active	true	
	description	Trellis Container Core Services	
	key	trellis	
	name		
	Vortion	2.0	



Step 3. Deploy and configure nfa_inventory probe to the NFA Master Console.

A. Open Admin Console – Select Archive – Select the NFA Robot – then select nfa_inventory package and click deploy.

🔍 🔍 Câ Home - UMP 🛪 Câ	Admin C	onsole	× +				
3 10.238.80.216:8080/adminconsole/							
Admin Console							
Intrastructure Archive							
Y Search Hubs/Robots	\bigcirc	La	ocal Archive	Web Archive	Distr	ibution Activity	
forwardinc_domain (3)			Deploy 🚺 Import	Group	10	3	
។ 🗐 🥪 🖧 forwardinc_hub (5)	\$		Package 🔶		Version	Category	Description
🖂 🗢 🖉 ada			nas ani service		8 40	Service	NAS ADI Services
🗹 🤜 🕰 nfa			net connect		3.21	Network	Monitor network connectivity (ICMP / TCP)
🗐 😎 🚝 nfa-capc			nfa inventory		1.30	Network	Collects NFA inventory of routers and associated interfai
🗐 😎 🚝 spectrum-mk			nisapi_wasp		8.40	Service	NIS Restful API (Wasp Edition)
m 🖉 😰 uim	=		nis_server		3.51	Infrastructure	NIS Server
4 T A hardele hub (2)	-		nq_services		1.2.0	Service	NetQoS Services
	~		ppm		3.30	Service	Probe Provisioning Manager
📖 💟 🐻 nordole-hub			pp_defaults		2.12	Service	Probe Provisioning Default Templates
🔲 🕑 👧 nordole-tixchange-web			prediction_engine		1.33	SLM	Prediction Engine
🔲 😎 👧 nordole-tixchange-ws_db			qos_processor		8.40	SLM	QoS Processor
4 🗐 🤣 🏤 voonair-hub (3)	\$		relationship_services		1.72	Service	Relationship Maintenance and Access Services
💷 😋 🝘 voonair-hub			robot_aix		7.80	Infrastructure	Native AIX installer
			robot_deb		7.80	Infrastructure	Native Ubuntu/Debian installers
Market and American Strength and American St			robot_exe		7.80	Infrastructure	Native Windows Robot Packages
📖 🍼 🕅 voonair-tixchange-ws_db			robot_hpux		7.80	Infrastructure	Native HPUX installers

B. Validate nfa_inventory probe has successfully started on NFA Console.

Search Hubs/Robots	۲	nfa						
forwardinc_domain (3)		The The						
🖌 🔗 🖧 forwardinc_hub (5)	\$	Туре	e: Regular					
💙 輝 ada		Addres	s: /forwardinc	_domain/for	wardinc.	hub/nfa		
🗸 📲 nfa	=	1	10.230.02.0					
🗸 🏭 nfa-capc								
Spectrum-mk		Probes Installed P	Packages	Environ	ment V	ariables		
🛇 🚑 uim		Group 🖨 📿						
🖌 📀 🖧 nordole-hub (3)	\$	Probe -	Port	PID \	Version	Description	Category	Last Start
		😔 👻 controller	48000	6080	7.80	Robot process and port controller	Infrastructure	Mon Feb 15 2016 07:56:11 P
🛇 😂 nordole-hub		•	49007	6012	7.80	Robot Database Server	Infrastructure	Mon Feb 15 2016 07:56:13 P
🛇 😂 nordole-hub 📀 🙉 nordole-tixchange-web		🤝 👻 hdb	-10007					
 anrdole-hub anrdole-tixchange-web anrdole-tixchange-ws_db 		 ✓ + hdb ✓ - nfa inventory 	48008	2104	1.30	Collects NFA inventory of routers	Network	Mon Feb 15 2016 07:56:14 P
 Inordole-hub Image: Second seco	\$	 ✓ ► hdb ✓ ▼ nfa_inventory ✓ ▼ crocolar 	48008	2104	1.30	Collects NFA inventory of routers Robot Maccade Specier	Network	Mon Feb 15 2016 07:56:14 F
	يتو	 ✓ ► hdb ✓ ▼ nfa_inventory 	48008	2104	1.30	Collects NFA inventory of routers	Network	Mon Feb 15 2016
	\$	 ✓ ► hdb ✓ ► nfa_inventory ✓ ▼ spooler 	48008	2104 : 5476 :	1.30 7.80	Collects NFA inventory of routers Robot Message Spooler	Network Infrastructure	Mon Feb 15 2016 07:56:14 F Mon Feb 15 2016 07:56:12 F

C. Configure nfa_inventory probe. Admin Console – Select NFA Robot – Select NFA Inventory – Select Configure – Click Add Console – Add Console Name and IP Address – Click Submit – Click Save

nfa-console	
Profile Setup	
NFA Console Name *	nfa-console
NFA Console Hostname or IP Ad	10.238.82.0
Alarm Message	C ResourceCritical
Active	✓

D. Validate NFA Inventory in UMP – In UMP – Select Router that is in NFA – Click Interface tab – Look for Aggregate Broadcast/Multicast Interface in the list

Ca.								
Home Unified Dashboards X Reports X Design Configuration								
UnifiedServiceManager							P -	+ X
🗄 🔠 🏥 🖉 🖉 🐙 Alias 🗸					Searc	h)	Actions •	?
🔻 😨 🌾 Groups (35)	Details Alarms Metrics Advanced Interfa	ces Groups Monit	toring Reports •					
▶ 🕐 🎼 Customers (11)	Quick Filter Showing interfaces for miami-ic	asv (6)						
▶ 🕑 🎼 ForwardInc Services (10)								
Derating Systems (35)	Name	Alias 🔺	Device	Utilization %	Errors %	Discards %	Speed	I
🕑 🛞 Geo View	Aggregate Broadcast/Multicast Traffic	Aggregate Broadcast/	miami-iosv					0
V A D Inventory (35)	GigabitEthernet0/0	GigabitEthernet0/0	miami-losv				1.00 Gbps	1
► ① D forwardinc_hub/uim (20)	GigabitEthernet0/1	GigabitEthernet0/1	miami-iosv	F			1.00 Mbps	2
▶ ④ ₽ nordole-hub/nordole-hub (8)	GigabitEthernet0/2	GigabitEthernet0/2	miami-losv	h			1.00 Mbps	3
▶ ④ ₽ voonair-hub/voonair-hub (7)	C Loopback0	Loopback0	miami-losv				8.00 Gbps	5
C External (0)	O Nullo	NullO	miami-iosv				10.00 Gbps	4
🗴 😴 💋 Search Results (1)								
C 🔶 miami-iosv								

E. Validate NFA Data in UMP - Select Router that is in NFA – Click Interface tab – Select Interface. The first graph (BitsIn/BitsOut) will not show until SNMP is configured.





SNMPCollector (Customer Nordole):

Step 1. Configure SNMPCollector

- A. Admin Console Select SNMPCollector Robot Select SNMPCollector Probe -Configure
- B. Create Discovery Filter for appropriate for Nordole discovery_agent

Search Image: Discovery Filters Show search settings Discovery Filters Discovery Filters Discovery Server Decovery Filters Discovery Server Decovery Filters Discovery Server Decovery Filters Discovery Server Discovery Server Discovery Server Discovery	
Image: Serie Watering status Image: Serie Watering status	
• @, snmpcollector iiii Custom Monitors iiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	
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	/
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	Di
/forwardinc_domain/nordole-hub/nordole-hub/discovery_agent	
Showing 1 to 1 of 1 entries	
Discovery Agent //orwardinc_domain/nordole-hub/nordole-hub/discovery_a	

C. Query Discovery Server for devices to begin discovery and polling of Nordole devices.

e e Ca Home - UMP × C	a Admin Console %	Ca snmpcollector v3.11: Confi ×	+		
(10.238.80.216:8080/adminconsole/jsp/Prol	beConfig.jsp?probe=/forwardinc	_domain/nordole-hub/nordole-hub/snmp	collector	C Q. Search	☆ 自 ♥ ↓ 余 ♥ 〓
Probe Configuration - /forwardinc_domain/nor	rdole-hub/nordole-hub/snmpcollec	tor v3.11			Save Discard Template Editor ?
Search	Show search settings	Discovery Filters			the Over Discourse Senar
		Discovery Server			
Custom Monitors		Discovery Server Address	/forwardinc_domain/forwardinc_hub/uim/discovery_server	T	
Discovery Filters					
Profiles		Discovery Scopes			
MIAMI-iosv					
MIAMI-iosvi2		New Delete			🕈 Filter
DITTOR IDCILLION					

Step 2. Validate SNMPCollector Data

 A. Validate SNMP data for Nordole devices. – Wait 15min after querying the discovery server – In UMP – Select Nordole Network Device – Select Metrics Tab – Expand Metric Family – Select CPU -

	Search Actions •
Details Alarms Metrics Advanced	Interfaces Groups Monitoring Reports
▼ MetricFamily	Vtilization: RAS-CPU
Availability	100
▶ BufferPool	80
▼ CPU	60
RAS-CPU ->	8 40
▶ Interface	20
PhysicalMemory	20
▶ Reachability	0

B. Once Nordole SNMP devices have been validated, Repeat Steps for VoonAir.

QOS Enrichment Steps (ForwardInc MSP):

Step 1. Create Ruby Script and Enable qos_processor

A. Create enrichment.rb ruby script to enrich the devices with the appropriate origins.

Example Script:





- B. Copy enrichment.rb script to qos_processor scripts directory. Ex: C:\Program Files (x86)\Nimsoft\probes\slm\qos_processor\scripts
- C. Configure and Enable qos_processor Admin Console Select Primary Hub Select Qos_Processor Probe – Select Raw Configure – Change Log Level to 3, Enrichment-Enabled to true and and Monitor-Enrichment-Execution-Interval to 15 minutes.

Raw Configure (/forwardinc_doma	in/forwardinc_hub/uim/	qos_processor)
Add section Remove section Add	key Remove key	🗸 Apply
4 🗁 /	Кеу	Value
setup	database-connect-max-at tempts	10
^r startup	database-connect-retry-sl eep-seconds	60
	database-loader-fetch-siz e	1000
	enrich-script-timeout-milli s	60000
	enrichment-enabled	true
	log-size	10485760
	loglevel	3
	message-receiver-bulk-siz e	60
	monitor-db-updater-auto- commit	true
	monitor-db-updater-batch -update-size	10
	monitor-db-updater-threa d-count	1
	monitor-enricher-thread-c ount	5
	monitor-enrichment-exec ution-interval	15
	monitor-enrichment-exec ution-interval-time-unit	MINUTES
	origin-change-detection-e nabled	true
	subscriptions-check-interv al-seconds	30

Step 2. Validate Origin Enrichment

- A. Log File Method Admin Console Select Primary Hub Select qos_processor -View Log File – Look for entries such as:
- #3, gos processor] Ruby Enricher for gos: QOS_INTERFACE_UTILIZATIONOUT, source: PITTSBURGH-iosvl2, target: Gi0/0(GigabitEthernet0/0)
- #3, qos_processor] Monitor before: origin = 'forwardinc_hub' #3, qos_processor] Monitor after: origin = 'nordole'
- B. UI Method In UMP Select Network Device Select Interface Tab Select Interface - Look for modified origin:



Step 3. Validate Origin to NFA Interface Group Mapping

A. Log File Method – Admin Console – Select NFA Robot – Select nfa_inventory probe - View Log File - Look for entries such as:

I	Feb	15	20:01:21:604	[interfaceToOriginMapping,	nfa_inventory]	About to map NFA interfaces to UIM origins.
	Feb	15	20:01:22:187	[interfaceToOriginMapping,	nfa inventory]	Processing interface 175 with 1 origins
	Feb	15	20:01:22:187	[interfaceToOriginMapping,	nfa inventory]	Found origin nordole for interface 175
	Feb	15	20:01:22:187	[interfaceToOriginMapping,	nfa inventory]	Found origin voonair for interface 172
	Feb	15	20:01:22:187	[interfaceToOriginMapping,	nfa inventory]	Processing interface 173 with 1 origins
	Feb	15	20:01:22:187	[interfaceToOriginMapping,	nfa inventory]	Found origin voonair for interface 173
	Feb	15	20:01:22:188	[interfaceToOriginMapping,	nfa inventory]	Processing interface 201 with 1 origins
	Feb	15	20:01:22:188	[interfaceToOriginMapping,	nfa inventory]	Found origin nordole for interface 201
	Feb	15	20:01:22:188	[interfaceToOriginMapping,	nfa inventory]	Processing interface 179 with 1 origins
	Feb	15	20:01:22:188	[interfaceToOriginMapping,	nfa inventory]	Found origin nordole for interface 179
	Feb	15	20:01:22:188	[interfaceToOriginMapping,	nfa inventory]	Processing interface 178 with 1 origins
	Feb	15	20:01:22:188	[interfaceToOriginMapping,	nfa inventory]	Found origin nordole for interface 178
	Feb	15	20:01:22:188	[interfaceToOriginMapping,	nfa inventory]	Processing interface 176 with 1 origins
	Feb	15	20:01:22:188	[interfaceToOriginMapping,	nfa inventory]	Found origin nordole for interface 176
	Feb	15	20:01:22:188	[interfaceToOriginMapping,	nfa inventory]	Origin: nordole Interfaces: 201, 175, 178, 179, 176,
	Feb	15	20:01:22:188	[interfaceToOriginMapping,	nfa inventory]	Origin: voonair Interfaces: 173, 172,



B. UI Method – In UMP – Select Network Device – Select Interface Tab – Select Interface – Look for modified origin with _NFA

Details /	Alarms	Metrics	Advanced	Groups	Rep
Gigab	itEthern	et0/1 - mia	mi-iosv		ŵ
Nam	e: Giga	abitEthernet(0/1		
Alia	s: Giga	abitEthernet()/1		Z
Devic	e: mia	mi-iosv			
IfAlia	s: to A	TLANTA-nx-o	DSV		
IfNam	e: Gi0,	/1			
Descriptio	n: Giga	abitEthernet()/1		
Labe	el: Gi0,	/1:iid178			
Nominal Spee	d: 1.00) Mbps			
Inde	x: 2				
MAC Addres	s: FA-	16-3E-70-1A	-7B		
IP Addresse	s: 10.0	0.0.4/30			
Admin Statu	s: Up				
Oper Statu	s: Up				
Тур	e: ethe	ernetCsmacd			
MT	U: 150	0			
Origi	n: nor forv	dole vardinc_hub dole_NFA]		
		Aları	ms O		

Create Customer Access (ForwardInc MSP):

Step 1. Create UIM Accounts for each customer.

A. In UMP – Click Configuration – Accounts – Click + to add account – enter nordole-account for Account Name – Select nordole and nordole_nfa for origins and click create.

Edit Account	
Account Name * nordole-account	Web Site
Description	Phone
Ownership (origin) *	Fax
nordole	Street
nordole_NFA	City
voonair	State/Province
voonair_NFA	
	ZIP/Postal Code
	Country

B. In UMP – Click Configuration – Accounts – Click + to add account – enter voonairaccount for Account Name – Select voonair and voonair_nfa for origins and click create.

Web Site
Phone
Fex
Street
City
State/Province
ZIP/Postal Code
Country

C. Add User to Account - In UMP – Click Configuration – Accounts – Select nordoleaccount – click + sign to add user. Enter Login ID, Password, Confirm Password, ACL, Email, First and Last Name and click create. Example Nordole User:

Edit User	
Login ID *	Email *
nordole-ops	nordole-ops@nordole.com
Password	First Name *
#####	Nordole
ACL *	Last Name *
Operator	Ops
Account * nordole-account *	Language English (United States)

D. Repeat Steps to create a new voonair user mapped to voonair-account.



Step 2. Provision UIM Customer Account Users to NFA Master Console

A. In NFA Console – Click Administration – Click Users – Click New – Enter same username and password as used in Step 1 – Item C. All other information can remain default. Note: If username and password are not the same drill-out from UIM will not work. Example NFA User after successful drill out:

lama	pardala ana	
Name.	hordole-ops	
Deseriations		
Description:		
		/
Email Address:		
Authentication Type:	Product ᅌ	
Password:	••••••	
Confirm Password:		
Time Zone:	MST7MDT	
Product Privilege:	User ᅌ	
Role:	Operator ᅌ	
Permission Group:	nordole-account	

B. Repeat steps for VoonAir Users:

Step 3. Validate UIM to NFA workflow for Customers

A. In UMP, Login as nordole-ops user and validate inventory only contains devices for the Nordole customer.

id ¥ 🥒 Manage ¥ 🔥 Go to ¥ 👘 nordole accountings Fore Unified Dashboards Reports Design Configuration Unified ServiceManager	rdole-ops بر	• (Sign Or
Home Unified Dashboards Reports Design Configuration Unified ServiceManager Ended ServiceManager Ended ServiceManager Ended ServiceManager	- بر	+ x
Honne Unified Dashboards Reports Design Configuration Unified ServiceManager	<i>ب</i> _ بر	+ ×
UnifiedServiceManager	. ـ م	+ x
E II II II O D (F Alus) Search Search Actio	ons •	?
Q Coups (0) Inventory		
Device Type Power Type		
C Search Results (0) No resconde (one week)		
Quick Pitter		
Next discovery at Wed Peb 17 2016 12:00:00 AM		
Name Alias IP Address Type Changed v OS Name Ori	rigin	
pittsburgh-isov/2 pittsburgh-isov/2 172.19.25.19 SwitchRouter 2/16 12:00 AM Cisco 106		<u>^</u>
Image: miami-iosvl2 miami-iosvl2 172.19.25.11 SwitchRouter 2/16 12:00 AM Cisco 105		مر
miami-iosv miami-iosv 172.19.27.3 SwitchRouter 2/16 12:00 AM Cisco 10S		۹,
pittsburgh-iosv pittsburgh-iosv 172.19.27.9 SwitchRouter 2/15 7:45 PM Cisco 10S		<i>P</i>

B. Validate "Interface Details" (SNMP/Flow data) for an interface on a Nordole device.





C. Validate "Advanced Tab" (SNMP/ToS - Flow data) for an interface on a Nordole device.



D. Validate Drill-out to NFA - Select "Details Tab" – Click on "Launch NFA diagnostics view" from within Stacked Protocol Graph

			RitsIn / RitsOut
GigabitEthernet0/1 - h	niami-iosv		320 kbit/s
Name: GigabitEthern	et0/1		260 kbit/s
Allas: Gigabitetnern	etu/1		200 kbit/s
IfAlias: to ATLANTA-n	IX-OSV		140 kbit/s
IfName: Gi0/1			80 kbit/s
Description: GigabitEtherne	et0/1		20 kbit/s
Label: Gi0/1:iid178			18:00 20:00 22:00 0:00 2:00 4:00 6:00 8:00 10:00 12:00 14:00 16:00 18:0
inal Speed: 1.00 Mbps			
Index: 2			Stacked Protocol Trend - In
C Address: FA-16-3E-70-:	1A-7B		280 LbH/c
min Status: Un			240 kbit/s
iner Status: Un			200 kbit/s
Type: ethernetCsma	acd		y 160 kbit/s
MTU: 1500			120 kbit/s -
Origin: nordole			80 kbit/s -
nordole_NFA			40 kbit/s
Ala	arms		0 bit/s
Ŭ	0		19:00 21:00 23:00 1:00 3:00 5:00 7:00 9:00 11:00 13:00 15:00 17:00
10 Hosts - Summary (last	t 24 hours)		http-alt http icmp https snmp Other
Host	Volume	Volume	Staaland Destaged Teams. Out
0.25.10	1.92 GB	10tal	60 kbit/s
9.25.10	425.8 MB	2.34 GB	
4.244	254.4 MB 1.46 GB	1.70 GB 🗄	40 kbit/s
9.27.3	76.98 MB	76.98 MB	1 30 kbit/s -
51.112.115	2.48 MB	53,73 MB	20 kbit/s
	51.24 MB		10 kbit/s
		27 OC MP	
200.5.165	33.49 MB 33.49 MB	urs)	0 bH/s 19:00 21:00 23:00 1:00 3:00 5:00 7:00 9:00 11:00 13:00 15:00 17:00
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E. Validate NFA Access to only Nordole devices and interfaces – Select Change next to current interface to display list of available interfaces and devices.

Interface Index							Close >
Router Inter	face						
	Search Clear Filter					Max per F	Page: 20 💌
▼ MIAMI-iosv (172.19.27	7.3) 3 Interfaces						
Filter By: 💿 All 🔘 Ac	tive 🔘 Inactive					Max per pag	je: 10 💌
Interface 🔺	Description	Туре	In Speed	Out Speed	Active	Last Updated (MST)	Notes
Gi0/0	OOB Management	LAN-ET	1.00 Gbps	1.00 Gbps	No	Never	
Gi0/1	to ATLANTA-nx-osv	LAN-ET	1.00 Mbps	1.00 Mbps	Yes	February 16, 2016 6:30 PM	
Gi0/2	to MIAMI-iosvl2	LAN-ET	1.00 Mbps	1.00 Mbps	Yes	February 16, 2016 6:30 PM	1

➡ PITTSBURGH-iosv (172.19.27.9) 2 Interfaces



Troubleshooting

NFA Origin to Interface Group Mapping failing

A. Run the following query to verify origin enrichment has occurred.

select distinct source, origin, nim_origin from s_qos_data order by source;

📰 Results 📑 Messages										
	source	origin	nim_origin							
1	ada	forwardinc_hub	forwardinc_hub							
2	ada-col-sp	forwardinc_hub	forwardinc_hub							
3	ADA-COL-SP-TIX	forwardinc_hub	forwardinc_hub							
4	ADA-COL-TIX-QA	forwardinc_hub	forwardinc_hub							
5	ATLANTA-nx-osv	forwardinc_hub	forwardinc_hub							
6	AUSTIN-nx-osv	forwardinc_hub	forwardinc_hub							
7	BOSTON-nx-osv	forwardinc_hub	forwardinc_hub							
8	DALLAS-csr1000v	voonair	forwardinc_hub							
9	DENVERiosv	forwardinc_hub	forwardinc_hub							
10	FORT-COLLINS	forwardinc_hub	forwardinc_hub							
11	MIAMI-iosv	nordole	forwardinc_hub							
12	MIAMI-iosvl2	nordole	forwardinc_hub							
13	nordole-tixchange-web.nordole.virl.info	forwardinc_hub	forwardinc_hub							
14	nordole-tixchange-ws_db.nordole.virl.info	forwardinc_hub	forwardinc_hub							
15	PITTSBURGHiosv	nordole	forwardinc_hub							
16	PITTSBURGH-iosvl2	nordole	forwardinc_hub							
17	SANDIEGO-iosvl2	voonair	forwardinc_hub							
18	SANDIEGO-iosxrv	voonair	forwardinc_hub							
19	uim	forwardinc_hub	forwardinc_hub							
20	voonair-tixchange-web.voonair.virl.info	forwardinc_hub	forwardinc_hub							
21	voonair-tixchange-ws_db.voonair.virl.info	forwardinc_hub	forwardinc_hub							

B. Run the following query to make sure changes are getting through to discovery server.

select * from cm_computer_system where cs_id in (select cs_id from cm_computer_system_attr where cs_attr_value like '%Nordole');

100	0 % * < 3													
	🔝 Results 📴 Messages													
	ate_time	change_time	alive_time	caption	description	dedicated	state	name	domain	origin	ip	dns_na		
1	16-02-15 18:43:31.287	2016-02-17 00:00:29.210	2016-02-17 00:00:29.210	NULL	Cisco IOS Software, vios_I2 Software (vios_I2-ADVENT	SwitchRouter	0	miami-iosvl2	NULL	forwardinc_hub	172.19.25.11	miami-i		
2)16-02-15 18:43:34.330	2016-02-16 00:00:30.277	2016-02-17 09:11:29.357	NULL	Cisco IOS Software, IOSv Software (VIOS-ADVENTERP	SwitchRouter	0	miami-iosv	NULL	forwardinc_hub	172.19.27.3	miami-i		
3	16-02-15 18:43:35.553	2016-02-17 00:00:44.153	2016-02-17 00:00:44.153	NULL	Cisco IOS Software, vios_I2 Software (vios_I2-ADVENT	SwitchRouter	0	pittsburgh-iosvl2	NULL	forwardinc_hub	172.19.25.19	pittsbu		
4)16-02-15 18:43:43.740	2016-02-15 19:45:17.787	2016-02-17 09:11:29.330	NULL	Cisco IOS Software, IOSv Software (VIOS-ADVENTERP	SwitchRouter	0	pittsburgh-iosv	NULL	forwardinc_hub	172.19.27.9	pittsbu		

If the changes are not propagating as expected, go back and validate qos_processor changes are occurring (requires log level 3), it is also suggested to restart snmpcollector to facilitate qos processor changes.

Drillout from UIM to NFA Fails with "Unknown Error"

When drilling out from UIM to NFA and you receive the following error:



This error will be shown when the UIM user is not provisioned in NFA. Please refer back to page 16 for details on completing this process.