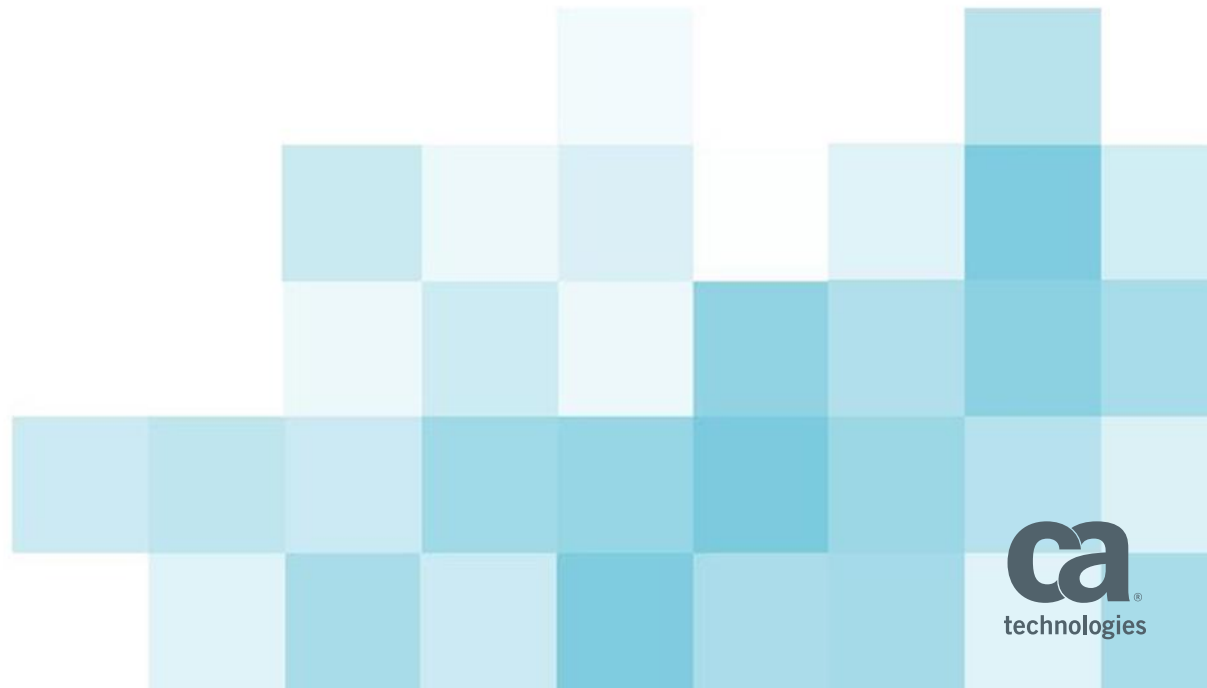


Service Operations Insight Unified Infrastructure Management (UIM) Connector

CA Engineering Services – Kevin Meehan
Alphaserve Technologies – Daniel Blanco

January 8th, 2015



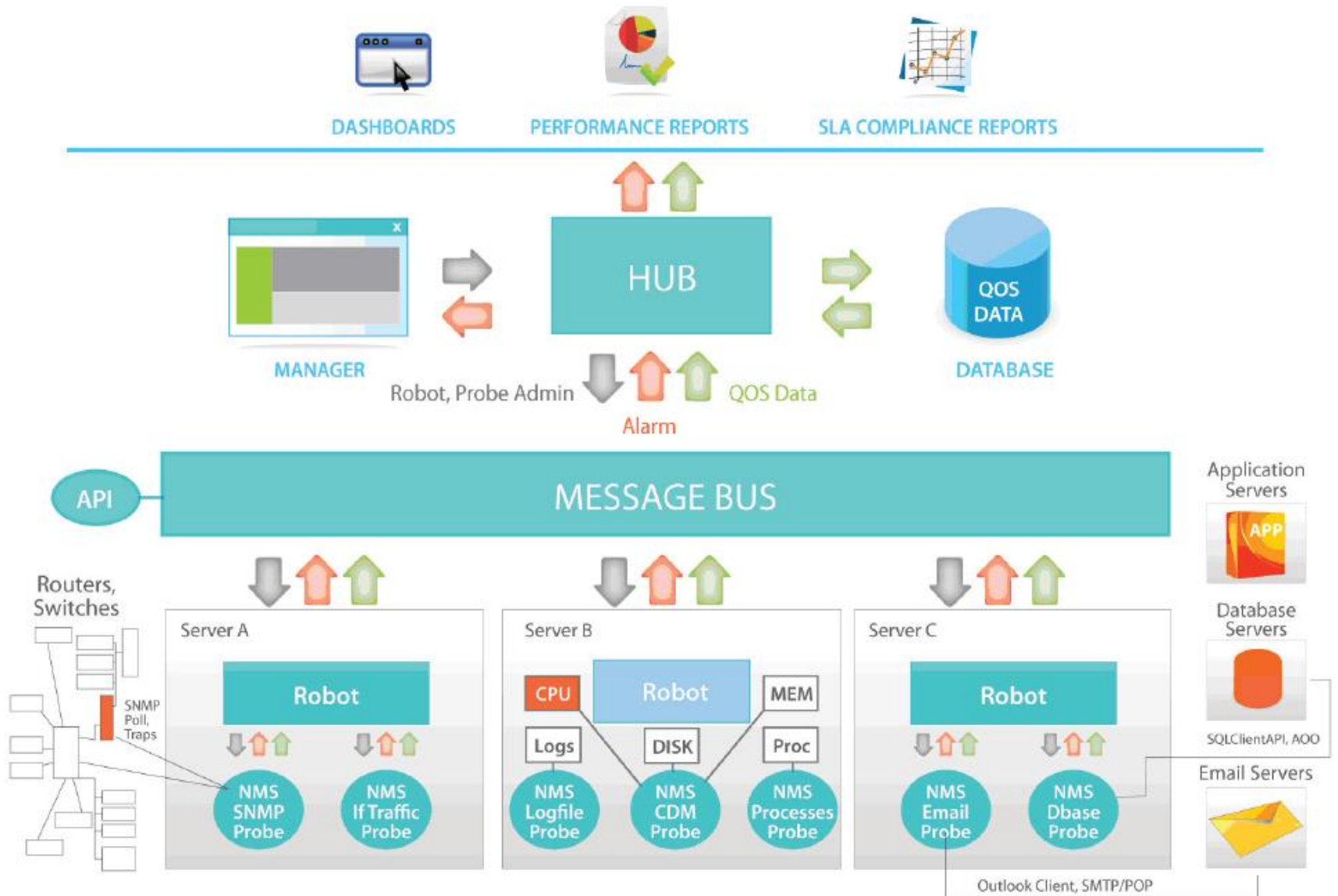
Agenda

- UIM Overview
 - Architecture
 - Data Flow and Messaging Model
- UIM Connector Overview
- Installation Requirements and Considerations
- UIM Connector CI Creation
 - CI retrieval process
 - Connector policy review
- UIM Connector Alert Synchronization
 - How alerts are received and processed
 - Connector policy review
- Best Practices and Debugging
- Guest Speaker: Daniel Blanco of Alphaserive Technologies

Unified Infrastructure Management (UIM) Overview

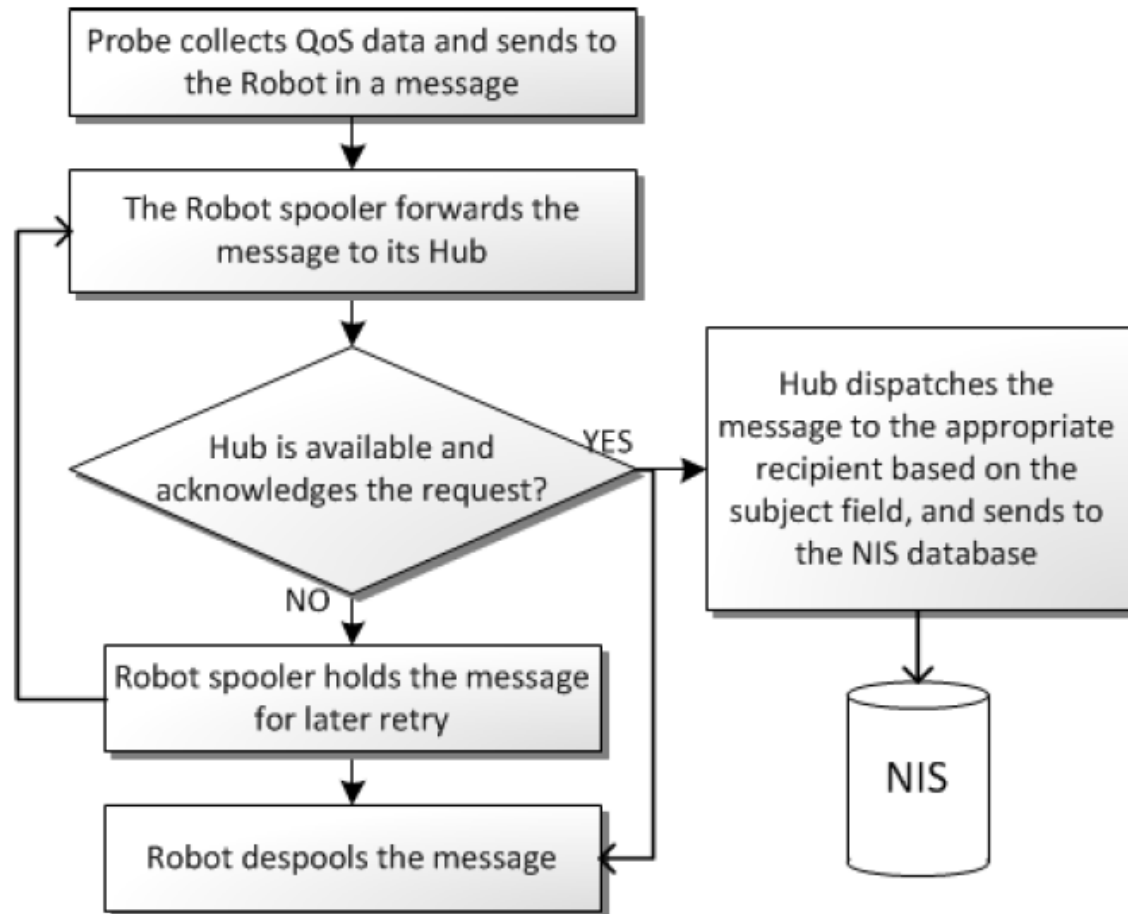
- CA UIM is a single, unified platform that provides end-to-end monitoring and control of your entire IT environment
- Unified visibility across heterogeneous infrastructures (systems, network, application, database, etc) built on unique lightweight architecture
- “Plug-and-play” probe architecture for quick, on-demand delivery of monitoring with easy extensibility
- Message Bus designed to be highly scalable, fast, secure and simple
- Resilient and highly available architecture (no loss of data)
- Portal provides intuitive, up-to-date views of monitoring data and offers multi-tenant capabilities

UIM Architecture and Components



UIM Message Bus

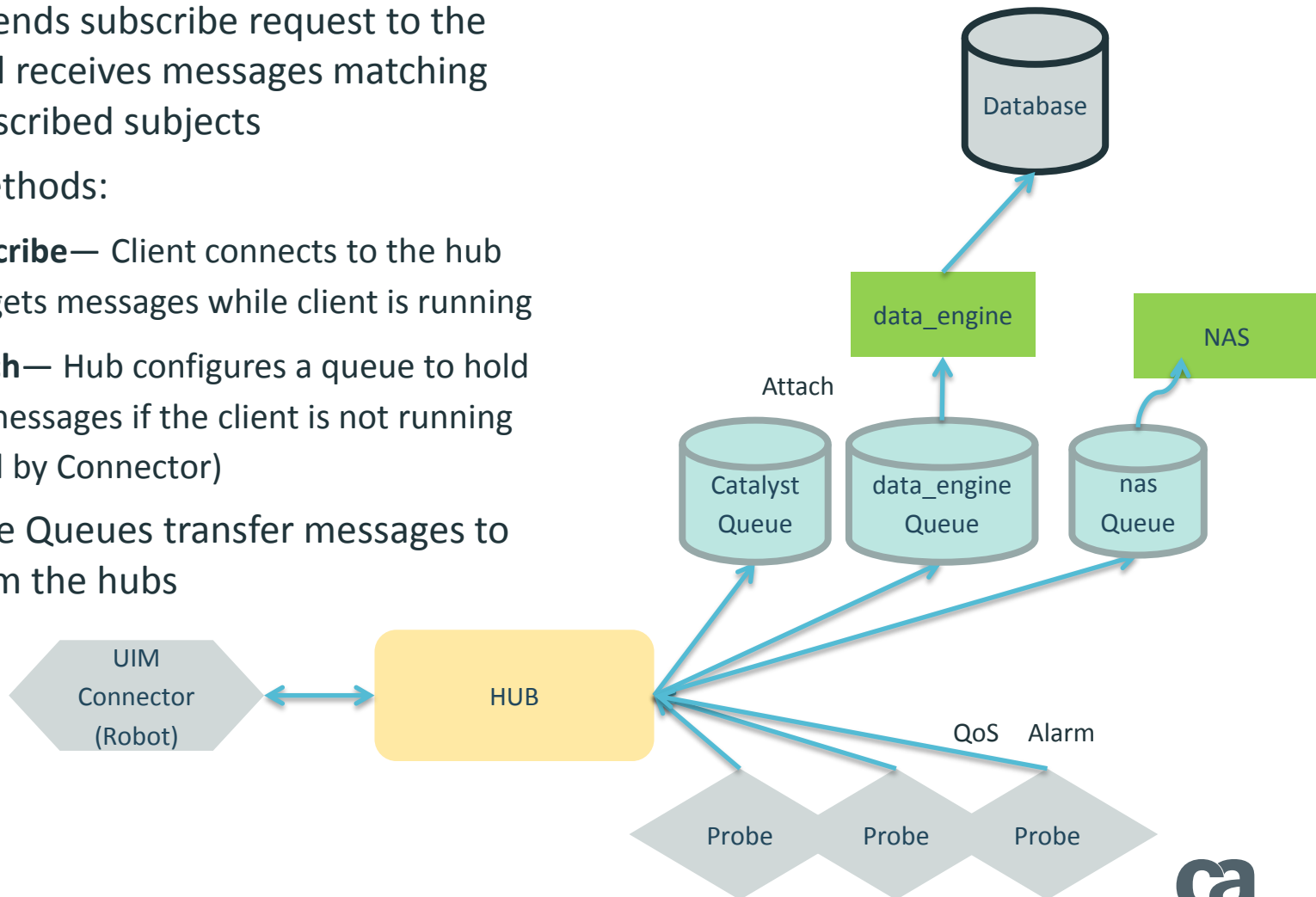
- TCP socket based for reliable message transfer
- Hub is the message broker for managing message queues and posting to subscribers



UIM Message Bus

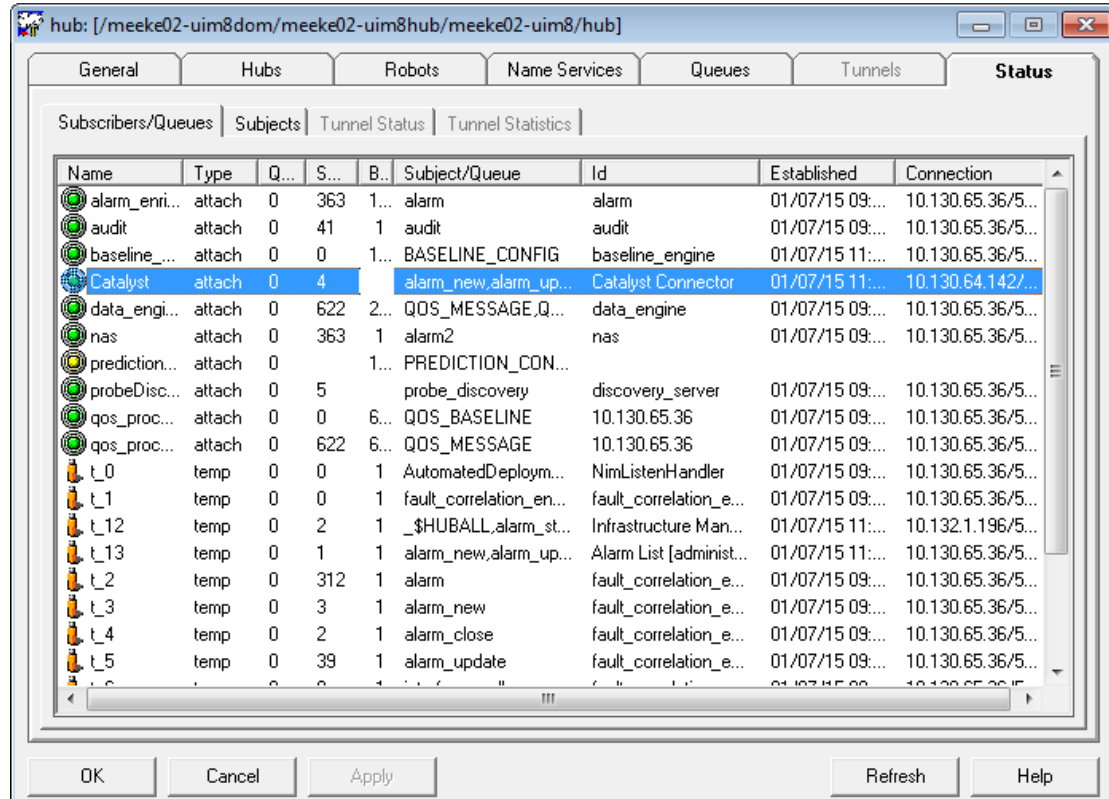
■ Subscribe Mechanism

- Client sends subscribe request to the hub and receives messages matching the subscribed subjects
- Two Methods:
 - **Subscribe**— Client connects to the hub and gets messages while client is running
 - **Attach**— Hub configures a queue to hold the messages if the client is not running (used by Connector)
- Message Queues transfer messages to and from the hubs



UIM Message Bus – Message Queues

- Queues are actually physical files (.sds) that contain records
- Messages are always stored to the queue files
- Connector subscribes to receive the following types of messages
 - alarm_new
 - alarm_update
 - alarm_close
 - alarm_assign



hub: [/meeke02-uum8dom/meeke02-uum8hub/meeke02-uum8/hub]

General Hubs Robots Name Services Queues Tunnels Status

Subscribers/Queues Subjects Tunnel Status Tunnel Statistics

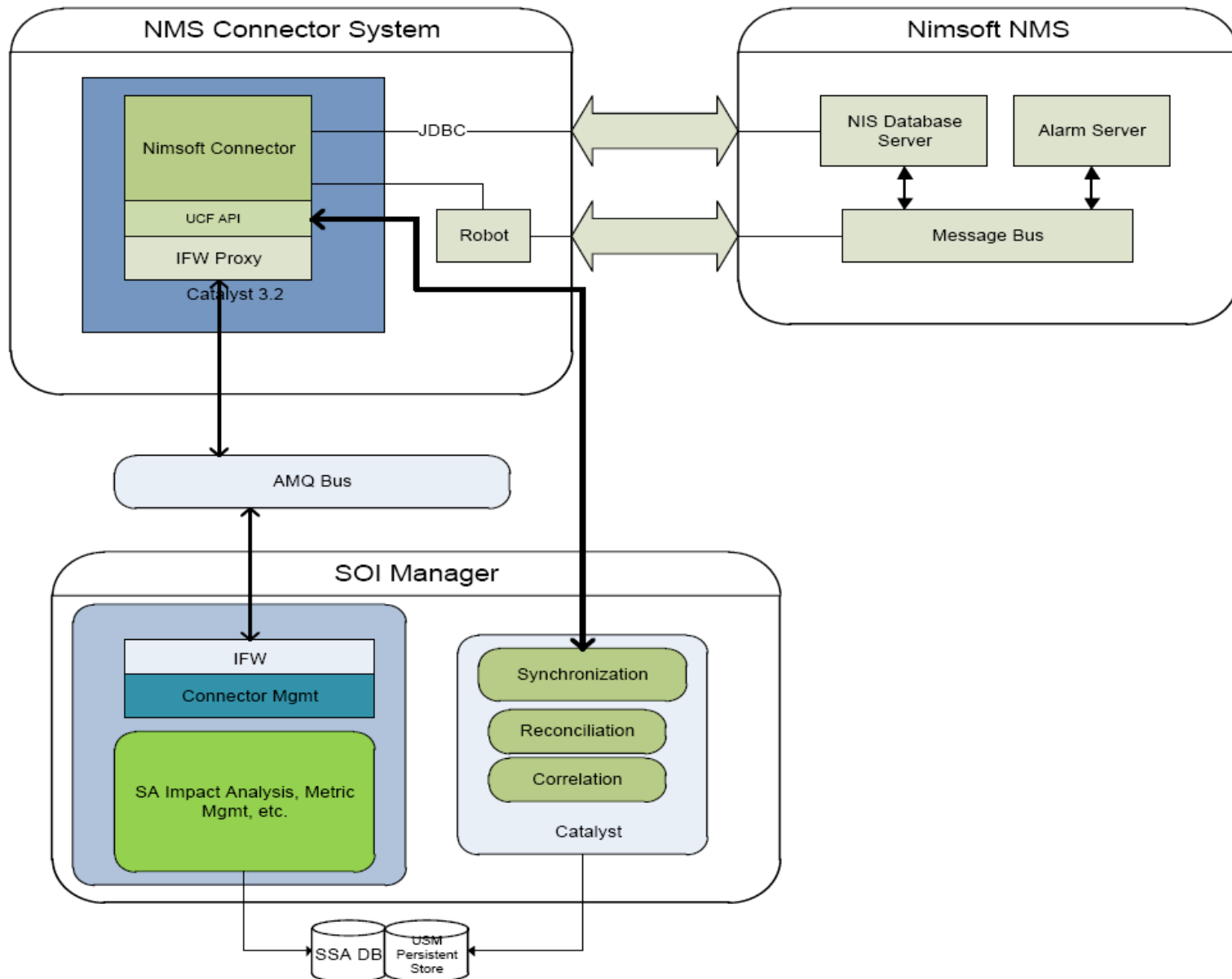
Name	Type	Q...	S...	B...	Subject/Queue	Id	Established	Connection
alarm_enri...	attach	0	363	1...	alarm	alarm	01/07/15 09:...	10.130.65.36/5...
audit	attach	0	41	1	audit	audit	01/07/15 09:...	10.130.65.36/5...
baseline_...	attach	0	0	1...	BASELINE_CONFIG	baseline_engine	01/07/15 11:...	10.130.65.36/5...
Catalyst	attach	0	4		alarm_new,alarm_up...	Catalyst Connector	01/07/15 11:...	10.130.64.142/...
data_engi...	attach	0	622	2...	QOS_MESSAGE,Q...	data_engine	01/07/15 09:...	10.130.65.36/5...
nas	attach	0	363	1	alarm2	nas	01/07/15 09:...	10.130.65.36/5...
prediction...	attach	0		1...	PREDICTION_CON...			
probeDisc...	attach	0	5		probe_discovery	discovery_server	01/07/15 09:...	10.130.65.36/5...
qos_proc...	attach	0	0	6...	QOS_BASELINE	10.130.65.36	01/07/15 09:...	10.130.65.36/5...
qos_proc...	attach	0	622	6...	QOS_MESSAGE	10.130.65.36	01/07/15 09:...	10.130.65.36/5...
t_0	temp	0	0	1	AutomatedDeploym...	NimListenHandler	01/07/15 09:...	10.130.65.36/5...
t_1	temp	0	0	1	fault_correlation_en...	fault_correlation_e...	01/07/15 09:...	10.130.65.36/5...
t_12	temp	0	2	1	_\$HUBALL,alarm_st...	Infrastructure Man...	01/07/15 11:...	10.132.1.196/5...
t_13	temp	0	1	1	alarm_new,alarm_up...	Alarm List (administ...	01/07/15 11:...	10.130.65.36/5...
t_2	temp	0	312	1	alarm	fault_correlation_e...	01/07/15 09:...	10.130.65.36/5...
t_3	temp	0	3	1	alarm_new	fault_correlation_e...	01/07/15 09:...	10.130.65.36/5...
t_4	temp	0	2	1	alarm_close	fault_correlation_e...	01/07/15 09:...	10.130.65.36/5...
t_5	temp	0	39	1	alarm_update	fault_correlation_e...	01/07/15 09:...	10.130.65.36/5...

OK Cancel Apply Refresh Help

UIM Connector Overview

- UIM Connector 1.0.0.105 is now available!
- CA UIM Connector collects configuration items, alerts and status from CA UIM
 - CIs are retrieved from UIM Database
 - Connector subscribes to receive alerts
- Data is processed and transformed to the common USM format through connector policy
- Policy is extensible, most UIM Alert attributes exposed to SOI
- Inbound Connector operations allow for alerts cleared in SOI to be cleared in UIM

UIM Connector Architecture



UIM Connector Operating System Support

- The CA UIM Connector supports the following:
 - CA Catalyst Container r3.4.1 installed using a file-based Registry
 - CA UIM 7.5, 7.6, 8.0 and 8.1
- CA UIM must be running on one of the following databases
 - Microsoft SQL Server 2012
 - Microsoft SQL Server 2008 R2
- The UIM Connector supports installation on:
 - Windows 2003 (32-bit and 64-bit) Standard, Enterprise, Datacenter with SP1 & SP2
 - Windows 2003 (32-bit and 64-bit) R2 Standard, Enterprise, Datacenter with SP1 & SP2
 - Windows 2008 (32-bit and 64-bit) Standard, Enterprise, Datacenter with SP1 & SP2
 - Windows 2008 (64-bit) Release 2 Standard, Enterprise
 - Microsoft Windows Server 2012 (64-bit) Standard and Datacenter w/ latest SP
 - Microsoft Windows Server 2012 (64-bit) R2 Standard and Datacenter w/ latest SP

UIM Connector Pre-Installation Considerations

- Verify that a CA UIM Robot is installed on the Connector server
- Verify that the CA Catalyst Container r3.4.1 is installed
- Verify the message queue is configured and enabled on the Primary Hub and Secondary Hub
- As a best practice, do not install the connector either on the primary or secondary servers or on the CA UIM database servers
- Configure UIM User Privileges
 - Read access to the NIS Database for querying the CI and Alarm information
 - Read and write access to the message queues configured in the Primary and Secondary Hub

Configure the Message Queue

- Configure the **hub** probe
- Add a new Message Queue named 'Catalyst'
- Add the following to the Subject field: "alarm_new,alarm_update,alarm_assign,alarm_close"

The screenshot displays the Infrastructure Manager interface with the 'hub' probe selected in the left-hand tree. The 'Message Queues' tab is active, showing a list of existing queues. A new queue named 'Catalyst' is being added, with its configuration details shown in the 'Edit Queue' dialog box.

Message Queues Table:

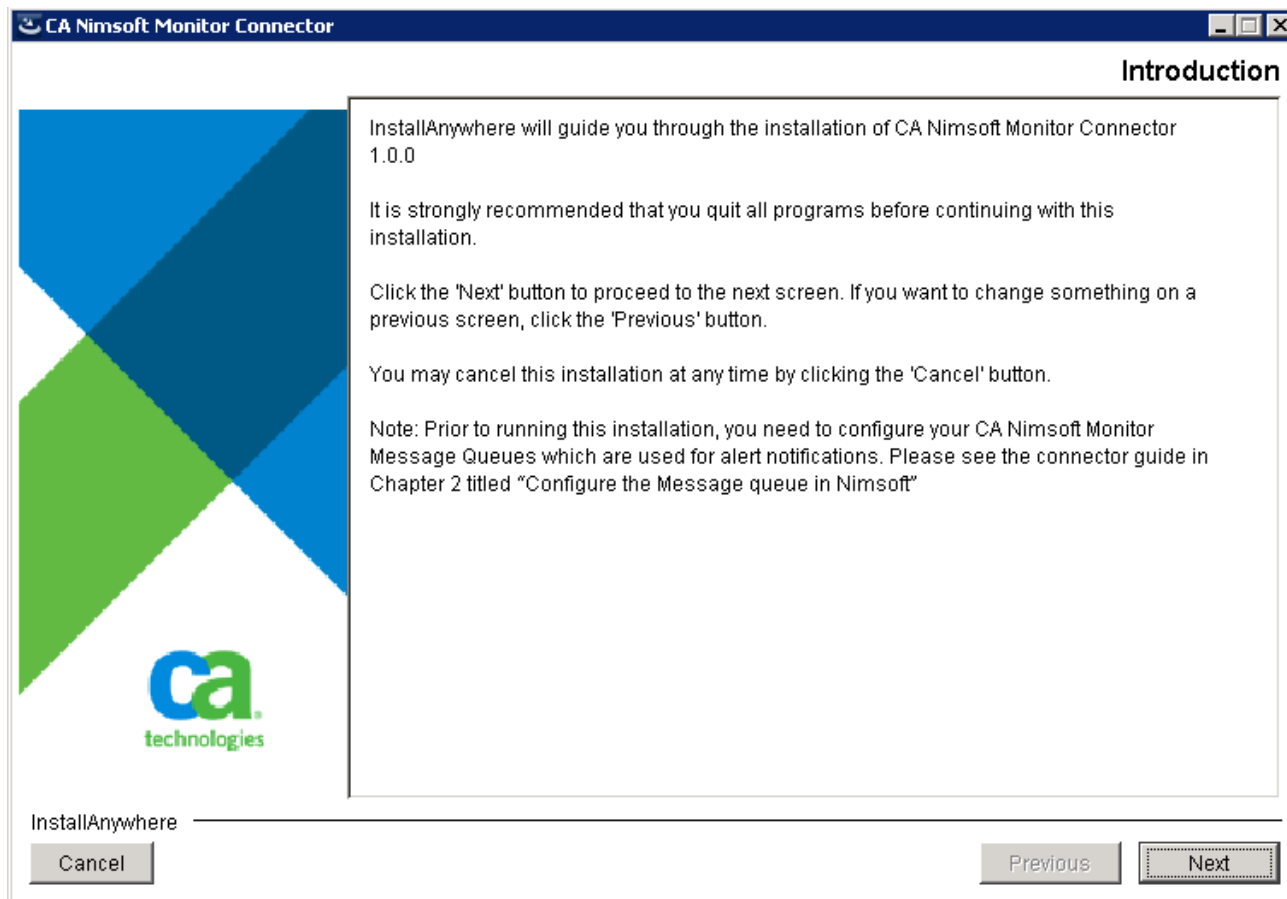
Name	Type	Subject/Queue
<input checked="" type="checkbox"/> data_engine	attach	QOS_MESSAGE,QOS_DEFI
<input checked="" type="checkbox"/> nas	attach	alarm2
<input checked="" type="checkbox"/> alarm_enrichment	attach	alarm
<input checked="" type="checkbox"/> tot_rule_config	attach	TOT_RULE_CONFIG
<input checked="" type="checkbox"/> baseline_engine.mee...	attach	BASELINE_CONFIG
<input checked="" type="checkbox"/> prediction_engine.mee...	attach	PREDICTION_CONFIG
<input checked="" type="checkbox"/> qos_processor_qos_m...	attach	QOS_MESSAGE
<input checked="" type="checkbox"/> qos_processor_qos_b...	attach	QOS_BASELINE
<input checked="" type="checkbox"/> audit	attach	audit
<input checked="" type="checkbox"/> probe_discovery	attach	probe_discovery
<input checked="" type="checkbox"/> Catalyst	attach	alarm_new,alarm_update,alarm_assign,alarm_close

Edit Queue Dialog:

- ☒ Active
- Name: Catalyst
- Type: attach
- Address:
- Subject: alarm_new,alarm_update,alarm_assign,alarm_close
- Bulk Size: <default>

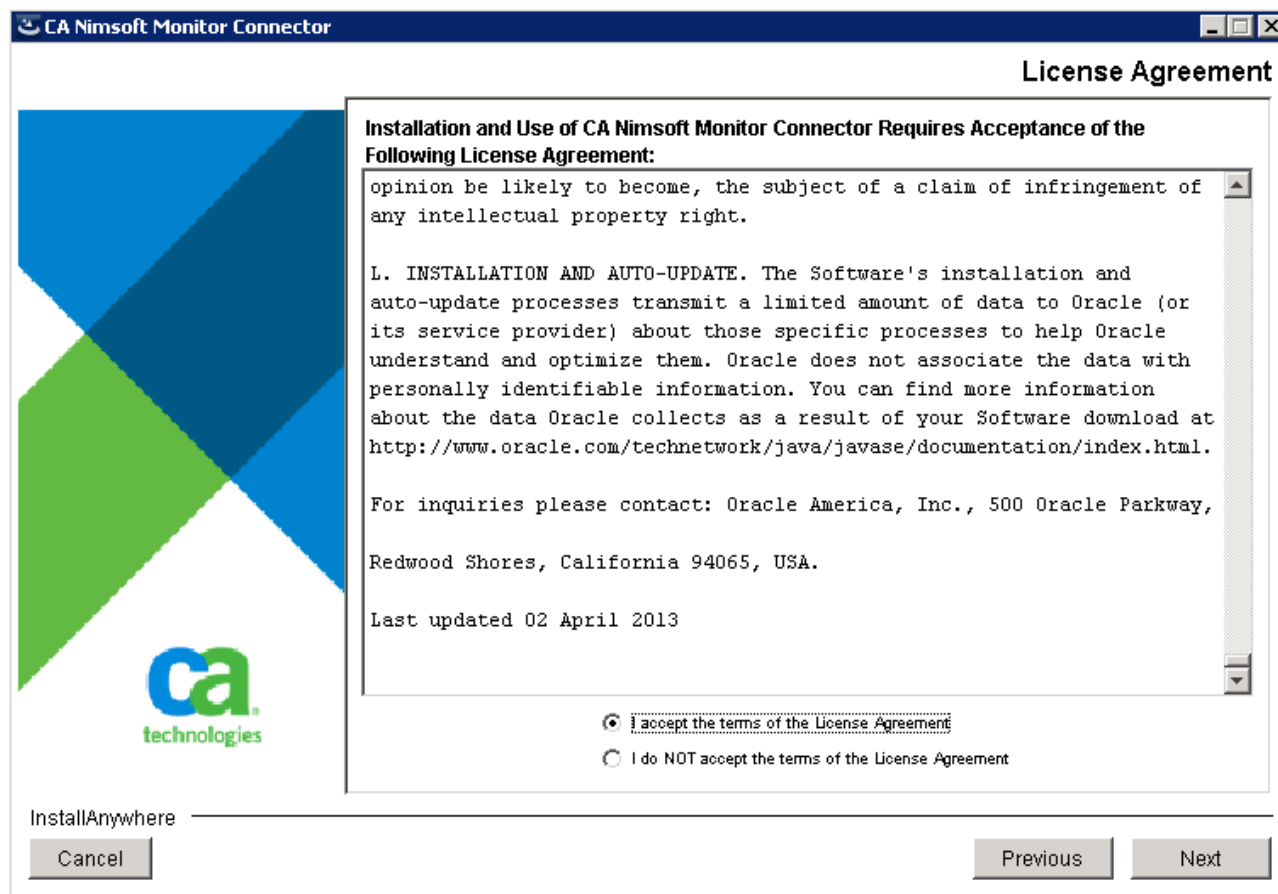
Installing the UIM Connector

- Double-click the Setup.bat file from the CA Nimsoft Monitor Connector package



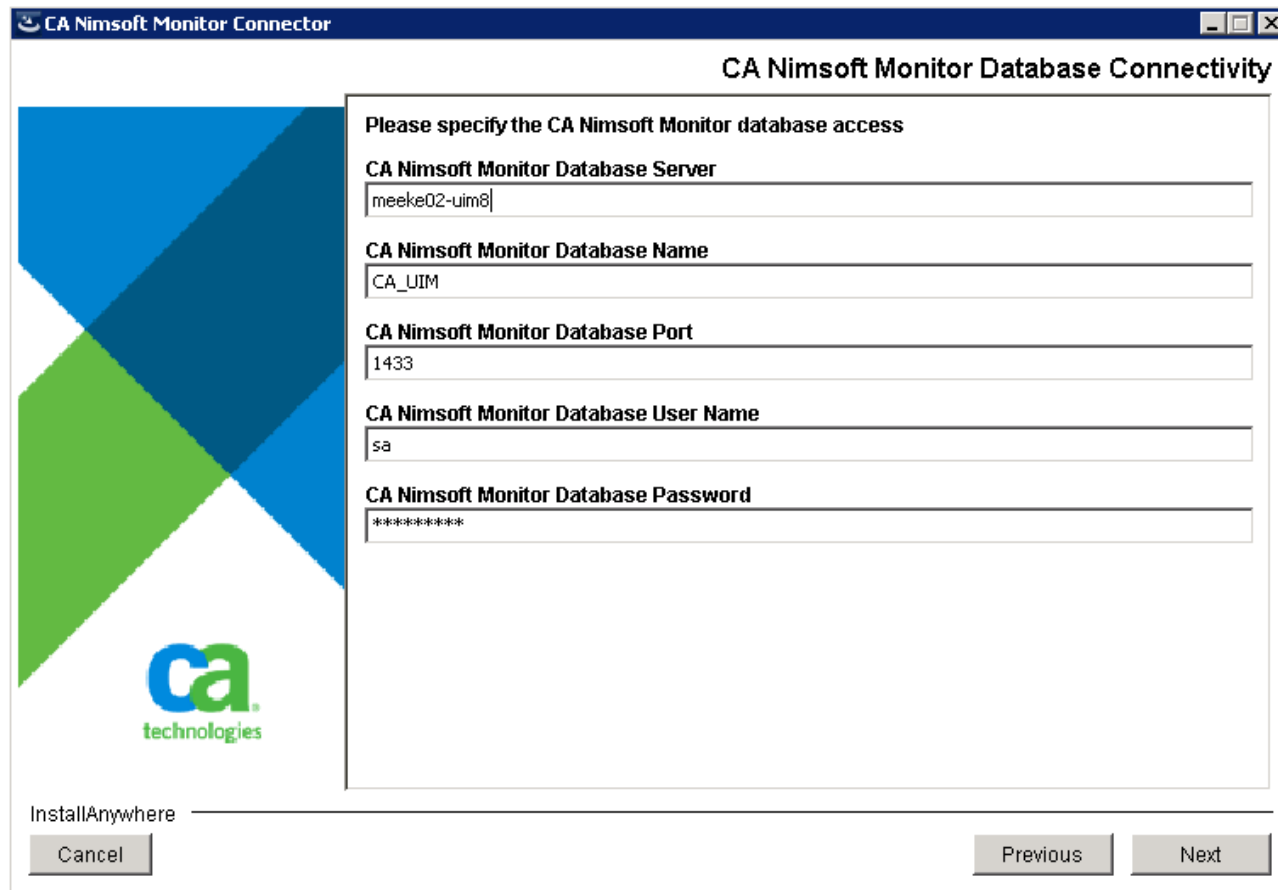
Installing the UIM Connector

- Accept License Agreement



Installing the UIM Connector

- Specify UIM database credentials



The image shows a Windows-style window titled "CA Nimsoft Monitor Connector". Inside the window, the title "CA Nimsoft Monitor Database Connectivity" is centered at the top. Below this, a message reads "Please specify the CA Nimsoft Monitor database access". There are five input fields, each with a label to its left: "CA Nimsoft Monitor Database Server" (containing "meeke02-uim8"), "CA Nimsoft Monitor Database Name" (containing "CA_UIM"), "CA Nimsoft Monitor Database Port" (containing "1433"), "CA Nimsoft Monitor Database User Name" (containing "sa"), and "CA Nimsoft Monitor Database Password" (containing "*****"). To the left of these fields is a large graphic consisting of four overlapping triangles in blue, green, and dark blue, with the "ca technologies" logo at the bottom. At the bottom of the window, there is a "Cancel" button on the left, and "Previous" and "Next" buttons on the right. The text "InstallAnywhere" is visible in the bottom left corner of the window's content area.

CA Nimsoft Monitor Connector

CA Nimsoft Monitor Database Connectivity

Please specify the CA Nimsoft Monitor database access

CA Nimsoft Monitor Database Server
meeke02-uim8

CA Nimsoft Monitor Database Name
CA_UIM


CA Nimsoft Monitor Database Port
1433

CA Nimsoft Monitor Database User Name
sa

CA Nimsoft Monitor Database Password

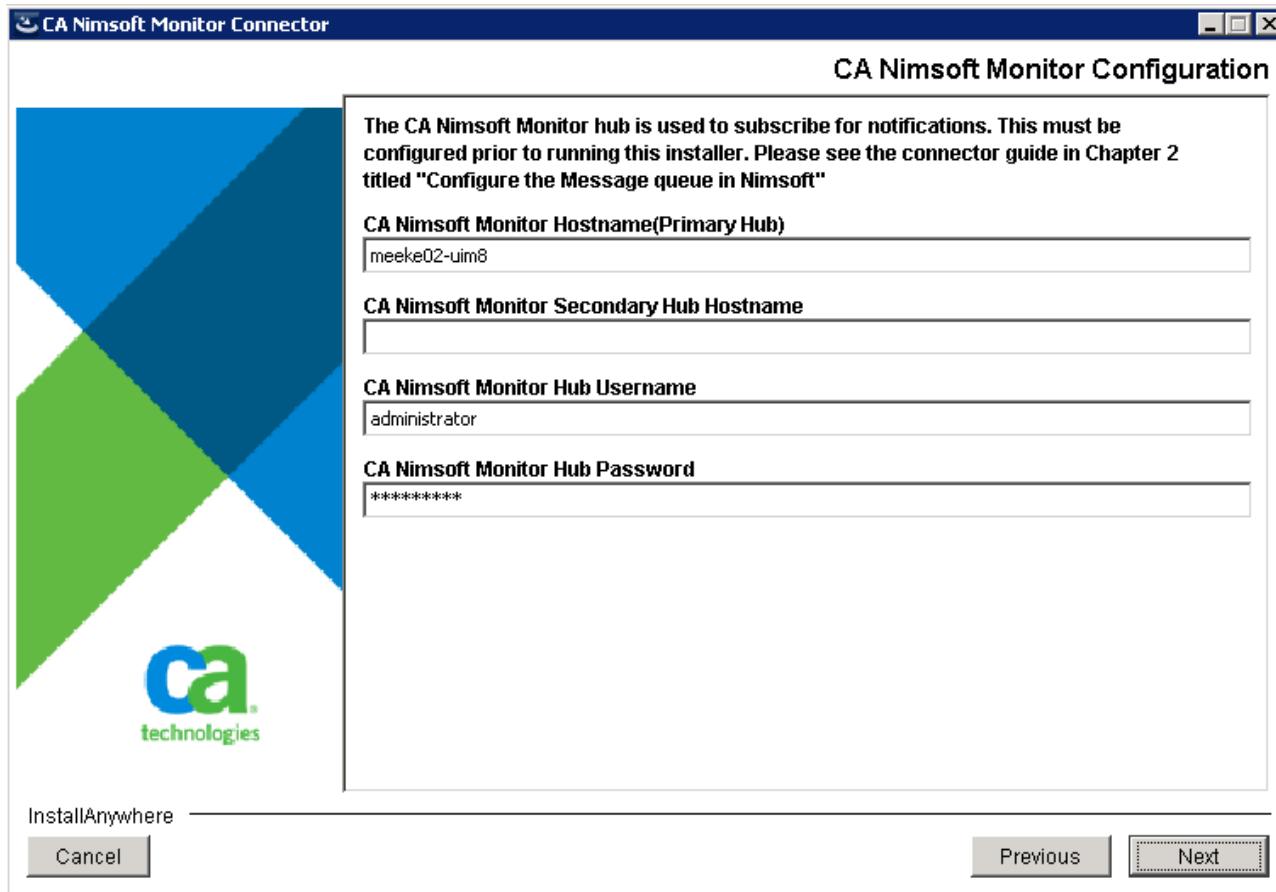
InstallAnywhere

Cancel Previous Next



Installing the UIM Connector

- Specify the Primary Hub and Username/Password



The screenshot shows a Windows-style window titled "CA Nimsoft Monitor Connector". Inside, the title "CA Nimsoft Monitor Configuration" is at the top right. On the left is a large graphic with blue and green geometric shapes and the "ca technologies" logo. The main area contains instructional text and four input fields. The first field, "CA Nimsoft Monitor Hostname(Primary Hub)", contains "meeke02-uim8". The second field, "CA Nimsoft Monitor Secondary Hub Hostname", is empty. The third field, "CA Nimsoft Monitor Hub Username", contains "administrator". The fourth field, "CA Nimsoft Monitor Hub Password", contains "*****". At the bottom left is the "InstallAnywhere" logo and a "Cancel" button. At the bottom right are "Previous" and "Next" buttons.

CA Nimsoft Monitor Configuration

The CA Nimsoft Monitor hub is used to subscribe for notifications. This must be configured prior to running this installer. Please see the connector guide in Chapter 2 titled "Configure the Message queue in Nimsoft"

CA Nimsoft Monitor Hostname(Primary Hub)
meeke02-uim8

CA Nimsoft Monitor Secondary Hub Hostname

CA Nimsoft Monitor Hub Username
administrator

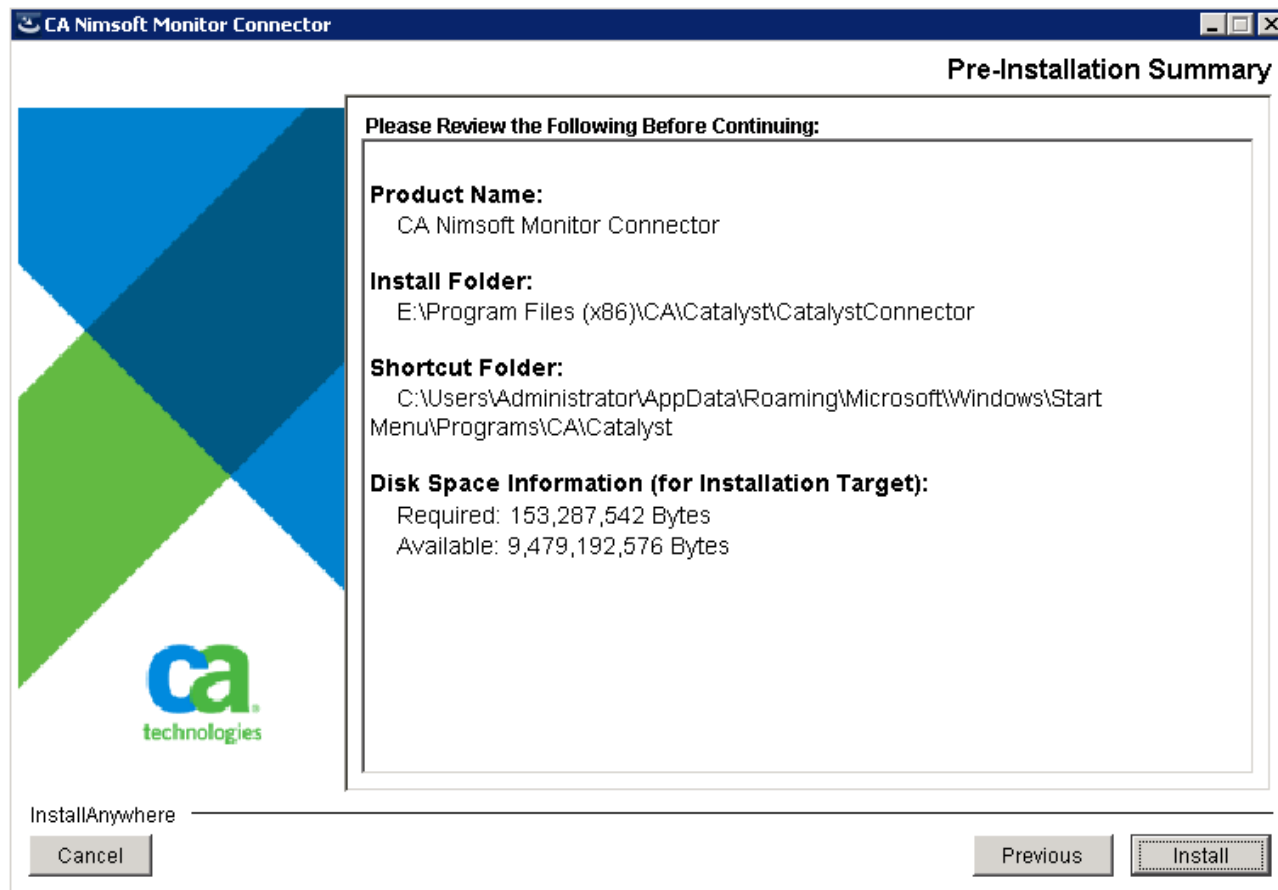
CA Nimsoft Monitor Hub Password

InstallAnywhere

Cancel Previous Next

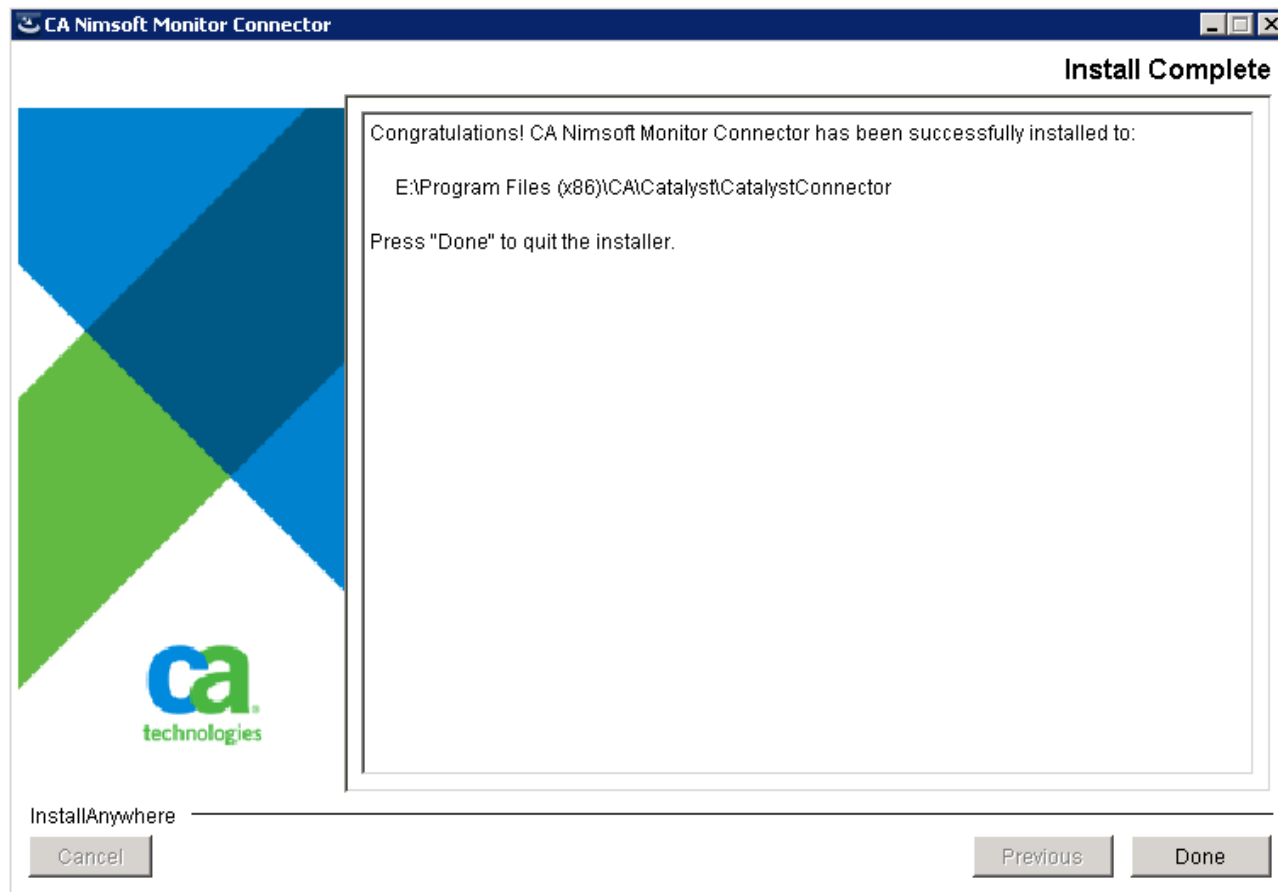
Installing the UIM Connector

- Pre-Installation Summary



Installing the UIM Connector

- Installation Completed



Post-Install UIM Connector

- If the installation summary page notes installation errors, review the following log:
Catalyst_HOME\CA_Catalyst_Nimsoft_Connector_Install_<Date (MM-DD-YYYY)>
<Time(HH:MM:SS)>.log

```
Summary
-----

Installation: Successful.

132 Successes
0 Warnings
0 NonFatalErrors
0 FatalErrors

Action Notes:

None

Install Log Detail:

Check Disk Space:      C:\Program Files (x86)\CA\Catalyst
                        Status: SUCCESSFUL
                        Additional Notes: NOTE - Required Disk Space:
                        153,287,542; Free Disk Space: 2,353,975,296

Install Action:        Find Component in Registry: CA Nimsoft Monitor Connector
                        Status: SUCCESSFUL

Custom Action:         COM.CA.connector.installUtil.ValidateContainer
                        Status: SUCCESSFUL

Custom Action:         COM.CA.connector.installUtil.DefaultServerHostNames
                        Status: SUCCESSFUL
```

UIM Connector within SOI UI Dashboard

tenant0

meeke02-
uimcon_CatalystConnector

CA:00050_meeke02-
uim8@meeke02-
uimcon_CatalystConnector

CA Service Operations Insight
Manager Configuration

CA Service Operations Insight UI
Server Configuration

Connector Status: Online

Connector Description: NimsoftConnector running in Catalyst node
meeke02-uimcon_CatalystConnector

Source Description: Nimsoft Monitor running on meeke02-uim8

Status Description: Connector is running normally

Connector Controls

dns_resolution ☒

getAlertsAtStartup ☒

getCIsAtStartup ☒

getRelationshipsAtStartup ☐

isRemotable ☒

performDeltaProcessing ☒

useAlertFilter ☐

useEnumeratedGet ☐

useEventStore ☒

useServiceFilter ☒

Connection Details

Note that any modifications in the host field will require you to install and configure the domain manager on the new host.

Name	Value
MdrProdInstance	
MdrProduct	
debugMode	
deleteThreadPollInterval	
eventDelay	
hubPassword	
hubUsername	
jdbcDriverCN	
mdrHostname	
mockAlarmsFile	
mockMode	
name	
primaryHub	
secondaryHub	
supportedCITypes	
wsPassword	

Nimsoftconnector.xml

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <usm:KeywordValuePairs xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
3   xmlns:usm="http://www.ca.com/usm" xsi:type="usm:KeywordValuePairs">
4   <property name="MdrProduct" value="CA:00050"/>
5   <property name="MdrProdInstance" value="meeke02-uim8"/>
6   <property name="mdrHostname" value="meeke02-uim8"/>
7   <property name="hubUsername" value="administrator"/>
8   <property name="hubPassword" value=
9     "AAAAEDu5zMKi7shLkEDhmSI9rWZwqdf8xBsE98NKLOR03C4c"/>
10  <property name="primaryHub" value="meeke02-uim8"/>
11  <property name="secondaryHub" value=""/>
12  <property name="wsUrl" value="jdbc:
13    sqlserver://meeke02-uim8:1433;databaseName=CA_UIM;/>
14  <property name="wsUsername" value="sa"/>
15  <property name="wsPassword" value=
16    "AAAAECKXT7SIyRWQtXtnKngvflYsvznpGk2BrFm78AfFN6Va"/>
17  <property name="supportedCITypes" value="ComputerSystem"/>
18  <property name="mockMode" value="false"/>
19  <property name="mockAlarmsFile" value=
20    "C:/Users/Administrator/Desktop/mock-alarms/sample-nimsoft-alarms.xml"/>
21  <property name="name" value="com.ca.usm.ucf.nimsoft_impl.NSConnector"/>
22  <property name="jdbcDriverCN" value="com.microsoft.sqlserver.jdbc.SQLServerDriver"/>
23  <property name="eventDelay" value="60000"/>
24  <property name="deleteThreadPollInterval" value="3600000"/>
25  <property name="debugMode" value="false"/>
26 </usm:KeywordValuePairs>
```

Verify Successful CI Import

- CIs are retrieved through UIM database query
- CIs are created of class ComputerSystem

Service Modeler - CA Service Operations Insight

File View Help

Selection

Objects

Browse by: Data Source

Filter:

Data Source

- CA:00005_Spectrum-meeke02-spim-1@meeke02-soi1.ca.com
- CA:00030@tenant0
- CA:00050_meeke02-uim8@meeke02-uimcon_CatalystConnect
- Computer System (4)
 - meeke02-1 (1)
 - meeke02-2 (2)
 - meeke02-uim8
 - meeke02-uimcon
- CA:00056_service-discovery@meeke02-soi1.ca.com
- CA:09993_meeke02-soi1.ca.com@meeke02-soi1.ca.com
- CA:09997_meeke02-soi1.ca.com@meeke02-soi1.ca.com

Component Detail: UIM of type Service

Information Root Cause Symptoms Service Impact Alerts Cleared Alert History USM Properties USM Notebook SOI Properties

Filter: Displaying 8 of 8

Filtered By: Maintenance Available Filters: All Alerts

Severity	Created	Name	Class	Category	Summary	Service Impact	# Impacte
Critical	Dec 22, 2014 7:56:02 AM EST	meeke02-2.ca.com	Computer S...	Risk-Fault	PROCESS IS DOWN	Moderate	1
Major	Dec 21, 2014 5:03:27 PM EST	meeke02-uim8	Computer S...	Risk-Fault	License will expire in 12 days on /meeke02-uim8d...	Slight	3
Major	Dec 21, 2014 7:42:49 PM EST	meeke02-1	Computer S...	Risk-Fault	Average (5 samples) memory usage is now 60%,...	Slight	4
Major	Dec 21, 2014 7:49:04 PM EST	meeke02-1	Computer S...	Risk-Fault	Average (4 samples) disk free on C:\ is now 38%,...	Slight	4
Major	Jan 7, 2015 9:47:06 AM EST	meeke02-2.ca.com	Computer S...	Risk-Fault	Average (1 samples) memory usage is now 51%,...	Slight	1
Major	Jan 7, 2015 9:54:02 AM EST	meeke02-2.ca.com	Computer S...	Risk-Fault	Average (2 samples) disk free on C:\ is now 39%,...	Slight	1
Major	Jan 7, 2015 12:30:46 PM EST	UIM	Service		Service is moderately degraded due to 1 active r...	Moderate	2
Minor	Jan 6, 2015 8:02:53 PM EST	meeke02-uimcon	Computer S...	Risk-Fault	Average (5 samples) processor queue length is 8.60	Slight	3

... Projection Sheet Type Mdr Product Sys

- reconciledSheet ComputerSy... CA Catalyst meek
- CA:00005:Spectr... ComputerSy... Spectrum Infrastructure Ma... meek
- CA:00047:meeke... ComputerSy... CA Service Operations Insig...
- CA:00050:meeke... ComputerSy... Nimsoft

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ca technologies

CI Import Process

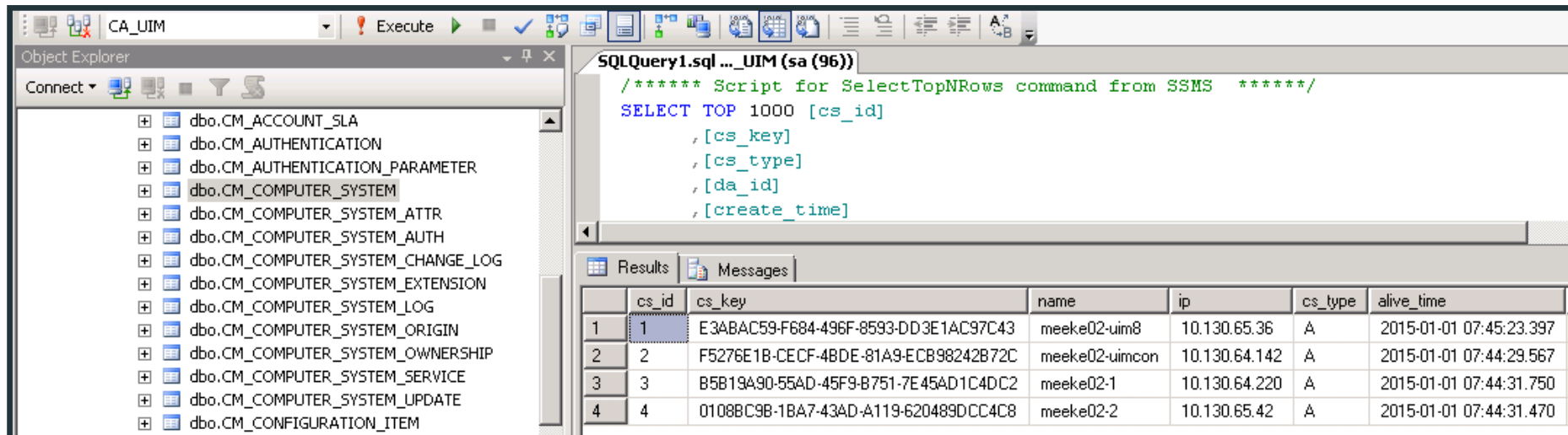
- During Connector startup, database query is performed:

```
SELECT * FROM CM_COMPUTER_SYSTEM
```

- Database is polled every minute for new CIs:

```
SELECT * FROM CM_COMPUTER_SYSTEM
```

```
WHERE (create_time>'YYYY-MM-DD HH:MM:SS' or change_time>'YYYY-MM-DD HH:MM:SS')
```



The screenshot shows the SQL Server Enterprise Manager interface. On the left, the Object Explorer displays the database schema for 'CA_UIM', including tables like 'dbo.CM_ACCOUNT_SLA', 'dbo.CM_AUTHENTICATION', and 'dbo.CM_COMPUTER_SYSTEM'. The main window shows a query titled 'SQLQuery1.sql ... UIM (sa (96))' with the following SQL code:

```
/****** Script for SelectTopNRows command from SSMS *****/  
SELECT TOP 1000 [cs_id]  
               , [cs_key]  
               , [cs_type]  
               , [da_id]  
               , [create_time]
```

Below the query, the 'Results' tab displays a table with 7 columns: 'cs_id', 'cs_key', 'name', 'ip', 'cs_type', and 'alive_time'. The table contains 4 rows of data:

	cs_id	cs_key	name	ip	cs_type	alive_time
1	1	E3ABAC59-F684-496F-8593-DD3E1AC97C43	meeke02-uim8	10.130.65.36	A	2015-01-01 07:45:23.397
2	2	F5276E1B-CECF-4BDE-81A9-ECB98242B72C	meeke02-uimcon	10.130.64.142	A	2015-01-01 07:44:29.567
3	3	B5B19A90-55AD-45F9-8751-7E45AD1C4DC2	meeke02-1	10.130.64.220	A	2015-01-01 07:44:31.750
4	4	0108BC9B-1BA7-43AD-A119-620489DCC4C8	meeke02-2	10.130.65.42	A	2015-01-01 07:44:31.470

CI Import Debug

- Turn on debug within the nimsoftconnector-log4j.xml
 - CA\Catalyst\CatalystConnector\container\etc
- No need to restart services

```
1 <?xml version="1.0" encoding="UTF-8" standalone="no" ?>
2 <!DOCTYPE log4j:configuration SYSTEM "log4j.dtd">
3 <log4j:configuration xmlns:log4j="http://jakarta.apache.org/log4j/">
4
5     <appender class="org.apache.log4j.RollingFileAppender" name="nimsoftconnector">
6         <param name="append" value="true" />
7         <param name="file" value="${karaf.data}/log/nimsoftconnector.log" />
8         <param name="maxBackupIndex" value="9" />
9         <param name="maxFileSize" value="15MB" />
10        <layout class="org.apache.log4j.PatternLayout">
11            <param name="ConversionPattern" value="%d{yyyy-MM-dd HH:mm:ss,SSS} %p
12                [%t] %c{2} - %m%n" />
13        </layout>
14    </appender>
15
16    <logger name="com.ca.usm.scf.gd">
17        <level value="DEBUG" />
18        <appender-ref ref="nimsoftconnector" />
19    </logger>
20</log4j:configuration>
```

CI Import Mapping to USM Schema

■ Example of CI import entry in nimsoftconnector.log

2015-01-04 06:12:21,271 DEBUG [CA:00050_meeke02-uim8@meeke02-uimcon_CatalystConnector] data.NisData - parseComputerSystem(): ComputerSystem [**cs_id**=4, cs_key=0108BC9B-1BA7-43AD-A119-620489DCC4C8, cs_type=A, **name**=meeke02-2, origin=meeke02-uim8hub, **ip**=10.130.65.42, **dns_name**=meeke02-2, **mac**=00-50-56-83-53-E0, **os_type**=Windows, **os_name**=WindowsServer-2008-R2, **os_version**=6.1.7601, os_description=Service Pack 1 Build 7601, dedicated=Host, **class**=computer, **create_time**=2014-12-21 14:32:11.093, **change_time**=2014-12-21 14:32:11.093, alive_time=2015-01-01 07:44:31.47, nimbus_type=1]

DB Property	USM CI Attribute
cs_id	MdrElementID
ip	PrimaryIPv4Adress
dns_name	PrimaryDnsName
os_type, os_name	PrimaryOSType
name	ComputerName
mac	PrimaryMacAddress
create_time	CreationTimestamp
change_time	LastModTimestamp
os_version	PrimaryOSVersion
os_name	OSName

Note: If no **dns_name**, FQDN lookup is done by the Connector against **ip** to populate **PrimaryDnsName**

nimsoftconnector_policy.xml – Item EventClass

- Connector policy file stored in:
 - \CA\Catalyst\CatalystConnector\registry\topology\physical\meeke02-uimcon_CatalystConnector\modules\policy
- Item EventClass is initial entry point in policy
 - <Classify> routes to appropriate EventClass based on message contents
 - <Format> section sets USM attributes that will be inherited by sub EventClasses

```
<EventClass name="Item">

  <Classify>
    <Field input='class' pattern='computer' output='eventtype' outval='ComputerSystem' />
    <Field input='class' pattern='device' output='eventtype' outval='GenericIPDevice' />
    <Field input='NSEntitytype' pattern='NSMessage' output='eventtype' outval='Alert' />
  </Classify>

  <Format>
    <Field output="CAPProductIdentifier" format="{0}" input="00050"/>
    <Field output="MdrProduct" format="CA:{0}" input="CAPProductIdentifier"/>
    <Field conditional="cs_id" output="MdrElementID" format="{0}" input="cs_id"/>
    <Field conditional="ip" output="PrimaryIPv4Address" format="{0}" input="ip"/>
    <Field conditional="dns_name" output="PrimaryDnsName" format="{0}" input="dns_name" />
    <Field conditional="!dns_name" output="PrimaryDnsName" format="{0}" input="{fgdn(ip)}" />
  </Format>

</EventClass>
```

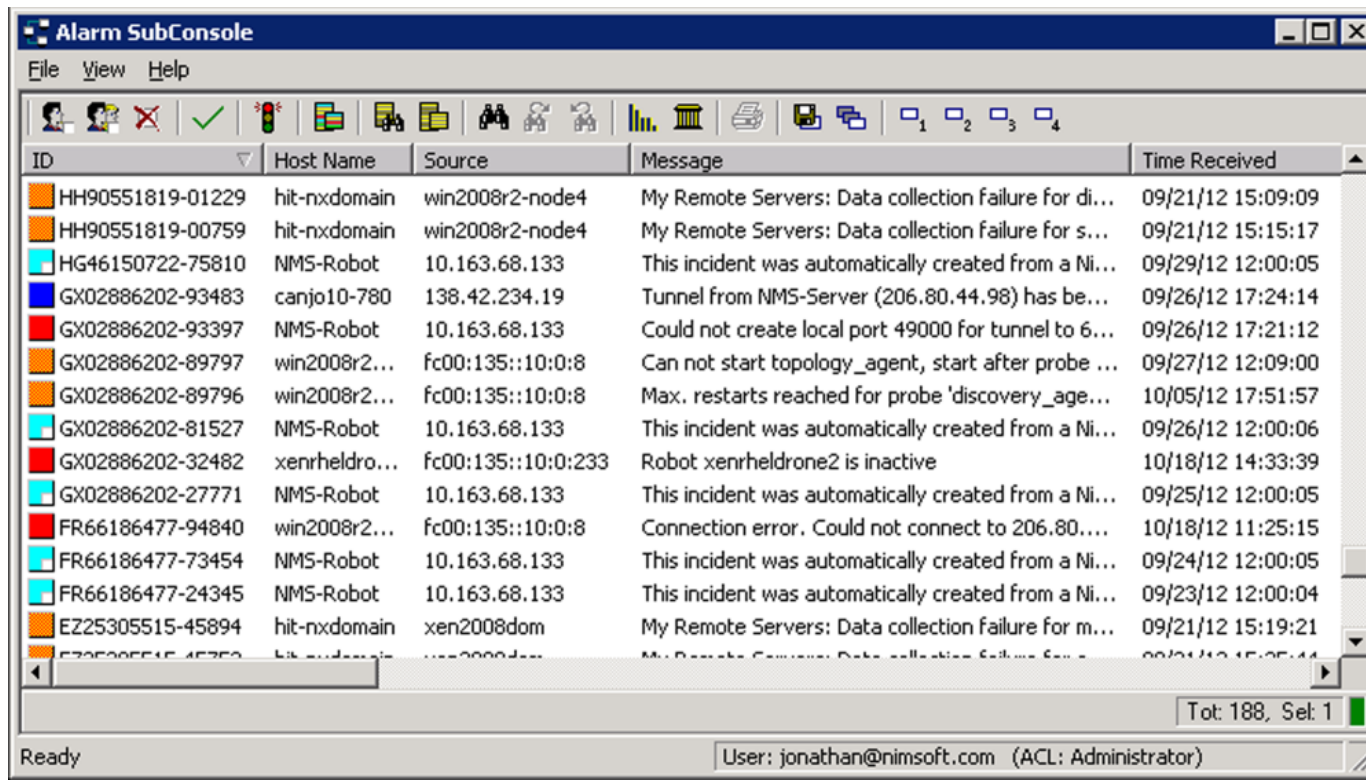
nimsoftconnector_policy.xml – ComputerSystem EventClass

```
<!-- Computer System CI -->
<EventClass name="ComputerSystem" extends="Item">
  <Normalize>
    <Field input='os_type,os_name' type='map' output='PrimaryOSType' >
      <mapentry mapin="^Windows,.*" mapout="Windows" />
      <mapentry mapin="UNIX,Linux" mapout="Linux" />
      <mapentry mapin="UNIX,Solaris" mapout="Unix-Solaris" />
      <mapentry mapin="UNIX,AIX" mapout="Unix-AIX" />
      <mapentry mapin="UNIX,HP-UX" mapout="Unix-HPUX" />
      <mapentry mapin="UNIX,.*" mapout="Unix" />
      <mapentry mapin=".*" mapout="Unknown" />
    </Field>
  </Normalize>

  <Format>
    <Field conditional='name' output='ComputerName' format='{0}' input='name' />
    <Field conditional='mac' output='PrimaryMacAddress' format='{0}' input='mac' />
    <Field conditional='create_time' output='CreationTimestamp' format='{0}' input='create_time' />
    <Field conditional='change_time' output='LastModTimestamp' format='{0}' input='change_time' />
    <Field conditional='os_name' output='OSName' format='{0}' input='os_name' />
    <Field conditional='os_version' output='PrimaryOSVersion' format='{0}' input='os_version' />
  </Format>
</EventClass>
```

UIM Alarms

- Probes monitor for symptoms of error situations (free disk space, log file contents, performance problems, stopped system processes, etc.)
- When a problem is found, the robot sends a message to the hub.
- Alarm Console allows users to view and act on alarms

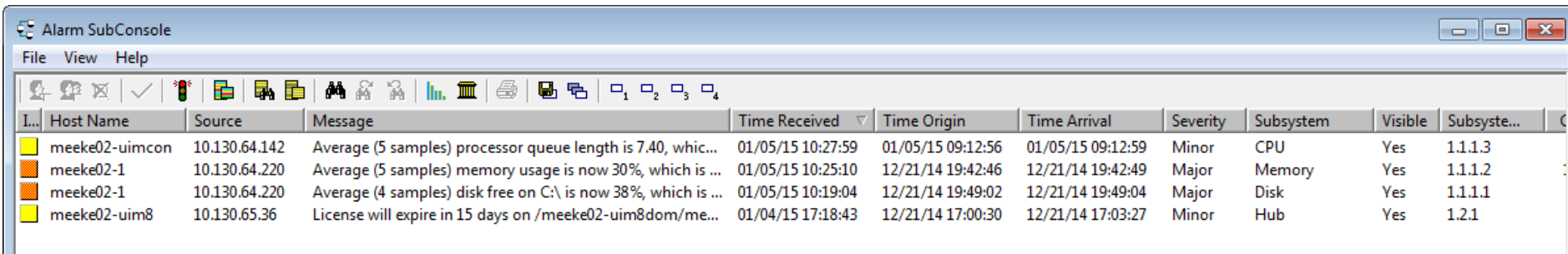


The screenshot shows the 'Alarm SubConsole' window with a menu bar (File, View, Help) and a toolbar. Below the toolbar is a table of alarms. The table has columns for ID, Host Name, Source, Message, and Time Received. The table contains 18 rows of data, with the last row partially obscured. The status bar at the bottom shows 'Ready', 'User: jonathan@nimsoft.com (ACL: Administrator)', and 'Tot: 188, Sel: 1'.

ID	Host Name	Source	Message	Time Received
HH90551819-01229	hit-nxdomain	win2008r2-node4	My Remote Servers: Data collection failure for di...	09/21/12 15:09:09
HH90551819-00759	hit-nxdomain	win2008r2-node4	My Remote Servers: Data collection failure for s...	09/21/12 15:15:17
HG46150722-75810	NMS-Robot	10.163.68.133	This incident was automatically created from a Ni...	09/29/12 12:00:05
GX02886202-93483	canjo10-780	138.42.234.19	Tunnel from NMS-Server (206.80.44.98) has be...	09/26/12 17:24:14
GX02886202-93397	NMS-Robot	10.163.68.133	Could not create local port 49000 for tunnel to 6...	09/26/12 17:21:12
GX02886202-89797	win2008r2...	fc00:135::10:0:8	Can not start topology_agent, start after probe ...	09/27/12 12:09:00
GX02886202-89796	win2008r2...	fc00:135::10:0:8	Max. restarts reached for probe 'discovery_age...	10/05/12 17:51:57
GX02886202-81527	NMS-Robot	10.163.68.133	This incident was automatically created from a Ni...	09/26/12 12:00:06
GX02886202-32482	xenrheldro...	fc00:135::10:0:233	Robot xenrheldrone2 is inactive	10/18/12 14:33:39
GX02886202-27771	NMS-Robot	10.163.68.133	This incident was automatically created from a Ni...	09/25/12 12:00:05
FR66186477-94840	win2008r2...	fc00:135::10:0:8	Connection error. Could not connect to 206.80....	10/18/12 11:25:15
FR66186477-73454	NMS-Robot	10.163.68.133	This incident was automatically created from a Ni...	09/24/12 12:00:05
FR66186477-24345	NMS-Robot	10.163.68.133	This incident was automatically created from a Ni...	09/23/12 12:00:04
EZ25305515-45894	hit-nxdomain	xen2008dom	My Remote Servers: Data collection failure for m...	09/21/12 15:19:21
EZ25305515-45752	hit-nxdomain	xen2008dom	My Remote Servers: Data collection failure for s...	09/21/12 15:20:14

UIM Alerts

UIM Alert SubConsole



The screenshot shows a window titled "Alarm SubConsole" with a menu bar (File, View, Help) and a toolbar. Below the toolbar is a table of alerts.

Host Name	Source	Message	Time Received	Time Origin	Time Arrival	Severity	Subsystem	Visible	Subsystem...
meeke02-uimcon	10.130.64.142	Average (5 samples) processor queue length is 7.40, whic...	01/05/15 10:27:59	01/05/15 09:12:56	01/05/15 09:12:59	Minor	CPU	Yes	1.1.1.3
meeke02-1	10.130.64.220	Average (5 samples) memory usage is now 30%, which is ...	01/05/15 10:25:10	12/21/14 19:42:46	12/21/14 19:42:49	Major	Memory	Yes	1.1.1.2
meeke02-1	10.130.64.220	Average (4 samples) disk free on C:\ is now 38%, which is ...	01/05/15 10:19:04	12/21/14 19:49:02	12/21/14 19:49:04	Major	Disk	Yes	1.1.1.1
meeke02-uim8	10.130.65.36	License will expire in 15 days on /meeke02-uim8dom/me...	01/04/15 17:18:43	12/21/14 17:00:30	12/21/14 17:03:27	Minor	Hub	Yes	1.2.1



SOI Alert Console

Severity	Created	Name	Class	Category	Summary	✓	Service Impact
Major	Dec 21, 2014 7:49:04 PM EST	meeke02-1	Computer System	Risk-Fault	Average (4 samples) disk free on C:\ is now 38%, which is below th...		Slight
Major	Dec 21, 2014 7:42:49 PM EST	meeke02-1	Computer System	Risk-Fault	Average (5 samples) memory usage is now 30%, which is above the...		Slight
Minor	Jan 5, 2015 9:12:59 AM EST	meeke02-uimcon	Computer System	Risk-Fault	Average (5 samples) processor queue length is 7.40, which is >= 4. La		Slight

UIM Alert Processing

- Connector is subscribed to the UIM Message Queue to receive notification of alert creation/update/clear
- Review the CA-00050*.xml files within the EventStore to review the RAW UIM alert properties that are received by the Connector

\CA\CatalystConnector\container\data\Core\EventStore

```
<events xmlns:usm-core2='http://ns.ca.com/2011/02/usm-core2' xmlns:coreapi='http://ns.ca.com/2011/02/coreapi'> <event
  <raw>
    <summary>Average (5 samples) processor queue length is 4.40, which is >= 4. Last value is 9.00.</summary>
    <nimts>1420434475</nimts>
    <dev_id>D0F5F47A8A57D62698694371AFC7BA5E4</dev_id>
    <prid>cdm</prid>
    <hub>meeke02-uim8hub</hub>
    <NSEntityType>NSMessage</NSEntityType>
    <level>3</level>
    <met_id>M3BCF1F75A3762399E71D7272ECD109E4</met_id>
    <supp_key>cpu/proc_q_len</supp_key>
    <nimid>JL39646625-47260</nimid>
    <domain>meeke02-uim8dom</domain>
    <suppcount>0</suppcount>
    <closed>0</closed>
    <ClassName>Alert</ClassName>
    <entitytype>Alert</entitytype>
    <sid>1.1.1.3</sid>
    <origin>meeke02-uim8hub</origin>
    <hostname>meeke02-uimcon</hostname>
    <robot>meeke02-uimcon</robot>
    <NSMessageType>Alert</NSMessageType>
    <cs_id>2</cs_id>
    <message>Average (5 samples) processor queue length is 4.40, which is >= 4. Last value is 9.00.</message>
    <clearable>true</clearable>
    <sunptime>0</sunptime>
```

UIM Alert to SOI Alert Mappings

UIM Alert Property	SOI Alert Attribute
summary	Summary
message	Message
level	Severity
nimid	MdrElementID
cs_id	AlertedMdrElementID
nimts	OccurrenceTimestamp
arrival	ReportTimestamp

```
<raw>
<summary>Average (5 samples) memory usage is now 54%, which is
above the error threshold (1%)</summary>
<nimts>1419208966</nimts>
<dev_id>D8F93C2C57C175F1ECD4F85B139C1A614</dev_id>
<prid>cdm</prid>
<hub>meeke02-uim8hub</hub>
<NSEntitytype>NSMessage</NSEntitytype>
<level>4</level>
<met_id>ME63D11805B2102E33D5CE0C990C6D3C3</met_id>
<supp_key>memory/pagefile</supp_key>
<nimid>JL39646625-00129</nimid>
<domain>meeke02-uim8dom</domain>
<suppcount>18246</suppcount>
<closed>0</closed>
<ClassName>Alert</ClassName>
<entitytype>Alert</entitytype>
<sid>1.1.1.2</sid>
<origin>meeke02-uim8hub</origin>
<hostname>meeke02-1</hostname>
<robot>meeke02-1</robot>
<NSMessageType>Alert</NSMessageType>
<cs_id>3</cs_id>
<message>Average (5 samples) memory usage is now 54%, which is
above the error threshold (1%)</message>
<clearable>true</clearable>
<supptime>1420652702</supptime>
<source>10.130.64.220</source>
<arrival>1419208969</arrival>
<nas>meeke02-uim8hub</nas>
```

Additional Exposed UIM Alert Properties

UIM Alert Property	Description
hub	Name of nearest hub to sending robot
robot	Name of sending robot
prid	Name of probe issuing alarm
supp_key	Suppression identification key
sid	Subsystem identification
origin	Origin of the alarm (stamped by nearest hub)
domain	Name of originating domain
nas	Name or originating alarm server
suppcount	RepeatCount

nimsoftconnector_policy.xml – Alert EventClass

```
<!-- =====Event Class===== -->
<EventClass name='Alert'>

  <Normalize>
    <Field output='Severity' outputtype='ref' type='map' input='level'>
      <mapentry mapin='5' mapout='Critical' />
      <mapentry mapin='4' mapout='Major' />
      <mapentry mapin='3' mapout='Minor' />
      <mapentry mapin='2' mapout='Minor' />
      <mapentry mapin='1' mapout='Informational' />
      <mapentry mapin='0' mapout='Normal' />
      <mapentry mapin='.*' mapout='Unknown' />
    </Field>
    <Field output='AlertType' outputtype='ref' type='map' input='severity'>
      <mapentry mapin='.*' mapout='Risk-Fault' />
    </Field>
  </Normalize>

  <Format>
    <!-- Non-Correlatable properties -->
    <Field output='ClassName' format='Alert' input='' />
    <Field output='CAPProductIdentifier' format='00050' input='' />
    <Field output='MdrProduct' format='CA:{0}' input='CAPProductIdentifier' />
    <Field output='MdrElementID' format='{0}' input='nimid' />
    <Field output='AlertedMdrElementID' format='{0}' input='cs_id' />
    <Field output='OccurrenceTimestamp' format='{0}' input='{xsdateTime(nimts)}' />
    <Field output='ReportTimestamp' format='{0}' input='{xsdateTime(arrival)}' />
    <Field output='IsClearable' format='true' />
    <Field conditional='suppcount' output='RepeatCount' format='{0}' input='suppcount' />
    <Field conditional='summary' output='Summary' format='{0}'
      input='summary' />
    <Field conditional='message' output='Message' format='{0}:{1}'
      input='prid,message' />
    <Field output='AlertedMdrProduct' format='{0}' input='MdrProduct' />
    <Field output='AlertedMdrProdInstance' format='{0}' input='ConnectorConfigMdrProdInstance' />
  </Format>
</EventClass>
```


Enable Inbound to Connector Operations

- Inbound connector operations enable transfer of data from SOI to CA UIM
- Southbound functionality currently only supports closing an alarm in UIM when corresponding alert is closed in SOI
- Three steps:
 - Enable the isRemotable property
 - Enable alert synchronization
 - Edit alert filter file

Enable Inbound to Connector Operations

Enable isRemotable Property

- The isRemotable property specifies whether to allow the connector framework to access the connector remotely for create, update, and delete operations

CA:00050_meeke02-uim8@meeke02-uimcon_CatalystConnector

Start Stop Remove Connector Scheduler Configuration

Status

Connector Status: Online
Source Description: Nimsoft Monitor running on meeke02-uim8
Status Description: Connector is running normally

Connector Description: NimsoftConnector running in Catalyst node meeke02-uimcon_CatalystConnector

Connector Controls Save Reset

dns_resolution <input checked="" type="checkbox"/>	getAlertsAtStartup <input checked="" type="checkbox"/>	getCIsAtStartup <input checked="" type="checkbox"/>
getRelationshipsAtStartup <input type="checkbox"/>	isRemotable <input checked="" type="checkbox"/>	performDeltaProcessing <input checked="" type="checkbox"/>
useAlertFilter <input type="checkbox"/>	useEnumeratedGet <input type="checkbox"/>	useEventStore <input checked="" type="checkbox"/>
useServiceFilter <input checked="" type="checkbox"/>		

Connection Details Save Reset

Note that any modifications in the host field will require you to install and configure the domain manager on the new host.

Name	Value
MdrProdInstance	meeke02-uim8
MdrProduct	CA:00050
debugMode	false
deleteThreadPollInterval	3600000
eventDelay	60000

Enable Inbound to Connector Operations

Enable Alert Synchronization

- Enables alert synchronization in all domain managers supported that have the IsRemotable control enabled

The screenshot shows the CA Service Operations Insight Administration interface. The left sidebar contains a tree view of administration pages, with 'Synchronization Configuration' highlighted and circled in red. A red arrow points from this link to the 'Alert Synchronization' section in the main content area.

CA Service Operations Insight

Reports | Console | Google Earth | USM Web

Logged in as: samuser | Log Out

Updated: Wednesday, 2015 Jan

Dashboard Administration

Administration Pages

- CA:00056_service-discovery@meeke02-soi1.ca.com
- tenant0
- meeke02-uimcon_CatalystConnector
 - CA:00050_meeke02-uim8@meeke02-uimcon_CatalystConnector
- CA Service Operations Insight Manager Configuration
 - meeke02-soi1.ca.com
 - EEM Configuration
 - Email Configuration
 - Error Notification Configuration
 - Help Desk Configuration
 - Synchronization Configuration**
 - Process Automation Server Configuration

Synchronization Configuration

Alert Synchronization	Select enabled to synchronize Alerts in all domain managers supported by the use case with the IsRemotable control enabled <input checked="" type="radio"/> enabled <input type="radio"/> disabled
Service Synchronization	Select enabled to synchronize Services in all domain managers supported by the use case with the IsRemotable control enabled <input type="radio"/> enabled <input checked="" type="radio"/> disabled If you need to configure the Single Source of Truth for reconciliation, see the CA Service Operations Insight Administration Guide appendix "Working with CA Catalyst Reconciliation."
	Select enabled to synchronize the reconciled IsInMaintenance property value in all domain

Enable Inbound to Connector Operations

Edit Alert Filter

- Default synchronization policy enables inbound to connector operations for specific connectors only, so you must add the CA UIM Connector

The screenshot displays the Catalyst Registry web interface. On the left, the 'Administration Pages' sidebar shows a tree structure where 'Catalyst Registry' is highlighted. The main content area is titled 'Catalyst Registry' and includes a 'Browse' section. A red circle highlights the path '/topology/physical/node0/sor/syncfilters/alert_filter.xml' in the 'Browse' section. A red arrow points from this path to the 'Content' section, which shows the XML content of the file. The XML content includes a condition and an action block with product names.

Logged in as: samuser | [Log Out](#)

Dashboard Administration

Administration Pages

- Administration
 - Connector Configuration
 - CA Service Operations Insight Manager Configuration
 - meeke02-soi1.ca.com
 - EEM Configuration
 - Email Configuration
 - Error Notification Configuration
 - Help Desk Configuration
 - Synchronization Configuration
 - Process Automation Server Configuration
 - Audit Configuration
 - Global Settings
 - UI Server Connection Details
 - UI Server Connection Log
 - Catalyst Registry**

Catalyst Registry

Governance Dashboard

Configure

- Users and Roles
- Lifecycles
- Handlers
- Features
- Key Stores
- Logging
- Notifications
- Service UI

Manage

- Shutdown/Restart

Metadata

- Add
 - Service
 - Policy
 - WSDL
 - Schema
 - List
 - Services
 - Policies

Browse

Root /topology/physical/node0/sor/syncfilters/alert_filter.xml

Metadata

Properties

Content

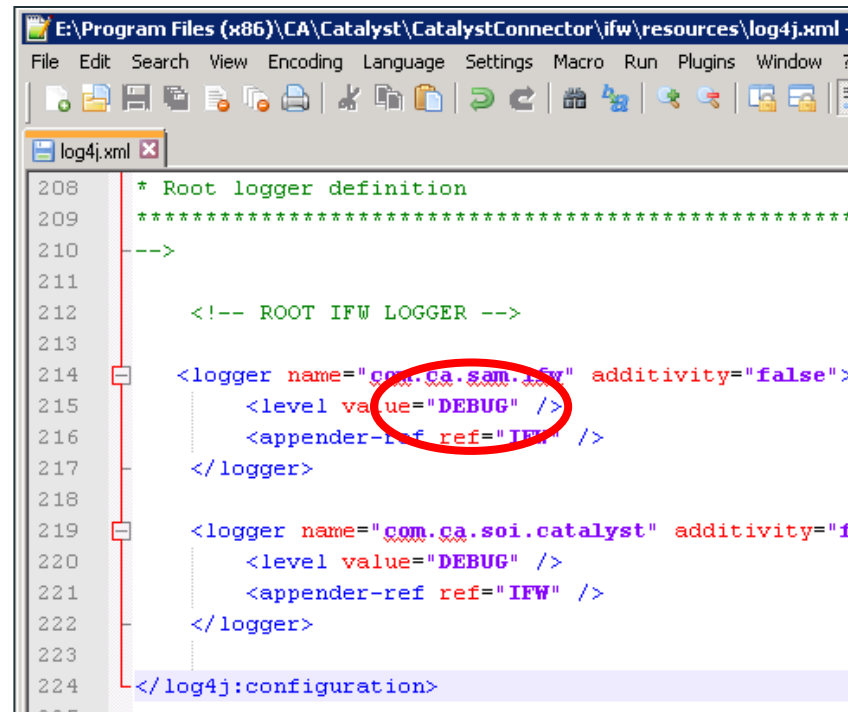
Display as text Edit as text Upload Download

Plain Text Editor Rich Text Editor

```
</condition>
<action defaultBehavior="drop">
  <send>
    <mdr productName="CA:00003" /> <!-- NSM-DSM -->
    <mdr productName="CA:00005" /> <!-- SPIM -->
    <mdr productName="CA:00031" /> <!-- SCOM -->
    <mdr productName="CA:00050" /> <!-- UIM -->
  </send>
</action>
```

Debugging

- CATALYST_HOME\jsw\logs\IntegrationServicesWrapper.log
- CATALYST_HOME\logs\ifw.log
- CATALYST_HOME\container\data\log\Nimsoft_connector.log
- Enable DEBUG within CA\CatalystConnector\ifw\resources\log4j.xml

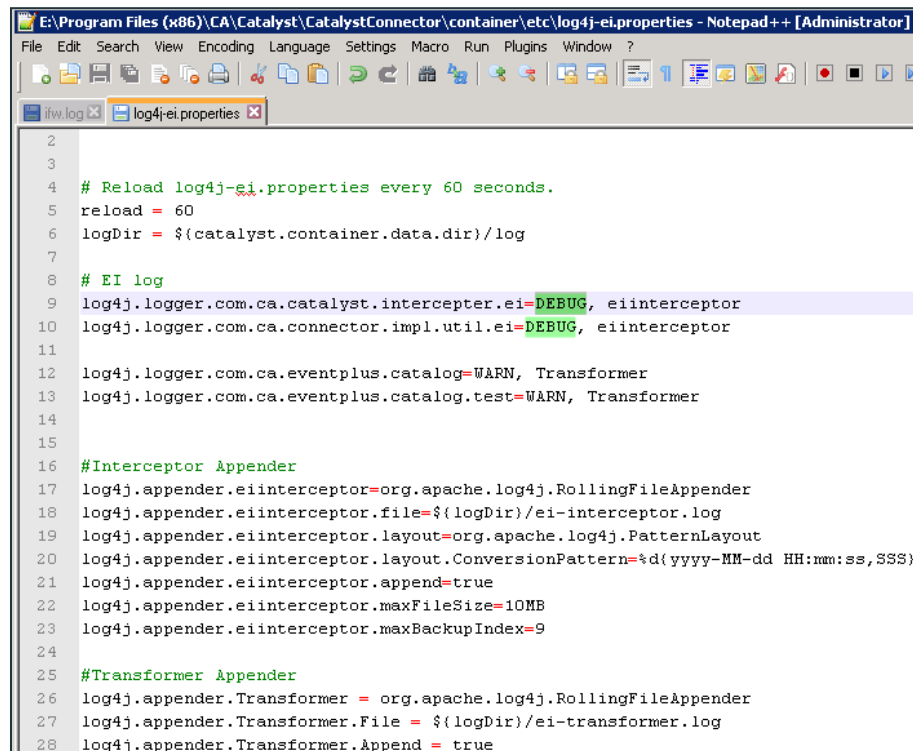


```
208 * Root logger definition
209 *****
210 -->
211
212 <!-- ROOT IFW LOGGER -->
213
214 <logger name="com.ca.soi.ifw" additivity="false">
215     <level value="DEBUG" />
216     <appender-ref ref="IFW" />
217 </logger>
218
219 <logger name="com.ca.soi.catalyst" additivity="f
220     <level value="DEBUG" />
221     <appender-ref ref="IFW" />
222 </logger>
223
224 </log4j:configuration>
```

Debugging

- Enable DEBUG within:

- \CA\Catalyst\CatalystConnector\container\etc\nimsoftconnector-log4j.xml
 - Writes Debug to the Nimsoft_Connector.log
- \CA\Catalyst\CatalystConnector\container\etc\log4j-ei.properties
 - View raw data sent from UIM to Connector in
 \Catalyst\CatalystConnector\container\data\log\EIDebugData



```
E:\Program Files (x86)\CA\Catalyst\CatalystConnector\container\etc\log4j-ei.properties - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
log4j-ei.properties
2
3
4 # Reload log4j-ei.properties every 60 seconds.
5 reload = 60
6 logDir = ${catalyst.container.data.dir}/log
7
8 # EI log
9 log4j.logger.com.ca.catalyst.interceptor.ei=DEBUG, eiinterceptor
10 log4j.logger.com.ca.connector.impl.util.ei=DEBUG, eiinterceptor
11
12 log4j.logger.com.ca.eventplus.catalog=WARN, Transformer
13 log4j.logger.com.ca.eventplus.catalog.test=WARN, Transformer
14
15
16 #Interceptor Appender
17 log4j.appender.eiinterceptor=org.apache.log4j.RollingFileAppender
18 log4j.appender.eiinterceptor.file=${logDir}/ei-interceptor.log
19 log4j.appender.eiinterceptor.layout=org.apache.log4j.PatternLayout
20 log4j.appender.eiinterceptor.layout.ConversionPattern=%d{yyyy-MM-dd HH:mm:ss,SSS}
21 log4j.appender.eiinterceptor.append=true
22 log4j.appender.eiinterceptor.maxFileSize=10MB
23 log4j.appender.eiinterceptor.maxBackupIndex=9
24
25 #Transformer Appender
26 log4j.appender.Transformer = org.apache.log4j.RollingFileAppender
27 log4j.appender.Transformer.File = ${logDir}/ei-transformer.log
28 log4j.appender.Transformer.Append = true
```

Guest Client Speaker:

Daniel Blanco from Alphaserve Technologies

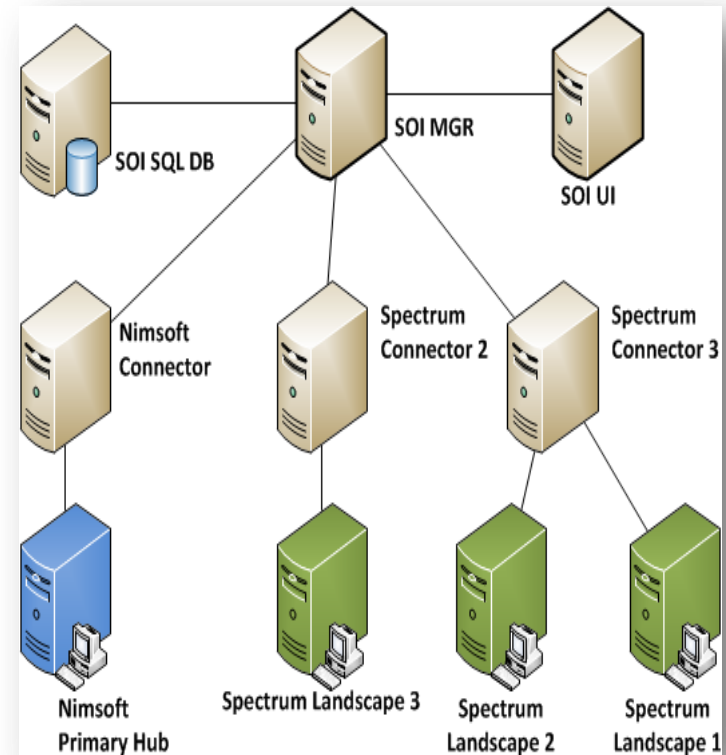


- Alphaserve is an MSP with a broad CA Product Portfolio focusing on Infrastructure Management Tools.
 - Spectrum, eHealth, NFA, UIM(Nimsoft), SOI
- Implemented SOI v3.2 and recently upgraded to v3.3
- Initial user of the UIM/Nimsoft Connector
- Customized the UIM Connector policy to better make the SOI integration easier for NOC.

CA SOI Unified Alarm Console Project Overview

CA Service Operations Insight 3.2

- CA SOI Manager Server
- CA SOI UI Server
- CA SOI Database Server
- CA SOI Reporting Server



3 Connector Machines

2 Connector Boxes >> CA Spectrum Landscapes (1,2 & 3)

1 Connector Box >> CA Nimsoft Primary Hub

CA SOI Unified Alarm Console Project Overview

Connector Enhancement Customization:

- Nimsoft Connector: Enhanced the connector's policy so when CI's are created in SOI's DB, every CI's "NamedAliases" property assigned the Client Name = Hub = ORIGIN.
- Would allow easier grouping of all client inventory by utilizing the Service Discovery Policies.
 - Example:

Group all Computer_System Classes where NamedAliases = CLIENT

*CI = configuration item

CA SOI Unified Alarm Console Project Overview

CA Nimsoft Connector Policy File:

Policy File Name: **nimsoft-soi-connector-policy.xml**

Path: \CA\Catalyst\CatalystConnector\registry\topology\physical\SOINMSCNTR_CatalystConnector\modules\policy\

In each of the following sections:

```
<EventClass name="Item">
<EventClass name="ComputerSystem" extends="Item">
<EventClass name="GenericIPDevice" extends="Item">
```

Mapped the ORIGIN = CLIENT HUB NAME to the NamedAliases property for the Computer Systems and Generic IP Devices that were created by the Nimsoft Connector:

```
<Field conditional='origin' output='NamedAliases' format='{0}' input='origin' />
```

CA SOI Unified Alarm Console Project Overview

CA Nimsoft Policy Tweak:

Added full CA Nimsoft probe address into the userAttribute2 alarm field so NOC engineers could locate exact probe sending the alert.

C:\Program Files

(x86)\CA\Catalyst\CatalystConnector\registry\topology\physical\NMSCNTR_CatalystConnector\modules\policy\nimsoft-soi-connector-policy.xml.

In the <!--EVENTS Class --> section in the <FORMAT> part added the following:

```
<Field output='userAttribute1' format='{0}' input='origin' />
<Field output='userAttribute2' format='{0}/{1}/{2}/{3}/{4}' input='domain, hub, robot, prid, supp_key' />
```

Now CA Nimsoft Alerts in CA Service Operations Insight contain the Nimsoft Full Address to the specific probe triggering the alert.

CA SOI Unified Alarm Console Project Overview

CA Nimsoft Policy Tweak: CA Nimsoft alerts in CA SOI contain the CA Nimsoft full address to the specific probe triggering the alert mapped to userAttribute2 column.

Example:

Contents: System Alerts

Alerts Information

Filter: loc1-lap042

Filtered By:

Severity	Client Name	Name	PrimaryIPV4Address	Summary	Count	Nimsoft Address
Critical	alphahub01	loc1-lap042	192.168.8.187	Average (5 samples) disk free on C:\ is now 57%, which is below...	2202	NMS/alphahub01/loc1-lap042/cdm/disk/C:\
Critical	alphahub01	loc1-lap042	192.168.8.187	Average (5 samples) disk free on D:\ is now 79%, which is below...	2202	NMS/alphahub01/loc1-lap042/cdm/disk/D:\
Major	alphahub01	loc1-lap042	192.168.8.187	Average (5 samples) physical memory usage is now 50%, which...	2202	NMS/alphahub01/loc1-lap042/cdm/memory/physical
Critical	alphahub01	loc1-lap042	192.168.8.187	Local file system J:\ is not available	2202	NMS/alphahub01/loc1-lap042/cdm/disk/J:\

userAttribute1 mapped to ORIGIN

userAttribute2 mapped to domain,hub,robot,prid,supp_key

CA SOI Unified Alarm Console Project Overview

CA Nimsoft Policy Tweak: CA Nimsoft alerts in CA SOI contain the CA Nimsoft full address to the specific probe triggering the alert mapped to userAttribute2 column.

Example:

The screenshot shows the 'Infrastructure Manager' console. On the left, the 'Domains' tree is expanded to show 'NMS' > 'alphahub01' > 'loc1-lap042'. The 'loc1-lap042' node is highlighted with a blue box. On the right, a table lists the probes installed on this node:

Probe	Description	IP Address	Version
cdm	CPU, Disk and Memory performance probe	192.168.8.216	4.81
controller	Robot process and port controller	192.168.8.216	7.05
hdb	Robot Database Server	192.168.8.216	7.05
ntservices	Windows Services Watcher	192.168.8.216	3.14
processes	Process monitoring probe	192.168.8.216	3.77
pooler	Robot Message Spooler	192.168.8.216	7.05

At the bottom, the 'Nimsoft Address' field in the alert console is highlighted in red and contains the text: 'NMS/alphahub01/loc1-lap042/processes/process/exchange.exe'. A blue arrow points from the 'loc1-lap042' node in the tree to this address field. Another blue arrow points from the 'processes' probe in the table to the same address field. A large blue arrow labeled 'SOI Alert Contents' points to the address field.

CA SOI Unified Alarm Console Project Overview

Customized R-Click Menus:

CA eHealth At-a-Glance Report:

Launches into eH Reporting page and you can create a report on a network device being monitored.

CA Nimsoft UMP 24-Hour Perf Summary:

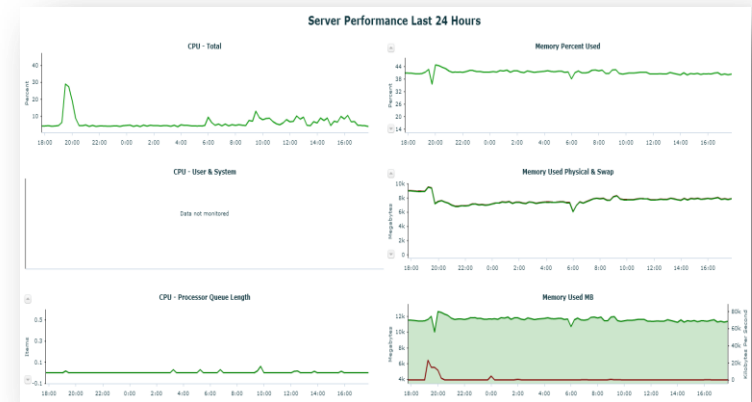
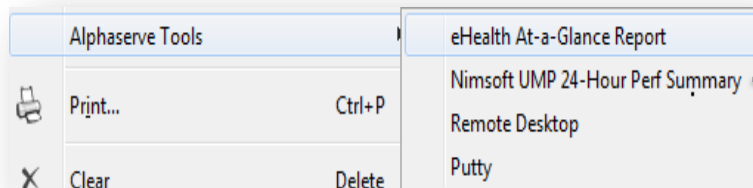
Launches direction into Nimsoft UMP and generates a 24-hour performance summary on the device.

Remote Desktop:

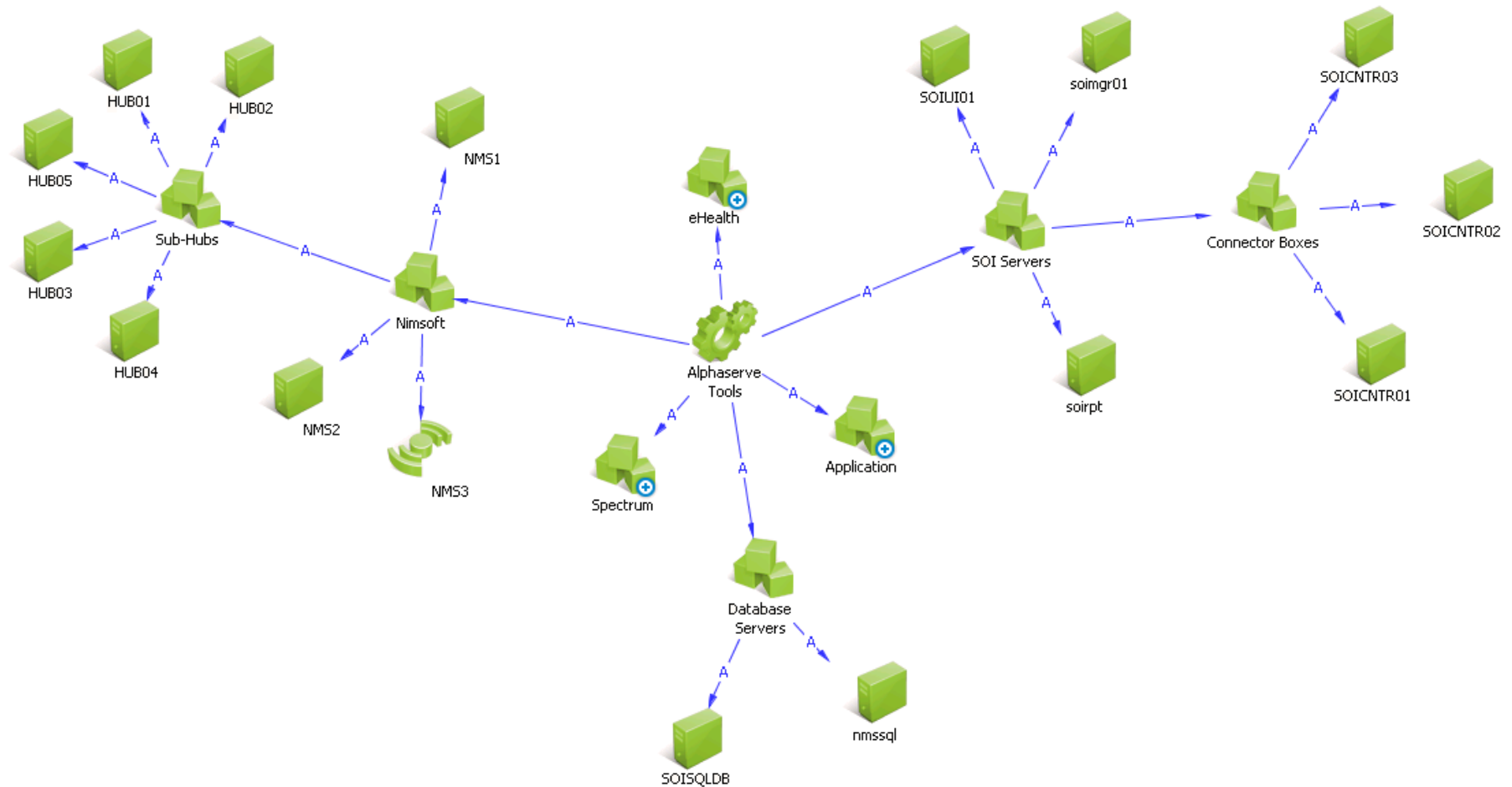
Launches mstsc.exe to RDC to the machine.

Putty:

Launches a putty session to the device.



CA Tools Service Overall Health Overview



Questions?

The next SOI Office Hours is scheduled for
1/27 10:00 AM ET

Event

link: <https://communities.ca.com/events/1614>