



Foglight Dashboard & Report Customization

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Course Objectives

- During this course we will cover:
 - Build a CIO Dashboard step by step.
 - Build a CIO Report step by step.



What is WCF

- WCF stands for Web Console Framework
- Can be very easy (Drag and Drop)
- Can be very powerful and flexible
 - Many Components to choose
 - Kinds of Renderers for rendering
 - Support Java/Groovy to do anything
 - Easy to bind Monitoring Data Model
 - ...

Preparation

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Preparation

Get Resources

- Get Resources from a Flash Disk or
- Download from Github:
https://github.com/Foglight/DevCamp2017/tree/master/CIO_Dashboard

Preparation

Assign Developer Role

The screenshot shows two windows from the Foglight User Management interface. The left window is the main dashboard, and the right window is a detailed view of user management.

Main Dashboard (Left):

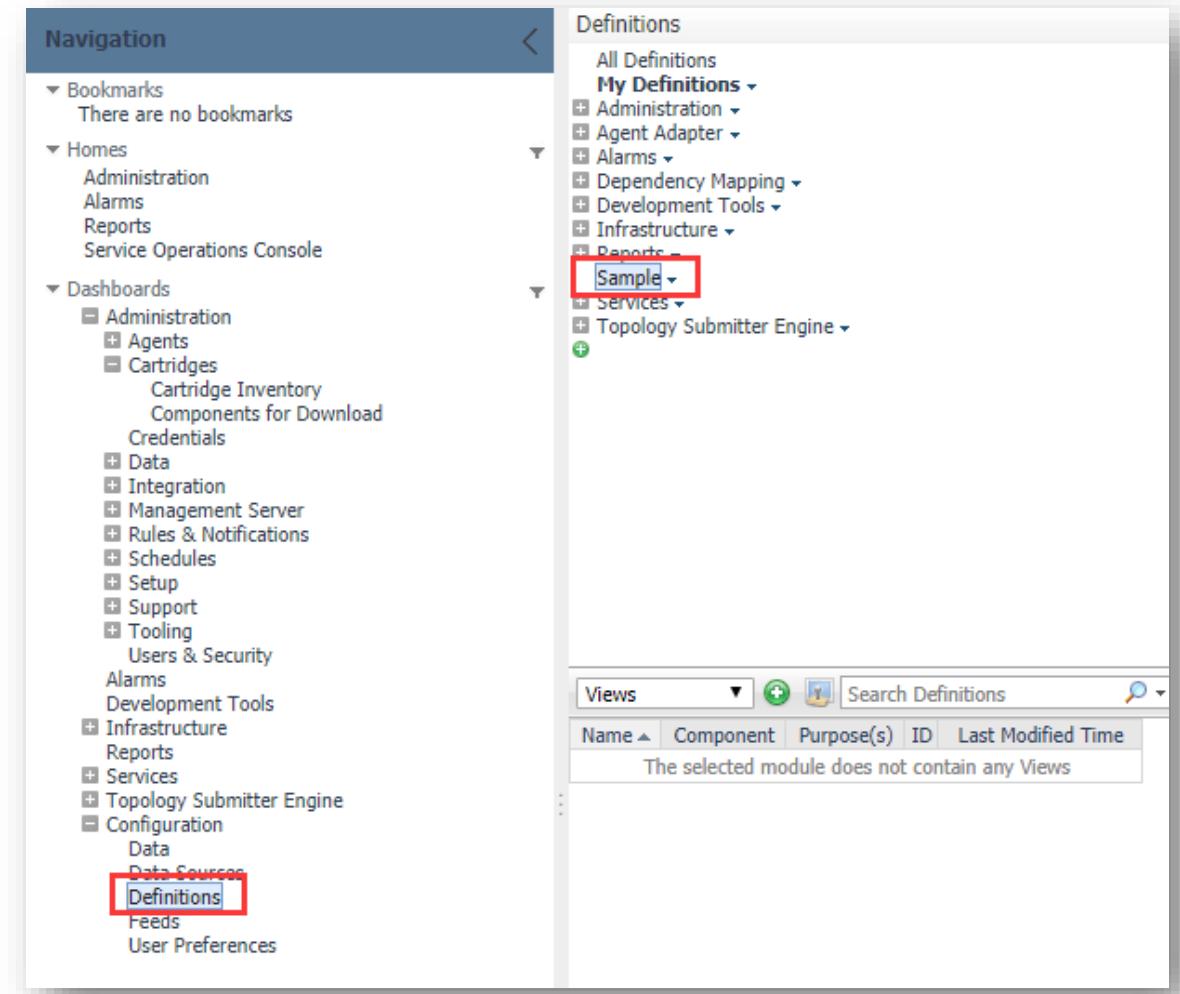
- Navigation:** Shows sections like Bookmarks, Homes, Dashboards, and Users & Security.
- Users & Security Management:** A dashboard with sections for User Look Up, Manage Users, Groups, Roles, Password Policy Settings, Directory Services Settings, and User Session Settings.

User Management (Right):

- User Management Overview:** Shows 1 user, 4 groups, and 14 roles. A red box highlights the "Take on 9 roles" button.
- Role Selection:** A list of roles with checkboxes. The "Cartridge Developer" role is highlighted with a red box.

• Preparation

- Install cartridge “Topology-Helper-Tools-5_6_2.car”
- Install “CIO-Dashboard-Get-Started-1_0_0.car”.



• Preparation

• Simulate Data and Verify

- Run function: Sample → Function → *Simulate Hosts* → Test

The screenshot shows two main windows from the Service Operations Console.

Left Window: A "Definitions" view under "Functions". It shows a table of functions, including "Simulate Hosts" which is highlighted with a red box. The "Script" column contains the following code:

```
package system.sample.script;
import java.util.Random;

def scriptvr = server.scriptingService;
def gettopologibuilder = scriptvr.getNamedScript("gettopologibuilder");

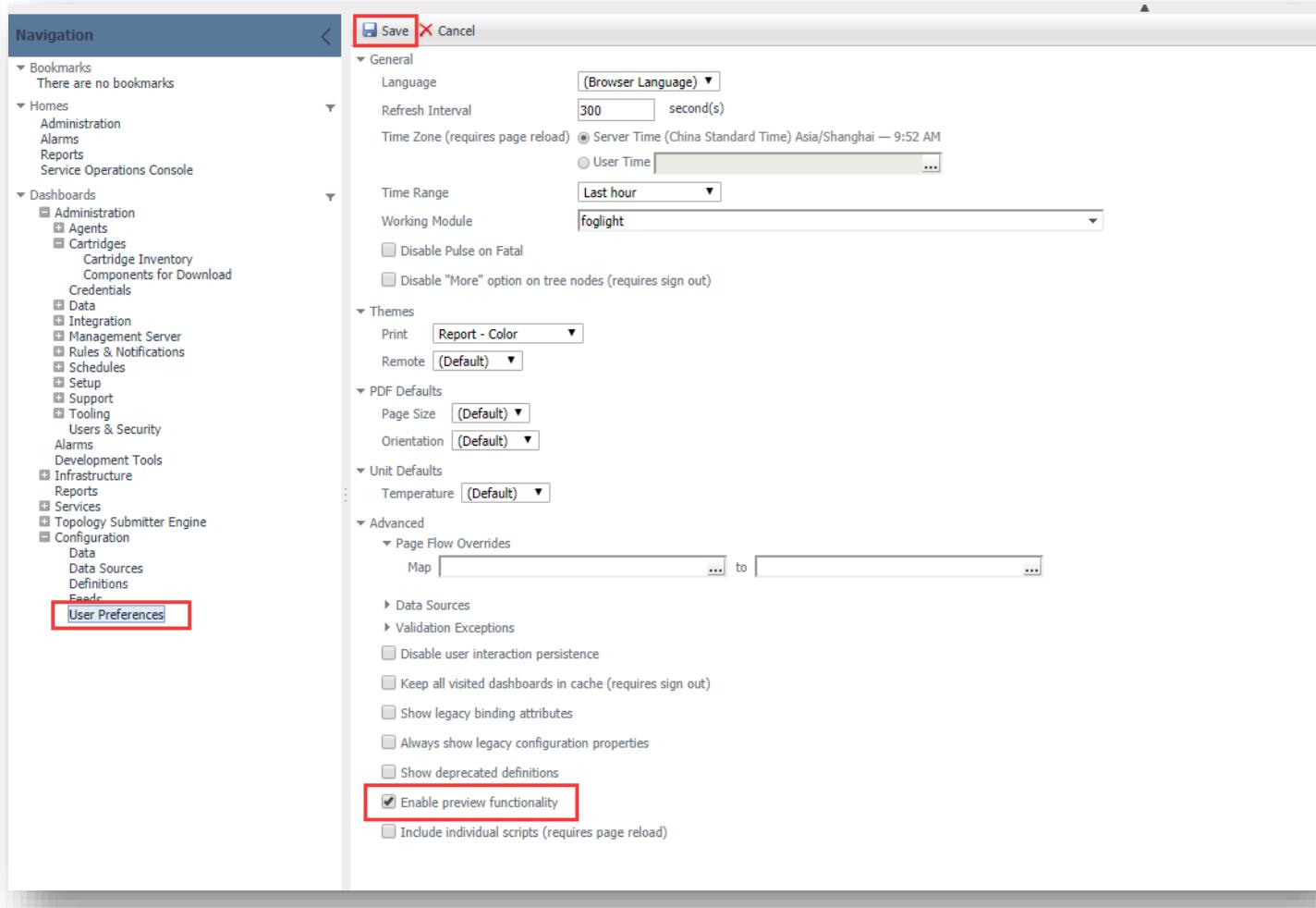
if(gettopologibuilder!=null){
    osArchitecture = "java";
    osName = "Microsoft Windows Xp Version 3000 Standard 1st Edition";
    "Linux"; "Centos"; "AIX"; "HPUX"
}
```

Right Window: A "Function Results" view showing the output of the "Simulate Hosts" function. The table lists several hosts (db-1, db-2, db-3, app-1, app-2, app-3, app-4, app-5, app-6, app-7, app-8, b-1, b-2, b-3, b-4, web-1, web-2, web-3, web-4) with their respective host types and last modified times.

Bottom Right Window: An "Infrastructure Environment" monitoring dashboard. It displays a summary of hosts by OS type (Windows 6, Linux 5, Solaris 0, AIX 6, HP-UX 2), four line charts for CPU, Network, Memory, and Disk utilization over time, and a table of alarms for various hosts like app-2, app-4, app-7, db-2, and web-2.

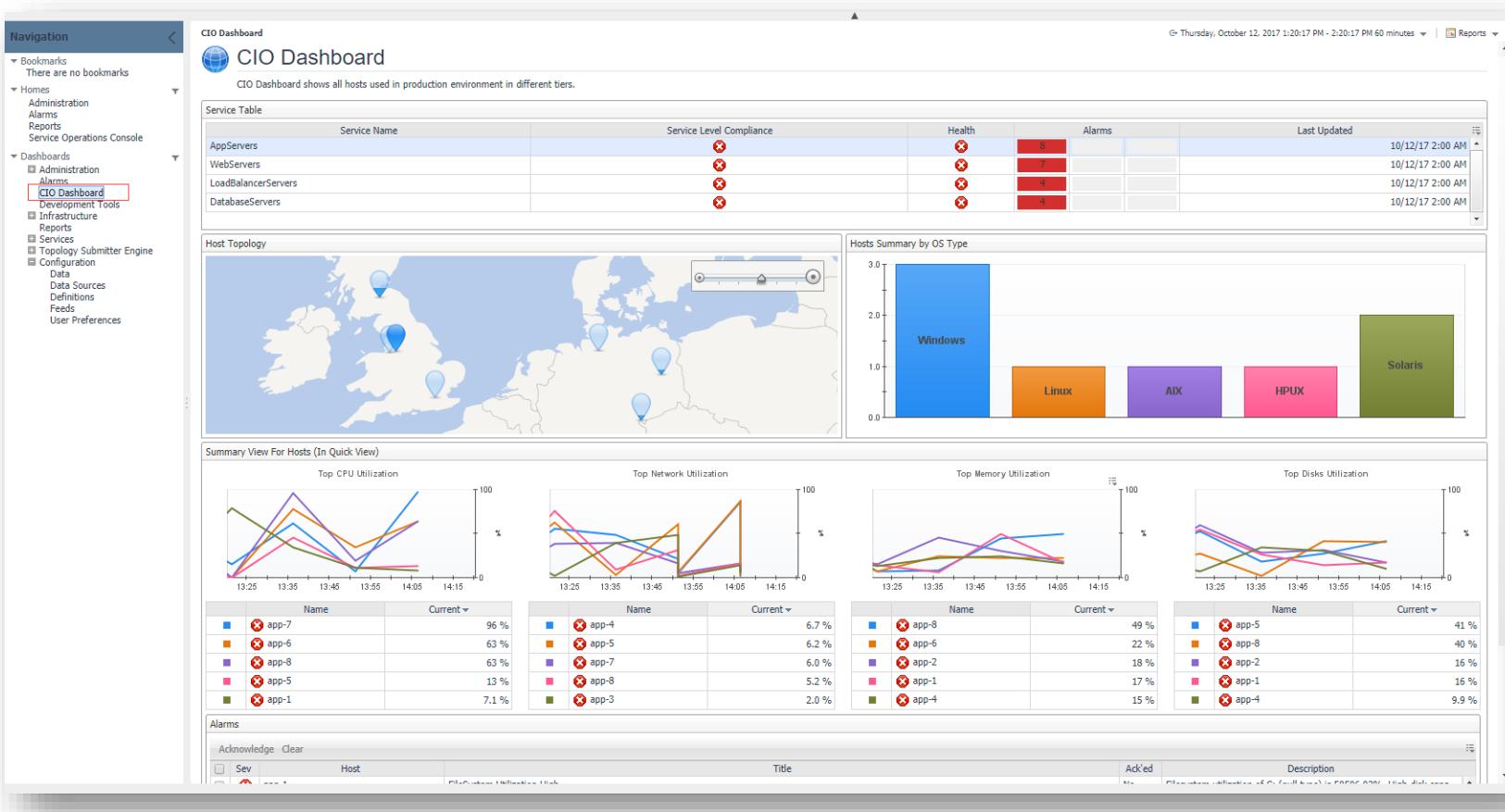
- Preparation

- Enable preview functionality to use Map



Use Case

- You have many hosts that have different applications running on.
- The applications belong to different tiers, Web, Database, App, etc.
- You want to know the health for each tier.
- Each tier is a service contains the hosts.



Build Services

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Lesson Objectives

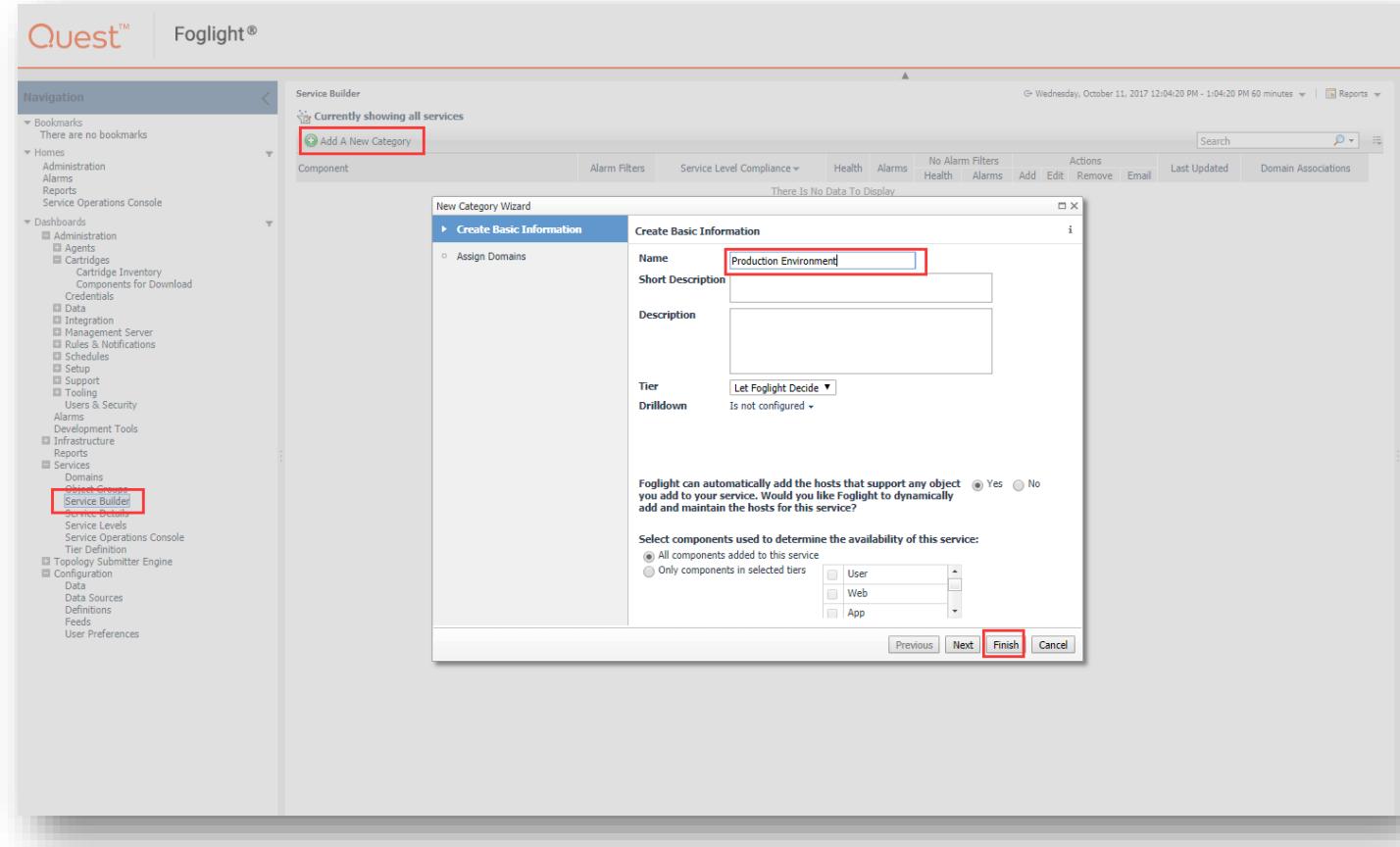
- During this lesson we will cover:
 - Services Builder dashboard usage
 - Add root data for CIO dashboard



Build Services

Add a Category

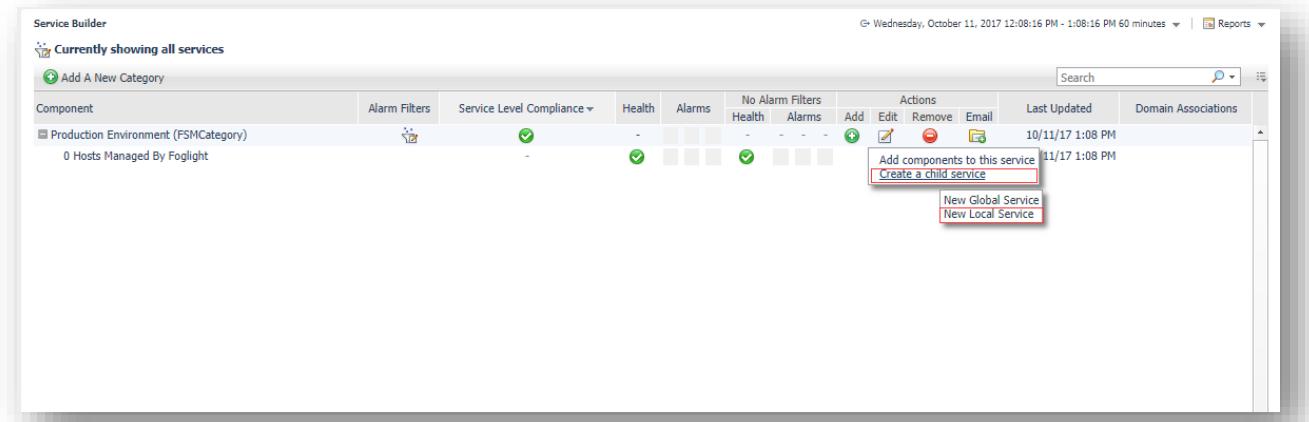
- Add a Service Category named “*Production Environment*”



Build Services

Add Child Services

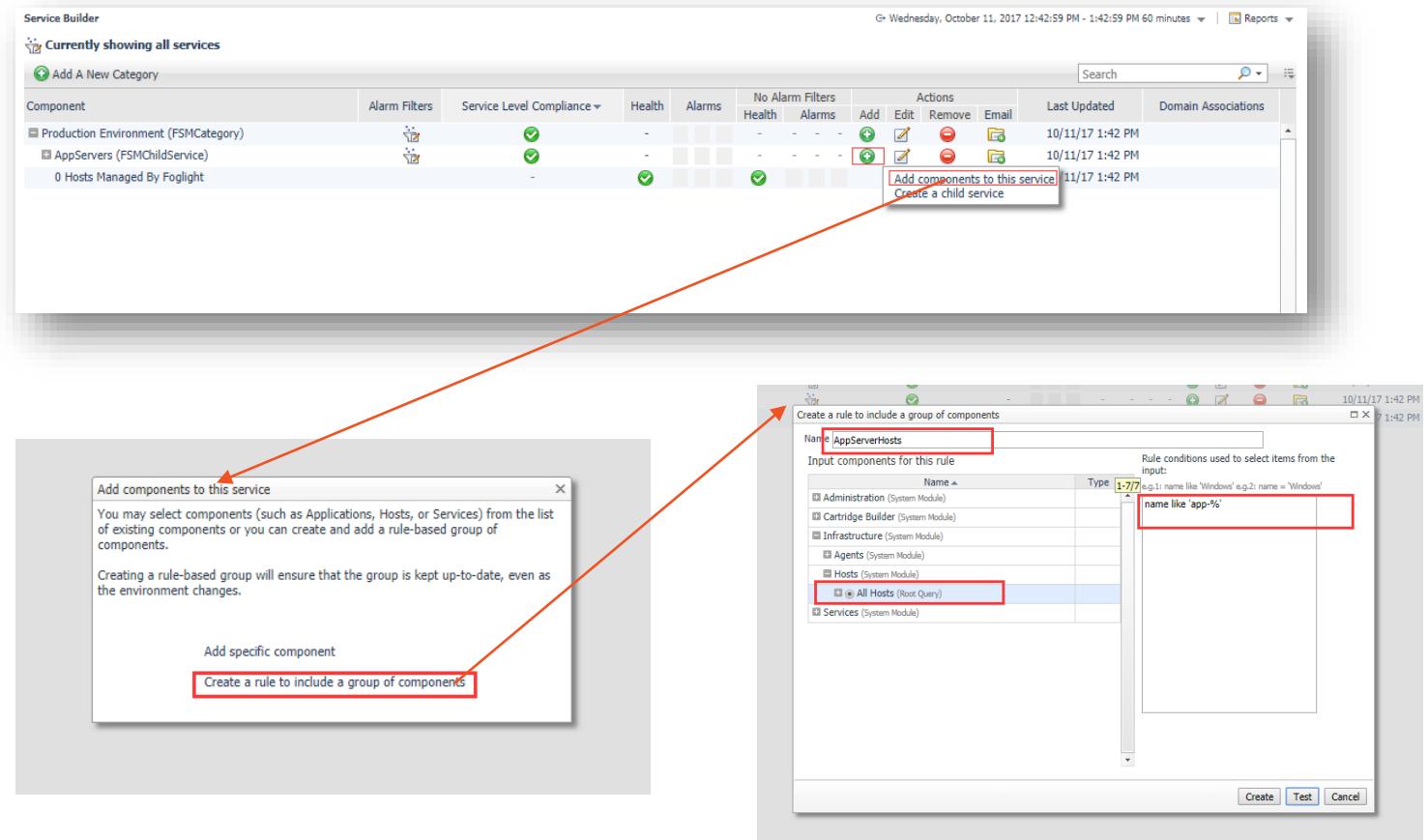
- WebServers
- LoadBalancerServers
- AppServers
- DatabaseServers



Build Services

Add Child Service Components

- WebServers
 - name like 'web-%'
- LoadBalancerServers
 - name like 'lb-%'
- AppServers
 - name like 'app-%'
- DatabaseServers
 - name like 'db-%'



Build Service

The Whole Category Overview

Component	Alarm Filters	Service Level Compliance	Health	Alarms	No Alarm Filters		Actions				Last Updated	Domain Associations	
					Health	Alarms	Add	Edit	Remove	Email			
Production Environment (FSMCategory)			-	23	-	-					10/11/17 2:03 PM		
LoadBalancerServers (FSMChildService)			-	4	-	-					10/11/17 2:03 PM		
LoadBalancerServerHosts (FSMDynamicManagedCompo			-	4	4	4						10/11/17 2:03 PM	
+ 4 Hosts Managed By Foglight			-	4	4	4						10/11/17 2:03 PM	
WebServers (FSMChildService)			-	7	-	-					10/11/17 1:59 PM		
WebServerHosts (FSMDynamicManagedComponent)			-	7	7	7						10/11/17 1:59 PM	
+ 7 Hosts Managed By Foglight			-	7	7	7						10/11/17 1:59 PM	
AppServers (FSMChildService)			-	8	-	-					10/11/17 1:57 PM		
AppServerHosts (FSMDynamicManagedComponent)			-	8	8	8						10/11/17 1:57 PM	
+ 8 Hosts Managed By Foglight			-	8	8	8						10/11/17 1:57 PM	
DatabaseServers (FSMChildService)			-	4	-	-					10/11/17 2:04 PM		
DatabaseServerHosts (FSMDynamicManagedComponent)			-	4	4	4						10/11/17 2:04 PM	
+ 4 Hosts Managed By Foglight			-	4								10/11/17 2:04 PM	
0 Hosts Managed By Foglight			-									10/11/17 2:03 PM	

Make the Dashboard

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Lesson Objectives

- During this lesson we will cover:
 - How to add a Query
 - How to add a View
 - How to use Layout



Make Service Table

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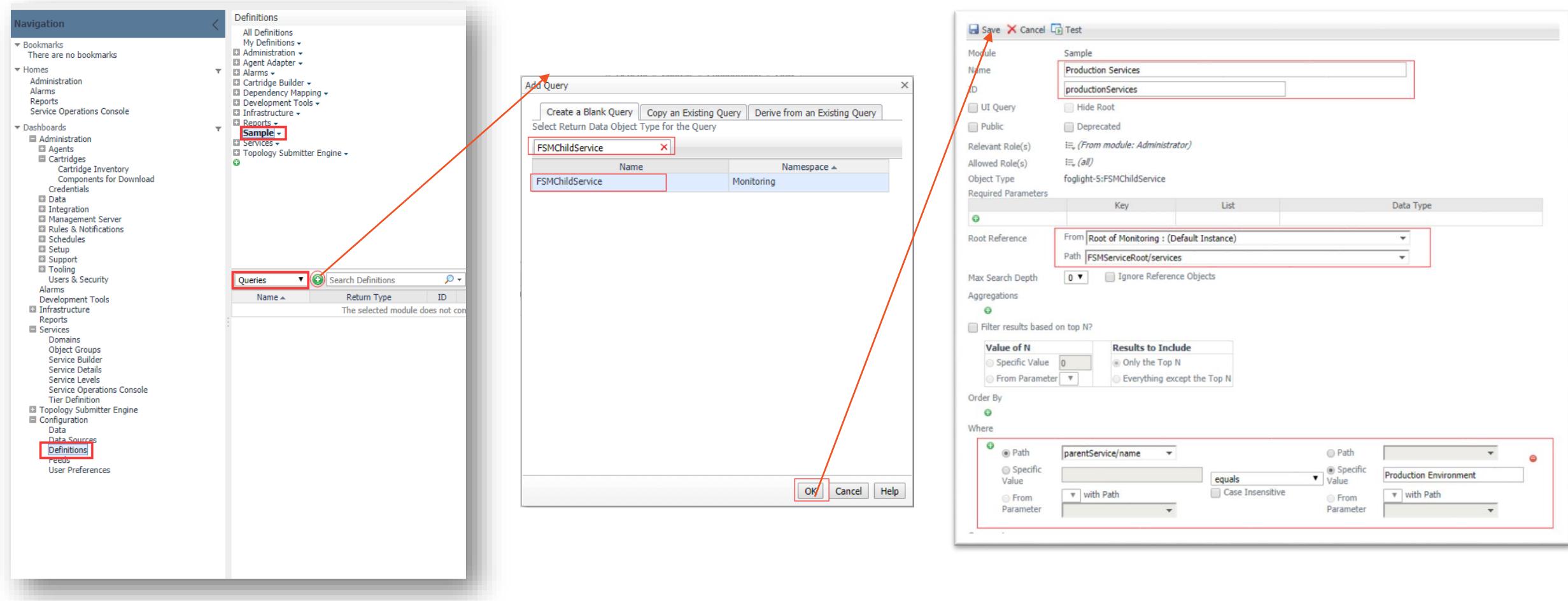
Goal for Service Table

Service Table

G Wednesday, October 11, 2017 3:43:37 PM - 4:43:37 PM 60 minutes | Reports ▾

Service Name	Service Level Compliance	Health	Alarms			Last Updated
AppServers	✗	✗	8			10/11/17 1:57 PM
WebServers	✗	✗	7			10/11/17 1:59 PM
LoadBalancerServers	✗	✗	4			10/11/17 2:03 PM
DatabaseServers	✗	✗	4			10/11/17 2:04 PM

Add a Query



Add a Row-Oriented Table

The screenshot shows the Service Operations Console navigation pane on the left and the 'Add View' dialog on the right.

Navigation:

- Bookmarks (empty)
- Homes
 - Administration
 - Alarms
 - Reports
 - Service Operations Console
- Dashboards
 - Agents
 - Cartridges
 - Cartridge Inventory
 - Components for Download
 - Credentials
 - Data
 - Integration
 - Management Server
 - Rules & Notifications
 - Schedules
 - Setup
 - Support
 - Tooling
 - Users & Security
- Definitions
 - Sample
 - Services
 - Topology Submitter Engine
- Views (highlighted with a red box)
- Search Definitions
- Definitions (highlighted with a red box)
- Feeds
- User Preferences

Add View Dialog:

Row-Oriented Table

A Row-Oriented Table displays in its columns the selected properties of a list of objects of the same type, for example, all monitored hosts. Columns can be shown or hidden and rows can be filtered to match certain criteria. Optionally, columns can be arranged in groups. Rows can be grouped by highlighting.

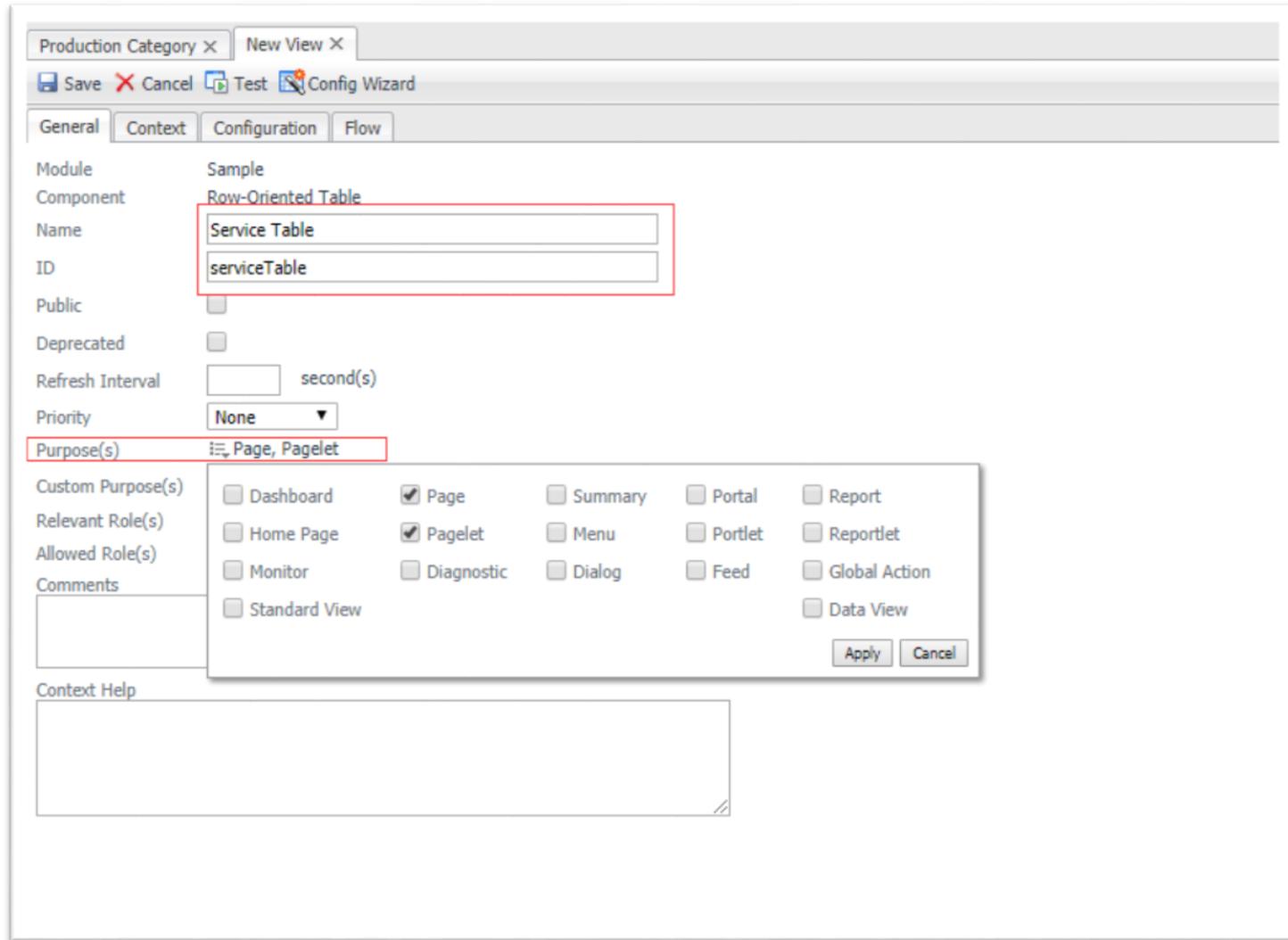
Example:

Date	Time	Instance	Message
12/08/09	5:17PM	N	No agent framework clients are running on
12/08/09	5:17PM	N	No agent framework clients are running on
12/08/09	5:17PM	N	No agent framework clients are running on
12/08/09	5:17PM	N	No agent framework clients are running on
12/08/09	5:17PM	N	No agent framework clients are running on
12/08/09	5:17PM	N	No agent framework clients are running on
12/08/09	7:35PM	N	NT Event Log: System EventLog The previ
12/08/09	7:35PM	N	NT Event Log: System EventLog The previ
12/08/09	11:52 AM	N	EventLog
12/08/09	9:40 AM	N	EventLog
12/08/09	4:55 PM	N	EventLog
12/08/09	4:55 PM	N	EventLog
12/08/09	10:29 AM	N	EventLog
12/08/09	10:29 AM	N	EventLog
12/08/09	10:29 AM	N	EventLog
12/08/09	10:29 AM	N	EventLog

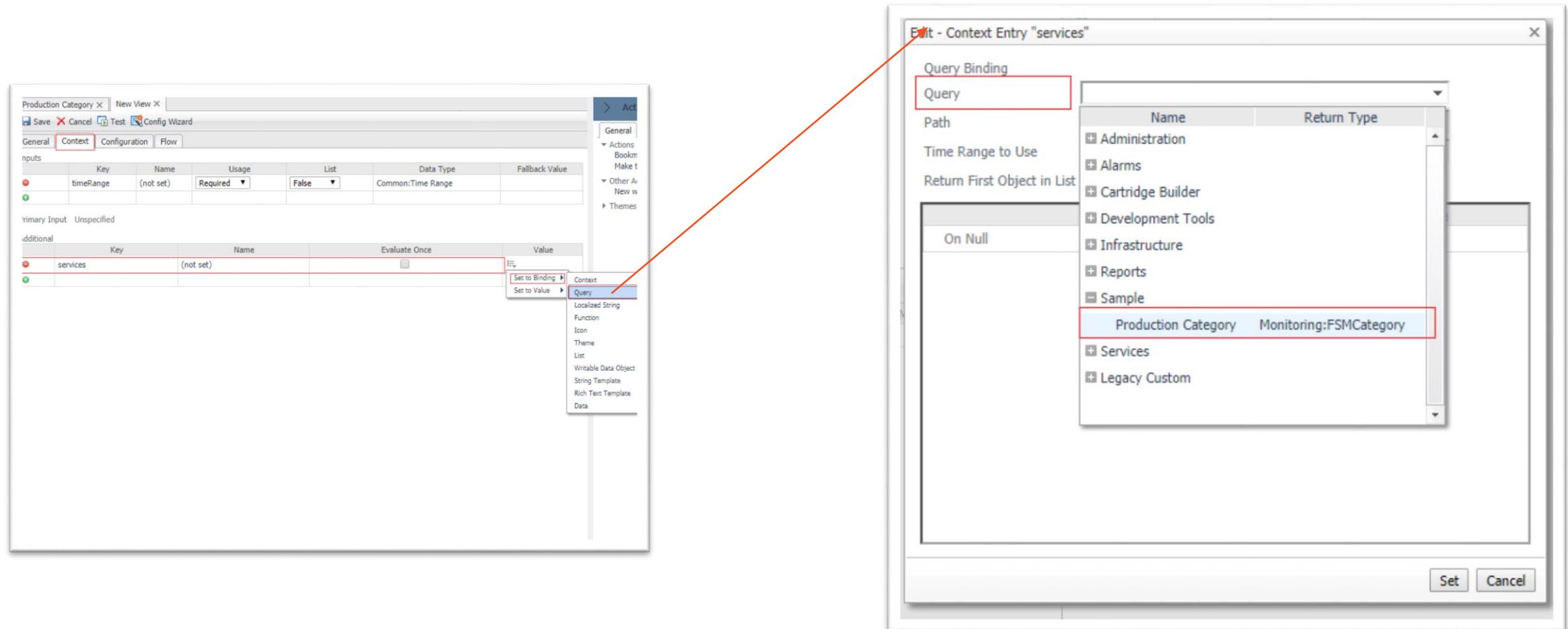
- Columns can be formatted with a header, a header tooltip, cell font, wrap, and alignment properties.
- Rows can be highlighted using the Rows Background Color Configuration set of properties.
- Row and cell actions can be assigned.
- Columns can be designated as sortable.
- Searching is supported, in which only those rows matching a search

Buttons: OK (highlighted with a red box), Cancel, Help

General Setup for Table



Context Setup for Table



Configurations for Table

- Configure Rows
- Configure Columns
 - ID
 - Value
 - Header
 - Localized String is recommended

Columns		
Column		
Summary Row Value	Any(s)	
Csv Column Label	Any	
Stack Mode Configuration		
Value	Any(s)	
Tooltip	Any(s)	
Export Value	Any(s)	
Render Value	Any(s)	
Cell Data Availability		
Column Maximum Value	Number	
ID	String	
Iterate Over	List of Anys	
Iterator Id Suffix	String	
No Wrap For Header	Boolean	
No Wrap For Cells	Boolean	
Selectable	Boolean	
Dwellable	Boolean	
Visible	Boolean	
Visible In Customizer	Boolean	
Visible in PDF	Boolean	
Description	String	
Label	Any	
Filter Label	Any	
Header	Any	
Header Tooltip	Any	Set to Value Set to Binding

Table Column Configurations

- Name
 - Value: name
 - Id: name
 - Header: Service Name
- Service Level Compliance
 - Value: aggregateStateSeverity
 - Id: SLAState
 - Header: Service Level Compliance
- FatalCount
 - Value: alarmAggregateFatalCount
 - Id: fatalCount
- CriticalCount
 - Value: alarmAggregateCriticalCount
 - Id: criticalCount
- WarningCount
 - Value: alarmAggregateWarningCount
 - Id: warningCount
- Health
 - Value: aggregateState
 - Id: health
 - Header: Health
- Last Updated
 - Value: lastUpdated
 - Id: lastUpdated
 - Header: Last Updated

Test Service Table

The screenshot shows a software interface with two main windows. On the left is a configuration dialog for a 'Service Table' component. The top bar includes 'Save', 'Cancel', 'Test' (which is highlighted with a red box), and 'Config Wizard'. Below this are tabs for 'General', 'Context', 'Configuration' (which is selected and highlighted with a red box), and 'Flow'. A legend indicates 'Set' (blue square), 'Unset' (grey square), and 'Required' (red square). The configuration grid lists properties such as 'Rows' (Type: List of Any), 'Stack Mode Configuration' (Value: <services>), 'Is Row Selectable' (Value: true), and various 'Tagging Column Configuration' options. An 'Input Values' panel at the bottom contains a 'Time Range' dropdown set to 'Last hour...', a 'Results' button (highlighted with a red box), and a list of selection options like 'name', 'SLAState', 'fatalCount', etc. On the right is a 'Service Table' report view. It has a header with columns: Service Name, Service Level Compliance, alarmAggregateFatalCount, alarmAggregateCriticalCount, alarmAggregateWarningCount, Health, and Last Updated. The data shows four rows: AppServers (Health: critical, Last Updated: 10/11/17 1:57 PM), WebServers (Health: critical, Last Updated: 10/11/17 1:59 PM), LoadBalancerServers (Health: critical, Last Updated: 10/11/17 2:03 PM), and DatabaseServers (Health: critical, Last Updated: 10/11/17 2:04 PM). A red arrow points from the 'Results' button in the configuration dialog to the 'Service Table' report.

Service Name	Service Level Compliance	alarmAggregateFatalCount	alarmAggregateCriticalCount	alarmAggregateWarningCount	Health	Last Updated
AppServers	critical	8			critical	10/11/17 1:57 PM
WebServers	critical	7			critical	10/11/17 1:59 PM
LoadBalancerServers	critical	4			critical	10/11/17 2:03 PM
DatabaseServers	critical	4			critical	10/11/17 2:04 PM

Improve Service Table

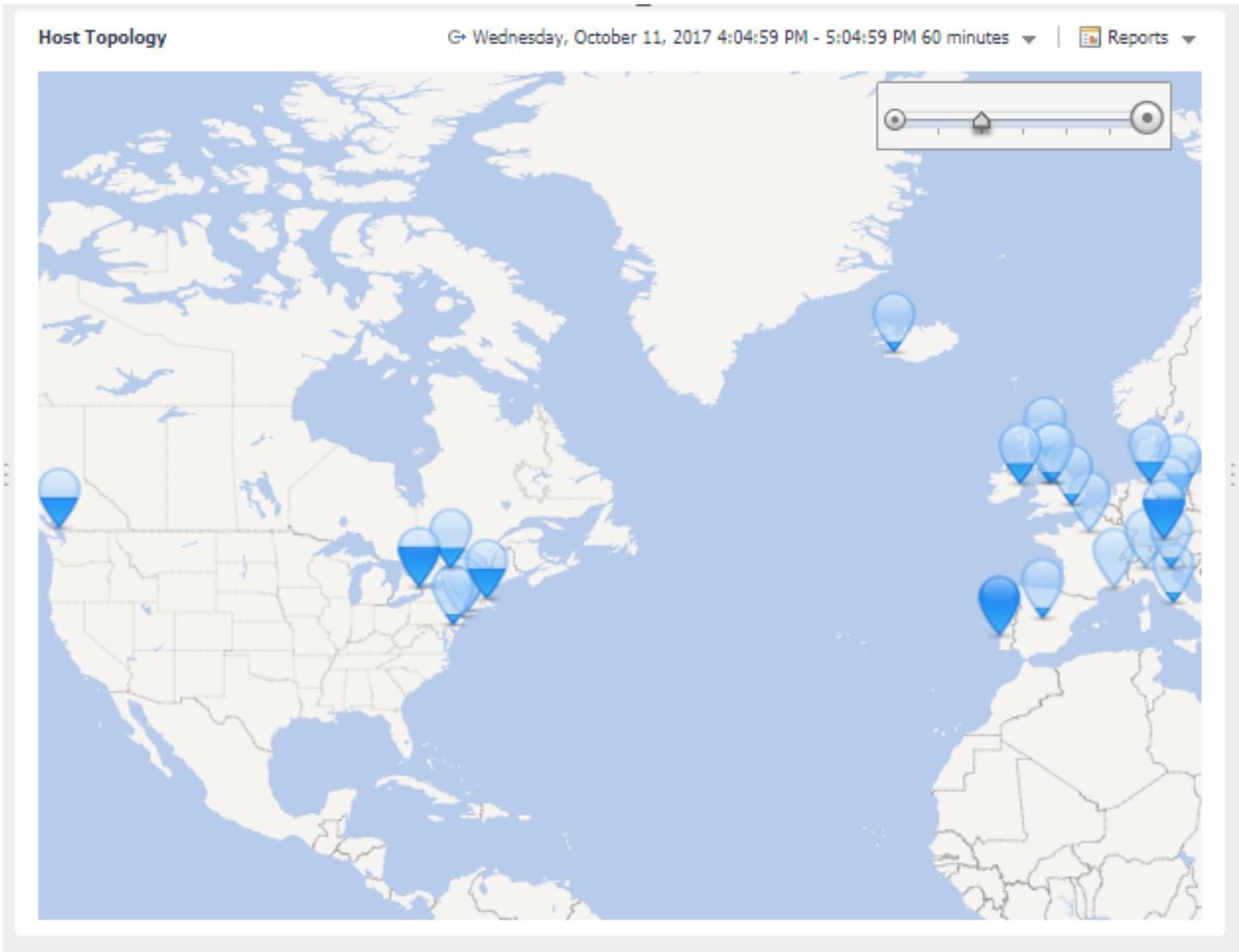
- Add alignment for some column
- Group fatalCount, criticalCount and warningCount as “Alarm”
- Change column order
- Add single row action(name: selectedService)

Service Name	Service Level Compliance	alarmAggregateFatalCount	alarmAggregateCriticalCount	alarmAggregateWarningCount	Health	Last Updated
AppServers	✗	6			✗	10/11/17 1:57 PM
WebServers	✗	7			✗	10/11/17 1:59 PM
LoadBalanceServers	✗	8			✗	10/11/17 2:03 PM
DatabaseServers	✗	9			✗	10/11/17 2:04 PM

Make Hosts Map

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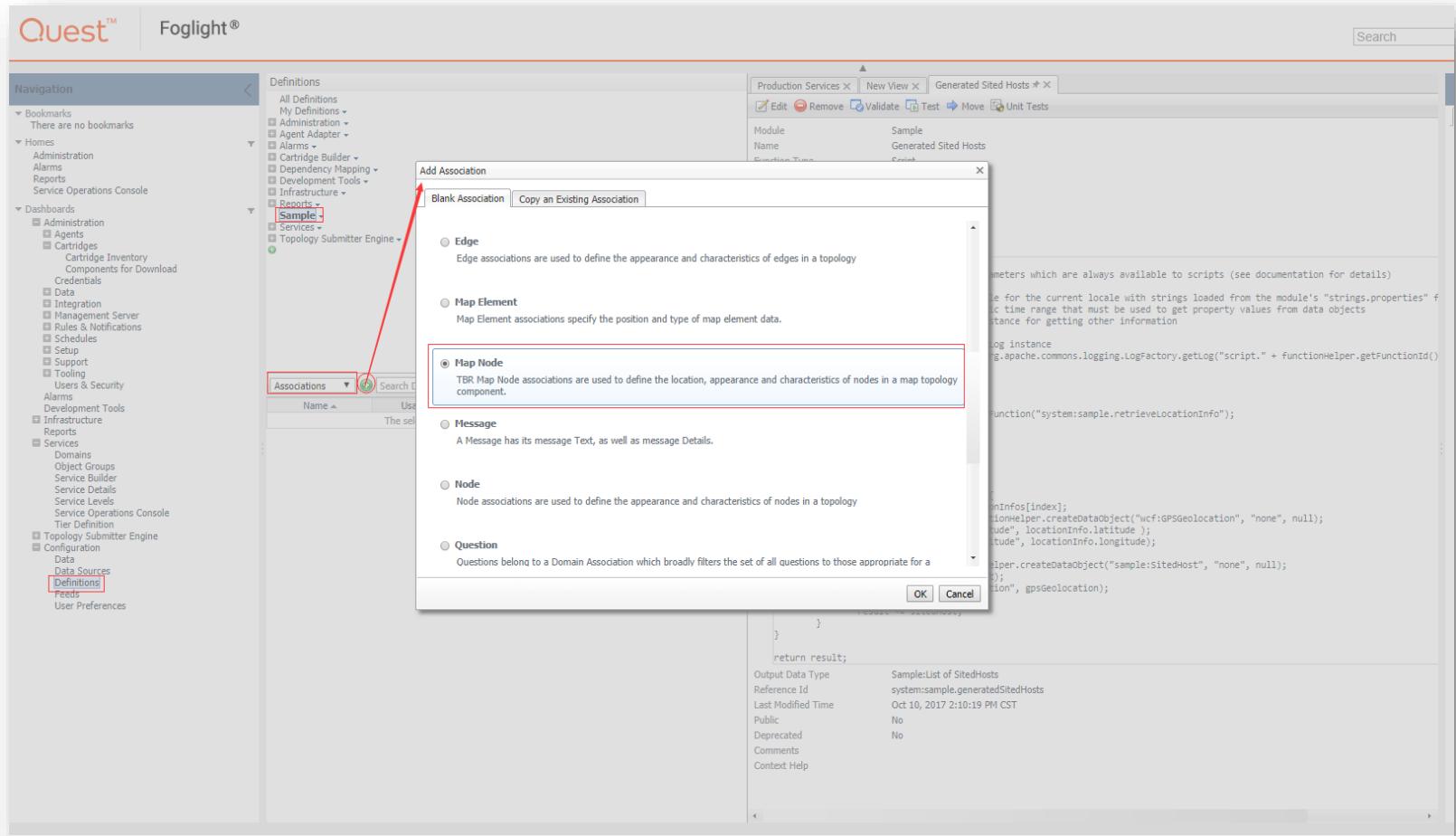
Goal for Hosts Map



Add a Map Node Association

- Map Node Association

- Used to provide latitude, longitude and value for each node associated with Map Topology Component.



Configure Map Node Association

- Add a context with name “currentNode”, this is a convention.
- Tag is used to build the relationship with Map Topology.

The screenshot shows a software interface for managing a host node. At the top, there are buttons for Edit, Remove, Validate, and Move. Below this is a table of properties:

Module	Sample
Name	Host Node
Usage	Map Node
Reference Id	system:sample.hostNode
Last Modified Time	Oct 11, 2017 4:16:44 PM CST
Public	No
Deprecated	No
Comments	
Context Help	
Context Inputs	

Under "Context Inputs", there is a table:

Key	Name	Usage	Data Type	Fallback Value
timeRange		Required	Common:Time Range	
currentNode		Required	Sample:SitedHost	

Below the table, under "Primary Input", is the value "currentNode". Under "Configuration", there is a list:

- Location Context <currentNode>/gpsGeolocation returning "Localized Value"
- Value Context <currentNode>/host/memory/utilization/current/average returning "Localized Value"
- Tags
 - hosts

Add Types and Functions to Wrap Host with Geo Location

- We prepared the functions and types already.
- You could find them in *sample* module.

The screenshot shows the ServiceNow navigation bar and several open windows:

- Navigation Window:** Shows various system modules like Bookmarks, Homes, Dashboards, and Cartridges.
- Definitions Window:** Shows a tree view of definitions under 'Definitions'.
- Functions Window:** Shows a list of functions:

Name	Type	Return Type	ID	Last Modified Time
Generated Sited Hosts	Script	Sample:List of SitedHosts	generatedSitedHosts	10/10/17 2:10 PM
Group Host By OS Type	Script	Sample:List of OSObjContainers	groupHostByOSType	10/10/17 10:30 AM
Location Data	Script	Common:List of Strings	locationData	5/19/16 10:20 AM
Retrieve Location Info	Script	Sample:List of LocationInfos	retrieveLocationInfo	5/18/16 9:03 PM
Simulate Hosts	Script	Monitoring:List of Hosts	simulateHosts	10/11/17 9:29 AM
- Module Definition Window:** Shows the configuration for the 'Generated Sited Hosts' module, including its name, function type (Script), converter (No), and cache results (Yes). It also displays the script code and its output data type.

```
package system._sample._scripts;
// The following are special reserved parameters which are always available to scripts (see documentation for details)
// resourcebundle - the Java ResourceBundle for the current locale with strings loaded from the module's "strings.properties" file
// specificTimeRange - the current specific time range that must be used to get property values from data objects
// functionHelper - the FunctionHelper instance for getting other information
//
// Uncomment the following line to get a Log instance
// org.apache.commons.logging.Log log = org.apache.commons.logging.LogFactory.getLog("script." + functionHelper.getFunctionId())
if(!hosts) {
    return [];
}

def locationInfos = functionHelper.invokeFunction("system:sample.retrieveLocationInfo");
hosts.sort();
return it.name;

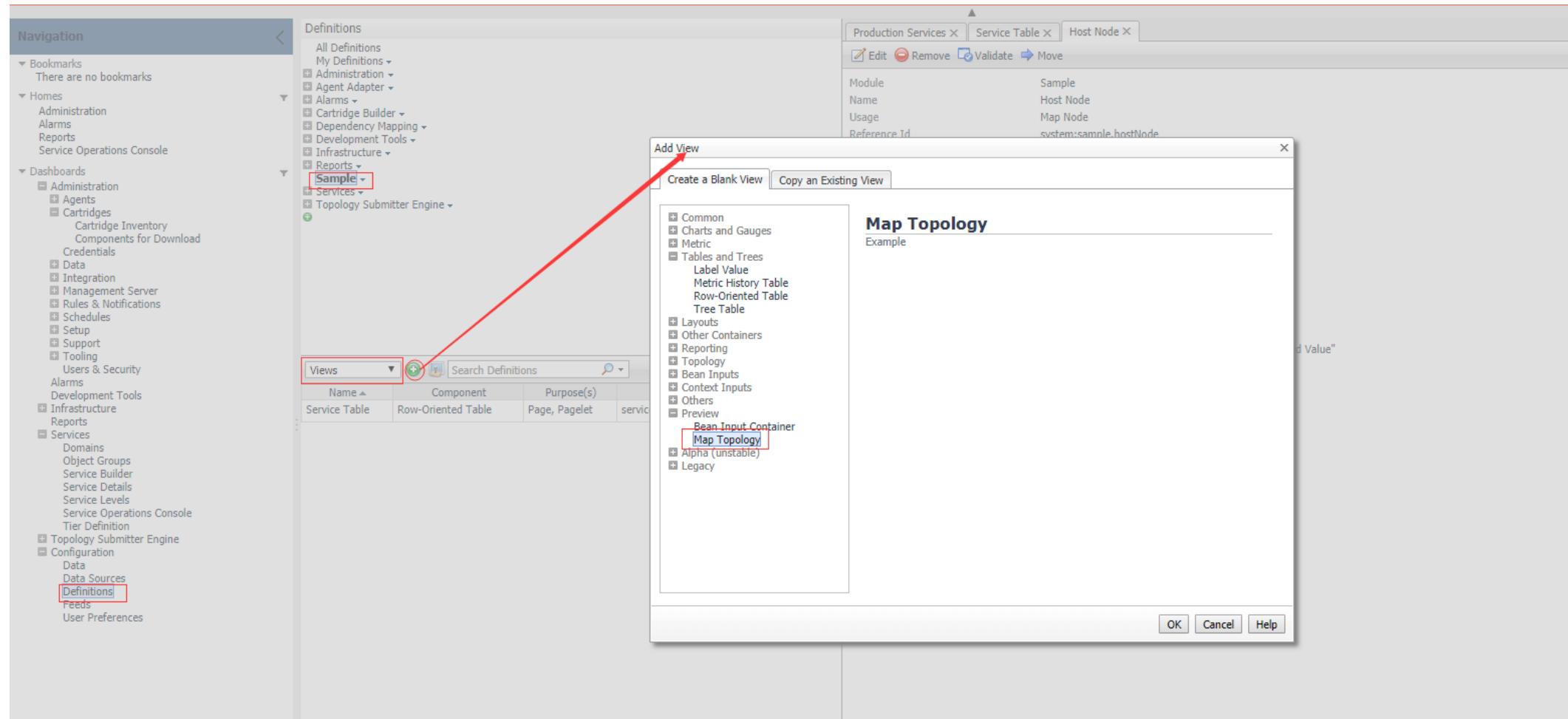
def result = [];
hosts.eachWithIndex(host, index ->
    if(index < locationInfos.size()) {
        def locationInfo = locationInfos[index];
        def gpsgeolocation = functionHelper.createDataObject("wcf:GPSGeolocation", "none", null);
        gpsgeolocation.set("latitude", locationInfo.latitude);
        gpsgeolocation.set("longitude", locationInfo.longitude);

        def sitedHost = functionHelper.createDataObject("sample:sitedHost", "none", null);
        sitedHost.set("host", host);
        sitedHost.set("gpsgeolocation", gpsgeolocation);
        result += sitedHost;
    }
}

return result;
```

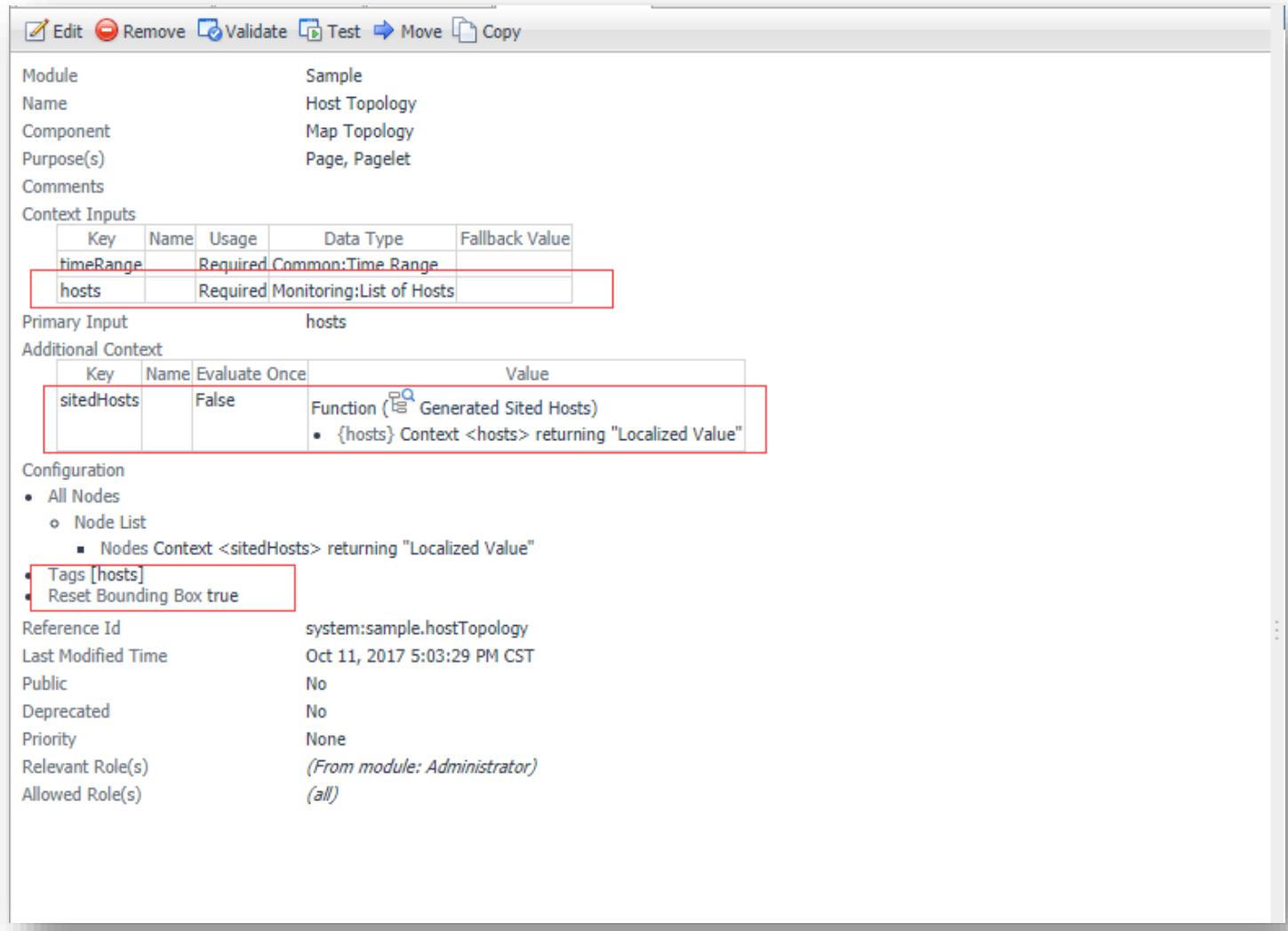
Output Data Type: Sample:List of SitedHosts
Reference Id: system:sample.generatedSitedHosts
Last Modified Time: Oct 10, 2017 2:10:19 PM CST
Public: No
Deprecated: No
Comments: No
Context Help: No

Add a Map Topology



Configure the Map Topology

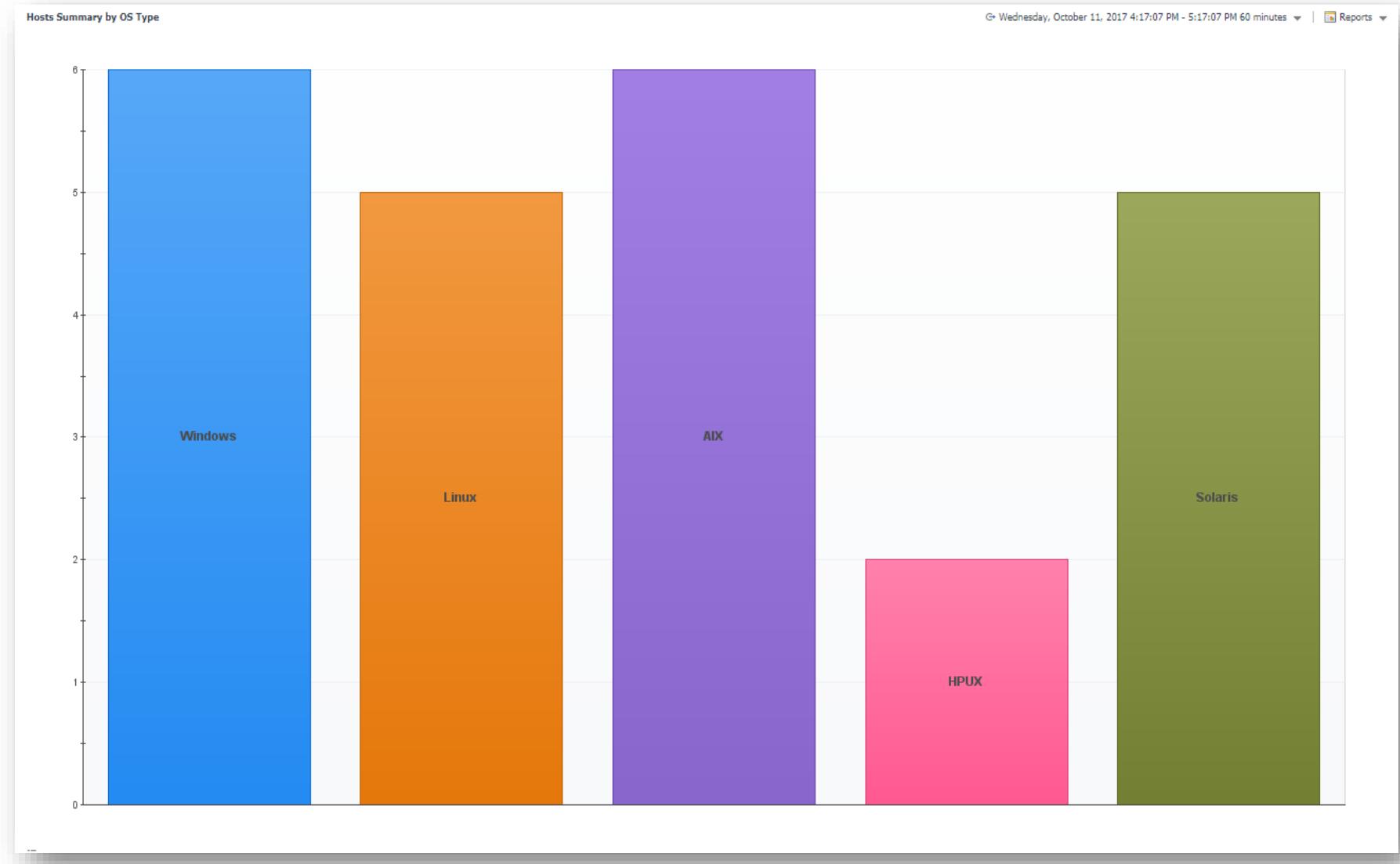
- Add context “hosts” as Input
- Invoke function “Generate Sited Hosts” to convert hosts to sitedHosts.
- Specify the tag which is the same with Map Node Association.
- Test after Save.



Make Hosts by OS Type Bar Chart

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Goal for Hosts by OS Type Bar Chart



Add Type and Functions to Wrap Hosts by OS Types

- We prepared the functions and types already, could be used directly.

The screenshot shows the Foglight interface with the following details:

- Navigation:** The left sidebar shows various navigation options like Bookmarks, Homes, Dashboards, Administration, Reports, Service Operations Console, Data, Integration, Management Server, Rules & Notifications, Schedules, Setup, Support, Tooling, Users & Security, Alarms, Development Tools, Infrastructure, Reports, Services, Domains, Object Groups, Service Builder, Service Details, Service Lists, Service Operations Console, Tier Definition, Topology Submitter Engine, Configuration, Data, Data Sources, Definitions (which is selected), Feeds, and User Preferences.
- Definitions:** The main pane shows the "Definitions" section with a tree view. Under "Sampled", there is a "Group Host By OS Type" entry.
- Functions:** A table titled "Functions" lists the following entries:

Name	Type	Return Type	ID	Last Modified Time
Generated Sited Hosts	Script	Sample:List of SitedHosts	generatedSitedHosts	10/10/17 2:10 PM
Group Host By OS Type	Script	Sample:List of OSObjContainers	groupHostByOSType	10/10/17 10:30 AM
Location Data	Group Host By OS Type	list of Strings	locationData	5/19/16 10:20 AM
Retrieve Location Info	Script	Sample:List of LocationInfos	retrieveLocationInfo	5/18/16 9:03 PM
Simulate Hosts	Script	Monitoring:List of Hosts	simulateHosts	10/11/17 9:29 AM
- Module Details:** On the right, the "Group Host By OS Type" module is detailed:
 - Module:** Sample
 - Name:** Group Host By OS Type
 - Function Type:** Script
 - Converter:** No
 - Cache Results:** Yes
 - Parameters:** hosts Monitoring:List of Hosts
 - Script:**

```
package system._sample.scripts;
// The following are special reserved parameters which are always available to scripts (see documentation for details)
//
// ResourceBundle - the Java ResourceBundle for the current locale with strings loaded from the module's "strings.properties" file
// specificTimeRange - the current specific time range that must be used to get property values from data objects
// functionHelper - the FunctionHelper instance for getting other information
//
// Uncomment the following line to get a Log instance
// org.apache.commons.logging.Log log = org.apache.commons.logging.LogFactory.getLog("script." + functionHelper.getFunctionId());

def ostypelist = ["windows", "Linux", "AIX", "HPUX", "Solaris"];

def groupedhost = hosts.groupBy(
it.os.type;
)

def result = [];
ostypelist.each{ostype ->
    def osContainer = functionHelper.createDataObject('sample:OSObjContainer', 'none', null);
    osContainer.set("osType", ostype);
    osContainer.set("hosts", groupedHost?.get(ostype)?.groupedHost.get(ostype)[]);
    result += osContainer;
}

return result;
```
 - Output Data Type:** Sample:List of OSObjContainers
 - Reference Id:** system:sample:groupHostByOSType
 - Last Modified Time:** Oct 10, 2017 10:30:14 AM CST
 - Public:** No
 - Deprecated:** No
 - Comments:** No
 - Context Help:** None

Add a Bar or Pie Chart

The screenshot shows the Foglight interface with the following components:

- Navigation:** On the left, under "Definitions", the "Sample" item is highlighted with a red box.
- Definitions:** A list of various definitions including All Definitions, Administration, Agent Adapter, Alarms, Cartridge Builder, Dependency Mapping, Development Tools, Infrastructure, Reports, and Sample.
- Add View Dialog:** A modal window titled "Add View" is open, showing the "Bar or Pie Chart" component selected (also highlighted with a red box).
 - Common:** Bar or Gauge, Bar or Pie Chart (selected), Circular Gauge, Cluster Bar Chart, High/Low Bar Chart, Time Bar Chart, Time Plot Chart.
 - Metric:** Label Value, Metric History Table, Row-Oriented Table, Tree Table.
 - Layouts:** Other Containers, Reporting, Topology, Bean Inputs, Context Inputs, Others.
 - Preview:** Bean Input Container, Map Topology, Alpha (unstable), Legacy.
- Module Details:** Production Services X, Service Table X, Host Node X, Host Topology X, Group Host By OS Type X. The "Module" is set to "Sample", "Name" to "Group Host By OS Type", "Function Type" to "Script", and "Converter" to "No".
- Example:** A bar chart titled "All Alarms Breakdown by Agents" is displayed, showing the percentage of alarms relative to total alarms for three agents: Windows_System_1@tor... (orange), AppMonitor_1@tor... (red), and TerminalServer_1@tor... (purple). The chart has a legend below it.
- Help:** A list of bullet points:
 - Use the Bar or Pie chart to show a visual representation of numeric values.
 - A wide variety of forms can be configured.

Configure the Bar or Pie Chart

- Add context hosts as Input
- Invoke function “*Group Host by OS Type*” to group the hosts by OS.
- Configure “*Parent Items*”

The screenshot shows a configuration interface for a module named "Hosts Summary by OS Type". The interface includes sections for Module Info, Context Inputs, Primary Input, Additional Context, Configuration, and Reference Id.

Module Info:

- Module: Sample
- Name: Hosts Summary by OS Type
- Component: Bar or Pie Chart
- Purpose(s): Page, Pagelet
- Comments:

Context Inputs:

Key	Name	Usage	Data Type	Fallback Value
timeRange		Required	Common:Time Range	
hosts		Required	Monitoring:List of Hosts	

Primary Input: hosts

Additional Context:

Key	Name	Evaluate Once	Value
groupedHosts		False	Function (Group Host By OS Type) • {hosts} Context <hosts> returning "Localized Value"

Configuration:

- General
 - Chart Type Bar
- Data
 - Parented Items
 - Parented Items Binding
 - Item Parents Context <groupedHosts> returning "Localized Value"
 - For Each Item Parent
 - Value Context <currentItemParent>/hosts returning "Count All"
 - Label Context <currentItemParent>/osType returning "Localized Value"

Reference Id: system:sample.hostsSummaryByOSType

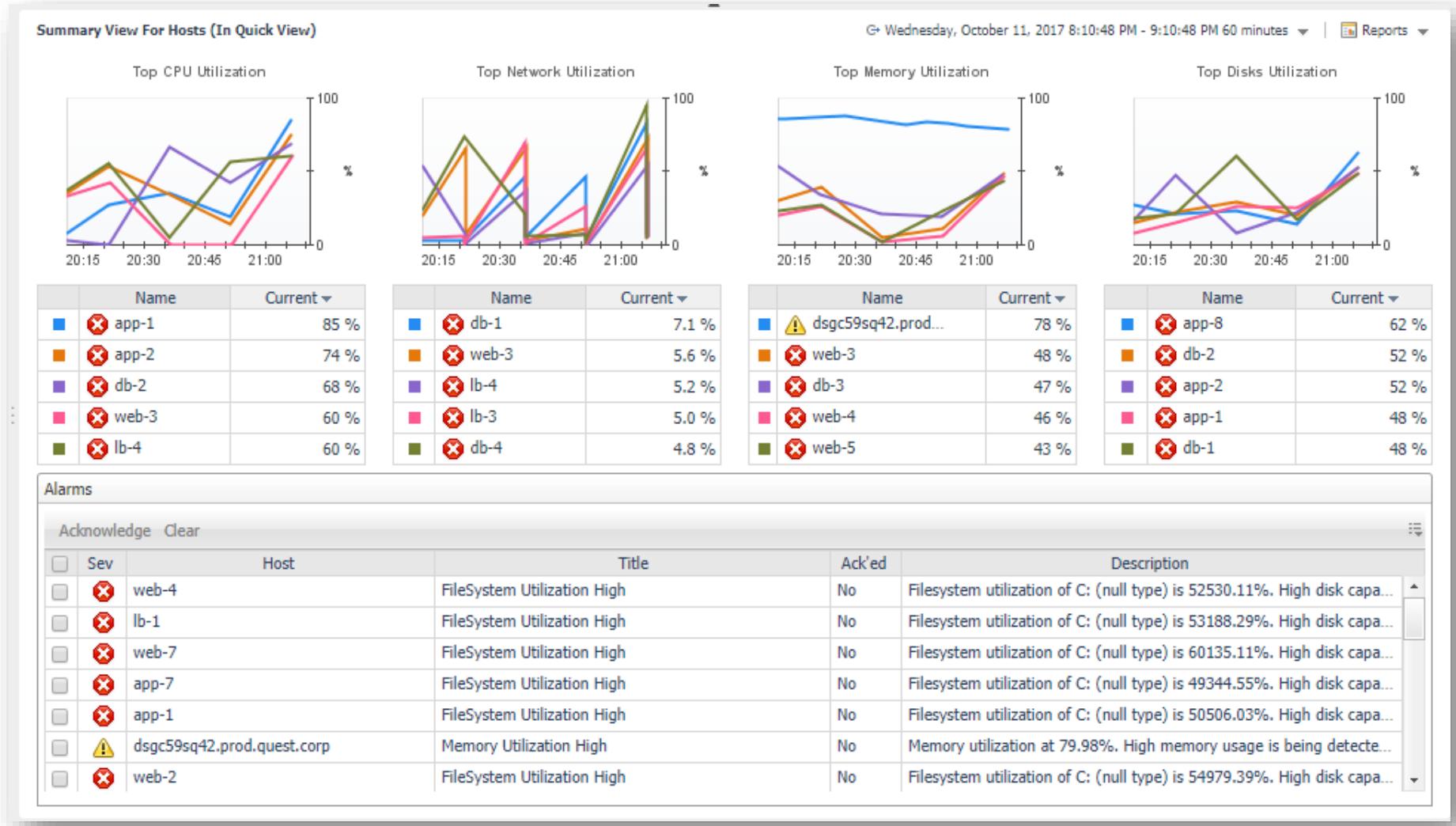
Properties:

- Last Modified Time: Oct 11, 2017 5:14:32 PM CST
- Public: No
- Deprecated: No
- Priority: None
- Relevant Role(s): (From module: Administrator)
- Allowed Role(s): (all)

Copy Resources Summary View

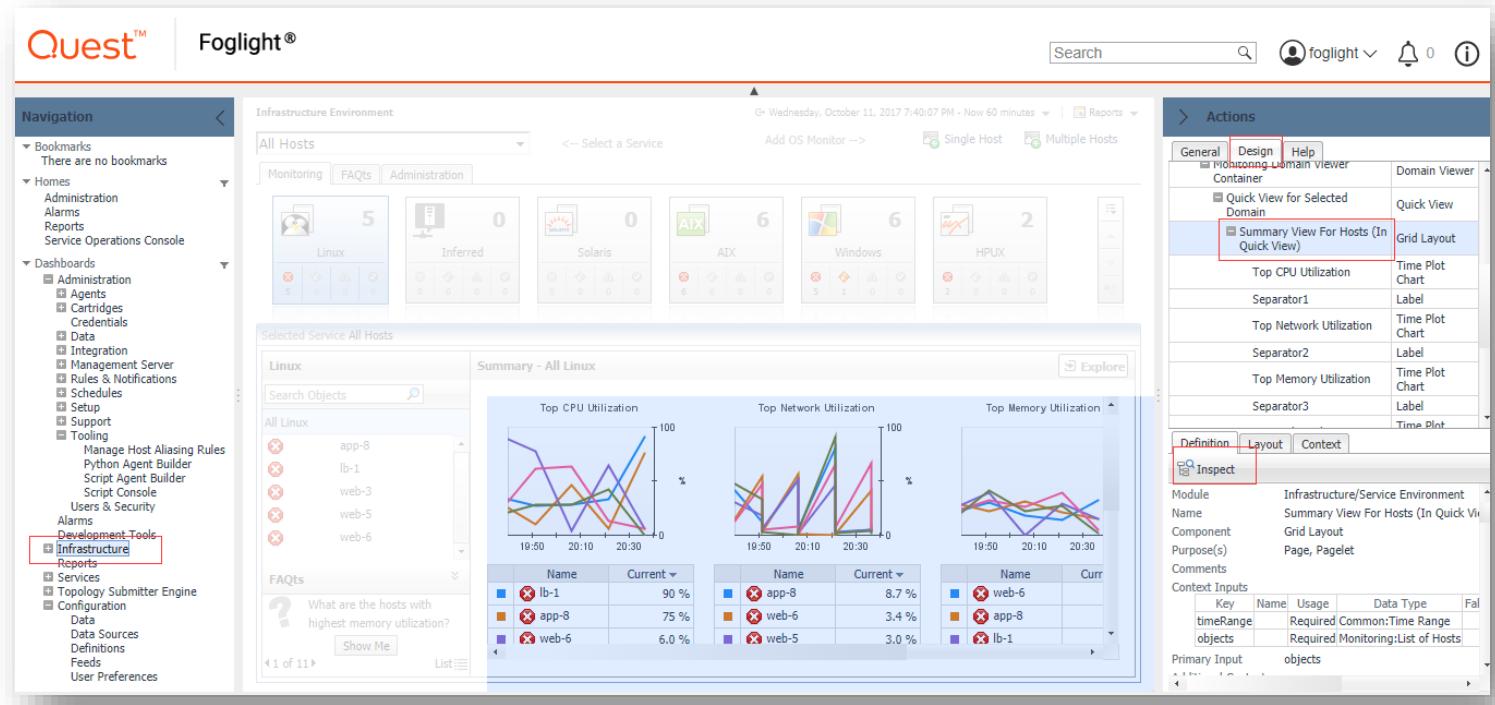
Quest®

Goal for Resource Summary

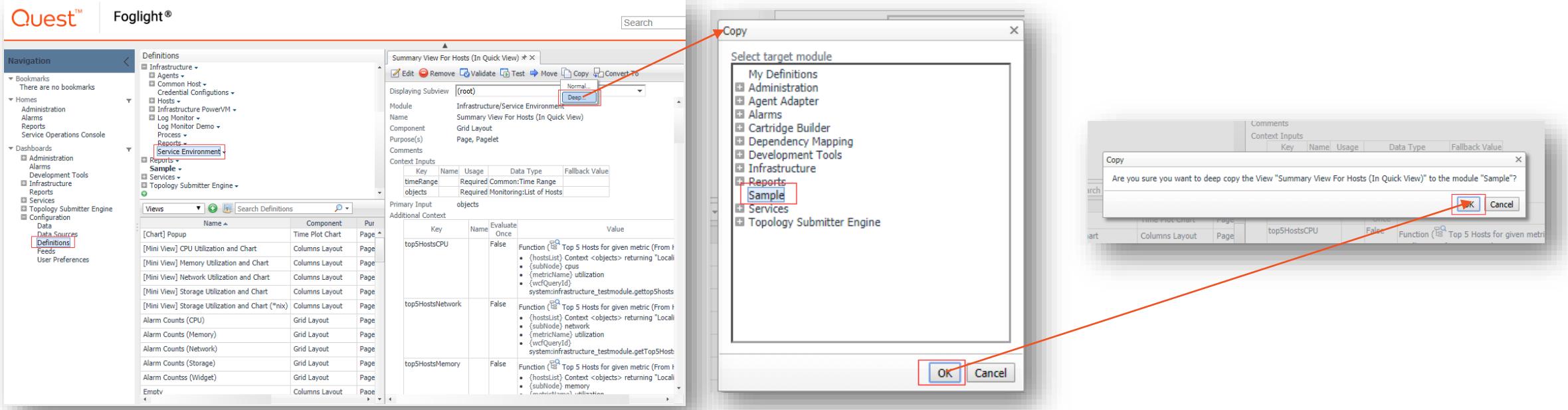


Locate Resource Summary View within IC

- Use WCF Investigation (Design Tab) to locate the View.
- Inspect into the View to edit.



Copy Resource Summary from IC



Construct CIO Dashboard

Quest™

Goal for CIO Dashboard

CIO Dashboard shows all hosts used in production environment in different tiers.

Service Table

Service Name	Service Level Compliance	Health	Alarms	Last Updated
AppServers	✗	✗	8	10/12/17 2:00 AM
WebServers	✗	✗	7	10/12/17 2:00 AM
LoadBalancerServers	✗	✗	4	10/12/17 2:00 AM
DatabaseServers	✗	✗	4	10/12/17 2:00 AM

Host Topology

Hosts Summary by OS Type

OS Type	Count
Windows	3.0
Linux	1.0
AIX	1.0
HPUX	1.0
Solaris	2.0

Summary View For Hosts (In Quick View)

Top CPU Utilization

Name	Current
app-7	96 %
app-6	63 %
app-8	63 %
app-5	13 %
app-1	7.1 %

Top Network Utilization

Name	Current
app-4	6.7 %
app-5	6.2 %
app-7	6.0 %
app-8	5.2 %
app-3	2.0 %

Top Memory Utilization

Name	Current
app-8	49 %
app-6	22 %
app-2	18 %
app-1	17 %
app-4	15 %

Top Disks Utilization

Name	Current
app-5	41 %
app-8	40 %
app-2	16 %
app-1	16 %
app-4	9.9 %

Alarms

Sev	Host	Title	Acked	Description
Info	Host1	Info about application 1	No	Info about application 1
Warning	Host2	Warning about application 2	No	Warning about application 2
Error	Host3	Error about application 3	No	Error about application 3
Critical	Host4	Critical about application 4	No	Critical about application 4

Add a Rows Layout

The screenshot shows a software interface for managing system definitions. On the left, a navigation sidebar lists categories like Infrastructure, Reports, and Dashboards. Under Reports, the 'Definitions' option is highlighted with a red box. The main area displays a list of views, including 'Hosts Summary by OS Type', 'Host Topology', 'Resource Alarms - Summary', 'Service Table', and 'Summary View For Hosts (In Quick View)'. To the right, a modal window titled 'Add View' is open, showing a catalog of view components. The 'Rows Layout' component is selected and highlighted with a red box. The modal also contains a detailed description of the Rows Layout, an example section with three visualizations (a chart, a table, and a log viewer), and an 'OK' button at the bottom.

Add View

Create a Blank View Copy an Existing View

Common

- Columns Layout
- Grid Layout
- Label
- Row-Oriented Table
- Rows Layout** (Selected)
- Time Plot Chart
- Charts and Gauges
- Metric
- Tables and Trees
- Layouts
- Other Containers
- Reporting
- Topology
- Bean Inputs
- Context Inputs
- Others
- Preview
- Alpha (unstable)
- Legacy

Rows Layout

The Rows Layout view component displays a set of views organized in rows. Within each row, the views are positioned horizontally in the same way as the views in a Grid Layout, except that each row is laid out independently. The natural width of the layout is based on the longest row, and natural height is the sum of the row heights. (Each row's natural height is based on the largest view in that row.)

Example

Rows Layout Example

Hosts

Name	Severity	Status
host_1	Info	Up
host_2	Warning	Up
host_3	Info	Up
host_4	Info	Up
host_5	Info	Up
host_6	Info	Up
host_7	Info	Up
host_8	Info	Up
host_9	Info	Up
host_10	Info	Up

Logs

Time	Message
May 29 22 19:13	host[1] [2022-05-29T19:13:00Z] [INFO] [host] Read from socket[1]
May 29 22 19:13	host[1] [2022-05-29T19:13:00Z] [INFO] [host] Write to socket[1]
May 29 22 19:13	host[1] [2022-05-29T19:13:00Z] [INFO] [host] Connection lost by peer
May 29 22 19:13	host[1] [2022-05-29T19:13:00Z] [INFO] [host] Read from socket[1]
May 29 22 19:13	host[1] [2022-05-29T19:13:00Z] [INFO] [host] Write to socket[1]

OK Cancel Help

General Setup for Layout

- Name: CIO Dashboard
- Purpose: Page

Save X Cancel Test

General Context Configuration Layout

Module	Sample
Component	Rows Layout
Name	CIO Dashboard
ID	CIODashboard
Public	<input type="checkbox"/>
Deprecated	<input type="checkbox"/>
Refresh Interval	<input type="text"/> second(s)
Priority	None ▾
Purpose(s)	Page
Custom Purpose(s)	
Relevant Role(s)	(From module: Administrator)
Allowed Role(s)	(all)
Comments	
Context Help	

Context Setup for Layout

- *selectedService*: this context is used to pass the value of selected service in *Service Table*.
- *hosts*: values are from the *selectedService*, and it is required by views '*Host Topology*' and '*Hosts Summary by OS Type*'.

The screenshot shows a software interface for configuring context settings. The top bar includes Save, Cancel, and Test buttons. The tabs are General, Context (which is selected), Configuration, and Layout. The Context tab has two sections: Inputs and Additional.

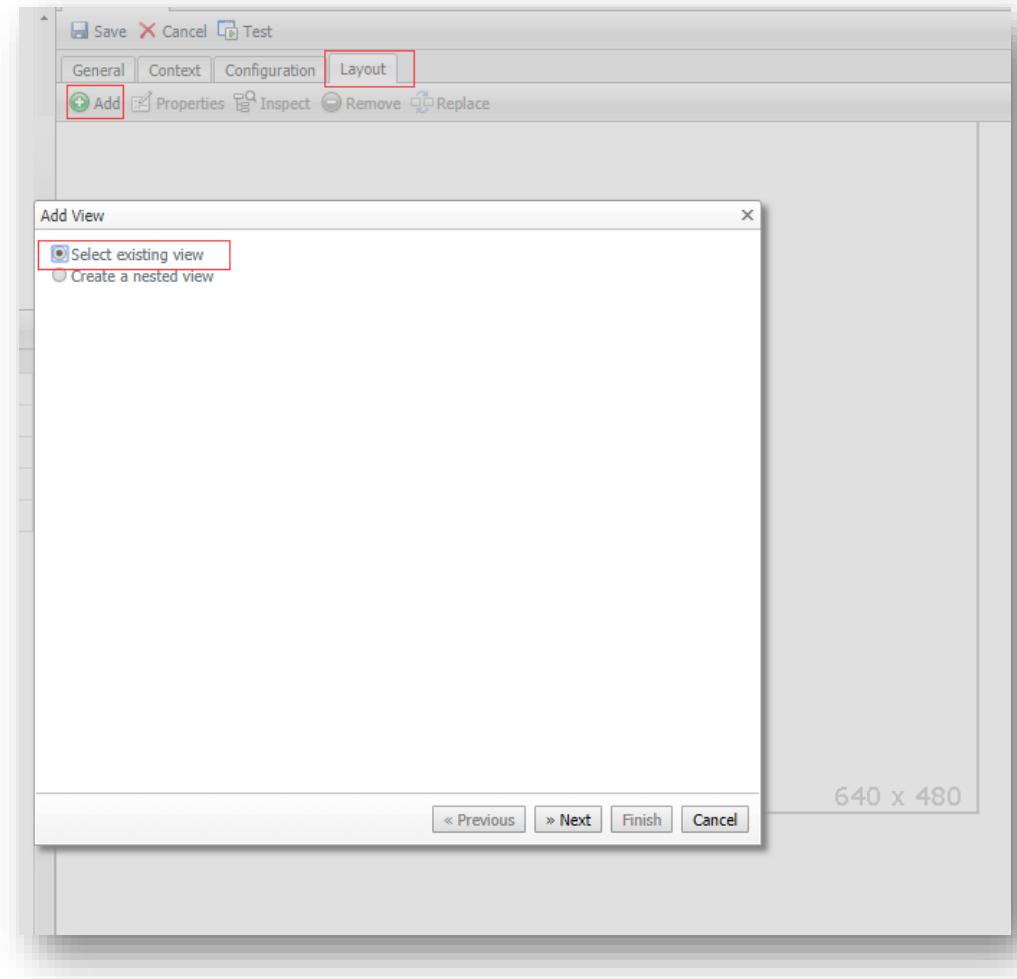
Inputs:

	Key	Name	Usage	List	Data Type	Fallback Value
⊖ ↖	timeRange	(not set)	Required	False	Common:Time Range	
⊖ ↖	selectedService	(not set)	Internal	False	Monitoring:FSMService	Null
⊕						

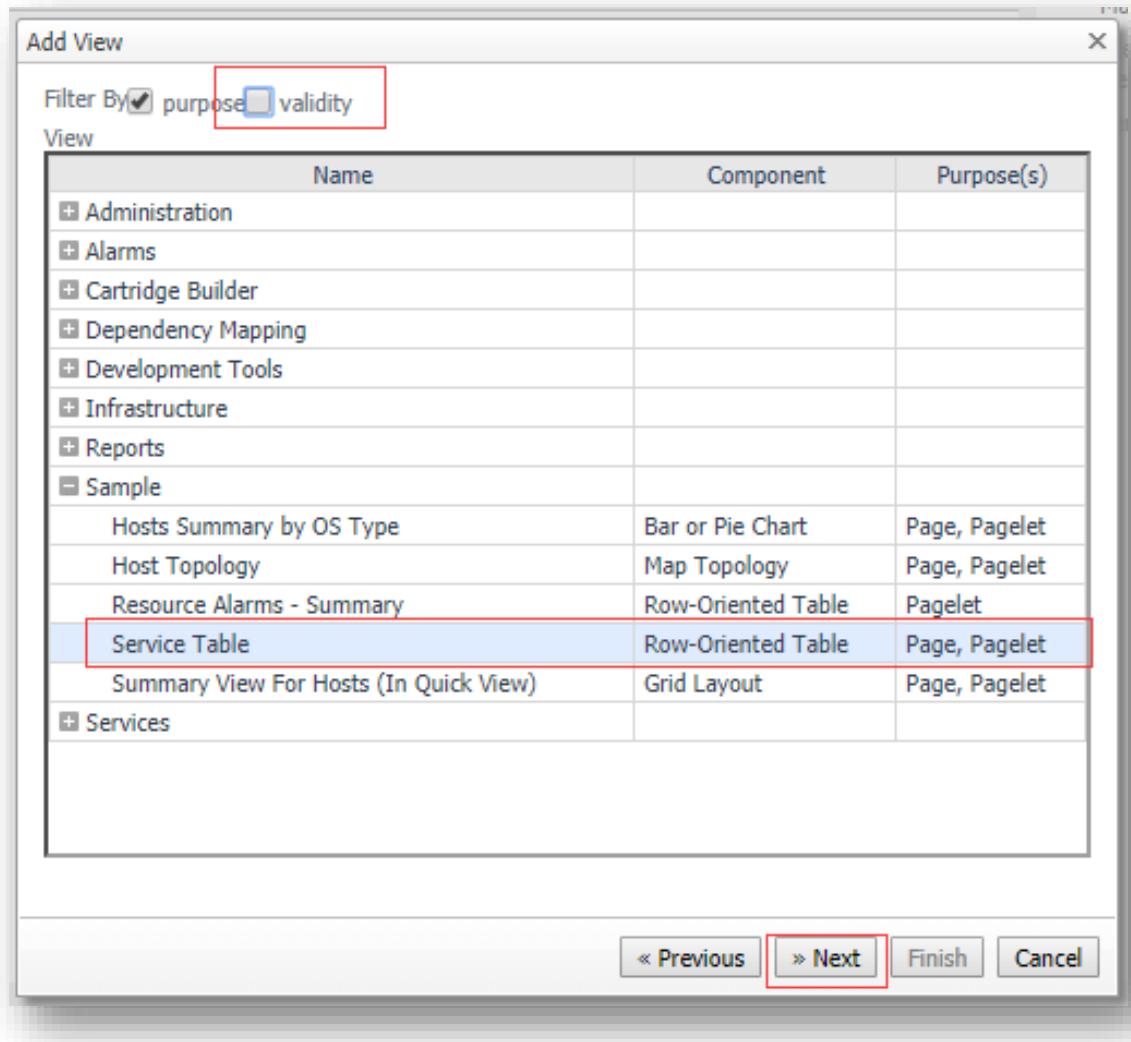
Additional:

	Key	Name	Evaluate Once	Value
⊖	hosts	(not set)	<input type="checkbox"/>	<selectedService>/hosts
⊕				

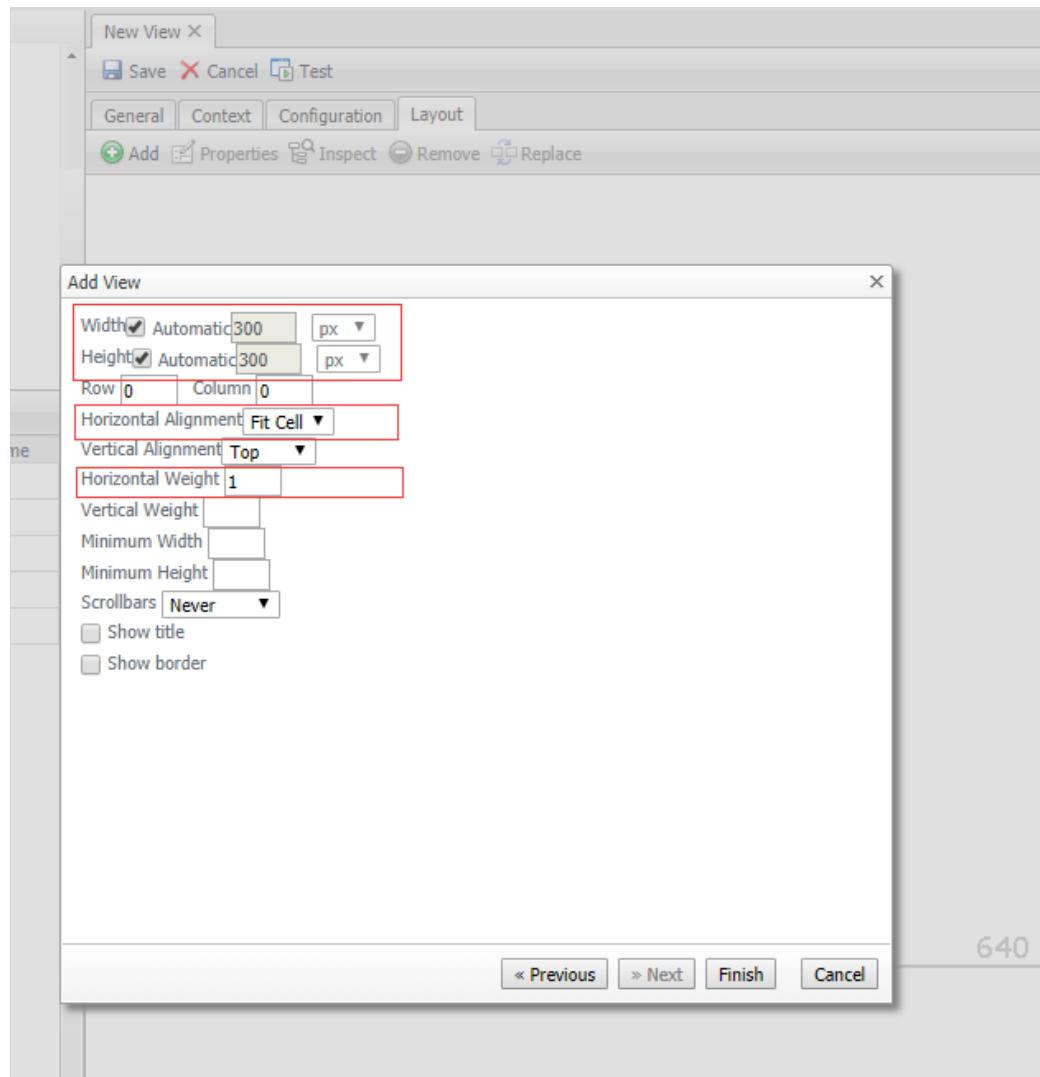
Add Service Table to Layout – Step 1



Add Service Table to Layout – Step 2

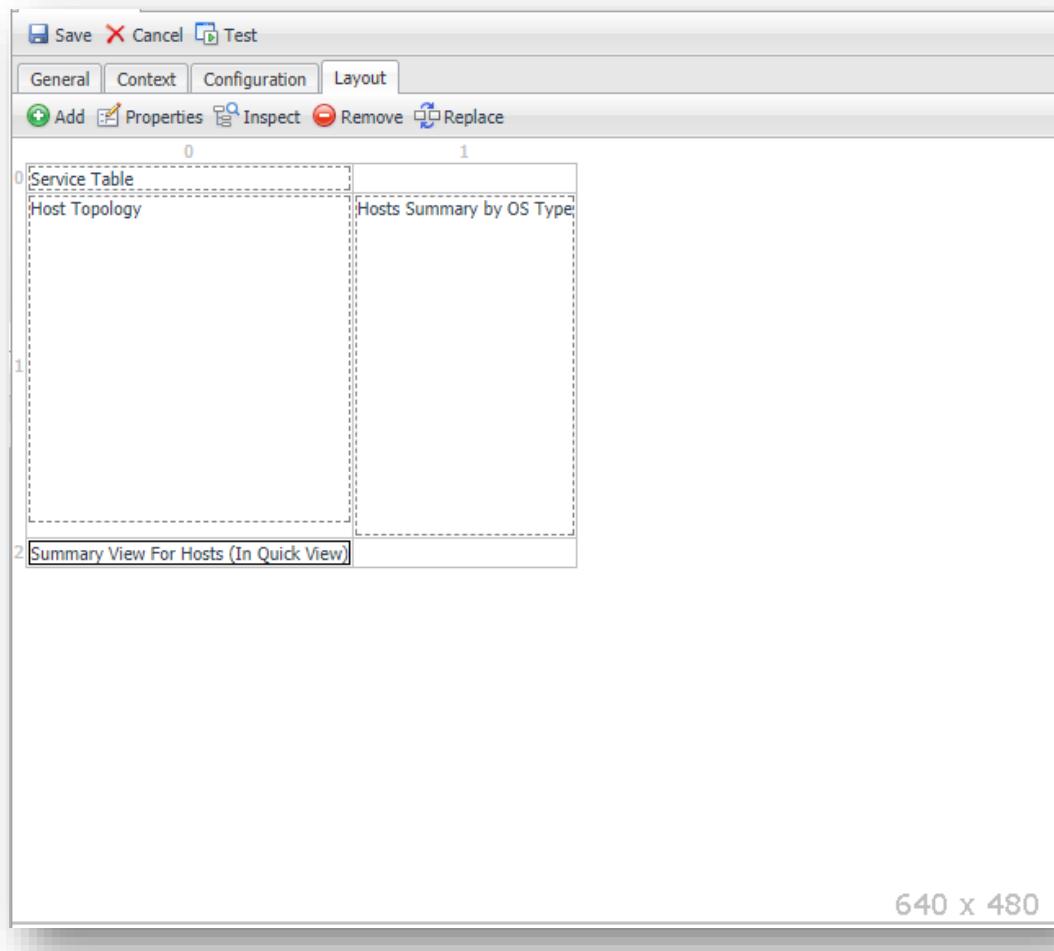


Add Service Table to Layout – Step 3



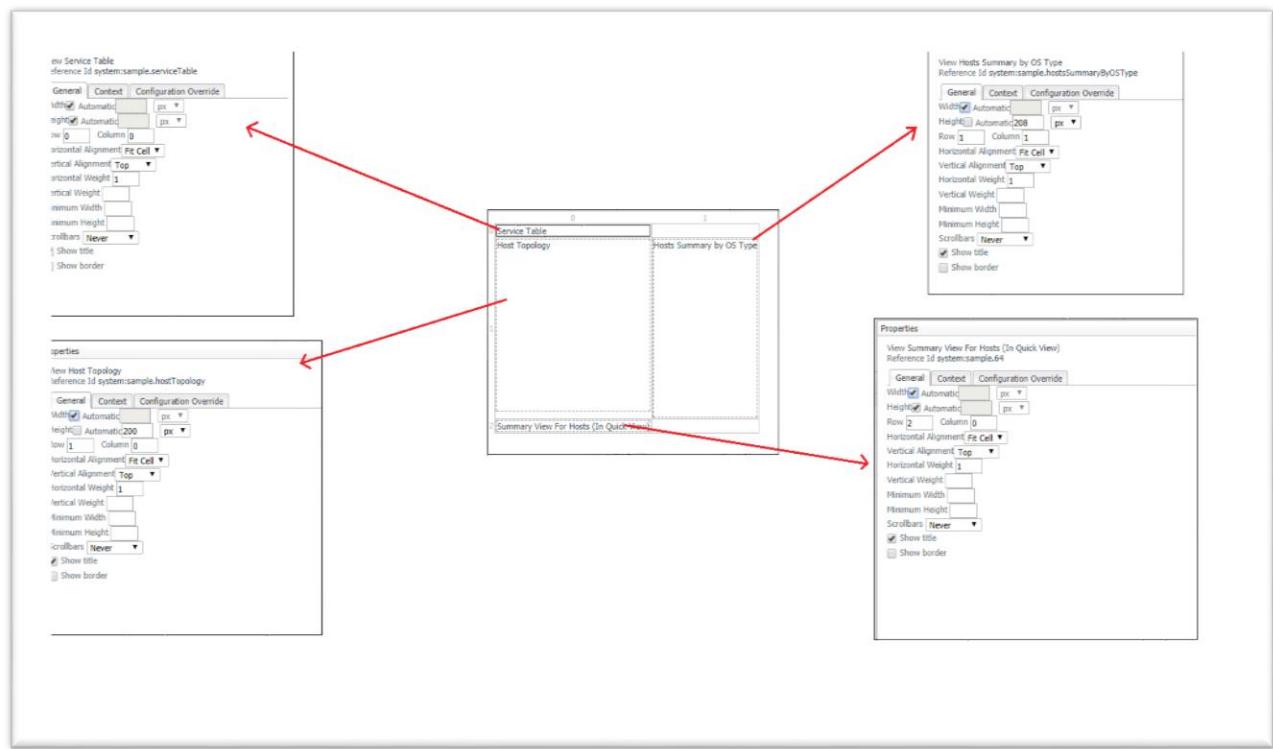
Add Service Table to Layout – Step 4

- Add other views to Layout in the same way
 - *Host Topology*
 - *Host Summary by OS Type*
 - *Summary View For Hosts (In Quick View)*
- Note, the input of *Summary View For Hosts (In Quick View)* is *objects*, which is not match with any context of this Layout, should convert context *hosts* to *objects* when adding this view.

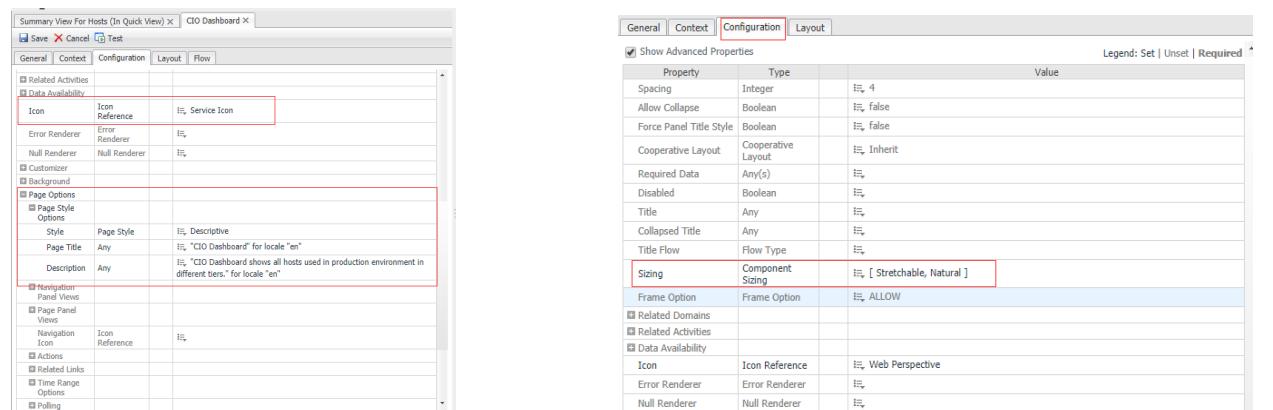


Adjustments for Contained Views

- Specify following properties for each view in Layout
 - Width
 - Height
 - Row
 - Column
 - Alignments
 - Weight: means how much space it should occupy compared with other views.
 - Show Title



- Add a Page Title
- Give a *Nature* height for Sizing
- Bind ‘CIO Dashboard’ to module as Main View so that a dashboard link appears in Navigation panel.
- Finally, change module name to ‘CIO Dashboard’.



Add a PDF Layout

- PDF Layout is a PDF template that contains the reportlets.

The screenshot shows the Foglight interface with the following components:

- Navigation Bar:** Displays "Quest™ Foglight®".
- Left Sidebar:** Shows a tree view of navigation items under "Definitions" and "Views". The "Definitions" section includes "All Definitions" and "My Definitions". The "Views" section lists various dashboards and reports, with "Definitions" highlighted by a red box.
- Central Area:** A table titled "Views" showing details like Name, Component, Purpose(s), and CIO Dashboard.
- Right Panel:** An "Add View" dialog box.
 - Buttons:** "Edit", "Remove", "Validate", "Test", "Move", "Copy".
 - Form Fields:** "Module" (CIO Dashboard), "Name" (Hosts Summary by OS Type), "Component" (Bar or Pie Chart), "Purpose(s)" (Page, Pagelet), "Comments".
 - Buttons:** "Create a Blank View", "Copy an Existing View".
 - Section:** "PDF Layout".
 - Description: "The PDF Layout contains a series of body views that are rendered in sequence (in the order they appear in the layout) to a ServerReport document for printing or saving as a PDF. Note: Page Decoration header and footer views used on the document's first page must be placed before the first body view."
 - Checkboxes: Common, Charts and Gauges, Metric, Tables and Trees, Layouts, Other Containers, Reporting, Page Decoration, **PDF Layout** (highlighted by a red box).
 - Section:** "Example".
 - Preview: A chart titled "Host Summary - Thursday, June 21" showing "System Load Summary for *". It includes multiple data series: CPU Utilization, Network Utilization, Memory Usage, Disk Utilization, Thread Count (Gauge), Context Switches (Rate), and Processor Queue. The chart has three Y-axis scales: 0-1000, 0-100, and 0-100.
 - Buttons: "OK", "Cancel", "Help".

General Setup for PDF Layout

- Purpose: Report

Save X Cancel Test

General Context Configuration Views

Module	CIO Dashboard
Component	PDF Layout
Name	CIO Report
ID	CIOReport
Public	<input type="checkbox"/>
Deprecated	<input type="checkbox"/>
Refresh Interval	<input type="text"/> second(s)
Priority	None ▾
Purpose(s)	Report
Custom Purpose(s)	<input type="text"/>
Relevant Role(s)	≡ (From module: Administrator)
Allowed Role(s)	≡ (all)
Comments	<input type="text"/>
Context Help	<input type="text"/>

Context Setup for PDF Layout

- Add context *selectService* and additional context *hosts* as Rows Layout does.
- In addition, add context *pageNumber* for PDF footer.

Save X Cancel Test

General Context Configuration Views

Inputs

	Key	Name	Usage	List	Data Type	Fallback Value
timeRange	timeRange	(not set)	Required	False	Common:Time Range	Null
selectedService	selectedService	(not set)	Internal	False	Monitoring:FSMService	Null

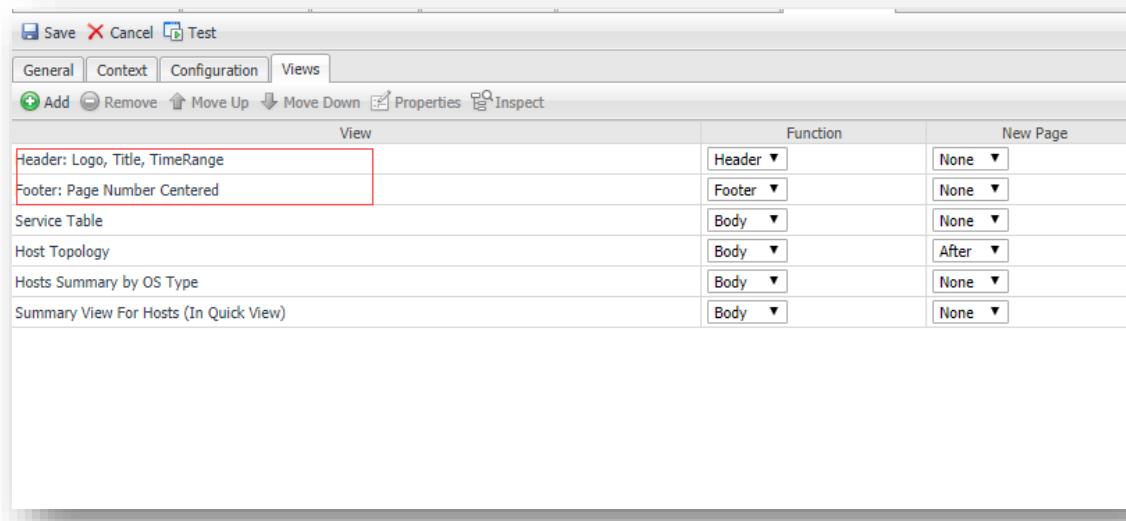
Primary Input Unspecified

Additional

	Key	Name	Evaluate Once	Value
hosts	hosts	(not set)	<input type="checkbox"/>	<selectedService>/hosts

Add Reportlet to PDF Layout

- Add following views to Layout
 - Service Table
 - Host Topology
 - Hosts Summary by OS Type
 - Summary View For Hosts(In Quick View)
 - Page Header
 - Page Footer
 - Page Header and Page Footer should be ahead of other views.
 - It's recommended that all contained views have fixed width and height.
 - Don't forget convert *hosts* to *objects* for Summary View For Hosts(In Quick View).
- Page header and footer could use existing ones under module *Administration/Management Server/Reporting*



Test CIO Report

Module CIO Dashboard
Name CIO Report
Component PDF Layout
Purpose(s) Report
Comments
Context Inputs

Key	Name	Usage	Data Type	Fallback Value
timeRange		Required	Common:Time Range	
selectedService		Internal	Monitoring:FSMService	Null
pageNumber		Internal	Common:Integer	0

Primary Input selectedService
Additional Context

Key	Name	Evaluate Once	Value
hosts		False	Context <selectedService>/hosts returning "Localized Value"

Reference Id
Last Modified T
Public
Deprecated
Priority
Relevant Role(s)
Allowed Role(s)
Views
Name
Componen
Size
Scrollbars Never
Configuration
• View Function Header

Input Values

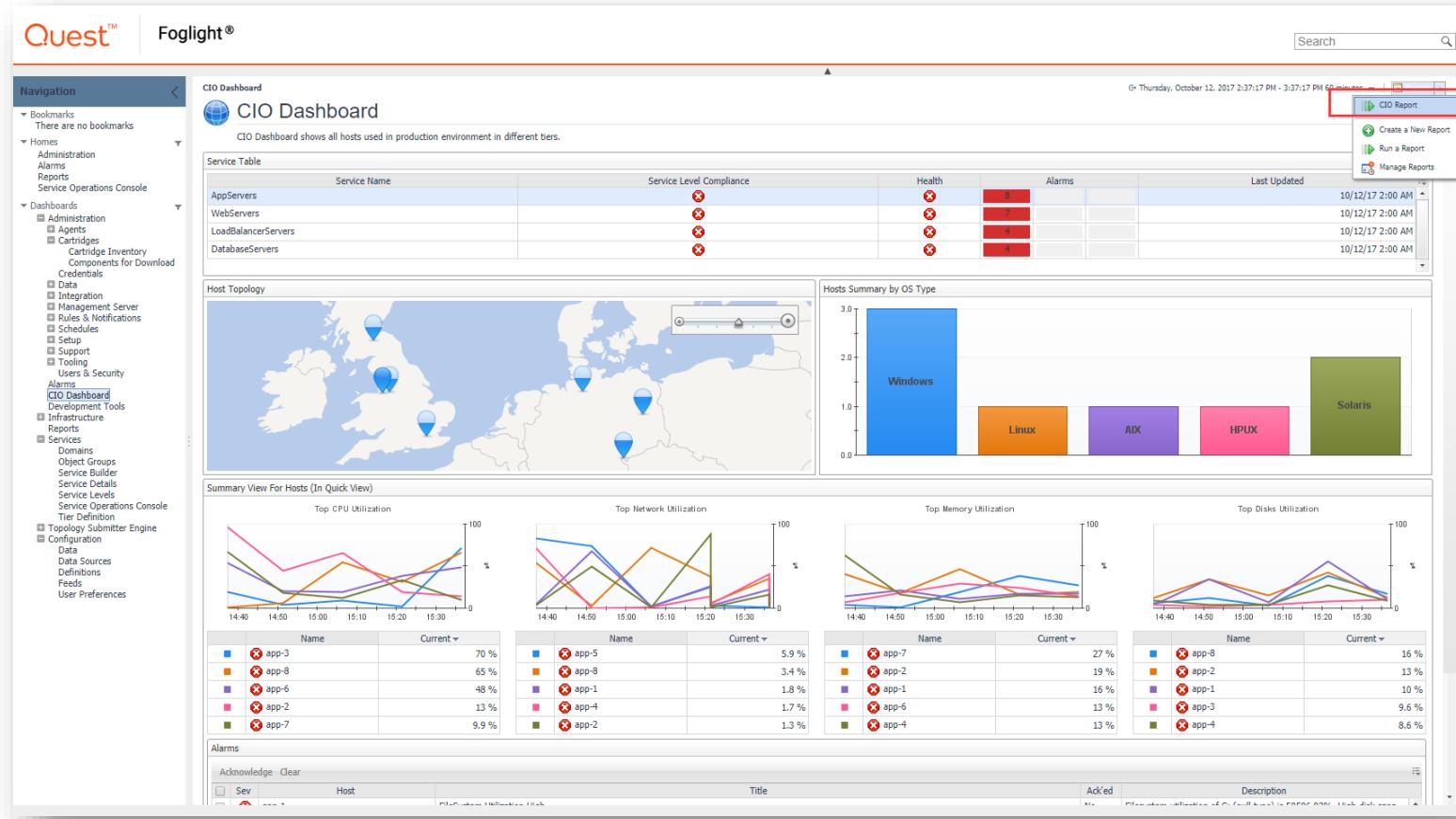
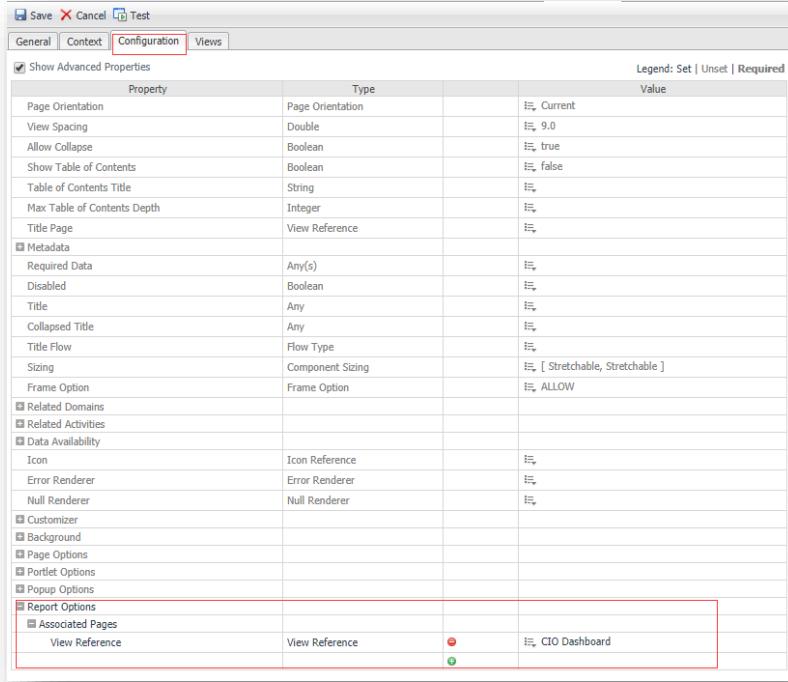
Time Range:	Last hour...
Optional	
selectedService:	Null...
pageNumber:	0

Results Cancel

Name Footer: Page Number Centered' from the System module Administration/Management Server/Reporting
Component Page Decoration
Size Automatic x Automatic
Scrollbars Never
Configuration

Associate CIO Report to CIO Dashboard

- Edit the *Configuration* of CIO Report
- Configure the *Report Options*

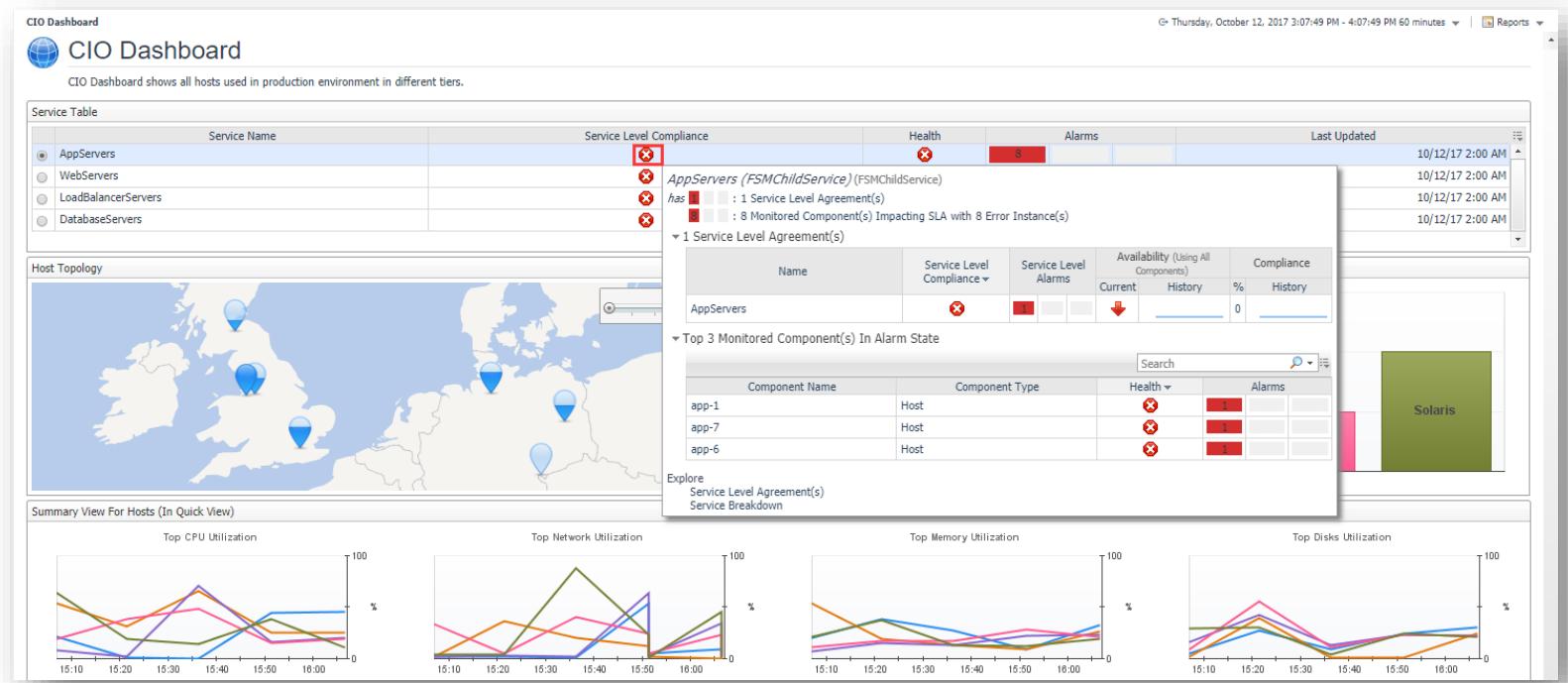


Next Steps

- Add actions to following places
 - SLA Detail
 - Health Detail
 - Alarm Detail
 - Map improvement – Bubble select & Dwell

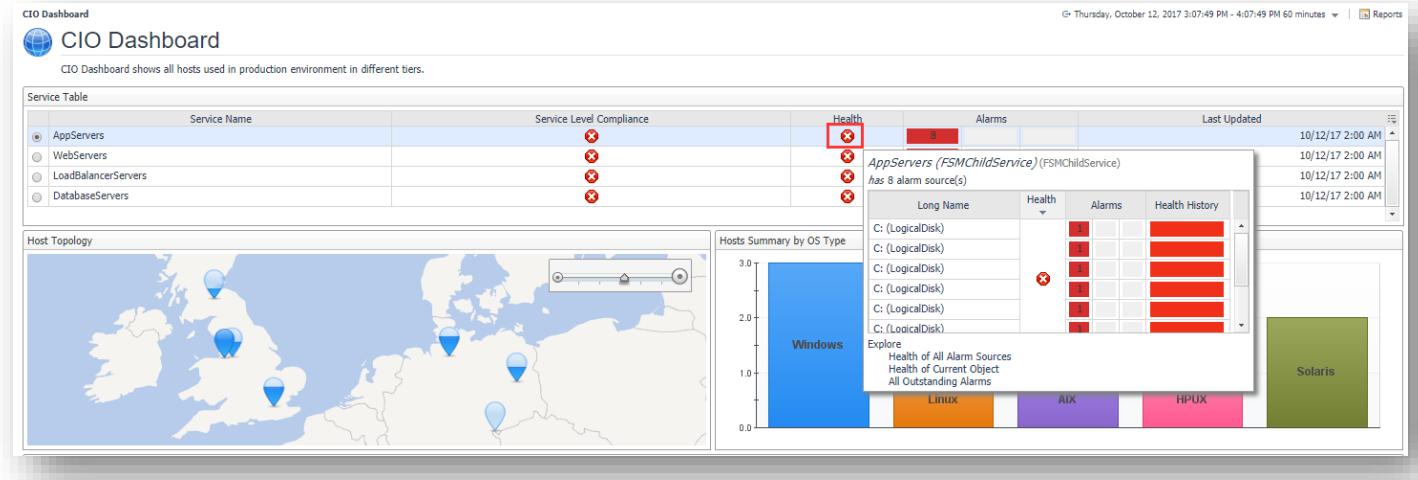
SLAState Select Action

Edit Service Table -> Flow,
Popup
Services/Explorer/FSMService
e Service Level Compliance
Summary



Service Health Select Action

Edit Service Table -> Flow,
Popup
Administration/Management
Server/Commons/Topology
Object aggregateState
Summary



Alarm Count Select Action

Edit Service Table -> Flow,
Popup Alarms/Alarm List As
Popup (TopologyObject)

CIO Dashboard

G: Thursday, October 12, 2017 3:07:49 PM - 4:07:49 PM 60 minutes | Reports

Action

General Design Help

Name

CIO Dashboard Service Table Host Topology Hosts Summary by OS Type

Service Table

Service Name	Service Level Compliance	Health	Alarms	Last Updated
AppServers	✗	✗	8	10/12/17 2:00 AM
WebServers	✗	✗	7	
LoadBalancerServers	✗	✗	4	
DatabaseServers	✗	✗	6	

Hosts Summary by OS Type

OS Type	Count
Windows	3.0
Linux	1.0
AIX	0.0
HPUX	0.0

Summary View For Hosts (In Quick View)

Top CPU Utilization Top Network Utilization Top Memory Utilization Top Disks Utilization

Name	Current
app-4	45 %
app-8	24 %
app-3	20 %
app-6	19 %
app-2	10 %

Name	Current
app-3	5.6 %
app-6	2.9 %
app-1	2.6 %
app-4	2.3 %
app-7	1.8 %

Name	Current
app-7	32 %
app-5	25 %
app-4	23 %
app-2	22 %
app-1	20 %

Name	Current
app-4	30 %
app-6	23 %
app-2	22 %
app-1	20 %
app-5	21 %

Alarms

Sev	Host	Title	Ack'd	Description
✗				

Actions

General Design Help

Name

CIO Dashboard Service Table Host Topology Hosts Summary by OS Type

Select All Unselect All Acknowledge Clear

Sev Time Ack'd Cleared Host Instance Message

Sev	Time	Ack'd	Cleared	Host	Instance	Message
✗	10/10/17 6:15 PM	No	No	app-8	C: (LogicalDisk)	FileSystem Utilization High. Filesystem util
✗	10/10/17 6:15 PM	No	No	app-7	C: (LogicalDisk)	FileSystem Utilization High. Filesystem util
✗	10/10/17 6:15 PM	No	No	app-6	C: (LogicalDisk)	FileSystem Utilization High. Filesystem util
✗	10/10/17 6:15 PM	No	No	app-5	C: (LogicalDisk)	FileSystem Utilization High. Filesystem util
✗	10/10/17 6:15 PM	No	No	app-4	C: (LogicalDisk)	FileSystem Utilization High. Filesystem util
✗	10/10/17 6:15 PM	No	No	app-3	C: (LogicalDisk)	FileSystem Utilization High. Filesystem util
✗	10/10/17 6:15 PM	No	No	app-2	C: (LogicalDisk)	FileSystem Utilization High. Filesystem util

Definition Layout Context

Inspect

Module CIO Dashboard

Name

Component

Comments

Context Inputs

Key	Name	Usage	Data Type	Fallback Value
timeRange	Required	Common:Time Range		
metricModelCPU	Required	Common:Metrics Model		
metricEntry	Optional	Common:Metrics Model Entry		

Primary Input metricModelCPU

Configuration

- Rows Context <metricModelCPU>/entries returning "Localized Value"
- Columns
 - Column
 - Value Context <currentRow>/style, Renderer: Chart Legend returning "Localized Value"
 - ID color
 - Header String Template ()
 - Cell Alignment
 - Vertical Middle
 - Horizontal Center
 - Column
 - Value Localized string ({0},{1})

Quest Confidential

Quest

Host Topology Bubble Actions

Edit Association *Host Node*

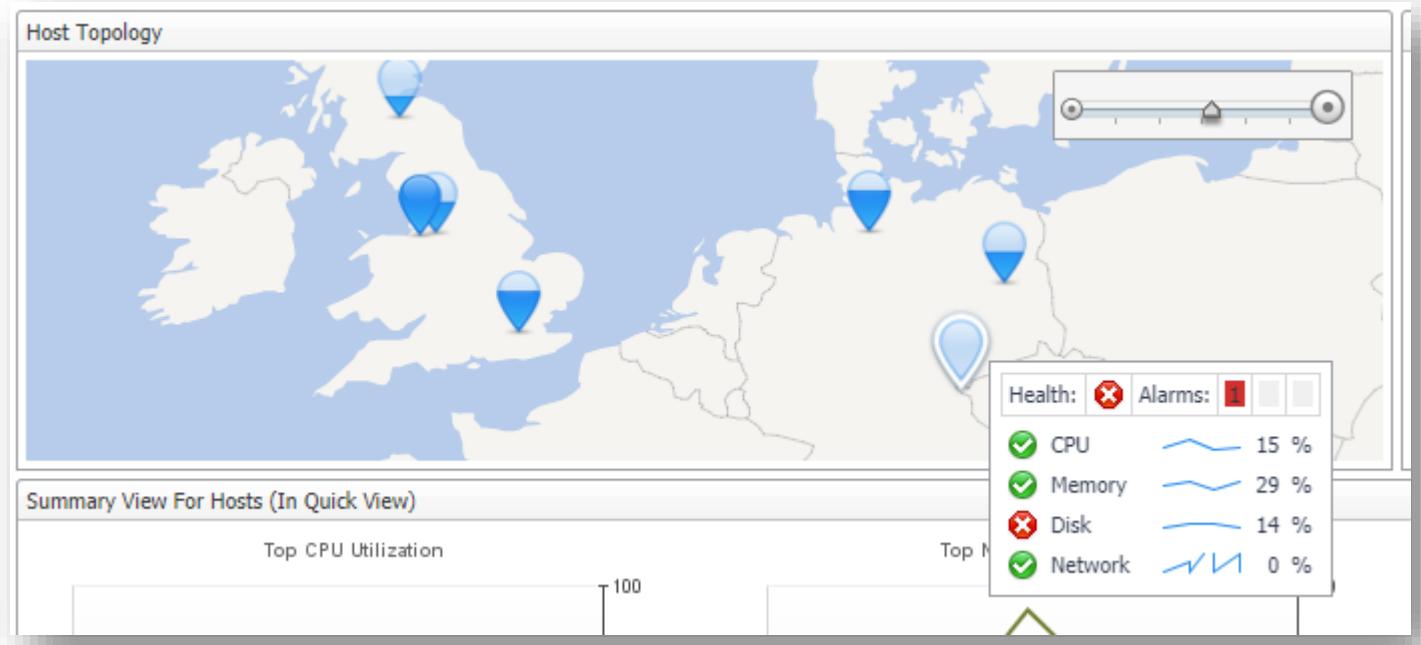
- Popup

Infrastructure/Hosts/Host/Host Summary with Status

when Dwell

- Next to Page

Infrastructure/Hosts/Host Monitor when Select



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