How to create a custom report using BIRT

Contents

This section reviews GroundWork Monitor Custom Reports.

1.0 Report Designer Initial Setup

GroundWork Monitor integrates the BIRT Report Viewer enabling operators to view GroundWork Reports, the standard pre-defined production reports including Alert and Notification counts, Availability, and Performance reports. In addition, GroundWork Monitor utilizes the Eclipse BIRT Report Designer which enables developers to create custom monitoring reports. This section covers the Getting Started steps including downloading and installing Java and the BIRT Eclipse Report Designer environment. The required components needed to use the BIRT Report Designer with GroundWork Monitor include:

- Java JDK 5.0 Update x - The Java SE Development Kit (JDK)
- BIRT Report Designer All in One 2.5.2 - This download includes the BIRT Reporting Framework, Eclipse SDK, GEF and EMF and Axis downloads. It includes everything you need to get started.

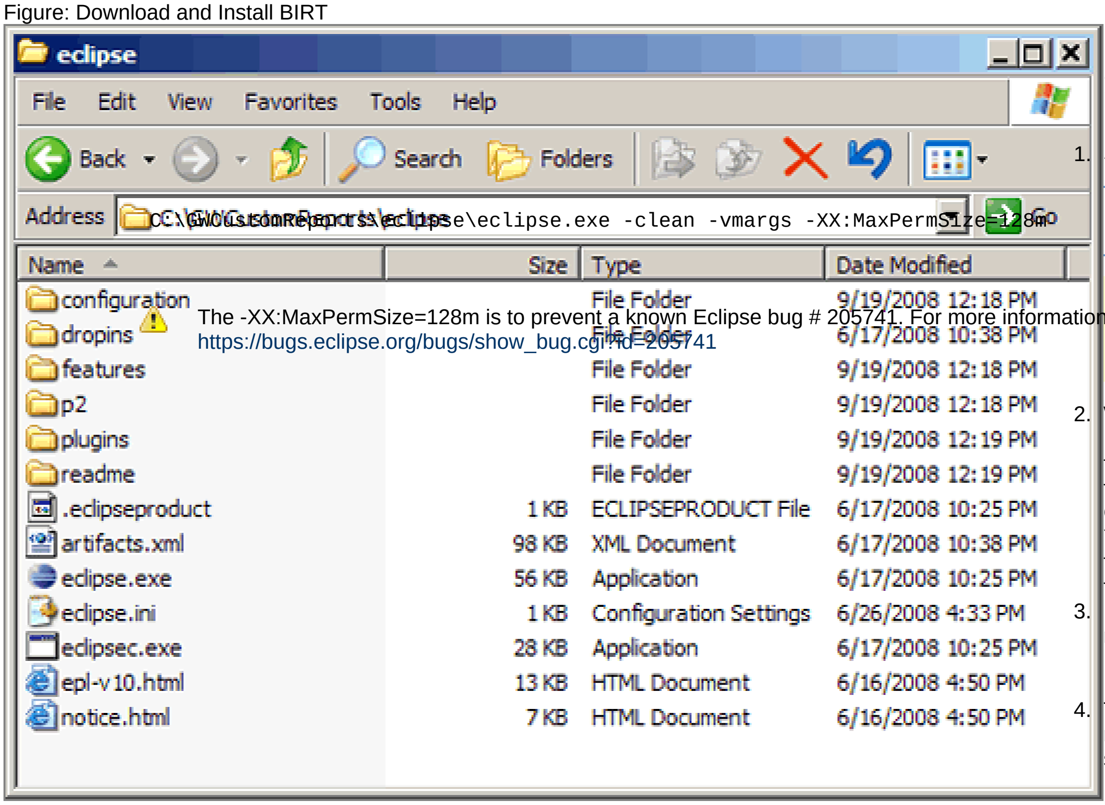
1.1 Downloading and Installing Java

Select the following link to download and install Java SE for your platform: Java SE Development Kit 5.0

1.2 Downloading and Installing BIRT Report Designer

1. Go to the GroundWork Support Portal at: GroundWork Connect
2. In the right search box, type and search for Custom Reporting.
3. Select the GroundWork Monitor 6.x custom reporting files link.
4. For Windows users select the zip file: birt-repport-designer-all-in-one-2_5_2.zip and for Linux users select the tar file: birt-report-designer-all-in-one-linux-gtk-2_5_2.tar.gz. The download process will take approximately 5 minutes. Once downloaded you will need to extract these files to your reporting directory. For example: `c:\GWCustomReports`

Figure: Download and Install BIRT



Address: C:\GWCustomReports\eclipse

Name	Size	Type	Date Modified
configuration		File Folder	9/19/2008 12:18 PM
dropins		File Folder	6/17/2008 10:38 PM
features		File Folder	9/19/2008 12:18 PM
p2		File Folder	9/19/2008 12:18 PM
plugins		File Folder	9/19/2008 12:19 PM
readme		File Folder	9/19/2008 12:19 PM
.eclipseproduct	1 KB	ECLIPSEPRODUCT File	6/17/2008 10:25 PM
artifacts.xml	98 KB	XML Document	6/17/2008 10:38 PM
eclipse.exe	56 KB	Application	6/17/2008 10:25 PM
eclipse.ini	1 KB	Configuration Settings	6/26/2008 4:33 PM
eclipsec.exe	28 KB	Application	6/17/2008 10:25 PM
epl-v10.html	13 KB	HTML Document	6/16/2008 4:50 PM
notice.html	7 KB	HTML Document	6/16/2008 4:50 PM

1.3 Testing your Installation

1. Start Eclipse:

```
C:\GWCustomReports\eclipse\eclipse.exe -clean -vmargs -XX:MaxPermSize=128m
```

⚠ The -XX:MaxPermSize=128m is to prevent a known Eclipse bug # 205741. For more information please see: https://bugs.eclipse.org/bugs/show_bug.cgi?id=205741

2. When you initially start Eclipse you will be prompted to choose a workspace folder name; e.g. GWCustomReportsProjects. You may also want to check the box to set this folder as the default.
3. Next, select the Window menu option, choose Open Perspective, Other, and Report Design.
4. To create reports you will need to first create a project; select File, New, Project, Business Intelligence and Reporting Tools (BIRT), Report Project, and select Next.
5. Type a Project Name (e.g. My GroundWork Reports).
6. Select Finish, and continue with Step 2 - Creating Custom Reports.

Some configurations may run into a known Eclipse/Firefox view report error. You can use the following to prevent this. This can be put into a startup script that exports the VAR and then starts eclipse. The startup script should include the -XX:MaxPermSize=128m fix documented above.

```
MOZILLA_FIVE_HOME=/yourfirefoxinstalltionlocation
export MOZILLA_FIVE_HOME=/usr/java/jdk1.5.0_06/jre/lib/i386/client
```

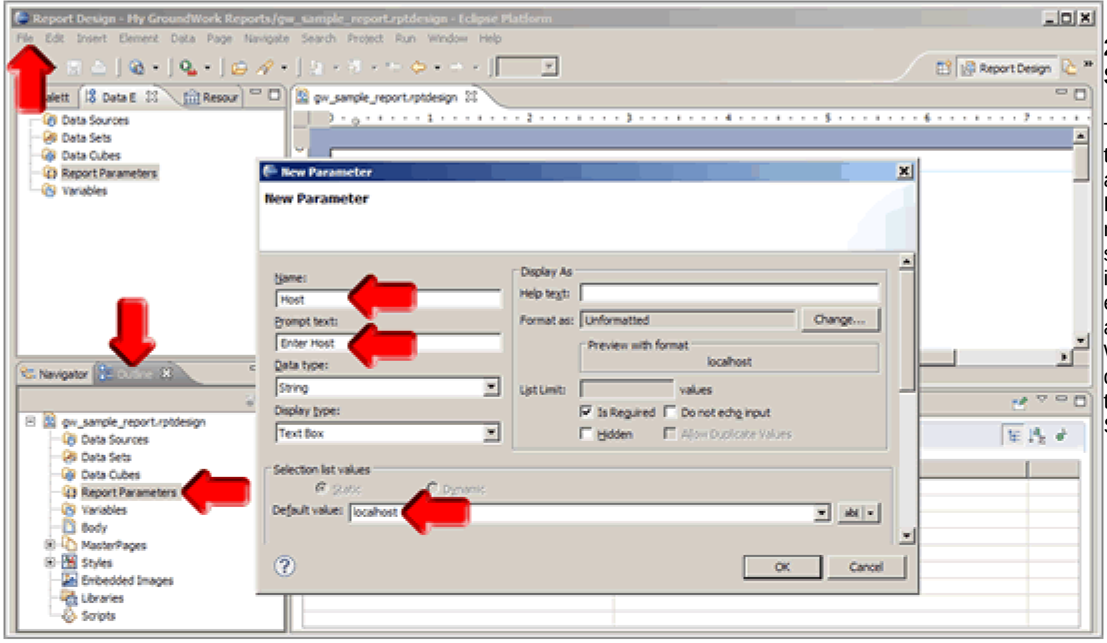
2.0 Creating Custom Reports

The following steps will guide you through creating a custom Host table report including setting up the report design, data source, and data set.

2.1 Setting up a Report Design

1. In the Report Designer, select File, New, and Report.
2. If not already selected for you, select My GroundWork Reports (or the name you created earlier in setup) as the parent folder.
3. Type a File name, e.g. gw_sample_report, and click Finish.
4. Next, we'll add the report parameter. In the Report Design screen (shown below), click on the Outline tab, right-click on Report Parameters, and New Parameter.
5. In the New Parameter box change the parameter Name to Host, enter a Prompt Text, e.g. Enter Host, and set the Default value to localhost (or enter your running GroundWork Monitor installation). Leave the other settings as is.
6. Click OK.

Figure: Naming report and setting parameters



Report Design - My GroundWork Reports/gw_sample_report.rptdesign - Eclipse Platform

New Parameter

Name: Host

Prompt text: Enter Host

Data type: String

Display type: Text Box

Help text:

Format as: Unformatted

Preview with format: localhost

List Limit: values

☑ Is Required ☐ Do not echo input

☐ Hidden ☐ Allow Duplicate Values

Selection list values: ● Static ○ Dynamic

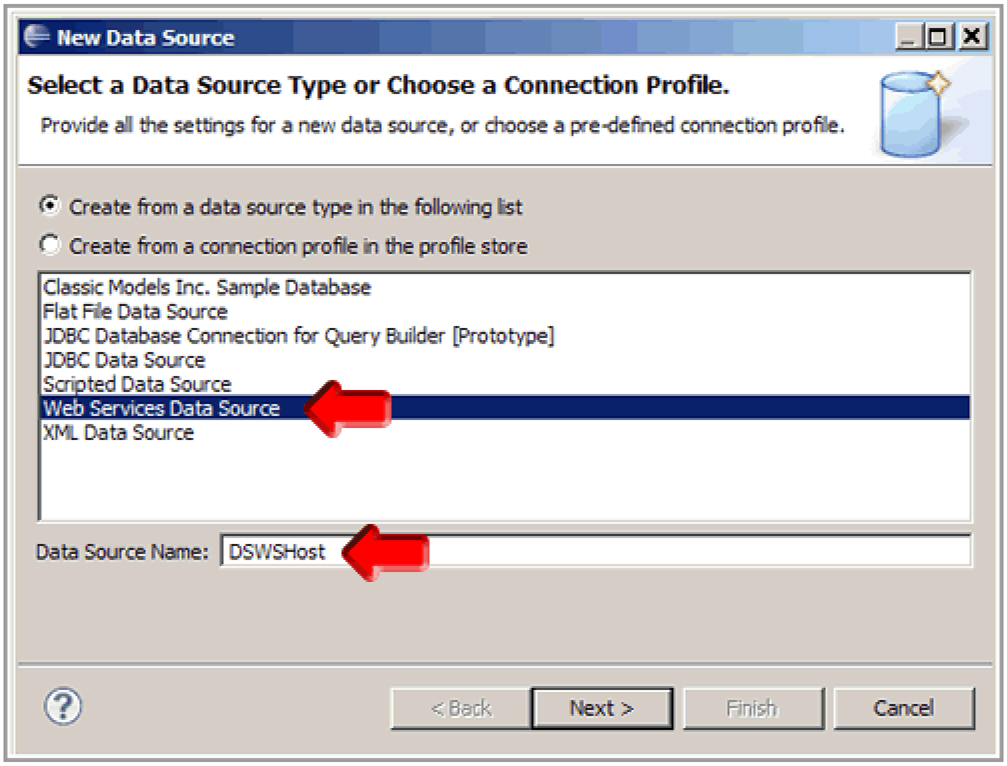
Default value: localhost

2.2 Setting up the Data Source

This section we will setup the data source to be able to access our report data. Report data comes from many different information systems. An important step in developing a report is ensuring you can connect to a system that provides data. We will cover how to access data from the data source type Web Services Data Source.

1. In the Report Design screen within the Outline tab, right-click Data Sources, and New Data Source.
2. Choose Web Services Data Source and enter a Data Source Name as DSWSHost.
3. Next, define the WSDL URL or location `http://"GWSERVER"/foundation-webapp/services/wshost?wsdl` where GWSERVER is your GroundWork Server, leaving the SOAP End Point, Custom Driver Class, and Driver Class Path blank. This data source can be used for any queries into the WSHost WebService.
4. You may want to test your server connection by selecting Test Connection. Click Finish.

Figure: Setting Data Source



New Data Source

Select a Data Source Type or Choose a Connection Profile.

Provide all the settings for a new data source, or choose a pre-defined connection profile.

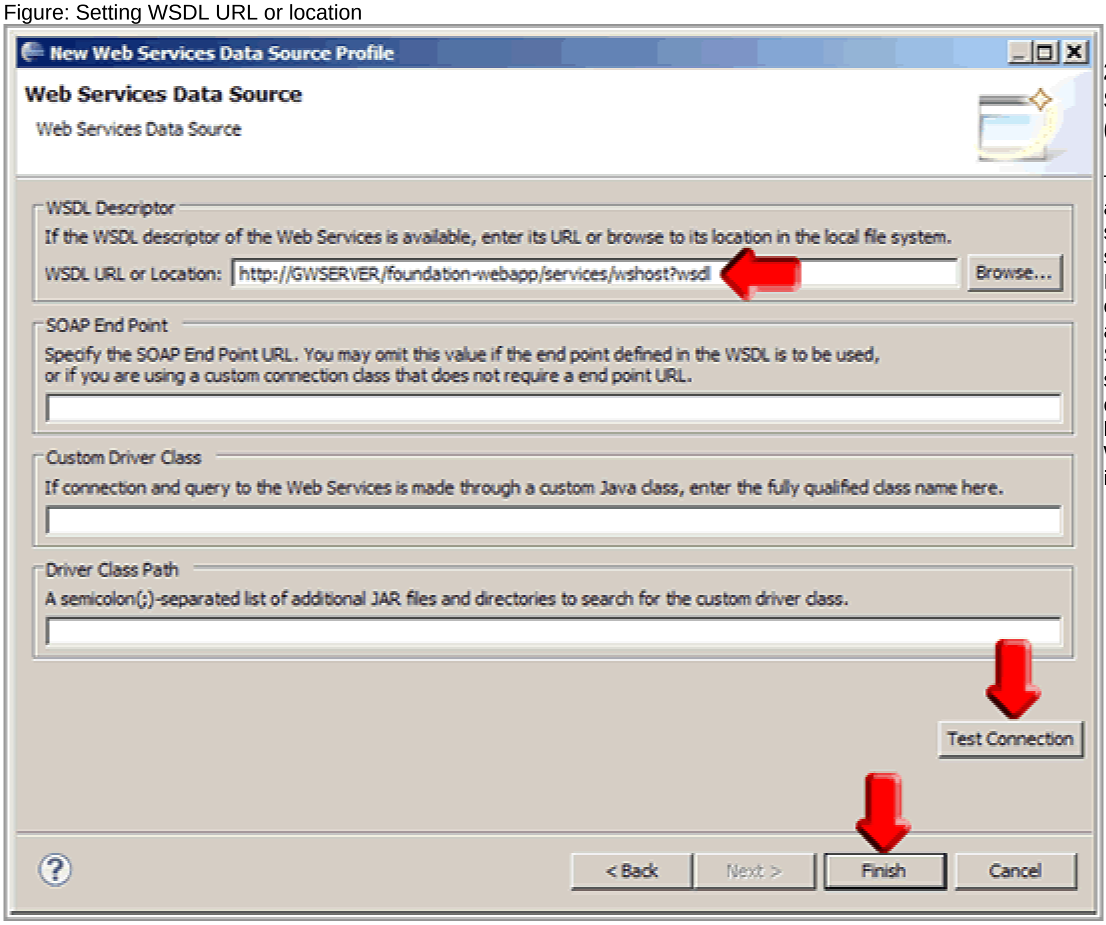
● Create from a data source type in the following list

○ Create from a connection profile in the profile store

- Classic Models Inc. Sample Database
- Flat File Data Source
- JDBC Database Connection for Query Builder [Prototype]
- JDBC Data Source
- Scripted Data Source
- Web Services Data Source
- XML Data Source

Data Source Name: DSWSHost

Figure: Setting WSDL URL or location



New Web Services Data Source Profile

Web Services Data Source

Web Services Data Source

WSDL Descriptor

If the WSDL descriptor of the Web Services is available, enter its URL or browse to its location in the local file system.

WSDL URL or Location: http://GWSERVER/foundation-webapp/services/wshost?wsdl

SOAP End Point

Specify the SOAP End Point URL. You may omit this value if the end point defined in the WSDL is to be used, or if you are using a custom connection class that does not require a end point URL.

Custom Driver Class

If connection and query to the Web Services is made through a custom Java class, enter the fully qualified class name here.

Driver Class Path

A semicolon(;)-separated list of additional JAR files and directories to search for the custom driver class.

2.3 Setting up a Data Source over SSL (https)

This section will discuss the additional steps required to set up a data source to a server utilizing SSL (https). In addition to the steps outlined in the procedure above, you must copy the SSL certificate from the server to a file, import the certificate in the java keystore, and modify the WSDL URL or Location field in Eclipse.

Copy the secure server SSL certificate to a file:

1. This guide was developed using Windows XP with Internet Explorer. This exact procedure may be different depending on the specific web browser and operating system used.
2. Open a web browser and navigate URL of the server, i.e. https://<groundwork server FQDN>. Ignore or click through any warnings encountered
3. View the sites certificate, select the details tab, and click "Copy to File"

4. Select DER encoded binary X.509 (.CER) as the format.
5. Browse and select the name and location of the exported certificate. Once the certificate is exported, close the browser.

Import the exported certificate:

1. Open a command prompt and navigate to the directory containing java's keytool.exe. For a standard Windows Xp installation with Java 1.7.0_04-b22 iunstalled, this path is "C:\Program Files\Java\jre7\bin\". Also note the full path to cacerts in the java install. For this installation example this is "C:\Program Files\Java\jre7\lib\security\cacerts"
2. Import the certificate you exported earlier:

   ```
   keytool.exe -import -trustcacerts -file <full path to the exported certificate> -alias
   <my_cert_alias> -keystore "<full path to cacerts>"
   ```

   You will be prompted for the keystore password, which by default is "changeit". If desired, you can change this password:

   ```
   keytool -storepasswd -keystore "<full path to cacerts>"
   ```

3. Verify the certificate was imported correctly through the java applet in control pannel:
   Security -> Certificates -> System tab. the Certificate type is "Secure site CA"

Modify the WSDL URL or Location field in Eclipse.

1. The procedure for setting up the data source is the same as the previous section, except you have to modify the WSDL URL or Location field in Eclipse:
   https://<groundwork server FQDN>/foundation-webapp/services/wshost?wsdl
   where <groundwork server FQDN> is the exact same name used when copying the certificate to a file.
2. The Report Designer automatically prompts for Web Service API credentials with a dialog box. By default GroundWork uses the credentials for user wsuser defined in the Portal Administration User Management page. At install time the password is set to wsuser but can be changed. After successful authentication, the credentials will be remembered and the Report Designer will not prompt for them while working on the report.

   > ⚠ When you change the credentials for wsuser, the ws_client.properties file needs to be adjusted as well. The `/usr/local/groundwork/config/ws_client.properties` file is used by the BIRT Viewer at run time to obtain the access credentials.

3. Test your server connection by selecting Test Connection. You will be propted to provide the username and password for wsuser.

2.4 Setting up a Data Set

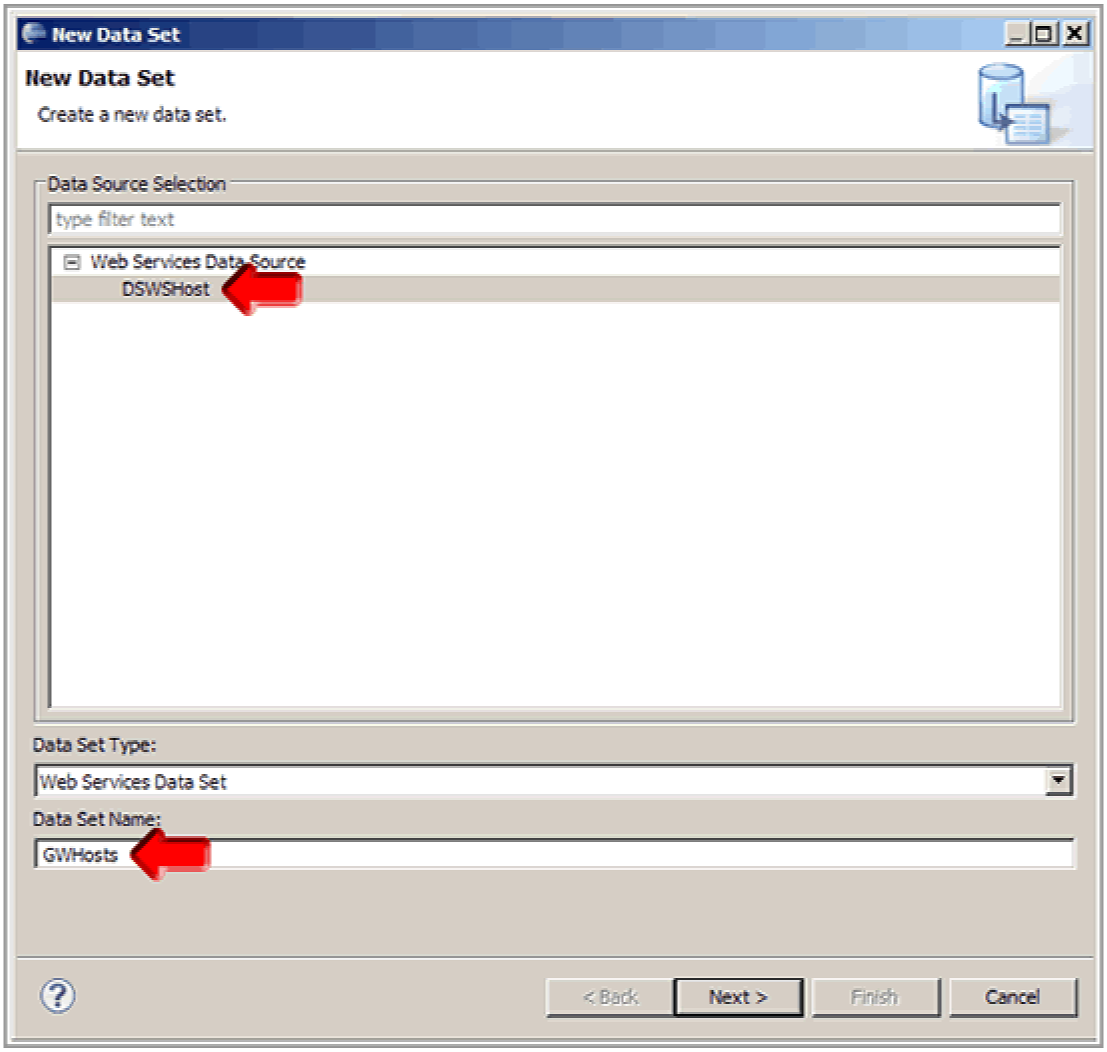
Data sources typically contain more data than is needed in an effective report. This section explains how to define data sets to retrieve only the data required for a report. Specifically, this section describes the process for setting up a Web Service Data Set, the data to be included in the report. We'll start by creating a new Data Set Name (GWHosts) and continue with defining the parameters which indicates what data will be queried from the Web Service Data Source.

Creating a New Data Set

1. In the Report Design screen and within the Outline tab, right-click Data Sets, and New Data Set.
2. Make sure Data Source equals the one created previously (e.g. DSWSHost).
3. Enter a Data Set Name (e.g. GWHosts) and click Next.
4. The Report Designer automatically prompts for Web Service API credentials with a dialog box. By default GroundWork uses the credentials for user wsuser defined in the Portal Administration User Management page. At install time the password is set to wsuser but can be changed. After successful authentication, the credentials will be remembered and the Report Designer will not prompt for them while working on the report.

   > ⚠ When you change the credentials for wsuser, the ws_client.properties file needs to be adjusted as well. The `/usr/local/groundwork/config/ws_client.properties` file is used by the BIRT Viewer at run time to obtain the access credentials.

Figure: Creating Data Set



New Data Set

Create a new data set.

Data Source Selection

type filter text

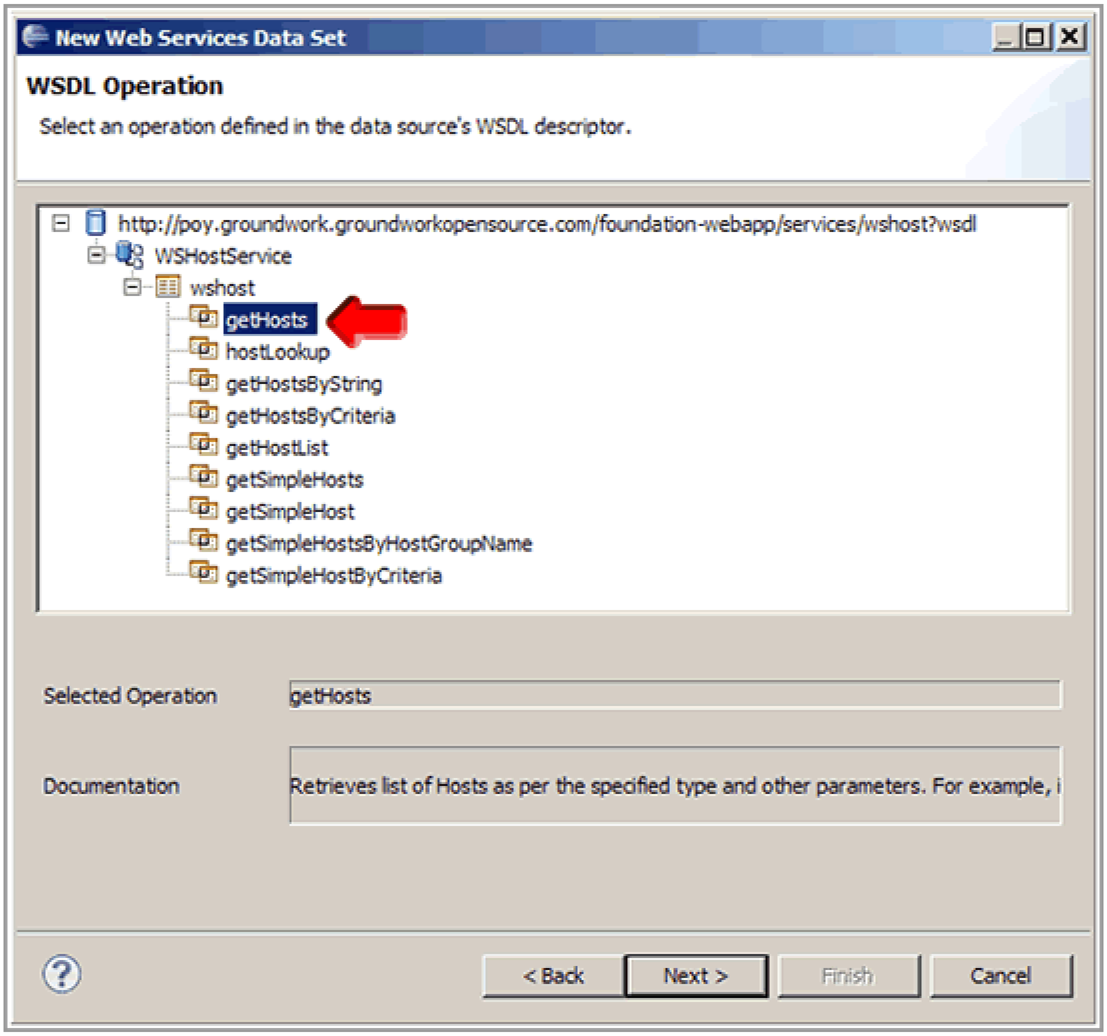
Web Services Data Source
- DSWSHost

Data Set Type: Web Services Data Set

Data Set Name: GWHosts

- Continue defining the parameters. Expand the list and select the method you would like to use (e.g. getHosts), click Next.

Figure: Selecting a WSDL operation



New Web Services Data Set

WSDL Operation

Select an operation defined in the data source's WSDL descriptor.

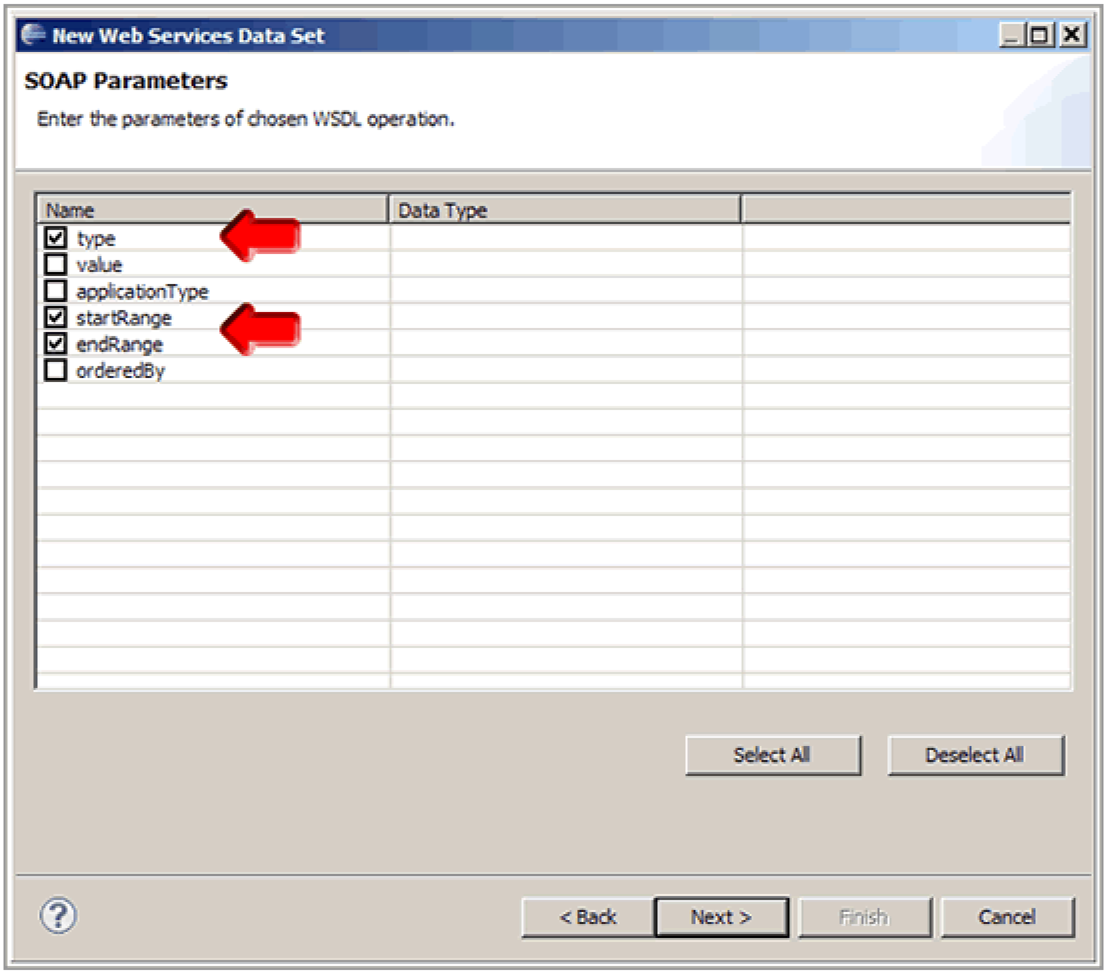
- http://poy.groundwork.groundworkopensource.com/foundation-webapp/services/wshost?wsdl
  - WSHostService
    - wshost
      - getHosts
      - hostLookup
      - getHostsByString
      - getHostsByCriteria
      - getHostList
      - getSimpleHosts
      - getSimpleHost
      - getSimpleHostsByHostGroupName
      - getSimpleHostByCriteria

Selected Operation: getHosts

Documentation: Retrieves list of Hosts as per the specified type and other parameters. For example, i

- Select the SOAP Parameters that will be used as an input for the getHosts call. The fields type, startRange and endRange are required. Click Next.

Figure: Indicating parameters for WSDL



New Web Services Data Set

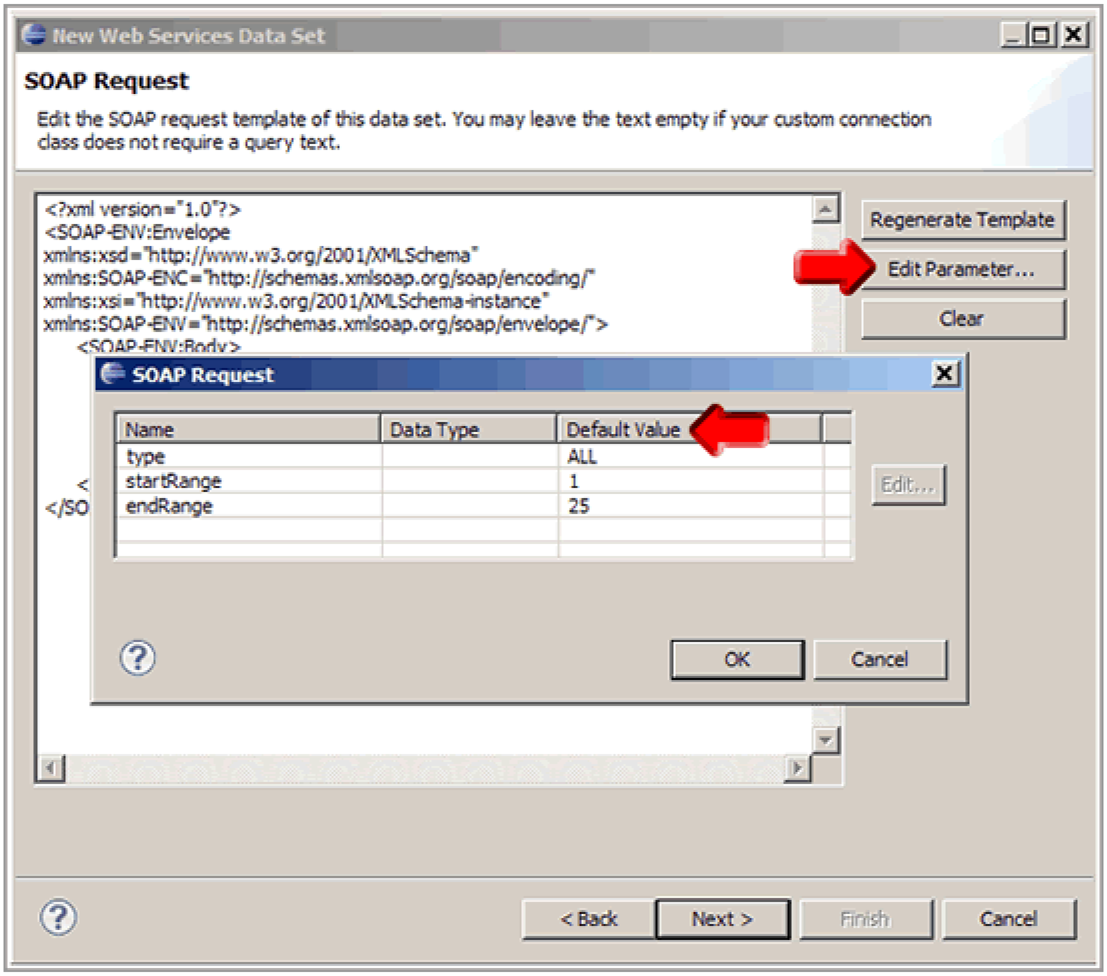
SOAP Parameters

Enter the parameters of chosen WSDL operation.

Name	Data Type	
☑ type		
□ value		
□ applicationType		
☑ startRange		
☑ endRange		
□ orderedBy		

- For the SOAP Request the parameter and default values need to be defined. Click Edit Parameters and define the defaults. Click Next.
- Soap Response. Make sure you select Use schema from response otherwise the return values of the call are not displayed in the next screens. Leave other fields blank. Click Next.

Figure: Editing SOAP Request parameters



SOAP Request

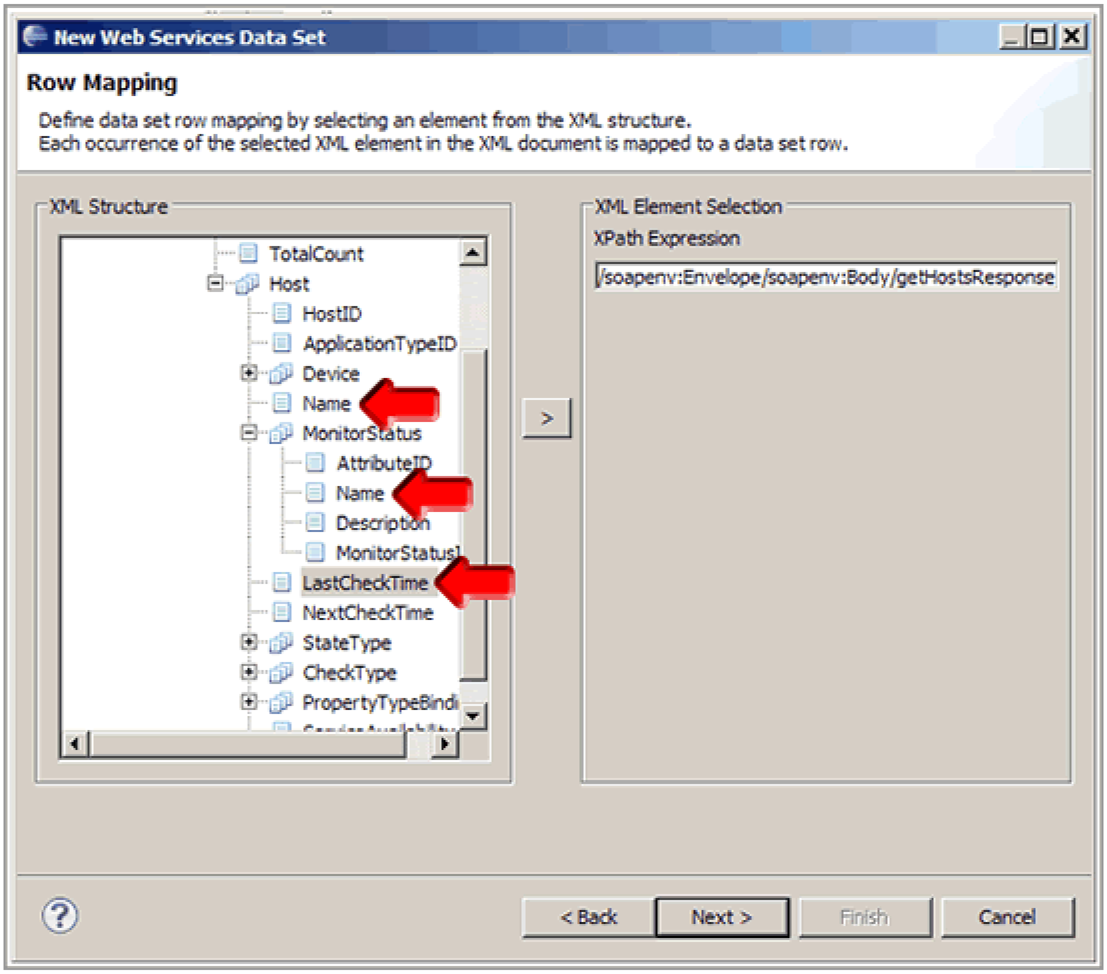
Edit the SOAP request template of this data set. You may leave the text empty if your custom connection class does not require a query text.

```
<?xml version="1.0"?>
<SOAP-ENV:Envelope
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
    <SOAP-ENV:Body>
    <
</SO
```

Name	Data Type	Default Value
type		ALL
startRange		1
endRange		25

- In Row Mapping expand the XML structure and select a value from the response to be included in the Data Set. Select "XML elements named <value> at fixed absolute path" then click OK. This will serve as a "starting point" for the values selected in the column mapping below. In this example we choose Name. Click Next.

Figure: Selecting Values for Data Set



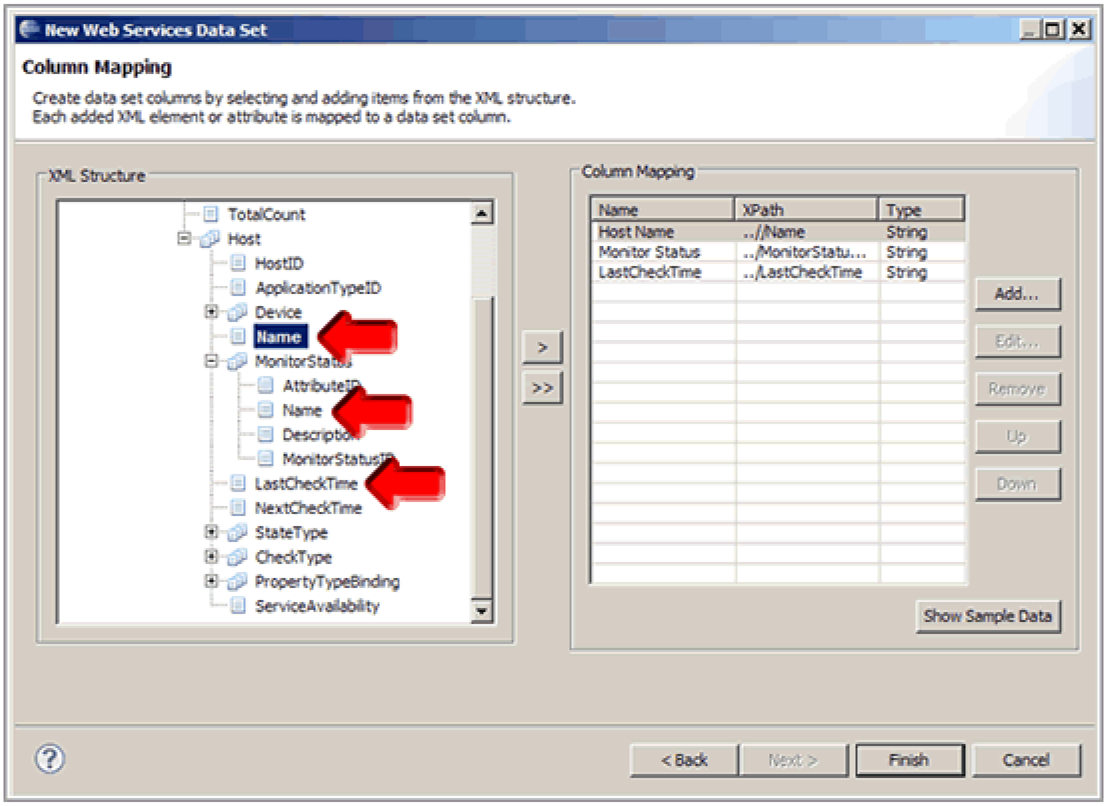
Define data set row mapping by selecting an element from the XML structure.
Each occurrence of the selected XML element in the XML document is mapped to a data set row.

XPath Expression: /soapenv:Envelope/soapenv:Body/getHostsResponse

- In the Column Mapping screen select the values from the response to be included in the Data Set (Name, MonitorStatus and LastCheckTime) and add to the mapping. Choose "XML elements at fixed absolute path" the click OK; for clarity, the Column Name can be changed to a more descriptive value (note several elements are simply called "Name.") . Please note that MonitorStatus is an object that needs to be expanded to get the Name. The Column Mapping XPath field will be relative to the Row mapping value selected above. Show Sample Data will run the query and retrieve the real data.
- Click Finish to complete the data set creation.
- Repeat the steps for any other SOAP call for the same or different data sources. Once the Data Source and the Data Sets are completed you can move ahead and assign values to charts, tables, etc.

Figure: Selecting Column Mapping values

2.5 Creating a Host Table Report



New Web Services Data Set

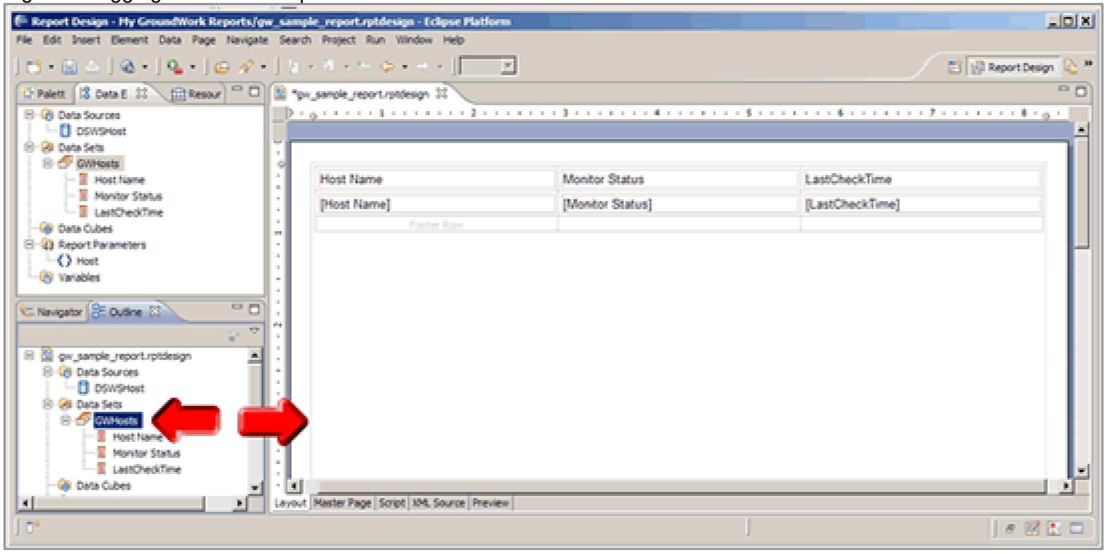
Column Mapping

Create data set columns by selecting and adding items from the XML structure.
Each added XML element or attribute is mapped to a data set column.

Name	XPath	Type
Host Name	../Name	String
Monitor Status	../MonitorStatu...	String
LastCheckTime	../LastCheckTime	String

1. To create the Host report we defined earlier (`gw_sample_report.rptdesign`), drag GWHosts Data Set from Outline onto the report canvas. A table will be automatically created displaying all columns of the defined Data Set.
2. Click the Preview tab to view report. To view the report in other formats, select Run, and View Report.

Figure: Dragging Data Set to report canvas



Report Design - My GroundWork Reports/gw_sample_report.rptdesign - Eclipse Platform

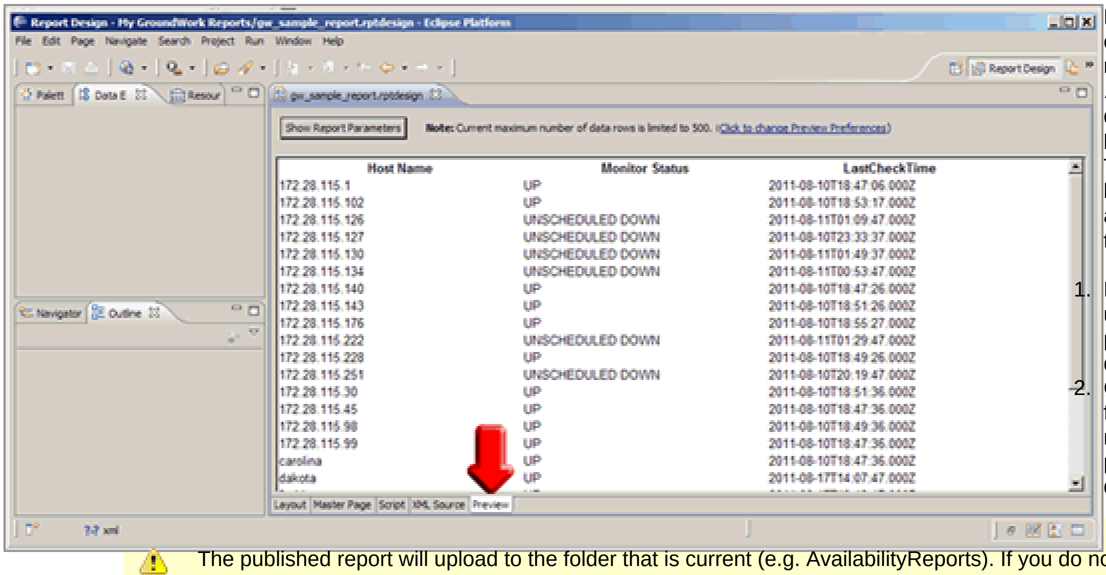
Host Name	Monitor Status	LastCheckTime
[Host Name]	[Monitor Status]	[LastCheckTime]

Figure: Previewing Host report

3.0 Publishing Reports

This page covers how to publish a custom report you've created using the Report Designer to the Report Viewer in GroundWork Monitor.

A `.rptdesign` file is created with the BIRT Report


Report Design - My GroundWork Reports/gw_sample_report.rptdesign - Eclipse Platform
File Edit Page Navigate Search Project Run Window Help
Report Design
Palett Data E Resour
gw_sample_report.rptdesign
Show Report Parameters
Navigator Outline
Layout Master Page Script XML Source Preview

Note: Current maximum number of data rows is limited to 500. (Click to change Preview Preferences)

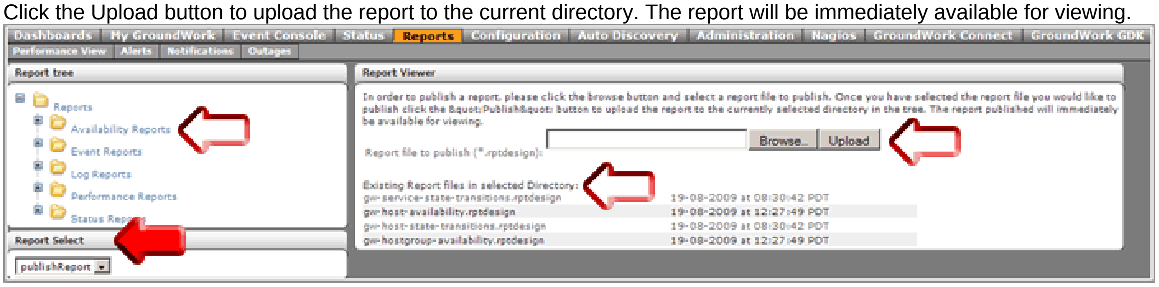
Host Name	Monitor Status	LastCheckTime
172.28.115.1	UP	2011-08-10T18:47:06.000Z
172.28.115.102	UP	2011-08-10T18:53:17.000Z
172.28.115.126	UNSCHEDULED DOWN	2011-08-11T01:09:47.000Z
172.28.115.127	UNSCHEDULED DOWN	2011-08-10T23:33:37.000Z
172.28.115.130	UNSCHEDULED DOWN	2011-08-11T01:49:37.000Z
172.28.115.134	UNSCHEDULED DOWN	2011-08-11T00:53:47.000Z
172.28.115.140	UP	2011-08-10T18:47:26.000Z
172.28.115.143	UP	2011-08-10T18:51:26.000Z
172.28.115.176	UP	2011-08-10T18:55:27.000Z
172.28.115.222	UNSCHEDULED DOWN	2011-08-11T01:29:47.000Z
172.28.115.228	UP	2011-08-10T18:49:26.000Z
172.28.115.251	UNSCHEDULED DOWN	2011-08-10T20:19:47.000Z
172.28.115.30	UP	2011-08-10T18:51:36.000Z
172.28.115.45	UP	2011-08-10T18:47:36.000Z
172.28.115.98	UP	2011-08-10T18:49:36.000Z
172.28.115.99	UP	2011-08-10T18:47:36.000Z
carolina	UP	2011-08-10T18:47:36.000Z
dakota	UP	2011-08-17T14:07:47.000Z

Designer and defines the content of the report. The reports are uploaded to the `/usr/local/groundwork/` directory by default. This location can be configured. The publishReport option lets you browse and upload a design file (`.rptdesign`) to the server for viewing.

1. From the Reports page, under Report Select, select publishReport from the drop-down list.
2. Click on an existing report folder that you would like the report to be located. A list of published reports is displayed for each directory.

⚠ The published report will upload to the folder that is current (e.g. AvailabilityReports). If you do not select an existing folder the report will be place at the bottom of the current folders.

3. Click Browse and select a report file to publish.
4. Click the Upload button to upload the report to the current directory. The report will be immediately available for viewing.


Dashboards My GroundWork Event Console Status Reports Configuration Auto Discovery Administration Nagios GroundWork Connect GroundWork GDK
Performance View Alerts Notifications Outages
Report tree
Reports
Availability Reports
Event Reports
Log Reports
Performance Reports
Status Reports
Report Select
publishReport
Report Viewer
Browse...
Upload

In order to publish a report, please click the browse button and select a report file to publish. Once you have selected the report file you would like to publish click the &quot;Publish&quot; button to upload the report to the currently selected directory in the tree. The report published will immediately be available for viewing.

Report file to publish (*.rptdesign):

Existing Report files in selected Directory:

gw-service-state-transitions.rptdesign	19-08-2009 at 08:30:42 PDT
gw-host-availability.rptdesign	19-08-2009 at 12:27:49 PDT
gw-host-state-transitions.rptdesign	19-08-2009 at 08:30:42 PDT
gw-hostgroup-availability.rptdesign	19-08-2009 at 12:27:49 PDT

4.0 Foundation Entity Descriptions

This section describes the Foundation data which can be queried with the BIRT Foundation ODA.

The GroundWork Data Source allows for report designers to query entity information stored in the Foundation by exposing a set of entities and entity properties that a report designer can query and filter by.

Each entity has a set of related data properties that are returned as a result of an entity query. Each entity property is defined as either being built-in or dynamic. A built-in entity property is common to the entity regardless of the application type for the entity. A dynamic property is a property that is related to a specific application type (e.g. NAGIOS). When defining an entity query, the report designer defines the entity type that he / she wants to query as well as the application type for the entity. If the report designer chooses the SYSTEM application type then only the built-in properties for the specified entity will be returned in the query. If the report designer chooses another application type such as NAGIOS then both the built-in and application type specific properties for the specified entity will be returned in the query.

When constructing the entity query in the report designer the user can define a query filter that defines which data should be returned. This is similar to using a SQL "WHERE" clause when using SQL to query information from a database. Currently, only the built-in properties of an entity can be used to define a query filter. The entity tables below describe the available entities and their related data properties and whether or not the property can be used in a query filter (Filterable).

Also see Statistical Entity Descriptions.

4.1 Foundation (Physical) Entities

APPLICATION_TYPE

Types of systems / applications that can be monitored through the system (e.g. NAGIOS, SYSLOG, JMX)

Table: Application Type

Property Name	Application Type	Description	Date Type	Filterable
ApplicationType	SYSTEM	Unique name of ApplicationType (e.g. NAGIOS, SYSTEM)	String(128)	Y

ApplicationTypeId	SYSTEM	Application Type unique identifier	Integer	Y
Description	SYSTEM	Textual description of application type	String(254)	Y
HostCount	SYSTEM	Number of hosts related to application type	Long	N
ServiceCount	SYSTEM	Number of service checks related to application type	Long	N
STAT_HOST_STATUS_DOWN	SYSTEM	Number of hosts currently in the DOWN state for the entire system.These statistics are not currently broken down by application type.	Long	N
STAT_HOST_STATUS_PENDING	SYSTEM	Number of hosts currently in the PENDING state for the entire system. These statistics are not currently broken down by application type.	Long	N
STAT_HOST_STATUS_UNREACHABLE	SYSTEM	Number of hosts currently in the UNREACHABLE state for the entire system. These statistics are not currently broken down by application type.	Long	N
STAT_HOST_STATUS_UP	SYSTEM	Number of hosts currently in the UP state for the entire system. These statistics are not currently broken down by application type.	Long	N
STAT_SERVICE_STATUS_CRITICAL	SYSTEM	Number of services currently in the CRITICAL state for the entire system. These statistics are not currently broken down by application type.	Long	N
STAT_SERVICE_STATUS_OK	SYSTEM	Number of services currently in the OK state for the entire system. These statistics are not currently broken down by application type.	Long	N
STAT_SERVICE_STATUS_PENDING	SYSTEM	Number of services currently in the PENDING state for the entire system. These statistics are not currently broken down by application type.	Long	N
STAT_SERVICE_STATUS_UNKNOWN	SYSTEM	Number of services currently in the UNKNOWN state for the entire system. These statistics are not currently broken down by application type.	Long	N
STAT_SERVICE_STATUS_WARNING	SYSTEM	Number of services currently in the WARNING state for the entire system. These statistics are not currently broken down by application type.	Long	N

CATEGORY

Logical grouping of Foundation entities.

Table: Category

Property Name	Application Type	Description	Date Type	Filterable
Category	SYSTEM	Name of category	String(254)	Y
CategoryId	SYSTEM	Category unique identifier	Integer	Y
Description	SYSTEM	Description of category	String(254)	Y

CHECK_TYPE

Represents type of check performed, ACTIVE or PASSIVE

Table: Check Type

Property Name	Application Type	Description	Date Type	Filterable
CheckType	SYSTEM	Check Type	String(254)	Y
CheckTypeId	SYSTEM	Check Type unique identifier	Integer	Y
Description	SYSTEM	Description of check type	String(254)	Y

COMPONENT

Table: Component

Property Name	Application Type	Description	Date Type	Filterable
Component	SYSTEM	Component name	String(128)	Y
ComponentId	SYSTEM	Component unique identifier	Integer	Y
Description	SYSTEM	Description of component	String(254)	Y

DEVICE

A device represents a server, router, switch, etc.

Table: Device

Property Name	Application Type	Description	Date Type	Filterable
Device	SYSTEM	Device Identification (IP)	String(128)	Y
DeviceId	SYSTEM	Device unique identifier	Integer	Y
Description	SYSTEM	Device description	String(254)	Y
DisplayName	SYSTEM	Device display name (Domain Name)	String(254)	Y

HOST

A host represents a physical server, workstation, device, etc. that resides on your network.

Table: Host

Property Name	Application Type	Description	Date Type	Filterable
ApplicationType	SYSTEM	Application type for which the host is associated	String(128)	Y
ApplicationTypeId	SYSTEM	Application type id for which the host is associated	Integer	Y
Description	SYSTEM	Description of host	String(254)	Y
Device	SYSTEM	Name of device (usually IP) related to the host	String(128)	Y
DeviceId	SYSTEM	Identifier of device related to the host	Integer	Y
Host	SYSTEM	Name of host	String(254)	Y
HostId	SYSTEM	Unique identifier of host	Integer	Y
LastCheckTime	SYSTEM	Date / Time of last status check	DateTime	Y
MonitorStatus	SYSTEM	Current monitor status for the host	String(254)	Y
MonitorStatusId	SYSTEM	Identifer for the current monitor status of the host	Integer	Y
ServiceCount	SYSTEM	Number of services related to the host	Long	N
STAT_SERVICE_STATUS_CRITICAL	SYSTEM	Number of host related services currently in the CRITICAL state	Long	N
STAT_SERVICE_STATUS_OK	SYSTEM	Number of host related services currently in the OK state	Long	N
STAT_SERVICE_STATUS_PENDING	SYSTEM	Number of host related services currently in the PENDING state	Long	N
STAT_SERVICE_STATUS_UNKNOWN	SYSTEM	Number of host related services currently in the UNKNOWN state	Long	N
STAT_SERVICE_STATUS_WARNING	SYSTEM	Number of host related services currently in the WARNING state	Long	N

HOSTGROUP

A grouping of hosts for reporting and display purposes.

Table: Host Group

Property Name	Application Type	Description	Date Type	Filterable
ApplicationType	SYSTEM	Application type for which the hostgroup is associated.	String(128)	Y
ApplicationTypeId	SYSTEM	Application type id for which the hostgroup is associated.	Integer	Y
Description	SYSTEM	Description of hostgroup	String(254)	Y
HostCount	SYSTEM	Number of hosts related to the hostgroup	Long	N
HostGroup	SYSTEM	Hostgroup name	String(254)	Y
HostGroupId	SYSTEM	Unique identifier of hostgroup	Integer	Y
ServiceCount	SYSTEM	Number of services related to the hostgroup	Long	N
STAT_HOST_STATUS_DOWN	SYSTEM	Number of hostgroup related hosts currently in the DOWN state	Long	N
STAT_HOST_STATUS_PENDING	SYSTEM	Number of hostgroup related hosts currently in the PENDING state	Long	N
STAT_HOST_STATUS_UNREACHABLE	SYSTEM	Number of hostgroup related hosts currently in the UNREACHABLE state	Long	N
STAT_HOST_STATUS_UP	SYSTEM	Number of hostgroup related hosts currently in the UP state	Long	N
STAT_SERVICE_STATUS_CRITICAL	SYSTEM	Number of hostgroup related services currently in the CRITICAL state	Long	N
STAT_SERVICE_STATUS_OK	SYSTEM	Number of hostgroup related services currently in the OK state	Long	N
STAT_SERVICE_STATUS_PENDING	SYSTEM	Number of hostgroup related services currently in the PENDING state	Long	N
STAT_SERVICE_STATUS_UNKNOWN	SYSTEM	Number of hostgroup related services currently in the UNKNOWN state	Long	N
STAT_SERVICE_STATUS_WARNING	SYSTEM	Number of hostgroup related services currently in the WARNING state	Long	N

HOST_STATUS

Represents current state of a particular host.

Table: Host Status

Property Name	Application Type	Description	Date Type	Filterable
30DayMovingAvg	NAGIOS		Double	N
ApplicationType	SYSTEM	Application type for which the host status is associated.	String(128)	Y
ApplicationTypeId	SYSTEM	Application type id for which the host status is associated.	Integer	Y
CheckType	SYSTEM	Type of check (e.g. passive or active)	String(254)	Y
CheckTypeId	SYSTEM	Unique identifier of check type	Integer	Y
CurrentNotificationNumber	NAGIOS		Integer	N
ExecutionTime	NAGIOS		Double	N
Host	SYSTEM	Name of host related to the host status.	String(254)	Y
HostStatusId	SYSTEM	Unique identifier of host status. This id is also the id of the host for which the status is related.	Integer	Y
isAcknowledged	NAGIOS		Boolean	Y

isChecksEnabled	NAGIOS		Boolean	N
isEventHandlersEnabled	NAGIOS		Boolean	N
isFailurePredictionEnabled	NAGIOS		Boolean	N
isFlapDetectionEnabled	NAGIOS		Boolean	N
isHostFlapping	NAGIOS		Boolean	N
isNotificationsEnabled	NAGIOS		Boolean	N
isPassiveChecksEnabled	NAGIOS		Boolean	N
isProcessPerformanceData	NAGIOS		Boolean	N
LastCheckTime	SYSTEM	Date / Time the host status was last checked.	DateTime	Y
LastNotificationTime	NAGIOS		DateTime	N
LastPluginOutput	NAGIOS		String (TEXT)	N
LastStateChange	NAGIOS		DateTime	N
Latency	NAGIOS		Double	N
MonitorStatus	SYSTEM	Current host state	String(254)	Y
MonitorStatusId	SYSTEM	Unique identifier of current host state	Integer	Y
PercentageStateChange	NAGIOS		Double	N
ScheduledDowntimeDepth	NAGIOS		Integer	N
TimeDown	NAGIOS		Long	N
TimeUnreachable	NAGIOS		Long	N
TimeUp	NAGIOS		Long	N

LOG_MESSAGE

Event message which occurred in the system.

Table: Log Message

Property Name	Application Type	Description	Date Type	Filterable
AcknowledgeComment	NAGIOS		String(TEXT)	N
AcknowledgedBy	NAGIOS		String(TEXT)	N
ApplicationCode	NAGIOS		String(TEXT)	N
ApplicationName	NAGIOS		String(TEXT)	N
ApplicationSeverity	SYSTEM		String(128)	Y
ApplicationSeverityId	SYSTEM		Integer	Y
ApplicationType	SYSTEM	Application type for which the log message is associated.	String(128)	Y
ApplicationTypeId	SYSTEM	Application type id for which the log message is associated.	Integer	Y
Component	SYSTEM		String(128)	Y
ComponentId	SYSTEM		Integer	Y
Device	SYSTEM	Device (IP) for which this log message is related.	String(128)	Y
DeviceDisplayName	SYSTEM	Device display name for which this log message is related.	String(254)	Y
DeviceId	SYSTEM	Unique identifier of device related to this log message.	Integer	Y
ErrorType	NAGIOS		String(TEXT)	N

FirstInsertDate	SYSTEM	Date / Time of the first occurrence of this log message	DateTime	Y
HostStatusId	SYSTEM	Host status related to the log message. This field can be null if log message is not related to a host.	Integer	Y
LastCheckTime	SYSTEM	Date / Time of the last host status check. This field can be null if log message is not related to a host.	DateTime	Y
LastInsertDate	SYSTEM	Date / Time of the last occurrance of this log message.	DateTime	Y
LoggerName	NAGIOS		String(TEXT)	N
LogMessageId	SYSTEM	Unique identifier of the log message	Integer	Y
MessageCount	SYSTEM	Number of times this log message has occurred when consolidating.	Integer	Y
MonitorStatus	SYSTEM	Status of log message	String(254)	Y
MonitorStatusId	SYSTEM	Unique identifier of log message status.	Integer	Y
OperationStatus	SYSTEM	Current status of log message (e.g. OPEN, CLOSED, NOTIFIED, and ACCEPTED)	String(128)	Y
OperationStatusId	SYSTEM	Unique identifier of current status of log message	Integer	Y
Priority	SYSTEM	Priority scale value of log message	String(128)	Y
PriorityId	SYSTEM	Unique identifier of log message priority	Integer	Y
ReportDate	SYSTEM	Date / Time log message was reported to Foundation.	DateTime	Y
ServiceDescription	SYSTEM	Name of service check for which the log message is related.	String(254)	Y
ServiceStatusId	SYSTEM	Unique identifier of service check	Integer	Y
Severity	SYSTEM	Severity level related to the log message	String(128)	Y
SeverityId	SYSTEM	Unique identifier of log message severity	Integer	Y
StateChanged	SYSTEM	Boolean indicating whether the log message resulted from a state change	Boolean	Y
SubComponent	NAGIOS		String(TEXT)	N
TextMessage	SYSTEM	Log message text	String(TEXT)	Y
TypeRule	SYSTEM		String(128)	Y
TypeRuleId	SYSTEM		Integer	Y

MONITOR_SERVER

Table: Monitor Server

Property Name	Application Type	Description	Date Type	Filterable
Description	SYSTEM	Description of monitor server	String(254)	Y
IP	SYSTEM	IP address of monitor server	String(128)	Y
MonitorServer	SYSTEM	Name of monitor server	String(254)	Y
MonitorServerId	SYSTEM	Unique identifier of monitor server	Integer	Y

MONITOR_STATUS

Represents a monitor state for hosts, services, and log messages within Foundation. Available monitor statuses include OK, DOWN, UNREACHABLE, WARNING, CRITICAL, UNKNOWN, UP and PENDING.

Table: Monitor Status

Property Name	Application Type	Description	Date Type	Filterable
Description	SYSTEM	Description of monitor status	String(254)	Y

MonitorStatus	SYSTEM	Unique name of monitor status	String(254)	Y
MonitorStatusId	SYSTEM	Unique identifier of monitor status	Integer	Y

OPERATION_STATUS

Represents a operation state of a log message within Foundation. Available operation statuses include OPEN, CLOSED, NOTIFIED, and ACCEPTED.

Table: Operation Status

Property Name	Application Type	Description	Date Type	Filterable
Description	SYSTEM	Description of operation status	String	Y
OperationStatus	SYSTEM	Unique name of operation status	String	Y
OperationStatusId	SYSTEM	Unique identifier of operation status	Integer	Y

PRIORITY

Represents a priority of a log message with Foundation. Available priority values include a range from 1 - 10 with one being the lowest priority.

Table: Priority

Property Name	Application Type	Description	Date Type	Filterable
Description	SYSTEM	Description of priority	String	Y
Priority	SYSTEM	Unique name of priority	String	Y
PriorityId	SYSTEM	Unique identifier or priority	Integer	Y

SERVICE_STATUS

Represents a service running on a host and its current status.

Table: Service Status

Property Name	Application Type	Description	Date Type	Filterable
30DayMovingAvg	NAGIOS		Double	N
ApplicationType	SYSTEM	Application type for which the service check is associated.	String	Y
ApplicationTypeId	SYSTEM	Application type id for which the service check is associated.	Integer	Y
CheckType	SYSTEM	Type of check (e.g. passive or active)	String	Y
CheckTypeId	SYSTEM	Unique identifier of check type	Integer	Y
CurrentNotificationNumber	NAGIOS		Integer	N
Domain	SYSTEM			
ExecutionTime	NAGIOS		Double	N
HostId	SYSTEM	Unqiue host id for which the service check is related	Integer	Y
HostName	SYSTEM	Name of host for which the service check is related	String	Y
isAcceptPassiveChecks	NAGIOS		Boolean	Y
isChecksEnabled	NAGIOS		Boolean	N
isEventHandlersEnabled	NAGIOS		Boolean	N
isFailurePredictionEnabled	NAGIOS		Boolean	N
isFlapDetectionEnabled	NAGIOS		Boolean	N
isNotificationsEnabled	NAGIOS		Boolean	N

isObsessOverService	NAGIOS		Boolean	N
isProblemAcknowledged	NAGIOS		Boolean	N
isProcessPerformanceData	NAGIOS		Boolean	N
isServiceFlapping	NAGIOS		Boolean	N
LastCheckTime	SYSTEM	Date / Time when the service check was performed	DateTime	Y
LastHardState	SYSTEM		String	Y
LastHardStateId	SYSTEM		Integer	Y
LastNotificationTime	NAGIOS		DateTime	N
LastPluginOutput	NAGIOS		String	N
LastStateChange	NAGIOS		DateTime	N
Latency	NAGIOS		Double	N
MetricType	SYSTEM		String	Y
MonitorStatus	SYSTEM	Current status result of service check	String(254)	Y
MonitorStatusId	SYSTEM	Unique identifier of current status	Integer	Y
NextCheckTime	SYSTEM	Date / Time when the next check is scheduled	DateTime	Y
PercentageStateChange	NAGIOS		Double	N
RetryNumber	NAGIOS		Integer	N
ScheduledDowntimeDepth	NAGIOS		Integer	N
ServiceDescription	SYSTEM	Name of service check	String(254)	Y
ServiceStatusId	SYSTEM	Unique identifier of service check	Integer	Y
TimeCritical	NAGIOS		Long	N
TimeOK	NAGIOS		Long	N
TimeUnknown	NAGIOS		Long	N
TimeWarning	NAGIOS		Long	N

SEVERITY

Represents a severity of a log message with Foundation. Available severity values include FATAL, HIGH, LOW, WARNING, PERFORMANCE, STATISTIC, SERIOUS, CRITICAL, OK, UNKNOWN, NORMAL, MAJOR, MINOR, INFORMATIONAL, UP, DOWN and UNREACHABLE

Table: Severity

Property Name	Application Type	Description	Date Type	Filterable
Description	SYSTEM	Description of severity	String(254)	Y
Severity	SYSTEM	Unique name of severity	String(128)	Y
SeverityId	SYSTEM	Unique identifier of severity	Integer	Y

STATE_TYPE

Coupled with Monitor status indicates the state of a host / service. Available values include HARD or SOFT.

Table: State Type

Property Name	Application Type	Description	Date Type	Filterable
Description	SYSTEM	Description of state type	String(254)	Y
StateType	SYSTEM	Name of state type (e.g. HARD, SOFT)	String(254)	Y

StateTypeId	SYSTEM	Unique identifier of state type	Integer	Y

TYPE_RULE

Table: Type Rule

Property Name	Application Type	Description	Date Type	Filterable
Description	SYSTEM	Description of type rule	String(254)	Y
TypeRule	SYSTEM	Name of type rule	String(128)	Y
TypeRuleId	SYSTEM	Unique identifier of type rule	Integer	

4.2 Statistical Entity Descriptions

Statistic entities are different then the physical entities because they are calculated at run-time and are not directly persisted in the database. When querying a statistical entity, the query filter is actually a set of named parameters and not a set of entity properties. When building a query filter a report designer is actually defining the statistic entity query parameter values to pass to the query. Please note, the operator in statistical entity query filters should always be EQ and the logical operator is ignored.

The following tables are all the statistic entities that a report designer can query.

HOST_STATISTICS

Table: Host Statistics

Property Name	Application Type	Description	Date Type	Filterable
Count	SYSTEM	Number of hosts in the particular state	Long	N
HostGroupName	SYSTEM	Name of host group	String(254)	N
Name	SYSTEM	Name of monitor status	String(254)	N

Parameters

All parameters are optional.

- ApplicationType: This parameter is currently ignored.
- HostGroupName: Possible values: Any host group name, null / empty for totals of all hostgroups, or "ALL" for all host group statistics.

LOG_MESSAGE_STATISTICS

Table: Log Message Statistics

Property Name	Application Type	Description	Date Type	Filterable
Count	SYSTEM	Number of log messages for the particular state	Long	N
Name	SYSTEM	Name of monitor status, priority, severity, operation status depending on the statistic type being queried	String(254)	N

Parameters

All parameters are optional.

- ApplicationType: Application type to filter statistic count by.
- EndDate: Specifies the end date of the log message to be included in the statistic counts. Only log messages with a LastInsertDate equal to or less than will be included in the counts. If not provided the log messages with a LastInsertDate equal to or greater than the StartDate parameter value will be included in the counts.
- HostGroupName: If specified, only the log messages related to the specified host group will be in the statistic counts.
- HostName: If specified, only the log messages related to the specified host will be in the statistic count.
- StartDate: Specifies the start date of the log message to be included in the statistic counts. Only log messages with a LastInsertDate equal to or greater than will be included in the counts. If not provided the log messages with a LastInsertDate equal to or less than the EndDate parameter value will be included in the counts.
- StatisticType: Possible values: MonitorStatus, Priority, Severity, OperationStatus - Defaults to MonitorStatus if not provided.

SERVICE_STATISTICS

Table: Service Statistics

Property Name	Application Type	Description	Date Type	Filterable
Count	SYSTEM	Number of services in the particular state	Long	N
Name	SYSTEM	Name of monitor status	String(254)	N
OwnerName	SYSTEM	Host or Host Group Name depending on statistics being queried	String(254)	N

Parameters

All parameters are optional.

- ApplicationType: This parameter is currently ignored.
- HostGroupName: Possible values: Any host group name, null / empty for totals of all hostgroups, or "ALL" for all host groups.
- HostName: Possible values: Any host name, null for totals of all host, or "ALL" for all hosts.

HOST_STATE_TRANSITIONS

Table: Host State Transitions

Property Name	Application Type	Description	Date Type	Filterable
EndTransitionDate	SYSTEM	Date and time host transitioned to a different state. Note - If the state for the host did not change then the EndTransitionDate is the current date of the Foundation server	DateTime	N
FromState	SYSTEM	Monitor status that the host was in before transitioning to this state	String(254)	N
FromStateId	SYSTEM	Monitor status id of the state that the host was in before transitioning to this state	Integer	N
FromTransitionDate	SYSTEM	Date and time that the host transitioned to the from state	DateTime	N
Host	SYSTEM	Name of host for which this state transition is related	String(254)	Y
StateDuration	SYSTEM	Time in milliseconds that the host was or has been in the state	Long	N
ToState	SYSTEM	Monitor status for this host state transition	String(254)	N
ToStateId	SYSTEM	Monitor status id for this host state transition	Integer	N
ToTransitionDate	SYSTEM	Date and time that the host transitioned into this state	DateTime	

Parameters

Host parameter is required.

- Host: Name of host for which to query state transitions, this parameter is required.
- StartDate: Start date of state transitions to include, this parameter is optional and if not provided then all state transitions up to EndDate will be included.
- EndDate: End date of state transitions to include. Note that this value is not inclusive. For example to include state transitions up to January 1, 2007 provide an end date value of 01/02/2007 so transitions for January 1, 2007 will be included. This parameter is optional. If not provided all state transition from the StartDate to the current date time of the Foundation server will be returned.

SERVICE_STATE_TRANSITIONS

Table: Service State Transitions

Property Name	Application Type	Description	Date Type	Filterable
EndTransitionDate	SYSTEM	Date and time service transitioned to a different state. Note - If the state for the service did not change then the EndTransitionDate is the current date of the Foundation server.	DateTime	N
FromState	SYSTEM	Monitor status that the service was in before transitioning to this state	String(254)	N
FromStateId	SYSTEM	Monitor status id of the state that the service was in before transitioning to this state	Integer	N
FromTransitionDate	SYSTEM	Date and time that the service transitioned to the from state	DateTime	N
Host	SYSTEM	Name of host for which this service state transition is related	String(254)	Y

ServiceDescription	SYSTEM	Name of service for which this state transition is related	String(254)	Y
StateDuration	SYSTEM	Time in milliseconds that the service was or has been in the state	Long	N
ToState	SYSTEM	Monitor status for this service state transition	String(254)	N
ToStateId	SYSTEM	Monitor status id for this service state transition	Integer	N
ToTransitionDate	SYSTEM	Date and time that the service transitioned into this state	DateTime	

Parameters

Host and ServiceDescription parameters are required.

- Host: Name of host for which the service that is being query is related, this parameter is required.
- ServiceDescription: Name of service for which to query state transitions, this parameter is required.
- StartDate: Start date of state transitions to include, this parameter is optional and if not provided then all state transitions up to EndDate will be included: EndDate
- End date of state transitions to include. This value is not inclusive. For example to include state transitions up to January 1, 20011 provide an end date value of 01/02/2011 so transitions for January 1, 20011 will be included. This parameter is optional. If not provided all state transition from the StartDate to the current date time of the Foundation server will be returned.