

Creating Basic Custom Monitoring Dashboards

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Introduction

With the release of IBM Tivoli Monitoring 6.3, IBM Performance Management 8.1.1, and the IBM Dashboard Application Services Hub 3.1.0.0 (DASH), administrative users can create customized performance monitoring dashboard pages using the DASH widgets and performance monitoring data from the following data providers:

- IBM Tivoli Monitoring dashboard data provider, a component of the Tivoli Enterprise Portal Server (TEPS), retrieves data from Tivoli monitoring agents for presentation in dashboard widgets.
- IBM Performance Management data provider, a component of the Performance Management server, retrieves data from Performance Management monitoring agents for presentation in dashboard widgets.

Custom monitoring dashboards are available through DASH for users to create their own pages, charts and tables from the Tivoli Widget Library (TWL).

ITM and DASH Configuration

These steps assume that IBM Tivoli Monitoring (ITM) and IBM Dashboard Application Services Hub (DASH) have already been installed and are running correctly. To enable ITM supported widgets on DASH the following configuration steps need to be completed.

ITM TEPS configuration

Configure the TEPS dashboard data provider:

Configuring the TEPS to enable the dashboard data provider on Linux/UNIX:

1. Reconfigure the TEPS by running the command:
`$CANDLE_HOME/bin/itmcmd config -A cq`
2. When you get to the question “Enable the dashboard data provider ?” Answer “1” for yes to the question.
3. Once configuration completes restart the TEPS to make changes effective

Configuring the TEPS to enable the dashboard data provider on Windows:

1. Click Start → Programs → IBM® Tivoli Monitoring → Manage Tivoli Enterprise Monitoring Services.
2. Right-click Tivoli Enterprise Portal Server and then click Reconfigure, and click OK to accept the existing configuration and go to the second TEP Server Configuration window.
3. In the dashboard data provider area of the configuration window, verify the *Enable the dashboard data provider* check box is selected. If it is not selected, then select it.
4. If you made changes to the portal server configuration, click OK. Otherwise, click Cancel to exit.
5. Ensure the portal server is restarted.

Note: It is not necessary to provide a domain override value when enabling the ITM dashboard data provider unless you are using the ITM Hot Standby feature, which provides high availability for your hub monitoring server. See the [Installing the Tivoli Enterprise Portal Server](#) topics in the Tivoli Monitoring IBM Knowledge Center for more information on specifying a domain override value.

Additional information on this procedure may be found in the [Verifying the dashboard data provider is enabled](#) topic in the Tivoli Monitoring IBM Knowledge Center.

Setting up your dashboard environment

Configure the Dashboard Application Services Hub environment, which includes creating a connection to the dashboard data provider, managing Dashboard Application Services Hub roles to control access to monitoring dashboard pages, and configuring access to resources in the monitoring dashboards.

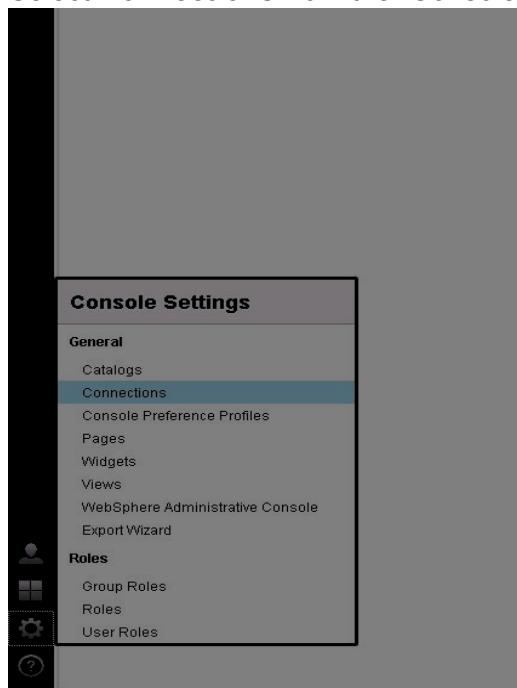
You have two options:

1. Set up a basic dashboard environment where all users have access to the same monitoring resources and single sign-on is not enabled when launching the Tivoli Enterprise Portal client from the Dashboard Application Services Hub.
2. Set up a dashboard environment where you can control which monitored resources a user can access by using either authorization policies or Tivoli Enterprise Portal permissions. This type of environment requires that you use a shared LDAP user registry and configuring single sign-on.

For more information, refer to the roadmaps in the [Preparing your dashboard environment](#) topic in the Tivoli Monitoring IBM Knowledge Center.

The steps below show how to create a connection on DASH to the ITM dashboard data provider and assume that you are implementing the basic dashboard environment described above:

1. Log in to DASH. The default URL is <https://myDASHhost:16311/ibm/console> where *myDASHhost* is the IP address or the fully qualified host name of the system where the DASH is installed. You must log into DASH as a user who has been assigned the administrator and iscadmins Dashboard Application Services Hub roles. These roles are required to create and manage data provider connections. For information on assigning these roles to users, see the [Managing Jazz for Service Management users and groups](#) topics in the Jazz for Service Management IBM Knowledge Center.
2. Select **Connections** from the “Console Settings” menu as shown below:



3. Click  **New** to create the new ITM dashboard data provider connection.

4. Fill in the displayed panel with the following information and click “search”:

- TEPS hostname or IP address
- Port: 15200 for HTTP or 15201 for HTTPS
- User to access the TEPS
- Password credentials for the above user

Notes:

- a. Enter a Tivoli Enterprise Portal user such as sysadmin who has been granted these Tivoli Enterprise Portal authorizations:
 - The user must be assigned the monitoring applications whose data will be displayed in the custom dashboards.
 - If your custom dashboards display situation events, the user must have permission to view situation events.

This user will be used to create the connection and to send all subsequent requests to the dashboard data provider on behalf of your dashboard users.

- b. If you plan to use HTTPS as the protocol connection, you must configure TLS/SSL between Dashboard Application Services Hub and the portal server before creating the data provider connection. For more information, see the [Configuring TLS/SSL communication between Dashboard Application Services Hub and the dashboard data provider](#) topic in the Tivoli Monitoring IBM Knowledge Center.

Tip: You can create the connection with HTTP protocol for your initial testing. Once your environment is working, you can configure TLS/SSL between the servers, delete the connection, and re-add it with the HTTPS protocol.

5. If the ITM dashboard data provider has been enabled, the portal server is running and the credentials provided above are correct, then the search will find the ITM dashboard data provider and list it as shown in this example:

The screenshot shows the 'Connections' dialog box with the following details:

- Server information:**
 - * Protocol: HTTP
 - * Host name: nc050044.tivlab.raleigh.ibm.com
 - * Port: 15200
 - Connection goes through a firewall
 - Firewall address: [empty]
 - Firewall port: [empty]
- Credentials:**
 - * Name: sysadmin
 - * Password: [redacted]
 - * Confirm password: [redacted]
- Search:** A button labeled 'Search' is present.
- Results:** A table titled 'No filter applied' shows one result:

Name	Description	Type	Provider ID
TEMs_nc050044	IBM Tivoli Monitoring dashboard data provider	IBMTivoliMonitoringServices	itm.TEMS_nc050044

Total: 1 Selected: 1

6. Select the provider and click **OK** as shown below:

Name	Description	Type	Provider ID
<input checked="" type="radio"/> TEMS_nc050044	ITM Data Provider	IBMTivoliMonitoringServices	itm.TEMS_nc050044

Total: 1 Selected: 1

Connection information

* Name:

Description:

* Provider ID:

Use the credentials of the user (requires SSO Configuration)

Buttons: OK Cancel

The new connection is created and listed in the Connections page below. If you need to use the same connection for the IBM Infrastructure Management Dashboards for Servers or IBM Infrastructure Management Dashboard for VMware, change the “Provider ID” field to specify the value “ITMSD”.

Connections ?

The connection manager allows you to configure the local and remote connections for this computer. The list below displays all configurable connections.

To create a new remote connection, click on the ‘Create new remote provider’ icon. To edit an existing connection, either select a connection and click on the ‘Edit existing provider’ button, or right-click on a connection and select the ‘Edit’ menu option. To delete a remote connection, either select the connection and click on the ‘Delete remote provider’ button, or right-click on the connection and select the ‘Delete’ menu option.

Name	Type	Description	Connection	ID
<input type="radio"/> HUB_amsnbt28	IBMTivoliMonitoringServices	ITM Data Provider		itm.HUB_amsnbt28.amsnbt28
<input checked="" type="radio"/> TEMS_nc050044	IBMTivoliMonitoringServices	ITM Data Provider		itm.TEMS_nc050044.nc050044.tivlab.raleigh.ibm.com
<input type="radio"/> DEFAULT	IBMTivoliMonitoringServices	ITM Data Provider		itm.DEFAULT.nc136216.tivlab.raleigh.ibm.com
<input type="radio"/> tip	tip	Tivoli Integrated Portal Data Provider		tip

7. After the connection has been created, you are ready to create pages with data from monitoring agents.

Note: if an error occurs when creating the data provider connection, see the [ibm tivoli monitoring troubleshooting guide](#).

IBM Performance Management and DASH Configuration

Checking for the Performance Management Dashboard Data Provider Availability

Configuring the IBM Performance Management to DASH connection is done in a similar fashion as the the ITM to DASH connection. However, before creating the connection to the Performance Management dashboard data provider, it must be up and running. To determine if the Performance Management dashboard data provider is available, point the web browser on the DASH server to the data provider URL to make sure that it will work correctly.

1. Open the web browser and enter the following URL:

<http://<yourPMServer>:8090/ITMRESTProvider/test.html>

The userID is “smadmin” and password should be what was used during the installation of the IBM Performance product (The system-supplied default value is “apppass”). After the connection has been established, the following screen should be visible:

The screenshot shows a web browser window with the URL `http://9.98.37.76:8090/ITMRESTProvider/test.html` in the address bar. The page contains a form with the following fields:

URI:	/ibm/tivoli/rest/providers
Accept:	application/json
Content-Type:	application/json
X-Method-Override:	[none]

Below the form are several buttons: Clear, GET, PUT, POST, DELETE, Reset URI, pretty: , and optimize: .

2. Click “Get” to test the data provider. If the resulting page returns information regarding the IBM Performance Management dashboard data provider, then the data provider has successfully registered. Check the “framework_status” section. It should show ready status for events, msys, and prefetch_storage. The following screen illustrates what should be seen.

File Edit View Bookmarks Tools Help

http://nc90980376:8090/ITMREST/Provider/test.html X +

9.98.37.76:8090 Google

URI: /ibm/tivoli/rest/providers

Accept: application/json

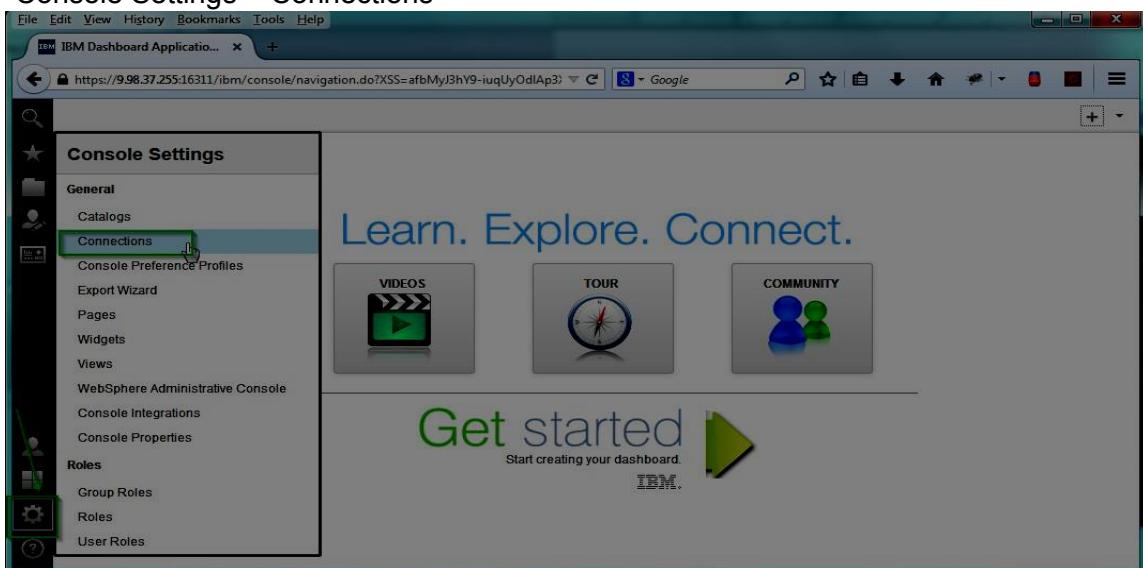
Content-Type: application/json

X-Method-Override: [none]

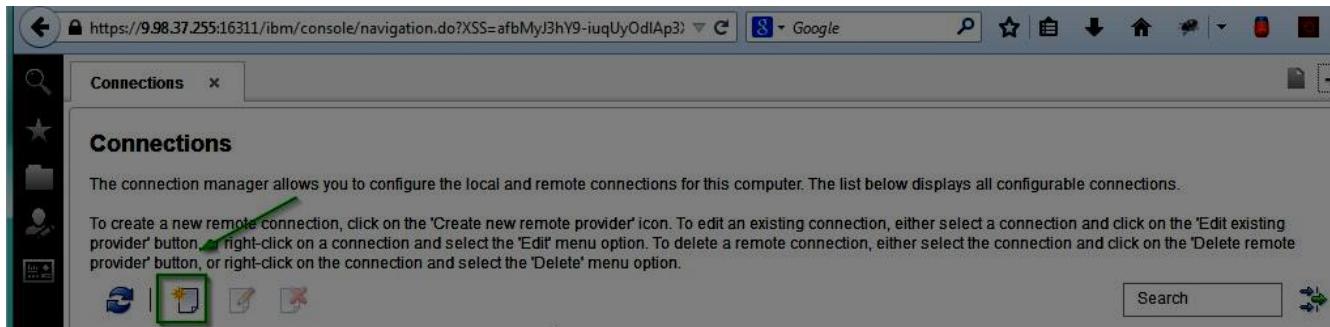
Clear GET PUT POST DELETE Reset URI pretty: optimize:

```
{
  "items": [
    {
      "name": "itm-KD8", "hostName": "itm-KD8", "port": 8090, "manufacturerName": "IBM", "productName": "IBM Performance Management", "baseUri": "http://9.98.37.76:8090/rest", "build": "20150522-1430", "datasetsUri": "/providers/itm.KD8/datasets", "datasourcesUri": "/providers/itm.KD8/datasources", "description": "IBM Performance Management dashboard data provider", "framework_status": {
        "datamart": "ready", "events": "ready", "mav": "ready", "prefetch_storage": "ready"
      }, "id": "itm.KD8", "label": "KD8", "remote": false, "type": "IBMPeformanceManagementServices", "uri": "/providers/itm.KD8", "version": "08.11.00.00"
    }
  ],
  "numRows": 1,
  "totalRows": 1
}
```

- After confirming that the Performance Management data provider is functioning properly, create the connection to that data provider inside DASH. To do this, log on to the DASH console and navigate to “Console Settings > Connections”



- When you bring up the Connections screen, click the **Create New Remote Provider** icon to create a new connection.



- Enter the data provider connection information and click "Search".

- *Protocol: HTTP (or HTTPS which is also supported)
- *Port: 8090 (or 8091 if you are using the HTTPS Protocol)
- *Hostname: <The PM server name>
- *Name: smadmin
- *Password: <password used when deploying the PM server>

This forces the DASH to discover the PM data provider.

- When the PM data provider is discovered, click on KD8 to populate the **Connection Information** fields with the *Name, Description, and *Provider ID. Click **OK** to save.

The screenshot shows a 'Connection information' dialog box. It contains the following fields:

- * Name: KD8
- Description: IBM SmartCloud Monitoring Application Insight dashboard data provider
- * Provider ID: itm.KD8.9.98.37.76
- Use the credentials of the user (requires SSO Configuration)

At the bottom of the dialog box are two buttons: 'OK' and 'Cancel'.

You have now successfully created the connection to the APM data provider and now can add DASH widgets that will retrieve data from the APM data provider.

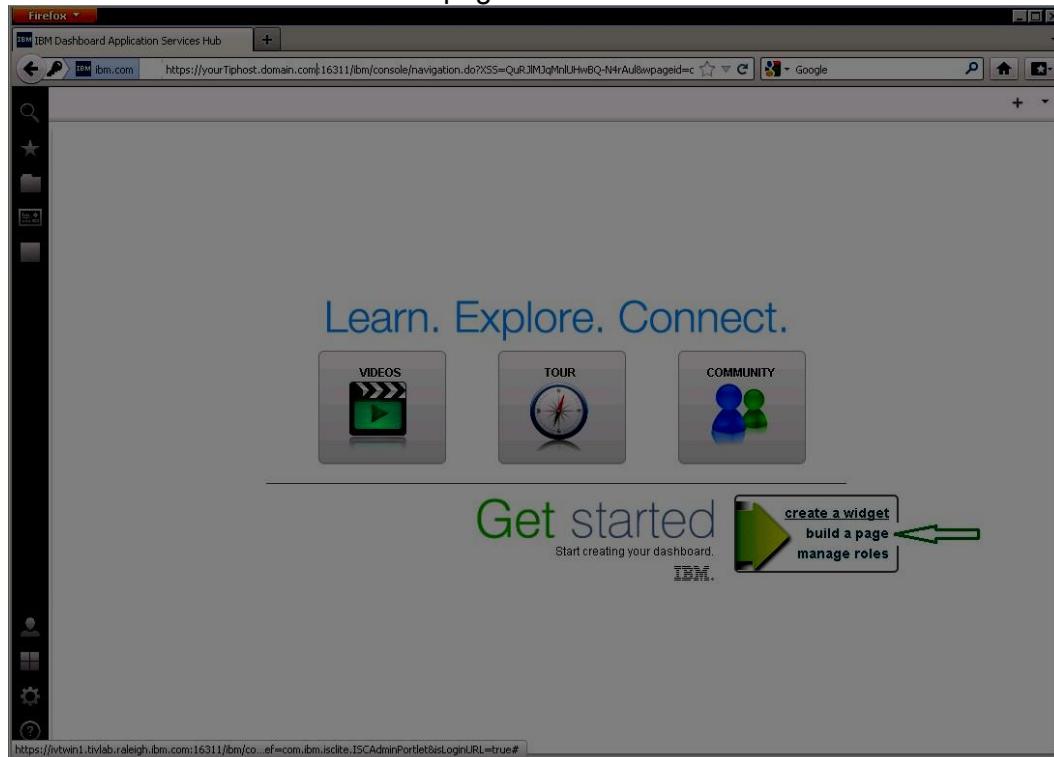
Working with Pages - Creating, Adding and Editing Widgets

Creating a page

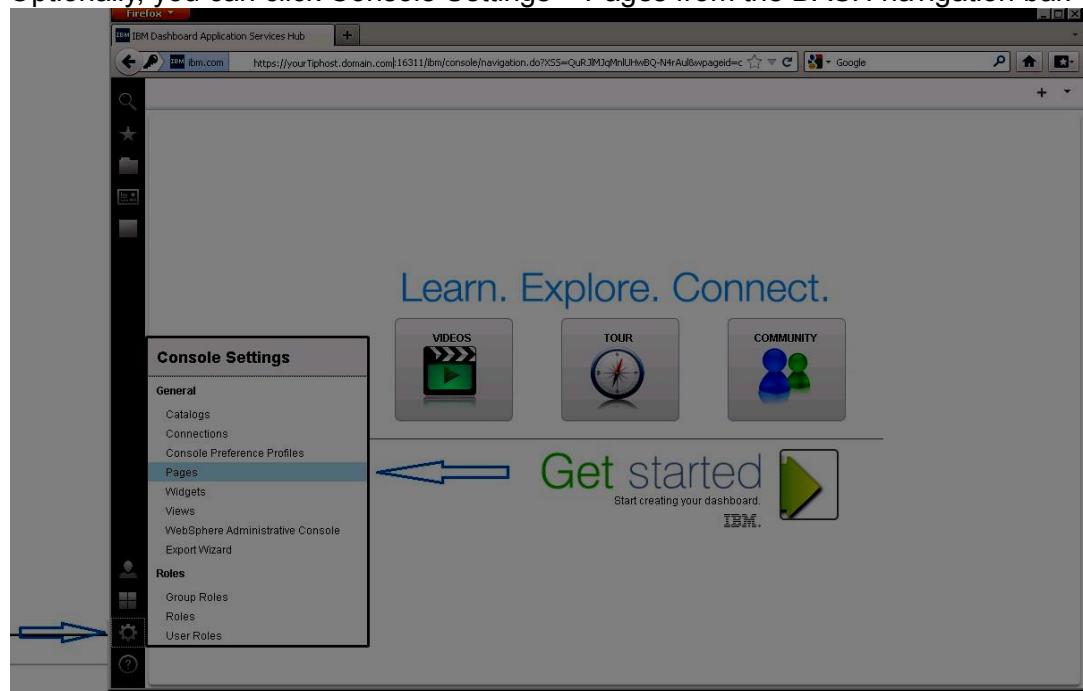
This section shows how to create a page on Dashboard Application Services Hub. If you need more information refer to [Working with dashboards or pages](#) in the Jazz for Service Management IBM Knowledge Center. The [Working with Roles](#) topic also describes the access level required to work with dashboard pages and widgets.

Limitation: When creating widgets with attributes from the Performance Management agents, you can see an agent's attributes but not all of them are available for display in the dashboard. If no data is displayed from an attribute in the widget, it might be because you specified an unsupported attribute or data set. To see a list of the attributes that are suitable for inclusion in the widget, log in to the Performance Management console, select Performance > Application Performance Dashboard, and drill down to the dashboard of an agent instance. Select the Attribute Details tab and create a table with the data set you intend to use in your DASH widget to see which attributes are available.

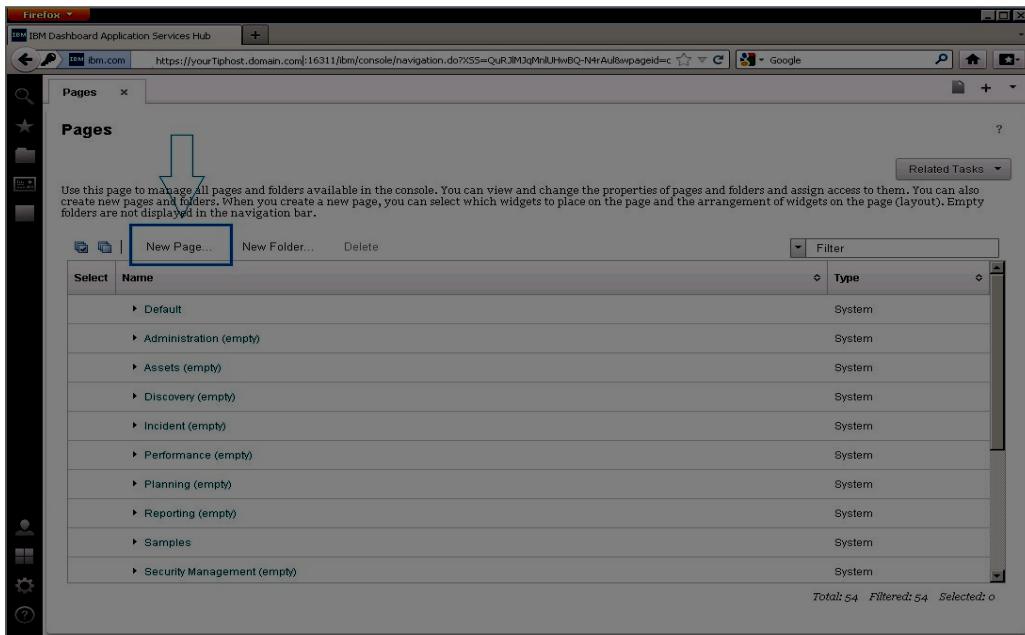
1. To create a page, log in to DASH. (The default URL is <https://yourDASHhostname:16311/ibm/console>.) After the Welcome page appears, click on the “Get started” arrow and select “build a page”.



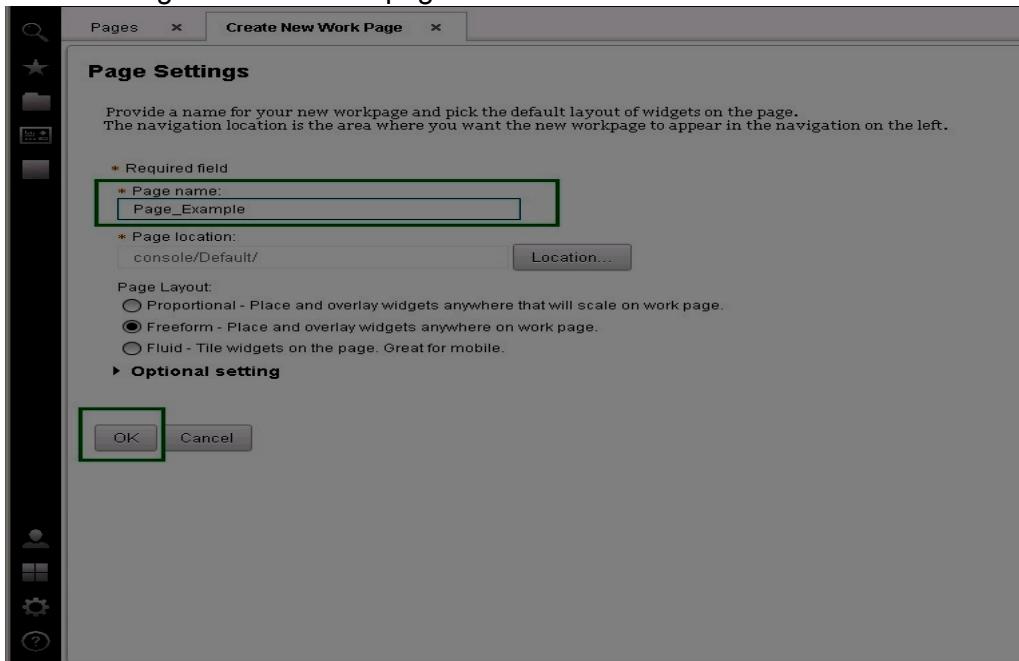
Optionally, you can click Console Settings > Pages from the DASH navigation bar.



2. When the Pages tab opens, click **New Page**:



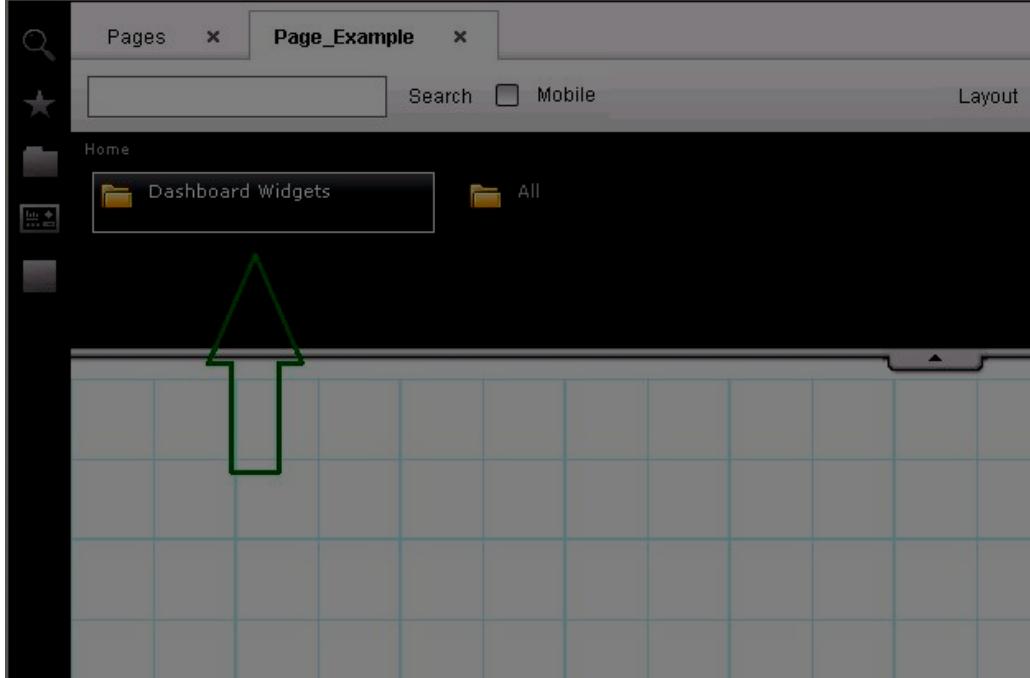
3. Assign a name to the page and click **OK**:



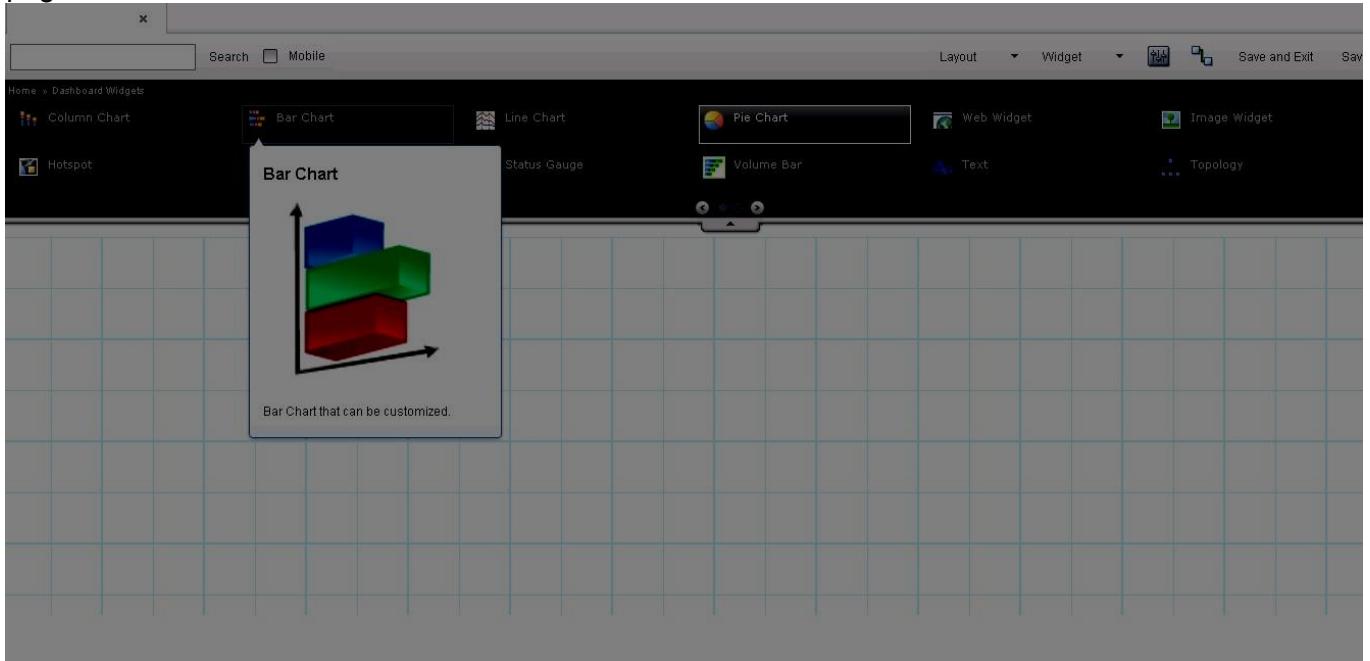
An empty page is displayed.

Adding widgets to a page

1. On the new page, click on the Dashboard Widgets folder icon to open and access the available widgets.



2. To add a widget to the page, choose a widget, for example **Bar Chart**, and then drag & drop it onto the page.



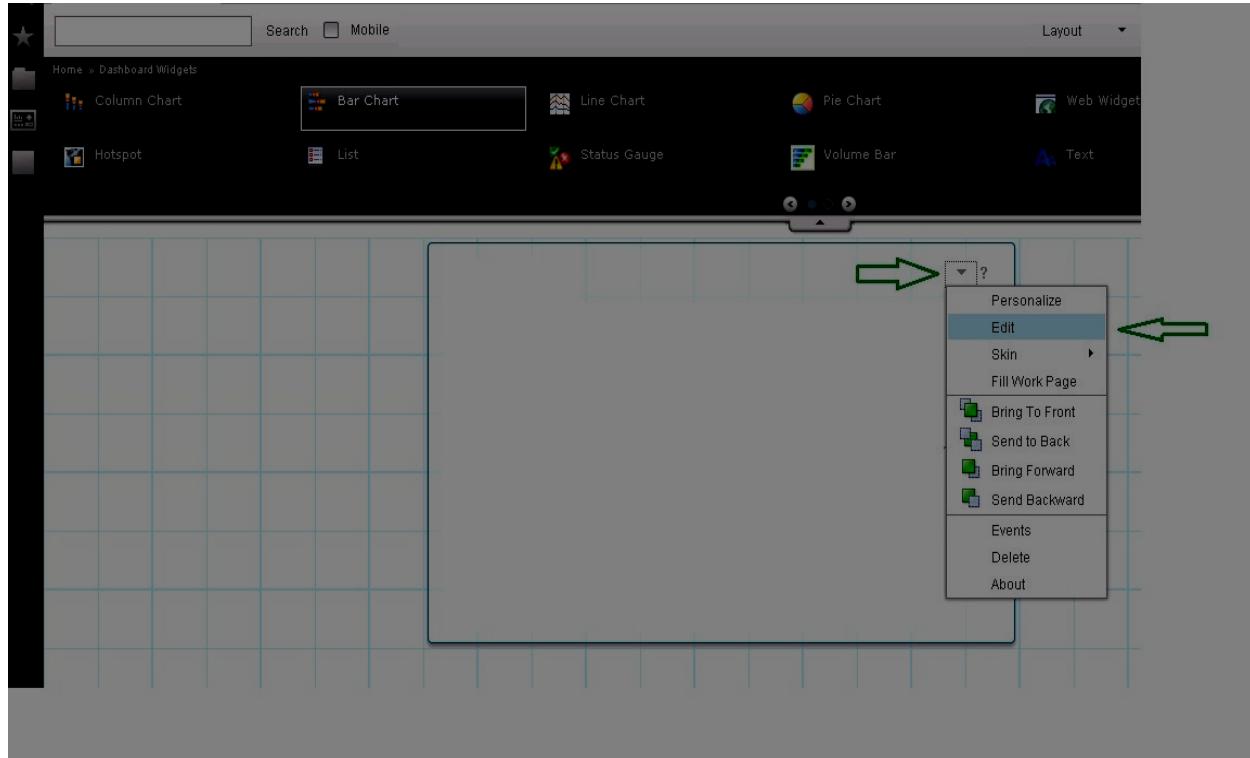
Editing a widget and specifying a dataset

Data providers partition their data into one or more data sources and, for each data source, there can be one or more dataset. When you edit a widget, you select the dataset that you want to retrieve data from.

Each monitoring tool's dashboard data provider has a data source for each agent type that has application support installed on the user interface. The datasets for a data source correspond to an attribute group of a monitoring agent. For example the Linux OS agent has datasets such as Linux Disk, Linux CPU, Linux Process, Linux Network, etc.

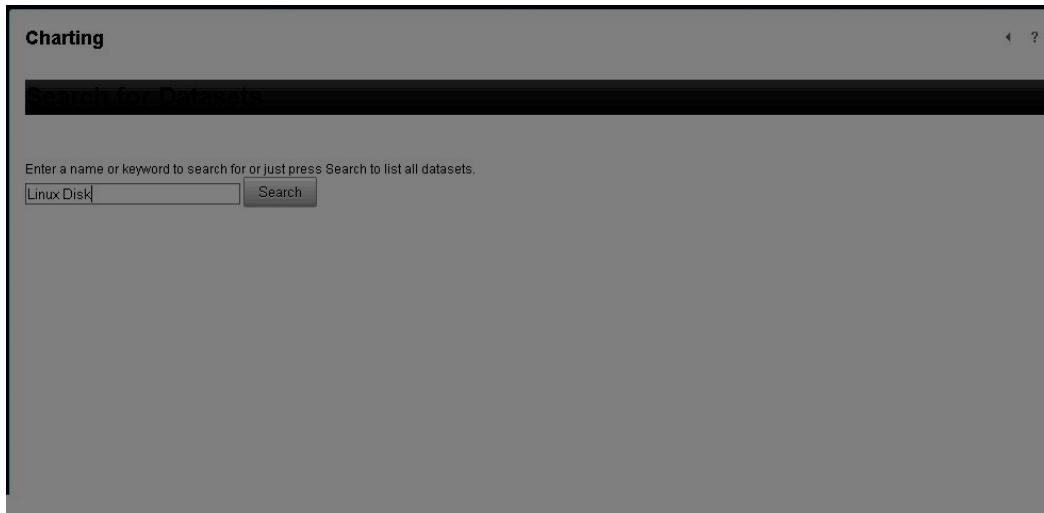
When choosing a dataset, you are selecting the attribute group that contains the metrics you want to display in a widget.

1. To edit a widget and specify a dataset, click the *arrow drop down* menu icon on the widget and then select Edit:

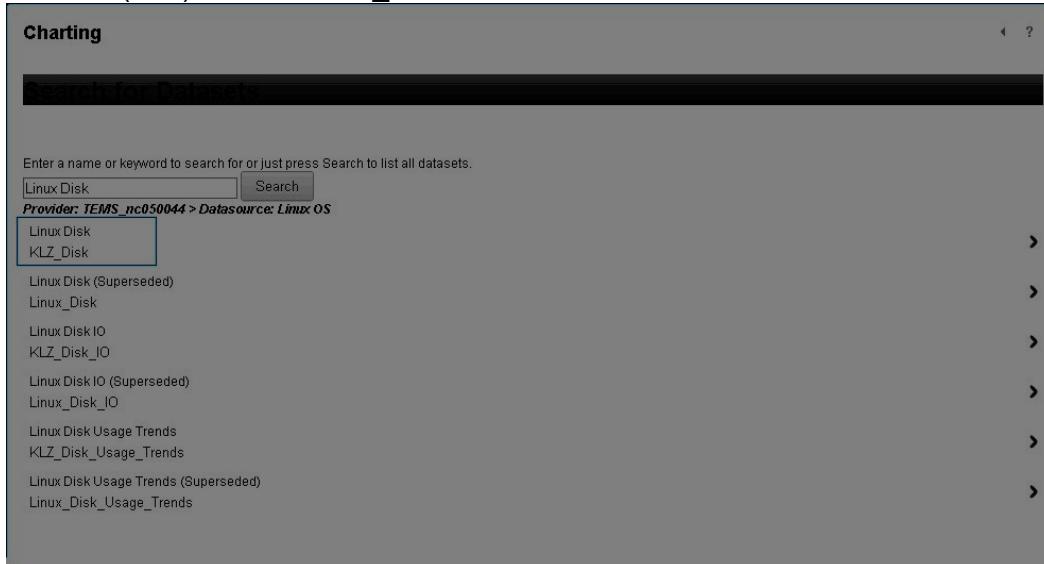


2. After you click **Edit**, the following panel appears where you can choose the dataset corresponding to an agent's attribute group. (Refer to the monitoring agent's documentation for the list of supported attribute groups.) You can then search for the desired dataset. If you leave the search field empty then all datasets for all data providers are listed. If you type a string in the search field, the search only shows a subset of datasets containing that string in the name or description.

For example, type “Linux Disk” to search all datasets to find the datasets that have “Linux Disk” in the dataset description or name:



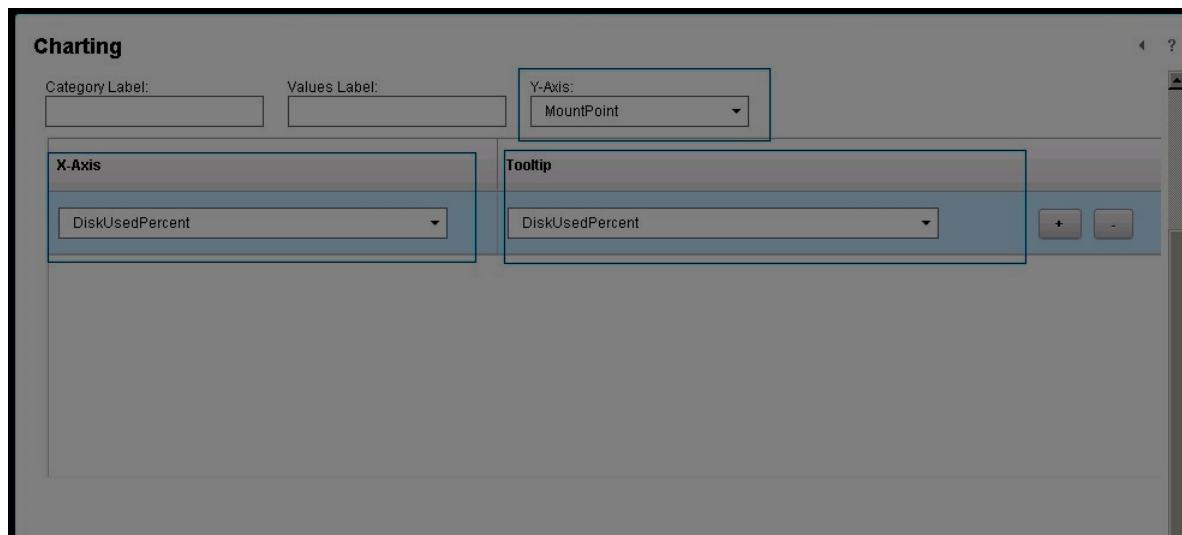
3. From the list of datasets returned by the search, you would then choose an attribute group (ITM) or a data set (IPM) such as "KLZ_Disk" as shown below:



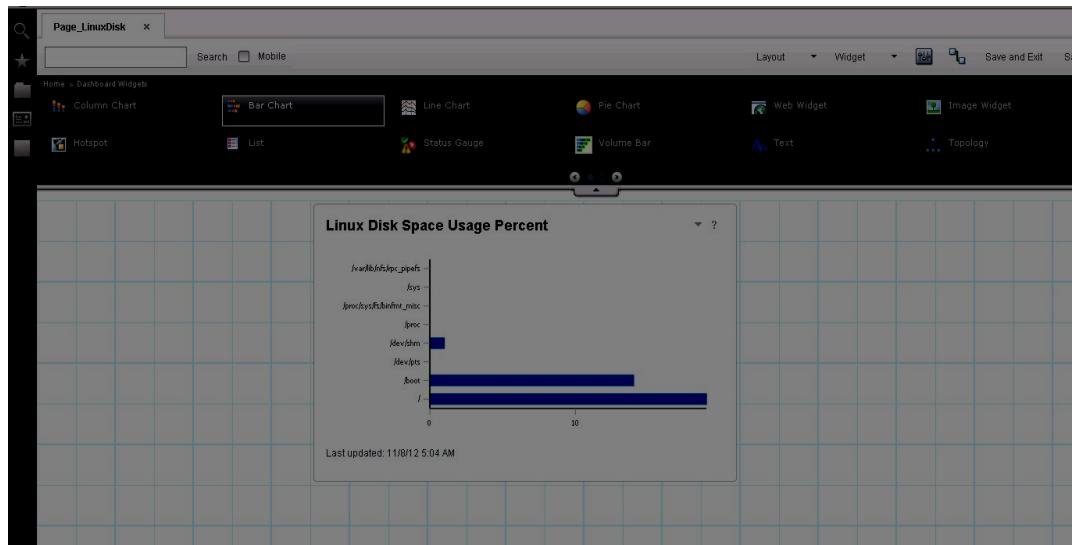
4. Next you specify the type of information you want to display from the KLZ_Disk attribute group and customize the widget with labels, etc.

In the bar chart example, as in most of the chart widgets, to complete these settings, specify the following information as shown in the picture below:

- Type of information to represent on the **Y-axis** which is selectable from a drop down list, for example, the “MountPoint” attribute from the KLZ_Disk attribute group
- Values to represent on the **X-axis** selectable which are selectable from a drop down list, for example, the “DiskUsagePercent” attribute from the KLZ_Disk attribute group.



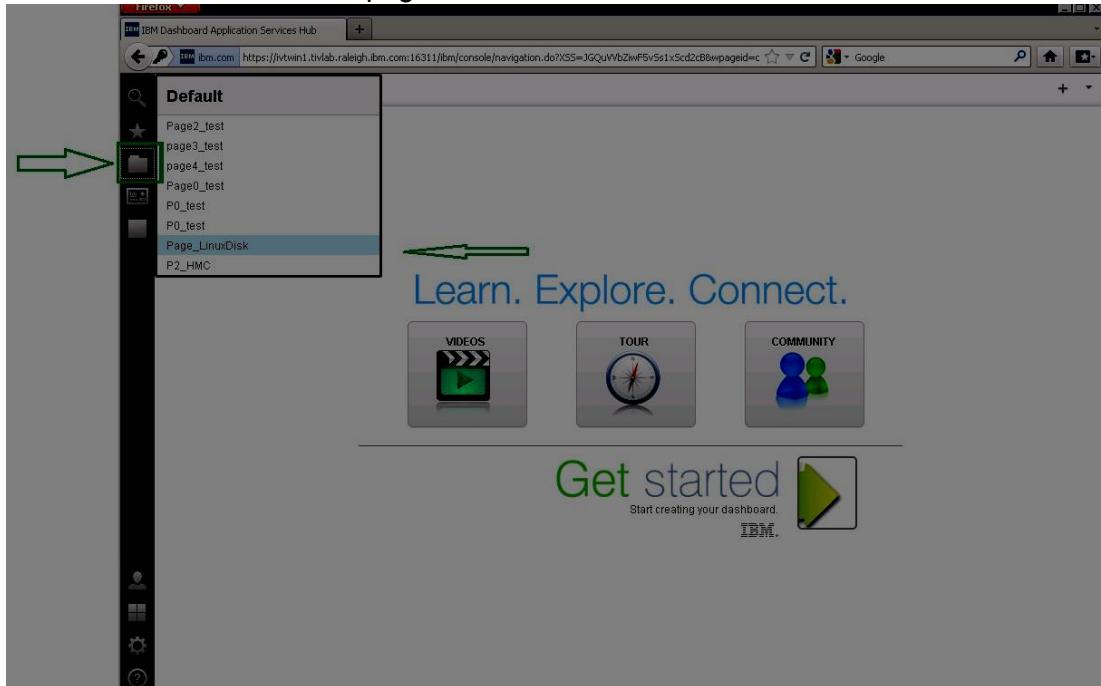
5. After you click **OK**, the data is retrieved and the bar chart is rendered:



6. Click **Save and Exit** to save the page you just created.

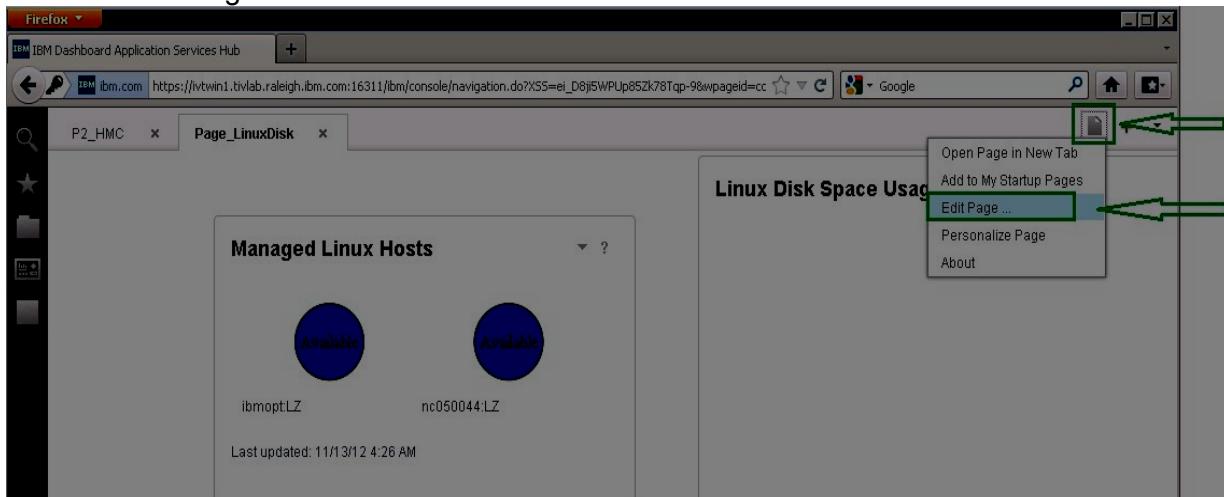
Edit an existing page

If you want to open an existing page, select the “Default” folder icon from the DASH vertical bar menu and then select the desired page in the list:



NOTE: When the page is opened, it is not in edit mode. If you want to change a setting, you can edit the page performing the following actions:

- Click on “Page Actions” icon
- Click on “Edit Page”



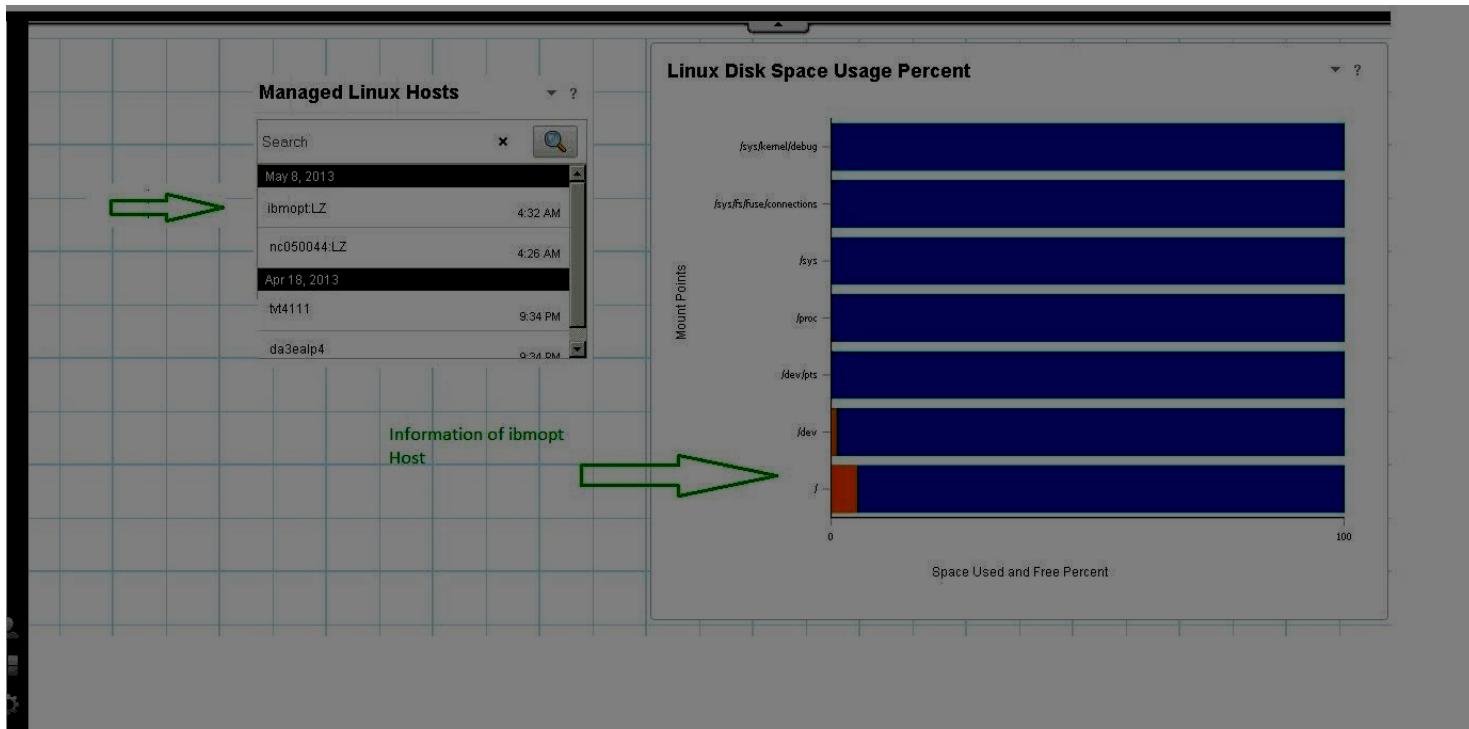
Once in edit mode, you can change or delete an existing widget or add a new widget.

Create connections between widgets on a page

Connections between widgets on a page provides you with the ability to select an object inside a widget and have related deeper object information shown contextually in 1 or more widgets in the same page.

Note: the ITM dashboard data provider only supports this type of connection if the source widget (in this example, the list widget) has the managed system name in either a ORIGINNODE or NODE property.

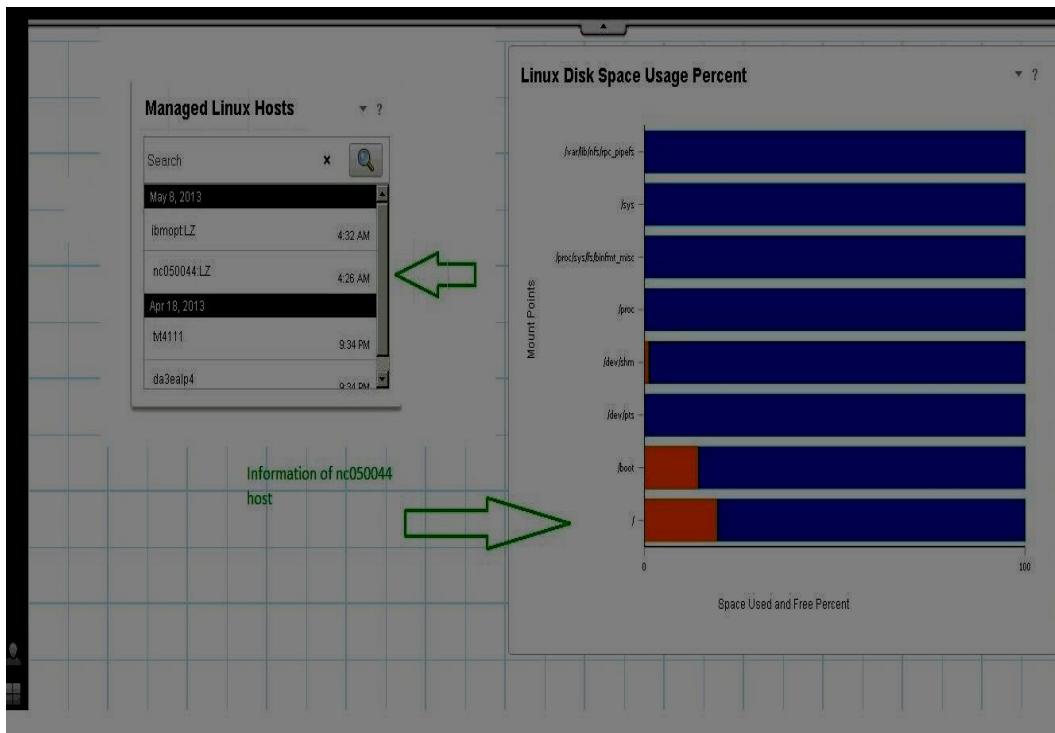
The picture below shows an example: The list widget shows the names of all Linux OS agents. The bar chart widget shows disk space usage information for the Linux OS agent that is selected in the list widget. In this example, when the ibmopt:LZ managed system name is selected in the list widget, the disk space usage from that managed system is displayed in the bar chart.



And when a user clicks on the Linux OS agent “nc050044:LZ” in the list widget, the information in Linux Disk Space Usage Percent bar chart widget is updated to show the disk usage information from the “nc050044:LZ ” Linux OS agent, as shown in the following picture:

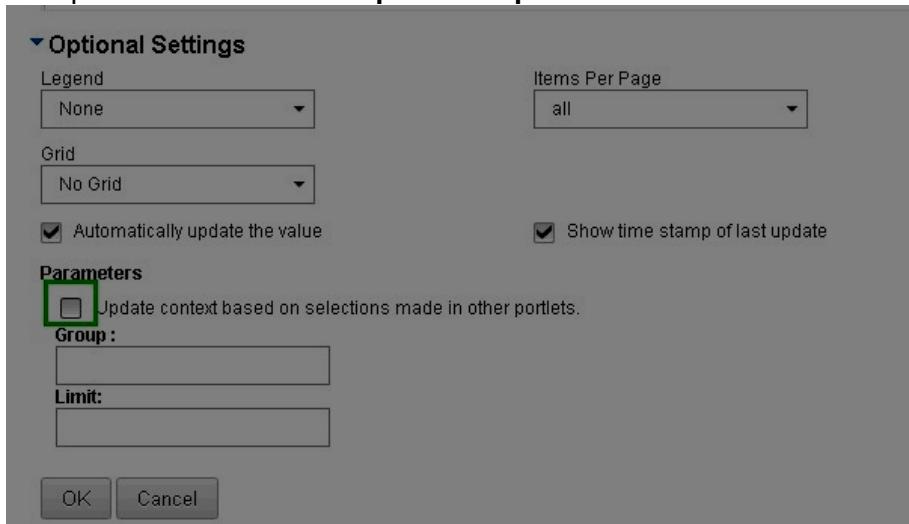
Note: When editing a target widget, which is updated by the source widget, enter a value for the **Managed System Name** field.

For more information about creating contextual connections between widgets, see [Widget events and wires](#) in the Jazz for Service Management documentation (http://www.ibm.com/support/knowledgecenter/SSEKCU_1.1.2.1/com.ibm.psc.doc/tip_original/iscd/doc/portlet_wires.html).

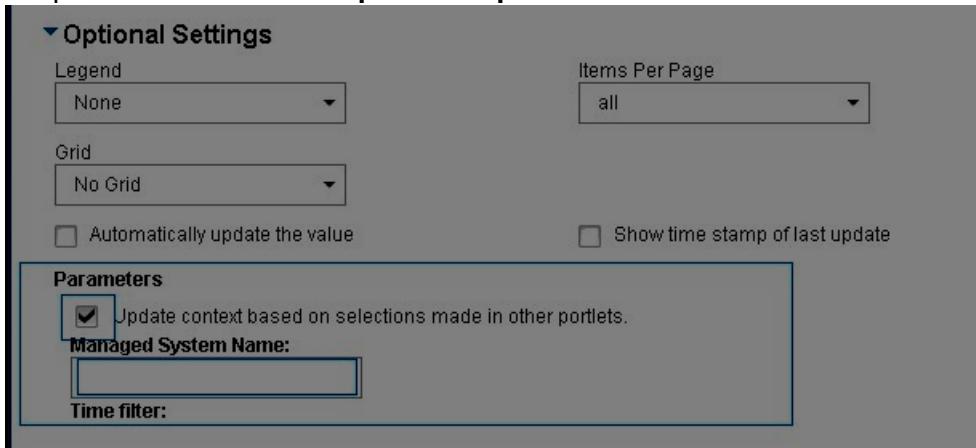


To create connections between two widgets, complete the steps below:

1. Enter edit mode for the widget that lists ITM managed systems. (In the example above, this was the list widget.)
- Expand the section “Optional Settings”
- Uncheck the box “**Update context based on selections made in other portlets**” if it is already checked
- Check the option “**Automatically update the value**” to automate the refresh of the managed systems.
- Check the option “**Show time stamp of last update**” to show the time of last refresh



- Enter edit mode for the widget that should be updated by the first widget. (In the example above, this was the bar chart widget.)
- Expand the section “Optional Settings”
 - Check the box “**Update context based on selections made in other portlets**” to update the data in this widget based on a managed system name selected in another widget (for example, the list widget in the picture above)
 - Ensure the field “**Managed System Name**” is not set
 - Uncheck the option “**Automatically update the value**”
 - Uncheck the option “**Show time stamp of last update**”



Note: In the Creating sample pages using ITM dashboard data provider supported widgets section in this paper, see the List widget Pie chart widget and Bar chart widget sub-sections that show how to create widgets similar to the ones in the example above.

DASH widgets that can retrieve data from the monitoring tool’s dashboard data provider

The ITM and IPM dashboard data provider can be used with the following DASH widgets:

1. List widget
2. Table widgets:
Simple table
3. Gauge widgets:
Status gauge
Analog gauge
Volume bar Value status
gauge
4. Chart Widgets: Bar
Column
Pie
Line

Creating sample pages using the monitoring tooling dashboard data provider supported widgets

In this section there are some examples showing the actions required to create pages using different widget types: charts, list, simple table, gauges. Although the following sections describe creating a new page you can also add widgets to existing pages using these same instructions.

The widgets shown in this section are all supported by Tivoli Monitoring dashboard data provider V6.3 and by IBM Performance Monitoring dashboard data provider v 8.1.1. The usage of different widgets with different Tivoli Monitoring datasets gives you numerous options when using this new functionality.

For more information on the widget functionality in DASH, refer to the “[Working with widgets](#)”, “[Charting](#)”, and “[Tivoli Widget Library](#)” topics in the Jazz for Service Management information center.

Common settings and parameters

When you configure a widget to retrieve monitoring agent data from the ITM dashboard data provider, you specify settings that are widget specific and parameters that are data provider specific. The widget specific settings are described in the Jazz for Service Management information center topics referenced above.

The widget may provide configuration parameters to filter what information is displayed. For example, if you are editing a widget such as a gauge that displays values from a single row in an agent attribute group, the data set configuration parameters allow you to specify dataset properties (attributes) that uniquely identify which row of data is displayed in the widget. For example, if you are configuring a gauge widget to display the disk utilization for a Linux OS agent, you can configure which dataset properties contain the disk and mount point to show the utilization of and which dataset property contains the disk utilization percentage.

The ITM data provider specific parameters are described below:

1. **Managed system name:** You must identify which managed system(s) the data should be *retrieved* from. You have multiple options:
 - a. Enter the name of a managed system, for example Primary:host1:NT for a Windows OS agent.
 - b. Enter the name of a managed system group. When you specify a group name, the widget displays from for all online managed systems in the group.

Note: Specifying a managed system group name is supported for these widget types:

- c. Select the option “*Update context based on selections made in other portlets*”. Choose this option if there will be another widget on the page that contains a list of one or more managed system names. This other widget is the source of the managed system name. When you choose the managed system name in the source widget then the data for that managed system will be displayed in the widget(s) that have the “*Update context based on selections made in other portlets*” option selected. See the “Create connections between widgets on a page” section in this paper for more details on how to configure connections between widgets.

Note: This option only works if the source and target widgets use the same property name for the managed system name.

2. **Time filter:** By default, near real-time monitoring data is retrieved by the dashboard data provider. If historical data is needed, the Time filter argument must be used. Depending on what type of widget is being configured for the page, the method by which the Time filter value is specified will be different. For charting widgets supplied with earlier versions of DASH (identified as 'Deprecated' in the DASH self-service dashboard), you may see a button entitled "Set Time Range". After clicking this button, a time range panel will appear, allowing you to specify a duration or discrete interval (start and end times). For other widgets, including the newer charting widgets supplied with current versions of DASH, a simple entry field will be presented. The value you enter in this field must be a legal ISO8601 formatted time string. The ISO8601 time standard allows for both duration and intervals to be defined. Some common examples of useful ISO8601 time strings would include the following:
 - a. PT30M request for last 30 minutes of historical information from the selected dataset
 - b. PT2H request for last two hours of historical information from the selected dataset
 - c. PT4H30M request for last 4 hours and 30 minutes of historical information from the selected dataset
 - d. P0Y0M2DT6H45M0S request for last 2 days, 6 hours, and 45 minutes of historical information from the selected dataset
3. **Refresh interval:** This parameter allows you to specify how often the ITM dashboard data provider provides refreshes of the data for those widgets that support auto-refresh. This parameter is not supported if you select the events data set.

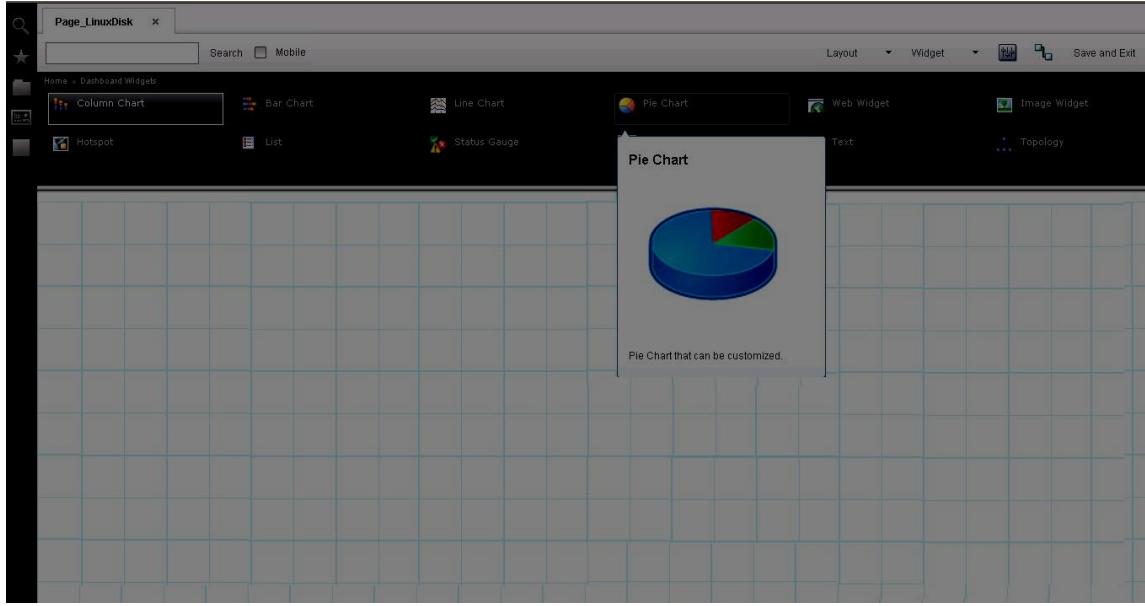
Pie chart widget

In this section, we describe how to create a pie chart and map it to a monitoring agent dataset. The pie chart in this example shows the paging file usage of a Windows computer system environment.

To create a page with a pie chart, perform this procedure:

Create a page as described in the “[Creating a page](#)“ section in this paper or edit an existing page as described in the “Edit an existing page” section in this paper.

Drag and drop the pie chart widget onto the page as shown in the following picture:



Click on the Edit button and search for the datasets for paging. Then choose the “Paging File – NT_Paging_File” dataset under the “Windows OS” datasource:



To complete the configuration, provide values for the following fields and options as shown in pictures below:

Enter a name for the chart. In this example, “IVTWIN6 Paging File” is specified.

Set **Pie Label** to the “Pagefile Name” attribute from the NT_Paging_File dataset.

For the **Pie Slices** fields, choose the “%Usage” and “%Usage Peak” properties from the NT_Paging_File dataset so that the pie chart shows the usage and usage peak percentages for each paging file.

Under “Settings” section:

-

Uncheck the box **“Update context based on selections made in other portlets”** to show data without a dependency on other widgets.

4.

Check the option **“Automatically update the value”** to automate the refresh of the data

-

Check the option **“Show time stamp of last update”** to show the time of last refresh

5.

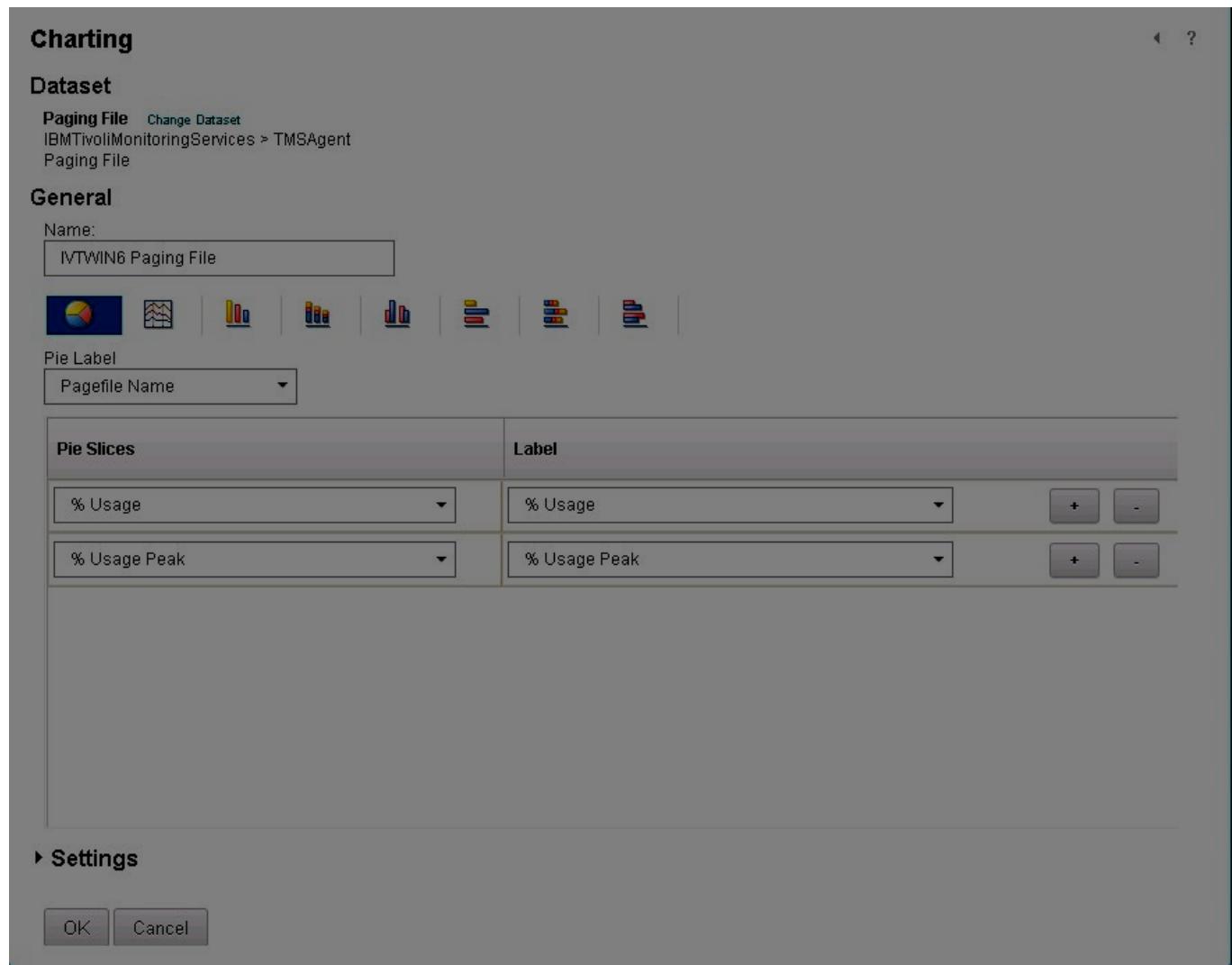
Select the option insert the Legend at the bottom of the chart

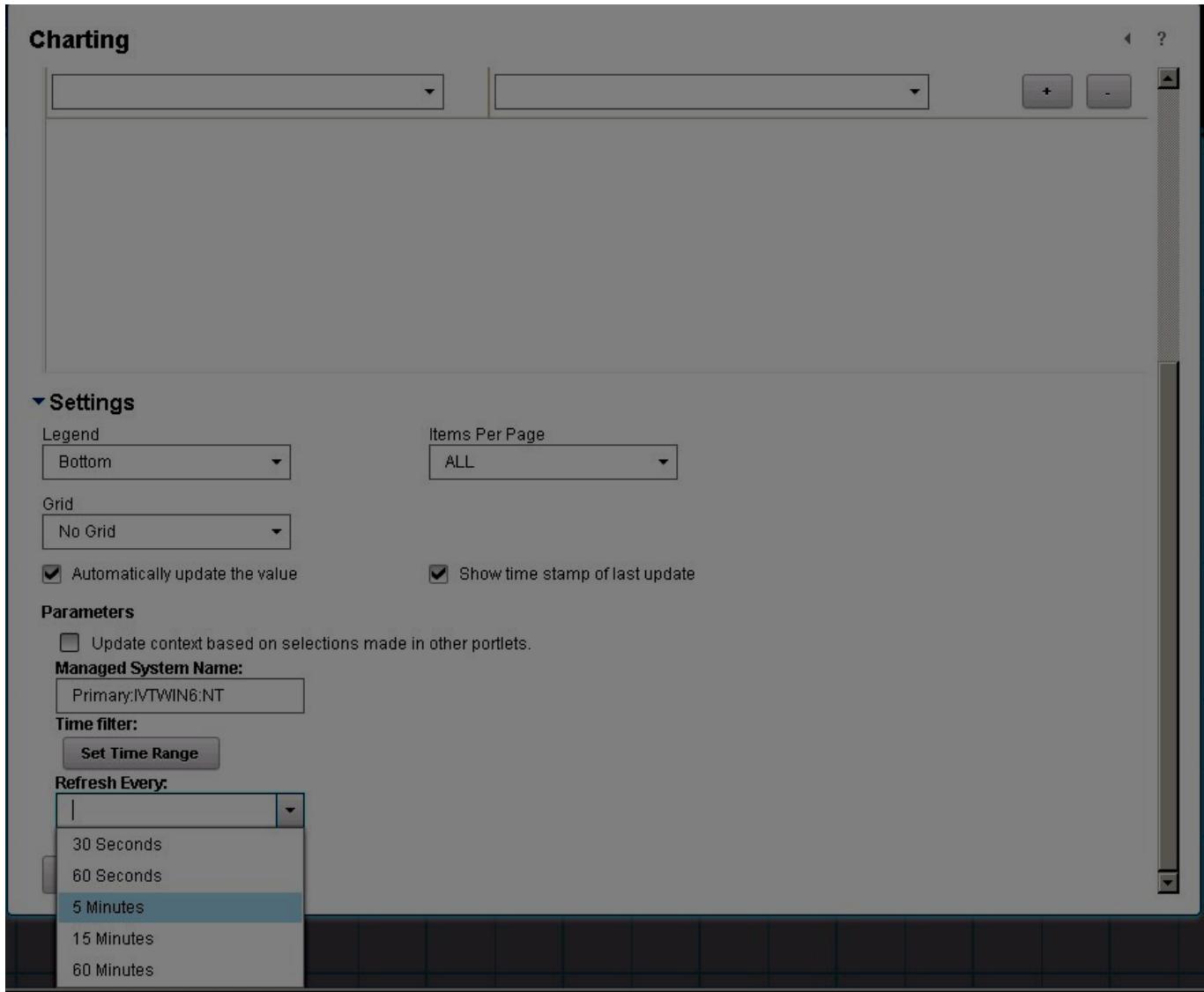
-

Enter a managed system name as in the example or a managed system group name

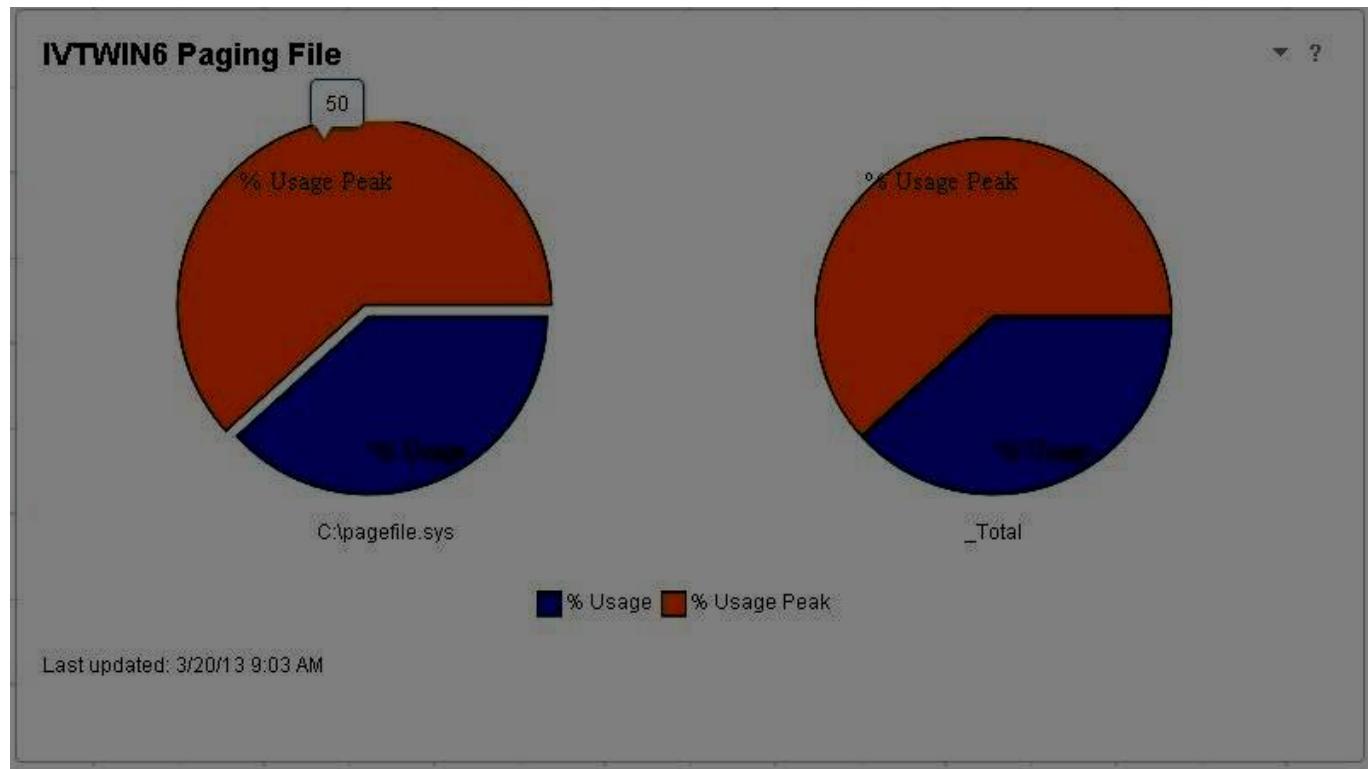
-

Select the refresh timeframe





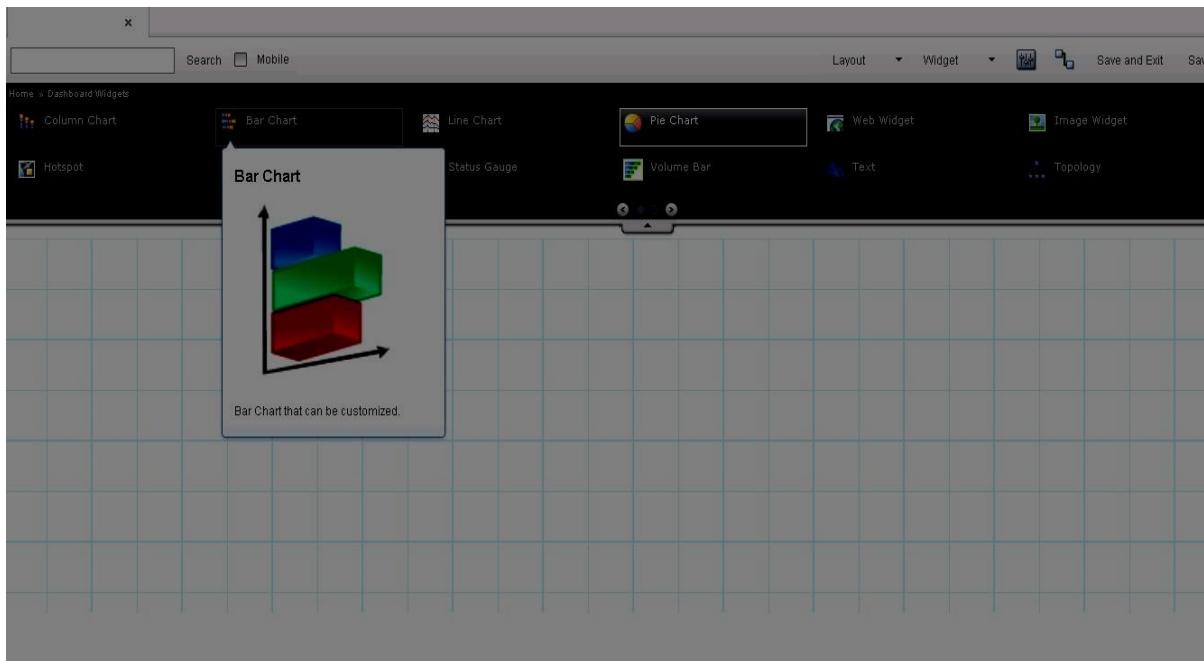
When you click OK, the pie chart displays the paging file usage similar to the example below:



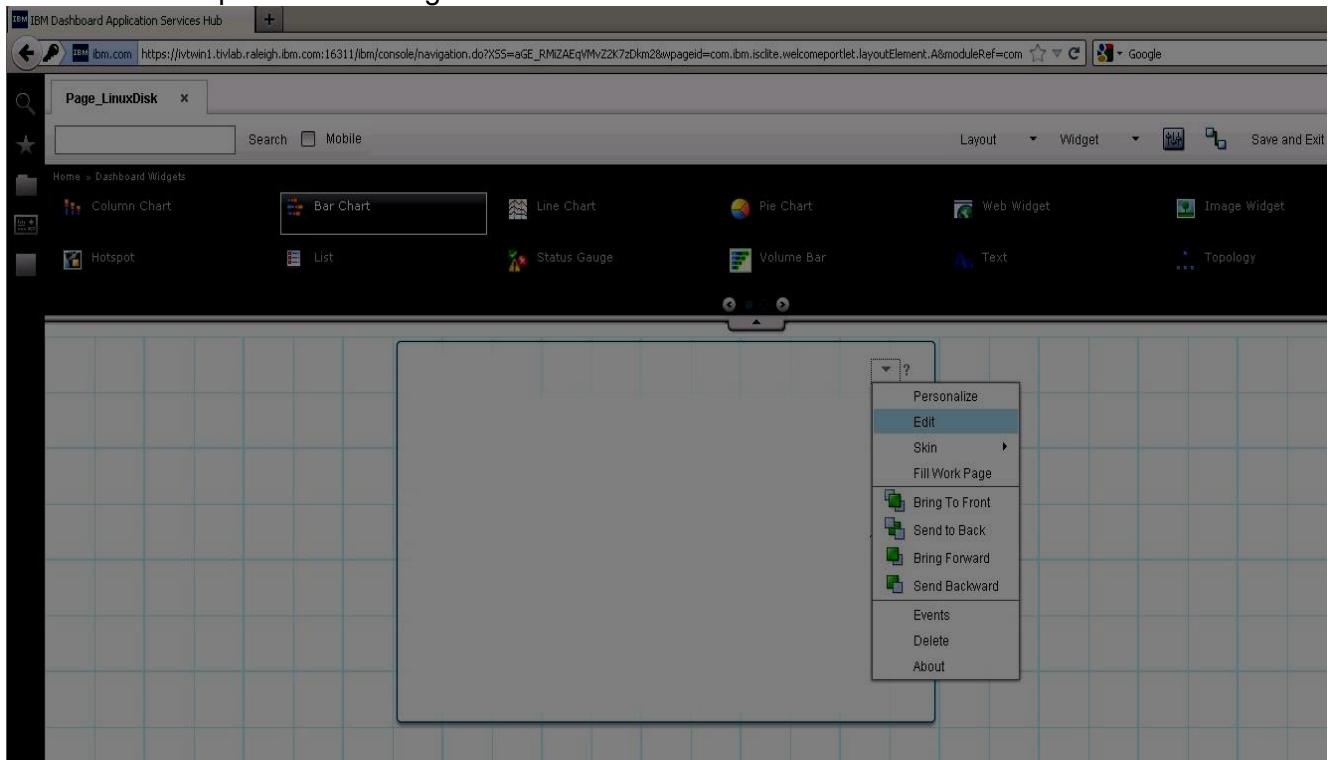
Bar chart widget

Similarly we can use a bar chart to represent Linux disk space usage on a bar chart. To create this type of chart, perform these steps:

- Create a page as described in "[Creating a page](#)" section in this paper or edit an existing page as described in the "Edit an existing page" section in this paper.
- Drag and drop the bar chart widget onto the page as shown in the following picture:



Select the Edit option for the widget as shown below:



- Enter “Linux Disk” in the search field and click **Search**.
- Choose the “Linux Disk → KLZ_Disk“ dataset

Charting

Search for Datasets

Enter a name or keyword to search for or just press Search to list all datasets.

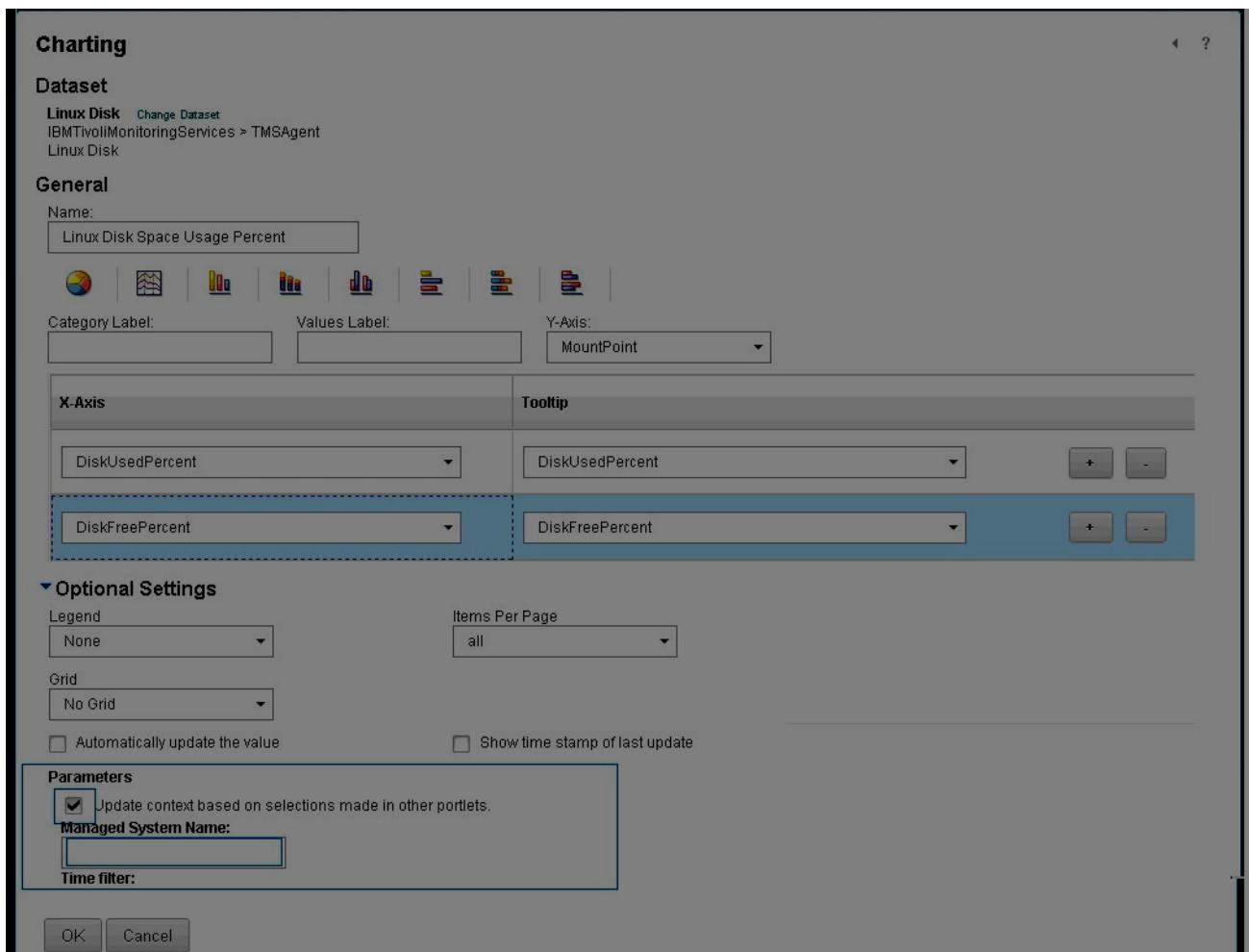
Linux Disk

Provider: TEMS_nc050044 > Datasource: Linux OS

- Linux Disk >
- KLZ_Disk >
- Linux Disk (Superseded) >
- Linux_Disk >
- Linux Disk IO >
- KLZ_Disk_IO >
- Linux Disk IO (Superseded) >
- Linux_Disk_IO >
- Linux Disk Usage Trends >
- KLZ_Disk_Usage_Trends >
- Linux Disk Usage Trends (Superseded) >
- Linux_Disk_Usage_Trends >

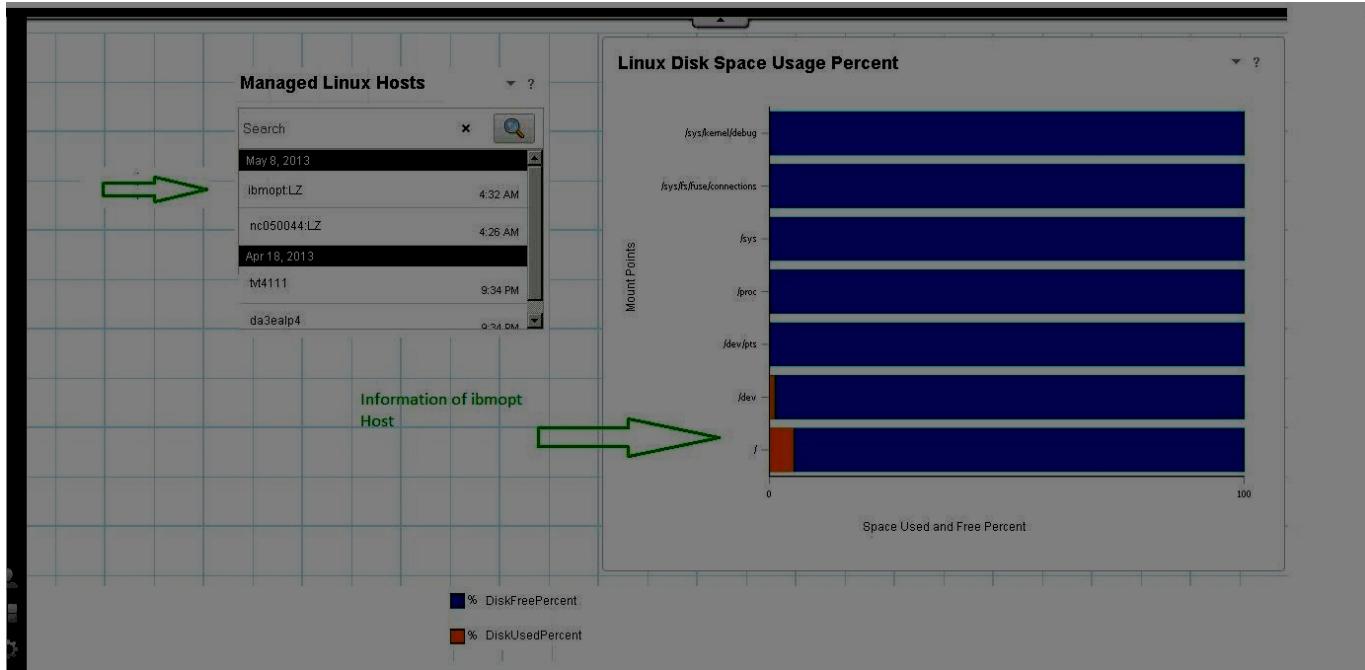
- Fill in the Charting panel with the following information:
- Enter a **Name** for the widget such as “Linux Disk Space Usage Percent”
- For the **Y-axis** value: select the “MountPoint” property from the Linux Disk dataset.
- For the values to represent on **X-axis**: select the following properties from the Linux Disk dataset to show the disk space used and free percentages: DiskUsedPercent DiskFreePercent
- **Managed System Name**: this value can be set in the following ways:
 - Enter the name of a specific agent (for example nc050044:LZ) to display the disk space usage values of that single specific agent
 - Enter the name of an ITM managed system group such as “*LINUX_SYSTEM”. In this case, the disk usage is displayed for all Linux managed systems in the group.

- Leave the **Managed System Name** field empty and check the option “**Update context based on selections made in other portlets**” to contextualize the information between widgets. In this example, this option is used so that metrics are shown in this widget every time a managed system is selected in the list widget on the same page. See the “Create connections between widgets on a page” section in this page for more details on how to pass the managed system name from one widget to another.

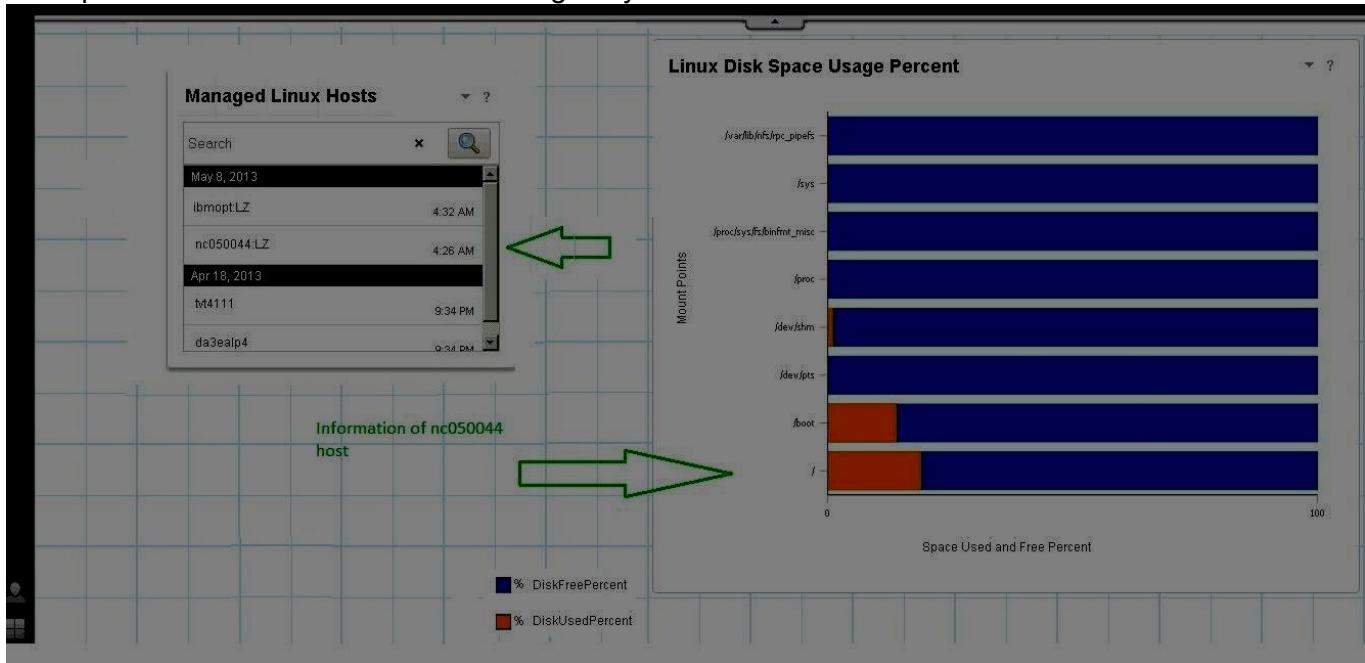


When you click OK, the bar chart displays the disk space usage for each mount point.

After clicking on the entry for the ibmopt:LZ managed system name in the “Managed Linux Hosts” list widget, the disk space usage percent for each mount point monitored by that managed system is shown in the bar chart as in the picture below:



When a user clicks on “nc050044:LZ” in the Managed Linux Hosts widget, the disk space usage in the bar chart is updated to show data from that managed system as shown below:

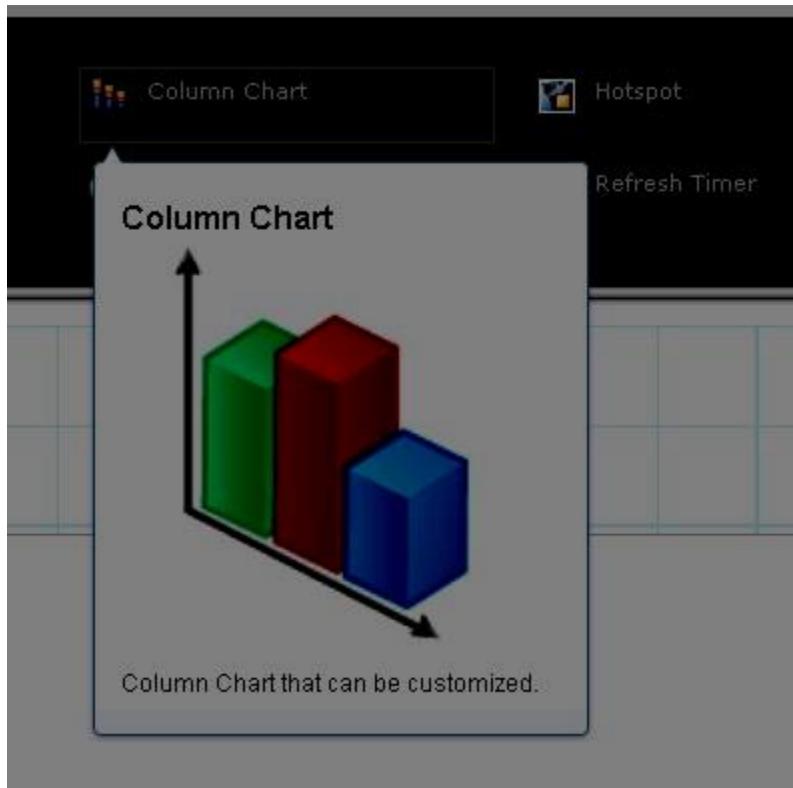


Column chart widget

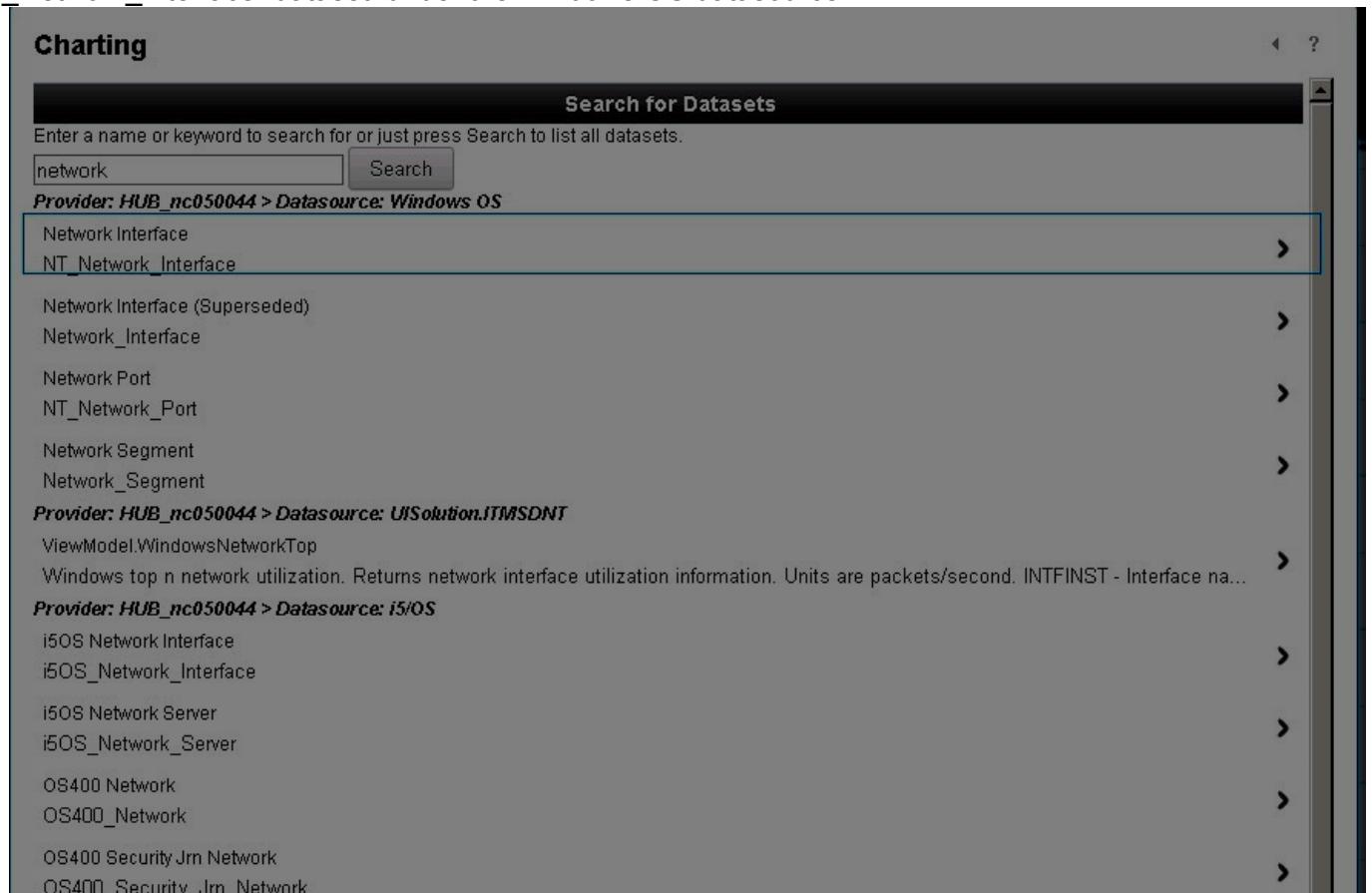
In this section, we describe how to create a column chart and map it to a monitoring agent dataset. The column chart in this example shows the packet rates for the network interfaces monitored by a Windows OS agent.

To create a page with a column chart, perform this procedure:

- Create a page as described in “[Creating a page](#)” section in this paper or edit an existing page as described in the “Edit an existing page” section in this paper.
- Drag and drop the column chart widget onto the page as shown in the following picture:



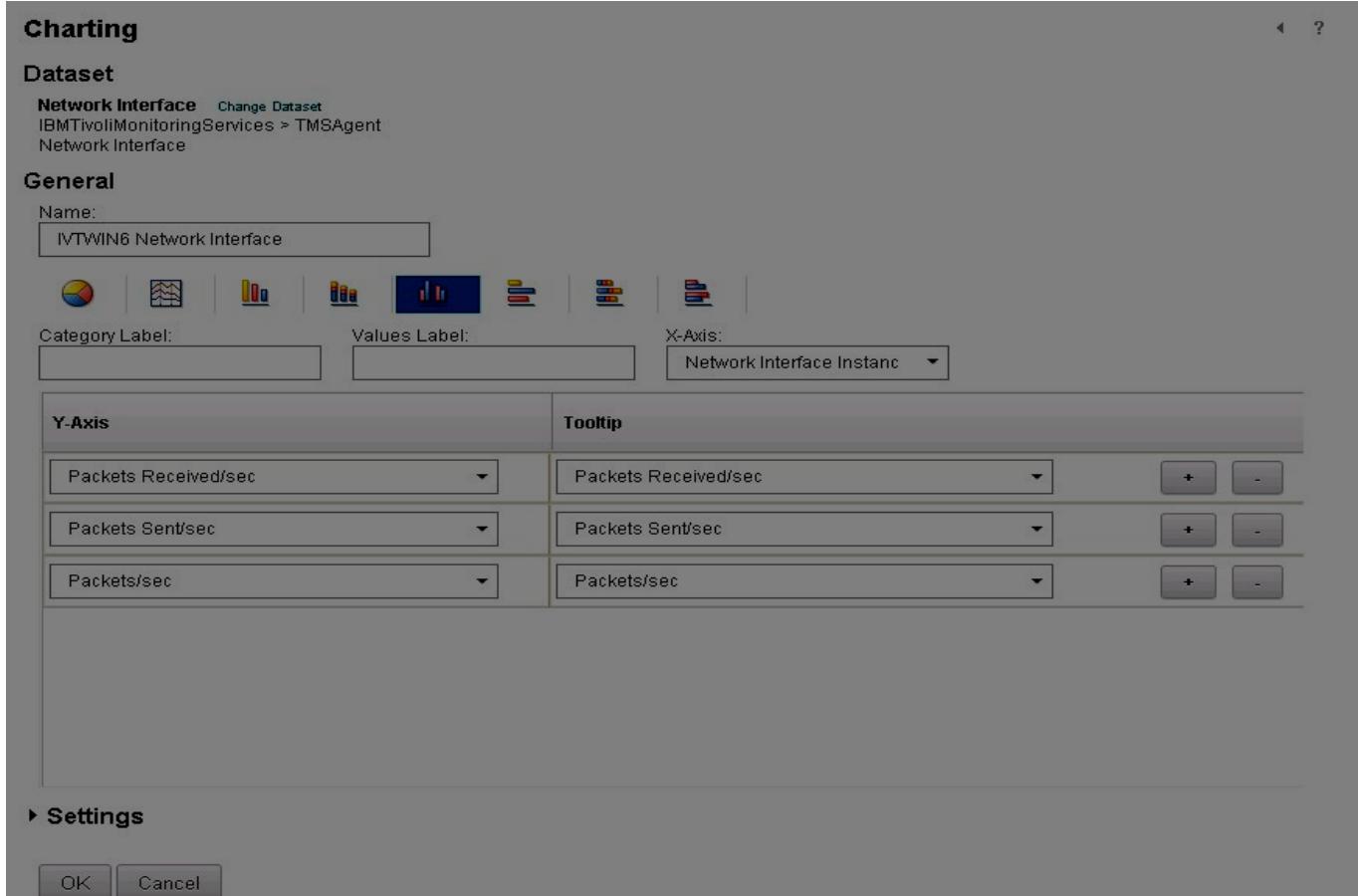
- Search for datasets containing the word “network” and select the “Network Interface - NT_Network_Interface” dataset under the Windows OS datasource:



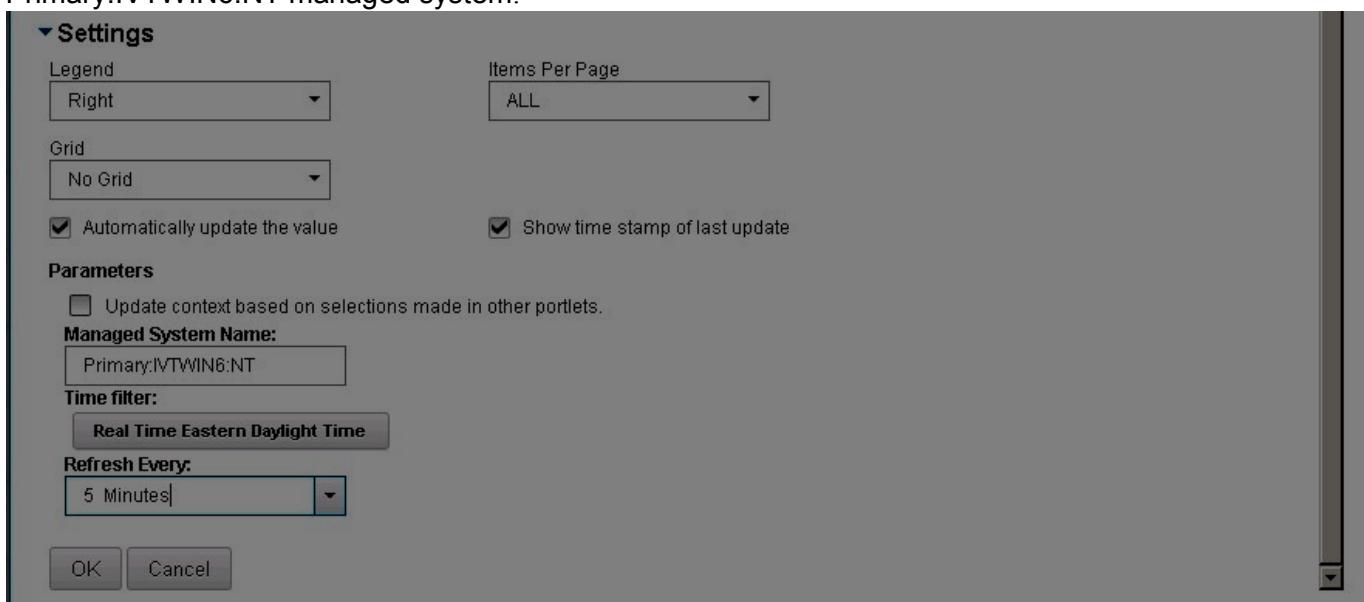
Fill in the Charting panel with the following information:

- Enter a name for the widget, for example “IVTWIN6 Network Interface”
- For the **X-Axis** value, select the “Network Interface Instance” property from the Network Interface dataset.

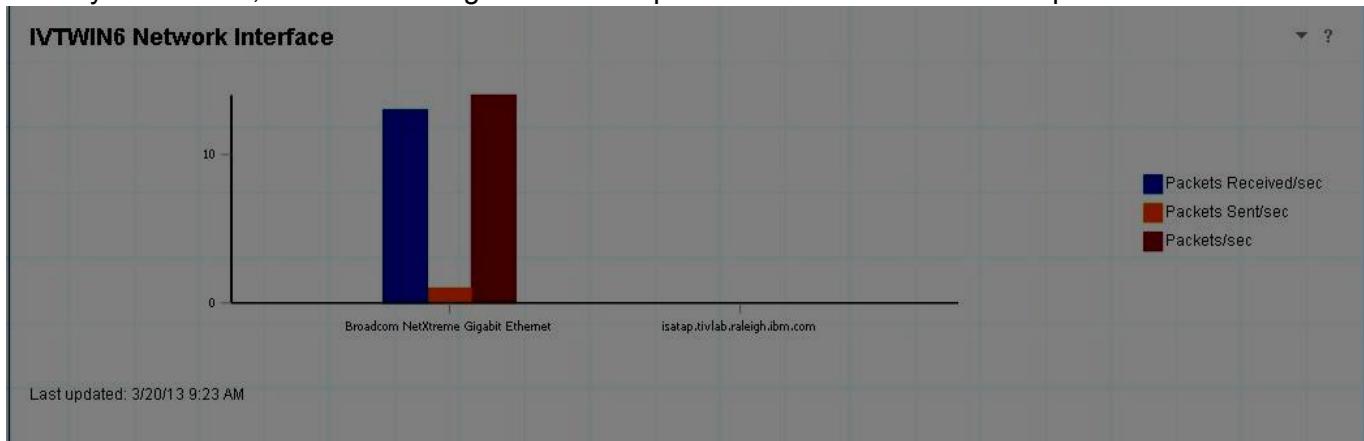
- For the **Y-Axis** values, select the following properties from the Network Interface dataset:
 - Packets Received /sec
 - Packets Sent /sec
 - Packets /sec



Also specify values for the settings shown below. In this example, the column chart shows data from the Primary:IVTWIN6:NT managed system.



When you click OK, the column widget shows the packet rate similar to the example below:



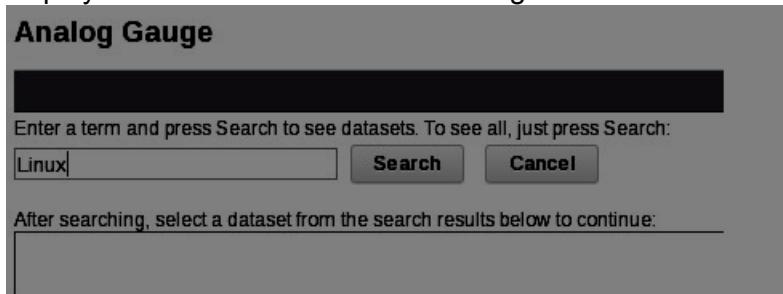
Gauge widgets

Each of the gauge widgets is configured in a similar manner although there is some customization that is unique to each gauge. The following steps detail how to create a page with an analog gauge widget but most of these steps will apply to the other gauge widgets as well:

1. Create a new page or edit a current page.
2. Drag and drop the analog gauge widget from the toolbar onto the page.
3. Configure the widget by selecting the down arrow and selecting the Edit option.



- 4 In the dataset selection panel, select a dataset for a monitoring agent in your environment. For example, filter the list of datasets by entering "Linux" in the search field and click on the Search button to display the datasets for the Linux OS agent.



5. Select a dataset such as “Linux Disk – KLZ_Disk” or “Linux CPU – KLZ_CPU”

Analog Gauge

Select a Dataset

Linux Cancel

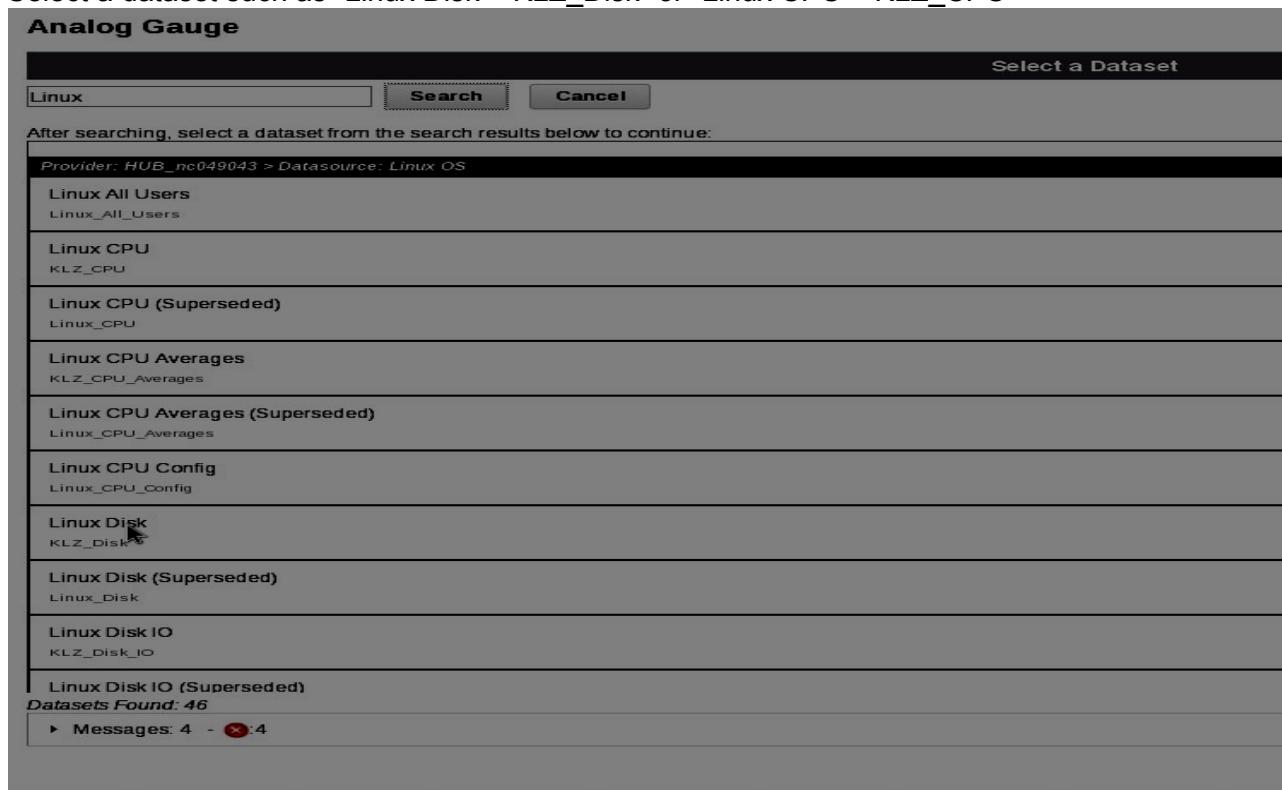
After searching, select a dataset from the search results below to continue:

Provider: HUB_nc049043 > Datasource: Linux OS

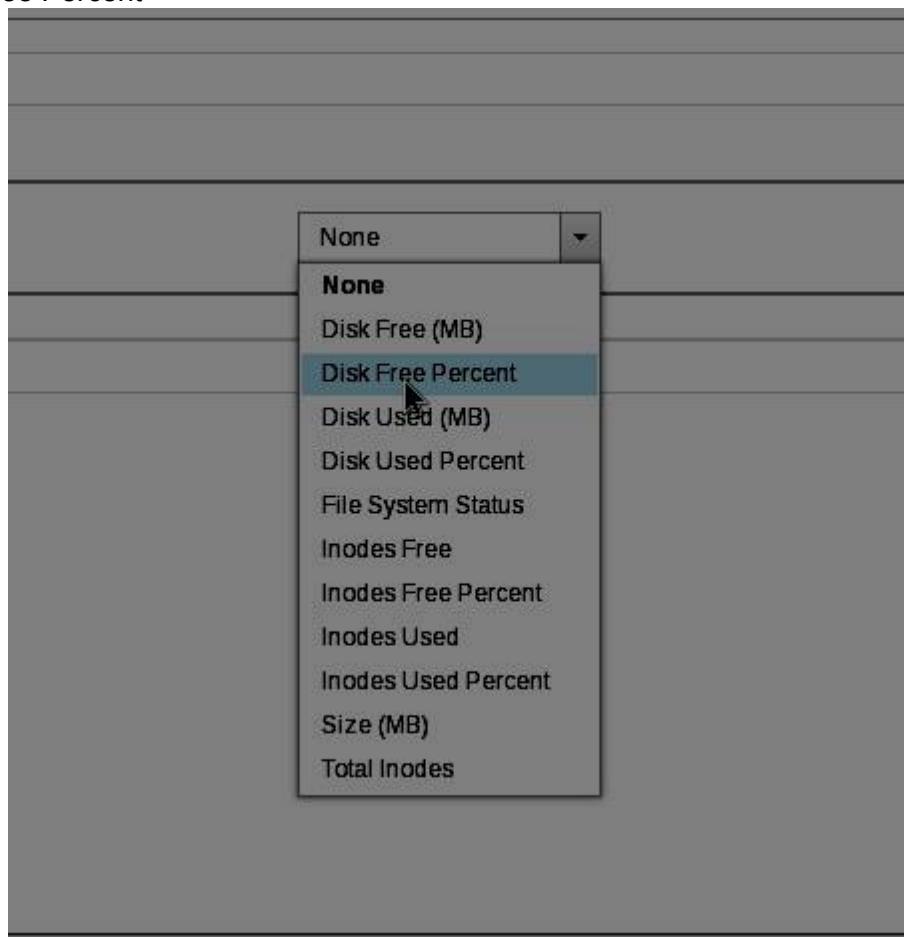
Linux All Users Linux_All_Users
Linux CPU KLZ_CPU
Linux CPU (Superseded) Linux_CPU
Linux CPU Averages KLZ_CPU_Averages
Linux CPU Averages (Superseded) Linux_CPU_Averages
Linux CPU Config Linux_CPU_Config
Linux Disk KLZ_Disk
Linux Disk (Superseded) Linux_Disk
Linux Disk IO KLZ_Disk_IO
Linux Disk IO (Superseded)

Datasets Found: 46

► Messages: 4 - 4



6. In the value drop down list, select the property from the dataset that you want to display in the gauge, for example 'Disk Free Percent'



7. Under Visualization Options, add any optional visual settings such as the color to use for a range of values, the minimum and maximum values, the unit, etc.

The screenshot shows a configuration interface for a gauge visualization. It includes sections for threshold values (Normal, Minor, Major, Critical, Fatal), a 'Show Threshold Strip' checkbox, and numerical input fields for Minimum Value (0), Maximum Value (100), Major Ticks Separation (20), Minor Ticks Separation (5), and Unit (MB). Below this is a section titled 'Configure Optional Dataset Parameters' which contains a 'Managed System Name' field set to 'nc049043:LZ'. There are also dropdowns for 'Time filter' and other parameters like 'Disk Name', 'Mount Point', and 'Refresh Every' (set to '60 Seconds').

<input checked="" type="checkbox"/> Normal	Threshold value indicating start of Normal Status	20
<input type="checkbox"/> Minor	Threshold value indicating start of Minor Warning Status	40
<input type="checkbox"/> Major	Threshold value indicating start of Major Warning Status	60
<input type="checkbox"/> Critical	Threshold value indicating start of Critical Status	80
<input type="checkbox"/> Fatal	Threshold value indicating start of Fatal Status	100
Show Threshold Strip		<input checked="" type="checkbox"/>
Disabling this won't show the thresholds range on gauge		
Minimum Value	Minimum Value that the gauge can represent	0
Maximum Value	Maximum Value that the gauge can represent	100
Major Ticks Separation	Distance between each major tick(major graduations) on the gauge	20
Minor Ticks Separation	Distance between each minor tick(minor graduations) on the gauge	5
Unit	Enter a metric for the gauge	MB

Configure Optional Dataset Parameters:

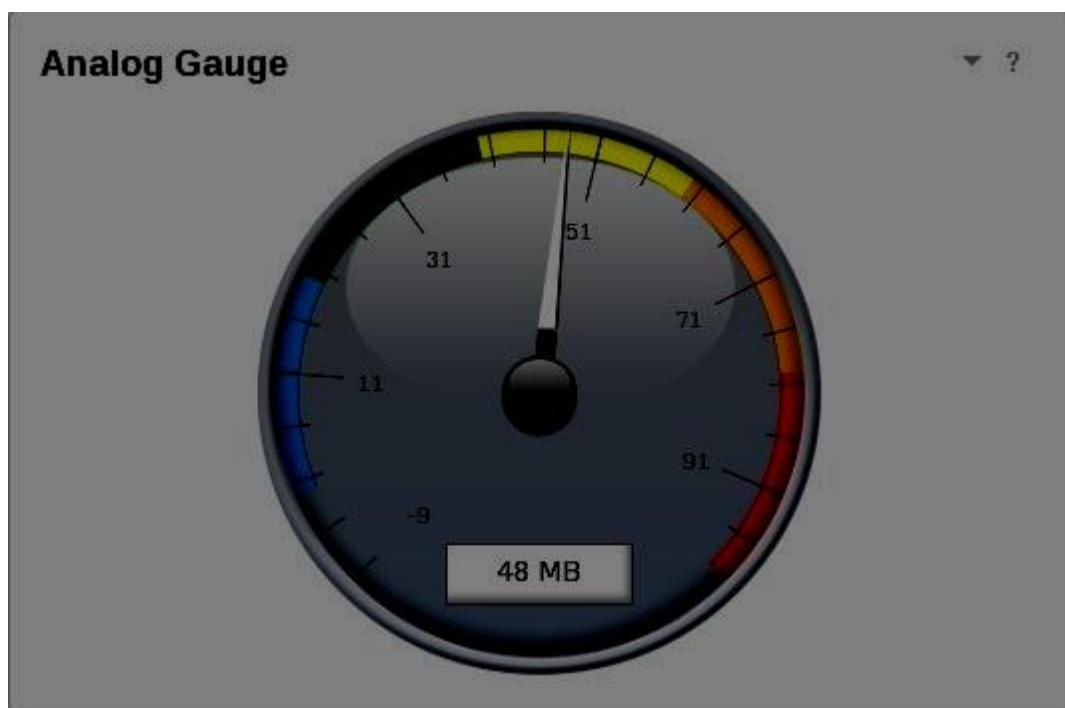
Managed System Name	nc049043:LZ
Time filter	
Disk Name	
Mount Point	
Refresh Every	60 Seconds

8. Under Optional Dataset Parameters, you MUST specify the Managed System Name of the system from which you want to display the disk free percent metric.

This screenshot shows the 'Configure Optional Dataset Parameters' section again. The 'Managed System Name' field is now explicitly filled with the value 'nc049043:LZ'. The other fields in this section (Time filter, Disk Name, Mount Point, Refresh Every) are either empty or have their default values displayed.

Managed System Name	nc049043:LZ
Time filter	
Disk Name	
Mount Point	
Refresh Every	60 Seconds

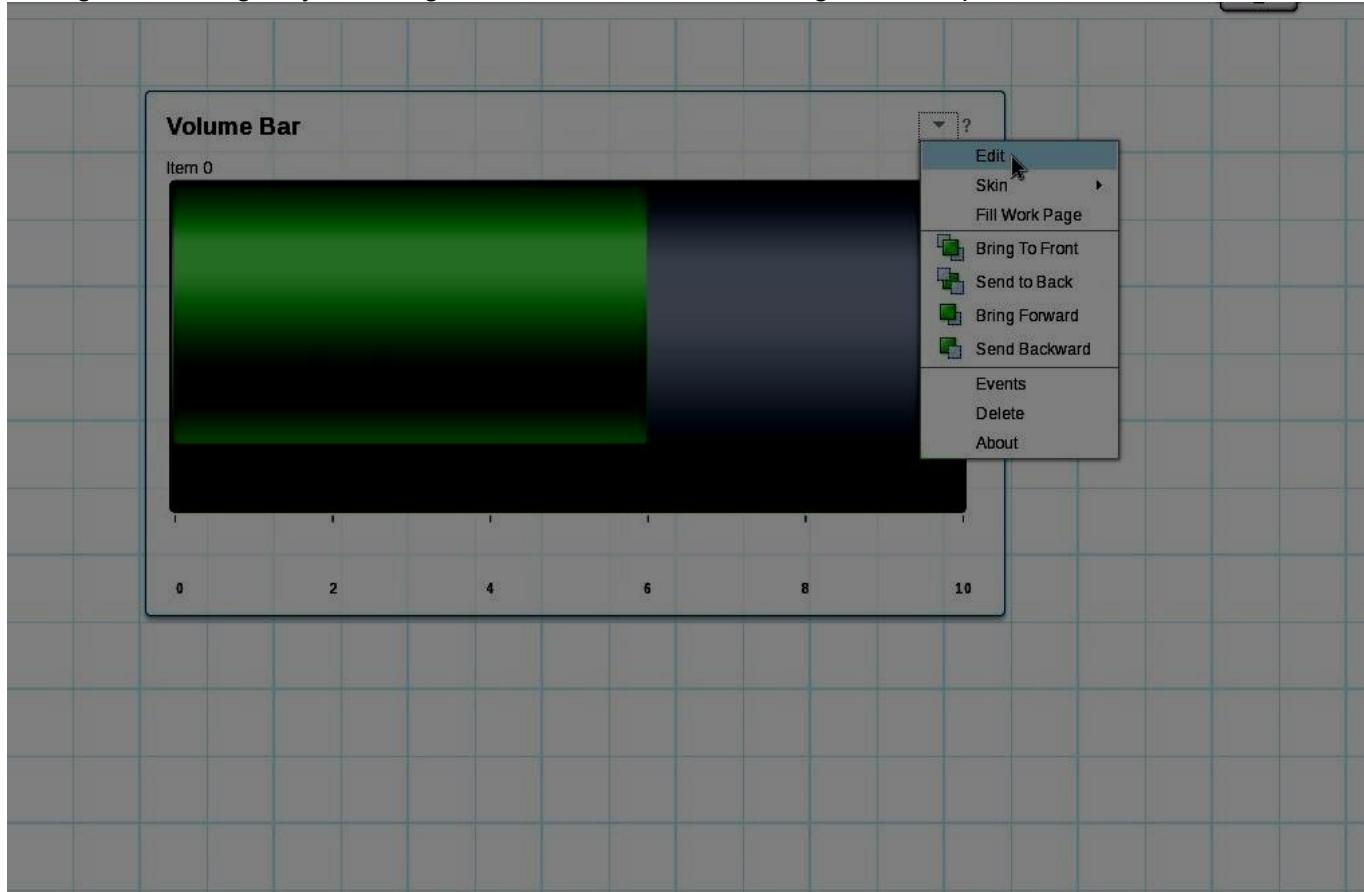
9. Click OK and then save the page with the configured widgets. 10.
11. View your new page and verify the data shown is accurate when compared to the data in the Tivoli Enterprise Portal.



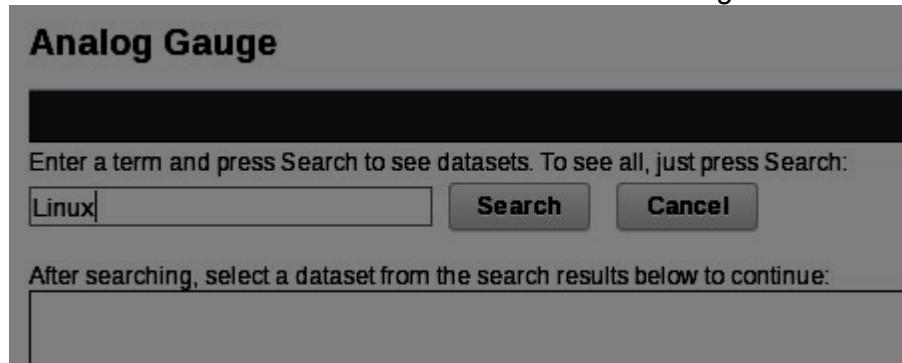
Volume bar widget

Follow the steps below to create a page with a volume bar widget:

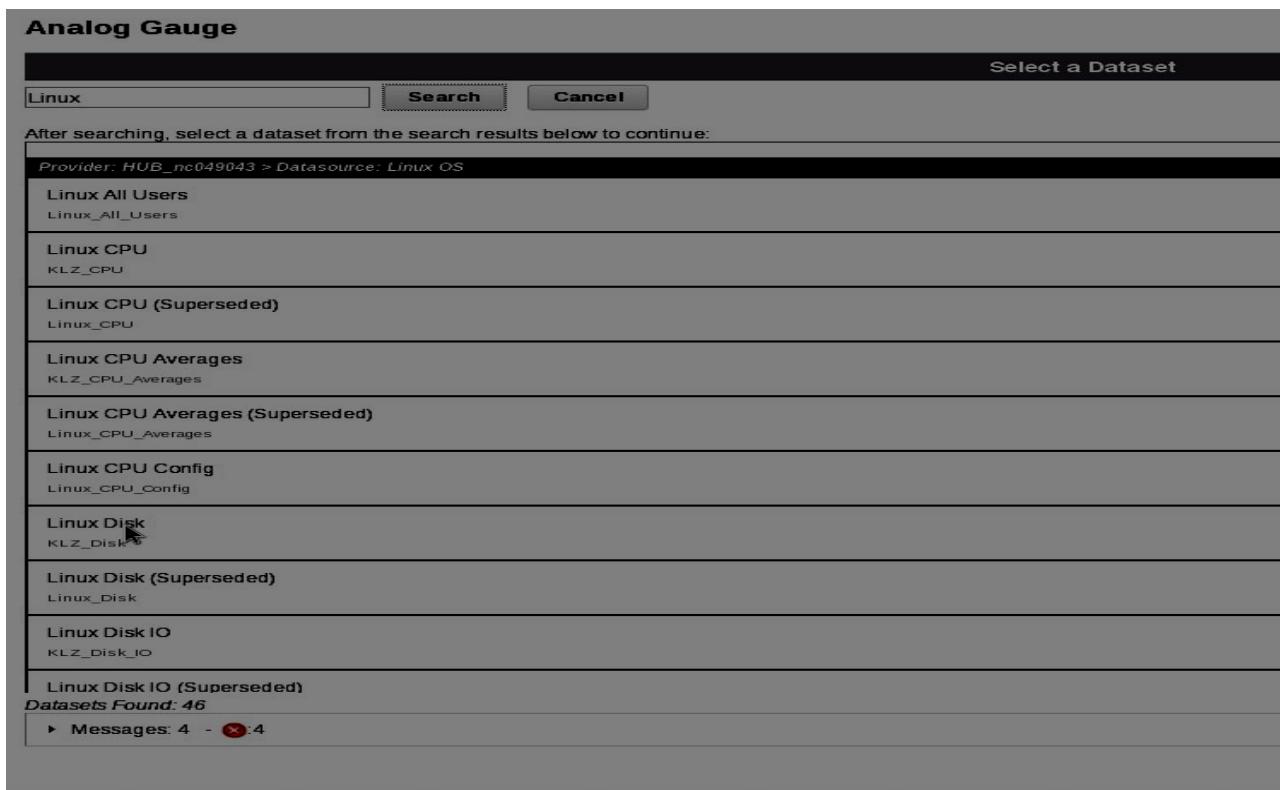
1. Create a new page or edit a current page
2. Drag and drop the volume bar widget from the toolbar onto the page.
3. Configure the widget by selecting the down arrow and selecting the Edit option.



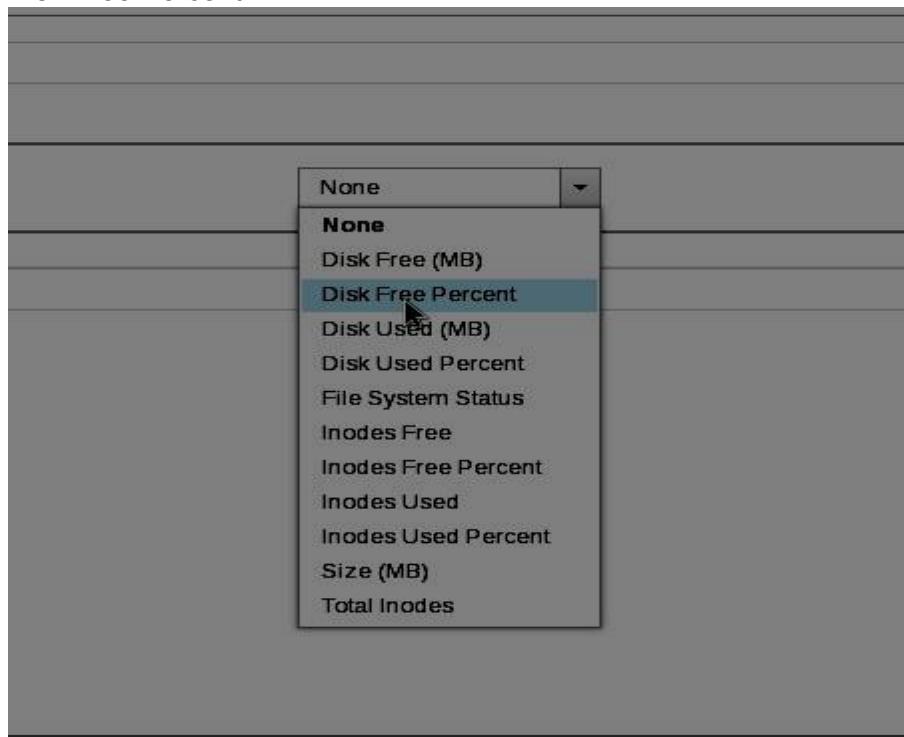
4. Select a dataset for a monitoring agent in your environment. Filter the list of datasets by entering "Linux" and clicking on the Search button to find the datasets for the Linux OS agent.



5. Select a dataset such as 'Linux Disk – KLZ_Disk' or 'Linux CPU – KLZ_CPU'



6. In the value drop down list, select the property from the dataset that you want to display in the volume bar, for example 'Disk Free Percent'



7. Under Visualization Options, add any optional visual settings such as the colors to use for a range of values, the minimum and maximum values, the unit, etc.

The screenshot shows a configuration page for a gauge. It includes sections for threshold values (Normal, Minor, Major, Critical, Fatal), a 'Show Threshold Strip' checkbox, and input fields for Minimum Value (0), Maximum Value (100), Major Ticks Separation (20), Minor Ticks Separation (5), and Unit (MB). Below this is a section titled 'Configure Optional Dataset Parameters' with a 'Managed System Name' field containing 'nc049043:LZ'.

<input checked="" type="checkbox"/> Normal	Threshold value indicating start of Normal Status	20
<input type="checkbox"/> Minor	Threshold value indicating start of Minor Warning Status	40
<input type="checkbox"/> Major	Threshold value indicating start of Major Warning Status	60
<input type="checkbox"/> Critical	Threshold value indicating start of Critical Status	80
<input type="checkbox"/> Fatal	Threshold value indicating start of Fatal Status	100
Show Threshold Strip <small>Disabling this won't show the thresholds range on gauge</small>		<input checked="" type="checkbox"/>
Minimum Value <small>Minimum Value that the gauge can represent</small>	0	<input type="button" value="▼"/>
Maximum Value <small>Maximum Value that the gauge can represent</small>	100	<input type="button" value="▼"/>
Major Ticks Separation <small>Distance between each major tick(major graduations) on the gauge</small>	20	<input type="button" value="▼"/>
Minor Ticks Separation <small>Distance between each minor tick(minor graduations) on the gauge</small>	5	<input type="button" value="▼"/>
Unit <small>Enter a metric for the gauge</small>	MB	<input type="button" value="▼"/>
Configure Optional Dataset Parameters:		
Managed System Name <small>Managed System Name</small>	nc049043:LZ	

8. Under the Optional Dataset Parameters you MUST specify the managed system name of the agent from which you wish to display the disk free percent metric.

The screenshot shows the 'Configure Optional Dataset Parameters' page with fields for Managed System Name (nc049043:LZ), Time filter (two dropdown menus), Disk Name (empty), Mount Point (empty), and Refresh Every (set to 60 Seconds).

Managed System Name <small>Managed System Name</small>	nc049043:LZ	
Time filter <small>Time filter</small>	<input type="button" value="▼"/>	<input type="button" value="▼"/>
Disk Name		
Mount Point		
Refresh Every	60 Seconds	<input type="button" value="▼"/>

9. Click OK and then save the page with the configured widgets.

10. View your new page and verify the data shown is accurate when compared to the data in the Tivoli Enterprise Portal.

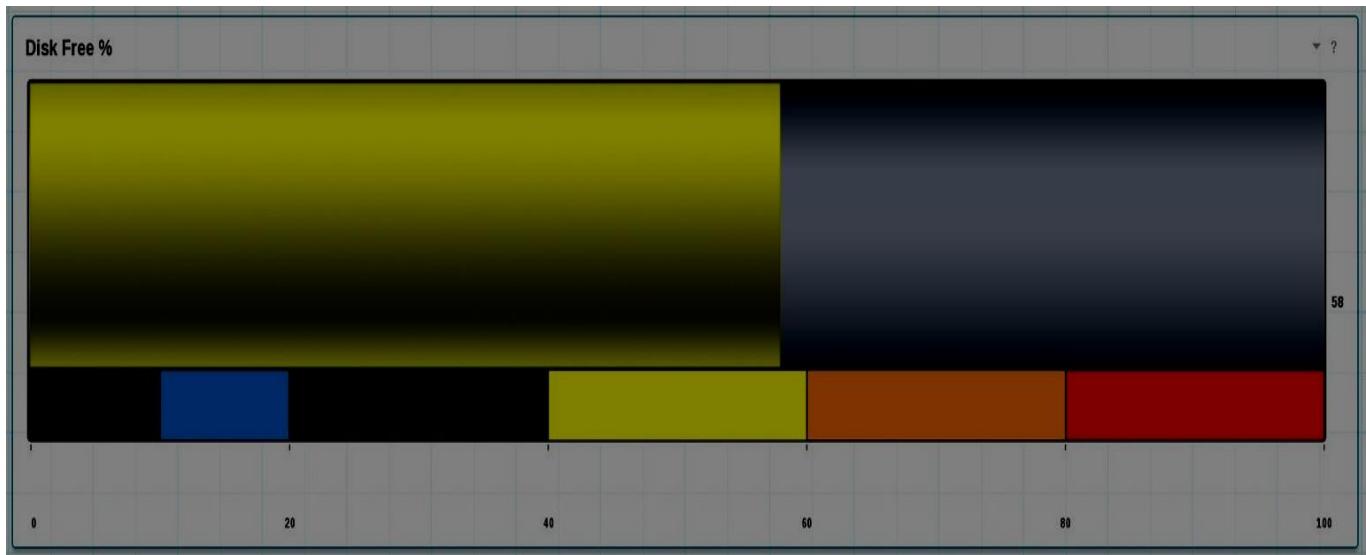
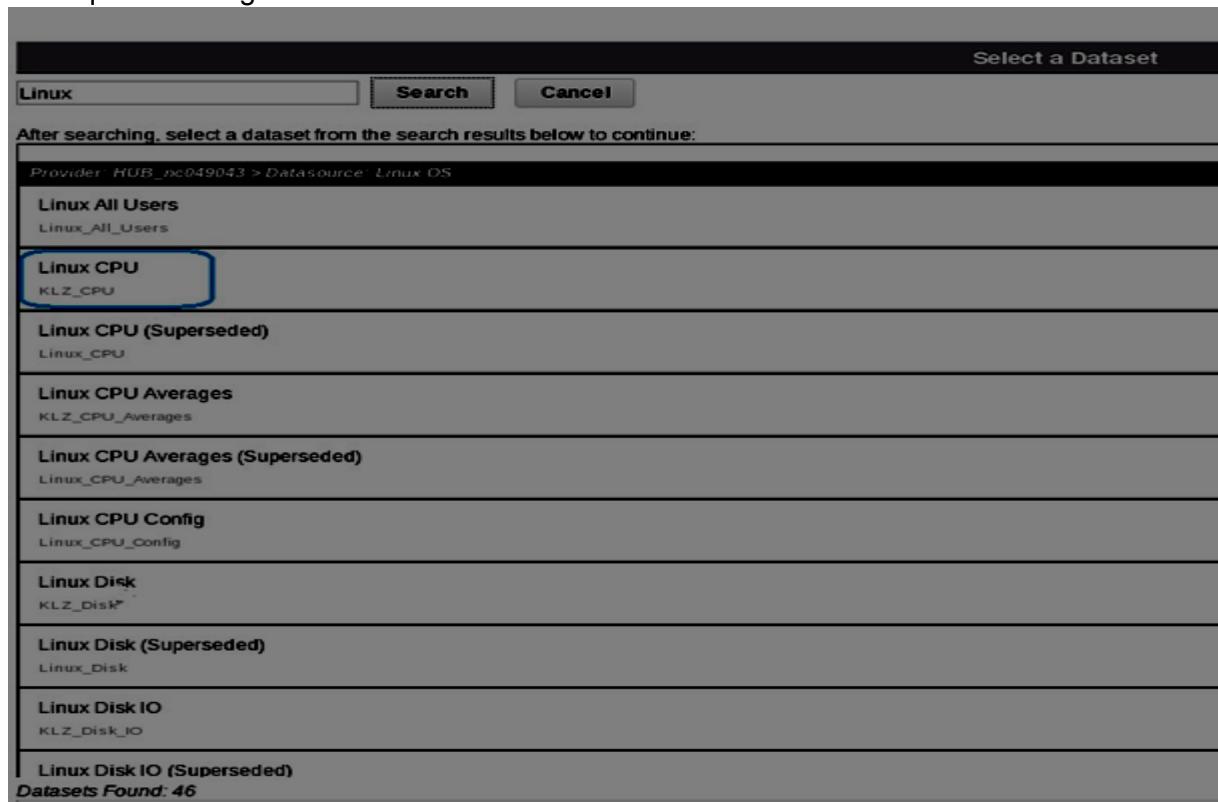


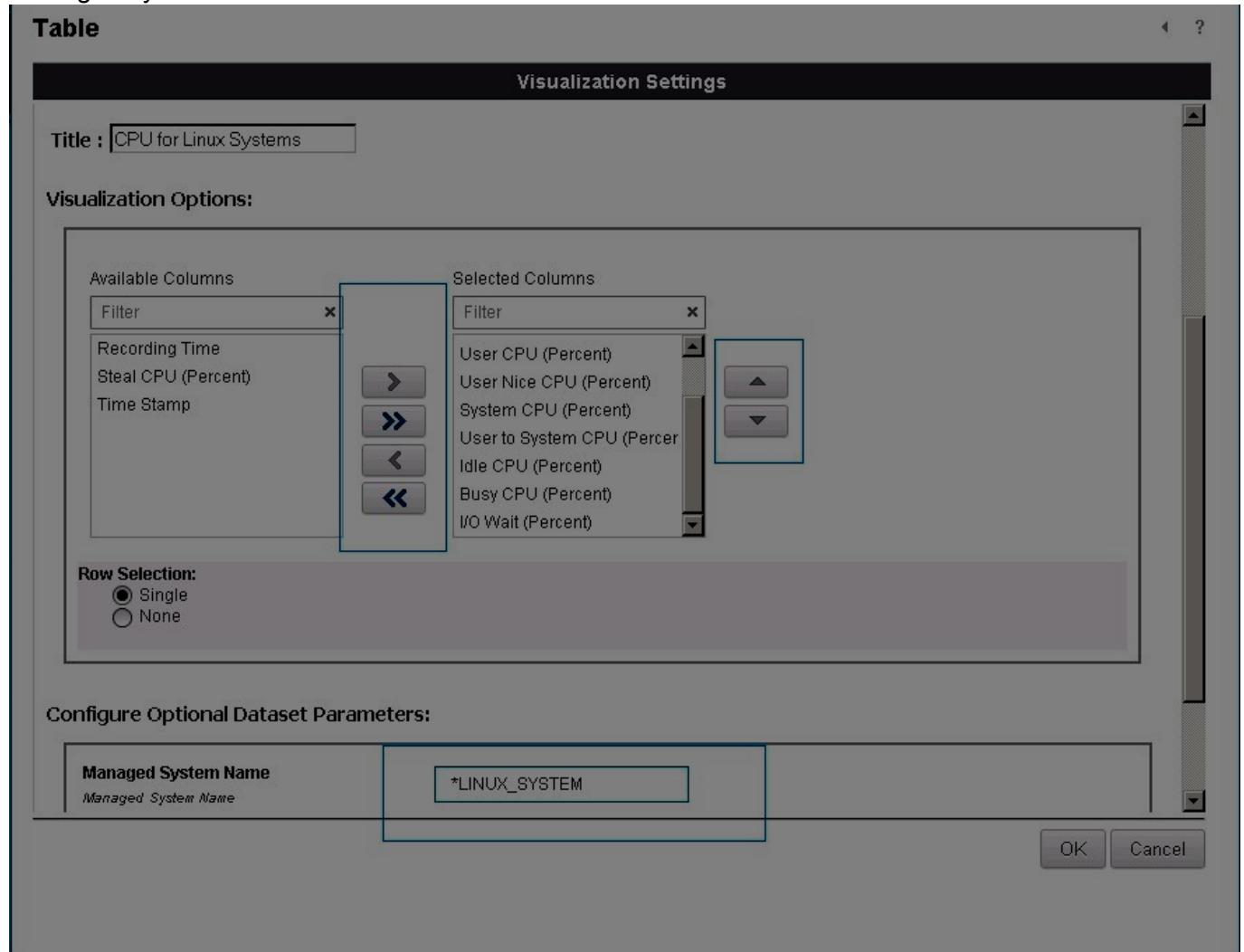
Table widget

Follow the steps below to create a page with a simple table widget:

1. Create a new page or edit a current page
2. Drag and drop the table widget from the toolbar onto the page
3. Configure the widget by selecting the down arrow and selecting the Edit option.
4. Select a dataset for a monitoring agent in your environment. Filter the list of datasets by entering "Linux" and clicking on the Search button to find the datasets for the Linux OS agent.
5. Select a dataset, for example "Linux CPU – KLZ_CPU"
6. No required setting is needed



7. Under the optional settings category, you can choose:
- A title for the table
 - The columns that you want to see in the table and the order in which they should be displayed. Each column maps to a property in the dataset.
 - The managed system name. You can enter a specific managed system name or you can specify a managed system group name as shown in the picture below in order to display data from multiple managed systems.



8. The picture below shows an example of the table widget display:

CPU for Linux Systems								
System Name	CPU ID	User CPU (Percent)	User Nice CPU (Percent)	System CPU (Percent)	User to System CPU (Percent)	Idle CPU (Percent)	Busy CPU (Percent)	I/O Wait (Percent)
ibmopt:LZ	Aggregate	0%	0%	0%	3%	100%	0%	
ibmopt:LZ	0	0%	0%	0%	0%	99%	1%	
		Busy CPU (Percent): 1%	CPU ID: 0	I/O Wait (Percent): 0%				
linux15:LZ	0	1%	0%	0%	3%	98%	2%	
nc048236:LZ	Aggregate	2%	0%	1%	2%	98%	2%	
nc048236:LZ	0	2%	0%	1%	2%	98%	2%	
nc050044:LZ	Aggregate	1%	0%	0%	2%	98%	1%	
nc050044:LZ	0	1%	0%	0%	4%	98%	2%	

9. A filter function is available to filter for a value in any column or in a specific column as shown in the example below:

The screenshot shows a "CPU for Linux Systems" dashboard with a table of system performance data. A "Filter" dialog box is open over the table. The dialog has a "Match all rules" dropdown set to "all rules". Under "Rule 1", the "Column" dropdown is set to "Any Column", and the "Condition" dropdown is also set to "Any Column". The "Value" dropdown is set to "System Name". This configuration allows filtering across all columns.

System Name	CPU ID	User CPU (Percent)	Busy CPU (Percent)	I/O Wait (Percent)
ibmoptLZ	Aggregate	0%	0%	
ibmoptLZ	0	0%	1%	
ibmoptLZ	1	0%	0%	
linux115LZ	Aggregate	1%	2%	
linux115LZ	0	1%	2%	
nc048236LZ	Aggregate	2%	2%	
nc048236LZ	0	2%	2%	
nc050044LZ	Aggregate	1%	1%	

The screenshot shows the same dashboard and filter dialog. The "Value" dropdown in the filter dialog is now set to "nc05". This specific filter will only show rows where the "System Name" column contains the string "nc05".

System Name	CPU ID	User CPU (Percent)	Busy CPU (Percent)	I/O Wait (Percent)
ibmoptLZ	Aggregate	0%	0%	
ibmoptLZ	0	0%	1%	
ibmoptLZ	1	0%	0%	
linux115LZ	Aggregate	1%	2%	
linux115LZ	0	1%	2%	
nc048236LZ	Aggregate	2%	2%	
nc048236LZ	0	2%	2%	
nc050044LZ	Aggregate	1%	1%	

The example below shows the result after filtering the table to show the rows whose System Name column contains the string "nc05" :

CPU for Linux Systems

Actions ▾ Filter X

3 of 3 items shown. Clear filter

System Name	CPU ID	User CPU (Percent)	User Nice CPU (Percent)	System CPU (Percent)	User to System CPU (Percent)	Idle CPU (Percent)	Busy CPU (Percent)	I/O Wait (Percent)
nc050044:LZ	Aggregate	0%	0%	0%	1%	100%	0%	
nc050044:LZ	0	0%	0%	0%	0%	100%	0%	
nc050044:LZ	1	0%	0%	0%	1%	100%	0%	