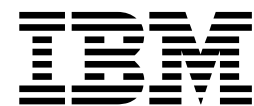




Customer and Network Analytics 9.3. User Guide



Customer and Network Analytics 9.3. User Guide

Note

Before using this information and the product it supports, read the information in “Notices” on page 83.

Edition Notice

This edition applies to Version 9 Release 3 of Customer & Network Analytics (product number 5725-Q80) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Chapter 1. Overview

Intended Audience

Customer & Network Analytics Users.

Related Documents

Document	Description
Customer & Network Analytics Administrator Guide	Customer & Network Analytics 9.2. Administrator Guide: System configuration and trouble shooting guide

Glossary

Acronyms and abbreviations that are used within this document are described in the following table.

Abbreviation	Description
GUI	Graphical User Interface
CEM	Customer Experience Management
GPRS	General Packet Radio Service
UMTS	Universal Mobile Telecommunications System
Gn	GPRS Node. IP Based interface between SGSN and other SGSNs and (internal) GGSNs
ISP	Internet Service Provider
LTE S1U - S11	Long Term Evolution - IP-based Interfaces between MME, SGW, and PGW.

Hotkey Features

Table 1. Summary Hotkeys

Navigation	Hotkey
Module > HOME	Ctrl + 1
Module > DSM	Ctrl + 2
Module > AM	Ctrl + 3
Module > NA	Ctrl + 4

Table 2. Managing Workspaces Hotkeys

Navigation	Hotkey
Workspace > New workspace	Ctrl + T
Workspace > Close current workspace	Ctrl + W

Table 2. Managing Workspaces Hotkeys (continued)

Navigation	Hotkey
Workspace > Cycle through opened workspaces	Ctrl + PageUp
Workspace > Cycle through opened workspaces	Ctrl + PageDown
Workspace > lock/unlock	Ctrl + L
Workspace > Rename	Ctrl + R
Workspace > Open workspace settings context menu	Ctrl + Alt + W
Workspace > Refresh	Ctrl + Alt + F5
Workspace > Open workspace	Ctrl + O
Workspace > Save as	Shift + Ctrl + S

Table 3. Managing Reports Hotkeys

Navigation	Hotkeys
Report > New report	Ctrl + N
Report > Cycle through reports	Ctrl + TAB
Report > Open report settings context menu	Alt + R
Report > Remove	Del

Table 4. Managing Alarms Hotkeys

Navigation	Hotkeys
AM > View Profile	Ctrl + Alt + V: Navigate the list of data records using Arrow Keys
AM > Open Profiles Dialog ("Manage profiles...")	Ctrl + M
AM > Details	Ctrl + D

Table 5. Network Analyzer Hotkeys

Navigation	Hotkeys
NA > View Data Record	Ctrl + D Navigate the list of data records via Arrow Key.
NA > Copy Record to Clipboard	Ctrl + C Navigate the list of data records via Arrow Key.
NA > CFA Search results > "i" parameters icon	Ctrl + I
NA > CFA Search results > Back to Parameters button	Ctrl + backspace
NA > CFA> scroll Up/Down	PageUp & PageDown

Table 6. Managing Settings Hotkeys

Navigation	Hotkeys
App settings > Change Account Settings	Ctrl + Shift + A
App settings > Account Management	Ctrl + Shift + M

Table 6. Managing Settings Hotkeys (continued)

Navigation	Hotkeys
App settings > Groups Management	Ctrl + Shift + G
App settings > Login and Logout Policies	Ctrl + Shift + P
App settings > Security Widget	Ctrl + Shift + E

Executive Summary

This document is intended to provide a guide to end-users of the Customer & Network Analytics application. It serves to provide a guide and reference to the correct use of the application's Graphic User Interface (GUI).

Note that this document does **not** cover the underlying processes, or the hardware upon which the application runs.

What is Customer & Network Analytics?

Customer & Network Analytics is an analytical software tool that is designed to provide operators with the information required to enable efficient planning, management, and optimization of data services. It provides real-time performance and quality of service information for data services - combining Control and User Plane information for instant visibility of network utilization and performance.

Customer & Network Analytics is built on a passive probing solution, which can be deployed on any IP-based network interface without impacting the traffic within the network.

High-Level Functionality

Customer & Network Analytics can be characterized by the following key aspects:

24x7 operating mode

- Storing and indexing raw packet data (X TB Storage Capacity)
- Real-time generation of metrics and KPIs from TDRs

Supporting Datasets

- Mobile Data

Mobile Data User Plane KPIs are consolidated within a single dataset to make it easier to see subscriber's combined Customer Experience across 2G/3G (Gn) and 4G LTE.

- 2G / 3G Interface (Gn, Gp, IuPS, Gb)
- 4G LTE Interface (S11 / S1-U, S8, S1MME, S6a)
- Mobile Data Policy and Charging (Gx, Gy)

- RAN Dataset

This dataset provides RAN to Core visibility for the mobile network. Our RAN dataset contains KPIs such as radio measurements, radio setup and congestion indicators which provide visibility for network access and enrich the customer view of RAN conditions for all subscribers. The standardized RAN dataset requires an adapter to integrate with a third-party RAN data source.

- Voice & SMS
 - 2G / 3G Circuit-Switch (A and IuCS) Interface

- 4G VoLTE Voice (over S11 / S1-u)
- Fixed Broadband

Enhanced Dimension Grouping

Managing Dimension Groups enhance reporting, to analyze and visualize any shared performance indicator - for example on comparing Customer Experience Score per Region (based on geographical group of cells) or Device features like Radio Capability. Groups can be edited in the CNA GUI for all dimensions. Groups and Sub-Groups can be based on attributes values as provisioned (Attribute-based Groups) Groups can be created ad hoc based on formulas and list of values (Pattern-Based groups).

Metric Based Graphing

- Layer 3 (TCP/UDP) Level - Volume, Throughput, Round-Trip Times
- Application Level - Volumes, KPIs, Response Times
- Customers Level - Count and List

Complex Analysis of Multiple Dimensions

- Interface, Protocol, Application, APN, SGSN/GGSN, Cell, Device, LNS server, RADIUS server, and so on.

Multi-Level Drill Down Analysis

- Iterative breakdown of the highest entities for each metric
- Integrated Call Trace (Session Inspector)

Granular Time Bins

- Real-time and 5-minute granularity for monitoring and troubleshooting
- Hourly, Daily, Weekly, and monthly granularity for reporting
- The time shown in the GUI is the local time on the user's desktop.

Error Analysis

- Drill down capability to analyze specific protocol and application error codes

Advanced Application Detection

Refer to Sourceworks Supported Services related document for a full list of supported applications and services

KPI Alarming

- Define custom and extendible alarms that use any network metric
- Receive alarms triggered by integrated alarming system when any issue on the network or a group of customers requires attention

Subscriber Searchable

- Service manager dimensions & metrics, Smartviews and Customer manager are subscriber-searchable
- Search on CSID for fixed line data
- Search IMSO for 2G/3G and LTE data metrics

System Requirements (client)

Table 7. Client System Requirements

Platform	Version	Memory	Disk space
Intel 32-bit	Windows XP Professional/Vista/Windows 7/Windows 8 (latest Service Pack)	1G(2G)	98 mb (130 mb)

Supported Browsers

The Client computer requires Chrome 55 or later and Macromedia Flash 24.0 or later installed.

Chapter 2. Getting Started

Logging In

About this task

To log in, you need:

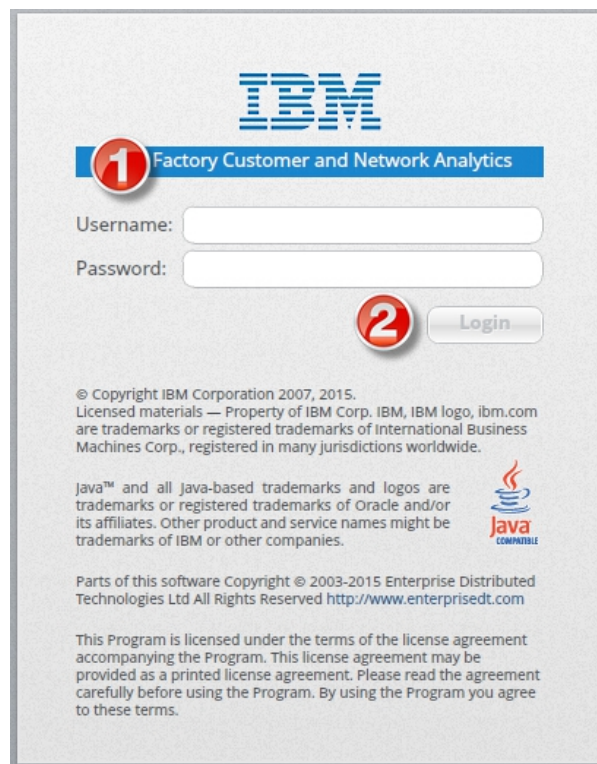
- The correct web address
- Username and password

Both can be obtained from your system administrator.

To log in:

Procedure

1. Enter your username and password
2. Click the **Login** button



On first login you are asked to immediately change your password:

3. Click **OK** on the warning message screen
4. Fill in the new password form and click **OK**

Home Screen

On first login, you see the home screen, which has a **Navigation Bar** and a **Quick Access Area**.

1. Use the **Navigation Bar** to access:

- a. Home - the homepage dashboard. This displays icons for workspaces, and can be configured to include work spaces and smart views you use frequently.
 - b. **Data Service Manager** - Customer & Network Analytics' main screen, from here you can manage and view reports, create, and view workspaces, and SmartViews
 - c. **Settings** - where you can change your password and administrator can manage user account and groups
 - d. **Log out**
 - e. **Home** - return to this home screen from anywhere in the application
2. Use the **Quick Access Area** to access shortcuts to SmartViews or the different managers

*Note: The shortcuts available in the **Quick Access Area** are configurable and change from one implementation to another based on the customer's preferences and are changed by IBM Now Factory's professional services team.*



Configuring the Home Screen

Configuring the home screen dashboard in Customer & Network Analytics

About this task

This gives you the option of configuring the home screen dashboard to include and exclude icons for predefined and shared smart views. The selected icons are retained as the default view between logged-in sessions. The available predefined and shared smart views are dependent on your installation of Customer Network Analytics.

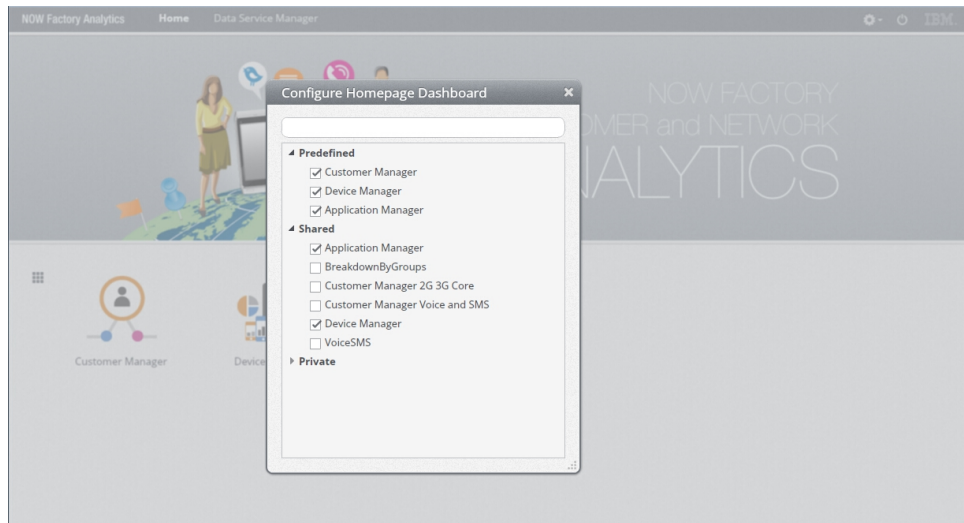
Procedure

1. Select the **Home** button in the navigation bar. This displays the home screen.
2. Select the *Configure Homepage Dashboard*



icon.

3. Select checkboxes for the required preconfigured and custom smart views and workspaces.



Results

Icons for the required workspaces and smart views are displayed on the home screen.

Shared Views

Customer & Network Analytics is packaged with **SmartViews** and **dashboards** which are pre-configured workspaces designed to answer customer requirements, built around one dimension type, these are also Shared Views as they are shared among users.

Working with Shared Views

Views can be private or shared.

- SmartViews have a dimensions sfilter, but dashboards do not
- A single SmartView can contain multiple dashboards
- Dashboards have auto-refresh enabled


Sharing a Workspace

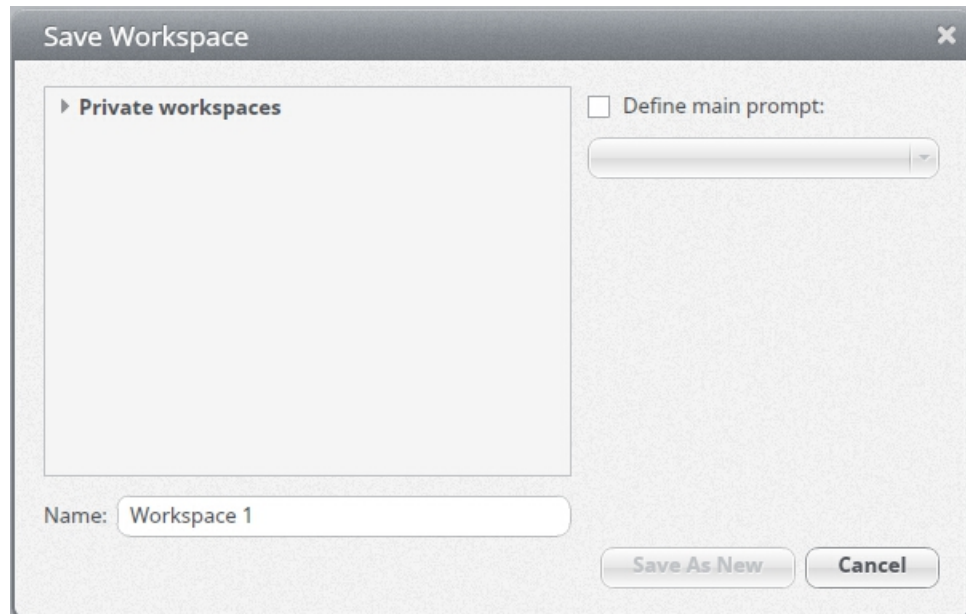
About this task

When you have set up a workspace, added and configured portlets, you can share the workspace as a SmartView by saving it to the **Public Workspaces**.

- **Public workspaces** - space where shared views are saved as dashboards or SmartViews. Customer Manager View and Alarms View are saved here by default.
- **Private Workspaces** - where private Views are saved as workspaces

Procedure

1. Click the  next to the workspace title, and click **Save As**.




2. Select **Public Workspaces**.
3. Select **Define main prompt**, and choose a prompt to add a filter to the shared view.
 - This workspace will then be saved as a SmartView. If there is no prompt, the view is saved as a dashboard.
4. Type a name for the shared view.
5. Click **Save as New**, to save the workspace as a SmartView or Dashboard.

Unsharing a Shared View

About this task

To unshare a shared view,

Procedure

1. Click the  next to the workspace title, and click **Save As**.
2. Save it to **Private Workspaces**.


It is now saved as a private workspace.

Opening a Shared View

About this task

To open a shared view,

Procedure

1. Click the  next to any workspace title and select **Open**.
2. Selected the required shared view in **Public workspaces** and click **Open**.

Closing a Shared View

About this task

To close a shared view,

Procedure

1. Hover the mouse over the **Shared View** title,
2. Click the highlighted




Close icon.

Deleting a Shared View

About this task

To delete a shared view,

Procedure

1. Click the  next to the workspace title, and click **Delete**.
2. In the **Confirmation** popup box, select **Delete**.

Cloning a Shared View

About this task

To clone a shared view,

Procedure

Click the  next to the **Shared View** title, and click **Clone**.

Results

The duplicate shared view is displayed with the title of the original shared view that is appended by **copy**. The displayed view is a new workspace, which does not affect the parent shared view.

Managing a Shared View's Common Filters

SmartViews have common filters, which are parameters that are applied by each individual portlet on a **SmartView** to data requests sent to the server.

Types of Common Filters

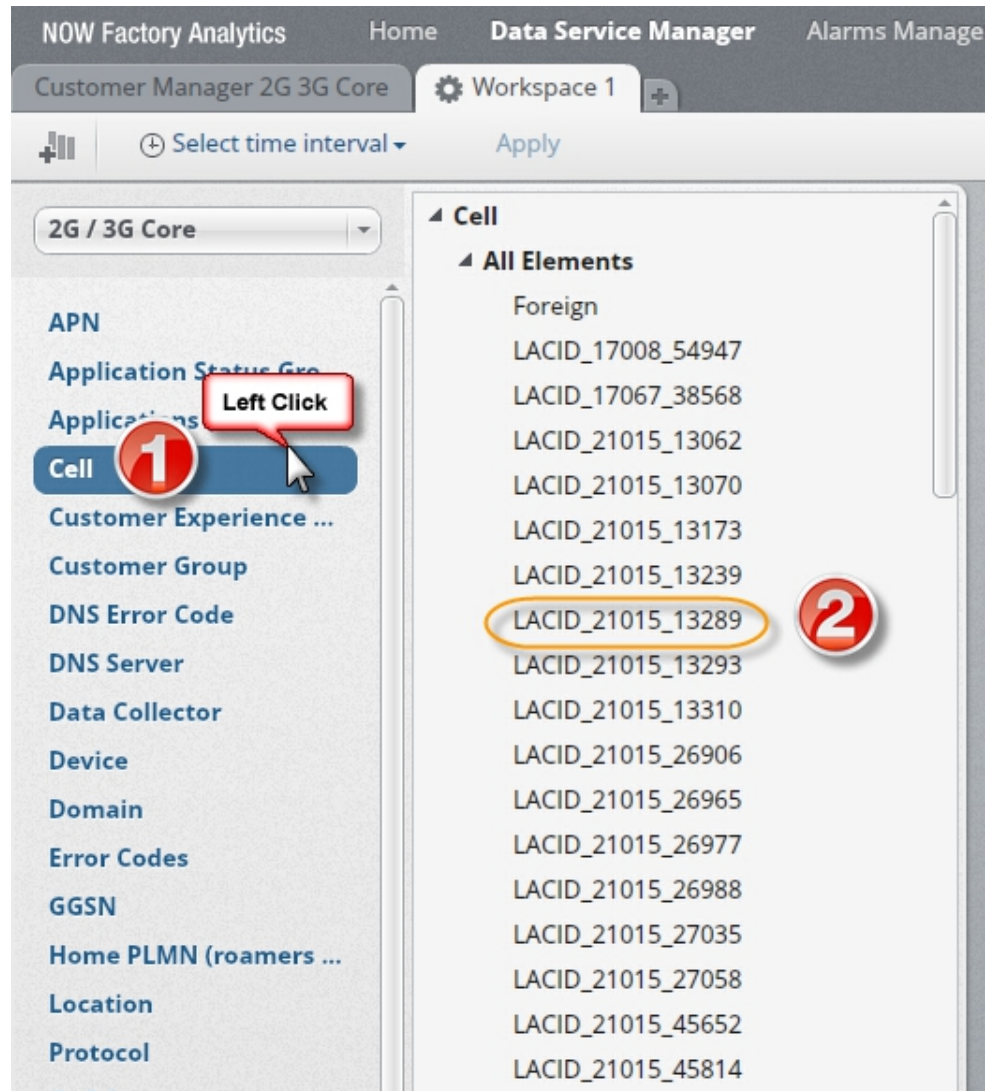
There are two types of Common Filters:

- Dimension with type - multiple;
- Periodic time interval - single.

Applying Common Filters

Common filters can be set from:

- 1 - **Network elements** tree



- 2 - Dimension filter selector

Chapter 3. Data Service Manager

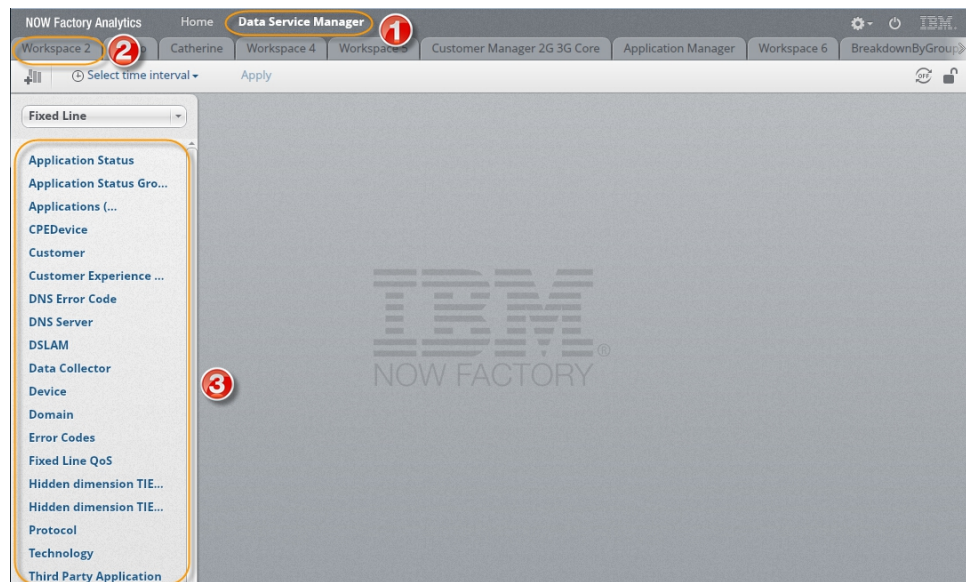
Basic Navigation

The **Data Service Manager** is where you analyze the data Customer & Network Analytics collects from the network. Here you can create reports, workspaces, and SmartViews, then save them and share them. It works with two main elements:

Workspaces - Page containers for reports. You can create and save as many as you would like and work with several of them simultaneously. You can also apply filters to a workspace that propagates to all the reports it contains.

Reports - Portlets defined to represent a report on selected data and metric/s. Reports must 'live' in a workspace even if there is only one of them. They can be rearranged, resized and copied.

1. Click the **Data Service Manager** text at the **Navigation Bar** to access it at any time
2. Workspaces appear as tabs at the top part of the screen
3. The **Dimension panel**, which allows for selection of data for report creation/modification (when minimized appears as a tab-labeled Dimension).

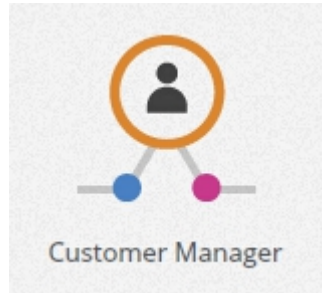


notes:

- a. Data Service Manager
- b. Workspaces
- c. Data selection for report creation

Chapter 4. Customer Manager

Customer Manager is a SmartView, which is launched from the Customer & Network Analytics Home page. Customer manager allows monitoring for both mobile and fixed line broadband customer experience.



Customer manager has several default filters in dimensions for network elements

- Fixed Line
- Mobile Policy and Charging (Gx Gy)
- Mobile Data
- RAN Experience
- Voice and SMS

Searching for Subscribers

Customers can be searched for by,

- MSISDN
- IMSI
- Attributes Search

Working with Attributes Search

About this task

Subscribers can be searched for using free text attributes or from a drop-down list of attributes, which apply to that subscriber base. It is possible to search for a subscriber using up to 10 attributes. When searching multiple fields, search criteria are joined with an AND operator.

Wildcard characters can be used in the attributes search, with asterisk (*) as a substitute for zero or more characters, or a question mark (?) as a substitute for one letter or numeral.

MSISDN
 IMSI
 Attributes Search

Select Criteria ✕

Note: wildcards can be used in the Attribute search criteria value(s): * as a substitute for zero or more characters or ? as a substitute for 1 character

Add criteria (9 left) Search

To search for a subscriber by their attributes,

Procedure

1. Click **Attributes Search**.
2. Either select a criteria from the drop-down list, or enter free text.
3. Add as many criteria as required.
4. Click **Search**.

MSISDN
 IMSI
 Attributes Search

AGE: 35 Edit...

Matching Subscribers 10 out of 43 ⓘ

MSISDN	IMSI
353853272020	272017240676270
353851352221	272017043733356
19125971248	310260630745955
353857700632	272017340031621
353852127101	272017340031621
18625517113	310260859321652

Results

The matching subscribers are listed in the search window.

Chapter 5. Corporate Manager

Corporate Manager

Corporate Manager allows for the control of corporate groups through a SmartView, which is launched from the Customer & Network Analytics Home page. **Corporate Manager**

- Group Application
- Mobile user plane & S8
- Gn Control Plane
- S11 Control Plane
- Group Platform
- Gn Control Plane
- Voice/SMS/(2G/3G)
- VoLTE

Corporate Manager displays at first glance key customer experience indicators and range of usage by regions, devices and used applications

Key Groups of customers are provisioned in Vantage by system import of IMSI lists which represent the groups in a predefined format. Groups may be updated as frequently as daily so that metrics are assured to be as accurate as possible for each group. Customer Groups as represented as dimensions within Vantage.

- Automatic Aggregation of Group metrics

When groups have been configured in Vantage, user and control plane metrics available for the other dimensions are automatically calculated in aggregate for the customer groups and are made available in near real-time.

This allows immediate access to user experience metrics such as throughput or volumes used for the group as a whole as well as set up of threshold-based alarm profiles for per group metrics.

- Viewing Group-level Metrics

The reports and charts available for standards dimensions in Vantage are also available for customer groups. This provides quick analysis capabilities and the intuitive functionality already available in Vantage.

Standard reporting and chart capabilities are supported including drilldowns and affected customers list for the selected corporate group – drilldowns reports may take longer to complete on large corporate groups.

- Viewing Metrics for list of Corporate Customer Groups

Any report can be set up to show one metric or more as a Breakdown by Corporate customer Groups and sort the resulting chart / table in order to easily identify corporate accounts with potentially bad experience, high usage, etc...

- Separate provisioning of the corporate_account_name attribute.
- Validation included, with optional alarm settings.
- supports IMSI / CallingID only (when MSISDN missing).

- enable 5-mins and Hourly Standard and Historical alarming as per other dimensions for all interfaces: Mobile User Plane and Voice and SMS (inc. VoLTE) priority
 - filter option for Corporate groups alarms profiles are disabled in GUI
- enable longer aging for Corporate groups: e.g. 366 days of Hourly per Corporate and 14 days for 5-mins
- Ideally: make it easy to extend when a new dataset is added or existing dataset added (e.g. new KPI)
- included in Cognos frameworks and default out of the box reports.

Acceptance Criteria:

- as a CNA advanced user , I can set up an alarm profile for any Corporate group on any Mobile user plane or Voice/SMS metric
- when an alarm is raised for any Corporate Group, I can run a report on the relevant metric for that Corporate group for the last 15 days by 5-mins, 366 days by Hour / by Day . - Any report with Corporate group dimension only must return within 5 seconds.
- I can open a Cooperate Group dashboard with a summary of the group's experience for the selected period.
 - BreakDown by other dimensions (cell, Device etc.) should be possible, but goes to level 3 (subscriber tables)

Chapter 6. Corporate Overview

Corporate Overview

About this task

This Shared Dashboard is designed to show the list of Corporate accounts ranked by different metrics and the Riser / Fallers accounts in order to identify quickly any possible service assurance issue quickly.

This view displays the table of corporate accounts per connectivity metrics, the table per customer experience scores, volume, volume per user, achievable throughput and number of customers, as well as the Top Risers and Fallers account per volume.

Each table can be sorted by any metric in place in order to identify at risk accounts quickly.

Context for the current task

Procedure

Task step.

Chapter 7. Alarms Manager

Working with Alarms

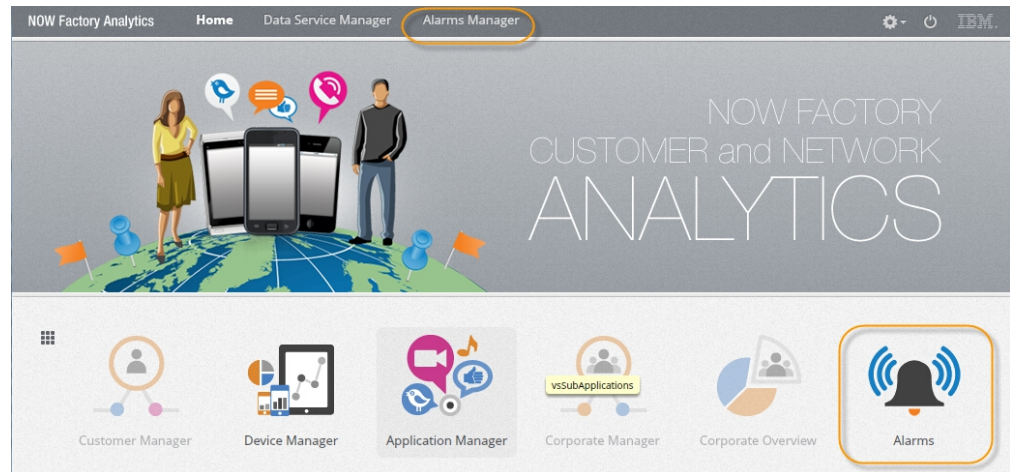
About this task

The Alarm Manager allows you to create alarm profiles where alarming conditions are set. Based on these profile alarms are raised and you are able to manage them from the **Alarm Manager** screen. This is a great way to proactively monitor the network. Since alarm profiles monitor dynamic conditions, we recommend that you look at alarm profiling as an iterative process and not a once off setting.

To access **Alarm Manager**:

Procedure

select it from the top navigation bar, or from the **Alarms** icon.



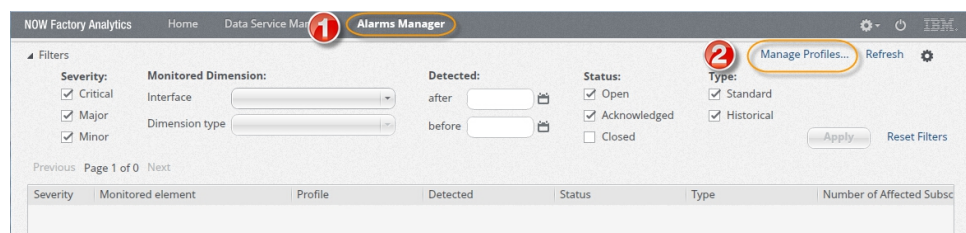
Viewing Alarm Profiles

About this task

To view **Alarm Profiles**

Procedure

1. Select the **Alarm Manager** from the top navigation bar
2. Select **Manage Profiles...**



Creating a New Alarm Profile

About this task

To create a new **Alarm Profile**

Procedure

1. Select the **Alarm Manager** from the top navigation bar
2. Select **Manage Profiles...**
3. Click **Create a New Profile...**

The screenshot shows a 'Create Alarm Profile' dialog box with the following fields and options:

- Title:** Create Alarm Profile
- Name:** New alarm profile
- Description (optional):** [Text input field]
- Type:** Standard Historical
- Interface:** [Select interface dropdown]
- Monitored Dimension type:** [Select Dimension Type dropdown]
- Measurement:** [Text input field]
- Filters (optional):** Add Filter
- Check rate:** [every 15 minutes dropdown]
- 1** breach(es) to raise alarm
- 1** breach(es) to close alarm
- Schedule:** Always active Configure time and days
- Severity:** [Minor dropdown]
- Notifications:** SNMP Email
- Buttons:** Create, Cancel

4. In the new alarm profile screen **specify:**

Name A free text field for entering the profile name that is used as a reference in any related raised alarm.

Description

A free text field for entering the profile description and possible areas to investigate that would cause the alarm

Type Specifies if the alarm is a Standard Alarm or a Historical Alarm

Interface

A list of the interfaces that are monitored by Customer & Network Analytics **for example**, 2G/3G core, 4G or fixed line.

Monitored Dimension Type

Choose the Dimension elements, which are monitored for the Criteria, for example, Device or SGSN. Only Corporate Customer Groups can be used be at the group level and for the Customer dimension.

Measurement Criteria

For Standard Alarms:

These are the measurement criteria or absolute thresholds that are applied to the item being measured for example, `pdpCreateSuccess > 1000`. It is possible to combine up to 2 threshold criteria using the logical operators.

For Historical Alarms:

Select an item to be measured (a metric) and a historical calculation to compare the measured item with. The historical calculation is calculated by specifying:

- Percentage difference between historical value and measured value.
- Comparison operator (>, <, >=, <=, > or <)
- Time period that is used to calculate historical average in days or weeks (e.g. past 3 days, past 2 weeks etc...)

E.g. Raise a historical alarm where bytesTotal is 10% less than historical average of bytesTotal for past two weeks.

Only a single historical calculation can be specified per alarm profile but multiple threshold criteria might be included in the query to filter out values below a threshold.

E.g. Raise a historical alarm where bytesTotal is 10% less than historical average of bytesTotal for past two weeks AND bytesTotal > 10,000.

Severity

Used to define the severity level of the Alarm if it is generated that is, Minor, Major, or Critical

Check Rate

Defines how often the alarm measurement query is executed, depending on the selected Monitored Dimension:

- Every 5 minute
- Every 15 minutes (Default)
- Every 30 minutes
- Every 1 hour
- Every 1 day

Filters (optional)

Optional Filter can be defined to reduce the scope of the monitored elements and conditions, for example a location (Cell group) or a specific device (for example, iPhone 4s). Up to 2 filters can be combined.

Open Alarm Consecutive Breaches

When "Open Alarm consecutive Breaches" is set to a number greater than 0, then the binding only opens alarms when it observes that the anomaly is observed this many times

Close Alarm Consecutive Breaches

If "Close Alarm consecutive Breaches" is set to a number greater than 0, then the binding only closes alarms when it observes this many times that the anomaly no longer exists

Schedule

Enter time period(s) (start and end times in hh:mm format) and weekdays during which this profile will be active and alarms can be generated.

Notifications

Select whether an SNMP trap will or will not be sent when an alarm is generated.

If **Email** is selected, click **Configure**.

An email is sent to the selected email addresses, with details of either a group of alarms, or for an individual alarm.

5. Once completed click the **Create** button.

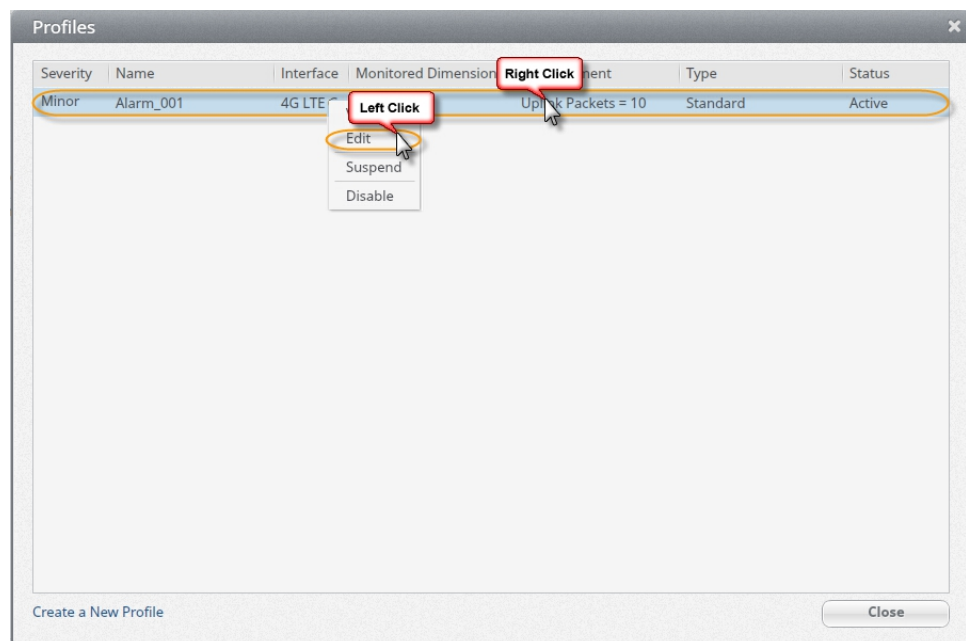
Editing an Alarm Profile

About this task

To edit an alarm profile:

Procedure

1. Select the **Alarm Manager** from the top navigation bar
2. Select **Manage Profiles...**
3. **Right click** on the alarm profile you wish to edit and select **Edit**



Suspending an Alarm Profile

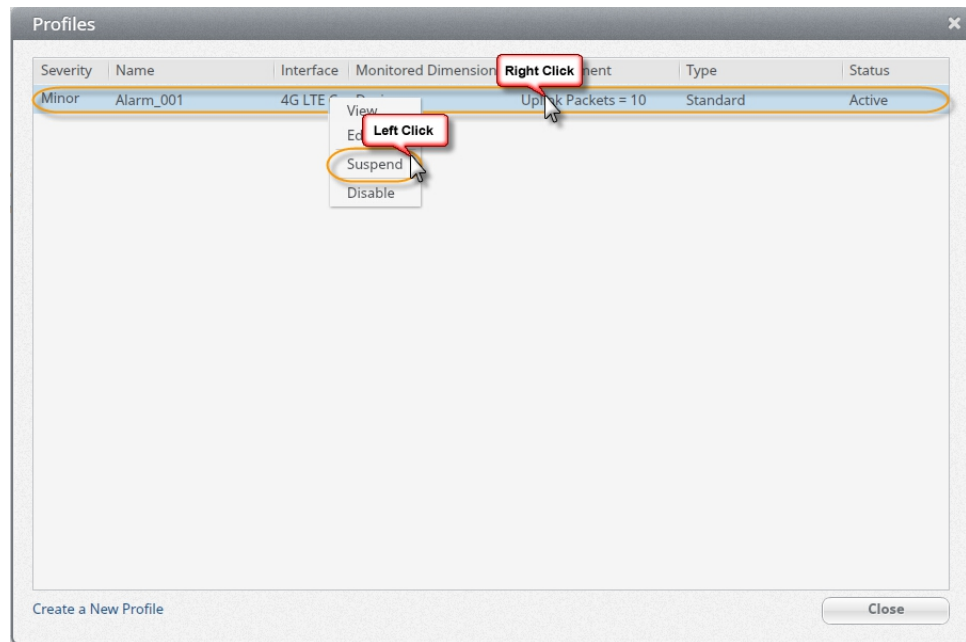
About this task

Suspending an alarm profile allows you to keep the profile but without it generating any alarms.

To suspend an alarm profile:

Procedure

1. Select the **Alarm Manager** from the top navigation bar
2. Select **Manage Profiles...**
3. **Right click** on the alarm profile you wish to edit and select **Suspend**



Activating a Suspended Alarm Profile

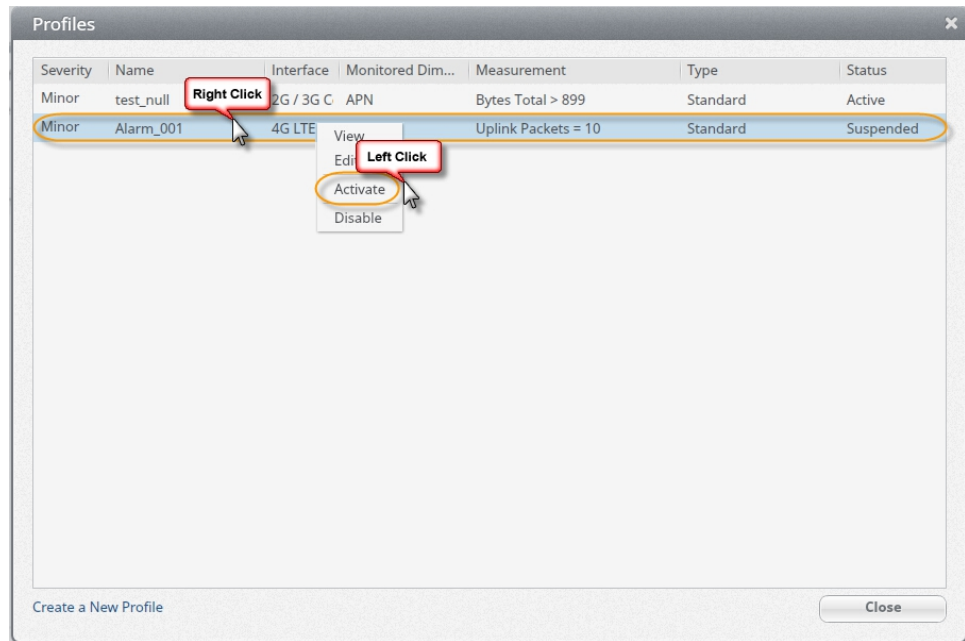
About this task

Activating a suspended alarm profile resumes the generation of alarms.

To activate an alarm profile:

Procedure

1. Select the **Alarm Manager** from the top navigation bar
2. Select **Manage Profiles...**
3. **Right click** on the alarm profile you wish to edit and select **Activate**



Disabling an Alarm Profile

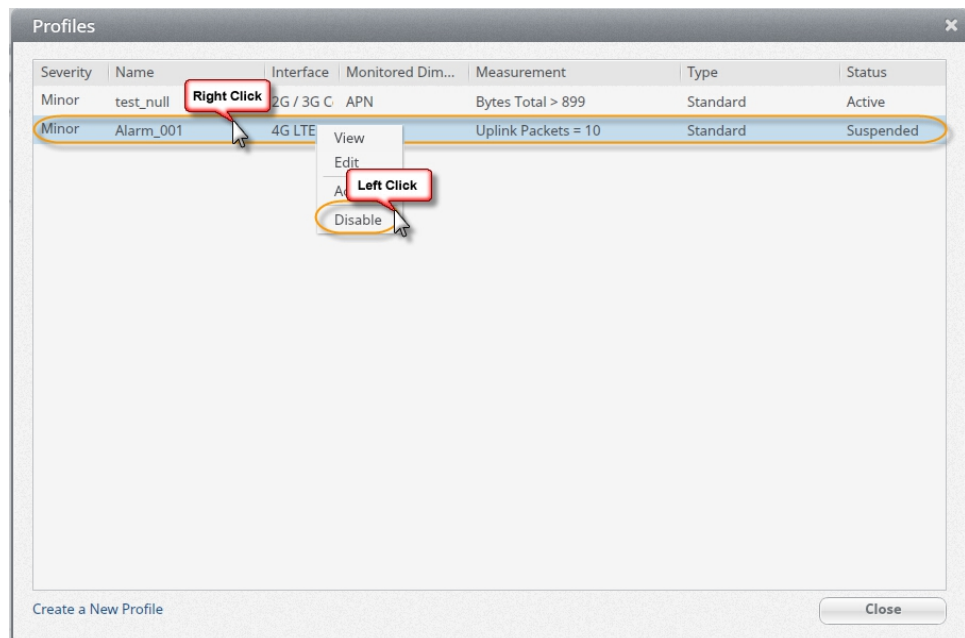
About this task

Disabling an alarm profile removes it from the profile view.

To disable an alarm profile:

Procedure

1. Select the **Alarm Manager** from the top navigation bar
2. Select **Manage Profiles...**



3. **Right click** on the alarm profile you wish to edit and select **Disable**.

Viewing Generated Alarms

About this task

Generated alarms automatically appear in the Alarm Manager main screen.

To view generated alarms:

Procedure

select the **Alarm Manager** from the *Customer & Network Analytics Home* screen

Results

When viewing alarms, the following color coding is used for alarm status:



= Minor alarms



= Major Alarms



= Critical Alarms



= Closed Alarms

Each alarm has the following fields:

Field	Description
-------	-------------

Monitored Element	The name of the dimension instance (for example, network node, application) for which the alarm was generated
--------------------------	---

Alarm Profile Name	The defined alarm profile name (from alarm profile configuration)
---------------------------	---

Severity	The assigned alarm severity (from alarm profile configuration)
-----------------	--

Status*	The alarm status that is, Open/Acknowledged/Closed
----------------	--

Detected Time	Time at which value of profile parameter "Open Alarm Consecutive Breaches" was reached and the alarm generated (from alarm profile configuration)
----------------------	---

Last modified by User	Displays the name of the person who last modified the alarm status
------------------------------	--

Date last updated	Date that the alarm was last updated either manually or automatically.
--------------------------	--

***Alarm reduction** is supported in case an immoderate number of alarms are raised by an active profile - a single alarm with Critical severity is raised. **Example:** An

alarm profile is defined using a dimension type (e.g. Cell). Executing the profile raises an alarm for every dimension instance where the alarm measurement criteria are met (e.g. if 100 cells exceed alarm profile measurement criteria then 100 alarms are raised). If when executing the profile, the system determines that more than 1000 alarms would be generated by a single alarm profile, then only one alarm with a Critical severity is raised.

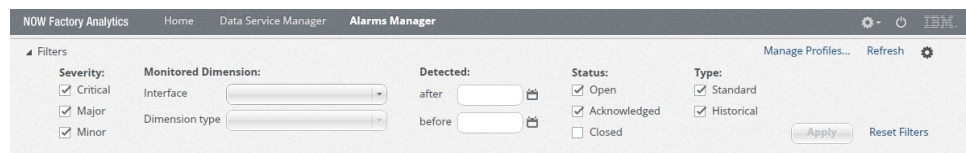
Filtering Alarms

About this task

To filter existing alarms in the **Alarms Manager**

Procedure

1. Select the option from the **Filters Panel**
2. Click **Apply**.
3. Click the filters drop down if the filters panel is hidden



Results

It is possible to filter the presented alarms that are based on the following fields:

Field	Description
-------	-------------

Monitored Dimension	The network interface and the name of the dimension instance (for example, network node, application) for which the alarm was generated
----------------------------	---

Severity	The assigned alarm severity (from alarm profile configuration)
-----------------	--

Status	Open/Acknowledged/Closed
---------------	--------------------------

Type	Filter by alarm type (Standard, Historical, Power)
-------------	--

Detected Time	Select time between dates
----------------------	---------------------------

Alarms are presented in a paged list. Use the *Previous* and *Next* links to navigate pages.

Resetting Alarm Filters

About this task

To reset the alarm filters:

Procedure

select the **Reset Filters** link from the Filters panel.

Manually Refreshing the Alarms Screen

About this task

To refresh the Alarms screen:

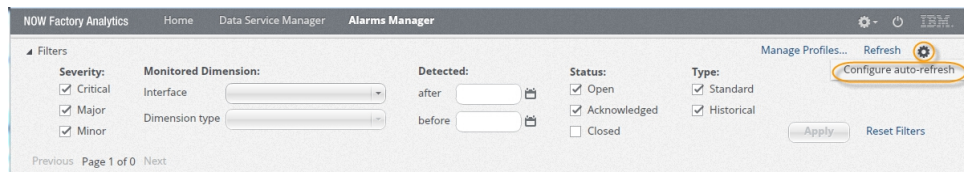
Procedure

click the **Refresh** link from the **Alarms Manager** screen

Automatically Refreshing the Alarms Screen

Procedure

1. In the **Alarms Manager**, click the  icon and select **Configure auto-refresh**
2. Select the **refresh interval** and click **OK**



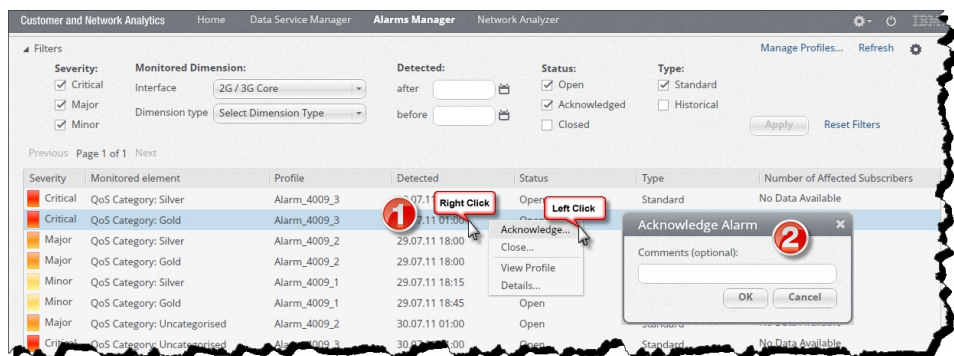
Acknowledging an Alarm

About this task

When you acknowledge an alarm you are able to add a comment and the status appears as **Acknowledged**. Your comments are then visible in the alarms comments field and the action is recorded in alarms' history.

Procedure

1. **Right click** on the alarm to be acknowledged and select **Acknowledge**
2. In the *Acknowledge Alarm* window, insert any comment that you would like and click **OK**



Closing an Alarm

About this task

When you close an alarm its status appears as **Closed** and the action is recorded in alarms' history. If an alarm is closed, it is not updated again by the system. New instances of the same alarm cause a new alarm to be opened.

A closed alarm cannot be re-opened.

Procedure

1. **Right click** on the alarm to be acknowledged
2. Select **Close**

Viewing Alarm Details

About this task

To view **Alarm Details**:

Procedure

1. **Right click** on the alarm and select **Details...**

The screenshot shows the 'Alarms Manager' interface. At the top, there are navigation tabs: 'Customer and Network Analytics', 'Home', 'Data Service Manager', 'Alarms Manager', and 'Network Analyzer'. Below the tabs is a 'Filters' section with options for Severity (Critical, Major, Minor), Monitored Dimension (Interface, Dimension type), Detected (after/before), Status (Open, Acknowledged, Closed), and Type (Standard, Historical). A table of alarms is displayed below the filters. The table has columns for Severity, Monitored element, Profile, Detected, Status, Type, and Number of Affected Subscribers. A red box highlights the 'Right Click' action on the 'Details...' option in the context menu for the selected alarm. An 'Alarm Details' dialog box is open, showing the Alarm ID (345), Profile (Alarm_4009_3), and a 'History' table. The 'History' table has columns for Date, Person, Status, and Comments. The history entry shows the alarm was raised on 29.07.11 01:00 by the System, with the status 'Open' and the comment 'ALARM RAISED | QoS Category | Gold | DOWNLINKPACKETS: 3319.0 > 0'.

Severity	Monitored element	Profile	Detected	Status	Type	Number of Affected Subscribers
Critical	QoS Category: Silver	Alarm_4009_3	29.07.11 01:00	Open	Standard	No Data Available
Critical	QoS Category: Gold	Alarm_4009_3	29.07.11 01:00	Open	Standard	No Data Available
Major	QoS Category: Silver	Alarm_4009_3	29.07.11 18:00	Open	Standard	No Data Available
Major	QoS Category: Gold	Alarm_4009_3				
Minor	QoS Category: Silver	Alarm_4009_1				
Minor	QoS Category: Gold	Alarm_4009_1				
Major	QoS Category: Uncategorised	Alarm_4009_2				
Critical	QoS Category: Uncategorised	Alarm_4009_3				
Minor	QoS Category: Uncategorised	Alarm_4009_1				

Date	Person	Status	Comments
29.07.11 01:00	System	Open	ALARM RAISED QoS Category Gold DOWNLINKPACKETS: 3319.0 > 0

2. Date and time the alarm was generated
3. Date and time the alarm was closed
4. Alarm Threshold/Criteria breached
5. Status changes including whether they were manual (User) or automatic (System) including:
 - Status changed from -> to
 - Date change made
 - Who made the change
 - Comment made by user

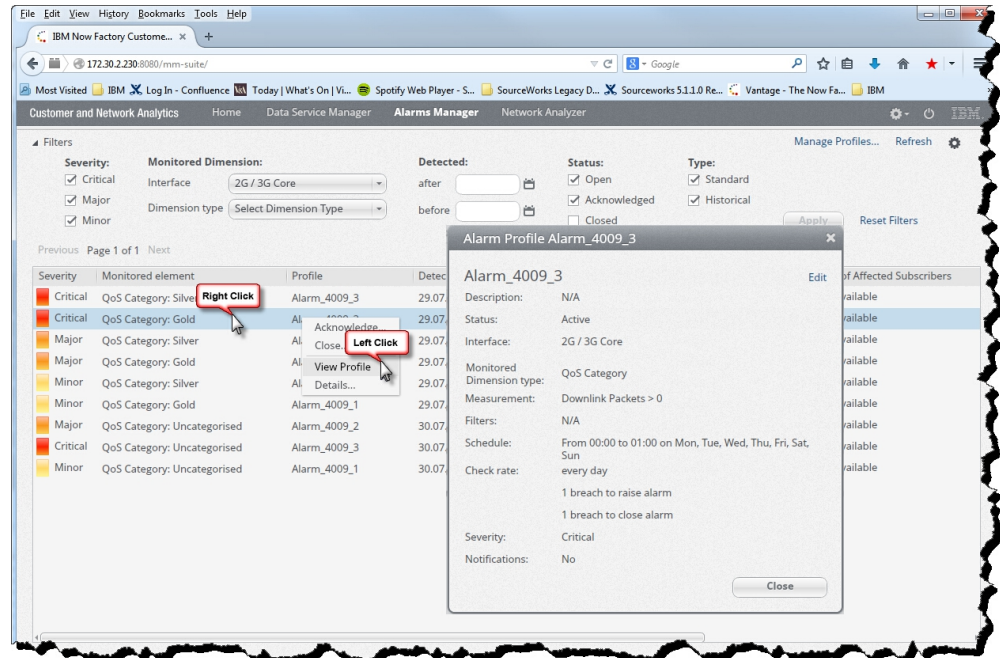
Viewing Alarm Profile from the Alarms Screen

About this task

To view the **Alarm Profile** that the alarm was generated from:

Procedure

Right click on the alarm you want to acknowledge and select **View Profile**



Chapter 8. Working with Reports

Getting Started with Reports

Charts are accessed by right-clicking on an element and selecting Analyze. The resulting dialog allows the user to select the type of analysis to be made, which results in a report being displayed.

Reports are displayed portlets each defined to represent a report on a selected data and metric/s. Reports must 'live' in a workspace even if there is only one of them. They can be rearranged, resized and copied.

All reports have the following elements:

Filters - who or what are you reporting on, that is, customers, smart phone, group of cells

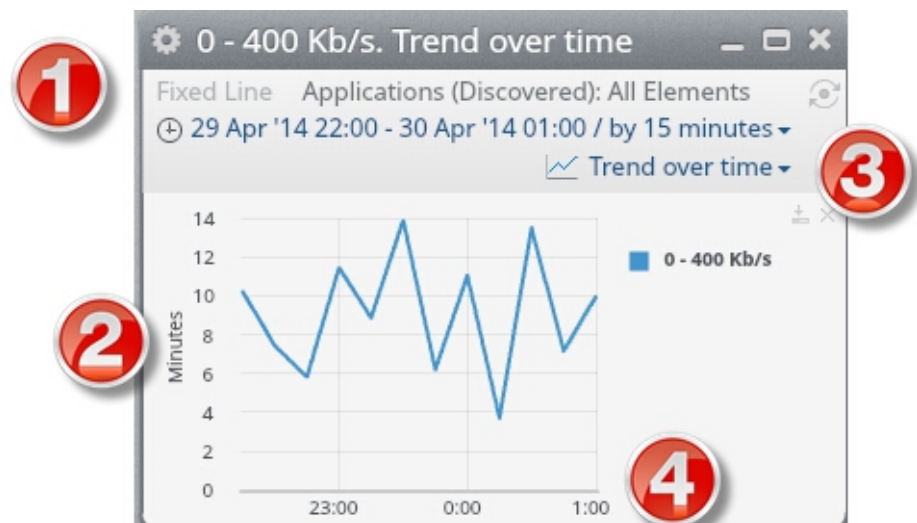
Metrics - what the report measures, that is, count, time, throughput, total bytes

Report Type - how the data is presented, that is, list, table, trend line over time, distribution

Time Interval - the period you want to report on and the time interval that it is divided to i.e. 3 hours by 15 minutes (that means report on the last 3 hours and break them into 15-minute intervals)

The following is an example report:


1. Subject - Applications discovered
2. Metric - Minutes
3. Report Type - graph of trend line over time
4. Time Interval - last 3 hours by 15 minutes



Creating a New Report

A report can be created for either **Mobile Data**, or **Voice and SMS** dimensions.

Reports can be created in two ways:

- When adding a new report, click the **Add Report** button .
- Or, in the **Dimensions** panel, drill down to the required dimension, and right-click. Select Analyze to open the report options window.

When a report is created, there are three elements that need to be specified:

Filters - who or what are you reporting on, that is, customers, iPhone 6, group of cells

Metrics - what the report measures, that is, count, time, throughput, total bytes

Report Type - how the data is presented, that is, list, table, trend line over time, distribution

Time Interval - the period you want to report on and the time interval that it is divided to i.e. 3 hours by 15 minutes (that means report on the last 3 hours and break them into 15-minute intervals)

It is worth your while to think about these elements before you start creating a report.

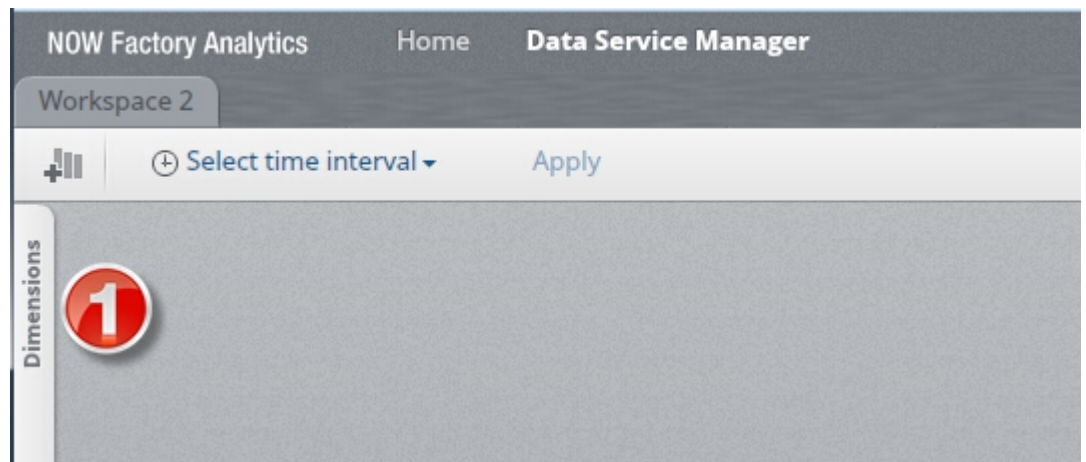
Define the Subject of the Report

About this task

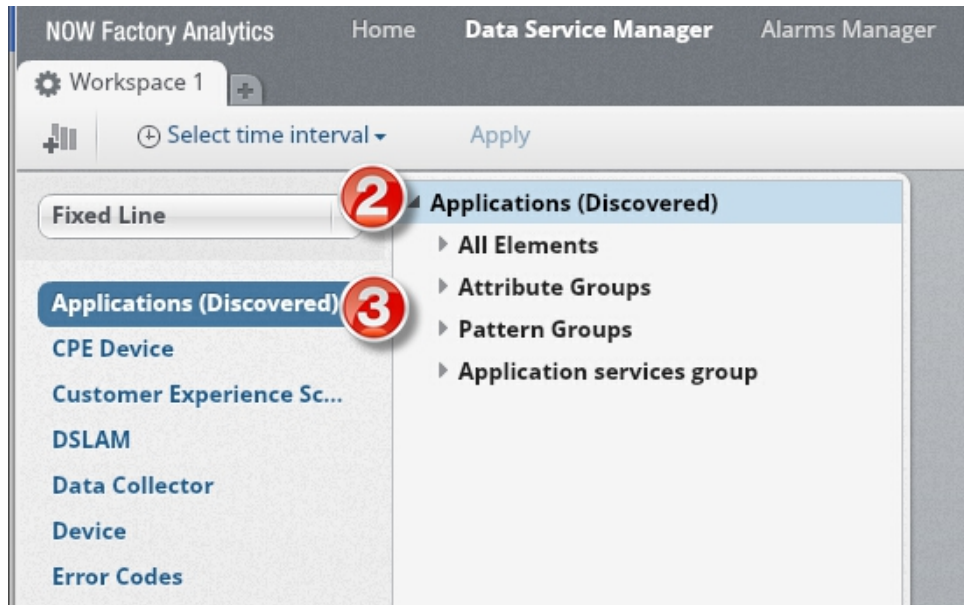
To create a new report make sure that you have workspace open, if you do not then **Create a New Workspace**.

Procedure

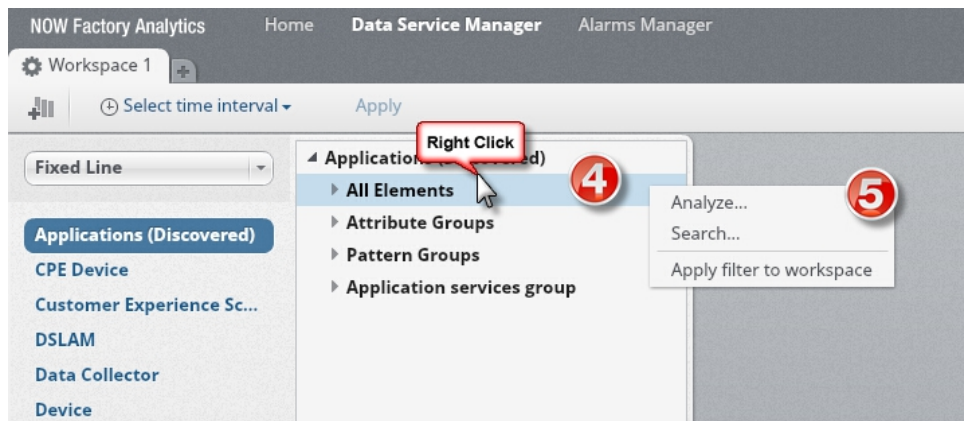
1. Open the **Dimensions** tab
- 2.



3. Select the desired **Dataset**.
4. Select the desired **Dimension**.



5. Right-click the element or group of elements you want to report on
6. Select **Analyze**



Select the Metric

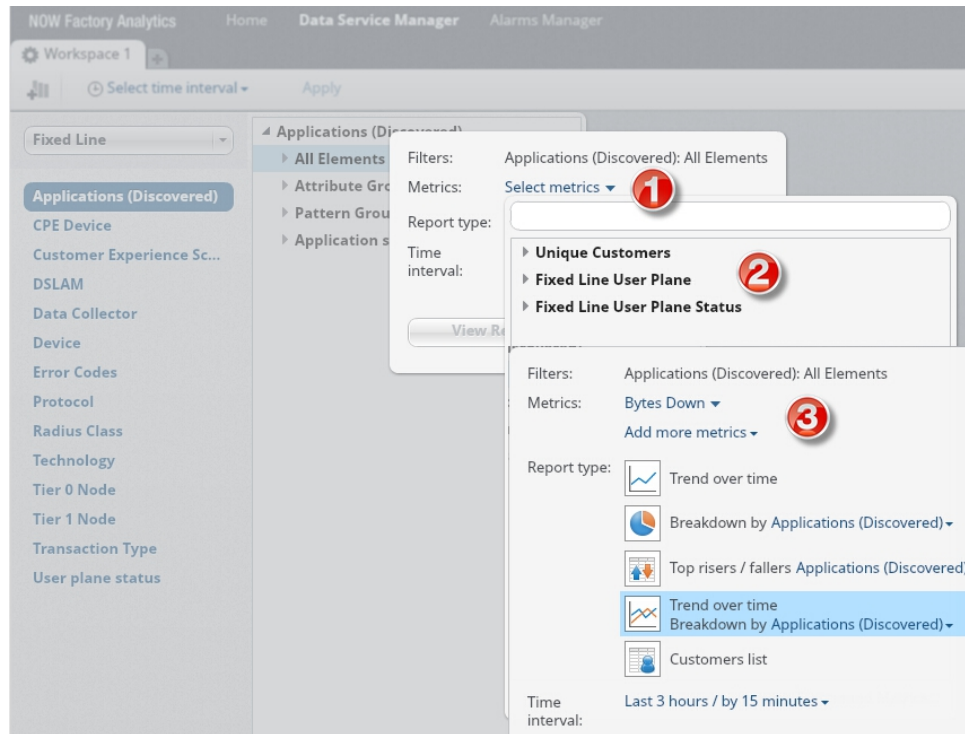
About this task

Once **Analyze** is selected, you are prompted to select the metric.

Procedure

1. Click the **Select Metrics** drop-down list.
2. Find the metric by searching or browsing the list and click it.
3. A new screen appears and your metric is selected. Where possible you are able to add more metrics to the report from the **Add more metrics** drop-down list and repeating steps 2-3.

Note: Selection of multiple metrics is only possible for **Trend Over Time** and **Breakdown By Reports**. Also, when the first metric is selected - the metrics available in **Add more metrics** list is restricted to metrics that use the dimensions and counters available in the same aggregation as the first metric selected.



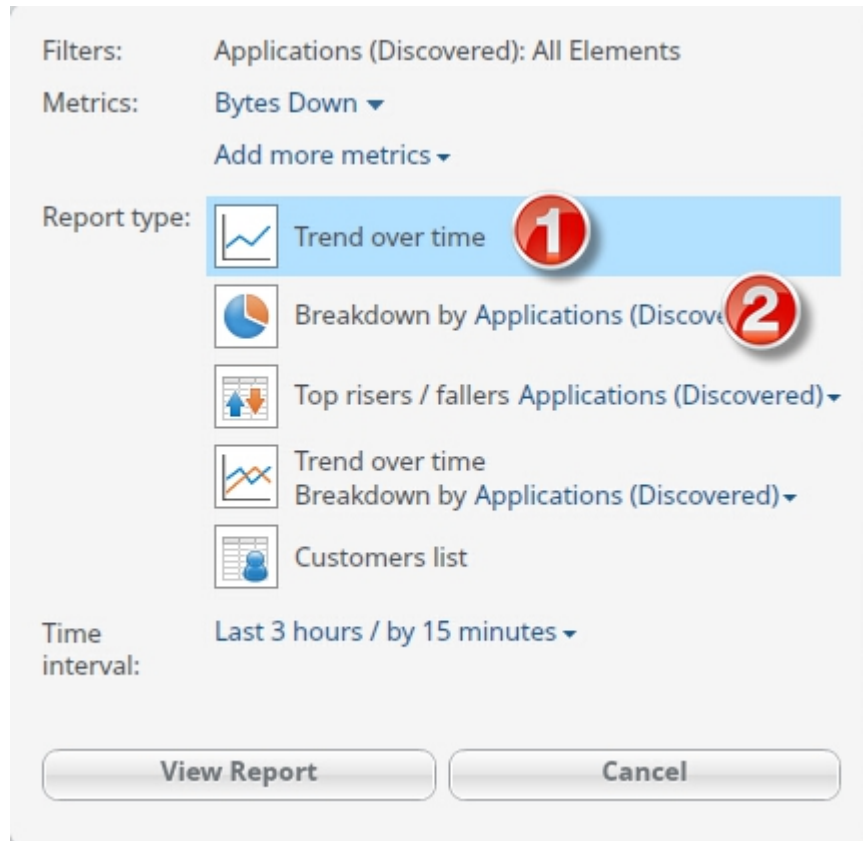
Select the Report Type

About this task

Once the metrics are selected the available report types for this selection appear.

Procedure

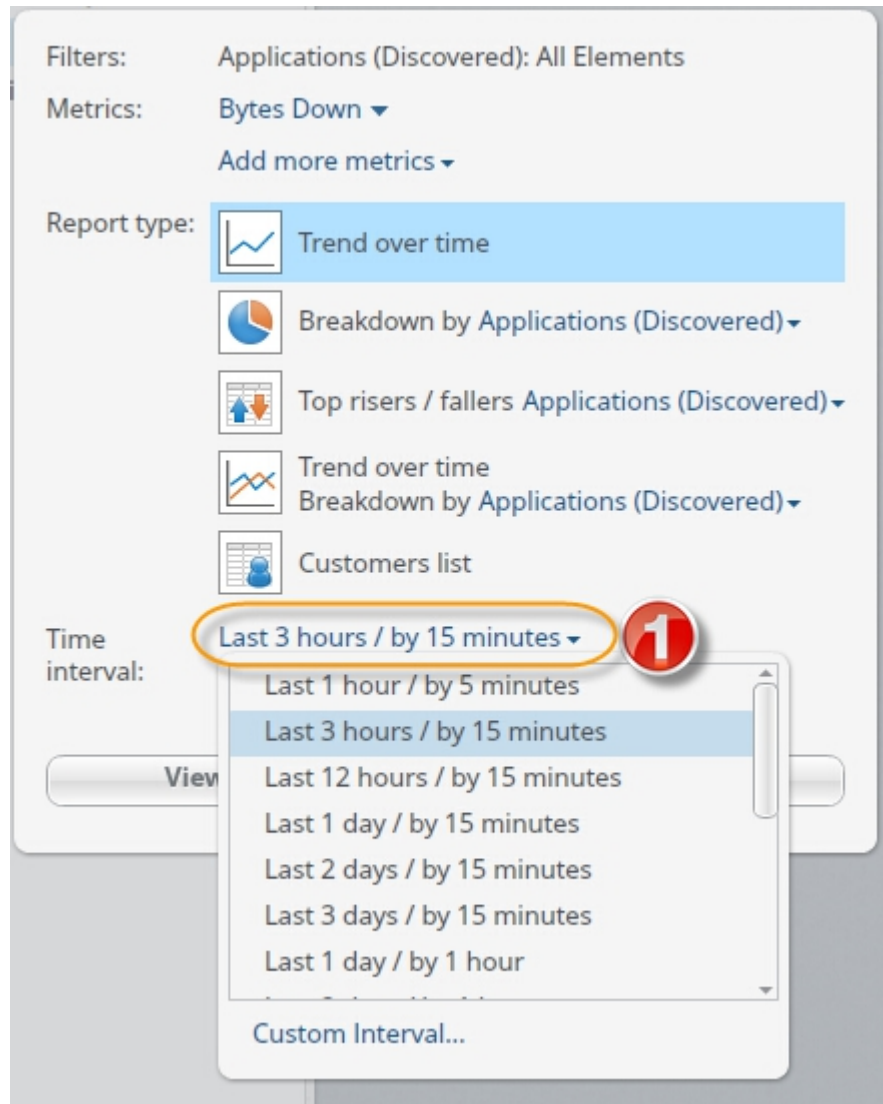
1. To select a report type, simply click it, the selection is highlighted in blue.
2. Some report types require plotting against another dimension such as a breakdown report. In this case click the drop-down list and select another dimension, then repeat step 1 of this process.



Select the Time Interval

Procedure

1. Click the **Time Interval** drop down list and click the **time interval and granularity** you wish to report on from the saved list
2. Click **Custom Interval** to enter your own time interval and granularity and fill in the respective fields
3. To return to the previous screen click the **Saved Intervals** link



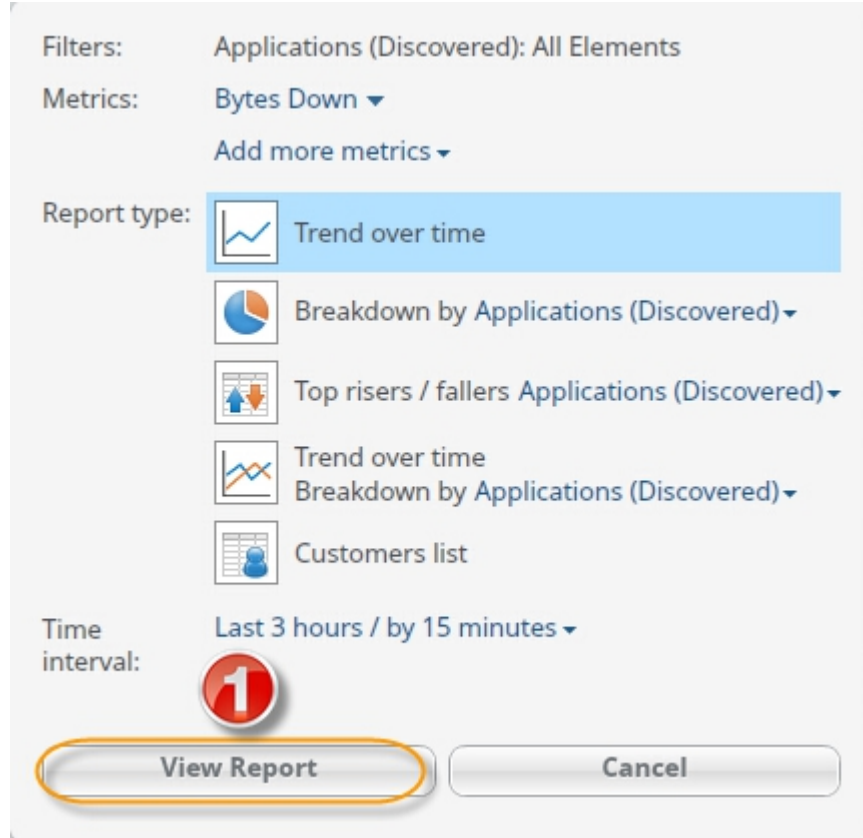
View Report and Select Visualization

About this task

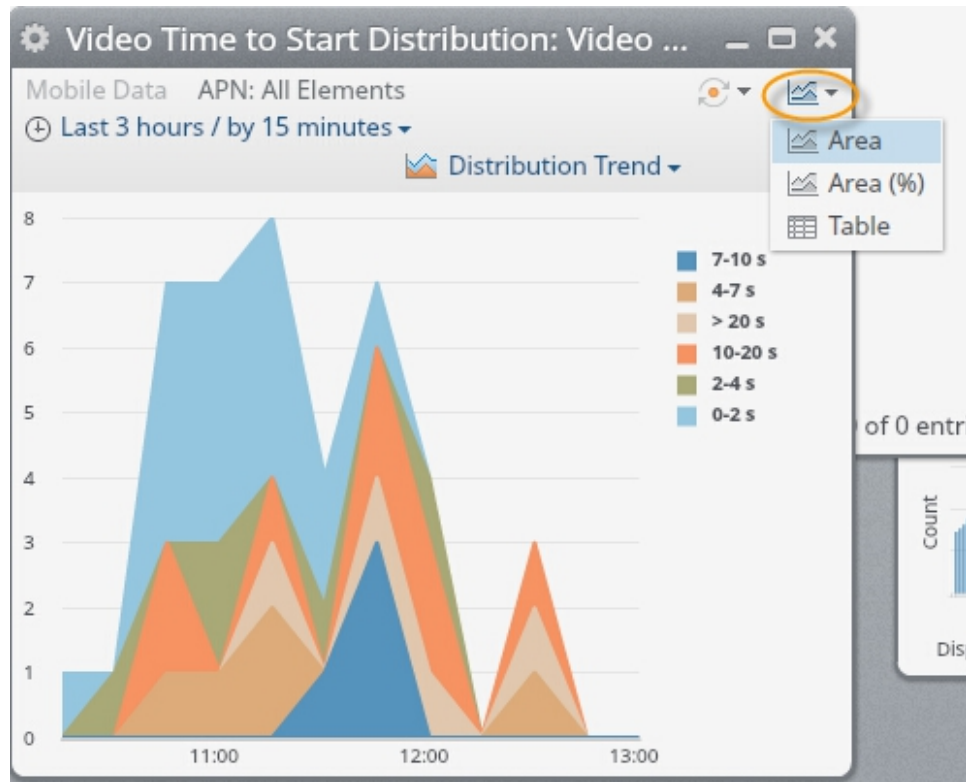
Now that you have completed the selection of the report elements you can view the report and in some cases also select your preferred display.

Procedure

1. Click the **View Report** button



2. Once you click the **view report** Customer & Network Analytics displays a default view of the report, in the image is an example of a variety of report types (the type indicated by their title)
3. **Click the chart type drop-down list to change the report visualization.** The available visualizations depend on the report type



Available Report Types

The report types vary according to the metric being analyzed. They include:

Trend over time

This return the selected metric that is charted for each time period at the granularity selected.

Breakdown by

The divided the metric selected over all elements in the selected breakdown dimension.

Top risers / fallers

This returns the dimensions for the selected metric that have the largest percentage change in value for the selected time period relative to the overall total for the selected metric. The metric values for each dimension in the selected time period will be compared to the overall metric total for the same time period to determine a percentage contribution (c1). Another percentage contribution is calculated for the previous time period of the same duration for each dimension (c2). Top risers/fallers measures the percentage difference between c1 and c2 for each dimension and shows the dimensions with the largest difference. This percentage is calculated as:

$$\text{Movement} = 100 * (\text{MAX}(c2, c1) / (c2+c1)) * (c1-c2)$$

c1 - Contribution to overall metric total as a percentage for the report period

c2 - Contribution to overall metric total as a percentage for the period occurring before the selected report period

Trend over time Breakdown by

This return the selected metric that is charted for each time period at the granularity that is selected for each element of the selected Breakdown by option.

Customers List

This return the list of individual Customers matching the selected elements

Distribution

Returns the selected distribution metric Summary report with the accumulated measures for each range. Typically this report can be viewed as a Column chart, either with Absolute value or Relative (%).

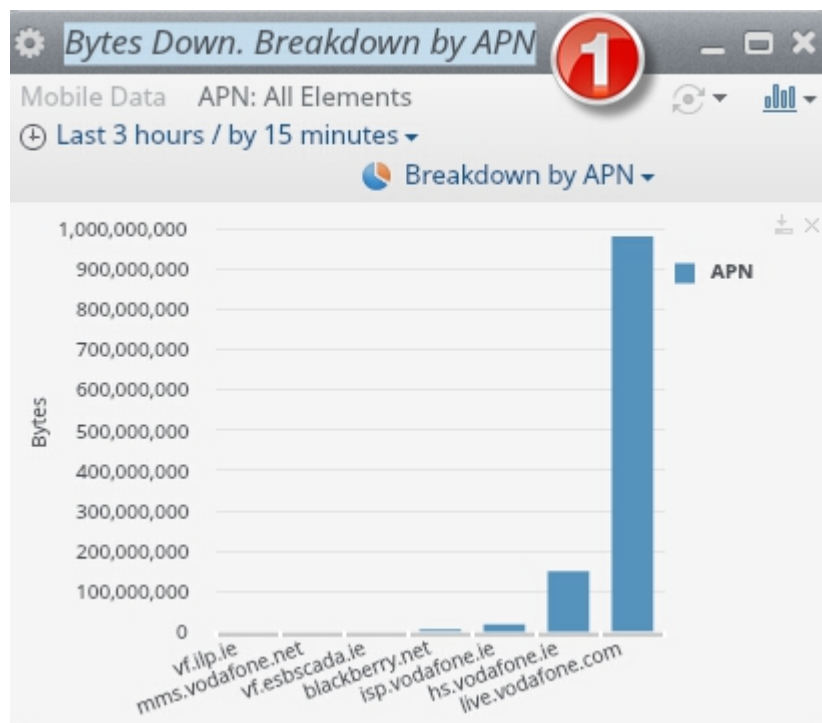
Distribution Over Time

Returns the selected distribution metric Trend report with the accumulated measures for each range over time. Typically this report can be viewed as a Stacked Area chart, either with Absolute value or Relative (%).

Changing the Report Title

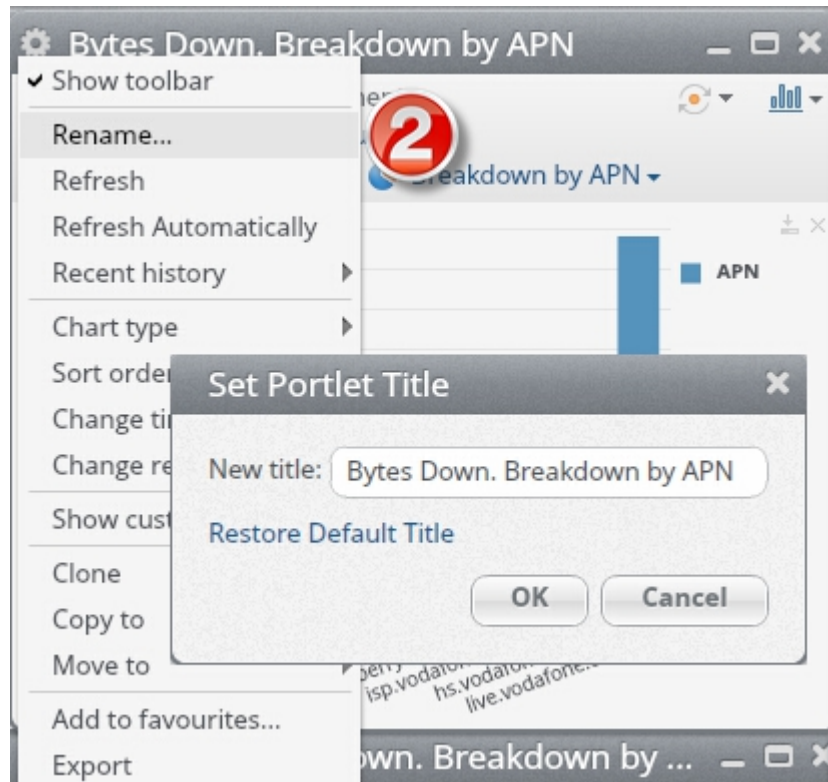
Procedure

1. Either **double-click** the report title and type the new name, then click **Enter**



Or


2. Click on the **Settings**



icon and select **Rename**

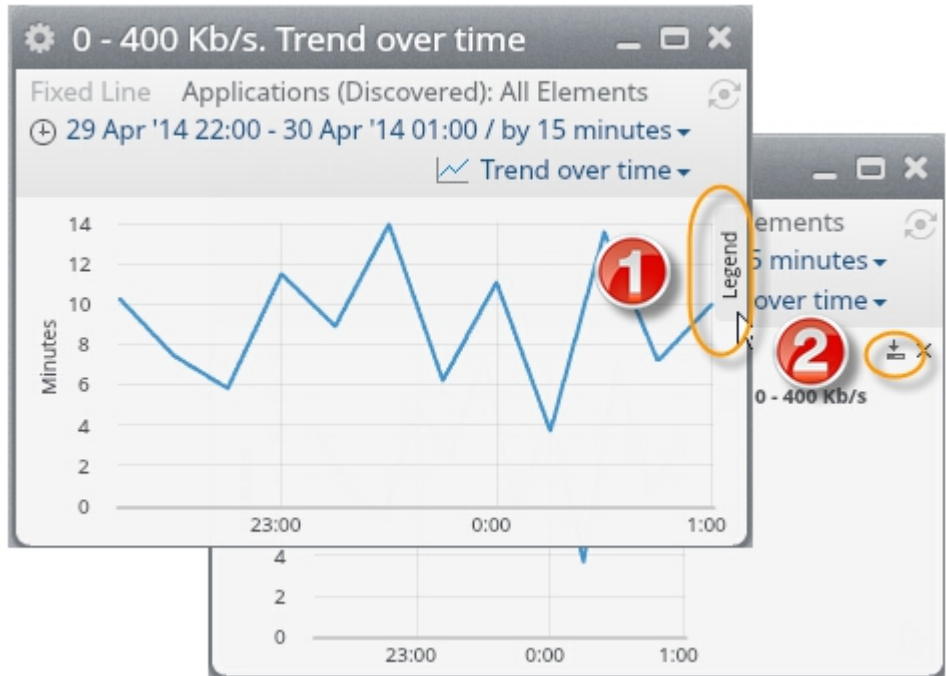
Display Report Legend

Procedure

1. Click the **Legend** tab on the side of the report
2. Use the  **Close** icon to hide the legend and click the



change the legend position



Changing Chart Type

About this task

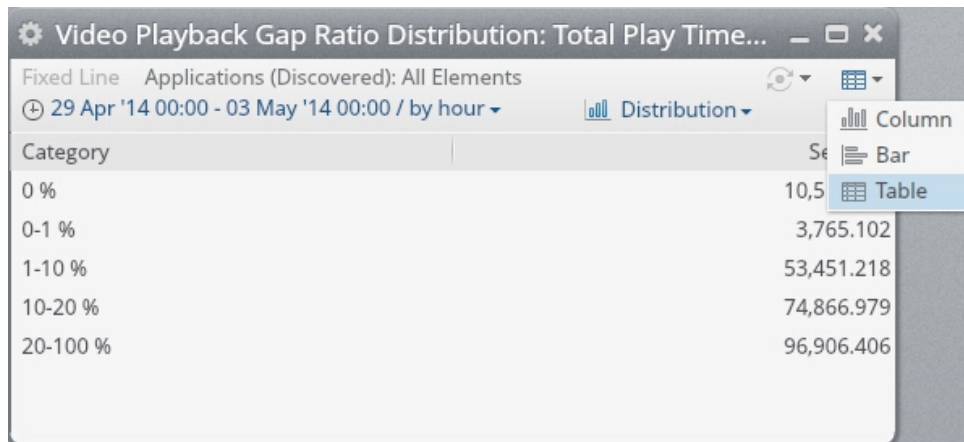
To change the chart type:

Procedure

1. select the **chart type drop down** list then
2. select from the available types.


The available visualizations depend on the report types.

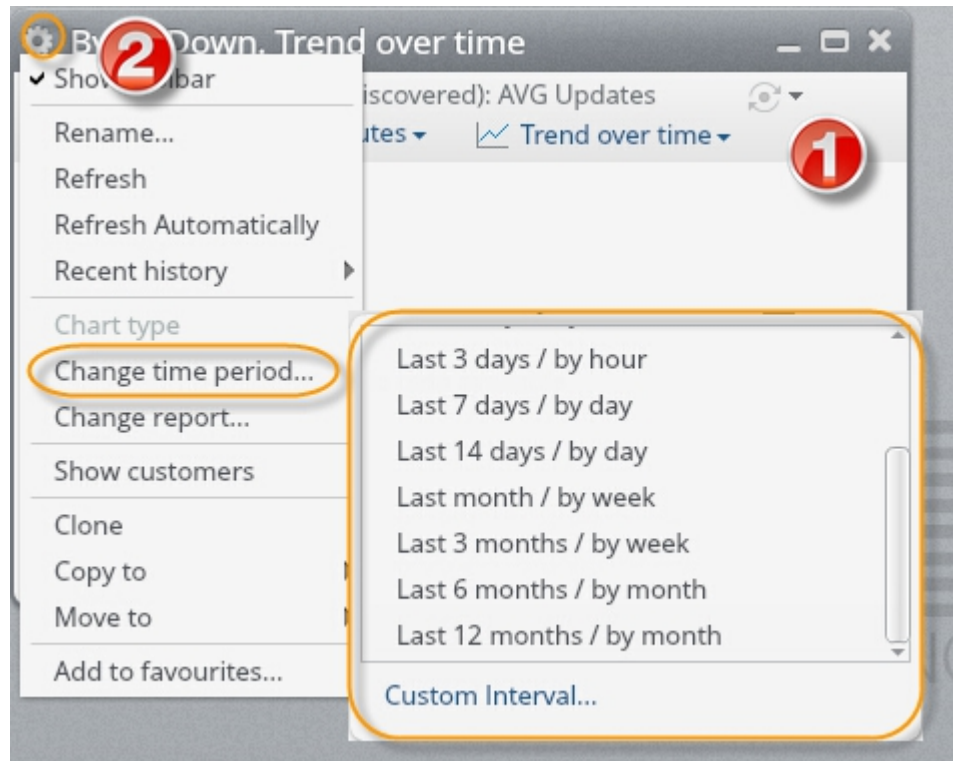
- Column
- Bar
- Table



Changing Report Time Interval

Procedure

1. Click the **Time Interval** drop down list
Or
2. Click on the **Settings**  icon and select **Change Time Period**




Changing Report Metric

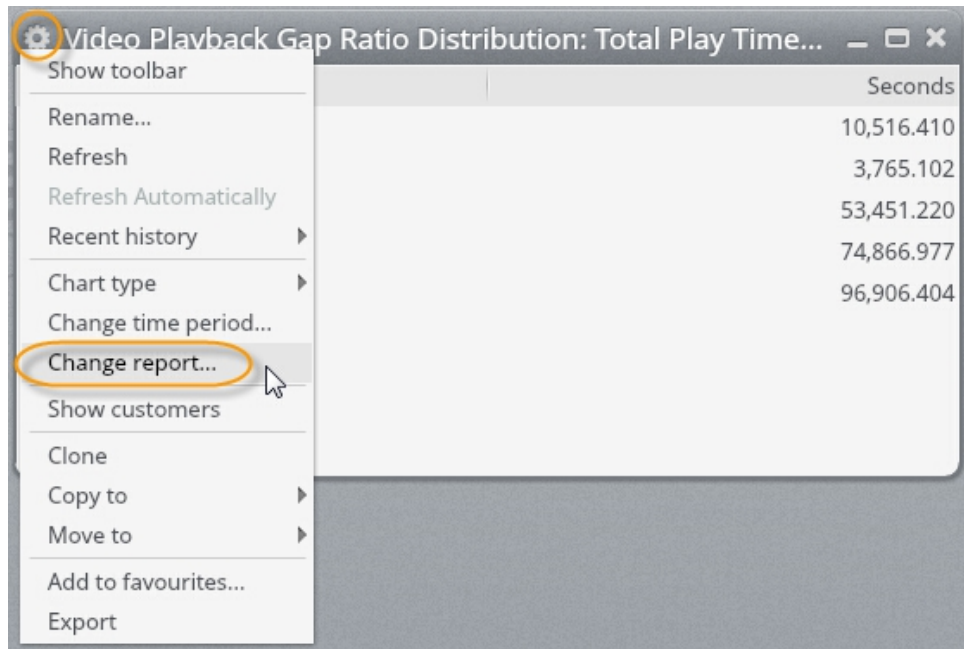
About this task

Note: Both default and user-generated metrics can be used when generating a report.

To change a report metric:

Procedure

1. Click on the **Settings**  icon
2. Select **Change Report**




3. Change the report metric.

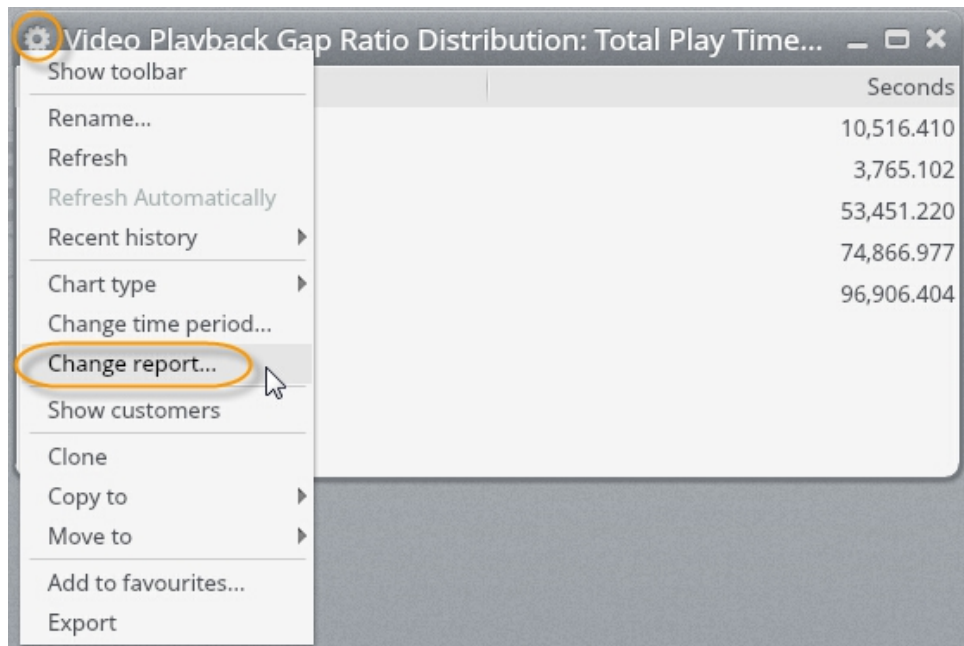
Changing Report Type

About this task

To change a report metric:

Procedure

1. Click on the **Settings**  icon
2. Select **Change Report**



3. Change the report type.

What to do next

Report Type. The report types will vary according to the metric being analyzed, they include:

- Trend over time
 - This return the selected metric charted for each time period at the granularity selected.
- The divided the metric selected over all elements in the selected breakdown dimension.
- Breakdown by
 - This return the selected metric charted for each time period at the granularity selected for each element of the selected Breakdown by option.
- Customers List
 - This return the list of individual Customers matching the selected criteria .
- Top Risers / Fallers by
 - This returns the Top Risers / Fallers elements for the selected metric and dimension, for example the Top Rising Devices for Bytes Total would show what Devices are trending up faster over the selected period compared to the previous period.
- Distribution
 - This returns the selected distribution metric Summary report with the accumulated measures for each range. Typically this report can be viewed as a Column chart, either with Absolute value or Relative (%).

Refresh a Report Manually

About this task

To refresh a report manually:

Procedure

1. Click the



icon

Or

2. Click on the **Settings**  icon and select **Refresh**

Refresh a Report Automatically

About this task

To refresh a report automatically:

Procedure

1. Click on the **Settings**  icon

2. Select **Refresh Automatically** Automatic refresh frequencies depend on the granularity as follows: **5 min granularity** refreshed every 1 min. **15 min granularity** refreshed every 5 min. **1-hour granularity** refreshed every 10 min. **1-day granularity** refreshed every 15 min. **1-month granularity** refreshed every 1 day.

Results

Note: These values are defaults and can be changed by IBM Now Factory professional services team.

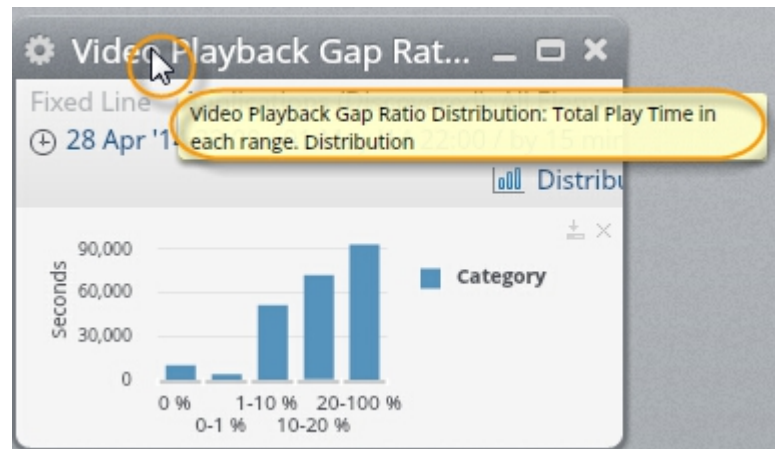
View Metrics of a Report

About this task

To view the metric/s used in a report:

Procedure

hover your mouse over the title of the report



Resizing a report

About this task

To resize a report:

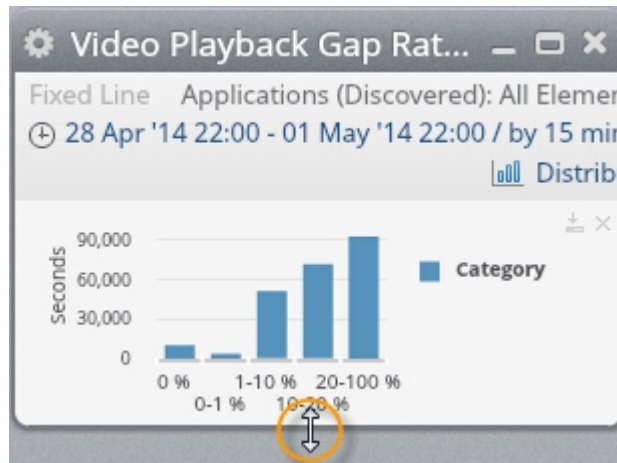
Procedure

1. Hover your mouse over the edges of the report until you can view the



icon,

2. **Click and drag** to resize the report.



Calculating Additional Values in a Report

When a report has a large amount of values that do not appear in a chart, it shows the largest 15 values. You can view the rest if the values are combined in an “other” group, by clicking the **Calculate Others** link.

Minimizing a Report

About this task

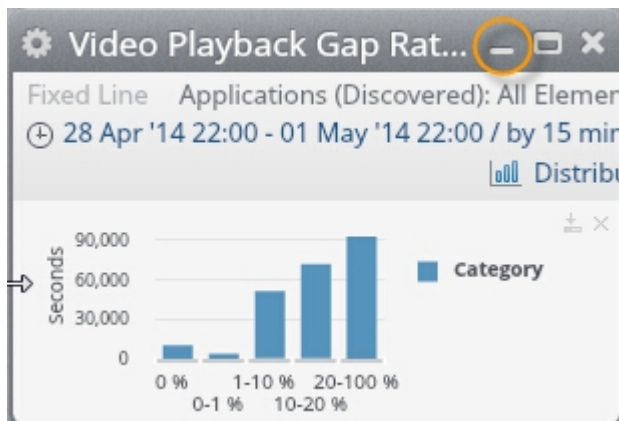
To minimize a report:

Procedure

Click the



icon on the report screen



Results

The report is minimized.

Viewing a report in full screen

About this task


To enlarge a report to the maximum space in a workspace:

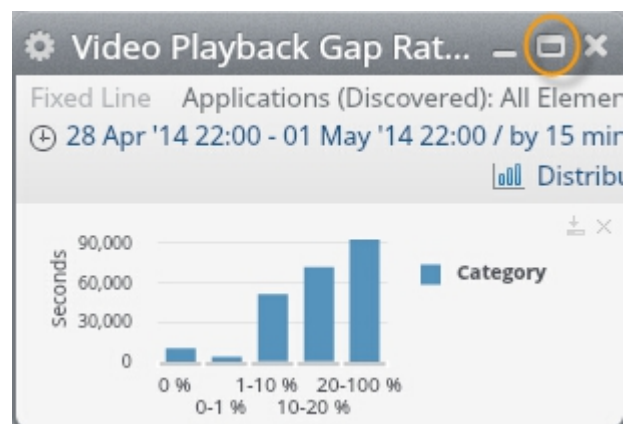
Procedure

Click the



icon

To reverse this action click the  icon on the report.



Deleting a report

About this task

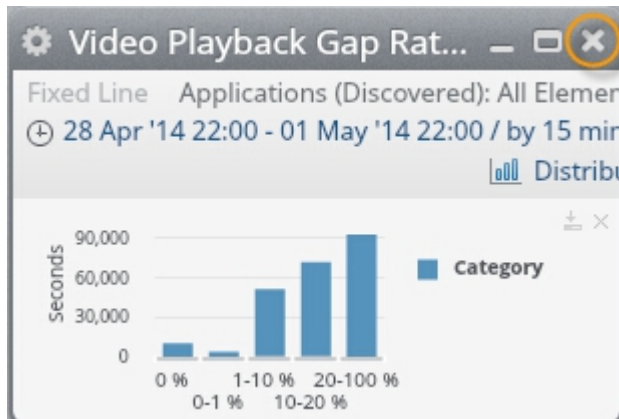
To delete a report:

Procedure

Click the



Delete icon




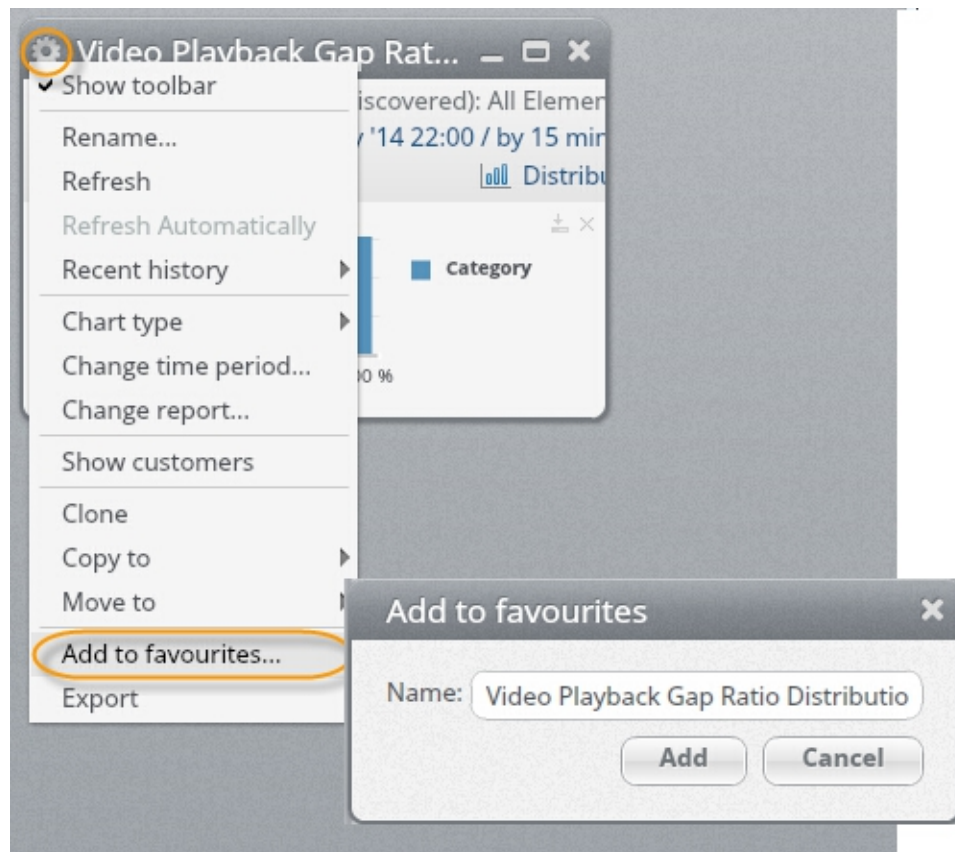
Adding a Report to Favorites

About this task

To add a report to your favorites:

Procedure

1. Click the **Settings**  icon and select **Add to Favorites**
2. Name the report and click the **Add** button




Scheduling a Report in a Workspace

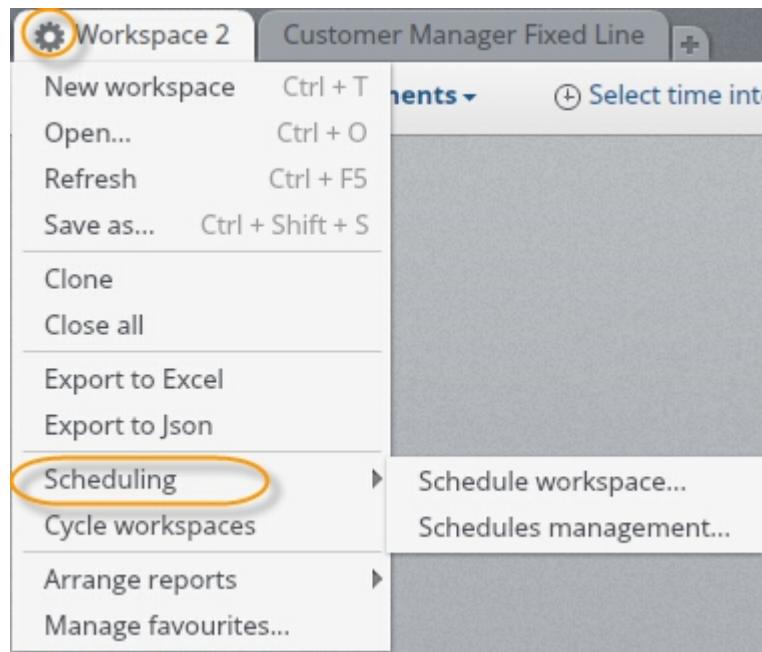
About this task

It is possible to schedule reports that are stored in a shared workspace. If you have a SmartView that is scheduled, the report can be emailed to selected users as an Excel file.

In a SmartView:

Procedure

1. Click on the **Settings**  icon
2. Select **Scheduling**.



There are two options:

- **Schedule workspace...**
- **Schedules management...**

Scheduling a Workspace

Procedure

1. Selecting **Schedule workspace**
Opens the **Schedule** screen.

Schedule Workspace 1

Occurrence

Repeats: Daily

Starts on: 05:00 20.07.15

Report data

Prompt dimension: Select main filter

Filters (optional): Add

Time interval: Select time interval

Share

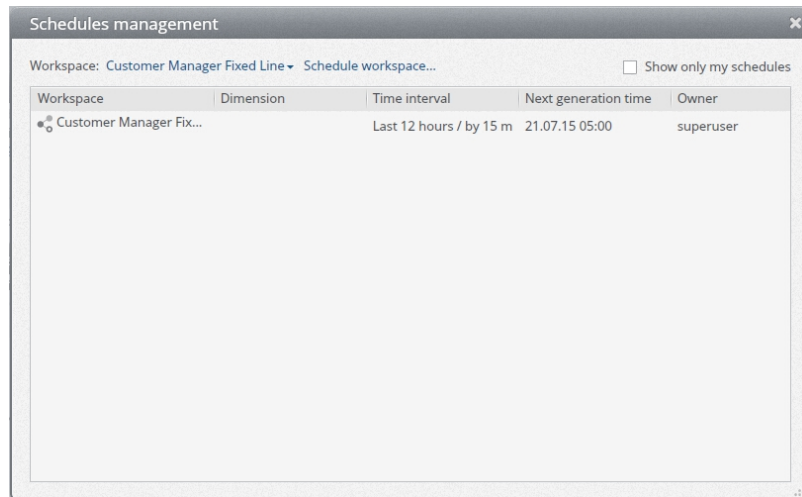
Via email:

OK Cancel

2. Occurrence
 - **Repeats** daily, weekly, or monthly
 - **Starts on** time of day and date when the report begins
3. Report data
 - **Prompt dimension** if applicable, e.g. Choosing iPhone 6 on a schedule for **Device Manager**
 - **Filters (optional)** is where you can add filters of dimension to the report
 - **Time interval** is the selected time frame that is covered by the report
4. Share
 - **Via email** - add the email addresses of the recipients of the scheduled report.
5. Click **OK**, and the schedule is saved.

Managing Schedules

Saved schedules can be viewed and edited by clicking **Schedules - Schedules management**.




You can display all shared workspaces from the **Workspace** drop-down list, and launch the scheduler from the **Schedule workspace...** option.

- **All Workspaces** includes private workspaces that are owned by other users
- **Owner** is the owner of the schedule, not the workspace

You can also edit, open, or delete a schedule by right-clicking the schedule and choosing the required option.


Moving a Report to a Different Workspace

Procedure

1. Click on the **Settings**  icon and
2. Select **Move to**
3. Select the workspace you wish to move this report to from the list.

Copying a Report to a Different Workspace

Procedure


1. Click on the **Settings**  icon
2. Select **Copy to**
3. Select the workspace you wish to move this report to from the list.

Clone a Report

About this task


Cloning a report creates a copy of the report displayed in the current workspace.

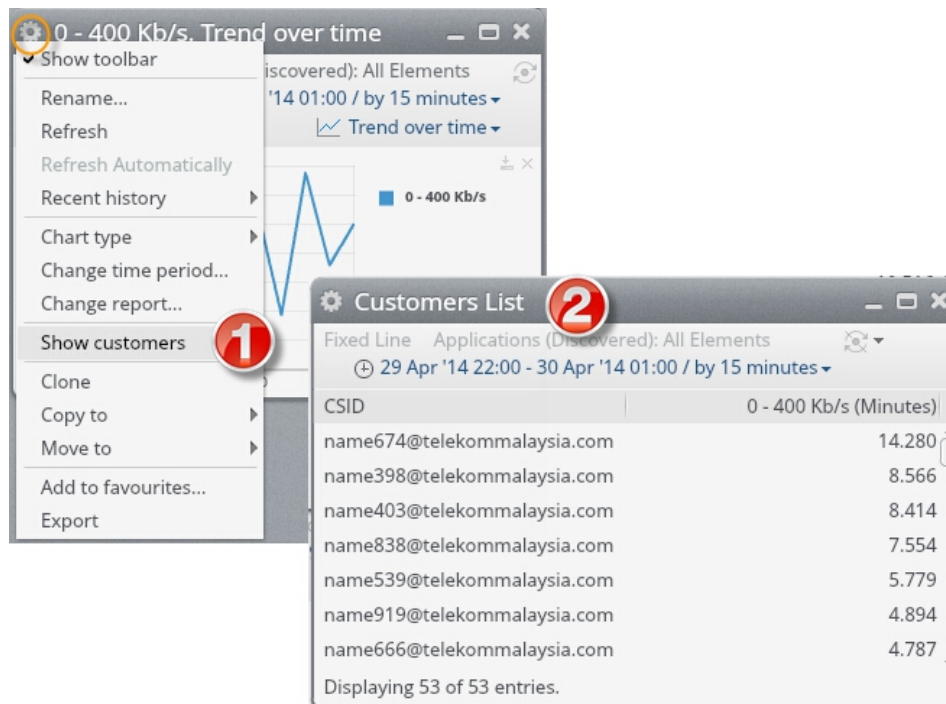
Procedure

1. Click on the **Settings**  icon
2. Select **Clone**

Displaying a List of Customers for the Report Data

Procedure

1. Click on the **Settings**  icon and select **Show Customers**
2. A customer list for this report data is displayed in a new report



- 3.

Exporting a List of Customers

Export the full list or current list for further analysis and contact.

About this task

To export a list of customers

Procedure

1. Click on the **Settings**  icon.
2. Select the **Export Current** or **Export All** option.

Note: The **Export All** option exports a maximum of 100,000 records.

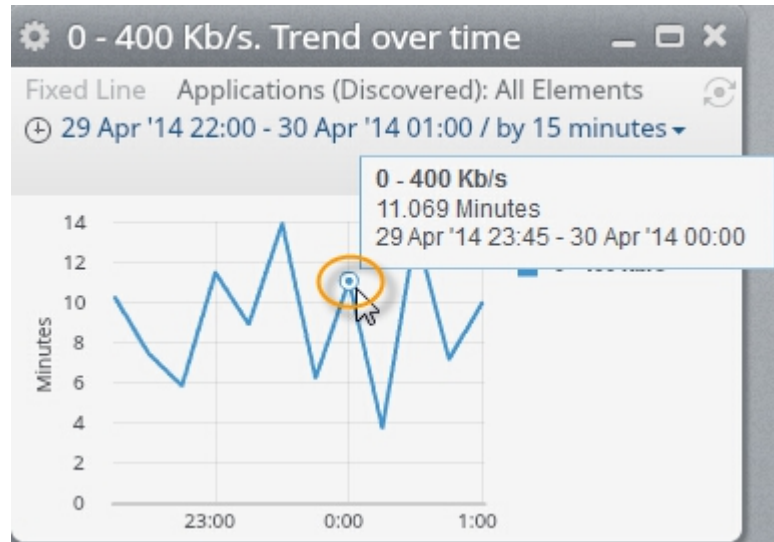
Viewing a Data Point in a Report Chart

About this task

To view a data point on a chart:

Procedure

Hover your mouse over the point in the chart.



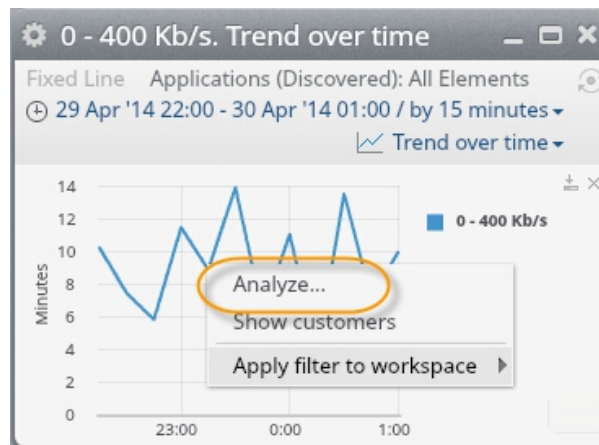
Analyzing a Data Point on a Report Chart

To analyze a specific data point:

1. Right-click on the point
2. Select **Analyze**.

A new report definition screen appears with the data point filters already in place. In a list view

3. Right-click on the line you want to analyze



Displaying a List of Customers for a Report Data Point About this task

To view a list of customers for a data point:

Procedure

1. Right-click on the point
2. Select **Show customers**.

- A new customer list report appears. In a list view
3. Right-click on the line you want to analyze

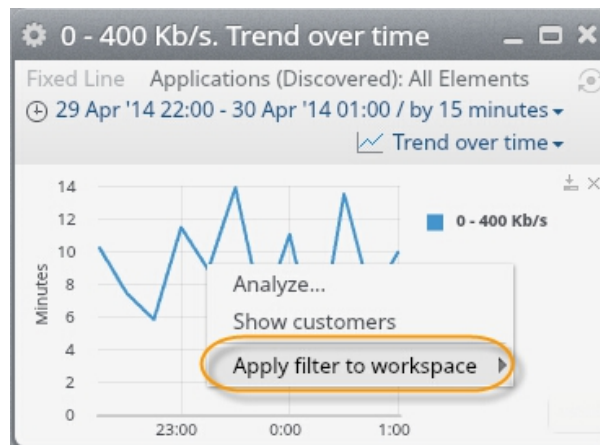
Applying a Data Point as a Filter to a Workspace

About this task

To apply a data point as a filter to a workspace:

Procedure

1. Right-click on the point
2. Select **Apply filter to workspace**.
A list of available filters appear for you to select from. In a list view:
3. Right-click on the line you want to analyze



Chapter 9. Working with Workspaces

Managing Workspaces

Workspaces can be saved and shared in several ways and they are also the basis of all SmartViews. When working on reports there is always at least one workspace open, as reports cannot be created on their own.

As you work, Customer & Network Analytics automatically saves. If you log out or your session has timed out, when you log back in the last screen you were on is displayed.

Note: Workspaces are auto-saved every 3 minutes and on logout. Workspaces are not saved if the browser is closed, in this case you may lose up to 3 minutes of edits.

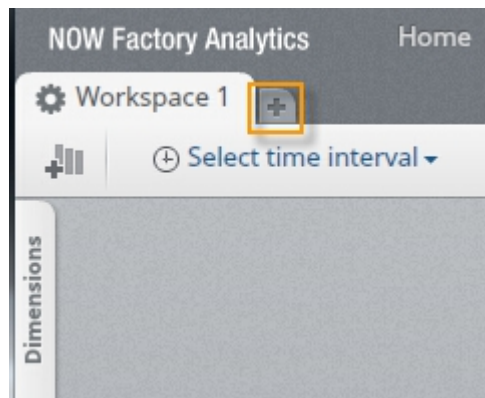
Creating a New Workspace

About this task

To create a new workspace simply:

Procedure

click the “Creating a New Workspace”




Settings icon.

Saving a Workspace

About this task

To save a workspace:

Procedure

1. Click the  next to the workspace title and select **Save as...**
2. In the **Save Workspace** screen select between these two options:
 - a. **Private Workspaces** - is visible only to you

- b. **Shared Workspaces** - is visible by other users (pending user access rights)
- 3. Name your workspace
- 4. You can choose if you would like the workspace to have a main prompt. A main prompt allows you to have a filter that applies to all reports in the workspace. The selection of main prompts are dynamically updated from the dimensions that are defined in your reports. To select a main prompt, click the check and select one from the drop-down list.
- 5. Click the **Save As New** button to save the workspace .

Results

If a workspace with auto refresh enabled is saved, it is saved with auto refresh disabled. Auto refresh can be enabled by a user after opening a saved workspace.

Locking and Unlocking a Workspace

Locking a workspace takes away all the toolbar functionality from the reports and 'flattens' the screen.

Note: Try not to have any overlapping reports before you lock the screen, as when the workspace is locked you are not to reorder them.

To lock a workspace, click the,

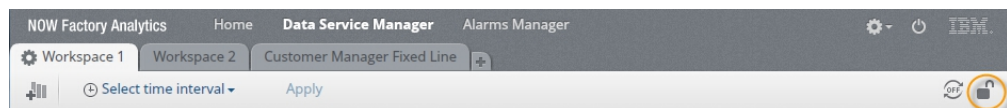


icon to unlock click the



icon.

Note: Locking is automatic when saving a workspace to the shared root




Arranging Reports in a Workspace

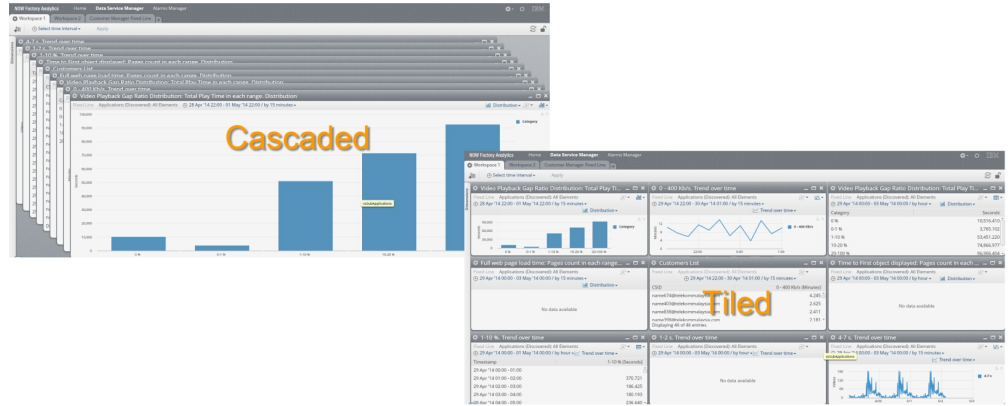
There are two ways in which you can arrange reports in a workspace

Tile - arranges the reports in equal size so that they all fit in the workspace

Cascade - enlarges the report and cascades them in order of opening


When arranging reports,

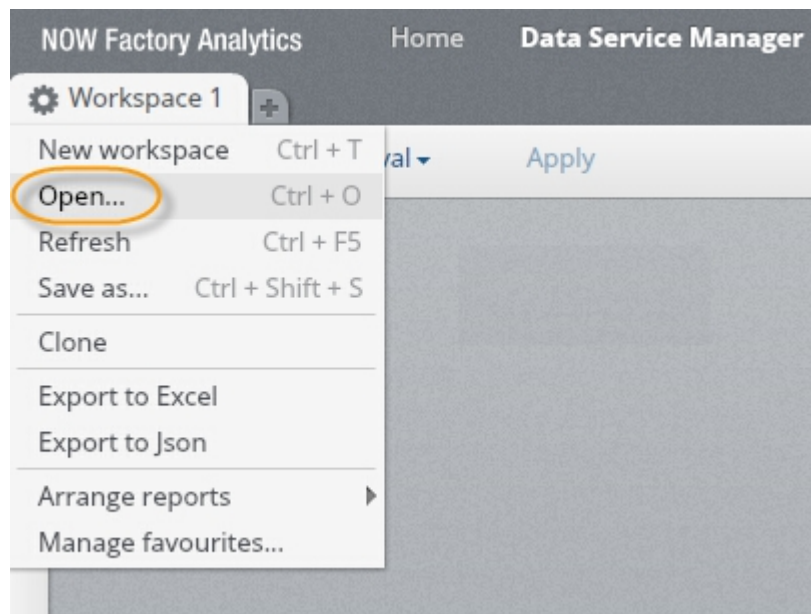
1. Ensure the workspace is unlocked.
2. Select the workspace's setting tab 
3. Select **Arrange reports**
4. Select **Tile** or **Cascade**.



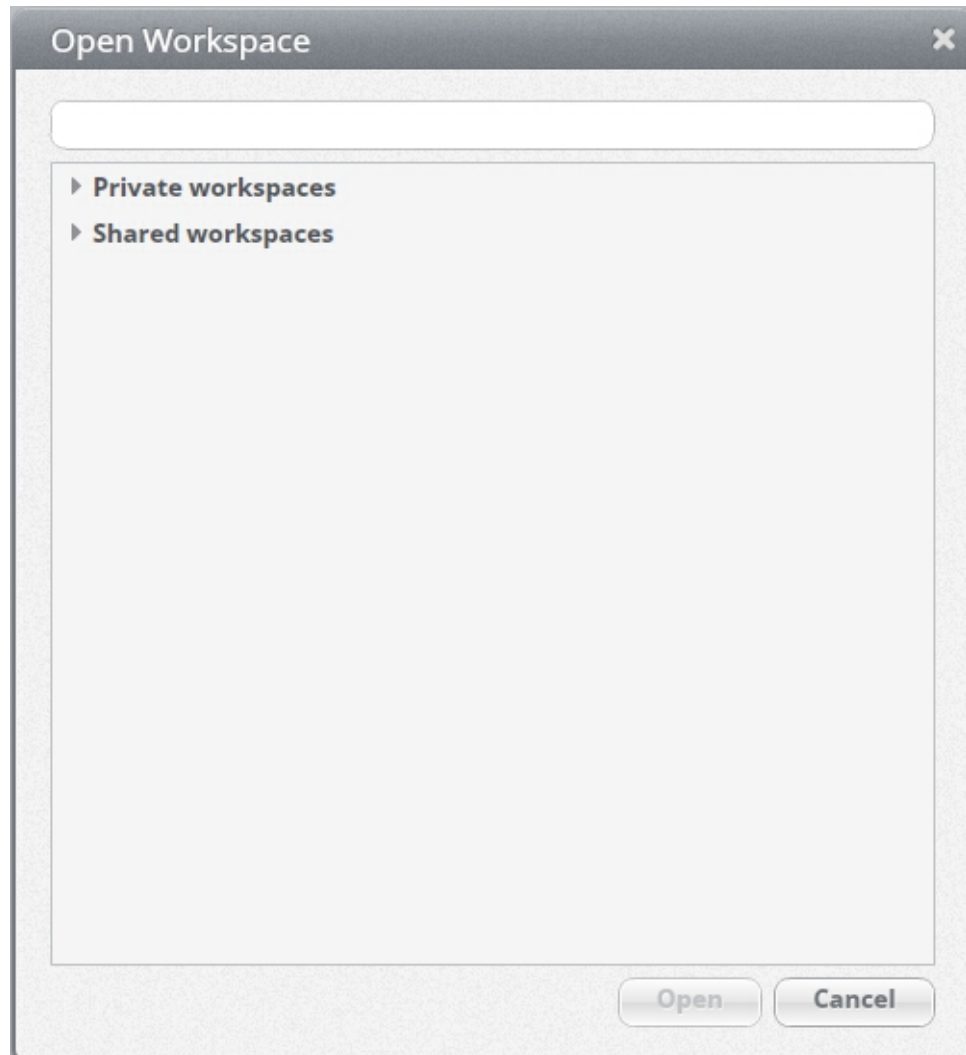
Opening a Saved Workspace

To open a saved workspace,

1. Click the  next to the workspace title
2. and select **Open...**



3. The **Open Workspace** dialog opens.



4. Either type the workspace name in the filter bar, or select from the **Private workspaces** and **Shared workspaces** lists.
5. Click the required workspace name to open the workspace in Customer & Network Analytics.

Finding a Workspace

Workspaces can be filtered by title so you can search both shared workspaces and private workspaces, to which you alone have access.

About this task

The **Open Workspace** dialog has a search box which allows you to search workspaces by name,


Sharing a Workspace (Json Export)

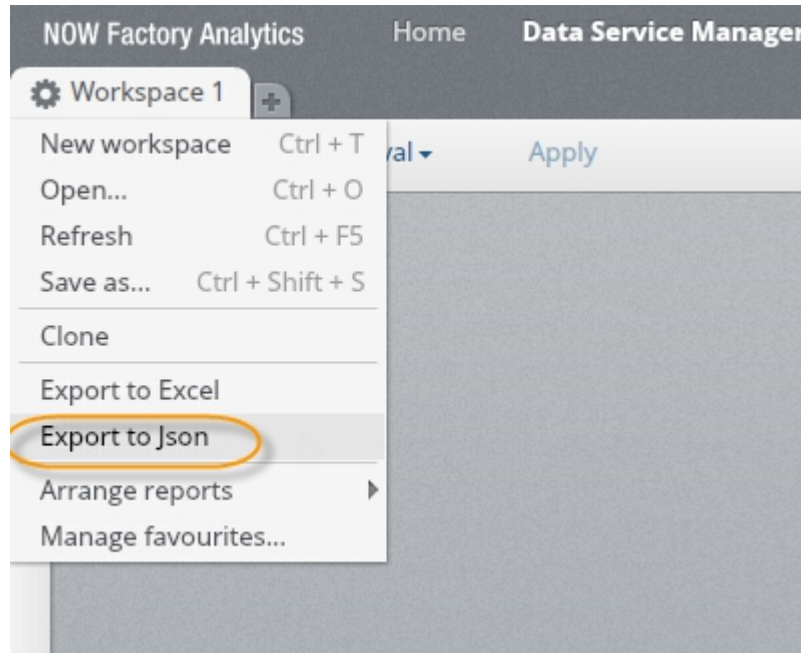
About this task

You can share a workspace by exporting it as a Json file and giving that file to another user. The Json file does not contain any data, only the settings of all the reports.

To save a file as Json:

Procedure

1. Click the  next to the workspace title
2. Select **Export to Json**




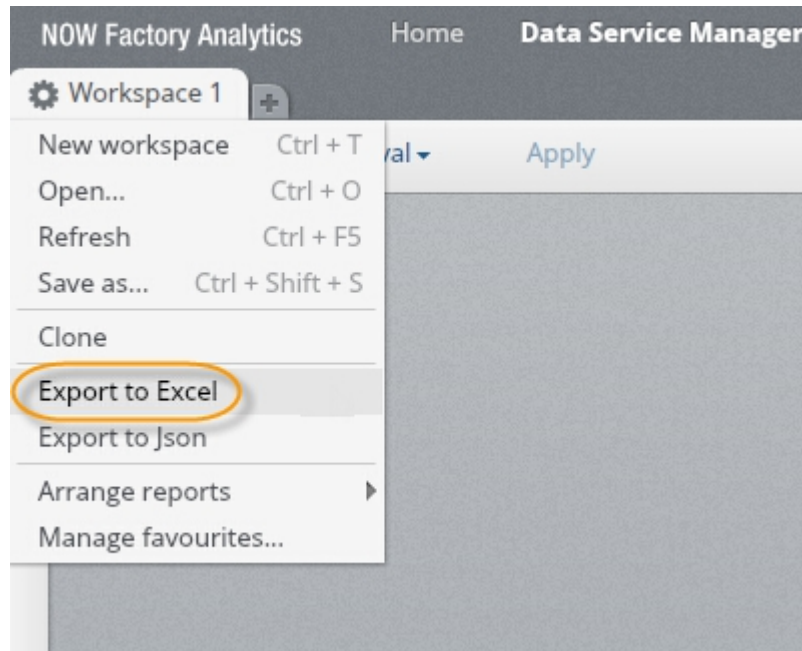
Exporting a Workspace to Excel

About this task

To save a file as Excel:

Procedure

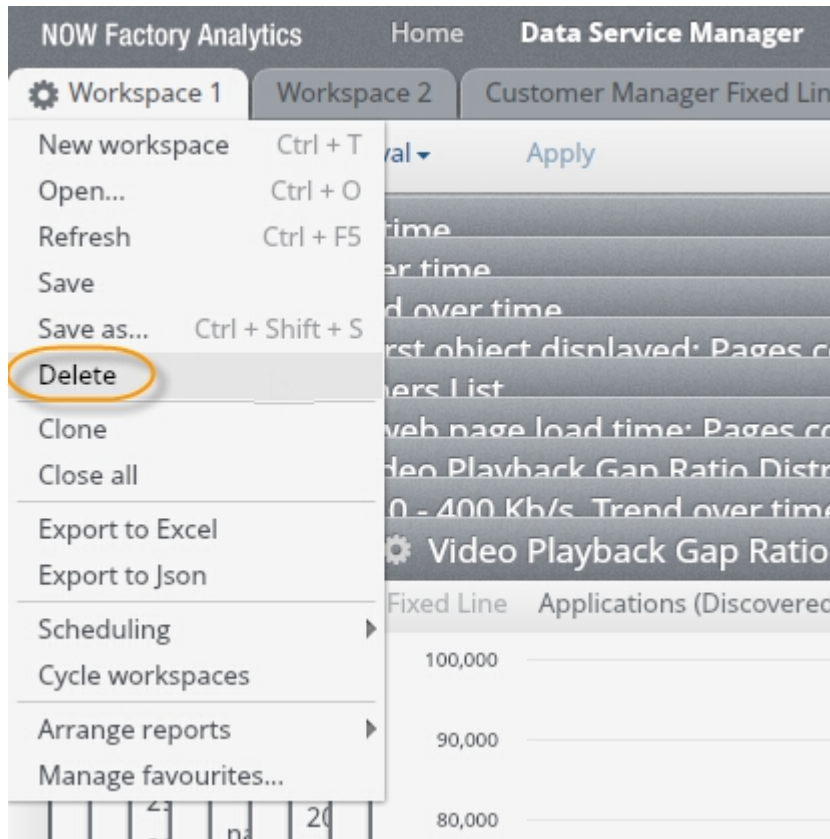
1. Click the  next to the workspace title
2. Select **Export to Excel**



Deleting a Workspace

Procedure

1. To delete a saved workspace, click the  next to the workspace title and select **Delete**
2. In the prompt screen, click **Delete**



Closing a Workspace

About this task

Closing a workspace removes it from the display.

Saved Workspaces - if the workspace is saved and no changes made, it will simply close. If you made changes, you will be prompted to save or discard them.

Unsaved Workspaces - when closed, you will not be able to recover them

To close a workspace:

Procedure

1. **Hover** your mouse over the workspace tab until the

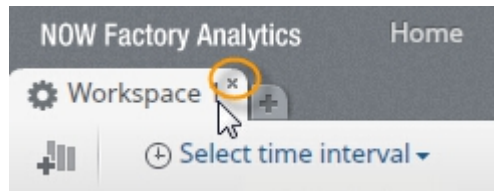


close icon has appeared

2. **Click** the



gear icon.



Closing All Workspaces


About this task

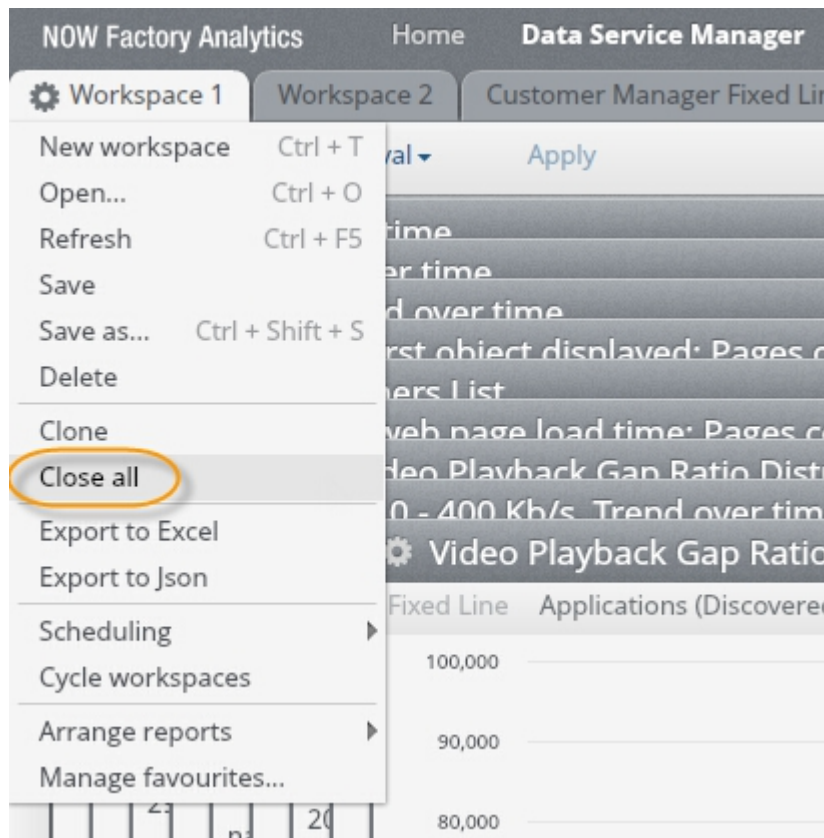
It is possible to close all open workspace at once in order to start from a blank screen.

Note: Unsaved workspaces will be deleted and you will not be able to recover them.

To close all workspaces:

Procedure

1. click the  next to the workspace title and
2. Select **Close All**




Cycling Workspaces

About this task

When a workspace is set to Cycle, the top menu items stay on the screen.

In a workspace,

Procedure

1. Click on the **Settings**  icon
2. Select **Cycle workspaces**.
3. The Configure cycling window opens.
4. Select **Switch workspaces every _ minute(s)**, where _ is the amount of time to be set.
5. Click **OK**.

Results

The listed workspaces are cycled.

Managing Favorites


About this task

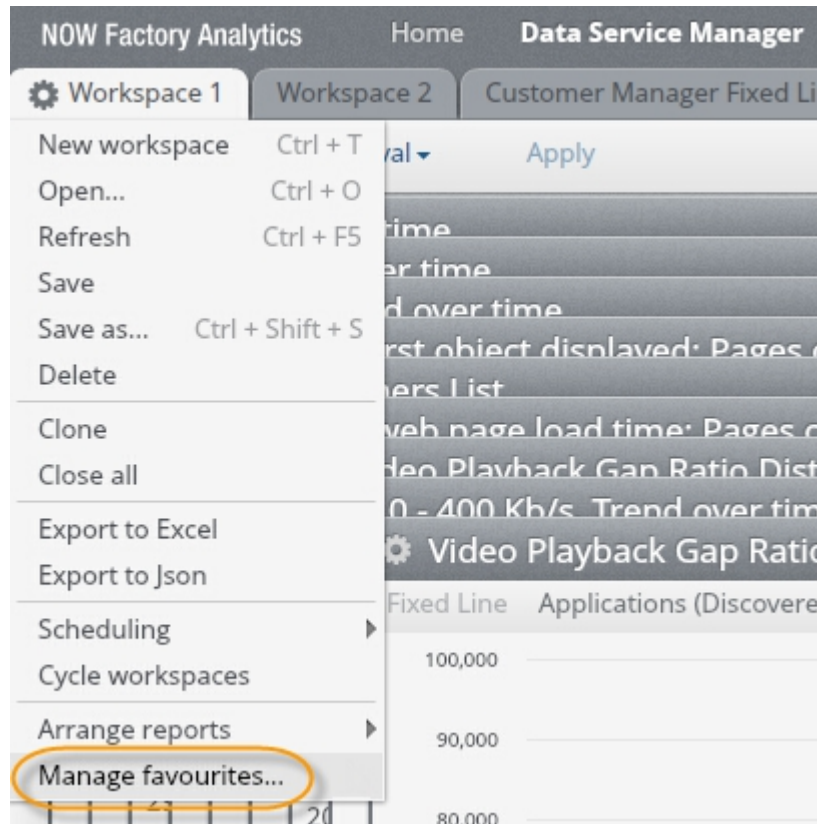
Customer & Network Analytics allows you save a report into a favorites folder where you can access them at any time and add them to new or existing workspaces.

Once you have saved a report to your favourites you can manage this list by organizing it into folders, renaming reports and deleting them.

To manage your favourites:

Procedure

1. Click the  next to any workspace title
2. Select **Manage Favourites**




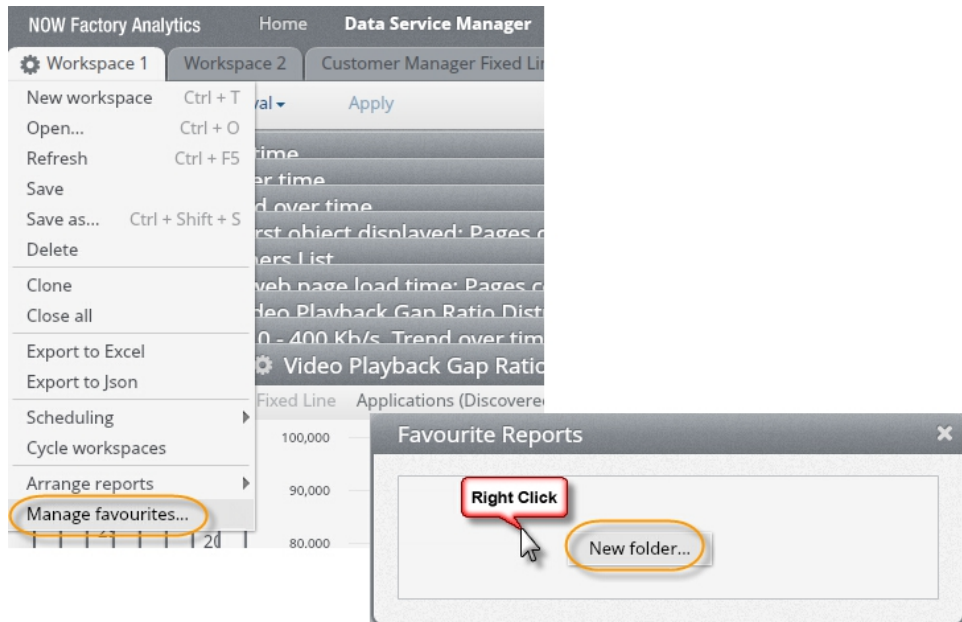
Creating Folders within Favorites

About this task


To create a folder within Favourites:

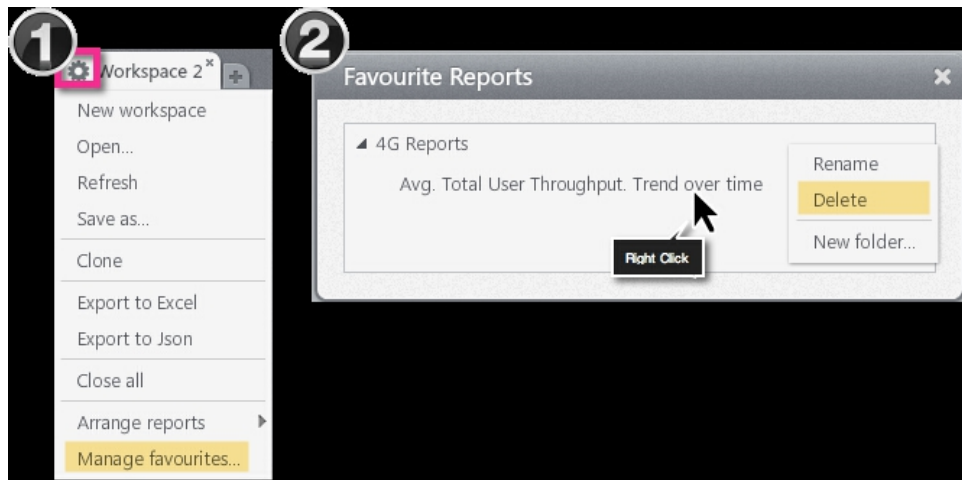
Procedure

1. Click the  next to any workspace title and select **Manage Favourites**
2. Right-click anywhere on the screen and select **New Folder**, name your folder



Deleting a Reports or Folders from Favorites Procedure

1. Click the  next to any workspace title and select **Manage Favourites**
2. Right-click on the report or folder you want to delete and select **Delete** confirm your choice




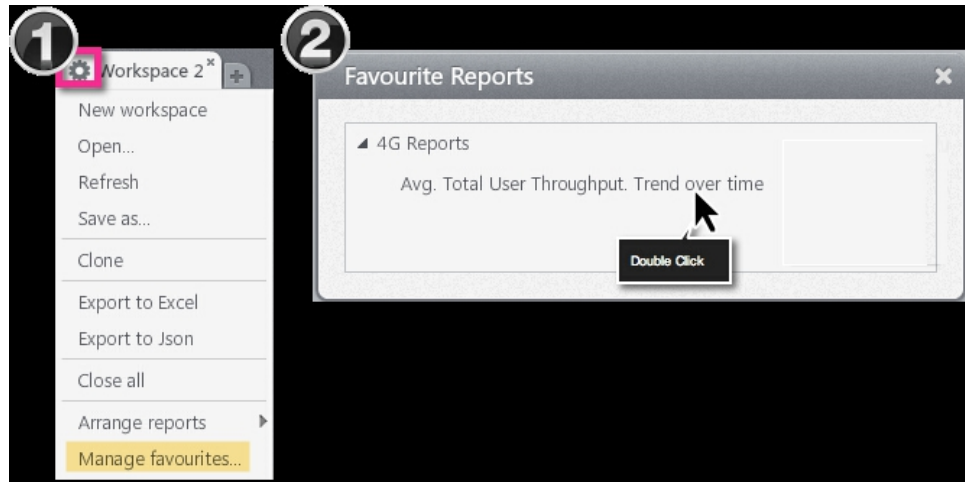
Adding a Favorite Report to a Workspace About this task

Once you have saved report to your favourites you can add it at any time to a workspace

To add a saved report to your workspace:

Procedure

1. Click the  next to any workspace title and select **Manage Favourites**
2. **Double click** the report you wish to add, it will be automatically added to the currently active workspace



Chapter 10. Datasets

Selecting a Dataset from the Dimensions Panel

About this task

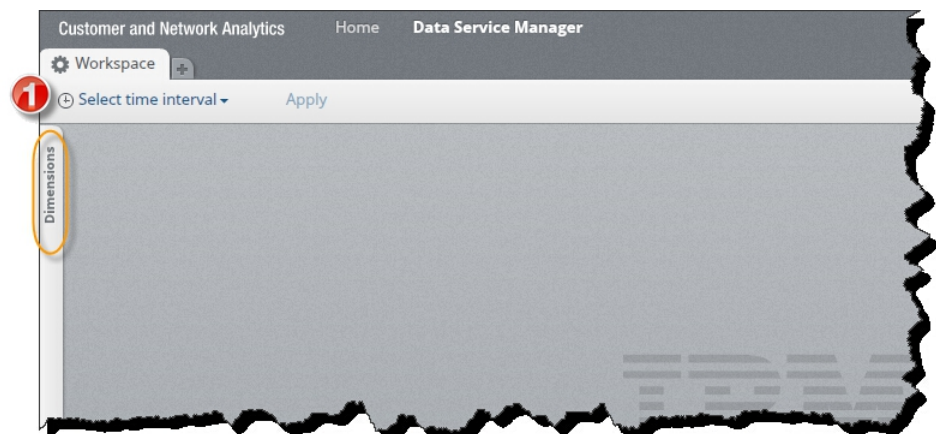
When creating a new report you will need to first select the relevant Dataset. A Dataset is a collection of related dimensions and metrics. Datasets typically are defined for a technology type such as GPRS/UMTS or LTE.

The set of dimensions and metrics available in a dataset are generally those available from the interfaces where data is collected.

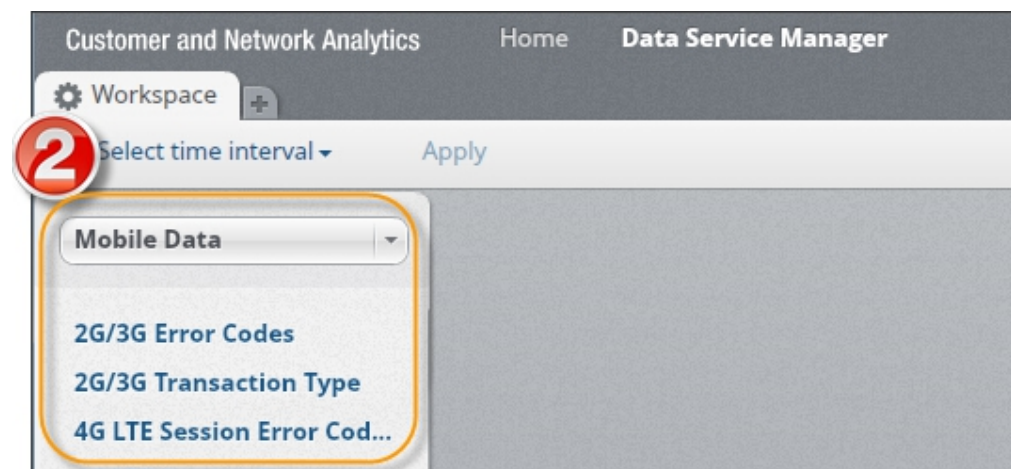
To select a dataset from the dimensions panel:

Procedure

1. From the **Data Service Manager** open the **Dimension Panel**
2. Click the **dataset** drop-down list to select the dataset you wish to report on



Results



Chapter 11. Dimensions

Analyzing dimensions and elements

About this task

A **Dimension** is a type or category of data. Examples of Dimensions are **Device** and **Application**. The dimensions panel at the left of each workspace lists the dimensions available for analysis for the selected technology. When you select a dimension, the elements available for that dimension are displayed in the elements panel to the right of the dimensions panel.

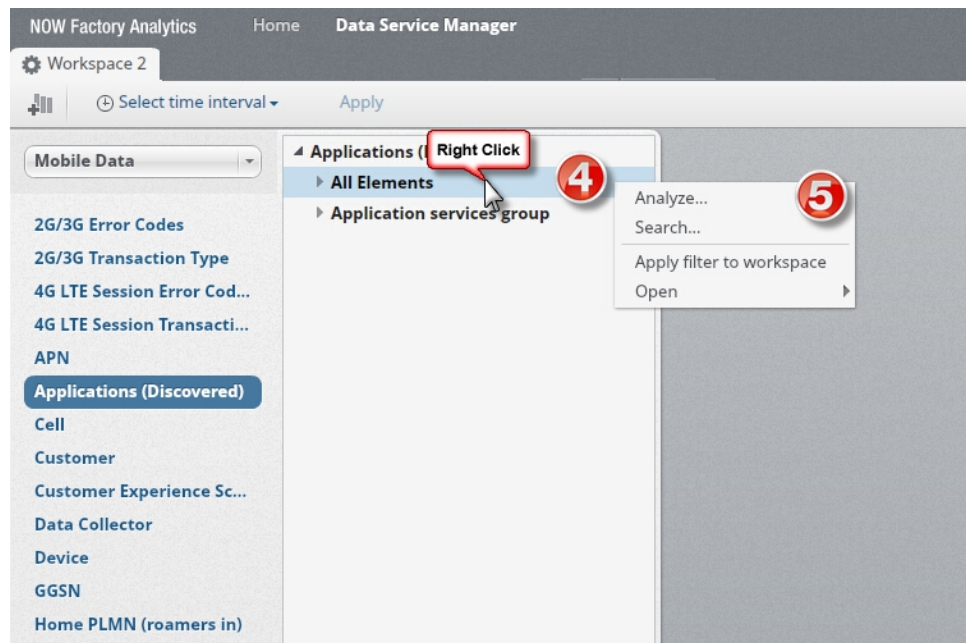
An **Element** is an instance of a **Dimension**. Examples of **Elements** of the **Application** dimension are **iPhone6** and **Bittorrent**.

You can analyze elements within a dimension, to analyze a full dimension select **analyze all elements**.

To analyze an element or all elements,

Procedure

1. From the **dimension panel**, select the dataset that you wish to report on
2. Select the **dimension** that you wish to report on by clicking it
3. Right-click the element or all elements and select **Analyze**



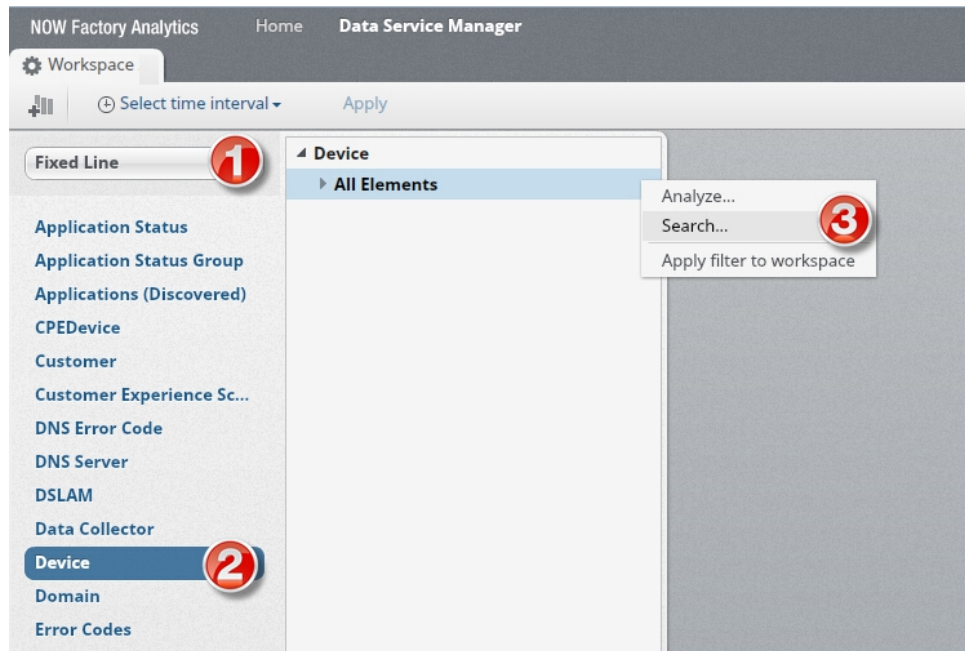
Searching for an element

About this task

To search for an element:

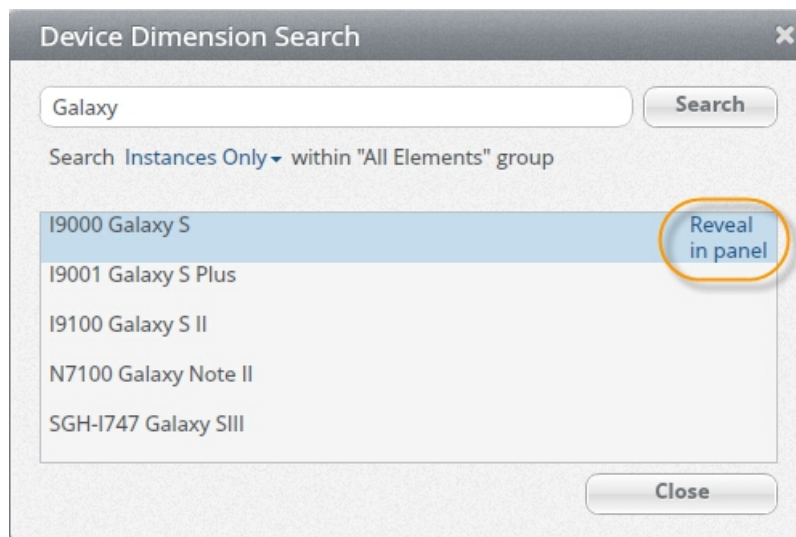
Procedure

1. From the **dimension panel**, select the dataset that you want to report on
2. Select the dimension that you want to report on by clicking it
3. Right-click **All Elements** and select **Search...**



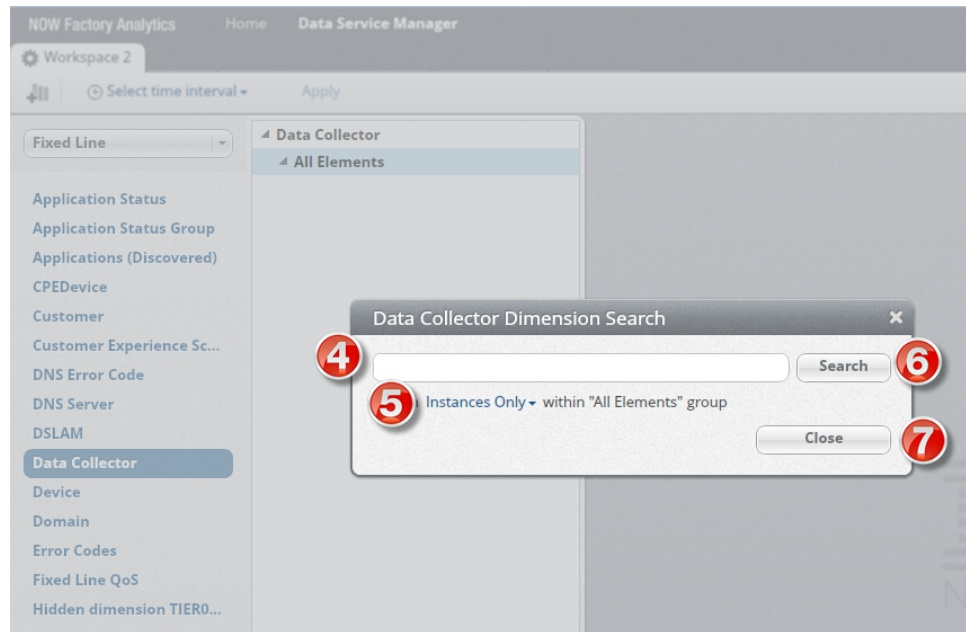
4. Type the name of the element
5. Select:
 - a. **Instances Only** - search for dimension instance
 - b. **Groups Only** - search for dimension group
 - c. **Groups and Instances** - search for both dimension group and instance

Results returned for the search are displayed in the Dimension Search window. If you selected a returned group or instance, you are offered an option to **Reveal in panel**. If this is selected, this links to the dimension panel where the group or instance is displayed.



6. Click the **Search** button

7. Click the **Close** button



Customer Types

Customer - Segment Groups allow you to create attribute-based groups from the subscriber list. This is a very useful grouping method and you can create and manage these groups from within the application. Once created, they are available for analysis and search, just like any other dimension elements they cannot be edited from the application.

This group is accessed through the **Customer** dimension.

Managing Dimension Groups

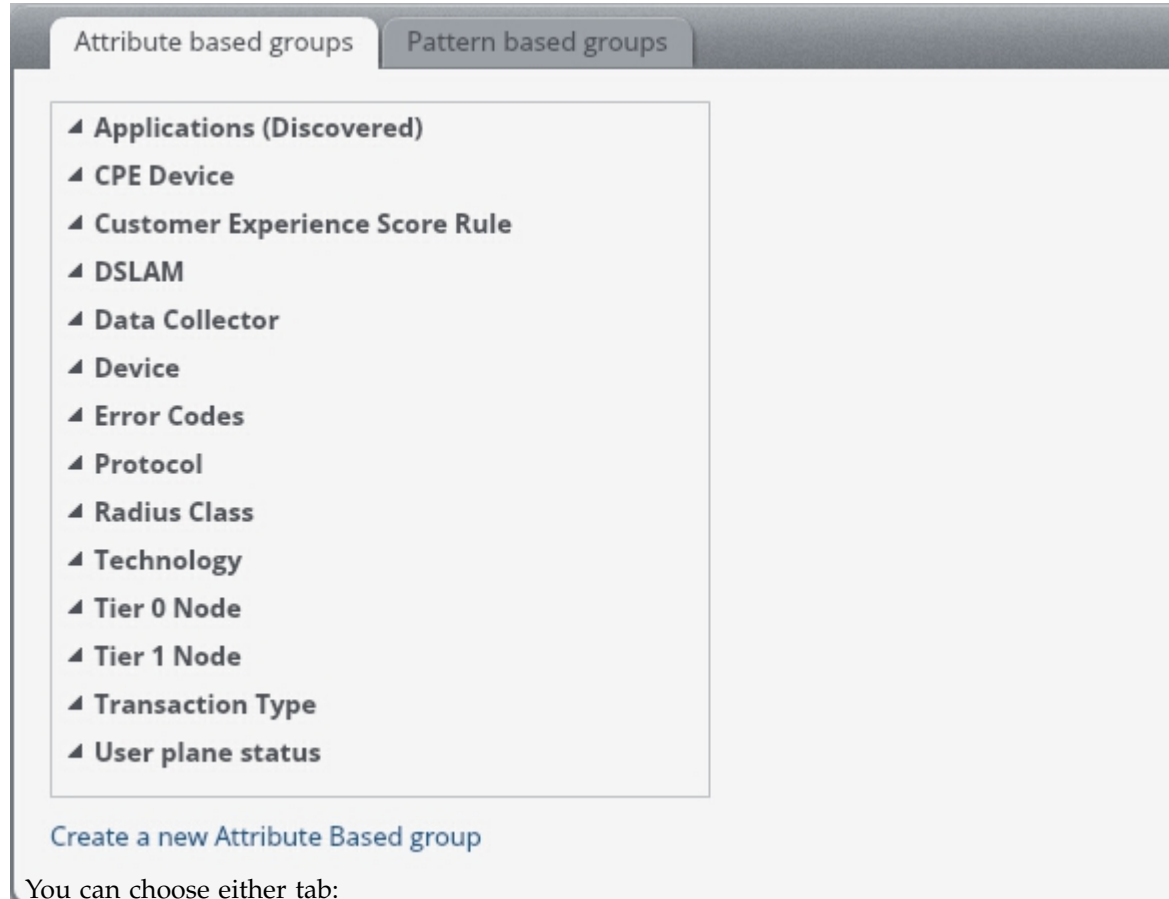
About this task

If you have sufficient privileges, you can set up and modify attribute or pattern based groups for any provisioned dimension.

Procedure

1. Select the **Dimensions** tab.
2. Select a dataset.
3. Select a **dimension type**.
4. Right-click to choose a group type:
 - **Attribute Groups**
 - **Pattern Groups**

5. Select **Manage**. The Groups window opens.



- **Attribute based groups**
- **Pattern based groups**

Results

All groups, both attribute-based, and pattern-based are shown in the Groups window.

Compound Metrics

Compound Metrics allows formulas to be used to create new aggregate metrics from existing metrics available in

Creating Compound Metrics

Select the Dimensions tab
Click Customer
Right-click Segment Groups - single attribute base
Select Manage.
Click Create a New Group.
Name your group and select an attribute from the drop-down list, and click OK
Click Close Customer group types

Configuring Compound Metrics

Applications

Using Applications in CNA

Customer & Network Analytics can be configured to track performance and experience metrics on pre-defined applications. You can configure applications with a set of parameters, that can then be used to create reports.

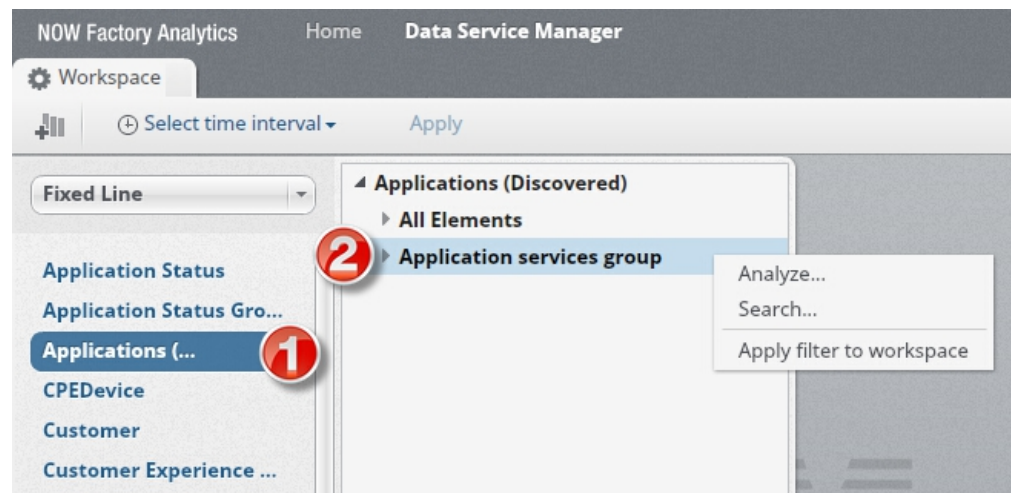
Viewing Applications

Procedure

1. From the **Dimensions** panel select your required **dataset**.
2. Select the **Applications (discovered)** dimension.
3. The following application options are displayed:

Results

- All Elements
- Application Services Group



Chapter 12. Sample Use Cases

Mobile Data Sample Use Cases

Use Cases are grouped by dimension type and function.

PDP Creates success rate per main Network Nodes **About this task**

In this Use Case, we'll look at examples of what is possible to report on to prevent and troubleshoot session connections errors in the Network.

This Use Case demonstrates:

- Control Plane KPIs
- Key Network Elements monitoring
- QoS Monitoring
- Drill-down to troubleshoot issue
- Affected Customers List

Step by step

Procedure

1. View Success Rate over all network GGSNs
 - a. Select GGSN Dimension Type
 - b. Select All Elements and Analyze
 - 1) Metric: Create - PDP Create Success Rate Metric
 - 2) Report Type: Trend Over Time Broken down by GGSN
 - 3) Time Period: Last 7 days by Hour
 - c. Most GGSNs have a success rate consistently close to 100% but GGSN123 shows a dip yesterday at 12:00
2. Drill-down to find if a particular requested QoS is affected
 - a. Select the datapoint at 12:00 for GGSN123, right-click and select **Analyze**
 - b. Keep all pre-selected parameters except change Report Type to: Breakdown by Requested QoS.
 - c. The report shows the success rate for the faulty GGSN broken down by Gold, Silver and Bronze requested QoS. All 3 have similar success rates, so there is no correlation here.
 - d. Navigate back to previous Trend Over Time Broken down by GGSN view.
3. Drill-down to find if a particular requested SGSN is affected
 - a. Select the datapoint at 12:00 for GGSN123, right-click and select Analyze
 - b. Keep all pre-selected parameters except change Report Type to: Breakdown by SGSN.
 - c. The report shows the success rate for the faulty GGSN broken down by associated SGSNs. One SGN shows a pronounced dip in success rate, it is the faulty element.
4. Find out which customers were affected so that messages are sent to them to ensure them the fault has been identified and rectified, so as to avoid churn.

- a. Select faulty SGSN datapoint at the time of the fault in report above
- b. Right-click and select **Show Customers**
- c. The **Customer List** report returns the list of customers who attempted **PDP Create** during that period. The list can be sorted in ascending or descending order by clicking on the **PDP Success Rate** header.
- d. Export the full list or only the leading IMSIs with the KPI values as CSV for further analysis and contact: click on the report settings menu at the and select **Export : Export Current.** or **Export All....**

Key applications usage and trend

About this task

In this Use Case, we'll look at examples of what is possible to report on to on applications usage in the monitored network and this information may be used for trending and capacity planning.

This Use Case demonstrates:

- User Plane KPIs
- Entity Search
- Customer Count KPIs
- Application Grouping
- Drilldown by subset of application
- Drilldown and cross-reference by Device

Step-by-step

Procedure

1. View usage trend on key application with impact on Network (e.g. MegaUpload) or Revenue (e.g. WhatsApp)
 - a. Select Applications Dimension Type then select All elements and right-click to search required key Application
 - b. Double-click on valid returned application to select it
 - c. Right-click and select **Analyze**
 - 1) Metric: Volume - Bytes Down
 - 2) Report Type: Trend Over Time
 - 3) Time Period: 14 days by 1 day
 - d. See for example that the total volume downloaded is steadily going up
 - e. Clone the report and in the new report, select the menu on the report - Change Metric to view Unique Customers Count.
 - f. The trend for Unique Customer Counts is growing at about the same rate as the volume. The application usage is driven by users spread.
2. Find which devices are driving this usage
 - a. Select a recent high data point in the Customer Count report and Analyze.
 - b. Select Trend Over Time Breakdown by Device Manufacturer
 - c. For example, it could be seen that the Samsung Manufacturer growth rate for the key application is growing faster than other manufacturer
 - d. The user can further breakdown by Device or Device Type for example to see if any other trend

3. Using marketing projection on device take up, the growth of the key application can be planned and impact on Network / Revenue assessed.

Corporate Customer Groups trends and fault impact

About this task

In this Use Case, we'll look at examples of what is possible to report on to view Customer Experience KPI at corporate customers groups levels near real-time for great reactivity.

This Use Case demonstrates:

- Control Plane and User Plane KPIs
- Corporate Customer Groups reports
- Trend over time reports

Step by step

Procedure

View connectivity and usage performance experience trend for a customer group.

1. Select Customer Group Dimension, then a Corporate Group e.g. CompanyABC
2. Right-click and select Analyze...
 - a. Metric: Create - PDP Create Success Rate
 - b. Report Type: Trend Over Time
 - c. Time Period: 14 days by 1 day
3. Check this trend is consistent or degrades.
4. If any degradation shows, select time point, right-click to "Analyze." and breakdown by any other dimension (for example Location) to find root cause of degradation or view Customers List to view which individual were particularly affected. Note, the corporate breakdowns and customer list may take a longer time to complete.
5. Select CompanyABC Group again
6. Right-click and select Analyze...
 - a. Metric: Time - TCP RTT Distribution: Packets in each range
 - b. Report Type: Distribution
 - c. Time Period: 14 days by 1 day
7. Select All Customers and open same report
8. Compare the group user's experience of Latency and the overall Customer Base experience.

Setting up alarms for corporate accounts

Procedure

1. Set up an **Alarm Profile** to monitor PDP Create Success Rate (for example)
2. Select the **Alarm Manager** tab in the Customer & Network Analytics header
3. Select **Manage Profiles...** on the **Alarm** tab (you will need permissions to create alarm profiles)
4. Select **Create a new profile**
 - a. Select a name, the **2G / 3G** interface, the **Customer Group** Dimension type

- b. In Measurement: the **PDP Create Success** metric, the option < and the value 0.85
 - c. Check Rate: every 15 minutes
 - d. 1 breach to raise alarm and 1 breach to close alarm
 - e. Schedule: always active
 - f. Severity: Minor
 - g. Click **Create** button
5. Alarms will be raised if any Corporate Customer Group experiences a problem with PDP session creations where the success rate falls below 85% for over a period of 15 min.

Customer Experience analysis by Location

About this task


In this Use Case, we'll look at examples of what is possible to report on to view Customer Experience KPIs at different location levels to find possible bottlenecks and help planning as well as root cause analysis.

This Use Case demonstrates:

- User Plane Distribution KPIs (throughput and latency)
- Location Dimension and hierarchical grouping for different views.
- Drilldowns for troubleshooting
- Change chart type

Step-by-step

Procedure

1. View **Max Downlink Throughput by Region** and drill-down to find which Towns are most affected
 - a. Select Cell Dimension Type then select All elements
 - b. Right-click to select **Analyze...**
 - 1) Metric: Throughput - Down link Throughput - Max. User DL Throughput
 - 2) Report Type: Breakdown by Cell: Region
 - 3) Time Period: 14 days by 1 day
 - c. The report shows the bar graph of Max Downlink Throughput by region for the leading regions: 1 region shows a particularly low Max Throughput.
 - d. In the toolbar, click on the  icon to change the Chart Type to Table to view the exact values
 - e. Select the line in the table for the lowest performance region (or when Chart Type is Bar Graph, select the Bar itself in the chart)
 - f. Right-click and select **Analyze...**
 - g. Keep the pre-selected options except **Report Type: Breakdown by Cell: Town**, choose **View Report**.
 - h. The report will show the **Top Towns for Max Throughput Bar Graph**
 - i. Change the chart type to **Table** to view all towns, click on the Column header to sort in ascending order and show the Towns with lowest Max Throughput first.

2. Drill-down and show customers affected for low throughput cells
 - a. Select Cells with low throughput in table above
 - b. Analyze..
 - 1) Breakdown By Application Types: find out if any application particularly used for this cell
 - 2) Change Metrics to Customer Count to compare total number of customers using this cell for data
 - 3) Change Report Type to Trend over time, 14 days by day, to view trend and see if performance has degraded in last few days.

Customer Manager

About this task

In this Use Case, we'll look at examples of what is possible to report on to view a Customer Experience and do root cause analysis in case of problem.

This Use Case demonstrates:

- Customer Manager
- In-place drill-down.
- Advanced drill-down in workspace

Step by step

Procedure

View Customer's experience at 1 glance

1. Click **Customer Manager** on main menu
2. Type in the Customer's MSISDN and select required time period
3. Click **Apply**
4. The **Customer Manager** dashboard loads data with the customer key indicators: the user can view in 1 screen the device(s) used, applications with download and upload, connectivity and errors, throughput and Latency experience, locations, the activity tracker with the table of main indicators over timeline.
5. This customer may for example have a very bad throughput experience.
6. 1 time period in the Activity tracker is of particular interest as it shows the time when the throughput degraded significantly
7. Select the line in the table, right-click and select **Analyze...**
8. Select the Bytes Down Metrics and Breakdown by Applications
9. The table reloads in place and shows Bytes down over the list of applications used during the selected time period.
10. In report menu, select Recent history to return to the previous table
11. In the **Applications Usage Report** menu select copy to workspace
12. Open workspace to view copied report: all standard report options are available, for example, the user can export to CSV, change the time period, the metric graphed...

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