Data Mining Interface (DMI)

User Guide

Release 11.1

Please direct questions about ClientVantage Agentless Monitoring or comments on this document to:

Technology Customer Support
Compuware Corporation
Customer Support Hotline
1-800-538-7822
FrontLine Support Web Site:
http://frontline.compuware.com

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Contents

Introduction

Who Should Read This Guide

This guide is intended for users of the Data Mining Interface(DMI), which is an interface for generating customized reports. DMI does not have any statistical information or structures associated with it—such as dimensions or metrics—but works on entities associated with hosted software.

Organization of the Guide

This user guide is organized as follows:

- DMI Overview [p. 11] – Explains the main concepts and functionality of DMI.
- DMI Usage [p. 13] – Explains the purpose of the DMI query screen, its division into sections and how to manage sections.
- Defining Report Conditions [p. 17] – Shows step-by-step how to define a report query.
- Running a DMI Report Definition [p. 31] – Describes DMI query execution.
- DMI Chart Customization [p. 35] – Concentrates on customizing report charts. Report charts have a large number of options and settings to enable you to design your charts to suit your particular needs.
- Advanced Reports [p. 47] – Describes advanced subjects, such as displaying multiple sections for a data view, multi-layered reports, benchmarking and merging data views and customizing report contents and layout.
- Report Maintenance [p. 61] – Describes concepts such as report saving, pre-loading, exporting, e-mailing and also explains issues related to user and report access management.
- Configuration [p. 69] – Deals with configuration issues such as configuring data servers to be available as data sources, or configuring the report server to e-mail reports.
- Example Reports [p. 73] – Lists all example DMI reports that can be manually imported to the report server; on import, these reports will appear on the server dashboard.

- Frequently Asked Questions About DMI [p. 79] – Presents a collection of FAQ based on user feedback.
- Differences in DMI Integrated with VantageView [p. 83] – Describes the effect of integration with VantageView.

Customer Support and Online Information

Corporate Web site

To access Compuware's site on the Web, go to *http://www.compuware.com*. The Compuware site provides a variety of product and support information.

FrontLine support Web site

You can access online customer support for Compuware products via our FrontLine support site at *http://frontline.compuware.com*. FrontLine provides fast access to critical information about your Compuware products. You can read or download documentation, frequently asked questions, and product fixes, or e-mail your questions or comments. The first time you access FrontLine, you are required to register and obtain a password. Registration is free.

Customer Support

You can contact Compuware Customer Support as follows:

- Web: via the “FrontLine Incident Reporting Form”.
- By phone: Compuware Customer Support.
  - USA and Canada customers: 1-800-538-7822 or 1-313-227-5444.
  - All other countries: please contact your local Compuware office.

All high-priority issues should be reported by phone.

Getting Help

When calling, please provide Customer Support with as much information as possible about your environment and the circumstances that led to the difficulty. You should be ready to provide:

- Client number: this number is assigned to you by Compuware and is recorded on your sales contract.
- The version number of the Agentless Monitoring Device (AMD) and the report servers.

  For the report server

  Use the report server GUI by selecting **Help** → **Product Information** → **About**, or **Tools** → **Diagnostics** → **System Status**.

  For the AMD

  Scroll down to the **Testing AMD** section. At the bottom of the diagnostic data paragraph, look for “`Version ND-RTM v.ndw.x.yy.zz`”.

- Environment information, such as the operating system and release (including service pack level) on which the product (AMD, report server) is installed, memory, hardware/network specifications, and the names and releases of other applications that were running.

  Problem description, including screenshots.
- Exact error messages, if any (screenshots recommended).
- Whether or not the problem is reproducible. If yes, include a sequence of steps for problem recreation. If not, include a description of the actions taken before the problem occurred.
- A description of the actions that may have been taken to recover from the difficulty and their results.
- Debug information as follows:

  Information from the report server
  - Log files from `http://report_server_IP/root/log/` and `watchdog.log` from the `C:\Program Files\Common Files\Compuware\Watchdog` directory.
  - Configuration file: `http://report_server_IP/ExportConfig`
  - Screenshots of the problem.

  Information from the AMD

  Log files from `/var/log/adlex/`: `rtm.log`, `rtm.log.1`, `rtm_perf.log`, `rtm_perf.log.1`.

  Information from the VCAEUE Server
  - Log files from `..\Program Files\Compuware\Vantage_Configuration_For_Agentless_EUE\cva\log` directory.
  - All files from `..\Program Files\Compuware\Vantage_Configuration_For_Agentless_EUE\platform3.0\InstallLogs`
  - All `*.log` files from `..\Documents and Settings\All Users\Application Data\Compuware\<Service Name>\workspace\log\kernel` where `<Service Name>` is Microsoft Windows Service Name associated with VCAEUE Server. By default it is `Agentless Platform 1`
  - Version file (`version.xml`) located in `..\Program Files\Compuware\Vantage_Configuration_For_Agentless_EUE\`
  - Version file (`version.xml`) located in `..\Program Files\Compuware\Vantage_Configuration_For_Agentless_EUE\cva\eclipse`

  Information from the VCAEUE Console

  The installation log file:

  `Vantage_Configuration_for_Agentless_End-User_Experience_11.1_InstallLog.log`

  location:

  `..\Program Files\Compuware\Vantage_Configuration_For_Agentless_EUE`

  log files located in the following directory of your VCAEUE Console installation:

  `..\Program Files\Compuware\Vantage_Configuration_For_Agentless_EUE\eclipse\log`

and version file (`version.xml`) located in `..\Program Files\Compuware\Vantage_Configuration_For_Agentless_EUE\` and in `..\Program Files\Compuware\Vantage_Configuration_For_Agentless_EUE\cva\eclipse`.

NOTE

Please compress all the files before sending them to Customer Support.

Compuware values your comments and suggestions about the Vantage products and documentation. Your feedback is very important to us. If you have questions or suggestions for improvement, please let us know.

Conventions

The following font conventions are used throughout documentation:

This font	Indicates
Bold	Terms, commands, and references to names of screen controls and user interface elements.
Conventions [p. 10]	Links to Internet resources and linked references to titles in Compuware documentation.
`Fixed width`	Cited contents of text files, examples of code, command line inputs or system outputs. Also file and path names.
`Fixed width bold`	User input in console commands.
`Fixed width italic`	Place holders for values of strings, for example as in the command: **`cd`** *`directory_name`*
Menu → Item	Menu items.

CHAPTER 1

DMI Overview

Data Mining Interface (DMI) is a Web-based, interactive, dynamic report-building module. DMI reports have immediate access to currently available data and can refresh automatically when new data becomes available. Trending and baseline data is also available for customized reports. Trending data is transparently used when needed, while baseline data can be mixed with current data on the same screen.

DMI reports have variable time-range settings, variable resolution settings, and dynamic sorting and filtering mechanisms. Tabular reports and extensive chart generation capabilities are also available, with the ability to mix multiple report sections on the same page. Custom-built reports can have a hierarchical structure, with contextual drill-down, sibling, and parent reports.

Report definitions are saved in the database and reports are re-run when opened. DMI is equipped with an integrated persistent report cache that optimizes report re-run requests in the context of real-time data changes in the database.

DMI can be integrated with a ClientVantage Agentless Monitoring database, providing means of report access restriction, based on the ClientVantage Agentless Monitoring user identity. Predefined DMI reports are available for various types of users and include high-level scorecards for IT executives, and dedicated planning and monitoring reports for staff responsible for application service delivery.

DMI can also be integrated with VantageView and used there as the Custom Reporting engine.

Internationalization Support

ClientVantage Agentless Monitoring supports international environments on both ends: report server and client browser.

Localized server support

The user interface of the report server is rendered in the following languages:

- English
- Japanese

- Korean
- Chinese simplified
- Chinese traditional.

For English, which is the default language setting, there is no need for additional configuration of the operating system or browser. To enable support for other languages, install the required font set for the target language and customize the regional options accordingly. For more information, see *Localizing the Report Server* in the *Advanced Web Diagnostics Server – User Guide*.

Character encoding support for monitored traffic

ClientVantage Agentless Monitoring recognizes the following character encodings in monitored HTTP and XML traffic:

European:

- ISO-8859-1
- ISO-8859-2
- Unicode (UTF-8)

Japanese:

- Unicode (UTF-8)
- Shift_JIS
- EUC-JP

Korean:

- Unicode (UTF-8)
- EUC-KR
- ISO-2022-KR

Chinese:

- Unicode (UTF-8)
- GB18030
- Big5
- Big5-HKSCS
- EUC-TW
- ISO-2022-CN
- GB2312
- GBK
- HZ.

For more information, see *Character Encoding Support for Monitored Traffic* in the *ClientVantage Agentless Monitoring – System Administration Guide*.

CHAPTER 2

DMI Usage

DMI typical workflow consists of two steps: definition of a query (with optional settings regarding sort order, filters, and so on) and execution of the query. As a result, a report is displayed that can be refined later. Based on a series of reports, you can build an application with drill-down links providing context for the report data.

DMI Report Definition Screen

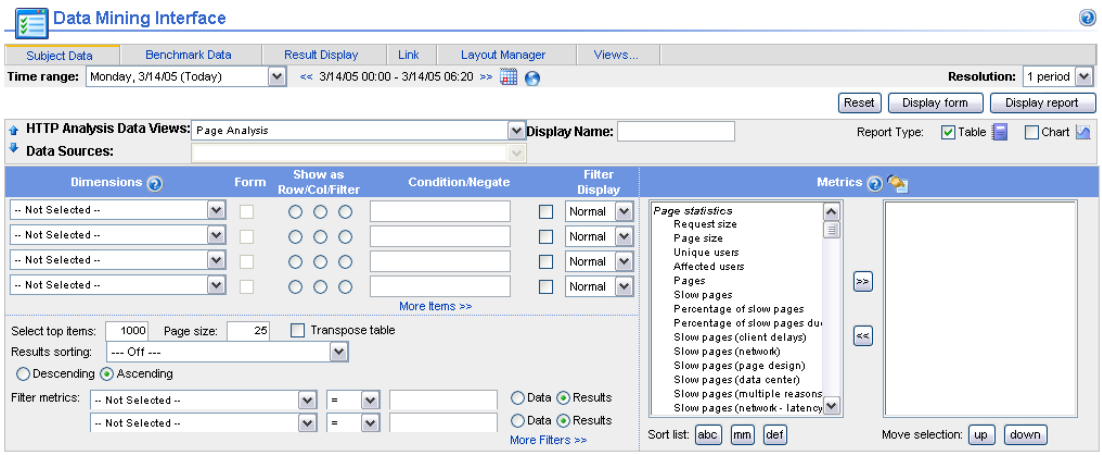
The Data Mining Interface (DMI) report definition screen is accessed through the **Define Report** option on the **Report** menu.

NOTE

When DMI is used from within VantageView, some of the DMI controls and features are handled by the hosting VantageView environment and therefore do not appear on the DMI screen. A summary list of the affected features is given in Differences in DMI Integrated with VantageView [p. 83].

The report definition screen is divided into sections.

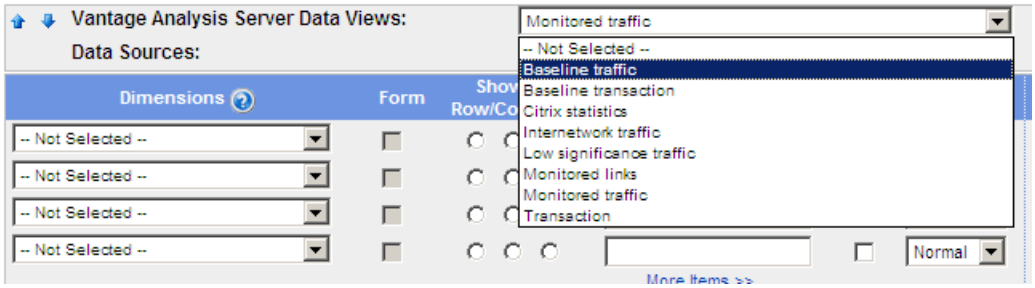
Figure 1. An example of a DMI screen with one section



The name of the data provider (for example, Vantage Analysis Server) appears in each section on the left-hand side of the header bar.

Within each section, for each data provider you can select a data view, which is a set of dimensions and metrics maintained internally by DMI and related to specific issues or topics. Data sources are selected in the **Data Sources** list.

Figure 2. An example set of data views for a data provider



NOTE

To cancel all of the selections that you have made and clear the form, click the **Reset** button in the bottom-right corner of the screen (not provided if you are using DMI in VantageView).

To give a section a name, type the name into the **Display Name** edit box.

To change the order in which the displayed sections appear on the screen, click the down or up arrow in the upper-left corner of each section to move the section down or up one position.

Concept of Sections and Data Views

There are important differences between sections and data views.

Data views

Data views are sets of dimensions and metrics maintained internally by DMI and related to specific issues or topics. Data views have names, but there is only one data view of each name.

You cannot create or delete data views, though you can use a particular data view in more than one section.

Sections

Sections are entry forms on which you specify your report conditions. Sections are created for generating particular reports. Every time you select DMI on the menu, you are presented with a fresh, empty section on which you need to specify all of your report definition settings, including the data view name.

You can display more than one section on a single DMI screen. The displayed sections are not bound by any dependency constraints. For example, the sections you display can, but do not have to, belong to the same data provider. This enables you to produce reports containing data from several different data providers. You can also display more than one section for a single data view. That is, you can select the same data view in a number of sections displayed on one DMI screen.

To access a particular section you have modified in the past, click **Refine** in the report that was generated by the section you want to recall. Use the **Advanced Reporting** tab if you are using DMI in VantageView.

DMI Integration with VantageView

DMI can be integrated with VantageView and used there as the Custom Reporting engine, available through the Custom Reporting option on the VantageView **Reports** menu.

When DMI is used in this configuration, some of the DMI controls and features are handled by the hosting VantageView environment and therefore do not appear on the DMI screen. Features not provided with VantageView are listed in Differences in DMI Integrated with VantageView [p. 83].

CHAPTER 3

Defining Report Conditions

Defining a DMI report requires that you specify criteria, filters, and other conditions that the report is built upon. You can also specify sort order, time range, data resolution, and the time zone for which the report is being defined.

Selecting Data Views

Before defining report conditions, you need to select the particular data view or views to which the conditions will apply. Data views are selected in the **Data views** list.

If more than one data provider has been linked to DMI, you can select a data view for each of the installed data providers.

Selecting Data Sources

Concept of data sources

Data for a particular data view can come from databases used by other report servers, provided that these remote servers have been configured (see Configuring Data Servers [p. 69]).

To specify the source of data for a particular data view, select it in the **Data Sources** drop-down list. This list is available only if there are different data sources to choose from. When no remote servers with the same view are configured, the **Data Sources** list is not available.

Rules governing data sources

When multiple data sources are available, the following data source choices can appear in the **Data Sources** drop-down list:

All (Aggregated)
: Aggregate data from all available databases supporting this view. When remote servers are configured and support this view, the relevant data from these servers is aggregated.

All (Reported separately)
: Report data from all data sources in separate tables or on separate charts.

-servers-

All available servers are listed, including **localhost**. If no remote servers are available, no servers will be listed at all.

Selecting Dimensions

For each data view, you can select a dimension from **Dimensions** list. The dimension is the key that will be used to find the report data in the database. It can be, for example, **Host Name** or **Server IP**.

Descriptions of the dimensions belonging to the different data views are given in the online help accessible through the icon next to the **Dimensions** heading.

NOTE

More dimension lines can be obtained by clicking the **More items** >> link.

Selecting table orientation

If the dimension is to be shown on the report, you can choose between row (**Row**) and column (**Col**) orientation by selecting the appropriate **Show** setting.

Pre-filtering per dimension

If you select **Show as: Filter**, the given dimension is not shown on the report, but it affects the data on the report in that it filters the result of the report definition using the specified dimension and any expression given in **Condition**.

Specifying a condition

In **Condition**, you can specify a group of exact or wildcarded (`*`) values. For example, a dimension can be an IP address or part of an IP address, such as: `10.123.1*`

Complex conditions containing special characters and spaces must be bracketed with quotation marks (").

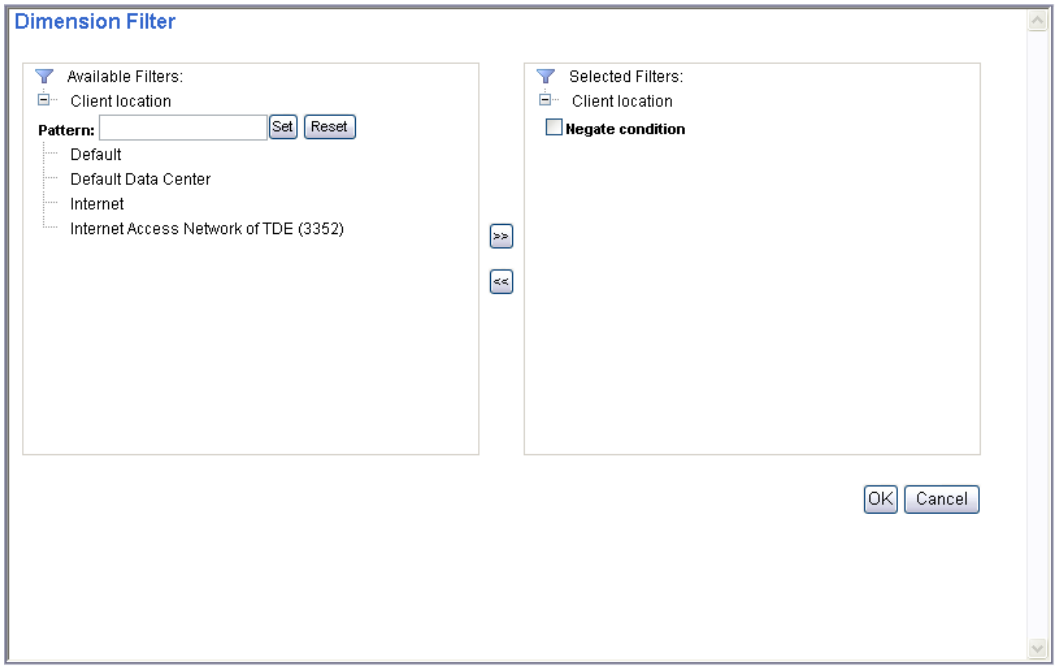
Select **Negate** to negate the logical value of the condition.

Dimension Filter

To define more precise criteria for report definition, apply a dimension filter. If there is a determined (and not very large) list of possible dimension values then, after selecting a dimension, the icon will appear next to the **Condition** edit box to help you narrow down the conditions of your report definition.

1. Click the icon to open the **Dimension Filter** window.

Figure 3. An example of the **Dimension Filter** window



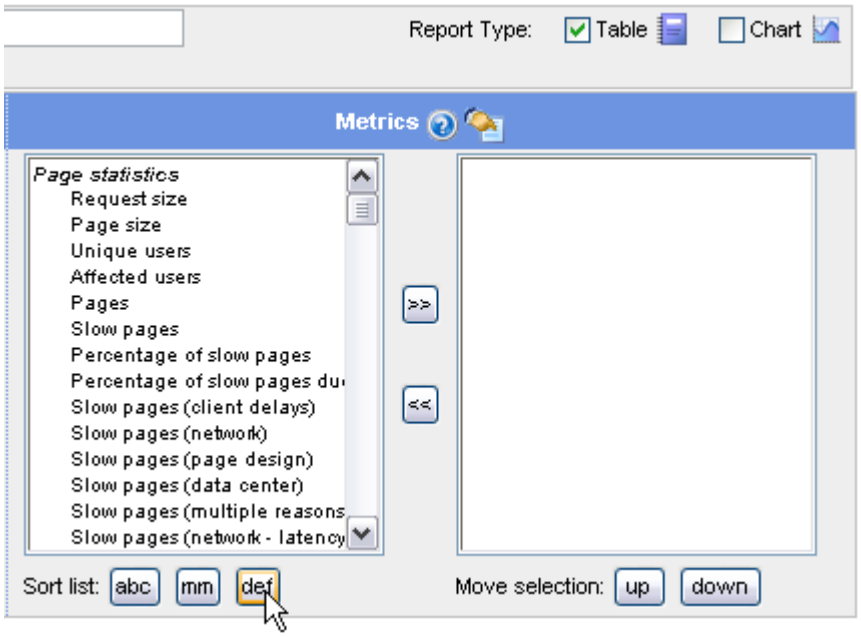
The selected dimension (in this case, **Client location**) is listed in the **Members** pane on the left-hand side.

- To include a dimension (member) value, select the desired value and click the >> button. This will copy the selected value to the right-hand side pane.
- To remove a dimension value from the report, select it on the right-hand side pane and click the << button. The selected item will be removed from the list of included filter criteria.
- If the number of member values of the dimension is higher than 50, only the first 50 is shown while more items can be downloaded on request.
- To make the finding of member values easier, you can use patterns (wildcards) to narrow down the scope of the values. To do this, enter a filter pattern in the **Pattern** edit box and click the **Set** button. To clear the pattern selection, click the **Reset** button. By default, the **Pattern** field is empty, which means that all values are selected. To select all values, you can also type in the wildcard character (*).

2. To submit your dimension filtering criteria, click **OK**.

Selecting Metrics

Specifying only dimensions would generate a report showing all the recorded instances of the specified dimensions. To show actual metrics for the selected dimensions, you must choose the metrics in the metrics section on the right-hand side of the screen.



A metric is a measurement taken for a particular entity at a particular time or for a particular period. Each metric has a unique name. For example, the total count of bytes transferred by specific clients during a given length of time is referred to as **Client Bytes**. Note that there are different metrics for different data views.

To determine the sort order of the displayed metrics, click one of the three buttons under the list of metrics:

abc
: Sort metrics in alphabetical order by the full name of the metric.

mm
: Sort metrics in alphabetical order by the name of the base metric.

def
: Display metrics in the default order.

Descriptions of the metrics belonging to the different data views are listed in the data provider's documentation, and also in the online help accessible through the icon next to the **Metrics** heading.

Aliasing: Customizing Dimension and Metric Names

It is possible to refer to dimensions and metrics using customized names called aliases. Alias names are defined on the alias definition screen, which is accessed through the icon in the header bar of the data view table.

Figure 4. An example of the alias definition screen

Click the **Global** tab to define global aliases that will apply to all reports you create based on this data view. Click the **This section only** tab to define aliasing for this particular section and for the report generated by this report definition. There is an important difference between data views and sections. For more information, see DMI Usage [p. 13].

The **Show** section determines which aliases are shown. By default, only those aliases that have already been defined are listed. Select **All names in this Data View** to show all of the names.

Click **OK** to save the new alias definitions.

Click **Reset** to clear all aliases from the screen.

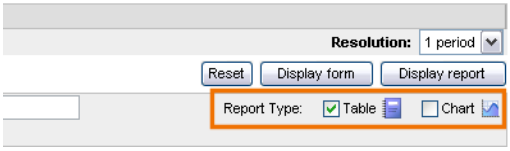
Specifying Sort Order

To specify the dimension or metric by which to sort the report, click **Results sorting** and choose any of the selected dimensions or metrics. You can select only one sort key. The **--Off--** option turns sorting off.

Selecting Report Type

To display your report as a table, a chart, or both, select either or both of the **Report Type** settings in the heading bar of the report definition entry box.

Figure 5. The title bar showing available report type selections



Selecting Time Range and Resolution

Your report definition must have valid time range and data resolution settings selected in the navigation bar at the top of the page. VantageView users should use the VantageView time bar to set the time range for a report and use the **Date Time Filters** tab for changing the resolution.

NOTE

When DMI is used from within VantageView, some of the DMI controls and features are handled by the hosting VantageView environment and therefore do not appear on the DMI screen. For more information, see Differences in DMI Integrated with VantageView [p. 83].

Time range list

Figure 6. The navigation bar with **Time range** and **Resolution** controls

The time range settings available depend on the data provider and on the particular data view that is currently displayed. Only those ranges that are compatible with the currently displayed data view are shown on the time range bar. In cases where more than one data view is displayed, the time ranges available are limited to those ranges that are valid for all of the displayed views.

The list of all the possible time ranges is divided in three sections: **Current**, **Recent**, and **Historical**:

Current

- **Last monitoring interval** – the last closed monitoring interval (5 minutes, by default).
- **Last 1 hour** – the last hour, ending at the closure of the last monitoring interval; if 60 minutes is not an exact multiple of the length of a monitoring interval, this period is the maximum multiple of the monitoring interval shorter than one hour.
- **Today** – today from midnight last night to the current time.

Recent

This section includes the last 10 days.

Historical

- **Last 7 days** – last seven days, ending at midnight last night.
- **Last 30 days** – last thirty days, ending at midnight last night.
- **Week to Date** – the period of time from last Monday 0:00 AM to midnight last night.
- **Full Week** – last full week: the period starting on Monday 0:00 AM two weeks ago and ending at midnight on the following Sunday.

- **Month to Date** – the period from 0:00 AM on the 1st day of the current month to midnight last night.
- **Full Month** – last full month: the period starting at 0:00 AM on the 1st day of last month and ending at midnight on the last day of last month.
- **Last 3 Months** – last rolling three months: the previous three calendar months, ending at midnight last night.
- **Last 12 Months** – last rolling twelve months: the previous twelve calendar months, ending at midnight last night.
- **Quarter to Date** – the period from 0:00 AM on the first day of the current quarter (January 1st, April 1st, July 1st, or October 1st) to midnight last night.
- **Year to Date** – the period from the first of January this year to midnight last night.

At the bottom of the list you will also see the**Custom** label, which is automatically selected after you define you own time range using the Calendar [p. 23] tool.

Note that in VantageView there are no pre-defined ranges like **Today** or **Last 7 days** on the time bar. However, you can set all these time periods using controls on the **Date Time Filters** tab.

Time range display

The selected time range is displayed as the beginning and ending dates. The >> (“next”) arrow is disabled if the entire range would be before the server time.

Figure 7. Time range display

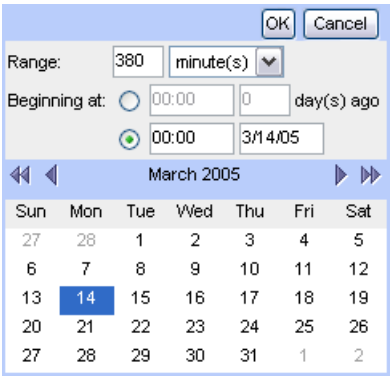
Calendar

Users can also select a customized time range by clicking the calendar icon next to the time ranges list, and by specifying the length of the desired time-period and the *start* date and time.

IMPORTANT

In CVAM releases prior to 11.1, you defined the *end* date of the desired time period. In this case the customized period of time did not necessarily start at midnight, but at the end time minus the specified number of months, weeks, days, hours or minutes. The reports defined before upgrade to CVAM 11.1 will still work.

Figure 8. The Calendar pop-up window



The window closes automatically when you make a selection. To scroll through months, use the single arrows. To scroll through years, use the double arrows.

If you define your own time range with the calendar, the **Custom** label will appear in the **Time range** list to inform you that the selected range does not fit any of the default options.

Resolution settings

The data resolution setting controls two aspects of report generation:

- If you use the **Time** dimension on the report, data resolution defines the time intervals between records on your report. For example, if you require a chart that depicts how traffic changes hourly during the day, choose the **1 hour** resolution.
- Even if you do not use the **Time** dimension on your report, **Resolution** defines the source of data used for the generation of your report: raw data or aggregate values. If the resolution is **1 period**, the report is generated directly from the raw data gathered by the AMD. If the resolution is greater than **1 period**, the report is generated from aggregate values such as sums, averages, maximums, and minimums, depending on the type of the metric. For example, if the resolution is selected to be **1 day**, then daily averages, sums, and other aggregates are used for report generation.

An aggregate value can be a sum, average, maximum, minimum, or other statistical value, depending on the particular metric. For example, aggregates for metrics that deal with the *volume* of transferred data would be sums of all the volume transferred during the given interval, and aggregates of metrics dealing with the *speed* of data transfer would be averages. The significance of selecting the resolution for report generation is that *only one value is always used per selected resolution period, per aggregation dimension*. Generating reports based on aggregates is faster than generating reports from raw data, because aggregate values are usually pre-calculated and so do not need to be computed afresh for your report.

NOTE

When the time range is changed, the default time resolution changes accordingly. For instance, when you change the time range from **Today** to **Last 3 months**, the resolution changes from **1 period** to **1 month**.

Selecting Time Zone For Reports

You can customize the time zone for your reports based on a pre-defined set or regions. More generic values for the server and user are also available.

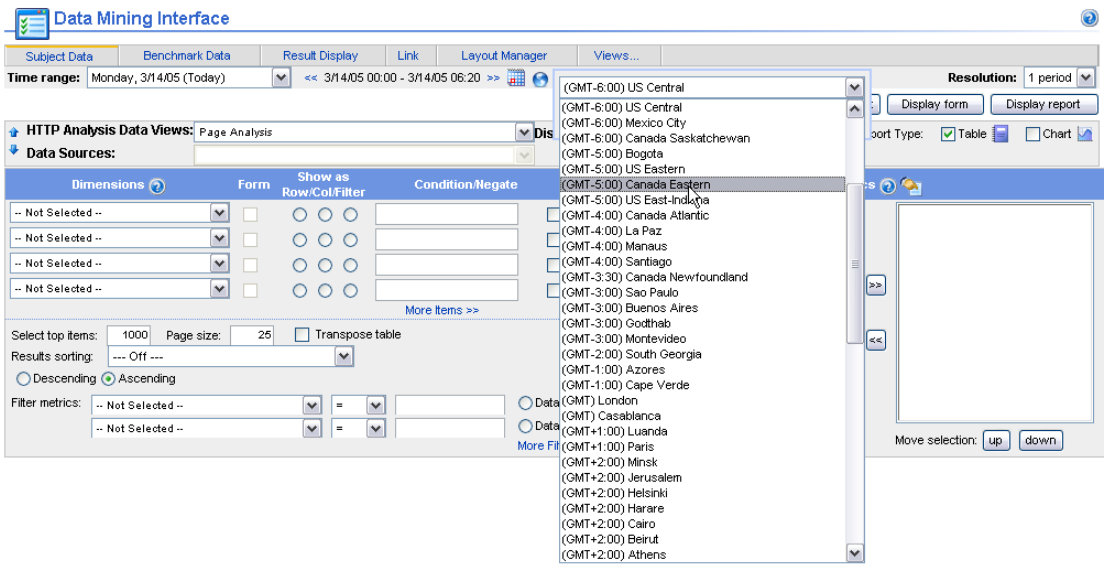
All Data Mining Interface (DMI) reports are presented using the server time zone, which is equal to the default regional setting of the operating system on which the report server is running. This is the zone of the server rendering the report and not the server that provides the data. Changing time zones for reports does not apply to aggregate data. DMI

DMI can set 77 different time zones for reports (GMT -11:00 to GMT +12:00, 1 hour step). Where applicable, the differentiation between summer and winter time is marked (for example CET vs CEST).

User session–specific settings

The time zone setting can be changed for the current session (the setting is reset to the default after user logs out). The **Show time zone** icon ( ) is visible when a new report is defined and when tabular reports are viewed (this does not apply to pre-defined reports). Click the icon to choose the desired region from a menu. Information on the change of time zone will appear on the generated report as an abbreviation in the report table heading and, if applicable, in the **Time** column beside the values. When you export data to CSV format, the export file header will also contain information on the time zone.

Figure 9. The **Show time zone** icon and the list of available time zones



Example 1. A fragment of report with a custom time zone

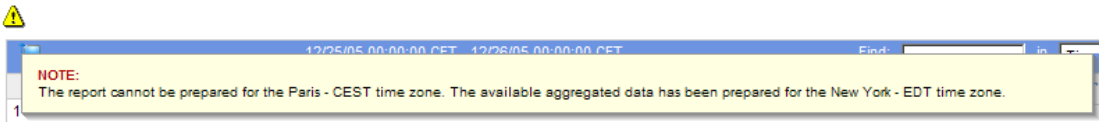
1/4/06 00:00:00 CET - 1/4/06 06:00:00 CET

Local host IP address	Time	Upstream bytes
123.123.124.1	1/4/06 05:00 CET	16.9 GB
195.159.12.1	1/4/06 05:00 CET	8.46 GB
123.123.123.1	1/4/06 05:00 CET	6.46 GB
15.159.11.1	1/4/06 05:00 CET	5.59 GB
123.123.123.2	1/4/06 05:00 CET	4.28 GB

NOTE

For report resolutions of 1 day and greater, the custom time zone is disregarded and a warning message is issued.

Example 2. Warning message on the server's inability to prepare report in the selected time zone




```
# Traffic by Host
# Application: Vantage Analysis Server
# Data View: Internetwork traffic
# Warning: The report cannot be prepared for the Fiji - FJT time zone. The available »
aggregated data has been prepared for the New York - EDT time zone.
# Filters: none
# 10/1/05 00:00:00 FJT - 1/1/06 00:00:00 FJT
# Local host IP address,Time,Upstream bytes(B),Downstream bytes(B),Upstream bandwidth
»
usage(bps),Downstream bandwidth usage(bps),
```

Server-specific settings

A user with administrative privileges can modify the list of time zones available on the server. To do so, open the **User properties** screen by typing the following in the Web browser's **Address** bar:

`http://`*`report_server`*`/userpropertiesadmin`

The property `DMI_TIME_ZONES` contains the list of comma-separated region IDs that appear in the menu of time zones. You can edit the values to a more limited (relevant) choice of zones. The values **Server time zone** and **User time zone** are always placed at the top of the list and cannot be blocked. To restore the default settings, click the **Restore default** button assigned to the time zones property.

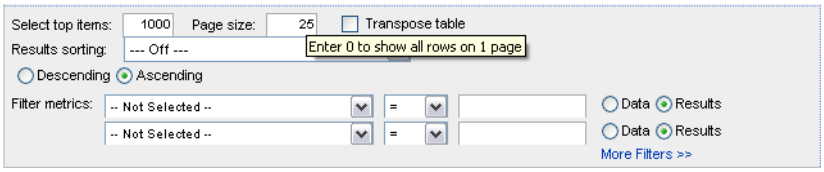
Customizing Your Report Definition

Report size

To improve performance and speed up the report definition execution, you can limit the number of results (report rows) by entering the maximum number in the **Select top items** field. Entering "`0`" causes all of the results to be included in the report.

The top elements are determined based on the dimension or metric selected as the sort key.

To define the size of each report page, set **Page size** to the maximum number of records on each page.



Sorting

To sort your results by any dimension or metric in your report definition, select that dimension in **Results sorting** and select the sort order with **Descending** or **Ascending**.

Specifying position of filter line

The filtering conditions you have specified (dimension filtering and metric or result filtering) normally appear on the report just below the time range bar. This is to remind you how the report was generated. To reposition or hide the header, set **Filter Display** to **Header** or **Hide**.

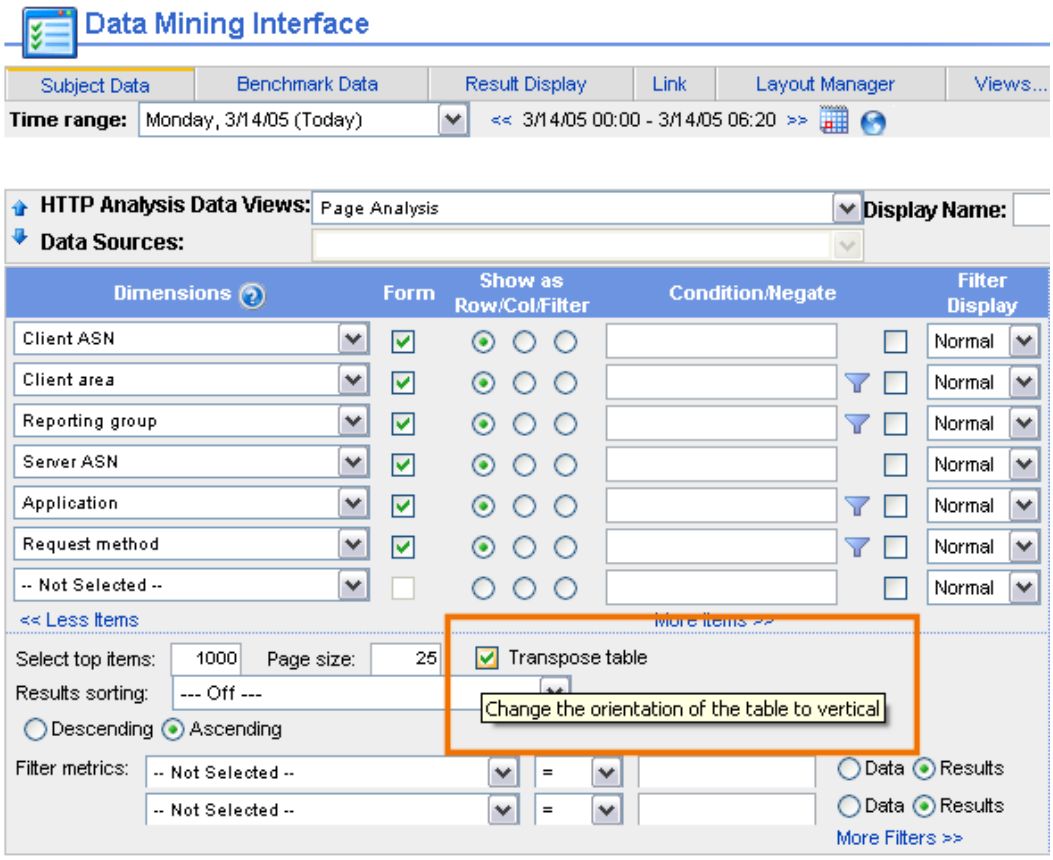
Your choice also affects the ability of the report user to further refine the report results. If you choose **Filter Display** as **Normal**, the resulting report provides you with a link to the dimension filter configuration screen. For more information, see Filtering Reports [p. 33].

Transpose Table

When large values of DMI dimension are displayed (for example, `HTTP header` or `HTTP request`), you can transpose the rows and columns to show the dimension and metric values horizontally (in rows), which may be more readable. To try this:

1. Click the **Subject Data** tab.
2. Select **Transpose table**.

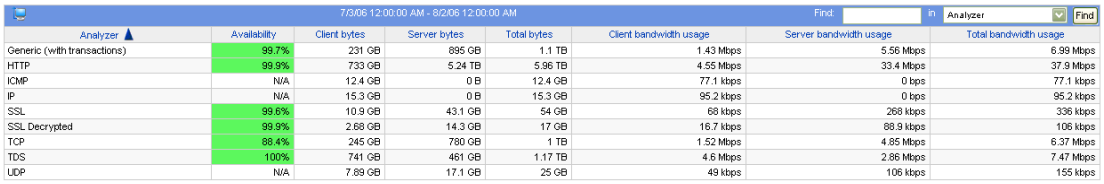
Figure 10. The **Transpose table** check box



Comparison of standard and transposed tables

The figures below show two version of the same table, first in the standard view and then with **Transpose table** selected.

Figure 11. The standard table look



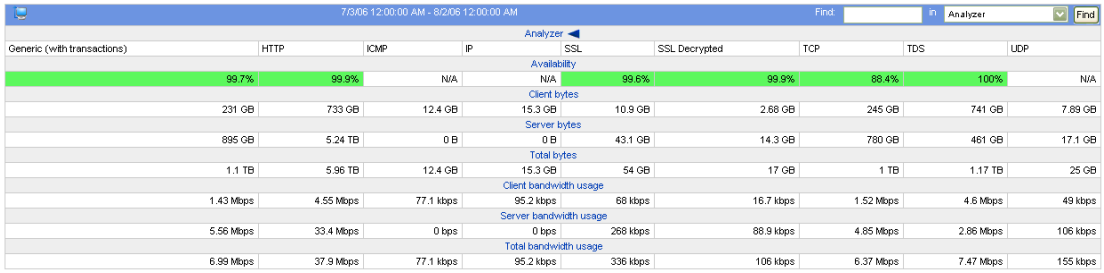
7/3/06 12:00:00 AM - 8/2/06 12:00:00 AM

Find: in Analyzer Find

Analyzer	Availability	Client bytes	Server bytes	Total bytes	Client bandwidth usage	Server bandwidth usage	Total bandwidth usage
Generic (with transactions)	99.7%	231 GB	895 GB	1.1 TB	1.43 Mbps	5.56 Mbps	6.99 Mbps
HTTP	99.9%	733 GB	5.24 TB	5.96 TB	4.55 Mbps	33.4 Mbps	37.9 Mbps
ICMP	N/A	12.4 GB	0 B	12.4 GB	77.1 kbps	0 bps	77.1 kbps
IP	N/A	15.3 GB	0 B	15.3 GB	95.2 kbps	0 bps	95.2 kbps
SSL	99.6%	10.9 GB	43.1 GB	54 GB	68 kbps	268 kbps	336 kbps
SSL Decrypted	99.9%	2.68 GB	14.3 GB	17 GB	16.7 kbps	88.9 kbps	106 kbps
TCP	88.4%	245 GB	780 GB	1 TB	1.52 Mbps	4.85 Mbps	6.37 Mbps
TDS	100%	741 GB	461 GB	1.17 TB	4.6 Mbps	2.86 Mbps	7.47 Mbps
UDP	N/A	7.89 GB	17.1 GB	25 GB	49 kbps	106 kbps	155 kbps

Table transposition can be especially useful in comparing two or more items. Using the **Select top items:** variable in a report definition panel, you can control number of items that are displayed on each page. In conjunction with table transposition, this table view is more legible.

Figure 12. The transposed table look



7/3/06 12:00:00 AM - 8/2/06 12:00:00 AM

Find: in Analyzer Find

Analyzer

Generic (with transactions)	HTTP	ICMP	IP	SSL	SSL Decrypted	TCP	TDS	UDP
Availability								
99.7%	99.9%	N/A	N/A	99.6%	99.9%	88.4%	100%	N/A
Client bytes								
231 GB	733 GB	12.4 GB	15.3 GB	10.9 GB	2.68 GB	245 GB	741 GB	7.89 GB
Server bytes								
895 GB	5.24 TB	0 B	0 B	43.1 GB	14.3 GB	780 GB	461 GB	17.1 GB
Total bytes								
1.1 TB	5.96 TB	12.4 GB	15.3 GB	54 GB	17 GB	1 TB	1.17 TB	25 GB
Client bandwidth usage								
1.43 Mbps	4.55 Mbps	77.1 kbps	95.2 kbps	68 kbps	16.7 kbps	1.52 Mbps	4.6 Mbps	49 kbps
Server bandwidth usage								
5.56 Mbps	33.4 Mbps	0 bps	0 bps	268 kbps	88.9 kbps	4.85 Mbps	2.86 Mbps	106 kbps
Total bandwidth usage								
6.99 Mbps	37.9 Mbps	77.1 kbps	95.2 kbps	336 kbps	106 kbps	6.37 Mbps	7.47 Mbps	155 kbps

Filtering Metrics and Results

You can apply filters to the input data (the values of metrics) used for report generation and to the result values before they are placed in the report. The input data can be either raw performance data or aggregate values, depending on the data resolution period selected.

To enable metric filtering:

1. In the **Filter metrics** section at the bottom-right side of the section, choose a metric, an operator, and a value.
2. To the right of the **Filter metrics** section, click **Data** or **Results** to select the filtering mode.
   - Specify **Data** to filter input data.
   - Specify **Results** to filter the report definition results before they are put in the report.
3. Verify the data resolution you have selected.

   If you choose a data resolution of **1 period**, **1 hour**, or **6 hours**, and you select **Data** to filter input data, raw input data will be filtered.

   For other resolutions (such as **1 day**, **1 week**, or **1 month**), the data aggregated per resolution period is filtered.

NOTE

Click **More filters** >> to obtain more filter lines.

CHAPTER 4

Running a DMI Report Definition

Executing a report definition and viewing the results is a one-click operation. We recommend incremental report development: get data, run and review your report, and then refine it to meet your goals.

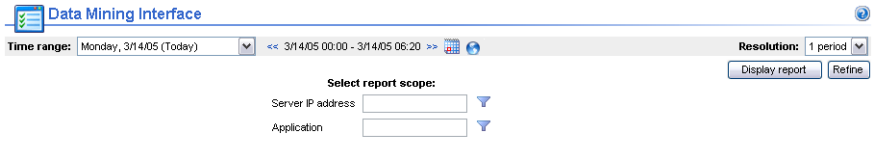
Executing a Report Definition

To start report definition execution:

1. Click **Display report** (or the **Apply** button, if you are using DMI in VantageView.[1]).

   To reduce report generation time, try narrowing the scope of the report. Click **Display form** (not provided if you are using DMI in VantageView[1]) to open the scope selection screen, where you can specify additional dimension conditions:

   Figure 13. An example of the scope selection screen



   In the single-form layout above, the number of dimension conditions listed corresponds to the number of unique dimensions selected in all views combined. This means that a condition entered for a particular dimension applies to the same dimension in other views. This default single-form layout can be changed to a multi-form layout where each view has its own list of dimensions and condition values. To switch to a multi-form layout, select **Separate sections on form** in **Layout manager**.

[1] When DMI is used from within VantageView, some of the DMI controls and features are handled by the hosting VantageView environment and therefore do not appear on the DMI screen. A summary list of the affected features is given in Differences in DMI Integrated with VantageView [p. 83].

2. For the dimensions displayed on the scope selection screen, you can either enter specific dimension values or use the filter icon to open the **Dimension Filter** window.
3. After you have specified your additional scope constraints, click **Display report** to proceed to the report generation stage.

Viewing Results of a Report Definition

Depending on the report type you have specified, the results of your report definition can be displayed as a table or a chart or both.

If the requested report type is a table, data rows can be sorted on each column by clicking on the column heading. To reverse the sort order, click again on the same column heading. In addition, the results can be filtered to a desired subset by specifying a search condition in the **Find** edit box, selecting a table column from the list, and clicking the **Find** button.

NOTE

The report definition is not resubmitted when changing the sort order. The current report definition results are sorted.

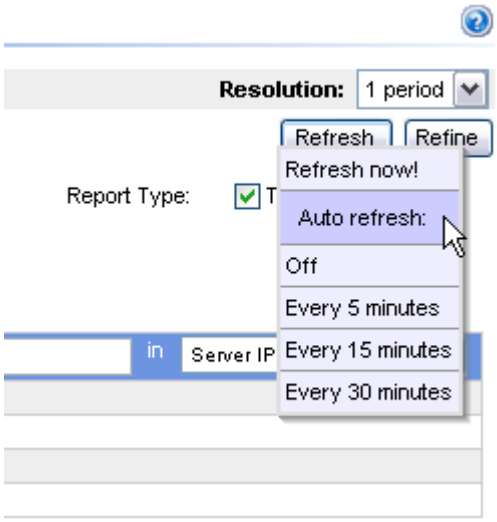
To export table data to the CSV format in a separate browser window, click the icon in the result table heading (in the upper-left corner).

To refine table and chart reports, click **Refine** at the top of the page (use the **Advanced Reporting** tab, if you are using DMI in VantageView.[1]) This will take you back to the report definition screen containing your last report settings.

The **Time Range** and **Resolution** settings work the same way as on the report definition entry screen. You can also use the navigation links << (previous range) and >> (next range) to move to an adjacent time range. In VantageView, you can use < and > on the VantageView Report navigator.

Refreshing Reports

To refresh your report immediately, or to determine whether and how often your report is refreshed automatically, click **Refresh** in the upper-right corner of the screen and select an option from the menu: refresh now; refresh every 5, 15 or 30 minutes; or turn off automatic refreshing.



NOTE

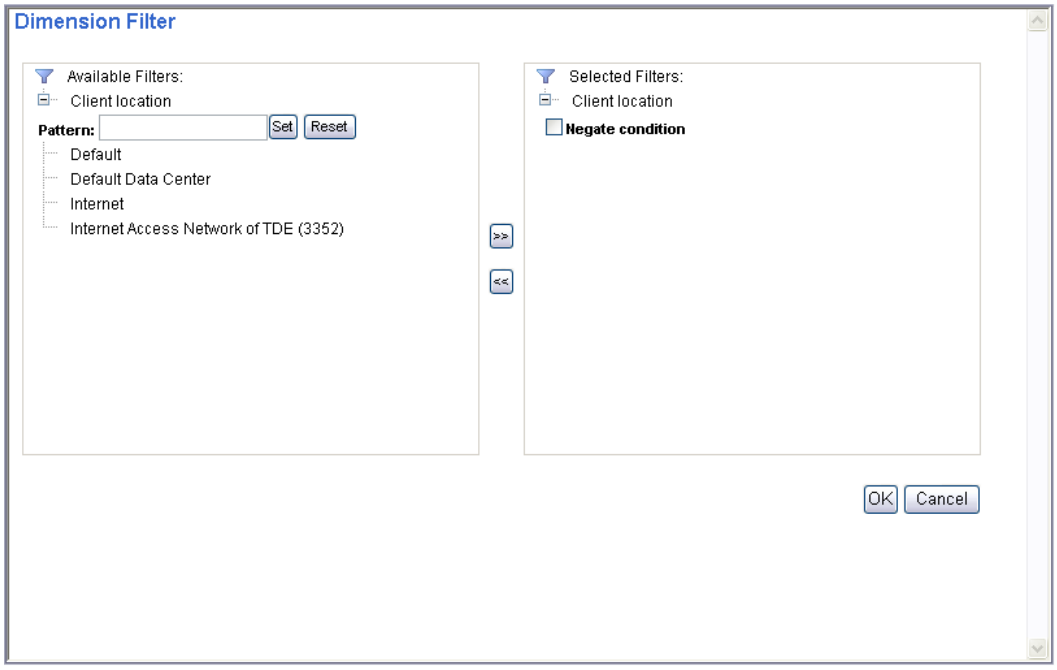
Refreshing a report is meaningful if the time interval covered by the report includes the current moment. In this case, a refresh causes a new query to be submitted to the report database, with the updated value of *current time*. Historical reports (reports for periods ending in the past, such as “last midnight”) do not change when refresh is requested.

Filtering Reports

Report results can be filtered after a report has been generated. To fine-tune your report:

1. Click **Filters** to open the **Dimension Filter** window (the **Filters** link is not available if you are using DMI in VantageView[1]).

Figure 14. An example of the **Dimension Filter** window showing dimensions used in a query definition



2. Select the dimensions to be included.

   The contents of the **Members** list in **Dimension Filter** depends on the query settings (on how many dimensions have been selected to define the query).

3. Click **OK**.

CHAPTER 5

DMI Chart Customization

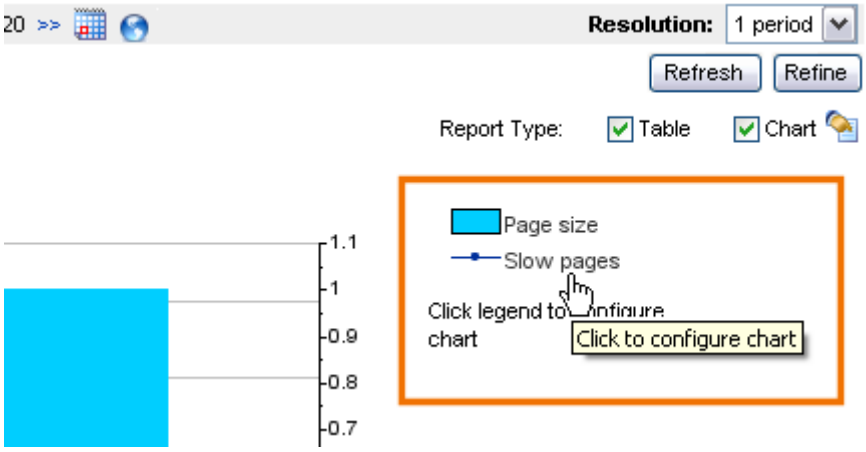
A DMI report can contain tabular data and charts. Adding a chart requires only selecting the **Chart** check box in the **Report Type** section. You can change the chart type and settings later, while refining the report.

Customizing Charts

To modify the appearance of a chart:

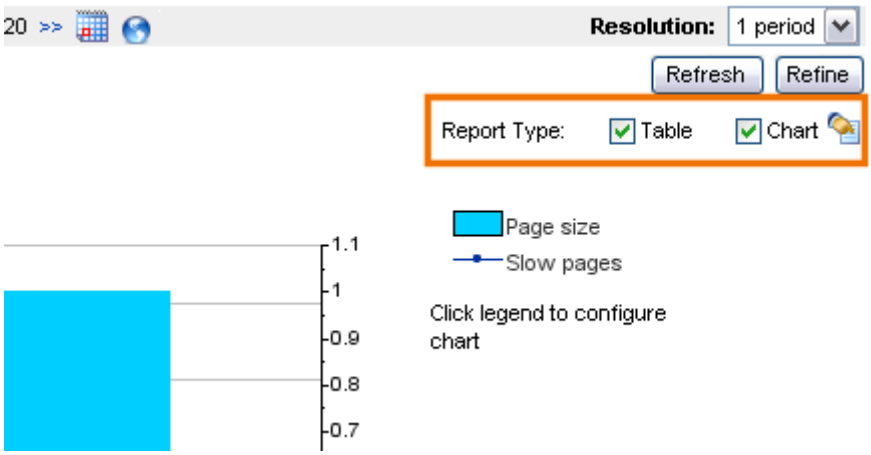
1. Click the chart's legend.

Figure 15. Chart's legend contains a link to **Chart Settings**



Alternative link: click the icon next to **Report Type**

Figure 16. Icon link to **Chart Settings**



This will open the **Chart settings** control panel in a new window.

2. On the **Chart settings** panel, adjust chart parameters such as chart type, scaling of axes, and titles.

Figure 17. An example of the **Chart settings** window

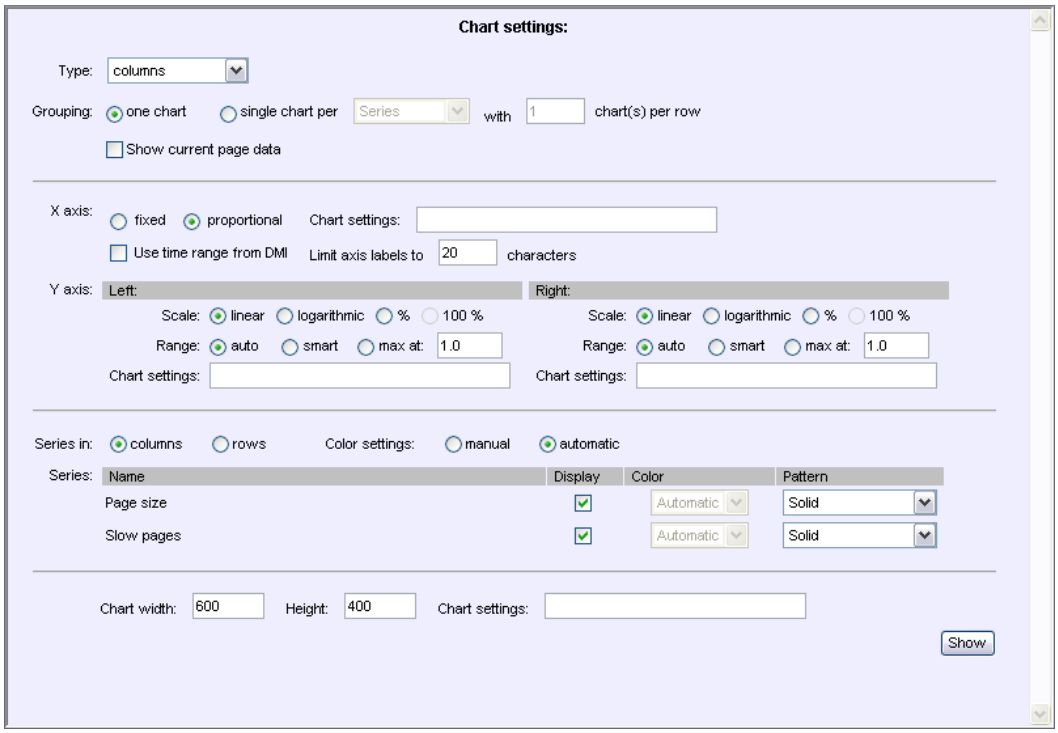
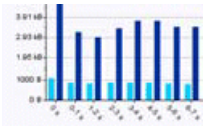
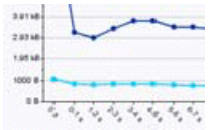
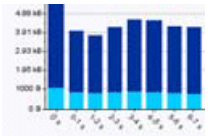
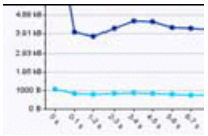
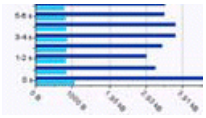
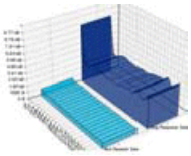
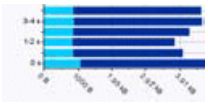
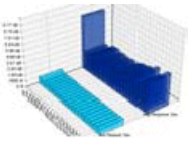
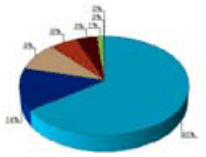
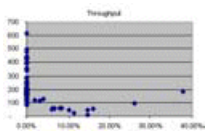
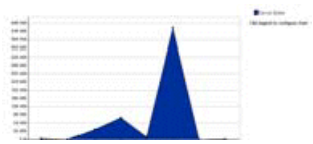
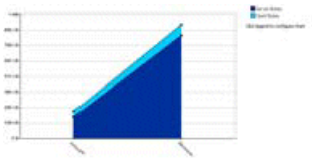
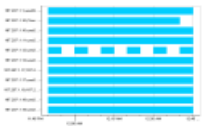
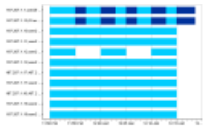


Chart Types

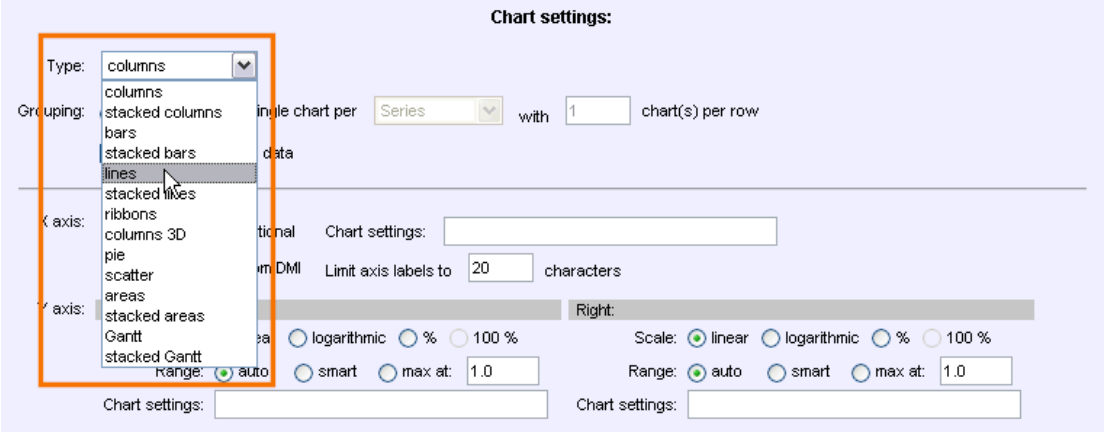
The different chart types available are shown below:

Table 1. Supported chart types

Columns		Lines	
Stacked columns		Stacked lines	
Bars		Ribbons	
Stacked bars		3D columns	
Pie		Scatter	
Areas		Stacked areas	
Gantt		Stacked Gantt	

To change the chart type, select a new **Type**:

Figure 18. The chart type list



Grouping Metrics and Displaying Multiple Charts

How metrics relate to one another determines how they combine on charts.

There are two types of relationship possible:

metric unit

A metric unit is the unit of the measurement taken. For example, the metric **Client Bytes** is measured in bytes [B] and **Page Load Time** is measured in seconds [s].

metric group

A metric group is an artificial grouping intended to make chart creation easier. For example, **RTT** and **Loss rate** could belong to a group that describes network conditions. If they were, it would be possible to group charts that way, so RTT and loss appear on one chart, and, for example, server time and network time on another.

Availability of metric groups depends on the particular software configuration.

Assigning Y-Axes on Charts

If a chart has more than one series to display, the chart generator checks the metric units in the series. For those series that have the same unit, it assumes that one common Y-axis is sufficient, allowing also for stacking such series (plotting one series on top of another).

Series that have different units are assigned a second Y-axis. The same stacking criteria apply to the second Y-axis. If there are more series with yet another unit, they are discarded by the chart generator, because a chart can have at most two axes.

Note that series are searched from left to right, in the order as they appear in the data table below the chart.

NOTE

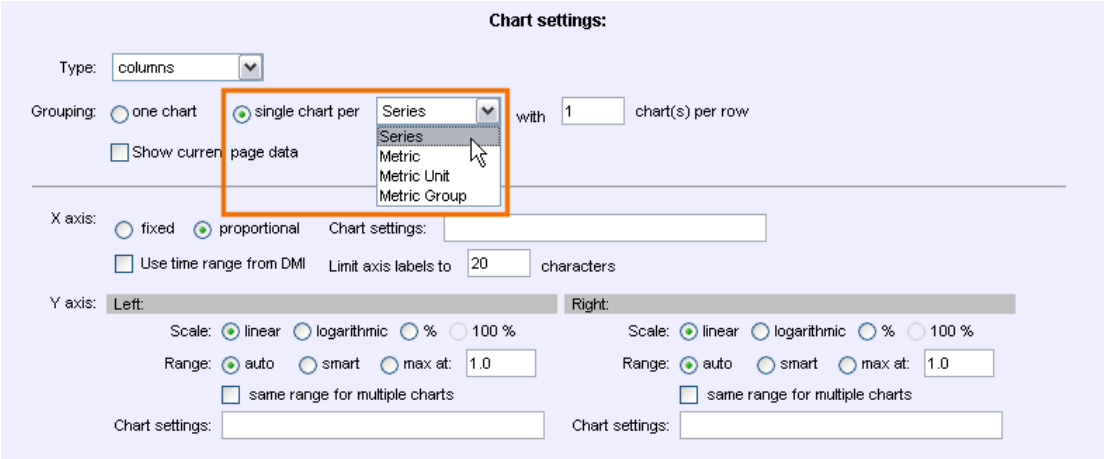
Chart type selection applies to the primary (left) Y-axis series. Secondary (right) Y-axis series always have line type.

If a stacked chart has been selected for the left Y-axis, the right Y-axis series would also be plotted as stacked.

Displaying Multiple Charts

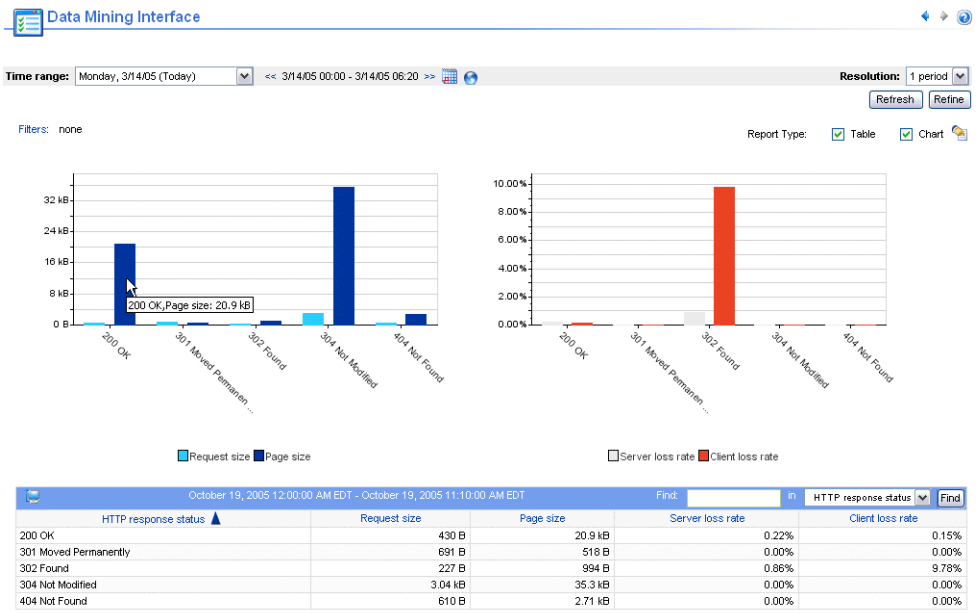
By default, only one chart is generated. You can generate multiple charts for a report by grouping series, metrics, or metric units using the **single chart per** options:

Figure 19. Available grouping settings



If the expected number of charts is high, there may be more than one chart per row. The following example shows 4 charts grouped by series, 2 per row:

Figure 20. An example of a report with grouped charts



Displaying One Page of Data at a Time

Show current page data

This setting specifies that data charts should show only data from the current page. Note that this control is related to **Page size** defined on the DMI query screen.

X-axis Settings

Proportional, Fixed

The X-axis values can be shown in a proportional or fixed distribution:

proportional

The values of the category series are distributed on the X-axis with the scale of the axis preserved. This can cause adjacent values in the category series to be separated by different physical distances along the axis: depending on to the numerical differences between the values.

fixed

Only the category series values are shown on the X-axis, without the scale of the axis being preserved. This will cause adjacent values in the category series to always be separated by the same physical distances along the axis.

For example, if a category contains values 1, 2, 4, and 6, there may be 4 or 6 values on the chart:

- In a proportional scenario, the category would be extended to 1, 2, 3, 4, 5, 6, and there would be no values for 3 and 5.
- In a fixed scenario, the category would remain 1, 2, 4, and 6 with no gaps between 2 and 4 or between 4 and 6.

NOTE

Time on the X-axis would usually be depicted according to the proportional distribution. A list of discrete objects (for example, TCP protocols) always uses a fixed distribution.

Use time range from DMI

This setting allows you to force the time range on the X-axis as specified in the DMI query. If this box is not selected, the time range is determined on the basis of timestamps in report data. This is particularly useful when comparing data from a number of data views. However, in such cases, one and only one time-based dimension—such as **Time** or **Hit begin time**—must be assigned to the X-axis.

Limit axis labels

If values on the X-axis have labels, you can define the maximum length of the labels by specifying it in this field. By default, labels are truncated to 20 characters.

Scatter chart X axis

A scatter chart is used to graphically demonstrate relationships between the values of two metrics or a metric and a dimension.

If **Scatter** chart type is selected, the **Scatter chart X axis** list allows you to select the X-axis values for the scatter chart: a metric or a dimension.

Title

The title for the X-axis series.

Y-axis Settings

If there are two Y-axes involved, settings are performed for each one separately.

Scale

Determines the type of scale to be used:

linear

A linear Y-axis.

logarithmic

A logarithmic Y-axis.

%

A scale where values are represented as a percentage of the graph's maximum value.

100%

A scale for stacked graphs, where the contents of each stack is separately scaled as a percentage of the whole stack.

NOTE

The value of zero cannot be displayed on a logarithmic scale. Such points are eliminated from chart data for display when a logarithmic scale has been selected.

Range

Determines the maximum value for the axis:

auto

Set maximum to the maximum value in the displayed data.

smart

Set maximum to the value not greater than 3 times the average (this setting eliminates spikes, leaving meaningful values).

max at

Set the maximum value manually.

If **same range for multiple charts** below the **Range** settings is selected, all charts are given the same Y-axis range settings.

Title

The title for the Y-axis series.

Series Placement and Display

Series in

This specifies whether rows or columns of the DMI report table should be taken as input for the chart.

A list of series names is provided, with three controls for each series:

- **Display** – controls the display of the series

- **Color** – sets the color
- **Pattern** – sets the line/bar pattern: solid, dashed, dotted, transparent, or semi-transparent.

The list is reloaded when the series orientation changes.

Color settings

This specifies whether colors representing different metrics should be defined manually or automatically. Automatic selection attempts to group similar metrics together based on their grouping as specified in the **Grouping** control.

Chart Size

The chart size controls **Chart width** and **Height** specify the size of the chart in pixels.

Settings Specific to Pie Charts

If more than one series is required, you can select to have a number of pie charts by using the **Single chart per** control as described in Displaying Multiple Charts [p. 39].

For pie charts, instead of selecting a whole series, you can select individual slices. You can turn each slice on or off separately, and you can assign a different color to each slice. If some slices are removed, however, the remaining slices expand to fill the pie circle.

The first figure below (Figure 21. Sample pie chart [p. 42]) shows the chart generated by the settings in the second figure below (Figure 22. Settings for sample pie chart [p. 43]).

Figure 21. Sample pie chart

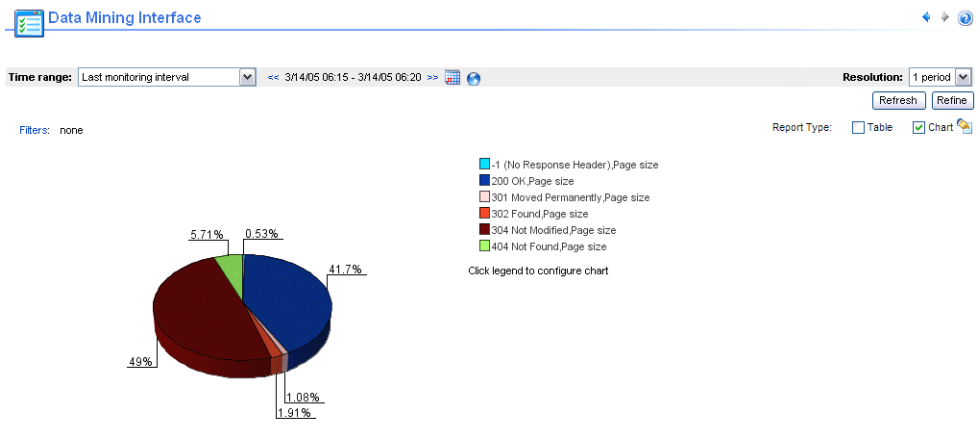
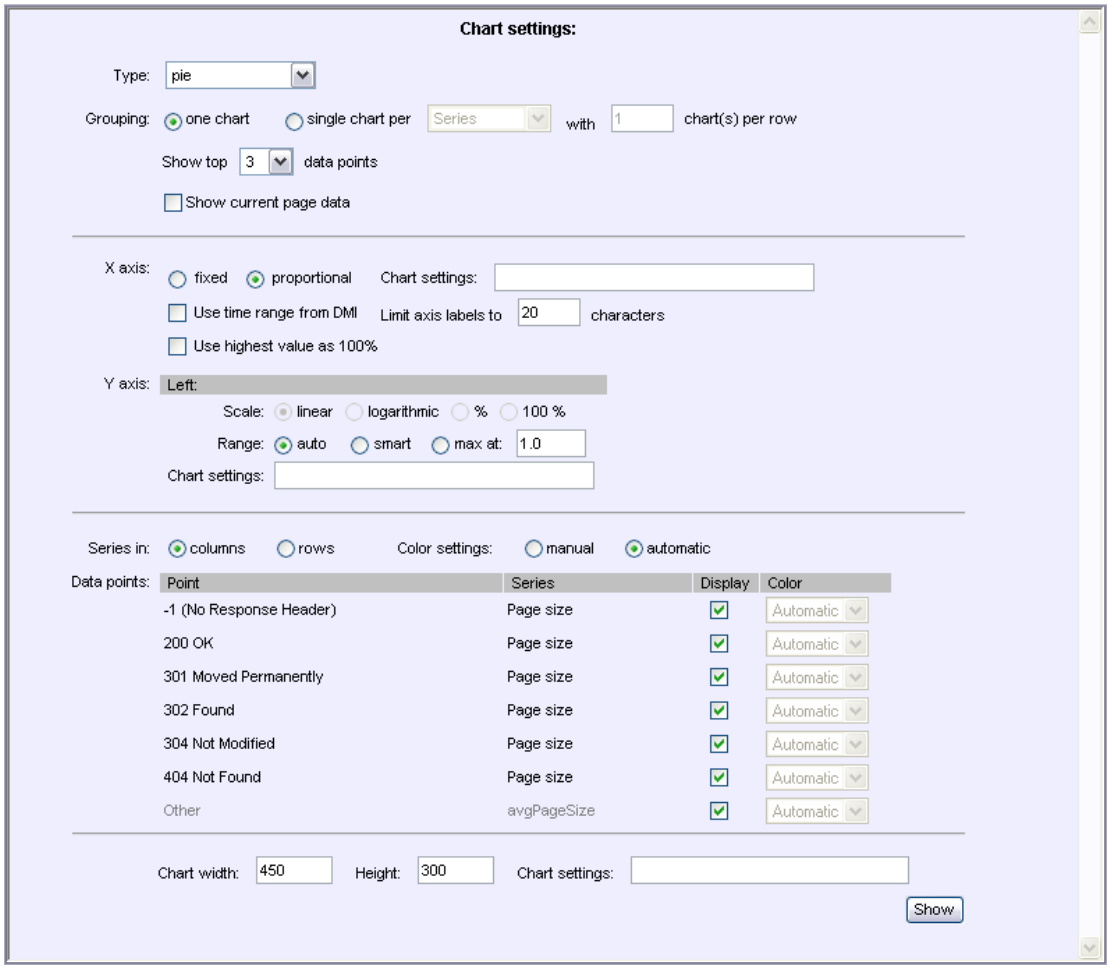


Figure 22. Settings for sample pie chart



Settings Specific to Gantt Charts

Gantt chart settings contain a slightly different set of options and requirements than other charts. The main requirement in Gantt chart settings is a time dimension selected in a report definition.

The Gantt chart settings options vary from other charts the following ways:

Grouping

If **Grouping** (in the **Chart settings** window) is set to **single chart per**, only the charts containing a time dimension are displayed. If you do not select a time dimension and you select chart **Type** of **Gantt**, you will see the message "Error: Gantt chart requires that one dimension is time type ".

X axis

The X-axis is set to **proportional** and cannot be changed.

Y axis

Only the left side is configurable, because only the left side is applicable to this chart type.

The **Scale** and **Range** options do not apply to this chart type.

When **Aggregate sibling events** is selected, consecutive events are shown on the chart as one event. Sibling events occur when a particular event is immediately is followed by another event, such that the end of one event is a start of another event. This option is beneficial when the chart contains links to a detailed drill-down report because the aggregated sibling events can have one drill-down link.

Figure 23. A sample Gantt chart

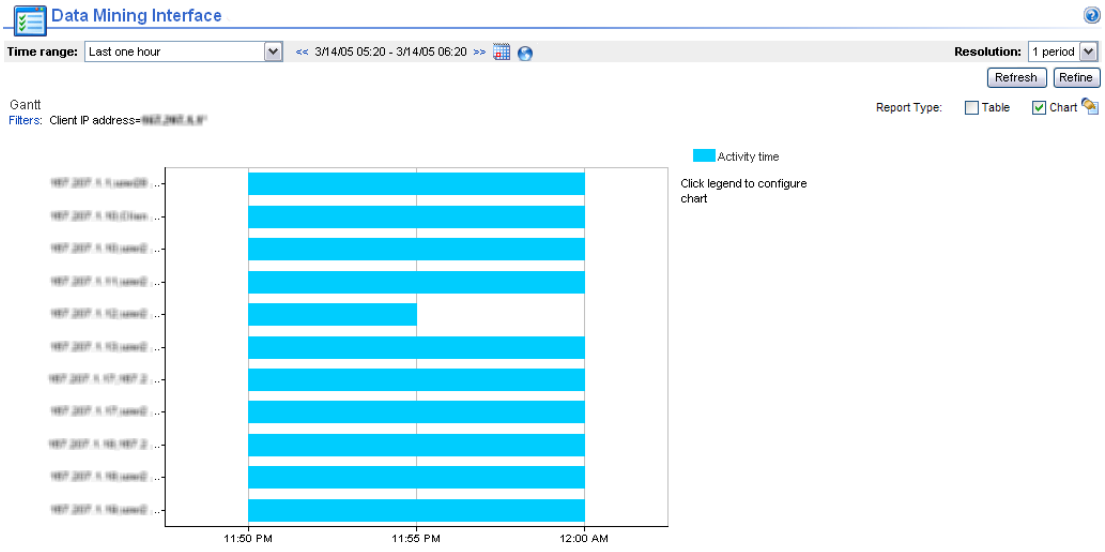
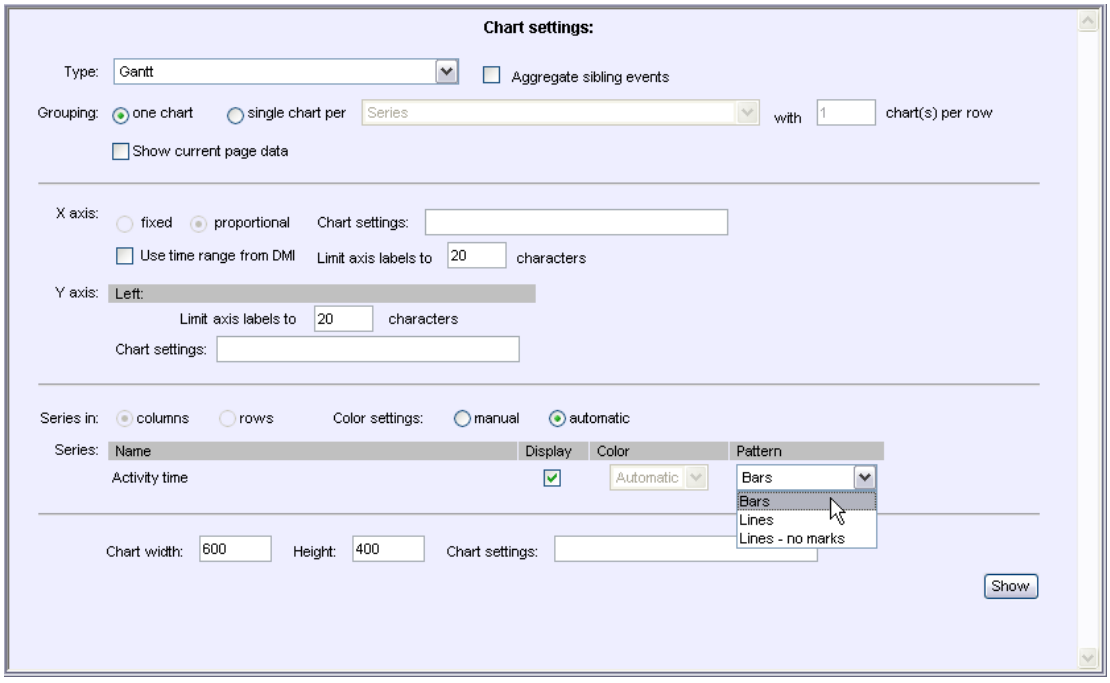


Figure 24. The **Chart settings** window for a Gantt chart



Defining a Histogram

To create histograms (breakdowns by threshold values), use the following DMI controls:

Dimension = Histogram
In the **Dimensions** list, select **Histogram**.

Metric for defining histogram thresholds
When you select the **Histogram** dimension, another lists appears immediately beneath it. Use it to select a metric for a breakdown threshold.

Histogram threshold values
After you have selected **Histogram** and a metric for a dimension, enter the values of the thresholds in the **Condition** box associated with the histogram metric. Use semicolons as separators. A maximum of 20 thresholds can be specified.

Rules

The following rules apply when defining a histogram:

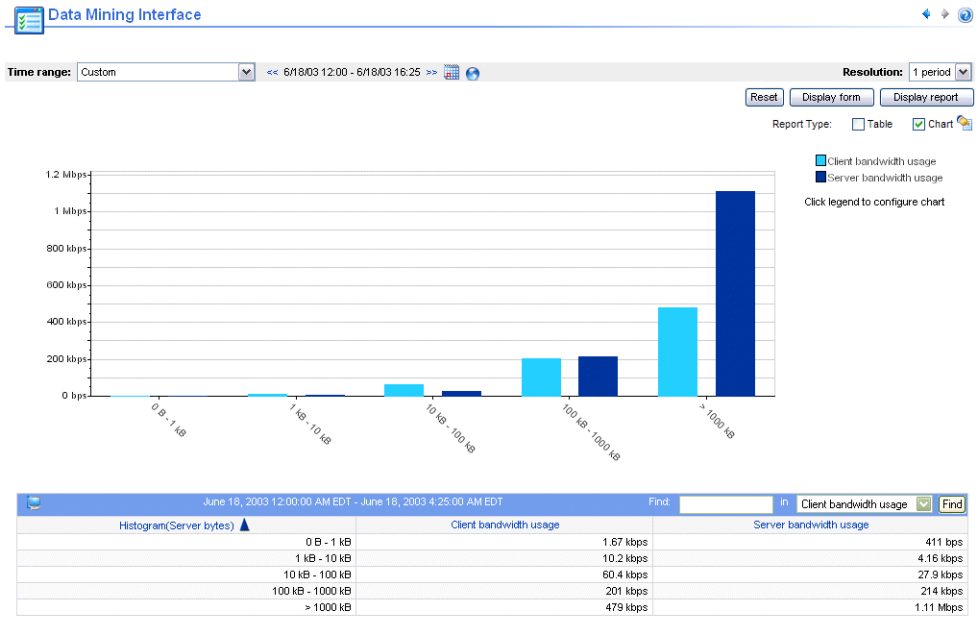
- Suffixes are permitted to express units of time (s, m, h, d), '%' for percentage metrics, and suffixes expressing quantities (k, M, G).
- If zero is specified as a threshold, the first range will contain only zero values. If a value greater than zero is specified as the first threshold, everything lower than or equal to the first threshold will be in the first range. The subsequent ranges contain values greater than the lower threshold and less or equal to the upper threshold (if any).
- In DMI, a histogram applies to input data values, not to result values. A histogram is calculated before data aggregation is done. This is similar to setting a metric filter with the mode **Data** (see Filtering Metrics and Results [p. 29]).
- Since data is monitored at a defined monitoring interval, only average data is assigned to ranges in histograms. For example, a histogram will not display a single measured value of operation time, but an average operation time, so that all the data from one monitoring interval is assigned to the same range. If the average value does not exceed a particular threshold, it does not mean that no single value exceeded it. This may result in some ranges on the histogram being empty.
- If you choose a “unique” type of metric such as **Unique Users**, the histogram will show the number of elements whose value has ever been in a defined range. For example, if a histogram shows the operation time for unique users, with three defined thresholds, each of the four ranges will contain the number of users who have ever had an operation time in each of these ranges. This means that a particular user can be assigned to more than one range.
- Additional characters are allowed at the start of the range specifiers:

  +
  A plus indicates that the threshold is to be treated as an upper boundary.

  *
  An asterisk indicates that the threshold is to be treated as a lower boundary.

Example

Figure 25. An example of a histogram report



Histogram(Server bytes)	Client bandwidth usage	Server bandwidth usage
0 B - 1 kB	1.67 kbps	411 bps
1 kB - 10 kB	10.2 kbps	4.16 kbps
10 kB - 100 kB	60.4 kbps	27.9 kbps
100 kB - 1000 kB	201 kbps	214 kbps
> 1000 kB	479 kbps	1.11 Mbps

Drill-down Charts

A drill-down report of a particular event within a chart can be viewed by clicking on that element. This features applies to the following chart types:

- Pie chart
- Gantt chart
- Stacked Gantt chart

The drill-down reports obtained from charts contain the same definition logic as in table drill-down reports. This means that they can be filtered, linked, and viewed in the same manner as drill-down reports derived from a table.

Similarly to the table drill-down reports, under the **Link** tab in a report definition screen, a **[+]** button opens a filter selection panel where a measure linking the chart data to the drill down report can be selected.

Drill-down report links originated from charts apply only to measures. You can specify whether the measure's link applies to table, chart, or both. By default, the **Table** option is selected.

While viewing a pie chart, the pie labeled as “other” acts as a filter for a single dimension for generating a drill-down report. When more than one dimension is used in a pie chart, the link to the drill-down reports on the pie titled “other” is unavailable.

Similarly, if a chart contains a series with breakdown dimensions, and if a breakdown contains one dimension, the drill-down report is available.

CHAPTER 6

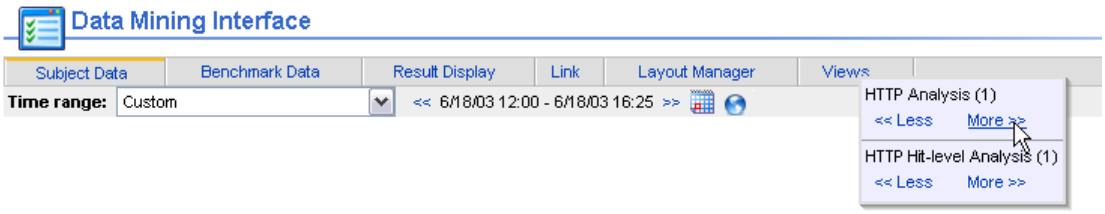
Advanced Reports

DMI is a highly customizable tool that allows you to define modular reports and complex multilayered reports with drill-down and drill-through capabilities, and to customize the report content and layout to your needs.

Displaying Multiple Sections for Data View

While defining a DMI query, you can display more than one section belonging to a given data provider. To manage the sections visible in DMI, click the **Views** tab to open a menu of view-related commands.

Figure 26. An example of the **Views...** tab



This menu lists of all the available types of sections. Sections are listed separately for each data provider. If a particular data provider supports more than one distinct type of section, each section type is shown separately. The value in parentheses is the currently displayed number of instances of that section.

Click **More** >> or << **Less** to increase or decrease the number of sections displayed on the screen.

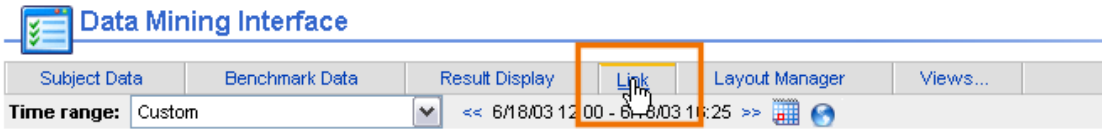
Multi-layered Reports

DMI functionality allows you to build a multi-layered report with drill-down and drill-through capabilities.

Linking Reports

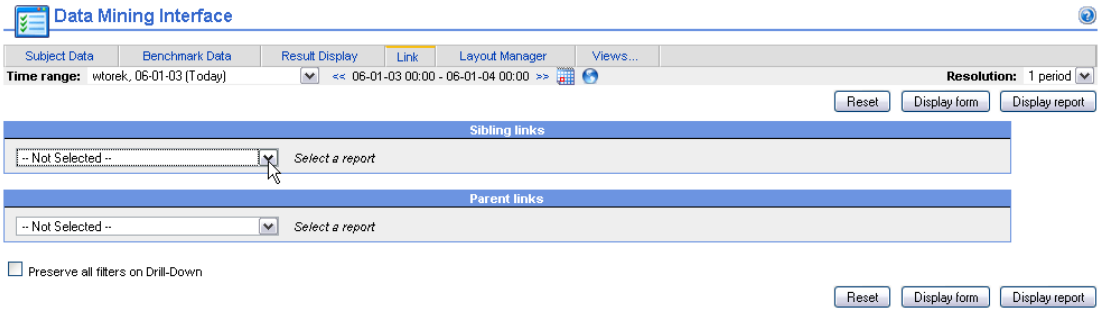
Multi-layered reports consist of a number of lower level reports that are linked to a top-level report. Peer links on the same level are also possible. To define or modify existing links of a multi-layered report, click the **Link** tab.

Figure 27. The **Link** tab



This will open the DMI **Link** screen as shown below.

Figure 28. An example of the DMI **Link** screen



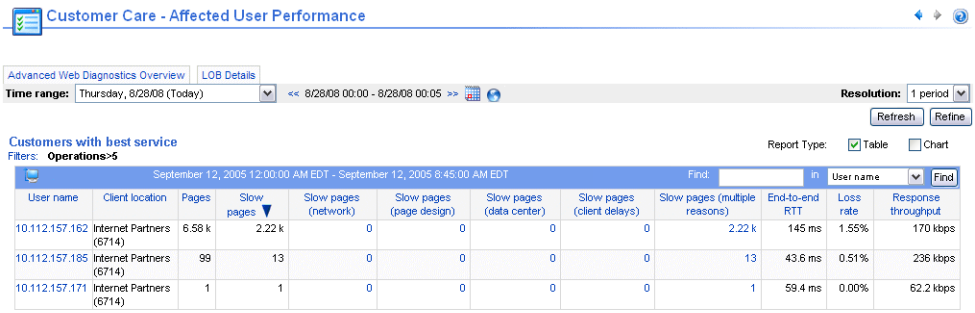
On the DMI **Link** screen, you can define the hierarchy of a multi-layered report by determining the component on which there will be a link to another report. Defining filter dependencies between reports is also possible.

Categories of Links

Three link categories can be embedded in multi-layered reports:

- Parent
- Sibling
- Drill-down (child)

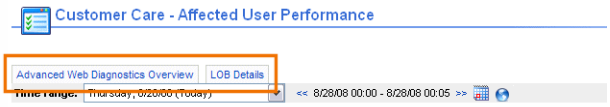
Figure 29. An example report showing parent and drill-down categories of links



Parent links

Parent links are always listed at the top of the report, just below the report title.

Figure 30. Parent links in tabs, in a multi-layered report

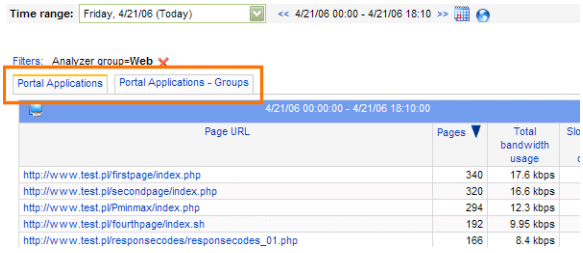


Parent links always lead to named (saved) reports. Such reports can also be reached from Dashboard.

Sibling links

Links belonging to this category are placed close to the data table to which they directly refer and are intended to lead to reports on the same level in the hierarchy.

Figure 31. An example of a sibling link embedded in a tab, in a multi-layered report

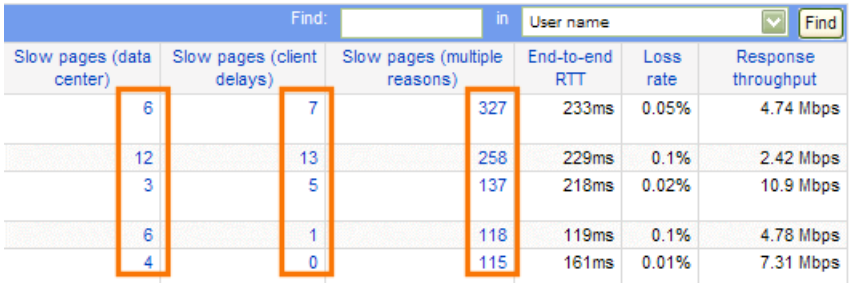


Sibling links can lead to different views of similar or the same data. For example, clicking the **Portal Applications** link above can activate a similar report, but for portal applications.

Drill-down links

This category is reserved for links that lead to reports generated dynamically.

Figure 32. An example of drill-down links embedded in table data



Drill-down links are embedded in the data table cells and lead to new reports for the clicked item. There can be many levels of drill-down links.

Drill-down link differs from parent and sibling links in that a drill-down link, when clicked, is able to apply values from the clicked report table row as the filtering criteria on the drill-down report. The DMI **Link** screen defines which values should be applied as filters.

Defining a Link

To define a link:

1. Decide what type of link you want to create: parent, sibling, drill-down on a dimension, or drill-down on a metric.

   Use the section on the **Link** screen that corresponds to your choice.

2. For a drill-down link, decide on the dimension or metric whose values are to be used as links.

   The available dimensions and metrics are listed on the selection screen.

3. Choose the target report from the to the right of the chosen dimension or metric.

   The target report is the report that will be opened when you click the link.

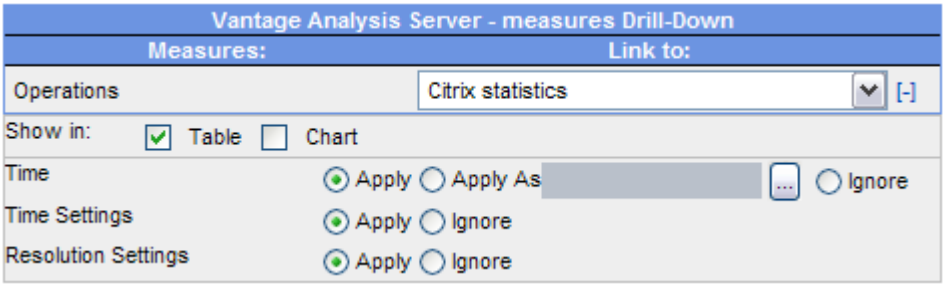
4. *Optional:* Define filters to be applied to the target report.

   Each dimension on your current report can be used as a filtering criterion for any dimension on the linked report. For example, values of **Server IP address** on the current report can be used as a filter for the **Client IP** dimension on the linked report.

   To define such a filter:

   a) Click **[+]** to open the filter selection panel for the chosen dimension.

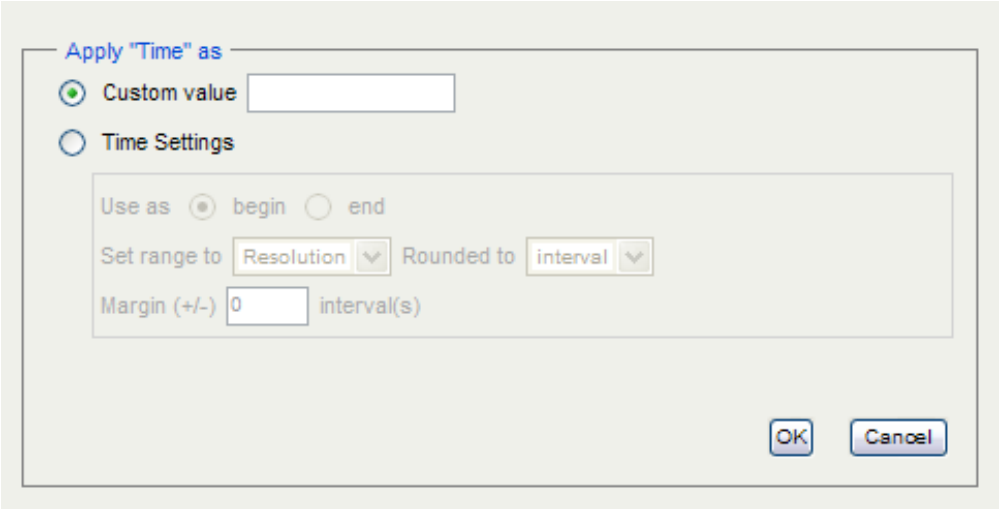
Figure 33. An example of the filter selection panel



b) Select **Apply** as to the right of the chosen dimension.

c) Click  to select a dimension from the target report.

Figure 34. Choosing a dimension on the target report



You can also click **Apply** to select the dimension *of the same name*. In this case, such a dimension has to exist in the target report. If you do not want a particular dimension to be a filtering criterion, choose the **Ignore** option.

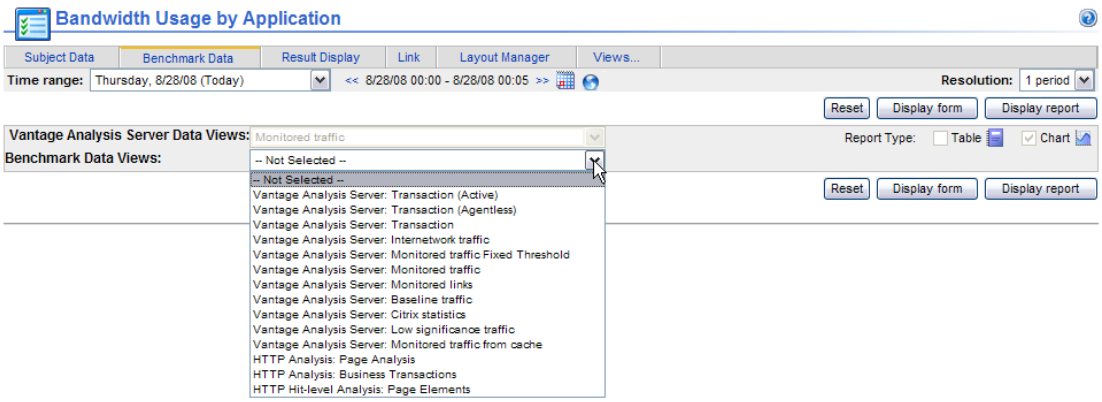
Benchmarking and Merging Views

DMI allows you to use two different sections to generate a single report table. The sections can have the same or different data views. You can use this feature to:

- Compare metric values in a particular data view with the corresponding metric values in another data view. For example, you can compare metric values in the **Monitored Traffic** data view with baseline values in the **Baseline Traffic** data view.
- Compare metric values from different times or days.
- Combine metrics or dimensions from two different data views to generate a single report.

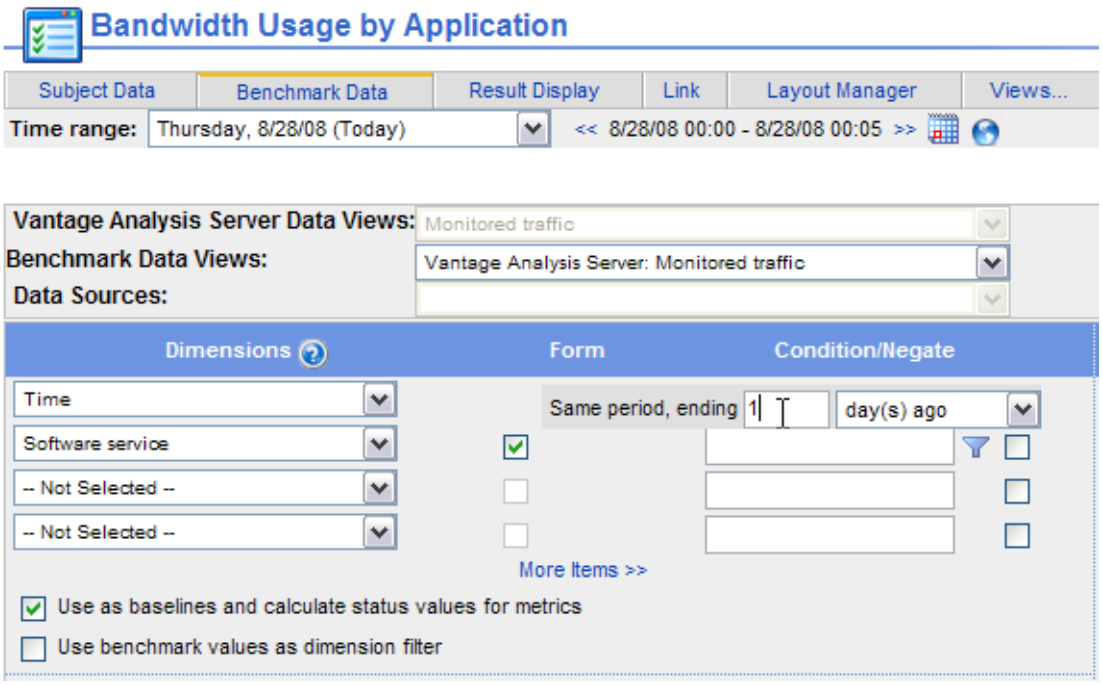
By default, the DMI screen opens the **Subject Data** tab, where you can open one or more sections to generate a report. Merging of data is performed by opening a corresponding section or sections in the **Benchmark Data** tab.

Figure 35. The **Benchmark Data** view



When your query is ready, after you have selected the desired dimensions, metrics, filters, and other required conditions in both of the tabs, click **Display report** in either the **Subject Data** or **Benchmark Data** tab. You can switch between the tabs as many times as you need before you submit your query.

To compare different times or days, select the **Time** dimension on the **Benchmark Data** tab. This will cause the following condition controls to appear in the condition column:



To perform color-coded data comparison, select **Use as baselines and calculate status values for metrics** on the **Benchmark Data** tab. Then, if **Subject Data** and **Benchmark Data** share a metric, the metric will be used as a basis for comparison: the subject value will be divided by the benchmark value. The resulting percentage value will be compared with appropriate threshold values and the resulting report's cells will be colored accordingly.

To use benchmark values as a dimension filter, select **Use benchmark values as dimension filter** and indicate the number of top items that the query should draw data from. The default value for the top numbers is 5 and the maximum is 100.

Note that the selection of data sources available for the **Benchmark** tab is the same as that available for the **Subject Data** tab, provided that the same data views are selected.

Customizing the Report Content and Layout

You can choose from a number of report customizing options.

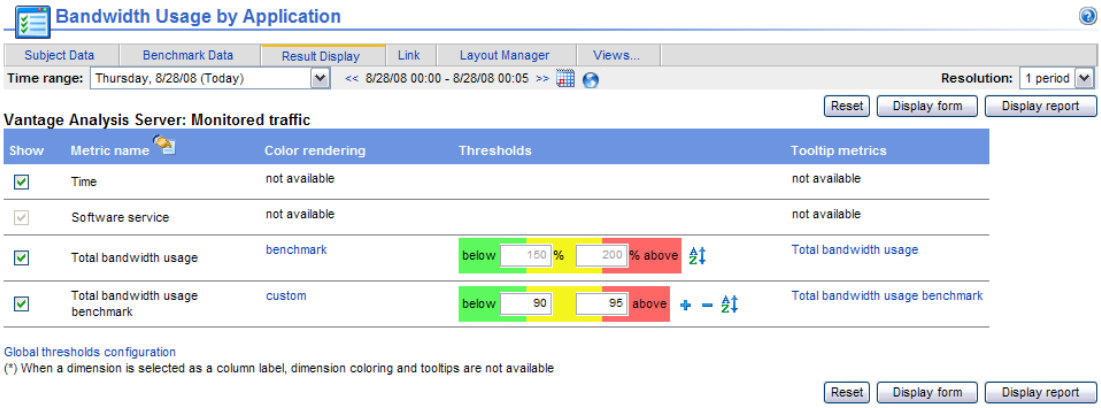
Use the **Result Display** tab to:

- Select columns to display
- Configure color rendering
- Select tooltips for report fields
- Specify metrics grouping

Selecting Columns to Display

To specify which columns should appear in the report, open the **Result Display** tab and select **Show** for each column you want to display.

Figure 36. An example of the **Result Display** tab



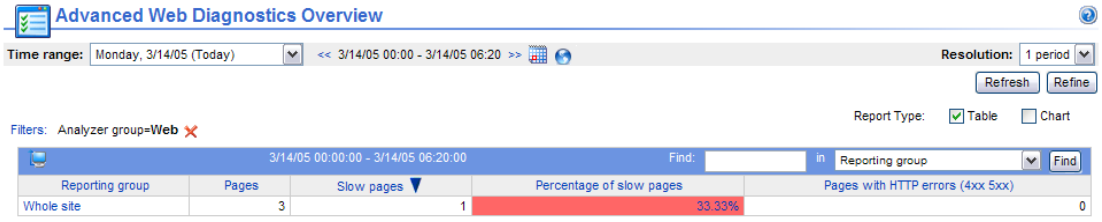
The **Result Display** tab displays only the fields that you have added to the report in the **Subject Data** or **Benchmark Data** tab.

The columns from the **Benchmark Data** tab, which are used for the benchmark comparison as reference values, are listed with the **benchmark** suffix and do not, by default, appear in the report.

Color Rendering Configuration

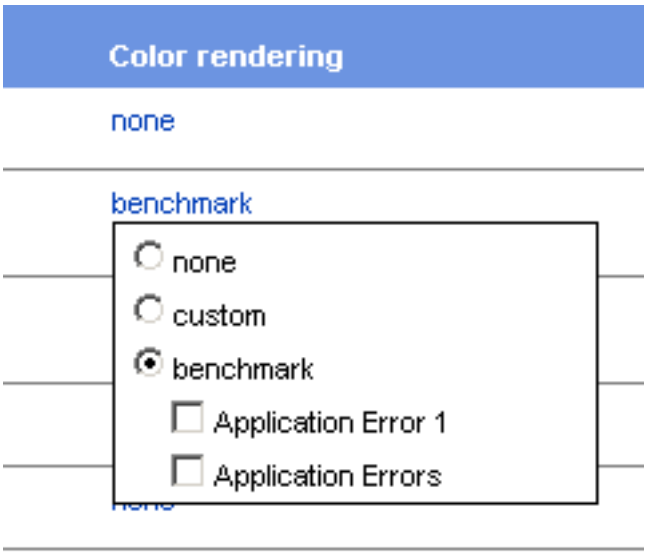
The color rendering configuration enables you to define a cell's background color, which can change if the metric's value meets certain conditions (*conditional formatting*).

Figure 37. An example of the report with color rendering



To select the background color type, click a link in the **Color rendering** column on the **Result Display** tab, and then choose a coloring option from the list.

Figure 38. An example view of the color rendering options

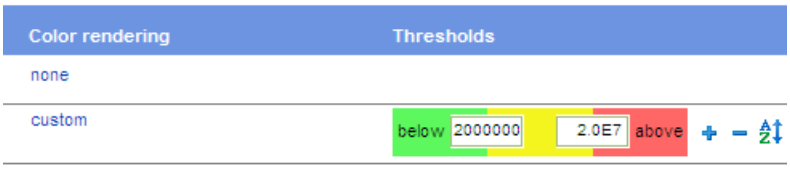


In the options list, you can choose between the **Custom** or **Benchmark** color rendering configuration types:

Custom

This rendering mode uses absolute metric values for comparison and enables you to specify threshold levels for each metric individually. The cell background color depends on the thresholds settings; you can set maximum three thresholds, using **[+] [-]** buttons—to increase or decrease the number—on the **Result Display** tab, and you can type the desired threshold level values in the text boxes. It is also allowed to use units prefix symbols (for example, k or G) or scientific notation (for example, 1e5) in the text fields. Certain metrics are more meaningful when represented in a reversed color order. The Icon allows you to reverse the color coding of the particular threshold.

Figure 39. An example view of the custom thresholds configuration options



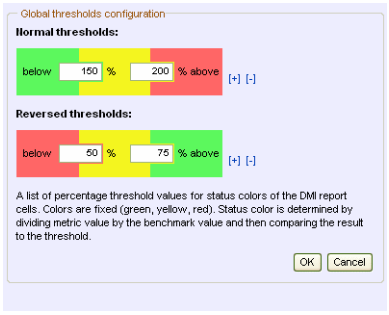
Benchmark

In the benchmark mode, the status color is determined by dividing the metric value by the benchmark value and then comparing the result with the threshold. Note that this configuration type is only available if you select the corresponding benchmark metric on the **Benchmark Data** tab, and if you select the **Use as baselines and calculate status values for metrics** check box on this tab.

The benchmark configuration allows you only to define the threshold levels globally in the **Global thresholds configuration** window, which you can easily access by selecting a link in the **Result Display** tab.

Similarly to the **Custom Thresholds Configuration** options, the threshold can be defined for the **Normal thresholds** and **Reversed thresholds** for more meaningful color representation.

Figure 40. The **Global Thresholds Configuration** window



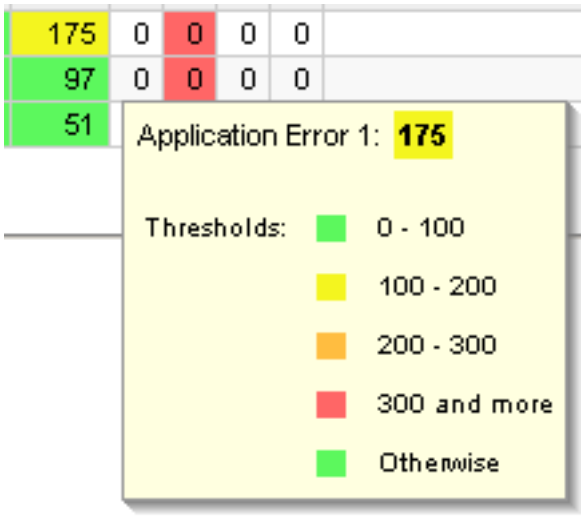
The settings from the **Global thresholds configuration** window apply to all the metrics in all the reports with benchmark-based color rendering.

Tooltips

A tooltip appears when you hover over (hold the mouse pointer over without clicking) a table cell.

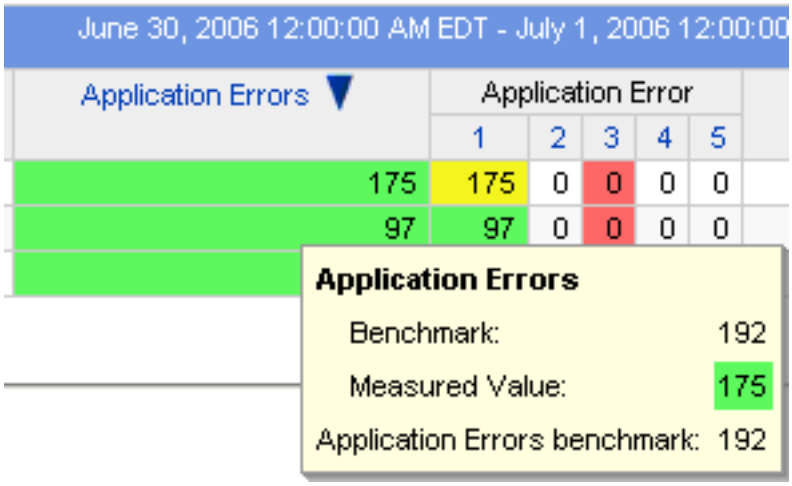
When **Color rendering** is set to **Custom**, the tooltip provides information on how the metric value is compared to the threshold levels, and shows the distribution of all the defined threshold values.

Figure 41. An example of the tooltip over a cell with custom rendering



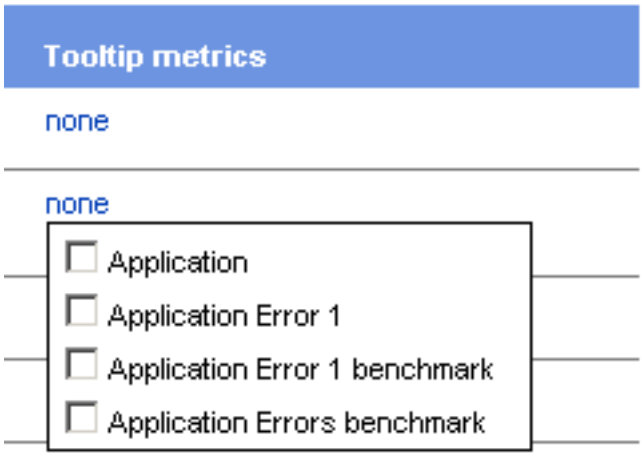
When **Color rendering** is set to **Benchmark** mode, the tooltip shows the measured and benchmark values that were used for comparison and for calculating the color status.

Figure 42. An example of the tooltip over a cell with benchmark rendering



Use the tooltip metrics list, which you can access by clicking a link in the **Tooltip metrics** column, to configure the set of metrics that are displayed in the tooltip.

Figure 43. An example view of the tooltip configuration options

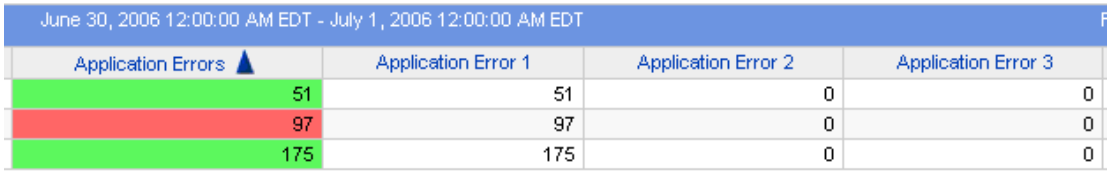


Metrics Grouping

The reports can show metric columns either separately or grouped by the metric header labels in the report table.

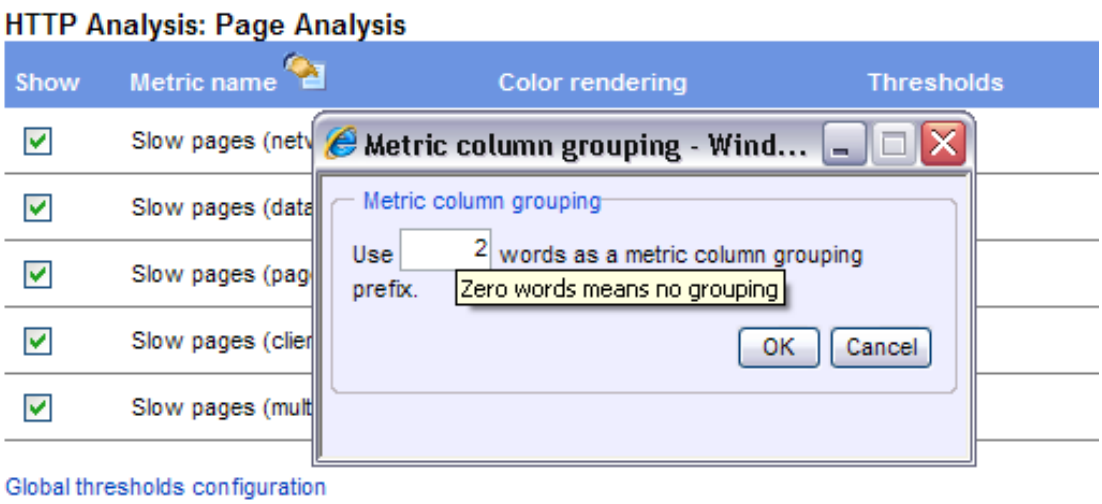
Figure 44. An example of the report with metric column grouping

Figure 45. An example of the report without metric column grouping



Click the icon next to the **Metric name** table header (see below) to set the **metric column grouping** and specify how many words from the metric header label are going to define a column grouping prefix.

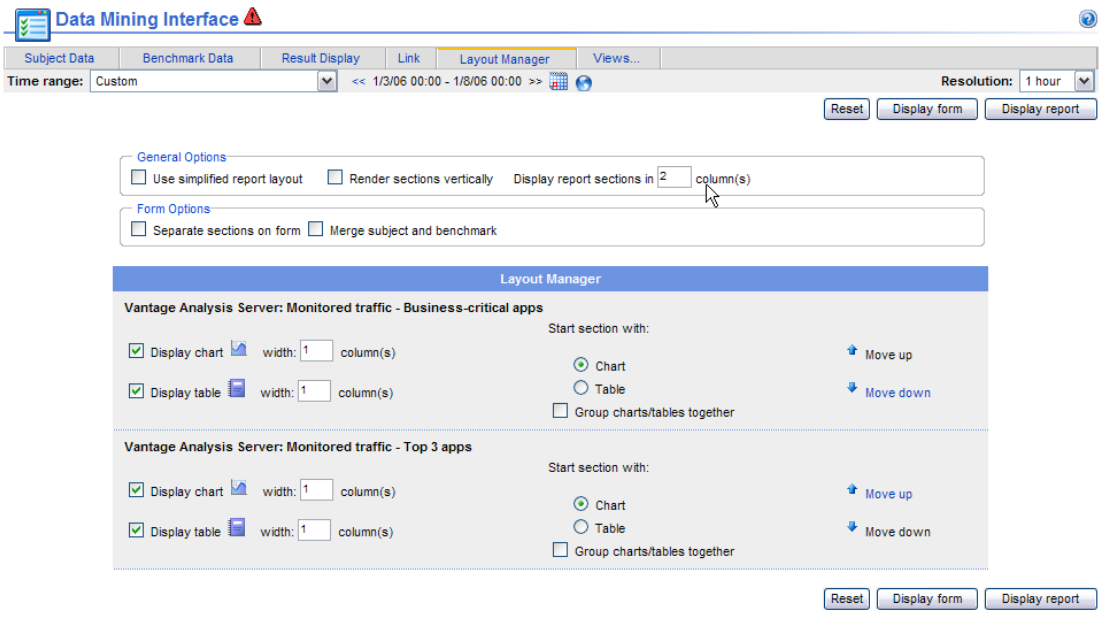
Figure 46. An example view of the **Metric Column Grouping** configuration



Layout Manager

The report layout can be defined in detail on the **Layout Manager** tab. This tab lists all the sections that you have selected in the **Subject Data** tab. For each section, the chart and table components are listed separately.

Figure 47. An example of the **Layout Manager** tab



Select **Display chart** or **Display table** to determine whether a particular chart or a table component should be included in the report. Use **Move up** and **Move down** to relocate each chart or table component.

The following settings determine the position and size of each report component, and determine the appearance of the report.

Display report sections in ... columns

Scope: global

This setting specifies the number of columns that will appear in all sections of the report. The columns are filled from left to right or from top to bottom, depending on other settings explained below. If, for example, you set the number of columns to 2 and you have a report containing two sections, with each section composed of a chart and a table, the report screen will show the chart component of the first section, and, to the right of it, the table component of the first section, provided, that the components are rendered horizontally. The chart of the second section will be visible below the chart of the first section, as in the example below.

Render sections vertically

By default, sections are filled from left to right. If this is selected, the order in which the report components are displayed in all sections is from top to bottom.

width ... column(s)

This setting specifies how many columns a particular element (chart or table) occupies. If you specify more than one column, the component will be stretched to fill the specified number of columns.

If the global setting specified in **Display report sections in ... columns** is less than the value you enter here, the global setting takes precedence: you can stretch a particular element to fill at most the number of columns specified in the global setting.

Start section with chart/table

This setting specifies the ordering of components within a particular section: by default the chart, if present, is rendered first. Note that the actual direction of rendering, horizontal or vertical, is defined by other parameters.

Group charts/tables together

By default, charts are matched with the corresponding tables. Select this option to instead render all of the table components in one group and all of the chart components in another group.

Use simplified report layout

Select this option to generate a simple report: no header row, no text export, no filter controls, and no user selection of graph or table components to be displayed.

Figure 48. An example of a report displayed in two columns

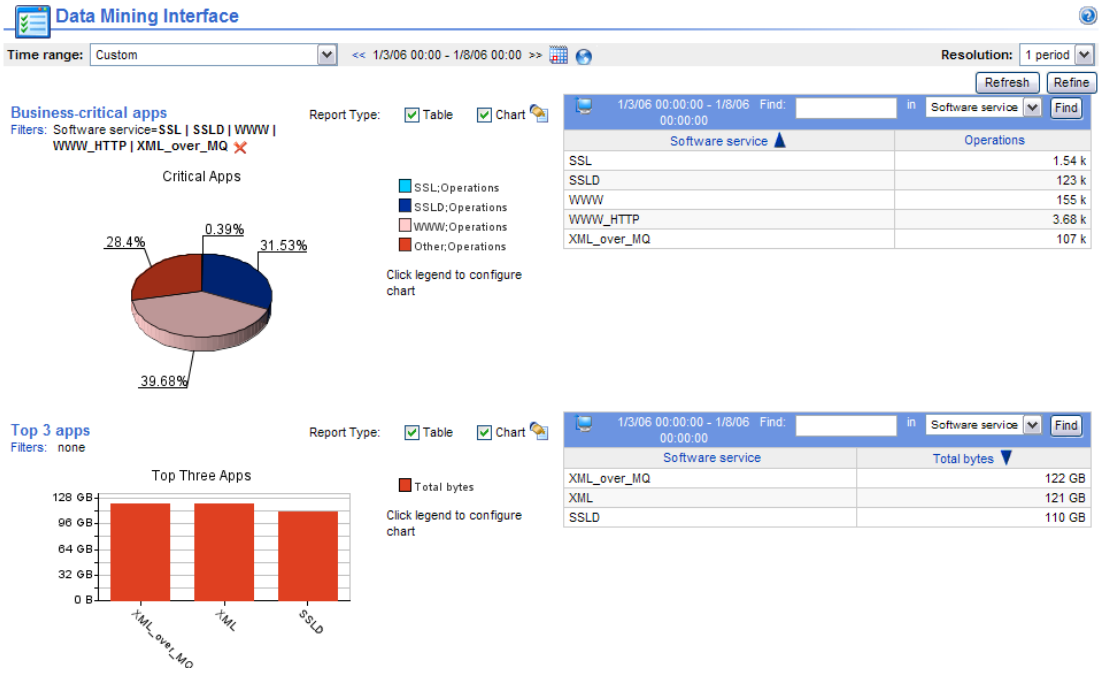
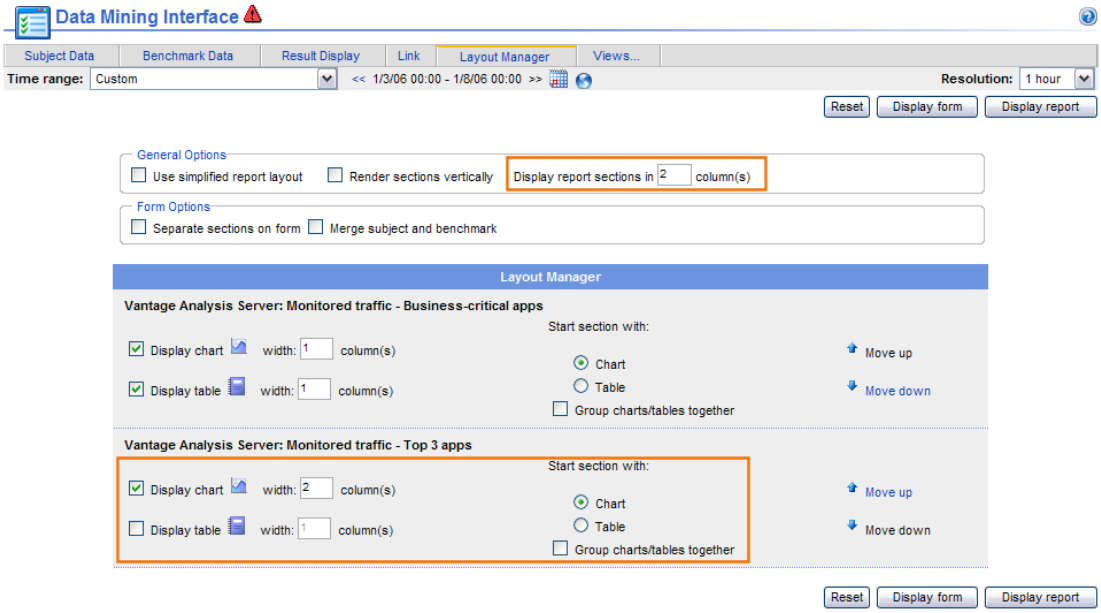


Figure 49. An example use of the **width...column(s)** parameter to increase the space allocated to a graph



CHAPTER 7

Report Maintenance

When DMI is used from within VantageView, DMI controls and features described here and related to report maintenance are handled by the hosting VantageView environment and therefore *do not appear* on the DMI screen. A summary list of the affected features is given in Differences in DMI Integrated with VantageView [p. 83].

Saving Reports

Any report (predefined or custom) can be placed on Dashboard, scheduled for pre-loading, e-mailed to a report user, or migrated to another report server.

Before you can perform any of these tasks with a report, however, you must save the report definition. It is important to differentiate between the following concepts:

- *Saving report definitions* relates to saving report query conditions for a given report. Every time such a save report is invoked, it is re-created using fresh data. This is accomplished by the **Save** and **Load/Organize** mechanisms described in Saving Report Definitions and Placing Reports on Dashboard [p. 61].
- *Saving report data*, for a particular instance of a report generation. This is performed using the **Save As** option described in Saving Reports as PDF or MHT Files [p. 68].
- *Exporting report definitions* to an external XML file, for migration to another report server. This functionality is described in Exporting and Importing Report Definitions [p. 62].

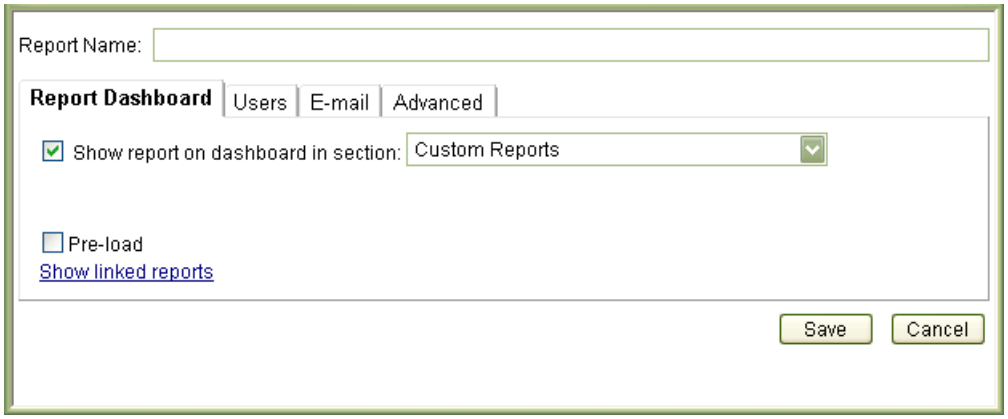
Saving Report Definitions and Placing Reports on Dashboard

Definitions of predefined reports are already saved. To save a custom report definition:

1. Select **Report** → **Save** while the report is displayed.

   The **Save Report** dialog box opens.

Figure 50. An example of the **Save Report** window



2. Enter the report name you want to use and click **Save** to save the report query.

TIP

You can use the same menu item to save an existing or predefined report under a new name, or to save a query definition form. This may be helpful if you want to submit a number of similar queries.

Links to saved reports can be placed on the **Data Mining Reports** screen. To link a report, select **Show report…** and select the section from the list. You can specify this option either at the time when you first save the report or at any time afterward. For more information, see Maintenance of Saved Reports [p. 67].

Pre-loading Reports

When saving a report, you can arrange for data needed by that report to be generated and pre-loaded in cache. The data in cache is automatically updated whenever it becomes out of date, thus the report is always ready to be displayed. For example, a daily trend report becomes out of date at midnight and needs new data. On the **Report Dashboard** tab, select the **Pre-load** check box to enable report data pre-loading.

Listing Linked Reports

All reports linked directly or indirectly to a saved report can be listed by clicking the **Show linked reports** link on the **Report Dashboard** tab.

Exporting and Importing Report Definitions

You can export a report definition an XML file that you can use to migrate your reports to other report servers. Both procedures are described below.

Exporting report definitions to external XML files

To export a report definition:

1. Save the report.

For more information, see Saving Report Definitions and Placing Reports on Dashboard [p. 61].

2. Select **Report → Export/Import...**.

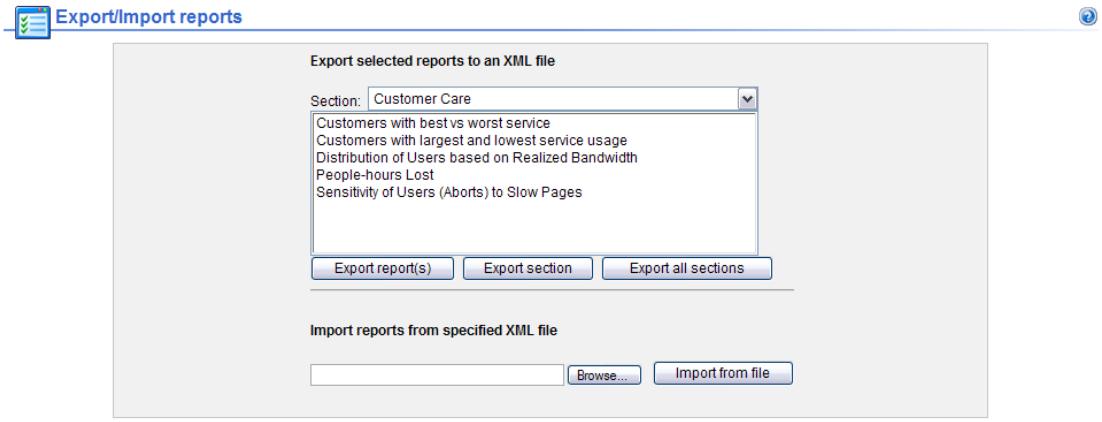
   The **Export/Import Reports** window opens.

3. Select your previously saved report and click **Export report(s)**.

   You can also choose to export an entire Dashboard section or all of the sections.

Now you can transfer the file to another machine and import it to DMI on that machine using the same window.

Figure 51. An example of the **Export/Import Reports** screen



Importing report definitions from external XML files

To import a report definition:

1. Select **Report → Export/Import...**.

   The **Export/Import Reports** window opens.

2. In the **Import reports from specified XML file** section at the bottom, specify or browse for the file and click **Import from file**.

   The imported report definition will be added to the list in the **Export/Import Reports** window.

Importing Report Definitions from External XML Files

The **Export/Import reports** window allows you to import XML report definitions previously exported from the report server. You can also use it to import predefined report examples.

To access this function, select **Report → Export/Import...** from the top menu. To import report definitions, type the name of the file containing the required report definitions or click **Browse...** to locate the file on your computer.

By default, a new report server installation will not contain built-in report examples, but a library of example reports is available with each server installation in the `C:\Program Files\Compuware\VASAWDS\config\dmireports-examples` folder. The sample reports are

installed on the report server, so local access to the server may be required to import these examples. For a complete list of which XML files include what reports, see the Example Reports [p. 73] appendix.

After the report definitions have been imported, select **Report → Data Mining Reports** from the top menu to review them. The arrangement of reports on a dashboard and renaming the report sections can be done via the **Load/Organize Reports** window accessed from the top menu, **Report → Load/Organize**. For more information, see Maintenance of Saved Reports [p. 67].

E-mailing Reports

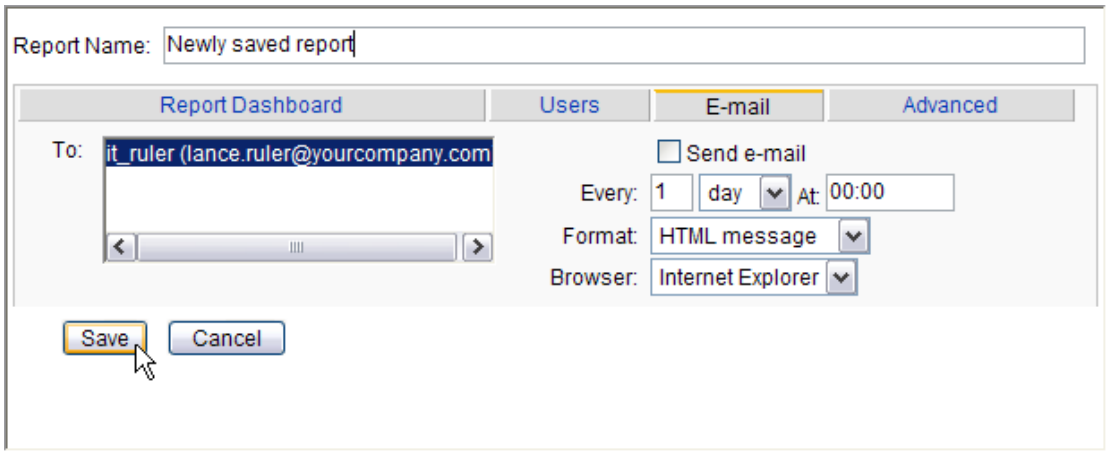
E-mailing instructions for a report can be set up using the **E-mail** tab of the **Save Report** window.

or the analogous tab of the **Load/Organize Reports** screen during subsequent report maintenance. For more information, see Maintenance of Saved Reports [p. 67].

These instructions allow you to define specific times at which the report should be sent. Each time the report is sent, new data, as currently available to the server, is used to generate the report.

NOTE

The **E-mail** tab will be available only if the report you are saving was defined using Data Mining Interface. The predefined reports can be scheduled for mailing using the **Send Report by e-mail** option found under the icon within each of the predefined reports. For more information, see *Sending Reports by E-mail* in the *ClientVantage Agentless Monitoring – System Administration Guide*.



To choose the recipients of the specified report, highlight the user from the **To:** list and select the **Send e-mail** check box . It is possible to register multiple recipients of a report.

In order to remove a user from the recipient list, select the user in the **To:** list and clear the **Send e-mail** check box.

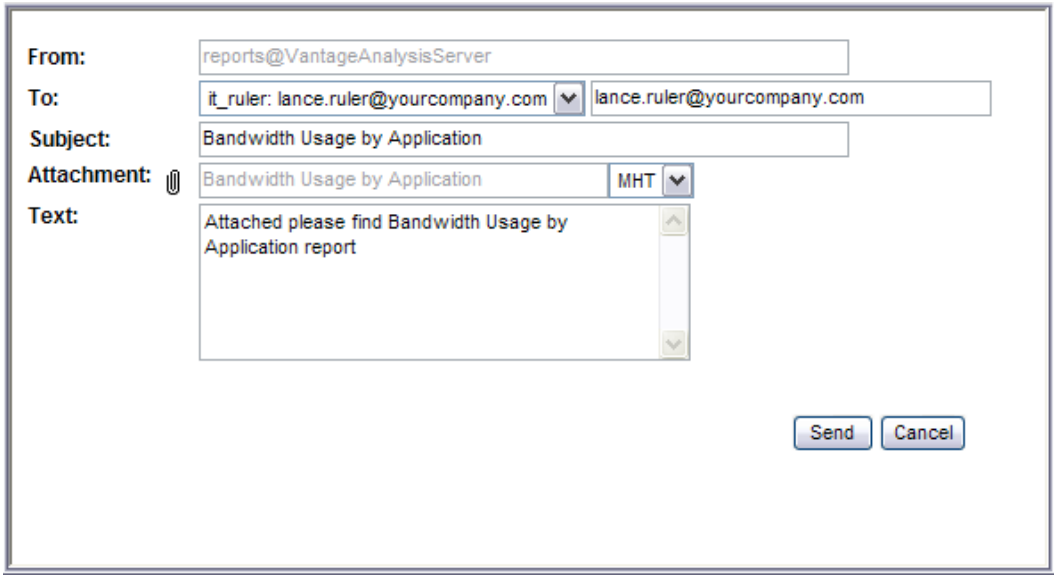
Note that this screen also allows you to specify the browser type and allows you to request that the report be sent as text. To ensure that the report does not exceed a certain size, specify the number of lines in the **Page size** box.

E-mailing the Currently Displayed Report

To send an immediate one-off copy of the currently displayed report via e-mail:

1. Select **Report → Send by E-mail** from the menu.
2. Enter your e-mailing instructions in the pop-up window:

Figure 52. Specifying e-mailing instructions for a single instance of the currently displayed report

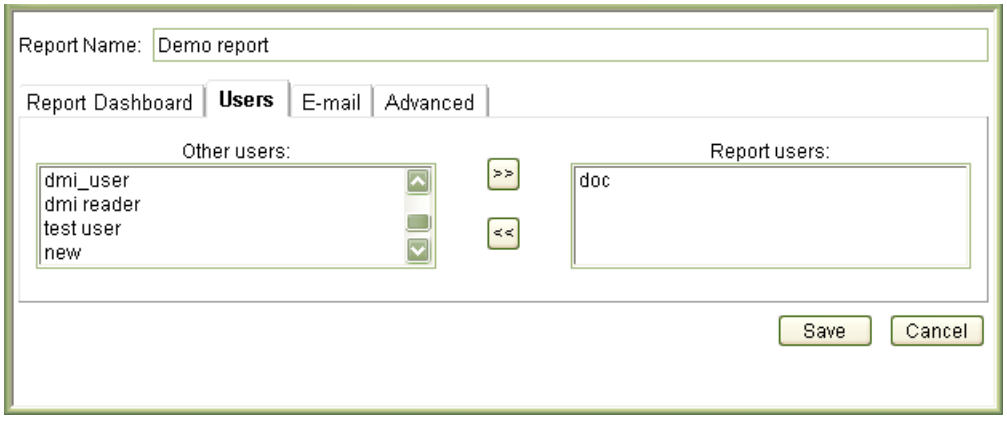


You can select a recipient from the drop-down list of available recipients or type an e-mail address in the **To** field. The report will be sent as an attachment in the selected attachment format: MHT or PDF.

3. Click **Send**.

Assigning Users to a Report

The **Users** tab specifies those users that will be allowed to access the report. By default, this right is given to the report creator.



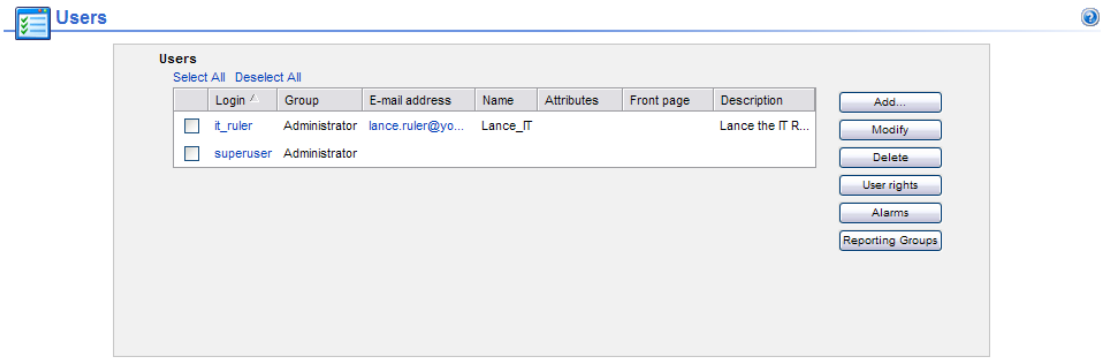
To assign users to the report, select one or more users in **Other users** pane and click >>. To remove a user from the report, select the user in **Report users** and click <<. Click **Save** to confirm the configuration.

You can specify the user assignment either at the time when you are first saving the report or at any time afterward. For more information, see Maintenance of Saved Reports [p. 67].

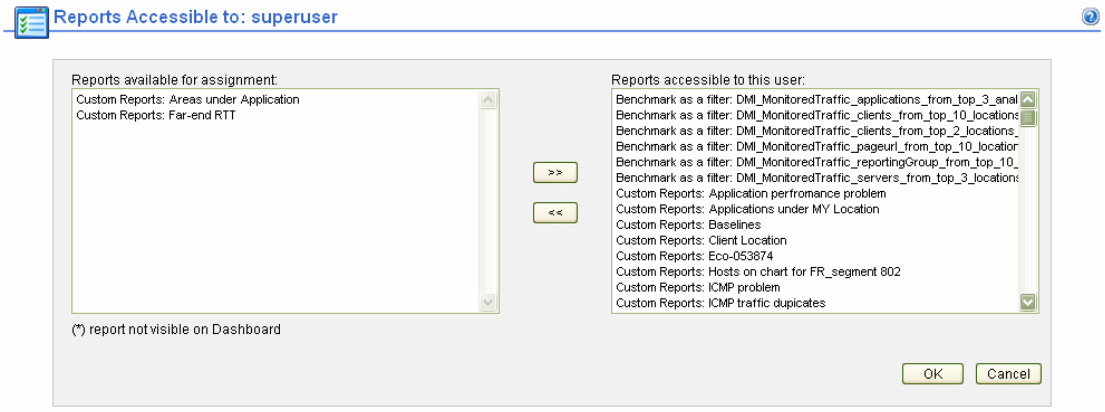
NOTE

An administrative user is always able to access all reports, even if the name of the administrative user is removed from the list. Note, however, that this right is not equivalent to being able to see the report on **Dashboard**. **Dashboard** shows only reports that were explicitly assigned to a given user.

You can also associate reports and users on the **User Administration** screen, accessed through **Settings** → **Security** → **Users**.



After selecting a user from the list, click **User rights** to list the reports accessible to this user. Select a report in **Reports available for assignment** and click >> to assign that report to the user. Select a report in **Reports accessible to this user** and click << to remove that report assignment from the user.



Changing Parameters of a Saved Report

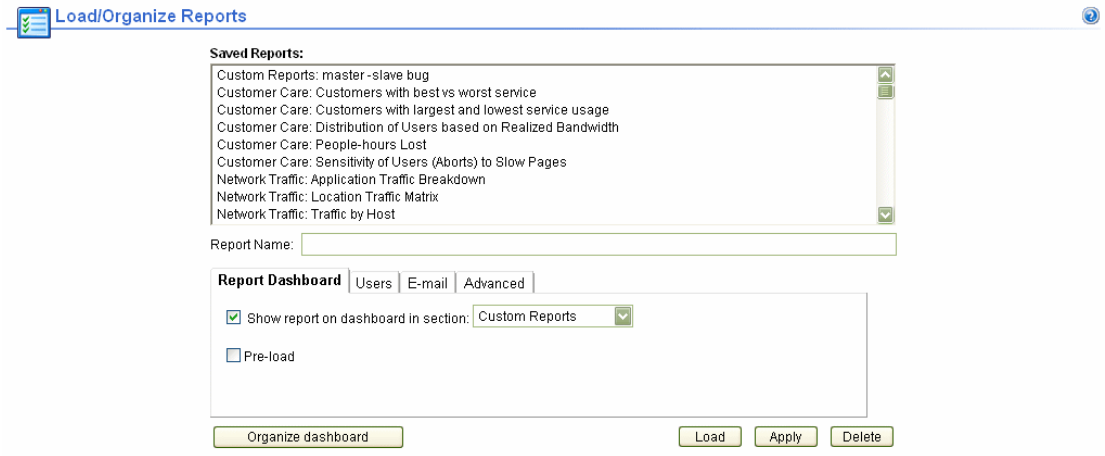
The **Advanced** tab enables you to change the parameters of the saved report. You should contact Compuware Technical Support before attempting to change parameters of a saved report in this way.

Maintenance of Saved Reports

Saved and predefined report titles appear on the **Load/Organize Reports** screen, which is accessed through the **Report → Load/Organize** menu item.

Predefined reports have been prepared and saved for your use, and therefore they appear on the **Load/Organize Reports** screen. They can be managed just like any reports you save. However, you are discouraged from deleting or modifying these reports, as they provide a broad range of the most commonly used reporting facilities.

Figure 53. An example of the **Load/Organize Reports** screen



Executing a saved report

To execute a saved report, select the report title in the **Saved Reports** list and click **Load**.

Renaming a saved report

To rename a saved report, select the report, enter the new name in **Report Name**, and click **Apply**.

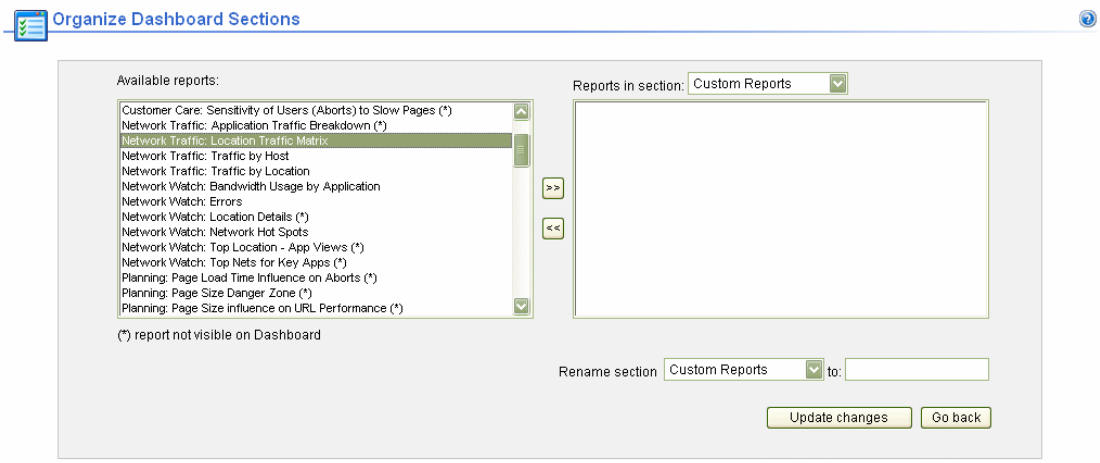
Removing a saved report

To remove a saved report, select the report and click **Delete**.

Organizing the dashboard

Or organize your reports, click **Organize dashboard** to open **Organize Dashboard Sections** (see below), where you can move reports between sections and rename sections.

Figure 54. An example of the **Organize Dashboard Sections** screen



Performing other management actions

Other management actions, such as changing e-mailing settings, pre-loading settings, or user assignment can be performed using the appropriate tab (**Report Dashboard**, **Users**, or **E-mail**) in exactly the same was as when the report is first saved. Click **Apply** to save your changes.

Saving Reports as PDF or MHT Files

The **Report → Save As…** option enables you to save your reports in PDF or MHT formats:

PDF

Saves the current report as a PDF file can be opened with Adobe® Reader™, free software distributed by Adobe Systems Inc.

MHT

Saves the current report as an MHT file that can be opened with Microsoft Internet Explorer®.

CHAPTER 8

Configuration

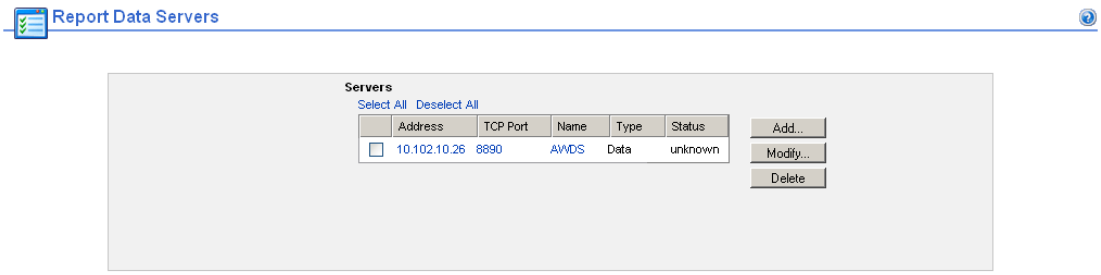
DMI can be configured to read data from various servers (data sources) that provide data in DMI-compatible format. Data from many sources can be used on a single report, so you can create powerful tools for analyzing your data.

Configuring Data Servers

In addition to the concept of server clusters, Vantage Analysis Server installations can form loose associations in which there is no common management or common configuration settings, but which still facilitate sharing of report data. The configuration screen accessed through the menu items: **Settings** → **Report Settings** → **DMI Data Servers** allows you to specify a number of associated report servers, to be used as data sources on the DMI screen. If DMI is used from within VantageView, to define sources of DMI data, use the **Administration** tab on the VantageView navigation bar and select the appropriate option from the **Vantage Analysis Server** folder [2].

For more information on server cluster concept, please see *Setting up a Server Cluster or a Failover Server* in the *ClientVantage Agentless Monitoring – System Administration Guide*.

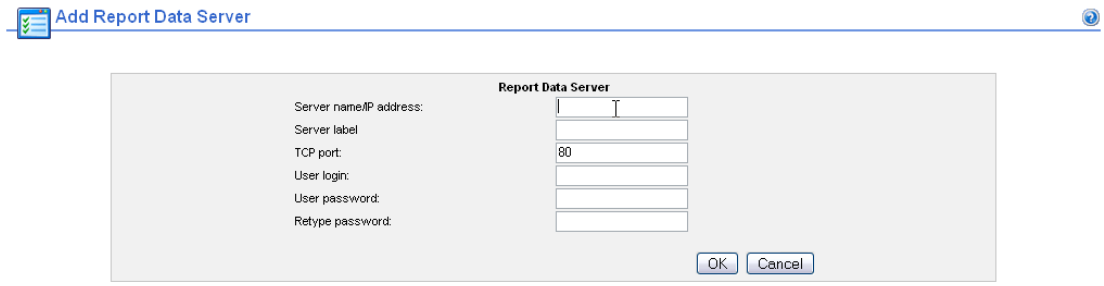
Figure 55. The Report Data Servers screen



[2] When DMI is used from within VantageView some of the DMI controls and features are handled by the hosting VantageView environment and therefore do not appear on the DMI screen. A summary list of the affected features is given in Differences in DMI Integrated with VantageView [p. 83].

The screen presents a list of the currently defined DMI data sources. To add a new data source, click **Add** and enter the server IP address or the DNS name, TCP port and label. The label is the name under which the server will appear as a data source in DMI and on reports. You also need to specify the user name and user login password necessary for accessing the VAS server.

Figure 56. Adding a new report data source



To modify or delete an existing entry, indicate the desired row in the selection check box and click the **Modify** or **Delete** button.

Configuring the Report Server to Send E-mails

Reports can be scheduled for mailing, based on report -mailing configuration. Report mailing is not active until you properly configure an SMTP server and activate the feature.

To activate the feature of sending e-mail:

Go to the **Mail Configuration** screen (**Settings** → **Sending Mail**) and enter the following settings:

`MAIL_ACTIVE`
: Set this value to `true` to enable the e-mailing mechanism.

`MAIL_HOST`
: This setting is the address (or DNS host name) of an SMTP server.

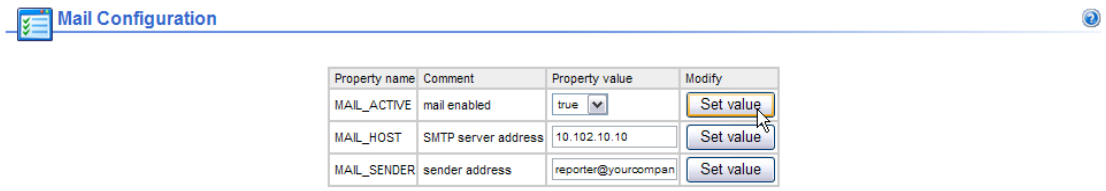
  SMTP servers that require authentication are *not supported*. The provided SMTP server must not require sender's authentication.

  The TCP port can be added to the address after a colon. The default port is `25`.

`MAIL_SENDER`
: This parameters must be set to a valid e-mail address. This address will appear as the sender of the reports.

  If the mail host is not specified, the report server sends a DNS request to the default DNS server to learn the default SMTP server's IP address. If the DNS server returns a valid address of an SMTP server and this server does not require authentication, the e-mail feature will work without the need for entering an explicit SMTP server address in the configuration.

Figure 57. An example of the **Mail Configuration** screen



NOTE

When DMI is used from within VantageView, the DMI controls and features described in this section are handled by the hosting VantageView environment and therefore do not appear on the DMI screen. A summary list of the affected features is given in Differences in DMI Integrated with VantageView [p. 83].

APPENDIX A

Example Reports

You can import a number of predefined reports using provided XML example reports.

The example reports are grouped into report sections. Each XML file may contain more than one report section and each section includes at least one report definition. The following XML files contain listed report sections and report definitions:

`report-srvcheck.xml`

This file contains a **Service Activity** section and includes the following reports:

- Application Status by Time
- Network Status For Location
- Network Status
- Status Overview Report
- System Status
- Status Overview
- Network Status (Time expanded 1 hour)
- Link Check for Client Location
- Application Status
- Status Overview by Time
- Transport Status (Time expanded)
- Application Performance by Time
- Application Performance
- Link Check (Time expanded)
- Link Check
- Transport Status (Time expanded raw)
- Transport Status
- Network Status (For Location Time expanded 1 hour)

`VAS-reports.xml`

This file contains a **VAS Reports** section and includes the following reports:

- Oracle Forms User Activity
- Basic FIX Analysis
- User Anomalies

`voip-reports.xml`

This file adds VoIP example reports to the **VAS Reports** section and includes the following reports:

- VoIP Activity Summary
- VoIP Activity Details

`zdata-network-reports.xml`

This file contains **Network Traffic** and **Network Watch** sections and includes the following reports:

Network Traffic section

- Application Traffic Breakdown
- Traffic by Host
- Traffic by Location
- Location Traffic Matrix

Network Watch section

- Errors
- Network Hot Spots
- Top Nets for Key Apps
- Bandwidth Usage by Application
- Location Details
- Top Location - App Views

`zdata-toplevel-custcare-planning-reports.xml`

This file contains **Customer Care** and **Planning** sections and includes the following reports:

Customer Care section

- People-hours Lost
- Customers with best vs worst service
- Sensitivity of Users (Aborts) to Slow Pages
- Customers with largest and lowest service usage
- Distribution of Users based on Realized Bandwidth

Planning section

- Web site capacity - HTTP Errors
- Page Load Time Influence on Aborts
- Page Size influence on URL Performance
- Web site capacity - TCP Connectivity Errors
- Web site capacity - Network
- Realized Bandwidth Influence on Network Time for poor users)
- Web site Load
- Web site capacity - Server Time
- Realized Bandwidth Influence on Network Time
- Page Size Danger Zone

`zdata-toplevel-reports.xml`

This file contains a **Top Level Reports** section and includes the following reports:

- User Performance Details
- Customer Care and Planning Reports...
- Availability and Response Times
- Availability Status Details
- Server Performance Details
- Error Status Details
- Network Performance Details
- Traffic Status Details
- Performance Status Details
- Orphaned Redirects (Monitored Traffic)
- Service Quality Overview - Data Center
- Service Quality Overview - URLs
- Service Quality Overview - User Groups
- Service Quality Overview - Reporting Groups
- Service Quality Overview - Users
- Service Quality Overview - Applications
- Service Quality Overview - Network
- Service Quality Overview - Business Groups

`zdata-usage-reports.xml`

This file contains a **Usage Reports** section and includes the following reports:

- Protocol Usage
- Usage by Location - charts
- Usage by Geographical Location - Regions
- Usage by Geographical Location - Cities
- User Count by Location - charts
- Bandwidth Breakdown
- Usage by Location
- Usage by Geographical Location
- Usage by User

`faultvision-reports.xml`

This file contains a **Advanced Web Diagnostics** report section and includes the following reports:

- Customer Care - Affected User Performance
- Continuous Improvement Gauge (FV)
- Application - URL Performance Overview
- Server Performance Overview
- Slow Page Loads - Client Delays
- Slow Page Loads
- Slow Page Load Sequence - Client Delays
- User Performance Overview
- LOB Details
- Advanced Web Diagnostics Overview
- LOB Continuous Improvement Gauge (FV)
- Slow Page Loads - Network (Latency)
- Slow Page Loads - Network (Retransmissions)
- Slow Page Loads - Network (Request Time)
- Slow Page Loads - Multiple Reasons
- Long Term Averages for selected URL
- Slow Page Loads - Page Design
- Slow Page Loads - Network (Details Unknown)
- Application Performance Overview
- Slow Page Load Sequence - Page Design
- Data Center Infrastructure Performance

- Slow Page Loads - Data Center
- Slow Page Loads - Customer Care
- Slow Page Load Sequence
- AS Performance Overview
- Reporting Group Performance Overview
- Slow Page Load Sequence - Network
- Server Performance
- Network Performance
- Location Performance Overview
- Long-Term Summary for Selected URL
- Slow Page Load Sequence - Data Center
- Slow Page Loads - Network

`faultvision-reports-vdata-cont.xml`

This file adds to a **Advanced Web Diagnostics** report section the following reports:

- Most Popular Page Elements
- Largest Page Elements
- Page Design Problem Overview

`pagedata-reports.xml`

This file contains a **Basic HTTP Analysis** report section and includes the following reports:

- Portal Applications
- Top And Low Talkers
- Application Summary - Page Metrics by Hour
- Portal Applications - Groups
- Application Summary
- Max Page Generation Time
- Max Page Load Time
- User Details
- Application User Summary - PLT and PGT Percentiles
- Application User Summary
- Orphaned Redirects (Page Analysis)

`transdata-reports.xml`

This file contains **HTTP Transaction Monitoring** and **XML Transaction Monitoring** sections and includes the following reports:

HTTP Transaction Monitoring

- Business Transactions Log
- Slow Business Transactions Log
- Business Transactions Overview
- Transaction Users and Agents (Re-generation)
- Business Transactions Log (Re-generation)
- Transaction Users and Agents
- Business Transactions Overview (Re-generation)
- Page Log (Re-generation)
- Page Log
- Business Transactions with Errors Log

XML Transaction Monitoring

- Business Transactions Log (XML-SOAP)
- Business Transactions Overview (XML-SOAP)
- Action Log (XML-SOAP)

`vdata-reports.xml`

This file adds to a **Basic HTTP Analysis** report section the following reports:

- Portal Applications
- Top And Low Talkers
- Application Summary - Page Metrics by Hour
- Portal Applications - Groups
- Application Summary
- Max Page Generation Time
- Max Page Load Time
- User Details
- Application User Summary - PLT and PGT Percentiles
- Application User Summary
- Orphaned Redirects (Page Analysis)

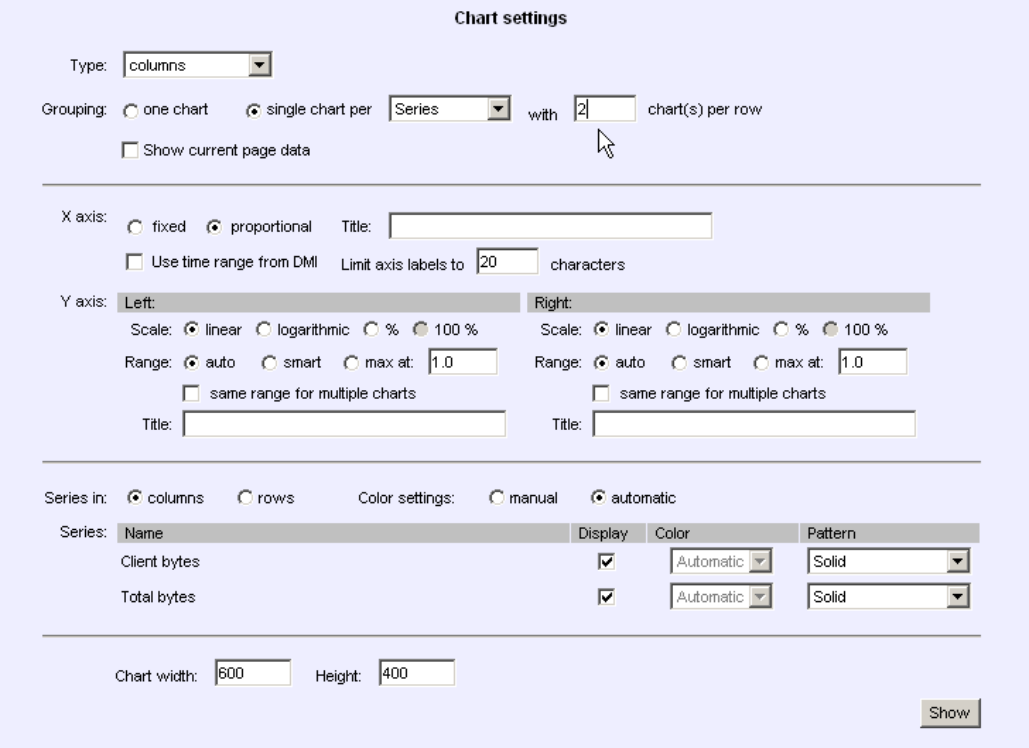
APPENDIX B

Frequently Asked Questions About DMI

How can I display several charts in a row?

Change the **charts per row** setting on the **Chart settings** screen, which you can access by clicking the chart's legend or the icon, next to the **Report Type**. Adjust the chart size (if necessary) by changing the default values in the **Chart width** and **Height** text boxes, at the bottom of the screen.

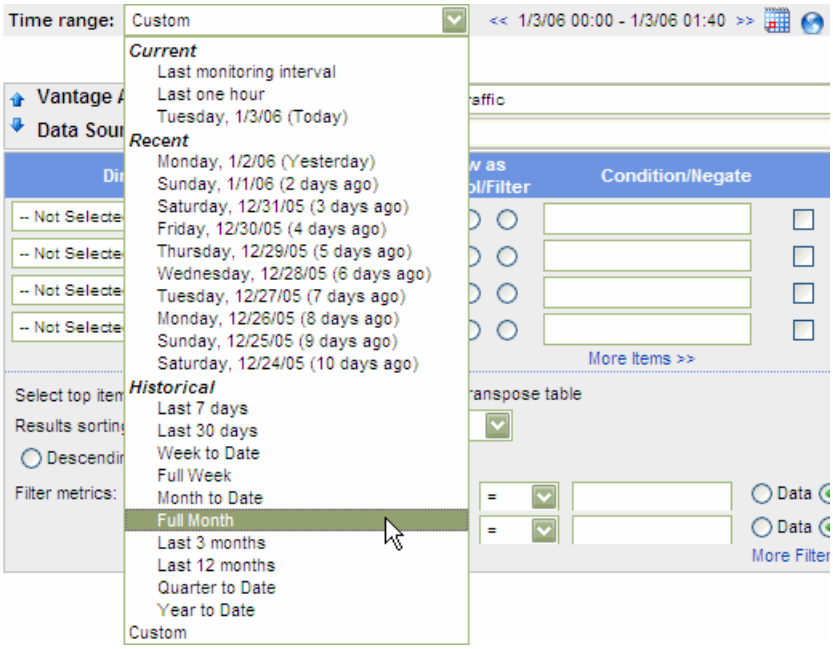
Figure 58. An example of the **Chart settings** screen



For more information, see Customizing Charts [p. 35].

How can I display full week or full month data coverage in a report?

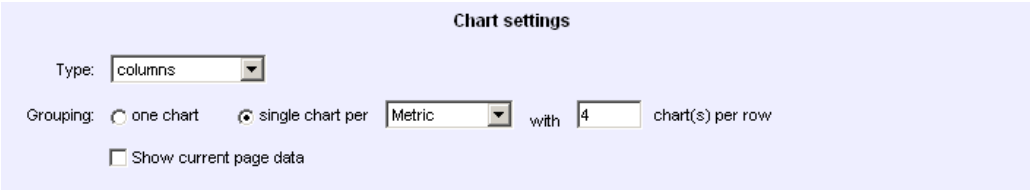
Select the **Full week** or the **Full month** option using the time range controls:



For more information, see Selecting Time Range and Resolution [p. 22].

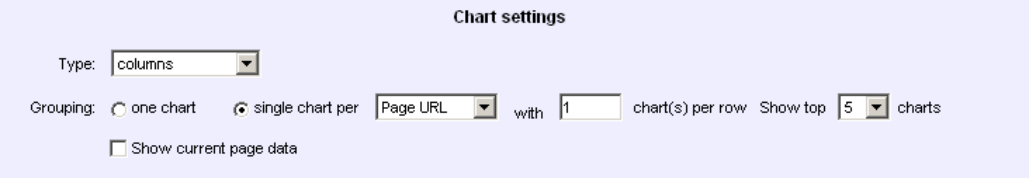
How can I create multiple charts in one report?

If you want to have one chart per metric, select the **Single chart per metric** option on the **Chart settings** screen:



If you want to have one chart per dimension value, first select the **Show as column** option, next to the relevant dimension in the main DMI control panel:

Then, on the **Chart settings** screen, select **single chart per** radio button, and choose the name of dimension from the drop-down list.



For more information, see Displaying Multiple Charts [p. 39].

How can I make the chart show only a subset of data rows that are in the table?

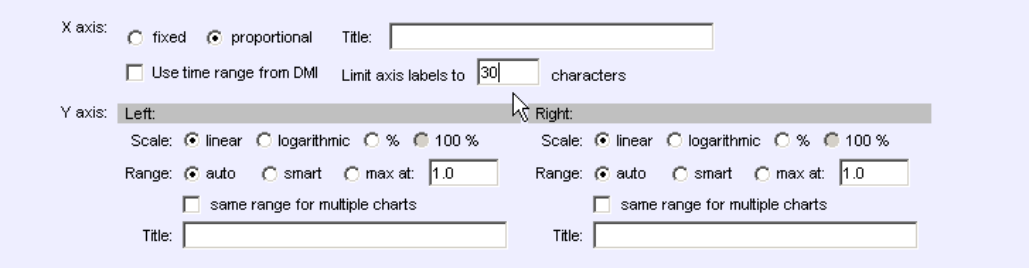
Two parameters define how many result rows will be presented in a table, and both can be modified manually.

- **Select top items** determines how many rows the whole table will contain.
- **Page size** determines the number of rows on a single page of a table. To show only the subset of the returned data, type the number of data rows to include in the chart in the **Page size** input field on the DMI control panel.

For more information, see Customizing Your Report Definition [p. 26].

How can I prevent the chart labels from getting truncated?

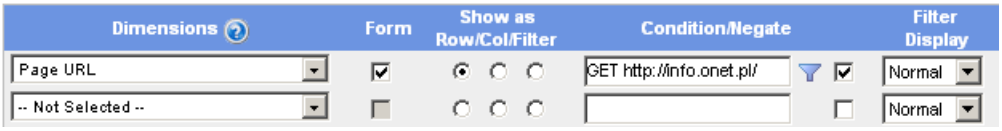
Axis labels are limited to 20 characters by default. To override this setting, change the value of **Limit axis labels to** on the **Chart settings** screen.



For more information, see X-axis Settings [p. 40].

How can I exclude some dimension values from the results?

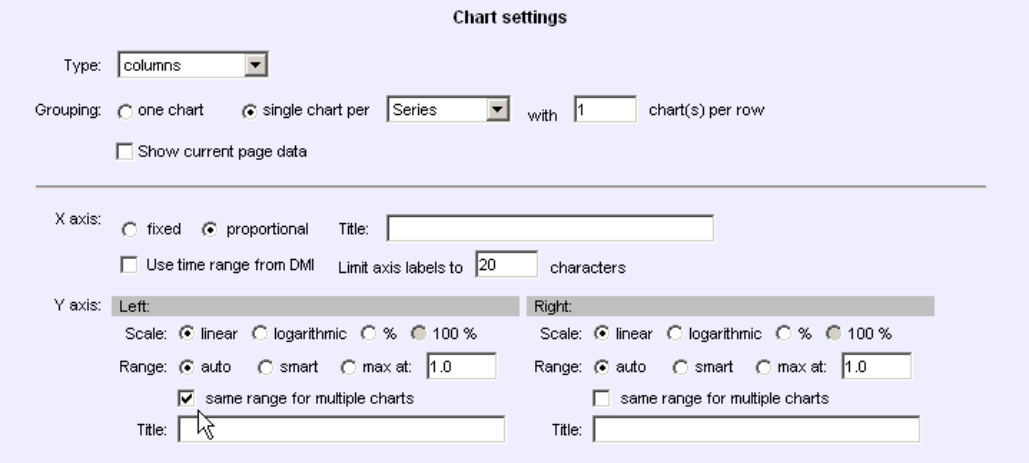
In the **Condition** field on the DMI control panel, type the values that you want to exclude and select the check box next to the filter icon. This check box negates the condition you typed. Alternatively, click the icon next to the **Condition** field to select the available values from a list and select **Negate condition**.



For more information, see Dimension Filter [p. 18].

How can I set the same axis ranges on all charts?

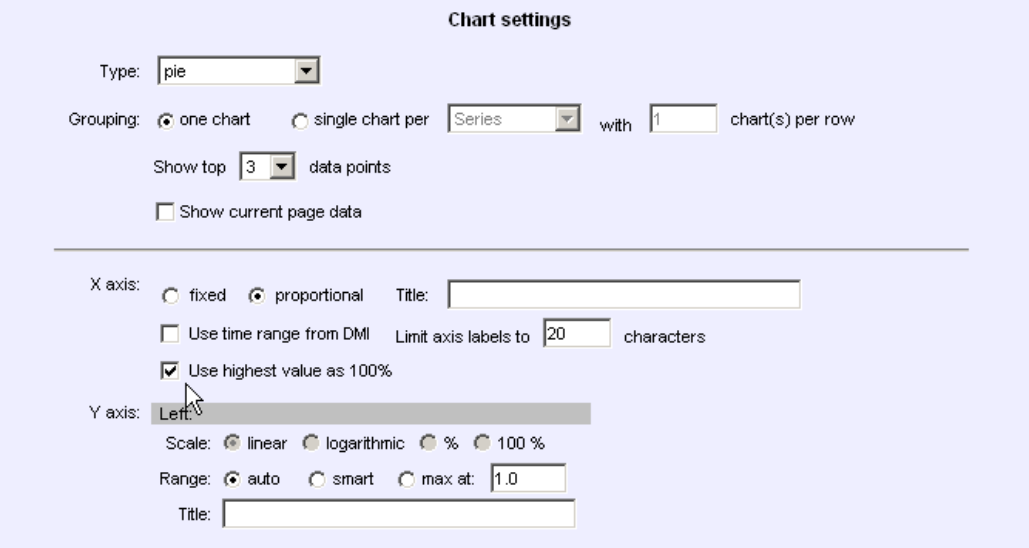
Select **Same range for multiple charts** on the **Chart settings** screen. This option is available only if you first choose **single chart per** in the top part of this screen, so that results will be presented on separate charts.



For more information, see Y-axis Settings [p. 41].

How can I use one of the metrics as the 100% value on the pie chart?

By default, all metrics are shown on the pie chart as slices. If you select **Use highest value as 100%** on the **Chart settings** screen, you will force the chart to use the metric with the highest values as the 100% value. All of the remaining metrics will form slices and, if they don't fill up the whole pie, the missing part will be shown as an **Other** slice.



For more information, see X-axis Settings [p. 40].

APPENDIX C

Differences in DMI Integrated with VantageView

The Data Mining Interface can be integrated with VantageView and used there as the Custom Reporting engine available through the Custom Reporting option on the VantageView Reports menu.

When DMI is used in this configuration, some of the DMI controls and features are not provided and other are handled by the hosting VantageView environment and therefore do not appear on the DMI screen. The following is a summary list of the affected features.

- DMI **Display Report** button: this is handled by the VantageView **Apply** button, outside of the DMI window (upper right-hand side corner).
- DMI **Refine** button: this is handled by the VantageView **Advanced Reporting** tab outside of the DMI window (upper left-hand side corner).
- DMI time bar: A VantageView user should use the VantageView time bar for time navigation.
- DMI **Display Form** button—not provided.
- DMI **Reset** button—not provided.
- Exporting and importing report definitions to/from external XML files—not provided.
- Saving a DMI report using the **Save** menu option: this functionality is provided by the **Save** button in the top right-hand side corner of the hosting VantageView window.
- The **Load/Organize** mechanism and Dashboard: Saved reports are placed in the VantageView report tree, under **Folders** and are managed as other VantageView reports.
- User access to reports dependent on user type: This is handled by the VantageView mechanisms according to VantageView user management rules.
- The **Send e-mail** feature—not provided.
- Defining sources of DMI data: this functionality is accessed by clicking on the **Administration** tab, on the VantageView navigation bar, and by selecting the appropriate option from the **Vantage Analysis Server** folder. Note that *selecting*, on the DMI screen,

an already defined data source is performed using controls on the DMI screen, and is done in same way, regardless of the hosting environment.

- DMI resolution settings: this feature is handled by the **Summary Level** option in the VantageView **Date Time Filters**

Glossary of Terms

The following glossary contains definitions of terms used across the CVAM documentation.

For definitions of metrics provided by CVAM in DMI data views, see *Vantage Analysis Server Data Views* in the *Vantage Analysis Server – User Guide*. For definitions of metrics available on the predefined reports, see *EUE Application, Site and Transaction Status Tabular Reports* in the *Vantage Analysis Server – User Guide*, *Website Status Tabular Reports* in the *Vantage Analysis Server – User Guide*, *Software Services Reports* in the *Vantage Analysis Server – User Guide*, and *Network Reports* in the *Vantage Analysis Server – User Guide*.

Alarm

The term alarm refers to event notifications generated by the report server when certain predefined events occur or when selected parameters, related to users sessions, applications and servers activity, reach predefined threshold levels. For more information, see *Overview of the Alarm System* in the *Advanced Web Diagnostics Server – User Guide*, *Alarm Definitions* in the *ClientVantage Agentless Monitoring – System Administration Guide*, and *Managing Alarms* in the *ClientVantage Agentless Monitoring – System Administration Guide*.

All Other

All clients who have not been assigned to an explicit site are classified as belonging to All Other object.

Analyzer

The report server monitors operations for specific software services based on popular protocols, such as HTTP, provided that the underlying transport protocol is TCP, or UDP only in case of DNS-based software services. Monitoring and traffic analysis can be performed using a number of different software components called *analyzers*, provided by Compuware.

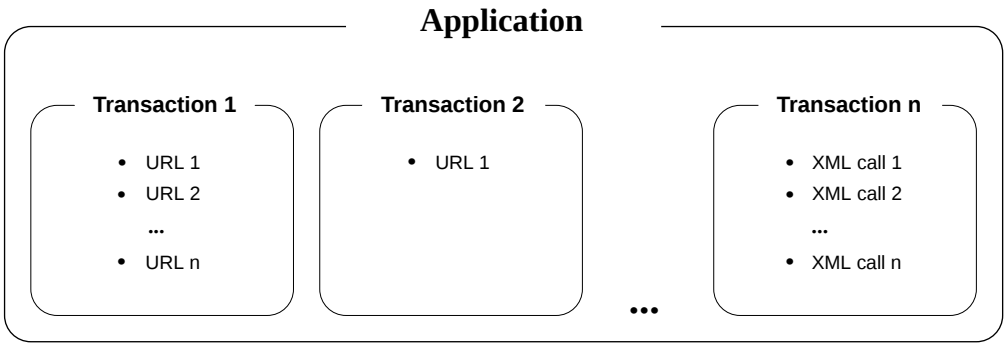
The report server can also analyze and report statistical information on non-transactional UDP-based or IP-based protocols.

A full list of the available analyzers is given in *Concept of Protocol Analyzers* in the *ClientVantage Agentless Monitoring – Getting Started Guide*.

Application

A universal container that can accommodate transactions. Each application can contain one or more transactions.

Figure 59. Diagram explaining the hierarchy of applications and transactions



Area

An area, in the context of the report server, is a collection of *sites*. It has the same properties as a site, but refers to a larger entity. See also *site* and *region*.

Note that areas cannot overlap, that is, any given site can belong to one and only one area.

Bandwidth Usage

Bandwidth usage refers to the classical definition of bandwidth measurement that is to the number of bits transferred divided by the length of the time interval. It does *not* take into account factors such as inactive periods, when the application was not attempting to transfer data, or transmission loss rate.

Baseline Data

Data from last several days (usually 10 days) aggregated into one “average” day. Baseline data is generated once a day, after arrival of data from the first monitoring interval, after 00:10 am. This operation runs in the background. Status of trend and baseline generation is available in the diagnostic console under **TASKS SCHEDULE STATUS**. In case of task failure or timeout, generation can be launched manually by configuring a manual task.

Note that baseline data is not averaged over the day within each day and therefore may vary rapidly depending on the time of day—just like monitored data would. Each monitoring interval is assigned the value averaged over the 10 day period *for this specific monitoring interval*.

Note also that requesting baseline data for **`yesterday`** will yield the same results as requesting baseline data for **`today`**, since baseline data for yesterday will still be calculated over the last 10 days *counting from today*.

System parameters used for trends and baselines generation in the **Advanced Properties Editor**:

PCS_REPORTING_PERIOD
: The number of days used for baseline generation. Note that only working business days in that range are taken into account.

RTM_DATAFILL_FACTOR
: The minimum data coverage (in minutes) of a single day, that allows baseline calculation. If a day contains less than RTM_DATAFILL_FACTOR minutes of data, baseline will not be calculated from the data for that day.

Class of Service (CoS)

The name identifying a *Type of Service* value. The mapping of *Class of Service* names to different values of Type of Service is defined in the report server configuration.

Client

The term client in the context of the report server refers to the IP address of a user. Users can be identified by their IP addresses or in a number of other ways, such as by HTTP cookie contents or VPN login names.

Client internal IP address

The report server uses the term internal IP address in relation to VPNs (virtual private networks) where external users of the network appear inside the network under different (internal) IP addresses.

Custom Metric

Custom metrics are values extracted from HTTP or XML requests (for example, HTML pages or SOAP messages) and divided into five categories. The meaning of a custom metric is not specified in the product. Its value could be, for example, the amount of a money transfer or the number of articles purchased in an online store.

Each custom metric can be displayed as a sum of values or as their average. The sum metrics can be used to trace users or resources that use the most or least resources (for example, clients who make the largest money transfers in a bank or purchase large quantities of items from an online bookstore). The average metrics can help in observing trends.

Decode

A synonym for *analyzer*.

Default Data Center Site

All servers who have not been assigned to an explicit site are classified as belonging to Default Data Center.

Downstream

Downstream, in the context of the report server, refers to the direction of traffic to a given region, area, site or host.

Host

A host can be either server, or client machine, depending on the context and direction of the monitored traffic. A host is a party participating in data exchange.

Local

The meaning of the terms *local* and *remote* has to be taken in the context of a particular site, area or region. When displaying data about a particular site, area or region, the report server can refer to this site, area or region as local and to other sites as remote. However, on the same report, when presenting data for those other sites, the report server will refer to them as local, and to the original site as remote.

Monitoring interval

Monitoring interval in the context of Global Configuration of the report server refers to the length of the shortest individual traffic-monitoring period. This is usually a short interval of a few minutes. When we refer to the latest values in a report, we mean the values obtained from the last closed monitoring interval, that is, from the last traffic-monitoring period (not to be confused with the time interval covered by the report).

Monitored session

The session that can be monitored is a combination of application, server IP address, client IP address and URL.

Network ID

Regardless of the type of network access employed, VPN or other, each user is assigned a *network ID for* logging into the network. Depending on the report server configuration, the network ID can be an IP address, HTTP authorization ID, HTTP cookie-based ID, a VPN ID, or static user name mapping.

Network Performance

The percentage of downstream and upstream traffic (bytes transferred) that did not experience network related problems. Bytes transferred internally within the site are *not* taken into account.

By network related problems we understand excessive average end-to-end RTT or Loss Rate (both upstream and upstream). At any given moment, traffic is considered to be experiencing network related problems if the values of Loss Rate or RTT exceed pre-configured thresholds. For Vantage Analysis Server, these thresholds are equal to the average values of RTT and Loss Rate for all of the business days withing the past 10 elapsed calendar days, increased by a predefined factor, which by default is equal to 100%. Thresholds for these metrics are calculated per site.

However, even if any of these thresholds has been exceeded, but the change in metric value is insignificant, it is *not* considered as threshold violation. You can modify the threshold settings in the **Performance Thresholds** section of the **Advanced Properties Editor** on the report server.

The average values of RTT and Loss Rate that are used in Network Performance measurements, are by default calculated only for recognized applications, so "not monitored" or "unknown" traffic is not taken into account. If you want the calculation to be based on all the traffic, you can change the default configuration of the AMD.

In specific circumstances, when end-to-end RTT measurements prove to be insufficient, ACK RTT may also be included in calculations, by changing the default monitoring settings in the **Advanced Properties Editor**.

Not monitored TCP

TCP traffic that is not associated with a monitored application. This term is related to smart application monitoring. If smart application monitoring is enabled, application session information captured and reported by AMD is not stored immediately in the report server database but has to meet smart application monitoring thresholds.

Not monitored UDP

UDP traffic that is not associated with a monitored application. This term is related to smart application monitoring. If smart application monitoring is enabled, application session information captured and reported by AMD is not stored immediately in the report server database but has to meet smart application monitoring thresholds.

Privacy Enhanced Mail (PEM)

Base64 encoded DER certificate, enclosed between "`-----BEGIN CERTIFICATE-----`" and "`-----END CERTIFICATE-----`"

Protocol

The term *protocol* in the context of the report server refers to layer 4 protocols according to the OSI model. The report server recognizes UDP and TCP-based protocols.

Realized Bandwidth

Realized Bandwidth refers to the actual transfer rate of application data *when the transfer attempt occurred*, and takes into account factors such as loss rate and retransmission. Thus, it is the size of an actual transfer divided by the transfer time.

Note that this metric reflects transient conditions on the network, during the times when the transfer occurred. When this metric is averaged over a longer time interval, the average value is calculated only for those time sub- intervals for which actual data transfers attempts took place.

Region

A region, in the context of the report server, is a collection of *areas*. It has the same properties as an area, but refers to a larger entity. See also *area* and site.

Regions cannot overlap, that is, any given area can belong to one and only one region.

Remote

The meaning of the terms *local* and *remote* has to be taken in the context of a particular site, area or region. When displaying data about a particular site, area or region, the report server can refer to this site, area or region as *local* and to other sites as *remote*. However, on the same report, when presenting data for those other sites, the report server will refer to them as local, and to the original site as remote.

Report server

A common name for Vantage Analysis Server (VAS) or Advanced Web Diagnostics Server (AWDS). This is the part of the Agentless Monitoring solution responsible for measurement data processing, storage and report generation. Report server connects to one or more AMDs and processes the measurement data into a relational database of measurements. The database is then used to serve interactive reports to the Agentless Monitoring system user. Report server is a software product that installs on top of Windows Server and Microsoft SQL Server. Report server is a Java application.

Reporting group

Reporting group is a universal container that can accommodate software services, servers, URLs or any combination of these. Reporting groups can contain software services of every type but they were designed especially for HTTP-based services.

Server

A server, in the context of the report server, is the recipient of a TCP session or request (SYN packet), TCP or UDP. Servers listen on particular TCP/UDP ports, accept incoming requests and reply to them.

Usually, but not always, a server is a computer running software that offers a service or a number of services on one or more of the computer's ports. Servers are said to *host* software services.

A server is identified by a unique IP address. This IP address appears on reports, unless the server's name can be resolved by means of a Domain Name Server (*DNS*), in which case the server's name is used instead.

Server from location

The following types of traffic can be reported as **server from** `location`:

If smart application monitoring is enabled, application session information captured and reported by AMD is not stored immediately in the report server database. It has to meet smart application monitoring thresholds. Sessions that meet the thresholds are stored under their server IP addresses, while those that do not, are stored as *server* from `location`.

Network scanning by a workstation infected by a virus. Such a workstation will scan a large number of IP addresses. These addresses will not be reported individually, but on per-location basis.

IP traffic other than TCP and UDP.

Site

The concept of sites is introduced to help report users to identify particular IP networks. A site is an IP network from which users log in to a monitored network.

A site can be:

a range of IP addresses set manually, referred to as a class-C IP network, or an automatically set class-B network, or it can be a range of addresses defined by a customized network mask, or a set of IP networks which is based on the BGP routing table analysis. Sites can be grouped together into *areas*, which in turn can be grouped together into *regions*. See entry for *area* and *region*.

For more information, see All Other [p. 85].

Site Realized Bandwidth

Site realized bandwidth is a weighted average of the software service realized bandwidth values *for all services accessed from a particular site*, weighted by the number of operations.

Software service

A service, implemented by a specific piece of software, offered on a TCP or UDP port of one or more servers and identified by a particular TCP port number. Software services are identified on reports by either port numbers or assigned names.

It is also possible to configure the report server to define software services as services on particular port of particular servers. In this case a software service is identified by a combination of a port number and a server IP addresses.

Synthetic agent

A simulator of user traffic to a given Web site. Synthetic agents are usually distributed over a number of different geographical locations and are designed to measure Web site availability and performance. The report server is able to distinguish synthetic traffic from real user traffic.

TCP Availability

The percentage of successfully completed connection attempts from the region, area or site. By default, the measurement algorithm for this metric is based only on traffic that is generated by recognized applications or scanning attempts, which means that "not monitored" or "unknown" traffic is not taken into account.

TCP Session

A collection of TCP packets exchanged between a given pair of client and server address, using a specific server port and client port(s).

Time

If you need to specify time in a report server input field, you should do so according to the format defined in the operating system settings on the report server computer.

Note: The report server uses a granular concept of time, where events are recorded as having occurred at the beginning of their monitoring intervals: that is, all events which have occurred during a monitoring interval are time-stamped with the time corresponding to the beginning of that monitoring interval.

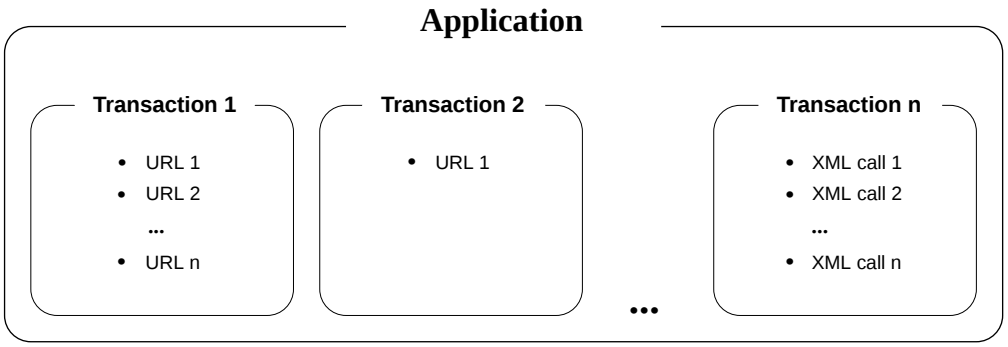
Transaction

Transaction can mean one of the following:

- A simple transaction consisting of a single operation such as a Web page load.
- A more complex transaction consisting of sequences of operations. CVAM monitors sequences of Web page loads and sequences of XML calls, and it reports on these sequences (as transactions) and on individual operations within sequences.
- Unstructured transactions consisting of collections of unsequenced operations.

Transaction defines a logical, business goal, like registration in an online store. One or more transactions constitute an application. Note that a transaction can only have *one* parent application.

Figure 60. Diagram explaining the hierarchy of applications and transactions



Type of Service (ToS)

A traffic identifier contained in an 8-bit field in the IP packet header. The contents of this field can be detected by the report server and displayed in reports. The use of this field is application specific: it is used by applications to denote special types of traffic.

See also *Class of Service*.

Unknown TCP proto

TCP traffic that has not been recognized as belonging to a particular application. This situation can occur if the traffic is not defined in **Monitoring Configuration** as belonging to a particular application, and the traffic has not been classified automatically by the port finder mechanism.

Unknown UDP proto

UDP traffic that has not been recognized as belonging to a particular application. This situation can occur if the traffic is not defined in **Monitoring Configuration** as belonging to a particular application, and the traffic has not been classified automatically by the port finder mechanism.

Upstream

Upstream, in the context of the report server, refers to the direction of traffic *from a given region, area, site or host.*

URI

URI stands for *Uniform Resource Identifier*.

A URI provides a way to identify abstract or physical resources on the World Wide Web. It is a syntax for encoding the names and addresses of objects. The URI is a general form for creating some kind of address. A URL, Uniform Resource Locator (see below), is a specific address used with some protocol such as HTTP or FTP that follows the general URI format.

URL

URL stands for *Uniform Resource Locator*, (previously, *Universal Resource Locator*.)

The URL provides a standard way of specifying the location of a resource on the Internet—it is an Internet address. Resources are often Web pages (HTML documents), but can also be text or PDF documents, images, downloadable files, services, electronic mailboxes, or many other

objects. URLs make resources available under a variety of naming schemes and access methods (such as HTTP, FTP, and email) addressable by one simple, uniform method.

User

The term client in the context of report server refers to the IP address of a user. Users can be identified by their IP addresses or in a number of other ways, such as by HTTP cookie contents or *VPN* login names.

User Session

The report server distinguishes between different user sessions by analyzing HTTP cookie information, that is, the *contents* of one particular, named cookie or - depending on the report server configuration - the contents of all the cookies in HTTP transactions.

A user session is a collection of transactions marked by a particular cookie(s) *value or values*. A new cookie *value* sent by the client starts a new user session. A new cookie *value* issued by the server does *not* signify the start of a new session.

For example, a user sends requests with cookie `ABCD = 1234`. In one of the responses the server changes the value to `ABCD = 5678`. The report server recognizes subsequent requests—with cookie value `ABCD = 5678`—as a *continuation* of the session: no session count is increased.

Virtual IP address (VIP)

The term Virtual IP address (VIP) refers to a network interface allowing users to utilize IP addresses not directly related to the actual physical hardware. In systems not using VIP addresses, if an interface fails, any connections to that interface are lost. With VIP addressing on your system and routing protocols within the network providing automatic reroute, recovery from failures occurs without disruption to the existing user connections that are using the virtual interface as long packets can arrive through another physical interface.

Virtual Private Network (VPN)

The term Virtual Private Network refers to the means by which a user is connected to the network: Virtual Private Network is the provision of private voice and data networking from the public switched network through advanced public switches. The network connection appears to the user as an end-to-end, nailed-up circuit without actually involving a permanent physical connection, as in the case of a leased line. VPNs retain the advantages of private networks but add benefits like capacity on demand.

The report server can monitor multiple VPNs. There is no fixed limit to the number of monitored VPNs and remote users; however, the capacity of the monitoring software depends on the overall system performance and on the VPN traffic.

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