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Fabric Manager Performance Monitoring User Guide

Release 1.1.0

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EMI Statement, United States of America (Class A)

“NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.”

EMI Statement, Canada (Class A)

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

EMI Statement, Europe and Australia (Class A)

“Warning - This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.”

EMI Statement, Japan (Class A)

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

“This is a Class A product based on the standard of the Voluntary Control Council For Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.”

Lithium Battery - Replacement and Disposal

CAUTION!

Danger of explosion if the lithium battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Laser Caution for I/O Cards (CDRH-US)

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

Complies with 21 CFR Chapter 1, Subchapter J, Part 1040.10.

IEC 60825-1: 1993, A1: 1997, A2: 2001; IEC 60825-2: 2000

Replacement Laser Transceiver Modules

For continued compliance with the above laser safety Standards, only approved Class 1 modules from our approved vendors should be installed in the product. Contact Xsigo Customer Support (see Technical Support Contact Information) for approved-vendor contact information.

Power Cord Set Requirements – General

The requirements listed below are applicable to all countries:

The length of the power cord set must be at least 6.00 feet (1.8 m) and a maximum of 9.75 feet (3.0 m).

All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord set will be used.

The power cord set must have a minimum current capacity of 13A and a nominal voltage rating of 125 or 250 V ac~, as required by each country's power system.

The appliance coupler on the power cord must meet the mechanical configuration of an EN 60320 / IEC 60320 Standard Sheet C20 connector, which is the connector on the Fabric Manager. The C20 connector supports a C19 plug as the mating part on the power cord that connects to the Fabric Manager.

Power Cord Set Requirements – Specifics By Country

United States (UL), Canada (CSA)

The flexible power cord set must be UL Listed and CSA Certified, minimum Type SVT or equivalent, minimum No. 18 AWG, with 3-conductors that includes a ground conductor. The wall plug must be a three-pin grounding type, such as a NEMA Type 5-15P (rated 15A, 120V) or Type 6-15P (rated 15A, 250V).

Europe (Austria (OVE), Belgium (CEBEC), Denmark (DEMKO), Finland (SETI), France (UTE), Germany (VDE), Italy (IMQ), Netherlands (KEMA), Norway (NEMKO), Sweden (SEMKO), Switzerland (SEV), U.K. (BSI/ASTA)

The flexible power cord set must be <HAR> Type H03VV-F, 3-conductor, minimum 0.75mm^2 conductor size. Power cord set fittings, particularly the wall plug, must bear the certification mark of the agency responsible for evaluation in the country where it is being used, with examples listed above.

Australia (DFT/SAA)

Cord is as described under “Japan (PSE)” immediately below. Pins in the power plug must be with the sheathed, insulated type, in accordance with AS/NZS 3112:2000.

Japan (PSE)

The appliance coupler, flexible cord, and wall plug must bear a “PSE” Mark in accordance with the Japanese Denan Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 0.75 mm^2 conductor size. The wall plug must be a grounding type with a Japanese Industrial Standard C8303 (15A, 125V) configuration.

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Xsigo Systems, a wholly owned subsidiary of Oracle, uses certain elements of GNU Public License (GPLv2) code. Under the conditions of the GPL licensing agreement, you are entitled to request a copy of the open source/freeware code. For questions about Xsigo’s use of the GPL code, or to request a copy of the code, you can contact Xsigo by completing the web form at http://pages.xsigo.com/compliance.html. Afterward, Xsigo will contact you to assist you with your request.

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Preface

Documentation Purpose and Audience

The purpose of this document is to describe what you need to get started and use Oracle's Fabric Manager Performance Monitoring. This document is intended for anyone interested in learning how to install, set up, and use Fabric Manager Performance Monitoring.

Document Overview

This guide is divided into the following chapters:

- Chapter 1, "Overview," which describes how you can use Fabric Manager Performance Monitoring to manage the data in your environment.
- Chapter 2, "Installing Fabric Performance Monitoring," which describes how to install Oracle's Fabric Manager Performance Monitoring in both Windows and Linux environments.
- Chapter 3, "Using Fabric Performance Monitoring," which describes how to use the Fabric Performance Monitoring window and how to read the graphs that are available within the tool.

Related Documentation

This document is part of a set of documentation for the Oracle Fabric Director. Table 1 shows the other documents in the Oracle Fabric Director and Oracle Fabric Manager documentation set.

Table 1 Related Documentation for Oracle's Fabric Manager

Document	Part Number	Revision Level and Date
Fabric Manager User Guide	650-30005-03	Rev A 10/2012
Fabric Director Quick Install Guide	650-20022-04	Rev A 10/2012
Fabric Director Hardware and Drivers Installation Guide	650-30008-03	Rev A 10/2012
Fabric Accelerator Quick Start Guide	650-20085-03	Rev A 10/2012
XgOS Software Upgrade Guide	650-20028-06	Rev A 10/2012
XgOS Command-Line Interface User Guide	650-30007-03	Rev A 10/2012
XgOS Remote Booting Guide	650-20029-08	Rev A 10/2012
XgOS vNIC Switching Configuration Guide	650-20052-02	Rev A 10/2012
Installing Host Drivers on Windows 2008 Servers	650-20081-02	Rev A 10/2012
Hyper-V Setup Guide	650-20040-02	Rev A 10/2012
SAN Install for Windows 2008 Servers	650-20078-03	Rev A 10/2012

Release notes are also available with each major hardware or software release for the Fabric Director and Xsigo Windows host drivers as well as Fabric Performance Monitoring. Refer to the *Fabric Performance Monitoring Release Notes* for the latest information about the product not published in this document.

Revision Trail

Table 2 shows the revision history for this document.

Table 2 Revision History

Document Title	Document Number	Revision Level	Revision Date
Fabric Manager Performance Monitoring User Guide 1.1.0	650-20082-03	A	01/2103
Fabric Manager Performance Monitoring User Guide 1.0.2	650-20082-02	A	10/2102
Fabric Manager Performance Monitoring User Guide, 1.0.1	650-20082-01	A	04/2012

Syntax Usage

Table 3 shows the typographical conventions used in this document.

Table 3 Syntax Usage

Syntax Marker	Means...	Example
bold text, courier font	a command	**`help`**
blank space	a delimiter for commands and arguments	**`system show version`**
- (dash)	you are specifying an argument	**`set ethernet-card 1 -type`**
= (equals sign)	you are specifying a parameters for an argument	**`set ethernet-card 1 -type=nwEthernet4Port1GbCard`**
bold, italics	dialog buttons, toolbar buttons, keyboard keys	Press the ***Edit*** button Press ***Ctrl*** + ***Q*** to quit
blue text	a cross reference link	http://support.xsigo.com
plain italic	text-entry fields on dialogs, menu maps, dropdown menus, and checkboxes	Choose *Network Resource Manager->Network Cloud* to view... In the *Name* field, enter the name you wish to give the Network Cloud

Technical Support Contact Information

Customers may contact support through the Xsigo website, telephone, or e-mail. In order to expedite troubleshooting, all new support requests must be submitted via the Xsigo self-service portal at: http://support.xsigo.com. In addition to opening cases, the Xsigo Support Portal allows you to update your support cases, download software, search for and view knowledge-base articles, and access technical documentation.

In order to access the customer support portal, you need a Xsigo Support Portal login. Your account team will provide you with the necessary login information to access the support portal. If you need additional log in IDs for your staff, contact your account team for assistance.

For all critical (P1) cases, call the Xsigo support center at **866-974-4647** (toll free) or **1 408-736-3013** (international). Alternatively, you can email `supportP1@xsigo.com`. You will receive a response within 30 minutes.

Contents

Overview 1

This chapter has the following sections:

Fabric Performance Monitoring Overview

Fabric Performance Monitoring is a plug-in application for the Fabric Manager, a multi-director management system created by Oracle's Xsigo Systems to inventory and manage Fabric Directors and virtual I/O.

About Fabric Manager

Fabric Manager is a browser-based management system that runs on a remote server. The remote Fabric Manager server translates configuration and management tasks from the Fabric Manager web interface, and relays that information to the Fabric Directors that are managed by Fabric Manager.

Fabric Manager can run in one of the following ways:

- as a stand-alone application
- as an extension to the VMware Virtual Center

The Fabric Manager configuration and management capabilities are the same regardless of whether Fabric Manager is running in stand-alone mode or as an extension to VMware. For more information about Fabric Manager, see the *Fabric Manager User Guide*.

Fabric Performance Monitoring Application

This document provides instruction for installing, configuring, and using Oracle's Fabric Manager Performance Monitoring.

The back end of this application requires a PostgreSQL database provided with Fabric Performance Monitoring as a tar file. You install one of the four versions of PostgreSQL (Linux or Windows; either 32 or 64 bit version) prior to installing the application (see Chapter 2, "Installing Fabric Performance Monitoring," for instructions).

Fabric Performance Monitoring allows you to review how the systems that you manage with Fabric Manager have performed over time. The application records system throughput (both inbound and outbound), in bytes per second, for all virtual network interface cards (vNICs) and virtual host bus adapters (vHBAs) known to Fabric Manager. For example, Fabric Performance Monitoring gathers resource performance data and calculates the throughput for each server, Director, card, and Cloud. If multiple vNICs are connected to the same Fabric Director, Fabric Performance Monitoring adds the throughput together to calculate the total throughput for the Director.

Monitoring Servers, Fabric Directors, and Clouds

Fabric Manager Performance Monitoring gathers information and displays historical (not live) performance statistics about your servers, Fabric Directors, and Clouds. The application polls and records throughput activity every five minutes for every resource in the system. You can view that data in graphical format to see a complete overview of how your systems are performing. Figure 1 shows the Fabric Performance Monitoring window that displays data when you choose **Fabric Performance Monitoring** from Fabric Manager's Navigation pane.

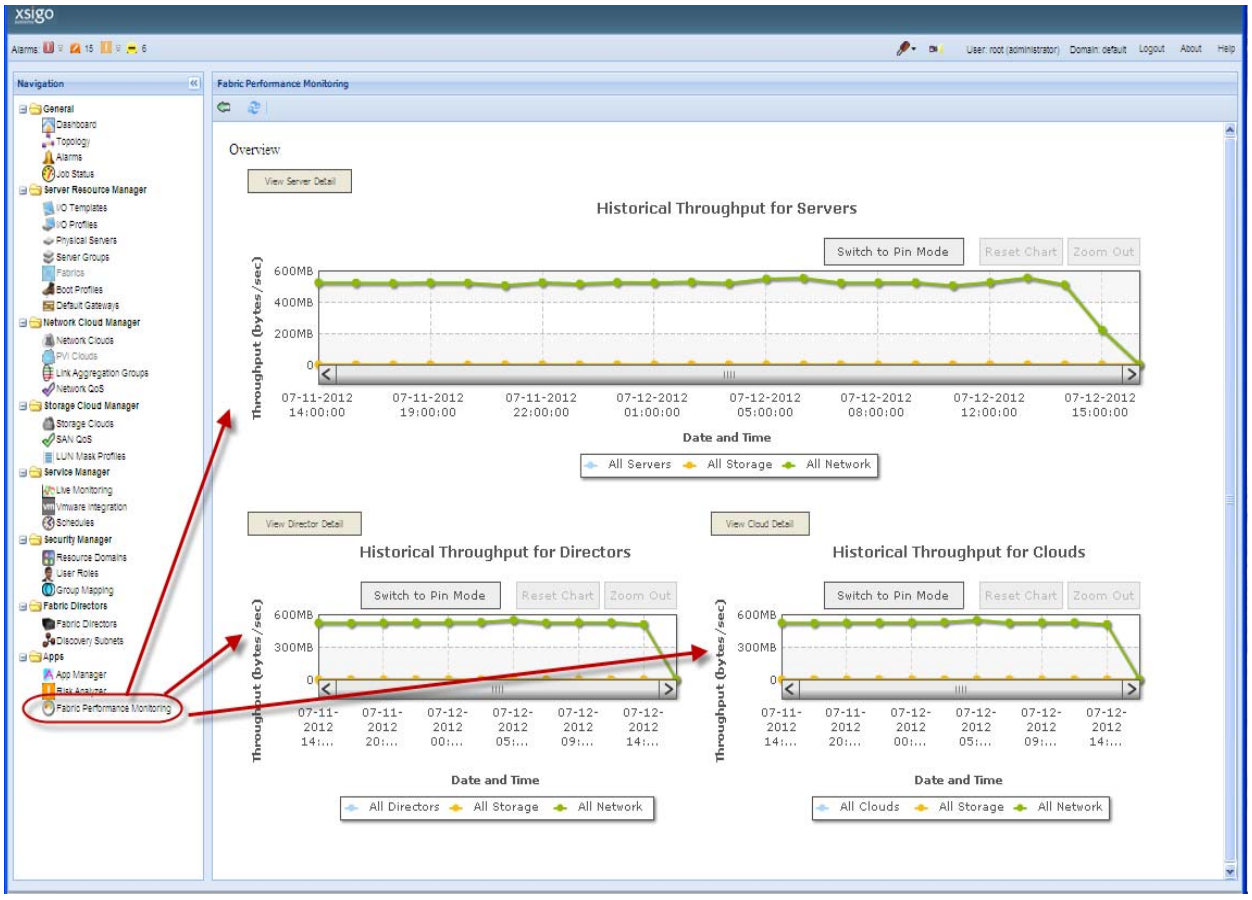

Figure 1 Displaying the Fabric Performance Monitoring Window

The top graph displays the server throughput, the bottom left graph displays the Fabric Director throughput, and the bottom right graphs shows the Cloud throughput. This window lets you:

- View I/O traffic across all servers
- Monitor both Ethernet and Fibre Channel traffic
- Select the data granularity you need – from specific ports to entire servers
- Graph historical results over time, with scales ranging from minutes to months

Monitoring Your Network and Storage Performance

You can view historical performance data for both Ethernet and Fibre Channel traffic, across all I/O resources, on a single screen. You can also quickly find and fix bottlenecks and identify critical usage trends, helping you to optimize resource loading, increase efficiency, and improve user experience. Using the information from Fabric Performance Monitoring, you can identify poor application performance, low CPU utilization, lengthy backup jobs, slow virtual machine migration, and sub-optimal network and storage performance, which can all result from I/O congestion issues.

This application allows you to view data at the level of granularity you need, from specific virtual interfaces, to the entire server, including statistics from:

- Virtual NICs
- Virtual HBAs
- Physical ports
- Specific servers
- I/O Clouds
- Fabric Directors

This document provides details for reviewing the statistics captured on each of these entities.

You can use Fabric Performance Monitoring to monitor traffic on vNICs and vHBAs that are configured through Oracle's XgOS, not just through Fabric Manager. In other words, you can manage your virtual resources without configuring vNICs and vHBAs through Fabric Manager to use Fabric Performance Monitoring. Fabric Performance Monitoring will work for virtual resources that are configured through the CLI as well.

Viewing Domain Related Information

Fabric Manager administrators can configure Fabric Performance Monitoring to restrict the data viewed by users based on their defined Domain. For example only the servers, vNICs, or vHBAs on the machines visible to a user's Domain are visible to them in the Performance Monitoring application.

Live Monitoring versus Fabric Performance Monitoring

Fabric Manager provides another utility called Live Monitoring that offers *real-time server performance* information, while the Fabric Performance Monitoring provides *historical data* for your entire infrastructure known to Fabric Manager. Figure 2 displays the Live Monitoring window (selected by clicking **Live Monitoring** in the navigation pane).

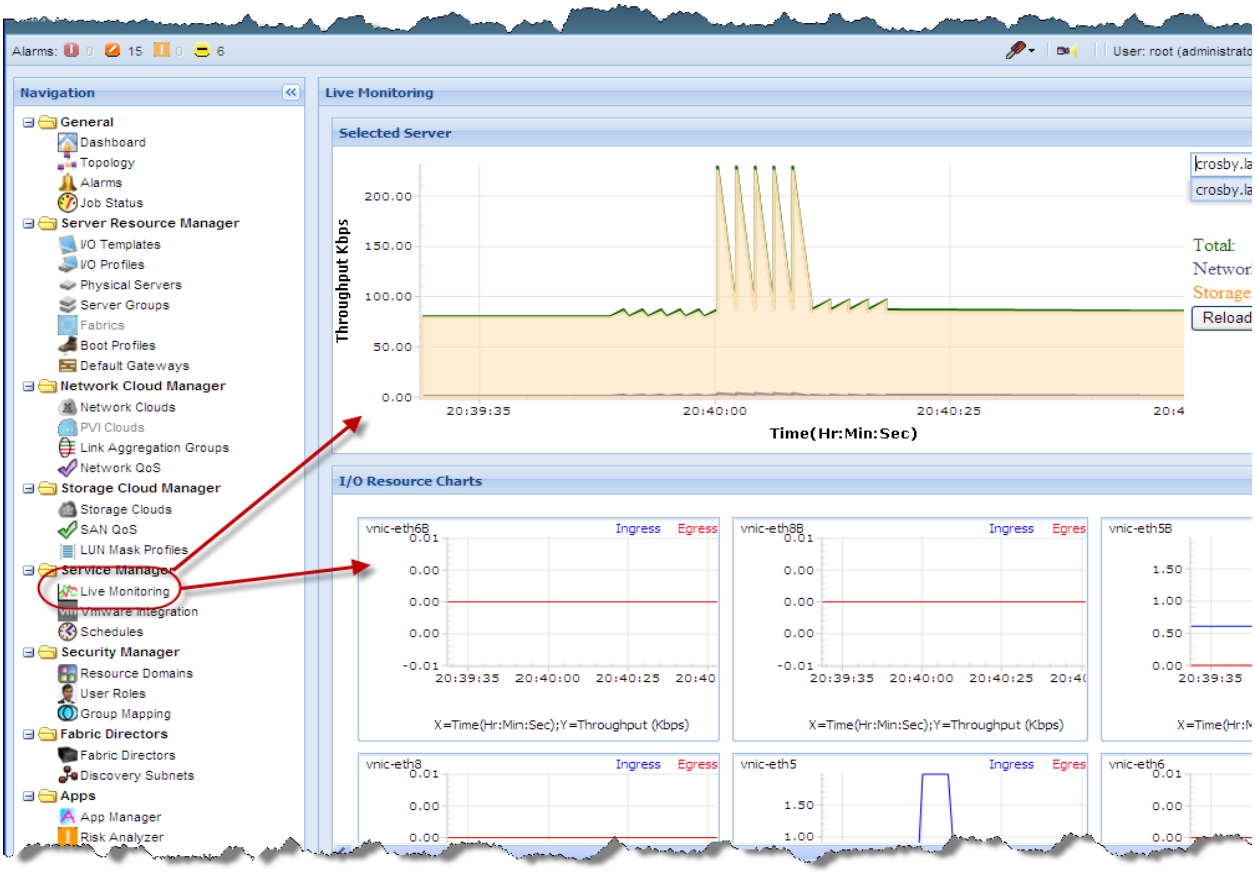

Figure 2 Live Monitoring

For more information about the Live Monitoring, see the *Fabric Manager User Guide*.

Managing Your Data

To track short and long term trends, the Fabric Manager Performance Monitoring enables you to analyze data gathered over hours, days, or months. You can select data from specific time periods and overlay that information on top of new data to quickly identify changes. You can also employ a variety of views, including historical and average throughput, to gain multiple perspectives on the information you need to optimize resource utilization. Once you identify the problem, you can employ Xsigo's rich toolset to add I/O resources, modify bandwidth allocations, and migrate workloads by following the instructions in the *Fabric Manager User Guide* that came packaged with your application.

Collecting Data

Oracle's Fabric Manager Performance Monitoring enables you to collect data across all monitored assets for long-term and seasonal throughput analysis. You can analyze data using the included set of charting tools to view information for specific resources across the time span you choose.

Document Assumptions

This document assumes that the core Fabric Manager product is installed in your environment, and Xsigo virtual I/O is already connected and running traffic. The purpose of this document is to provide information about installing and using the management tool for the I/O that is carrying traffic. For the other work flows (such as discovering Oracle Fabric Directors and creating I/O Templates and I/O Profiles), refer to the *Fabric Manager User's Guide*.

Installing Fabric Performance Monitoring 7

This chapter provides instructions for installing Oracle's Fabric Manager Performance Monitoring and the PostgresSQL database on both Windows and Linux, and includes the following sections:

Fabric Performance Monitoring Requirements

In order to install and use Fabric Performance Monitoring, you need the following:

- Oracle's Fabric Manager version 4.1 or higher installed and collecting data in your environment
- Oracle's Fabric Manager Performance Monitoring application package
- For Linux, Red Hat Enterprise Linux 5.4 or higher (update 0) installed


Note

For a fresh install of Linux (for example from a CD or DVD), install the OS first, but do not install the PostgreSQL database. Then install PostgreSQL 9.1 from the Fabric Performance Monitoring tar ball. PostgreSQL 9.1 is packaged into the Fabric Performance Monitoring tar file, but is **not** installed as part of the PM installer. Follow the instructions in this chapter to install it manually before running the Fabric Performance Monitoring installer.

- The PostgreSQL database version 9.1 or higher


Note

If you have an existing Red Hat 5.x server (or are upgrading to Red Hat 5.x), and you already have PostgreSQL server installed, if the version of PostgreSQL is not 9.1 or later, you must remove this "old" PostgreSQL database first, and then install the PostgreSQL 9.1 database that is shipped with Fabric Performance Monitoring. To delete the "old" PostgreSQL database, issue the "**`rpm -e <postgres-name>`**" command, then install the PostgreSQL 9.1 package from the PM tar ball, as described in this chapter. After installing 9.1, you can install Fabric Performance Monitoring.

- For Windows, Windows Server 2008 R2
- Adobe Flash Player for Fusion Charts (Version 10.3.181.34 or later)
- Browser (these are the same browser requirements as those published for Fabric Manager)
  - Mozilla® Firefox 2.0 and higher
  - Microsoft® Internet Explorer 7.0 and later, with all cumulative security updates. Any version of Internet Explorer less than 7.0 is not supported.


Note

For some clients running Internet Explorer 7.0, a browser pop-up sometimes recurrently displays. For information about controlling the pop-up, see the *Fabric Manager User Guide* in "Appendix B".

  - Apple Safari 5
  - Google Chrome 8
- Display—1280 x 1024 resolution, 16-bit Medium color mode
- JavaScript with cookies enabled

Obtaining Fabric Manager Performance Monitoring

You can download the Fabric Manager Performance Monitoring software from the Xsigo Technical Support portal. To download the application, you need access to the Xsigo support site using a user name and password. To request a user name and password for the Xsigo Support Portal, contact Xsigo Technical Assistance through any of the methods documented in the section entitled Technical Support Contact Information in the Preface of this manual.

To get the Fabric Manager Performance Monitoring software:

Step 1 Log in to the support portal (http://support.xsigo.com/support/) with a user name and password.

Step 2 From the tabs at the top of the page, select **SOFTWARE->CURRENT RELEASE**.

Step 3 Download the "xsigo-xms-perfmgr-1.1.0_PM.tar" file.

Step 4 Unzip the tar file to display the Fabric Manager Performance Monitoring installation files as shown in Figure 1.

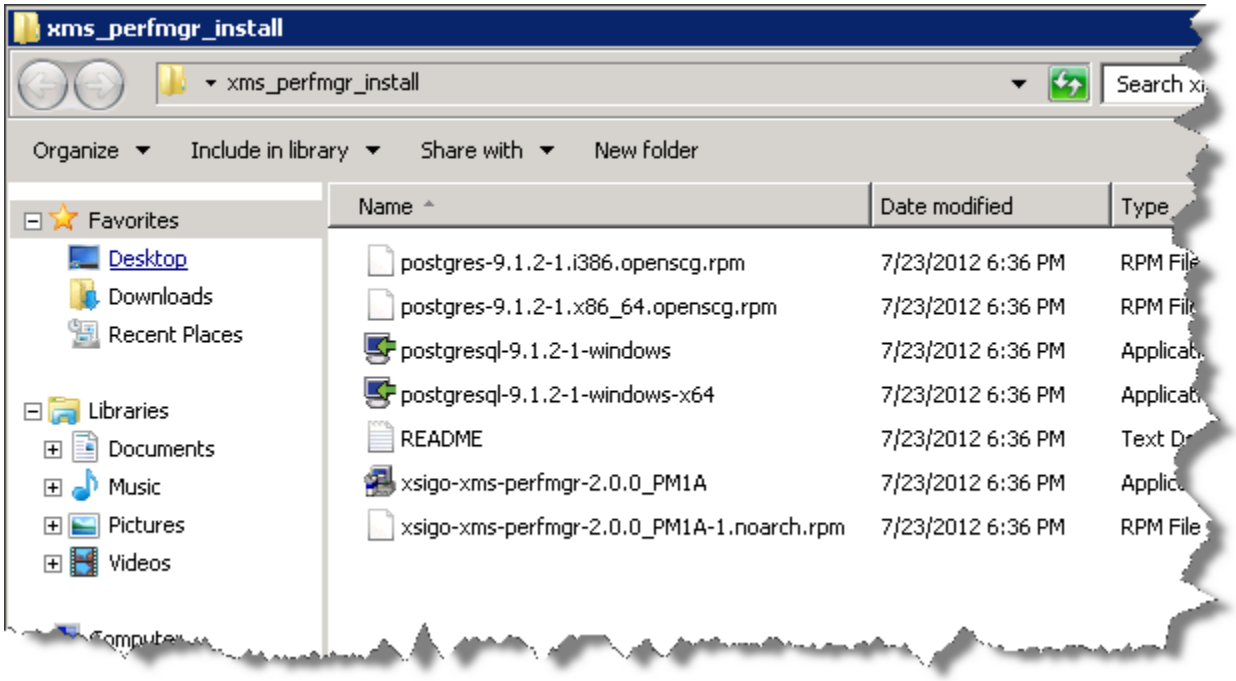

Figure 1 Fabric Performance Monitoring Installation Files

Step 5 Continue with the next section, which describes how to install Fabric Performance Monitoring on a Windows System.

Installing Fabric Performance Monitoring on a Windows System

Installing Fabric Manager Performance Monitoring on a Windows system involves the following:

- Installing the PostgreSQL Database
- Installing Adobe Flash
- Installing the Fabric Performance Monitoring Application

Installing the PostgreSQL Database

To install the PostgreSQL database and create a new database for Fabric Performance Monitoring data, perform the following steps:

Step 1 Open the directory in which you copied the Performance Monitoring installation files. Fabric Manager Performance Monitoring is shipped with four versions of the PostgreSQL database, including:

- postgres-9.1.2-1.i386.openscg.rpm
- postgres-9.1.2-1.x86_64.openscg.rpm
- postgresql-9.1.2-1-windows.exe
- postgresql-9.1.2-1-windows-x64.exe

Step 2 Select the installer version appropriate for your use from the choices presented, then download and run the installer. The PostgreSQL Setup Wizard appears as shown in Figure 2.

Figure 2 PostgreSQL Wizard Setup Dialog

Step 3 Click **Next**. The Wizard prompts you to specify the directory where you wish to install PostgreSQL as illustrated in Figure 3.

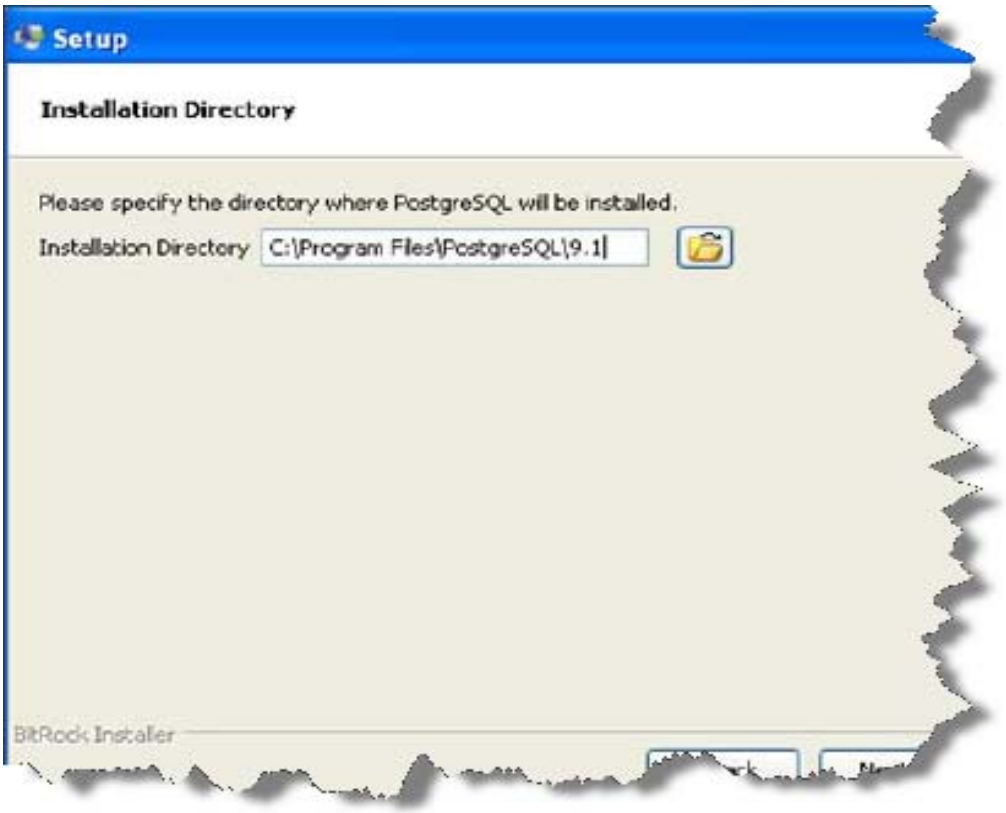

Figure 3 Specify the Installation Directory

Step 4 Click **Next** to install PostgreSQL in the default location.

Step 5 Click **Next**. The Setup Password dialog appear as shown in Figure 4.

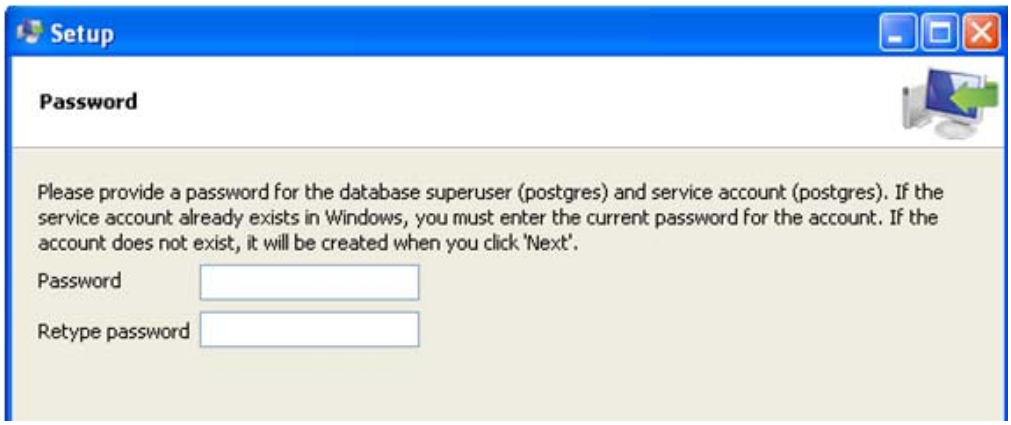

Figure 4 Specify a Database Password

Step 6 Specify a password for the database super user (postgres) as prompted, then retype the same password in the **Retype password** box. This is the user that will be responsible for administering the database.

Step 7 Click **Next**. The installation progresses as shown in Figure 5.

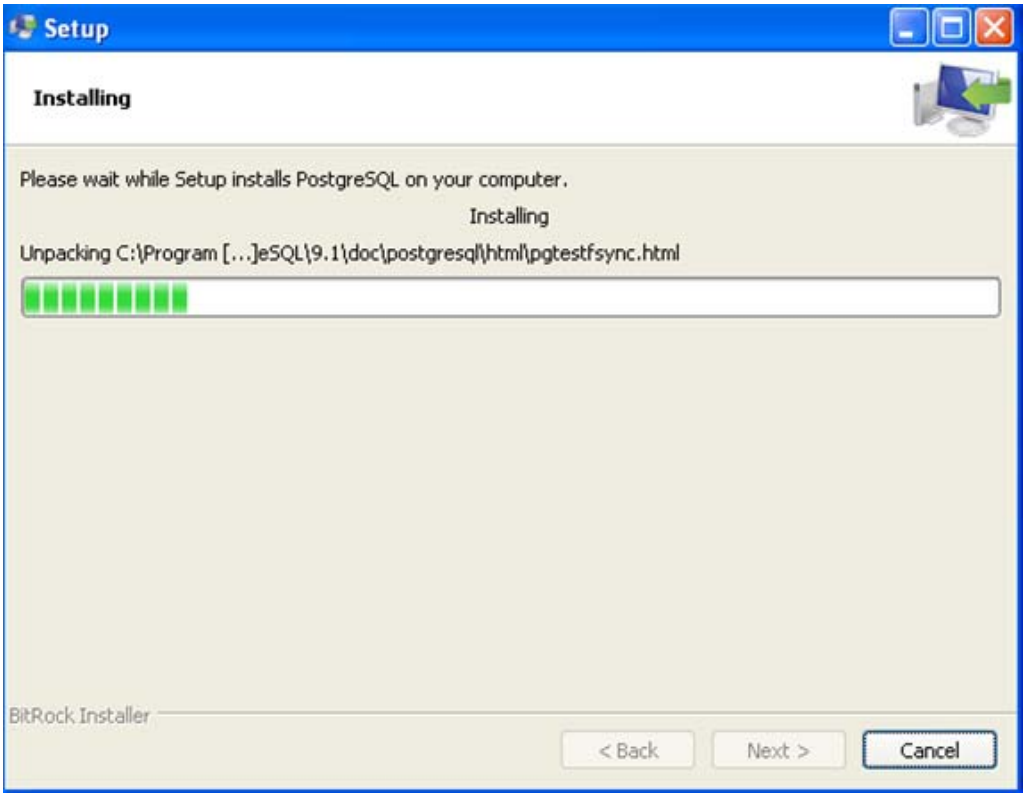

Figure 5 Installing PostgreSQL

Step 8 When complete, click **Next** to finish the installation.

Step 9 Next, install Adobe Flash.

Installing Adobe Flash

Install Adobe Flash from Adobe's website (www.adobe.com) unless you already have it installed. Follow the Wizard instructions.

Installing the Fabric Performance Monitoring Application

Note

The Fabric Performance Monitoring installer installs and configures the PostgreSQL database as part of the installation.

Step 1 To start the Fabric Performance Monitoring installation program, double-click on the ***perfmgr.exe*** file. Oracle's Fabric Manager Installer wizard appears as shown in Figure 6.

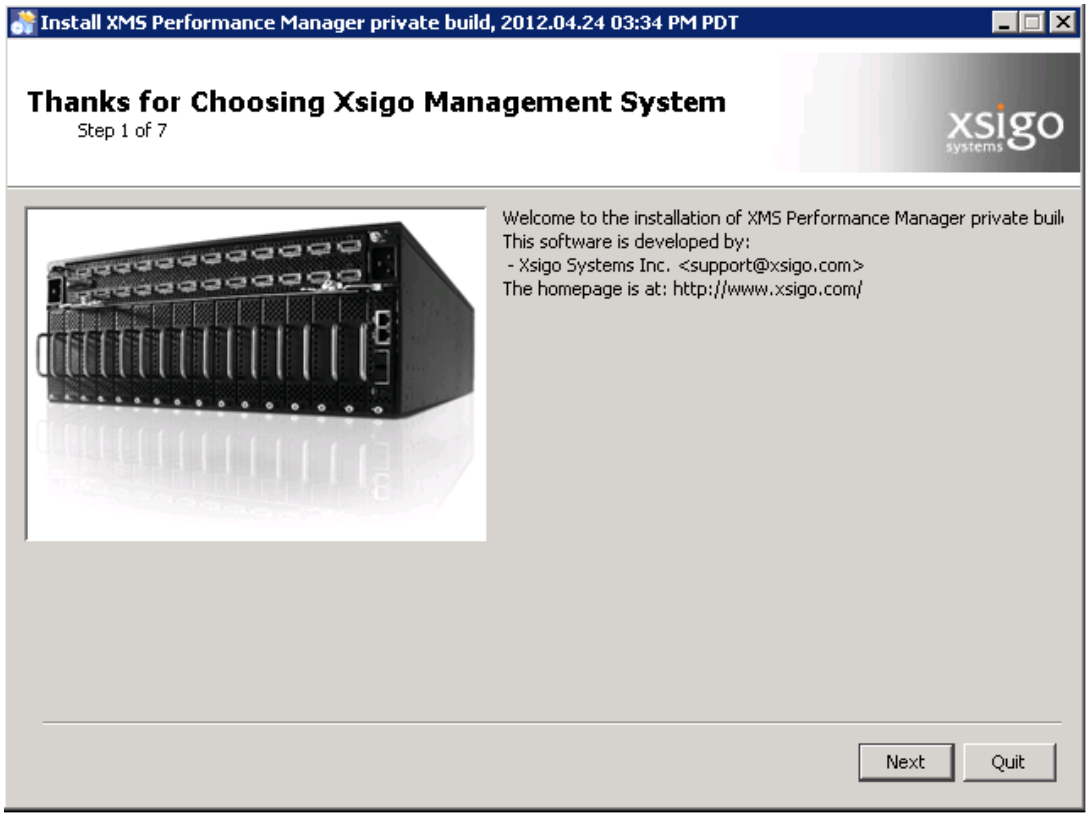

Figure 6 Initiating the Fabric Performance Monitoring Installer

Step 2 Click ***Next***. The Licensing Agreements dialog box is displayed as shown in Figure 7.

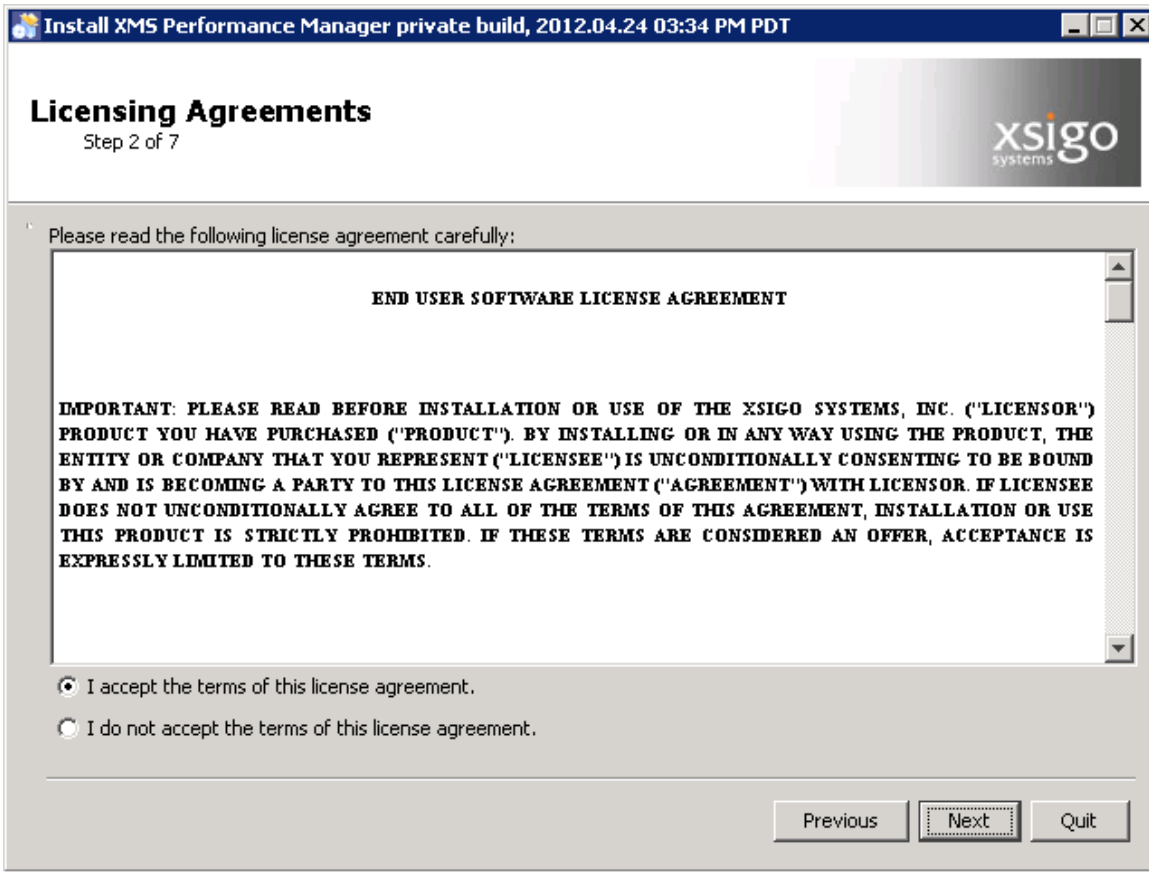

Figure 7 The Licensing Agreement Dialog Box

Step 3 Click the ***I accept the terms of this license agreement*** button, then click ***Next***. The Installation Path dialog box displays as shown in Figure 8.

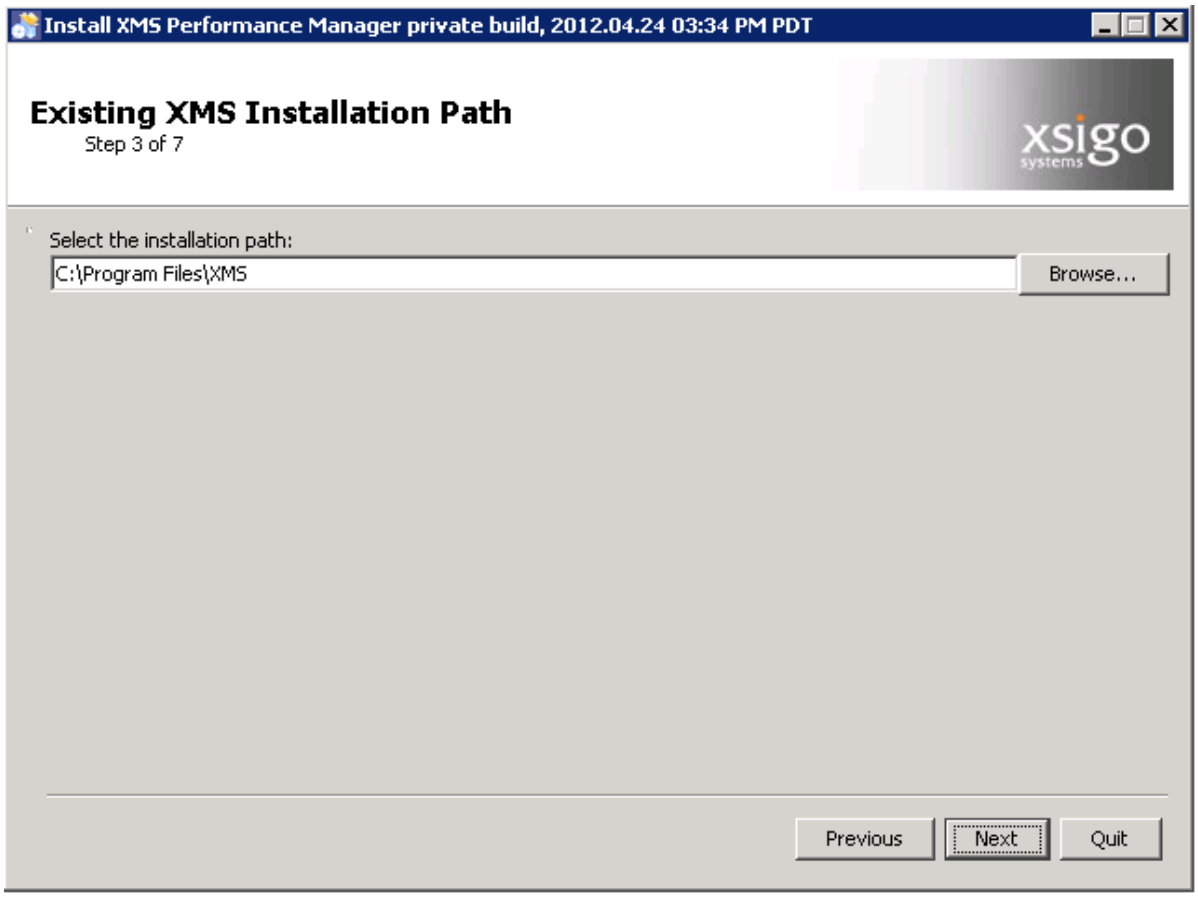

Figure 8 Specify the Installation Path

Step 4 Accept the default directory where the Fabric Manager files are located and click ***Next***. You are prompted to confirm the directory location as shown in Figure 9.

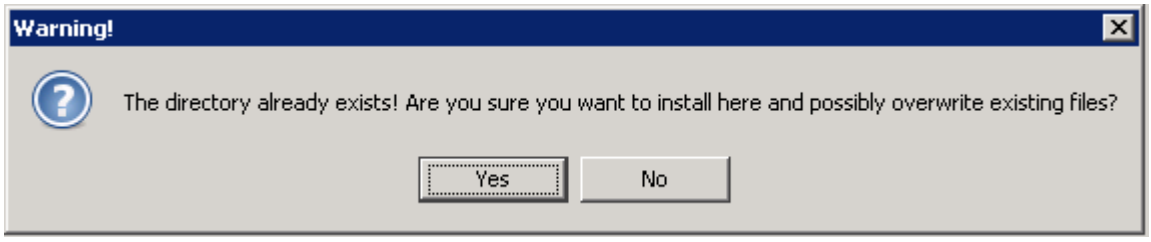

Figure 9 Accept the Installer Default Directory

Step 5 the Installer displays the installation progress as it continues the install the product. When it is complete, Click ***Next*** to continue. Click ***Next*** until the *Installation Finished* message displays as shown in Figure 10.

Figure 10 Finishing the Installation

Step 6 Click ***Done***. The Fabric Performance Monitoring and Postgres installation is complete.

Step 7 Continue with the section entitled Configuring Fabric Performance Monitoring on page 19.

Installing Fabric Performance Monitoring on a Linux System

Installing Fabric Manager Performance Monitoring on a Linux system involves the following:

- Understanding the Linux Requirements
- Installing the PostgreSQL Database
- Installing Fabric Performance Monitoring

Understanding the Linux Requirements

If you are installing Linux before installing Fabric Performance Monitoring, (for example from a CD or DVD), install the OS first, but do not install a PostGRES database. Then install PostGRES 9.1 from the Fabric Performance Monitoring tar ball. PostGRES 9.1 is packaged in the Fabric Performance Monitoring tar file, but PostGRES is ***not*** installed as part of the Fabric Performance Monitoring installer. Follow the instructions in this section to install it manually before running the Fabric Performance Monitoring installer.

If you have an existing Red Hat 5.x server (or are upgrading to Red Hat 5.x), and you already have PostGRES server installed, if the version of PostGRES is not 9.1 or later, you must remove this "old" PostGRES database first, and then install the PostGRES 9.1 database that is shipped with Fabric Performance Monitoring. To delete the "old" PostGRES database, issue the **`rpm -e`** `<postgres-name>` command, then install the PostGRES 9.1 package from the PM tar ball as described in this section.

Installing the PostgreSQL Database

The Performance Monitoring tar file contains a directory called xsigo-xms_perfmgr_install, which contains the following files:

- xms_perfmgr_install
- xms_perfmgr_install/xsigo-xms-perfmgr-1.1.0_VS-1.noarch.rpm
- xms_perfmgr_install/postgres-9.1.2-1.i386.openscg.rpm
- xms_perfmgr_install/README.txt
- xms_perfmgr_install/postgres-9.1.2-1.x86_64.openscg.rpm
- xms_perfmgr_install/postgresql-9.1.2-1-windows-x64.exe
- xms_perfmgr_install/xsigo-xms-perfmgr-2.0.0_VS.exe
- xms_perfmgr_install/postgresql-9.1.2-1-windows.exe

To install PostGRES 9.1 from the xsigo-xms-perfmgr.tar file, issue the following commands:

Step 1 **`tar xvf xsigo-xms-perfmgr.tar`**

Step 2 **`cd xsigo-xms-perfmgr_install/`**

Step 3 **`rpm -ivh postgreSQL`**`<version>`

Step 4 **`chkconfig postgres-9.1-openscg on`**

Next, you can install Performance Monitoring.

Installing Fabric Performance Monitoring

To install Oracle's Fabric Manager Performance Monitoring on a Linux system, issue the command **`rpm -ivh xsigo-xms-perfmgr`**`<version>`**`.rpm`**.

Continue by following the instructions in the next section, entitled Configuring Fabric Performance Monitoring

Configuring Fabric Performance Monitoring

To configure Fabric Performance Monitoring, perform the following steps:

Step 1 Open the Fabric Manager application in a browser, and click on **App Manager** in the Navigation Pane. The Installed Apps Summary is displayed as shown in Figure 11.

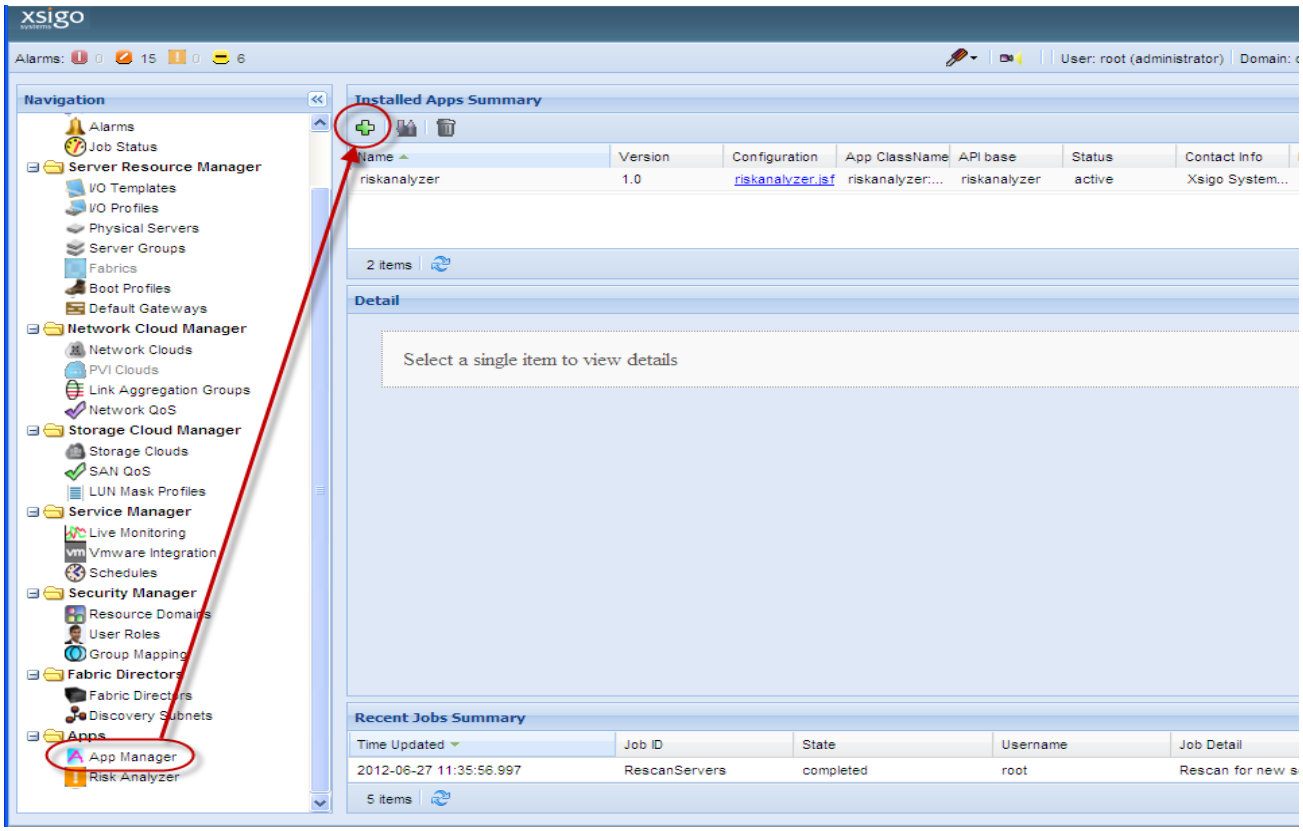

Figure 11 Opening the App

Step 2 Select ***Add a new App*** (the green plus sign circled in Figure 11 above) and select ***perfmgr*** from the *App Name* dropdown as shown in Figure 12.

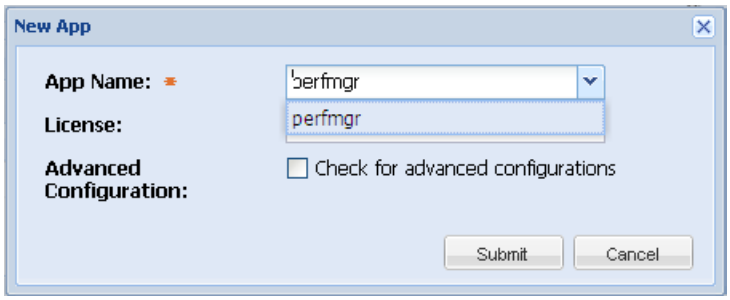

Figure 12 Adding Fabric Performance Monitoring to Fabric Manager

Step 3 Click ***Submit*** to begin the application installation process. When that is complete, you should see the Fabric Manager Performance Monitoring option at the bottom of the Navigation panel as shown in Figure 13.

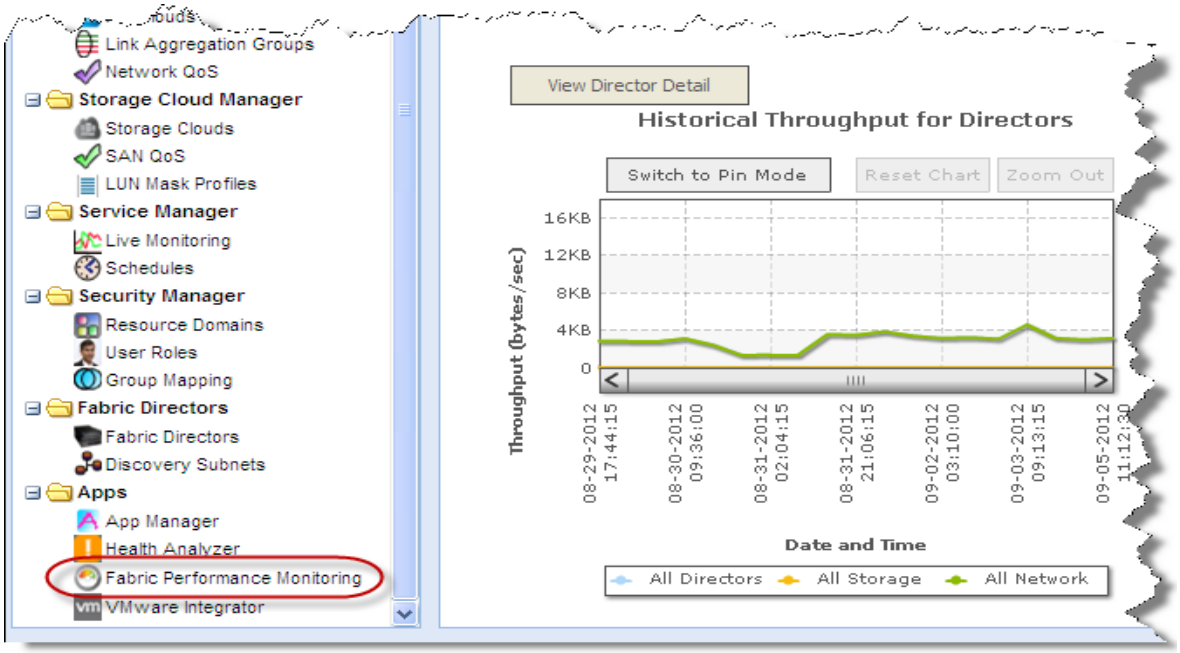

Figure 13 Configuring Performance Monitoring

Step 4 The first time you attempt to use Fabric Performance Monitoring by clicking on the Fabric Performance Monitoring icon in the Navigation Panel (see Figure 13 on page 20), Oracle's Fabric Manager prompts you to configure Fabric Performance Monitoring as shown in Figure 14. Click *Yes* to continue with the configuration.

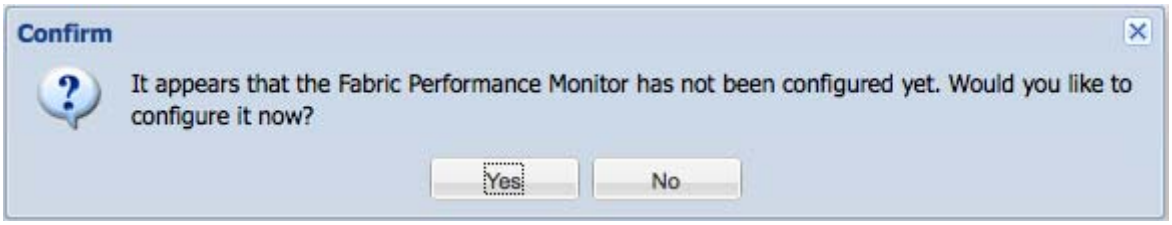

Figure 14 Configuration Confirmation Dialog

Step 5 The Edit Configuration dialog box appears as shown in Figure 15. Specify the fields as described in the following steps. The fields with asterisks are required.

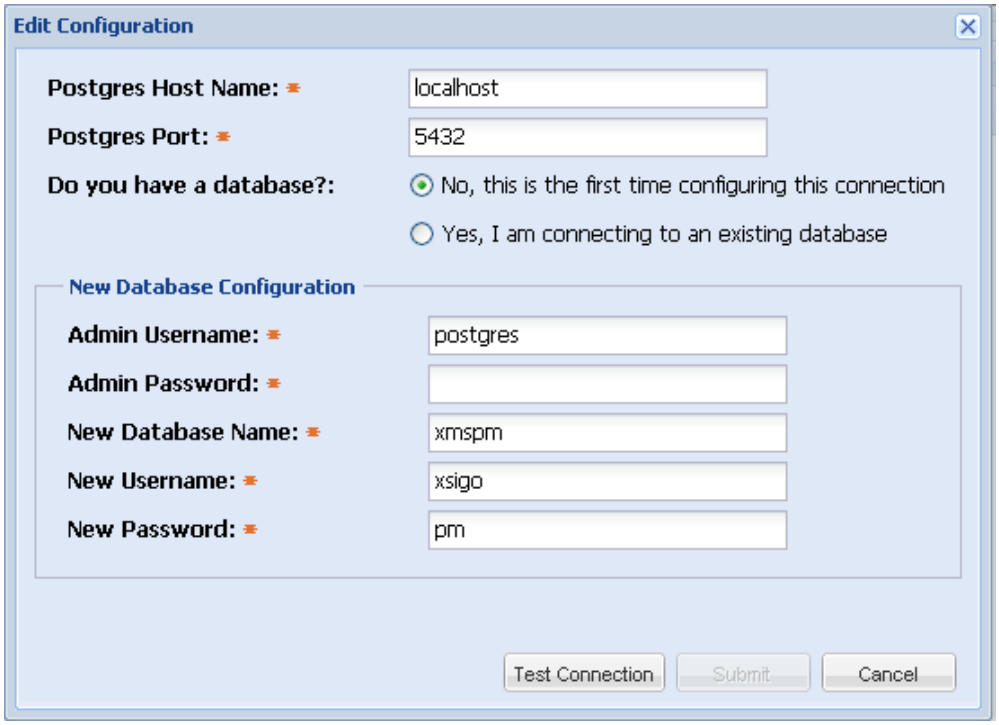

Figure 15 Enter Configuration Details

Step 6 Specify the name of the host on which the PostgreSQL database resides.

Step 7 Specify the port through which the database will communicate.

Step 8 If this is the first time you are using this application (not an upgrade) click the ***No, this is the first time...***radio button and specify the following fields:

- Admin Username = **postgres**
- Admin Password = **<the password you created when installing the Postgres database>**
  This is the password you specified when installing PostgreSQL as instructed earlier in this chapter.

- New Database Name = **<specify a new database name>**
- New Username = <specify a new username>
- New Password = <specify a new password>

Otherwise, if you have an existing database choose the ***Yes, I am connecting to an existing database*** radio button and specify the following fields:

- Existing Database Name = **xmspm**
- Existing Username = **xsigo**
- Existing Password: **pm**

Note

The user name and password specified above are those used for Performance Manager 1.x. If the username and password for your PostgreSQL database is different from those specification, use yours in these fields.

Step 9 Click Test Connection to ensure that you can

Changing Your Configuration

You can change the PostgreSQL configuration from within the Fabric Performance Monitoring application by performing the following steps:

Step 1 Click on the ***Edit Configurations*** button as shown in Figure 16.

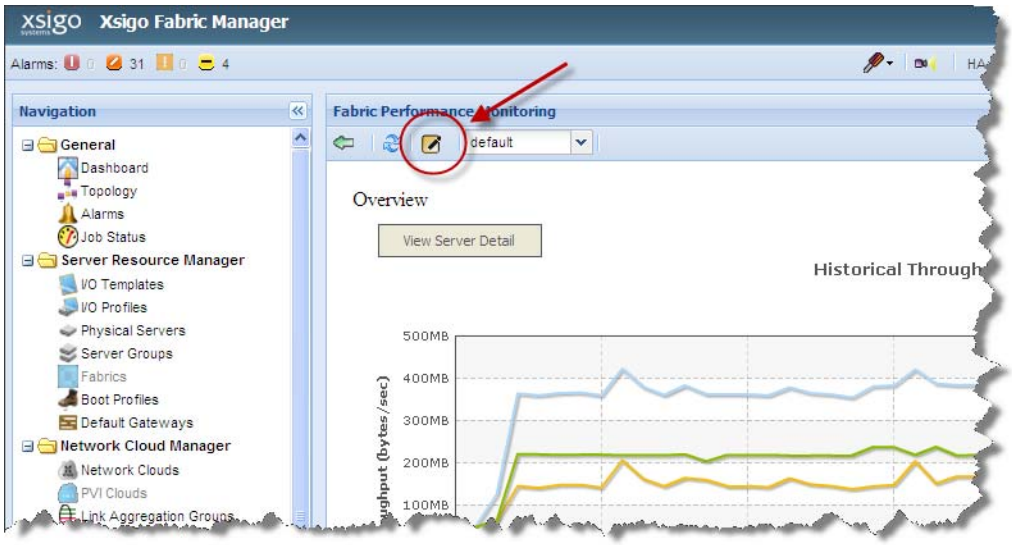

Figure 16 Editing the PostgreSQL Configuration

Step 2 The Edit Configuration dialog box displays as shown in Figure 17.

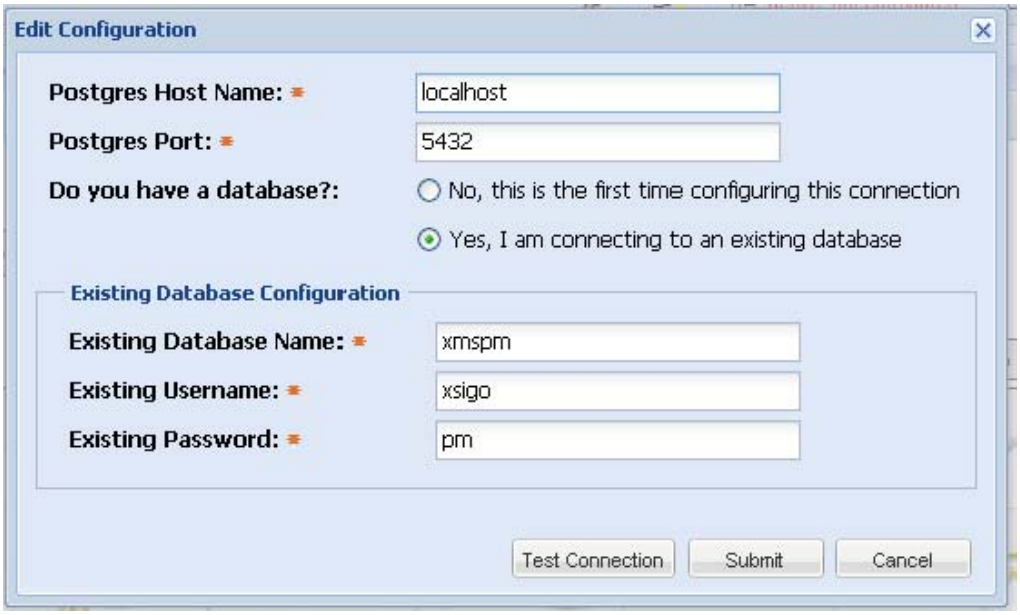

Figure 17 Changing the Configuration Settings

Step 3 Change the settings according to your needs, and click the ***Submit*** button. Your changes will take affect next time you start Performance Monitoring.

Testing Your Successful Installation

Once the installation process is complete, Fabric Performance Monitoring begins polling and you should begin to see data being populated in the Fabric Performance Monitoring graphs. Click *Apps -> Fabric Performance Monitoring* to view these graphs. Chapter 3 describes how to navigate through the graphs and describes the data in them.

Using Fabric Performance Monitoring 25

Oracle's Fabric Manager Performance Monitoring collects statistical data for all chassis under its management so that you can easily view the performance of components in your environment.

This chapter describes how to use the graphs and charts generated through the Fabric Performance Monitoring application and includes the following sections:

Understanding the Fabric Performance Monitoring Window

To view the Fabric Performance Monitoring window, click on the *Apps -> Fabric Performance Monitoring* from the Navigation pane. The Fabric Performance Monitoring summary window is displayed as shown in Figure 1.

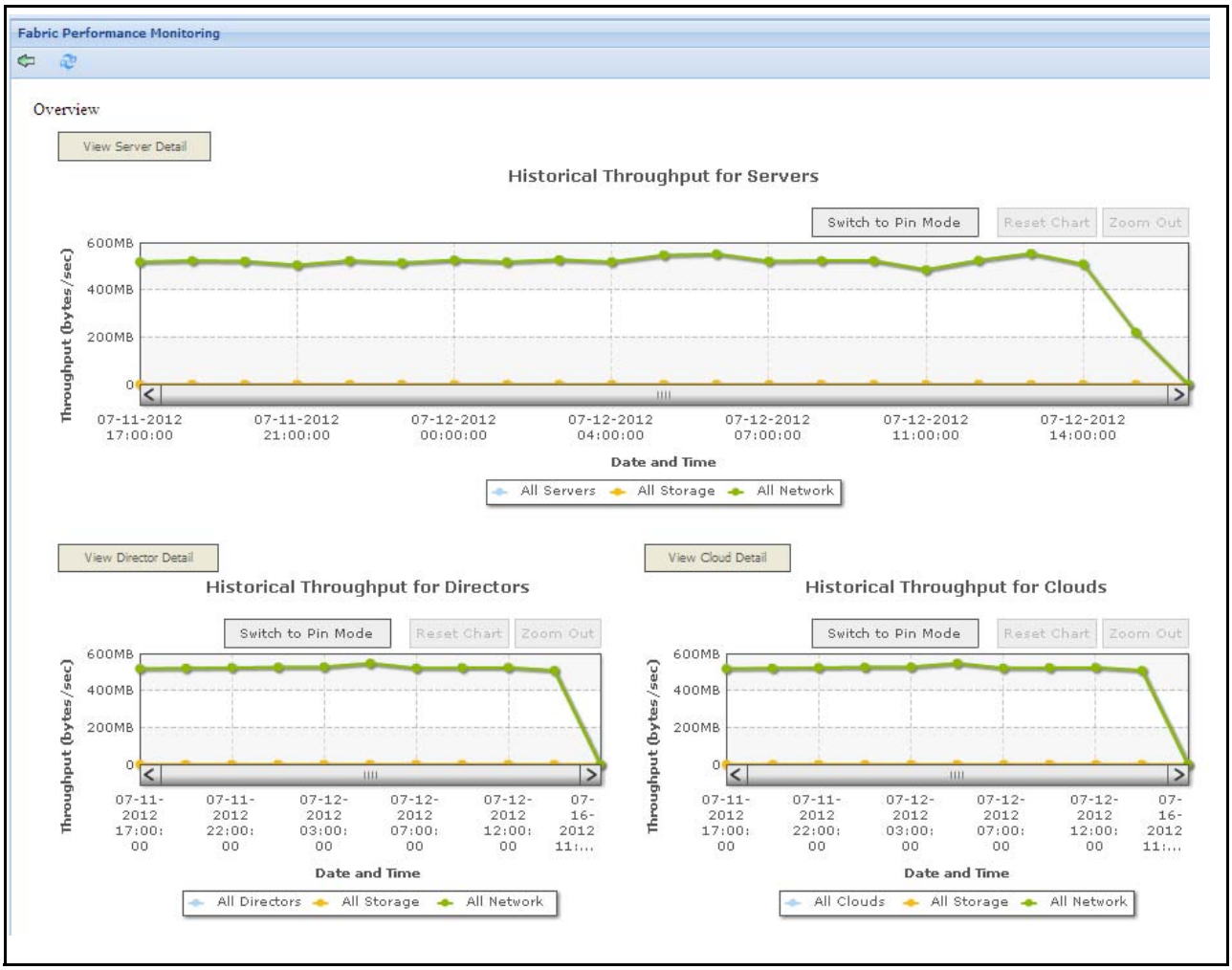

Figure 1 Fabric Performance Monitoring Summary Window

Note

If there are no Directors defined in a Domain, then the Historical Throughput for Directors graph does not display. In this case, only two graphs appear on the screen.

The Initial Three Graphs

When you first access Fabric Performance Monitoring, the window displays three graphs:

- **Historical Throughput for Servers—**This view provides statistical data for all servers managed by Oracle's Fabric Manager for the past week. You can further investigate server throughput by double-clicking on the graph. The information available by server is provided in the section entitled Obtaining Server Information.
- **Historical Throughput for Directors—**This view provides statistical data for all Oracle Fabric Directors managed by Fabric Manager for the past week. You can further investigate a Director's throughput by double-clicking on the graph. The information available for each Director is provided in the section entitled Obtaining Fabric Director Information.
- **Historical Throughput for Clouds—**This view provides statistical data for all Network and Storage Clouds being managed by Fabric Manager for the past week. You can further investigate Cloud throughput by double-clicking on the graph and choosing either ***Network Cloud*** or ***Storage Cloud***. The information available about your Clouds managed by Fabric Manager is provided in the section entitled Obtaining Cloud Information.

Graph Components

Each graph presents the throughput in bytes per second along the y-axis and the date and time on the x-axis. The legend along the bottom of the graphs is color-coded to indicate the contents of the graphs themselves, for example in Figure 2 Directors are shown in blue, Storage in orange, and Networks in green. Each graph also allows you to display more details about that device by either double-clicking on the graph or by clicking the ***View Detail*** button. Figure 2 shows the basics elements of the Fabric Performance Monitoring graphs.

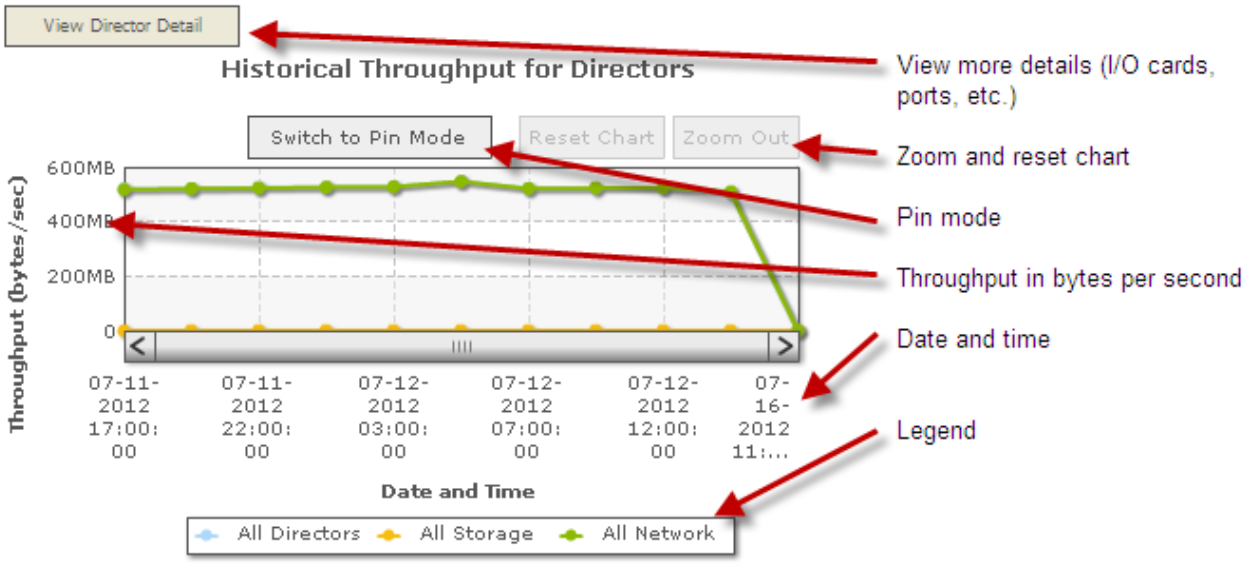

Figure 2 Understanding the Graphs

You can also display the exact data points along any graph by hovering your cursor over that data point as shown in Figure 3.

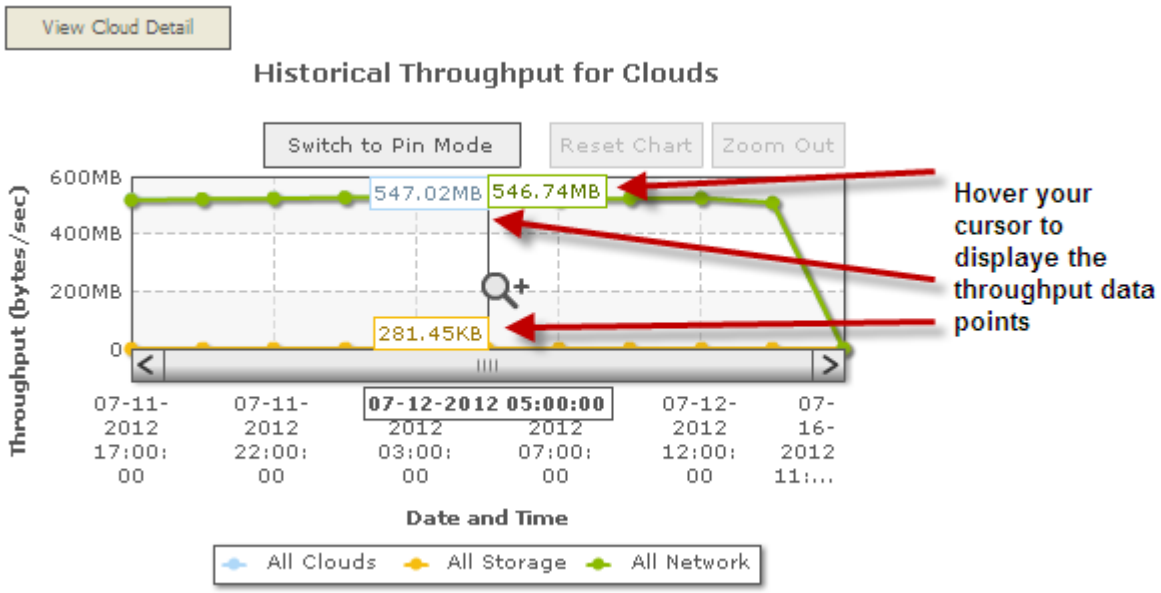

Figure 3 Displaying the Exact Data Points

Zoom and Pin Modes

To zoom in to a section of the chart, click and drag your mouse over the chart and release the mouse button. The graph zooms in to the data, displaying data for the time frame you selected, as shown in Figure 4.

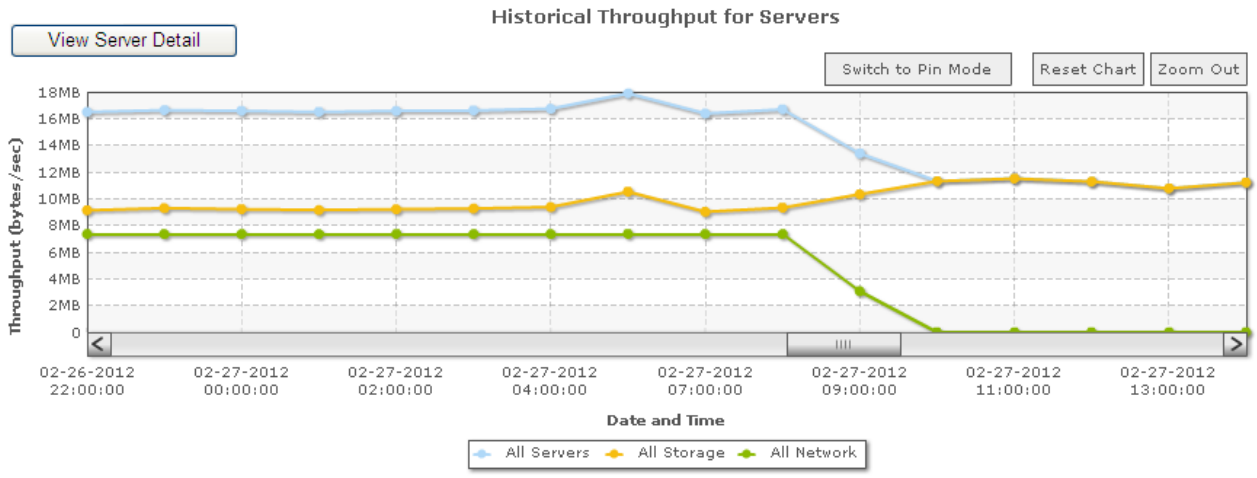

Figure 4 Zooming In to View Data

Click the ***Reset Chart*** button to return to the original chart as shown in Figure 5.

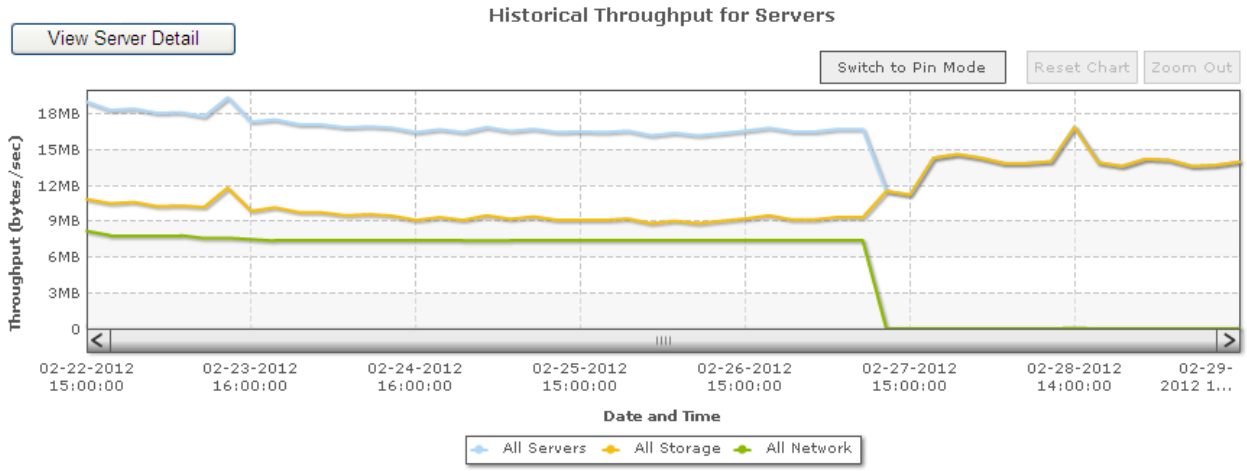

Figure 5 Resetting the Chart

You can switch to Pin Mode (each change in data points are indicated by "pins" in the graph) by clicking the ***Switch to Pin Mode*** button. Drag the bar across the chart to select a portion of the chart. You can then compare the pinned segment of the chart with the rest of the chart by scrolling through your chart, dragging the pinned segment to any part of the graph.

For example:

Step 1 On a chart, click the ***Pin Mode*** button. When the mouse hovers over the chart, notice the pointer changes to a bulls eye-like icon.

Step 2 Click and drag on a chart to select "Data set A" that you want to compare to other parts of the chart. See Figure 6.

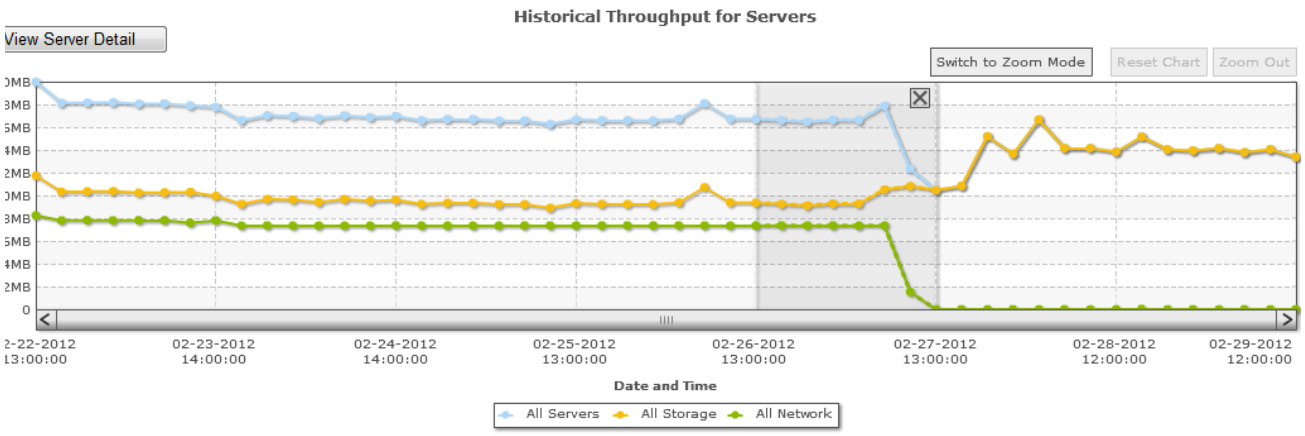

Figure 6 Using Pin Mode—Selecting Data

Step 3 When the data set you selected is complete, it becomes shaded and has the ***Close*** button ("X") in the upper right corner. When the mouse hovers over the chart, notice that the pointer changes to a left or right arrow to indicate the ability to horizontally position the selected data set.

Step 4 Slide the data set to the location on the chart that contains the usage you want to compare to the data set. Notice that the selected graph of usage becomes a dashed line to indicate that it is the overlaid data. See Figure 7.

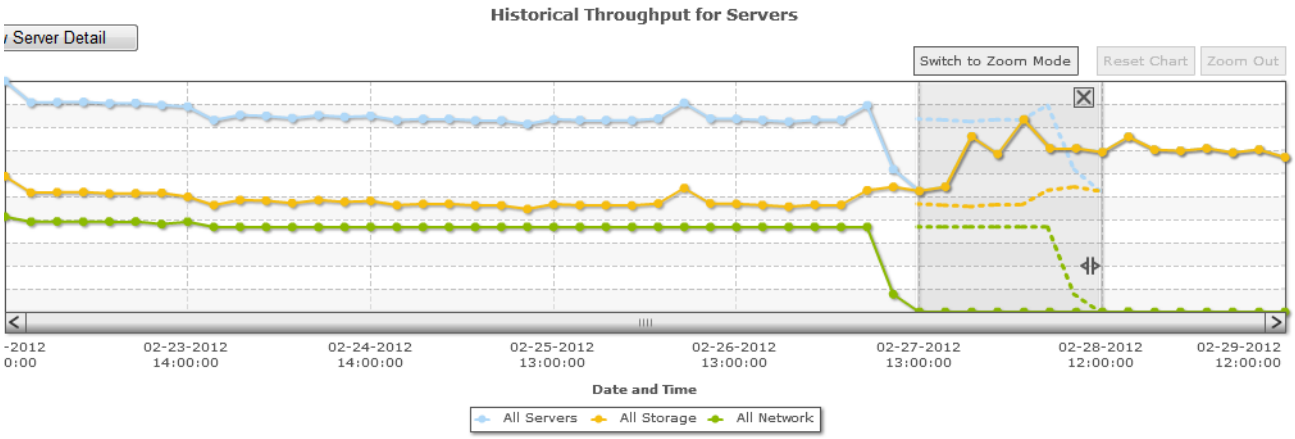

Figure 7 Using Pin Mode—Comparing Data Points

Step 5 To return to Zoom Mode, click the ***Switch to Zoom Mode*** button.

Bread Crumb Display

As you continue to drill down for more detailed information within the charts, Fabric Performance Monitoring displays your location using Bread crumbs as shown in Figure 8.

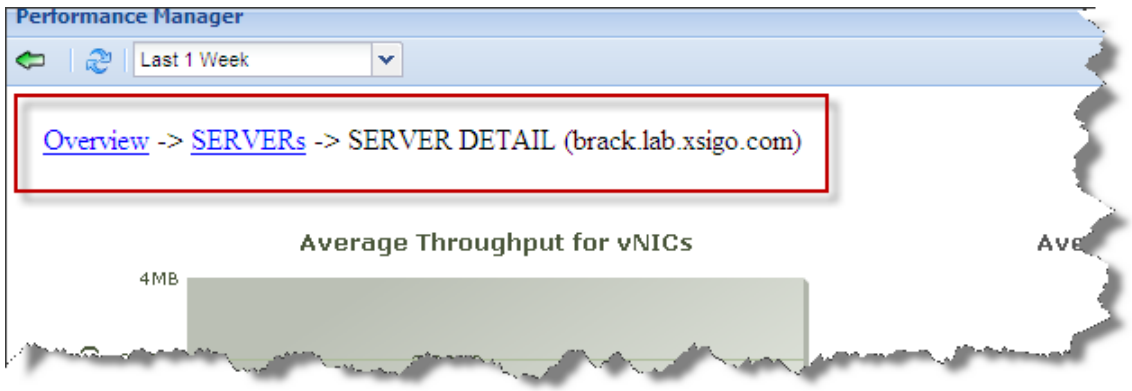

Figure 8 Fabric Performance Monitoring Bread crumbs

You can return to a previously displayed chart by clicking the link in the bread crumb series, for example in Figure 8, to move from the *Server Detail* view to the *Average Throughput per Server* view, click the ***SERVERs*** link.

Understanding Adobe Fusion Charts

Fabric Performance Monitoring is built using Adobe Fusion Charts, which is a tool that creates interactive charts for web and enterprise applications. It is the industry's leading charting component that functions seamlessly on PCs, McIntoshes, iPads, iPhones and a majority of other mobile devices. Fusion Charts leverages JavaScript (HTML5) and Flash to create the data visualizations you see in the Fabric Performance Monitoring graphs presented in this chapter.

These charts include 3D columns and pie charts that enable you to drill-down for more granular data. Fabric Performance Monitoring also includes combination charts, advanced zoom features, and scroll charts that all support interactive options like tooltips (see Figure 9), drill-down, and printing. Click on the chart to move it sections.

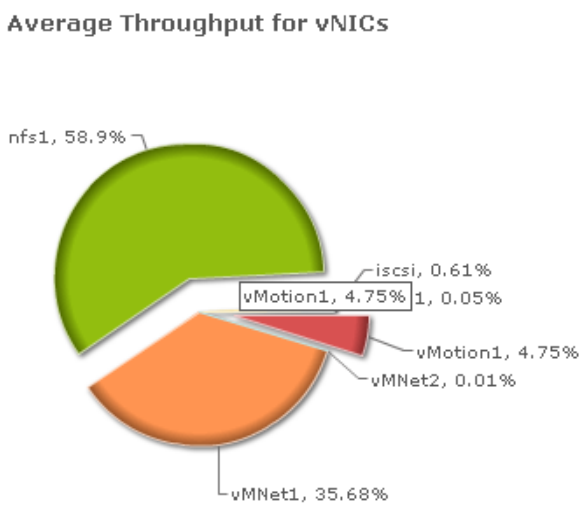

Figure 9 Sample Pie Chart with Tool Tip

Domain-restricted Statistics

Administrators with Default Domain access can restrict the resources that Non-default Domain users can view by specifying the resources available to specific Domains and then assigning those Domains to users.

For example, Figure 10 shows that the Domain *westCoast* (created from *Security Manager->Resource Domains*) has access to specific resources on the Fabric Directors Arkansas and Texas.

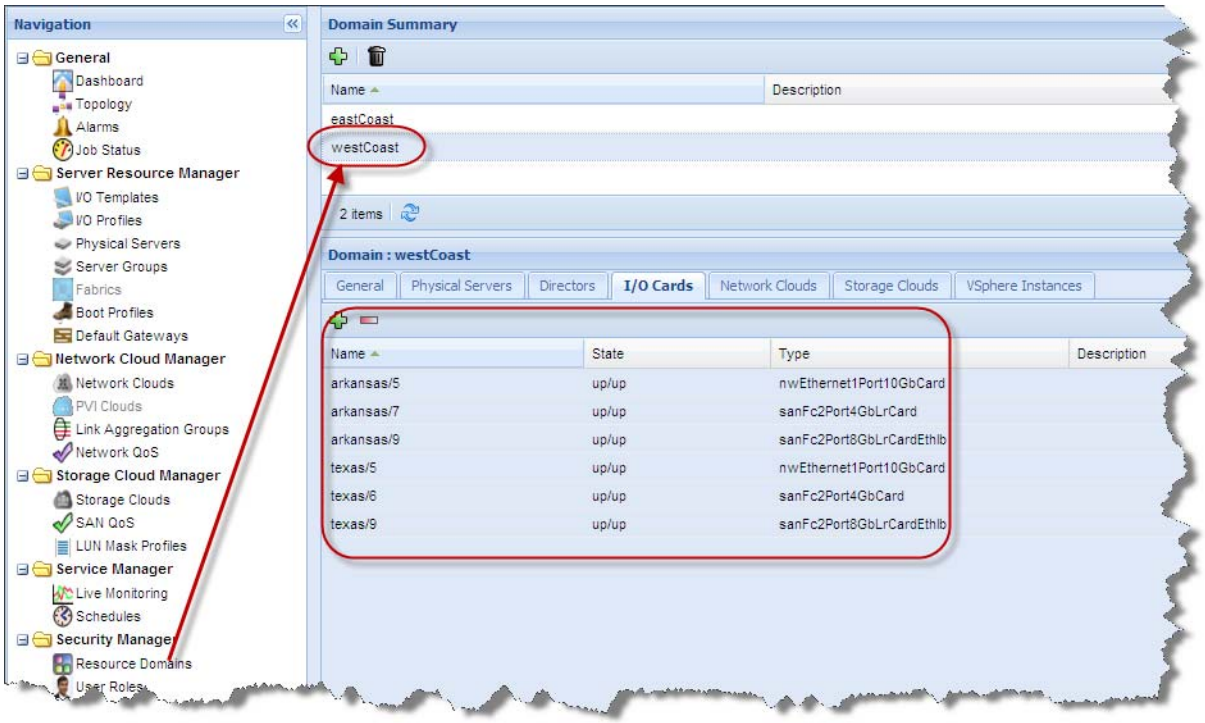

Figure 10 Domain-restricted Resources

Next, to see who has access to the westCoast resources, select *Security Manager->User Roles*. Figure 11 shows that user2 is assigned to the westCoast Domain.

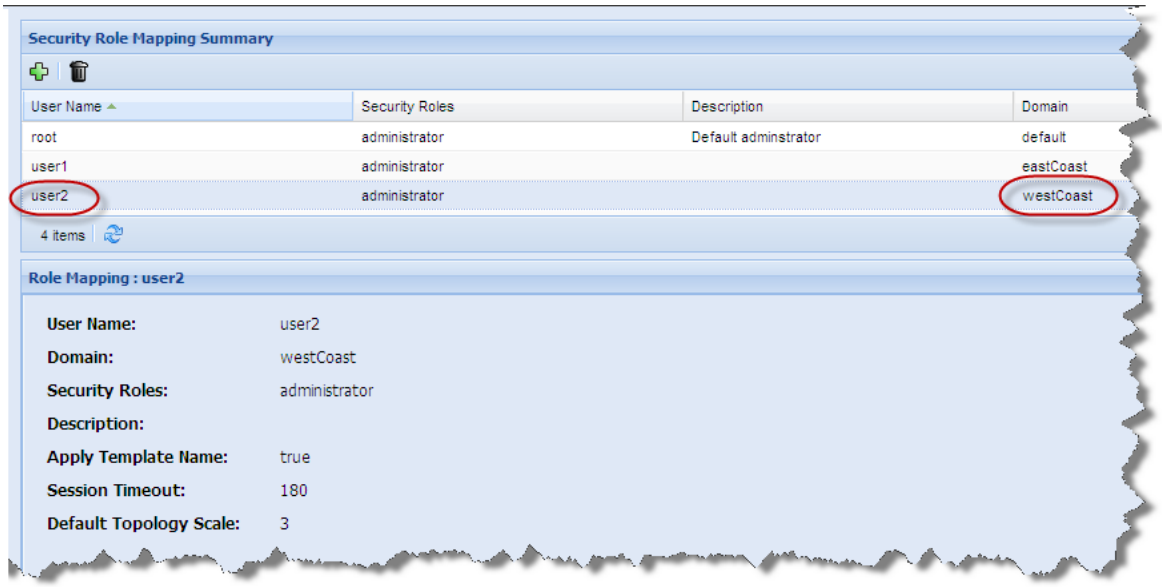

Figure 11 Domain-restricted Users

The Fabric Performance Monitoring window now shows the performance of only those resources to which user2 has access. The westCoast Domain's resources, displayed in Figure 12, show the Historical Throughput for the Directors included in that Domain.

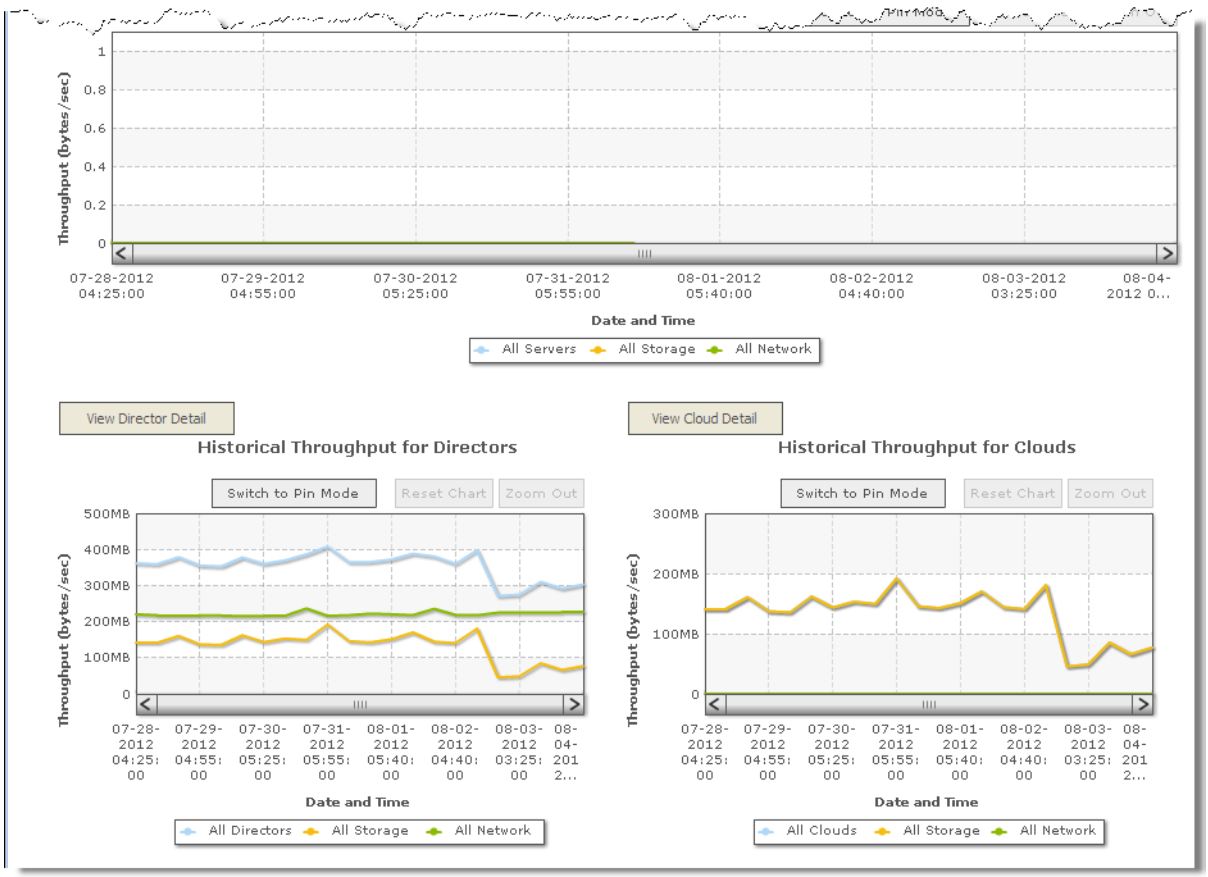

Figure 12 Domain-restricted Performance

Printing Fabric Performance Monitoring Information

You can print any of the charts displayed in Fabric Performance Monitoring by right-clicking on that chart and choosing ***Print Chart***, as shown in Figure 13.

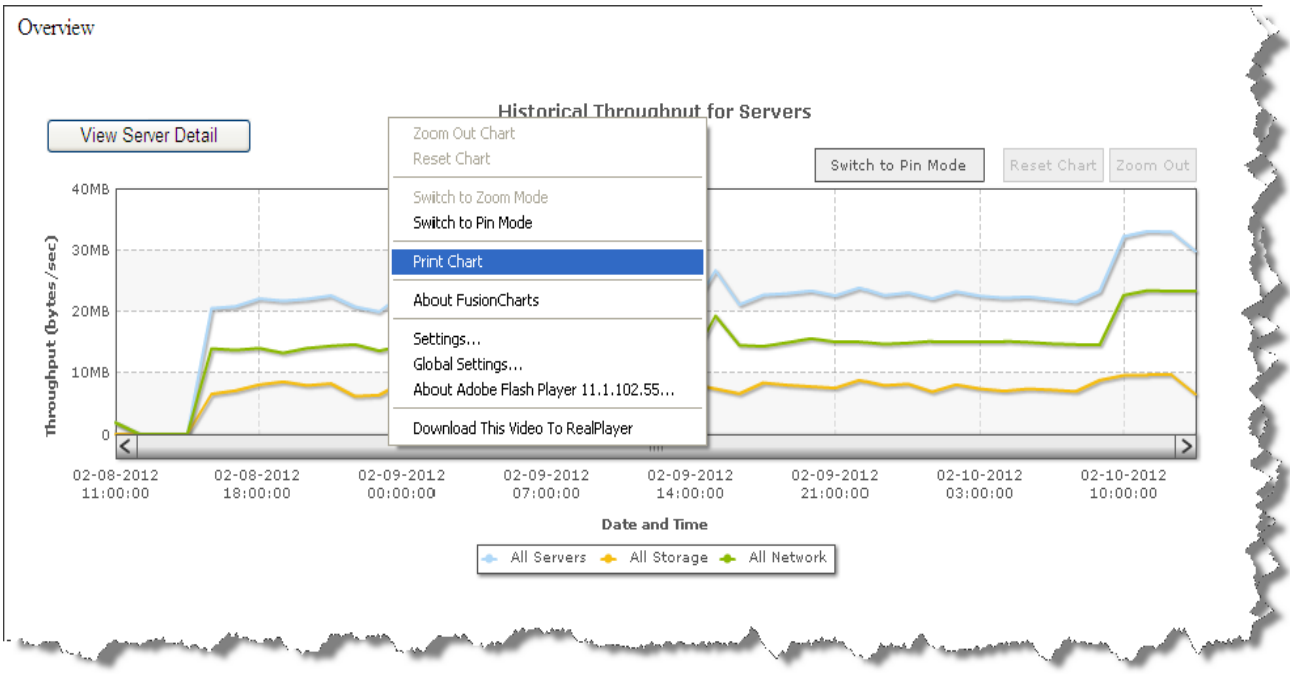

Figure 13 Printing Charts

Choose the printer from the Print dialog and click ***Print***. Your chart is printed on the selected printer.

Note

All other options in this menu are Adobe Flash options. See documentation available on the Adobe.com website for more information on using Fusion chart and Adobe Flash.

Obtaining Server Information

This section describes the Fabric Performance Monitoring information you can obtain for each server in your Fabric Manager environment, including:

- Historical Throughput for Servers
- Average Throughput for Servers
- Server Details
- Virtual Resource Details

Historical Throughput for Servers

Figure 14 shows data throughput (in bytes per second) for all servers for the past week that are currently being managed by Fabric Manager.

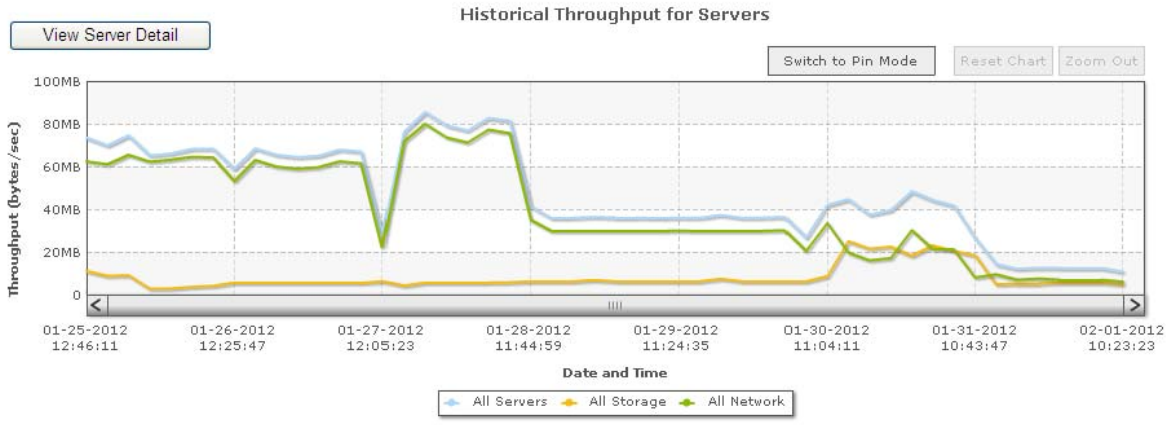

Figure 14 Historical Throughput for Servers

Domain Restricted Historical Throughput for Servers

For sites that have implemented Domain restrictions, this graph include statistics of the servers in the Domain within the time frame indicated. For example, the Historical Throughput for Servers graph displays only the servers to which the Domain has access.

Average Throughput for Servers

To view the average throughput for servers, either double-click on the ***Historical Throughput for Servers*** graph (for Safari and Firefox browsers) or click the ***View Server Detail*** button shown in Figure 14 above (for Internet Explorer and Chrome browsers). The Average Throughput for Servers window is displayed as shown in Figure 15.

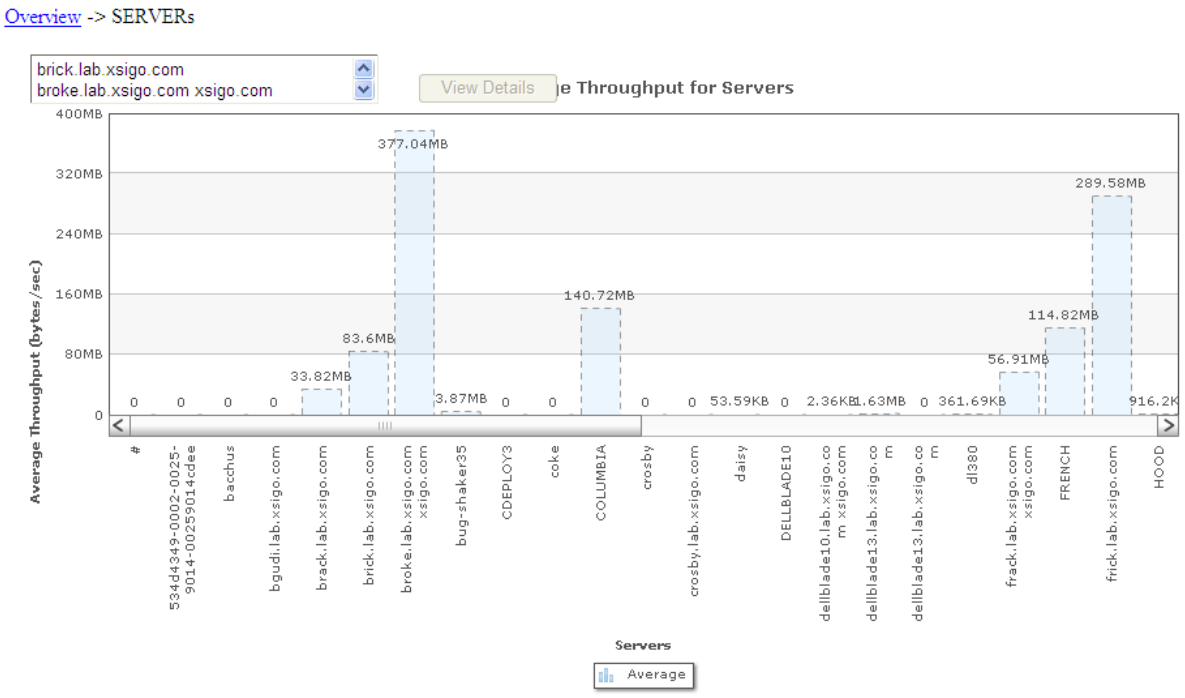

Figure 15 Average Throughput for Servers

Note

If you are using Safari or Firefox browsers, you can double-click on the chart to view details for a particular server. If you are using Internet Explorer and Chrome, you need to click ***View Detail*** button to view details for a server or Cloud. The ***View Detail*** button is invisible in the Firefox and Safari browsers.

You can choose to view the average throughput for servers for several different date ranges including the last hour, day, week, month, three months, and year by choosing that range from the dropdown shown in Figure 16.

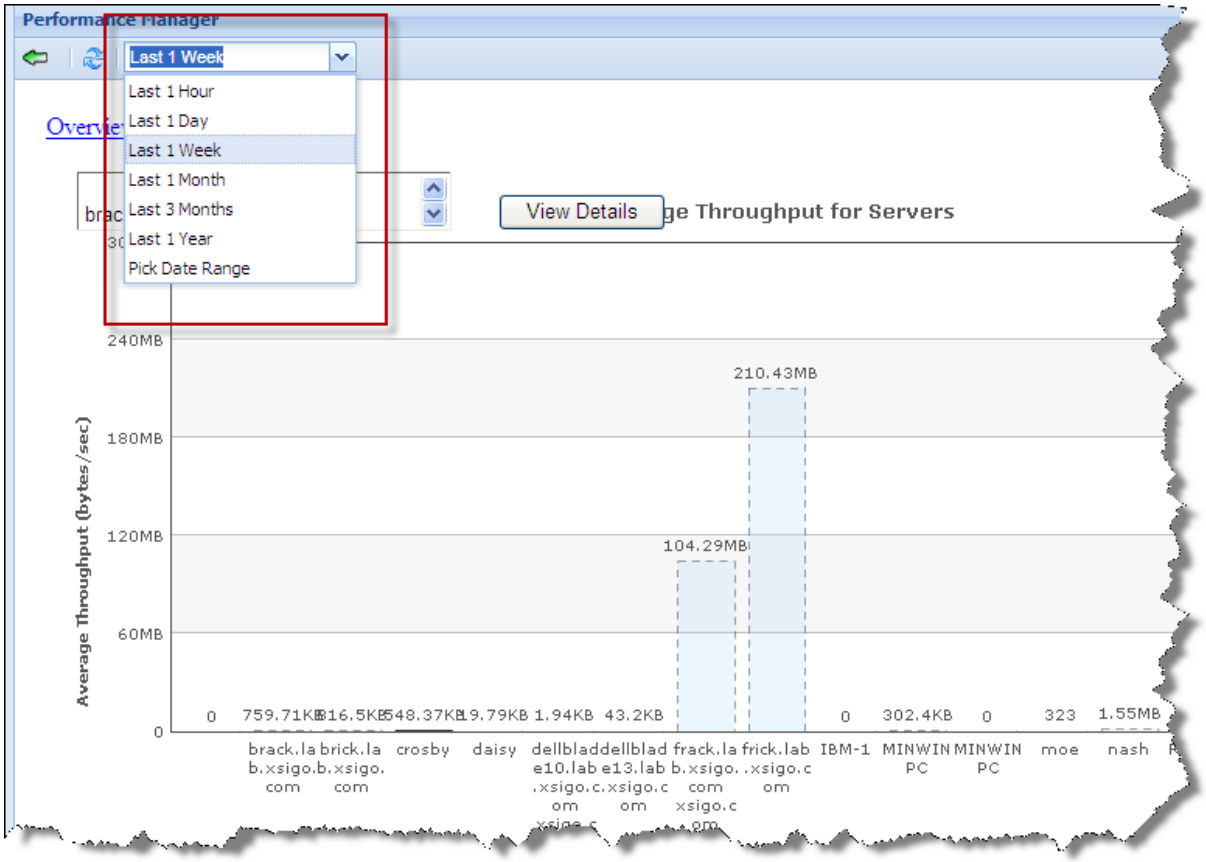

Figure 16 Average Throughput for Servers—Options

If you want to specify a date range, choose the last option, *Pick Date Range,* and choose a *Start* date and time and an *End* date and time from the dropdowns as shown in Figure 17.

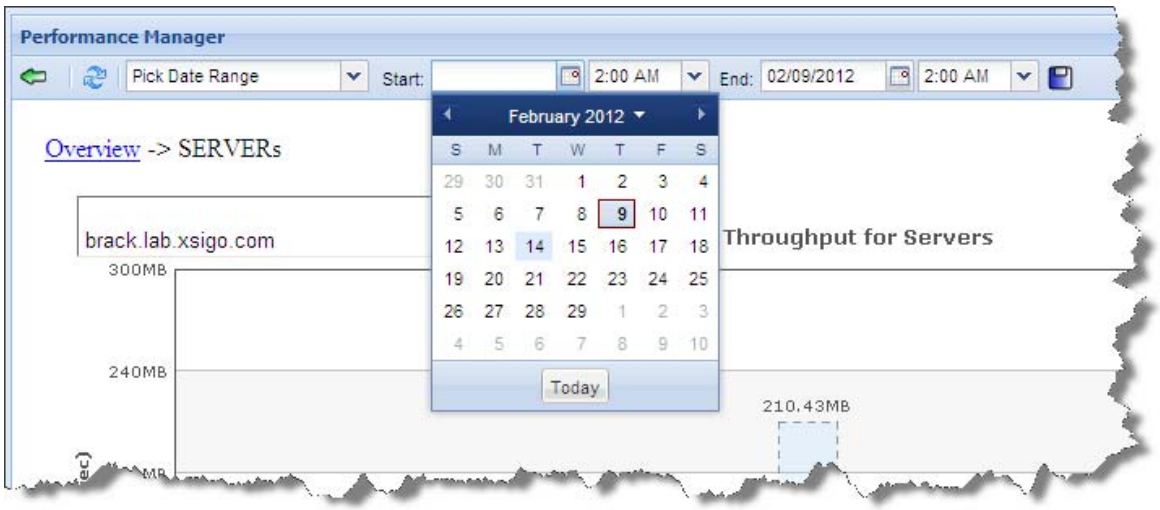

Figure 17 Choosing a Date Range

Domain-restricted Average Throughput for Servers

For sites that have implemented Domain restrictions, this graph displays the average statistics of the servers in the Domain during the time frame indicated.

Server Details

There are two ways to view details about one of the servers on this page. Either choose a server (or servers) from the scroll box or click a server column (or columns) from the All Server graph and click the ***View Details*** button. This selection (or selections) displays the *Average Throughput for vNICs/vHBAs* and *Historical Throughput for vNICs/vHBAs* connected to the server(s) for the selected time frames. If you selected multiple servers, the bread crumb contains *Overview ->Servers ->Selected Servers*. These graphs are displayed in Figure 18 and Figure 19.

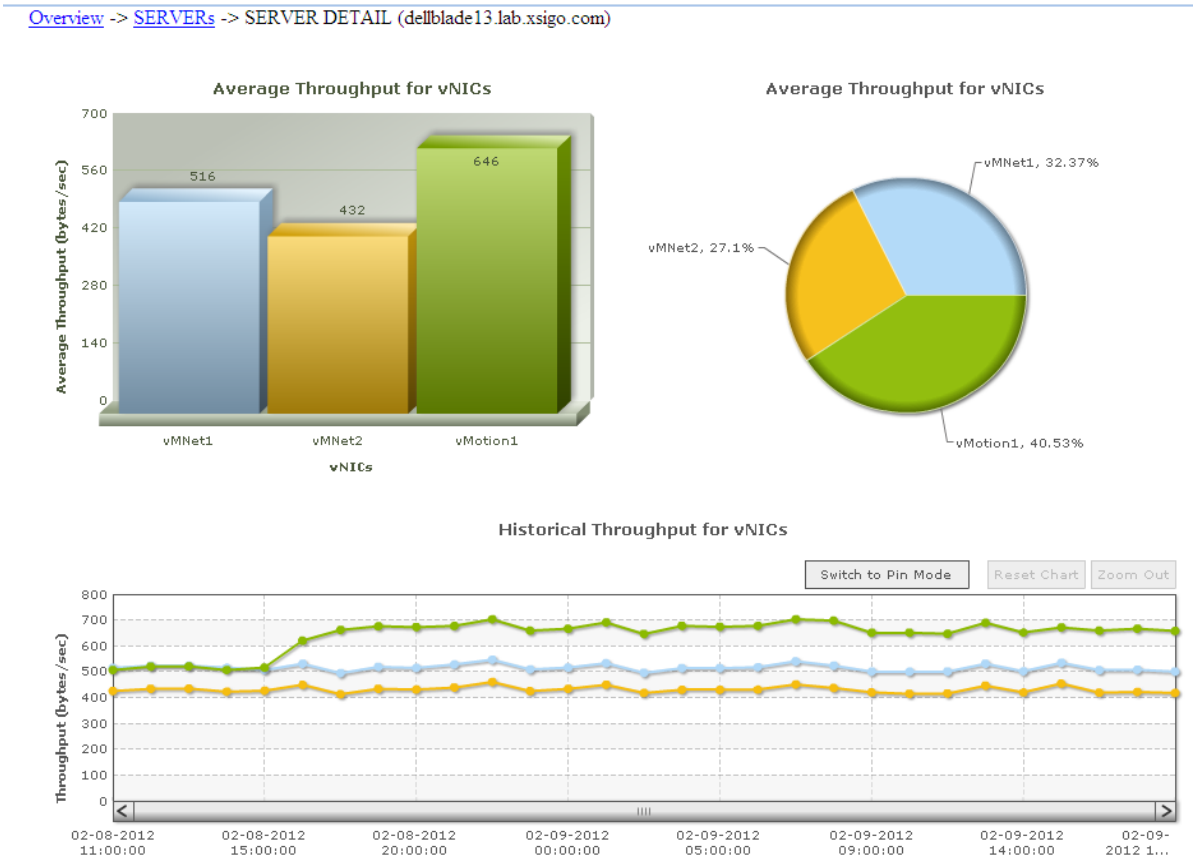

Figure 18 Server Details—vNICs

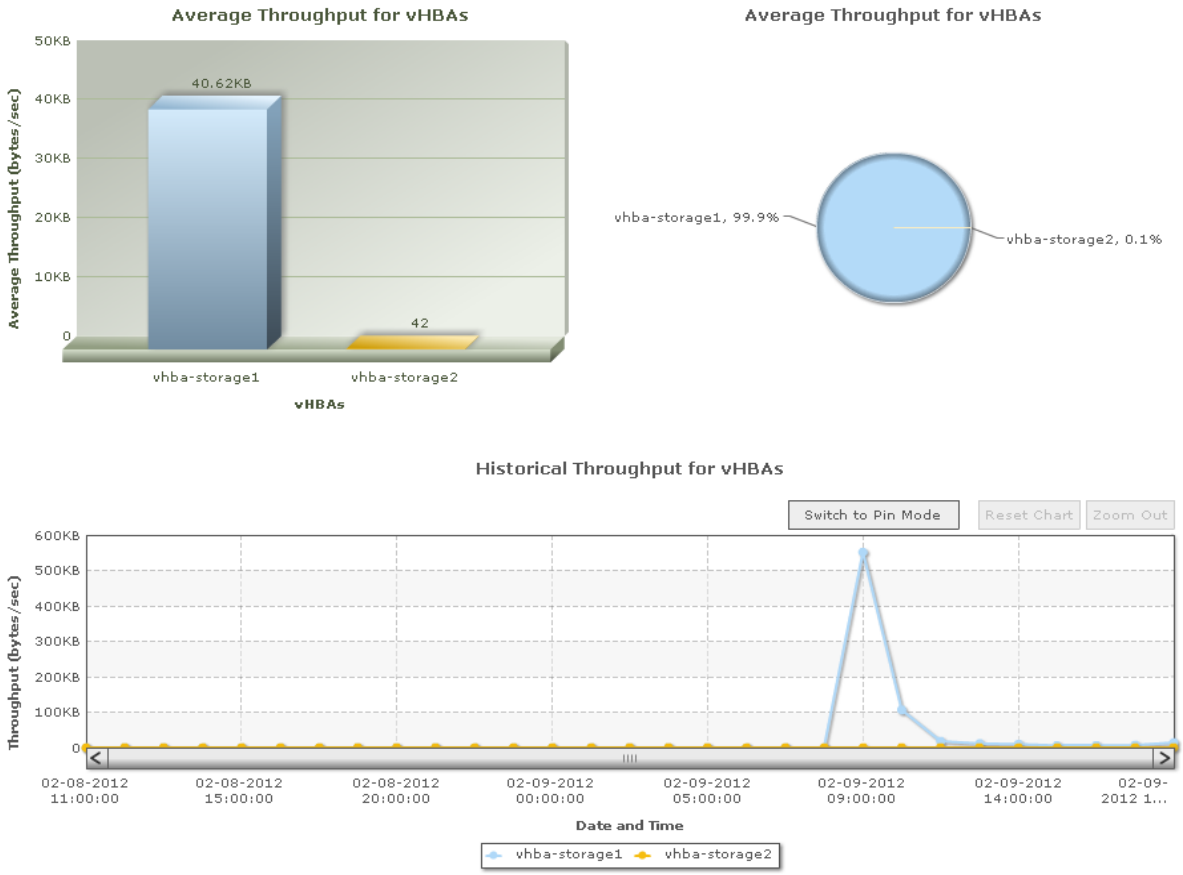

Figure 19 Server Details—vHBAs

Virtual Resource Details

You can also view the servers' ingress and egress throughput for each vNIC and vHBA by double-clicking on one of the vNICs or vHBAs. Figure 20 shows a sample vNIC Details page.

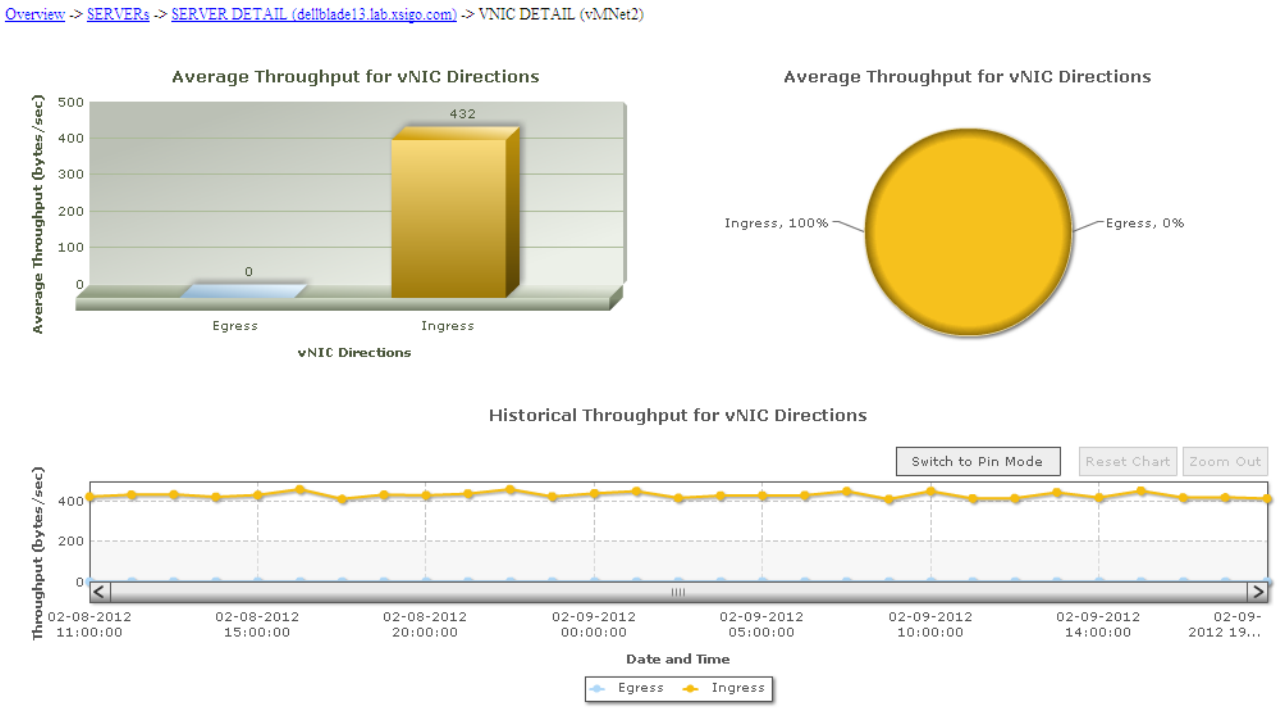

Figure 20 Sample vNIC Details Page

Note

Notice the bread crumbs at the top left of this window. You can back-track to a previously displayed graph simply by clicking on one of the links.

Obtaining Fabric Director Information

This section describes the Fabric Performance Monitoring information you can obtain for each Director in your Fabric Manager environment, including:

- Historical Throughput for Fabric Directors
- Average Throughput for Fabric Directors
- Fabric Director Details

Historical Throughput for Fabric Directors

This graph provides historical statistics for all Directors managed by Fabric Manager for the past week. It shows throughput (bytes per second) for all Directors, all Storage, and all Networks as shown in Figure 21.

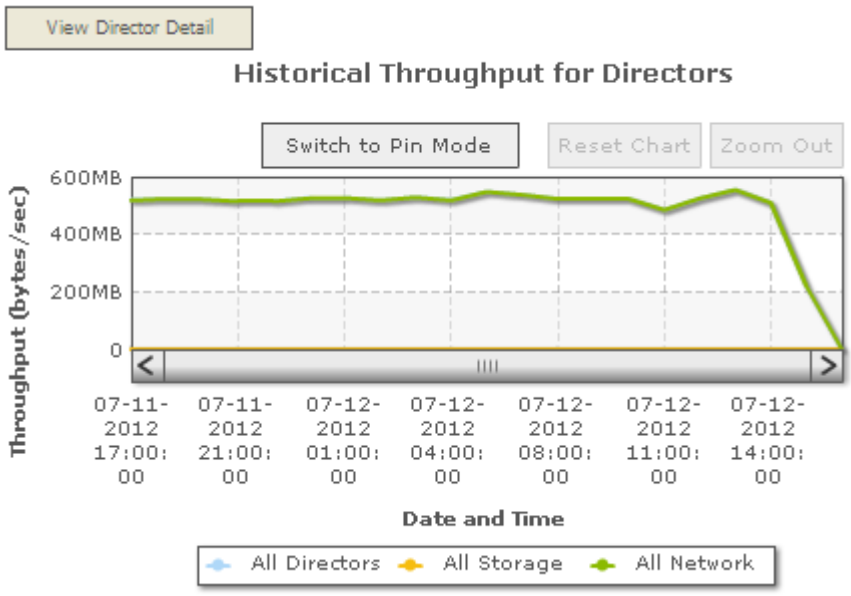

Figure 21 Historical Throughput for Directors

Domain-restricted Historical Throughput for Directors

For sites that have implemented Domain restrictions, this graph shows statistic for only those Directors included in the user's Domain. If the domain includes I/O cards, but no Fabric Directors, no statistics are displayed. When Directors are within the Domain, all statistics in the Domain's Directors are displayed in this graph.

Average Throughput for Fabric Directors

To view the average throughput for Fabric Directors, either double-click on the ***Historical Throughput for Directors*** graph or click the ***View Director Detail*** button (shown in Figure 21). The Average Throughput for Directors window is displayed as shown in Figure 22.

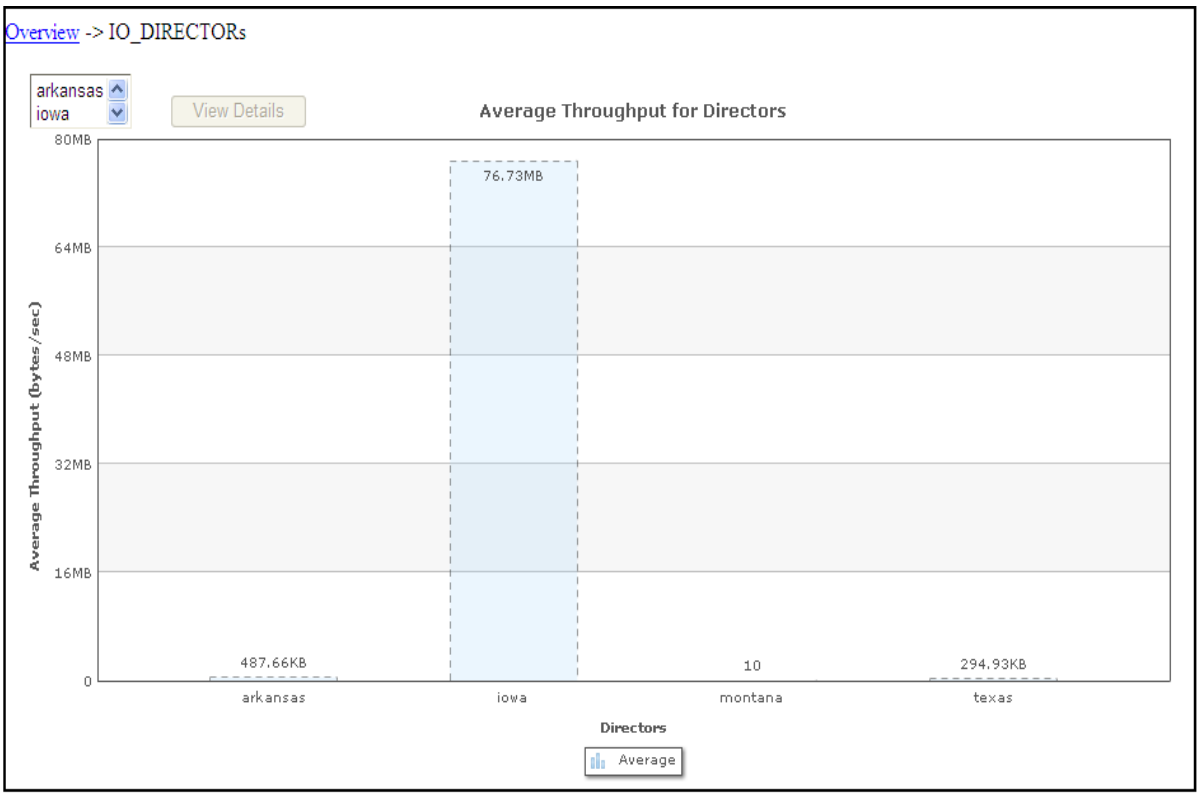

Figure 22 Average Throughput for Directors

You can choose to view the average throughput for Directors for several different date ranges including the last hour, day, week, month, three months, and year by choosing that range from the dropdown shown in Figure 23.

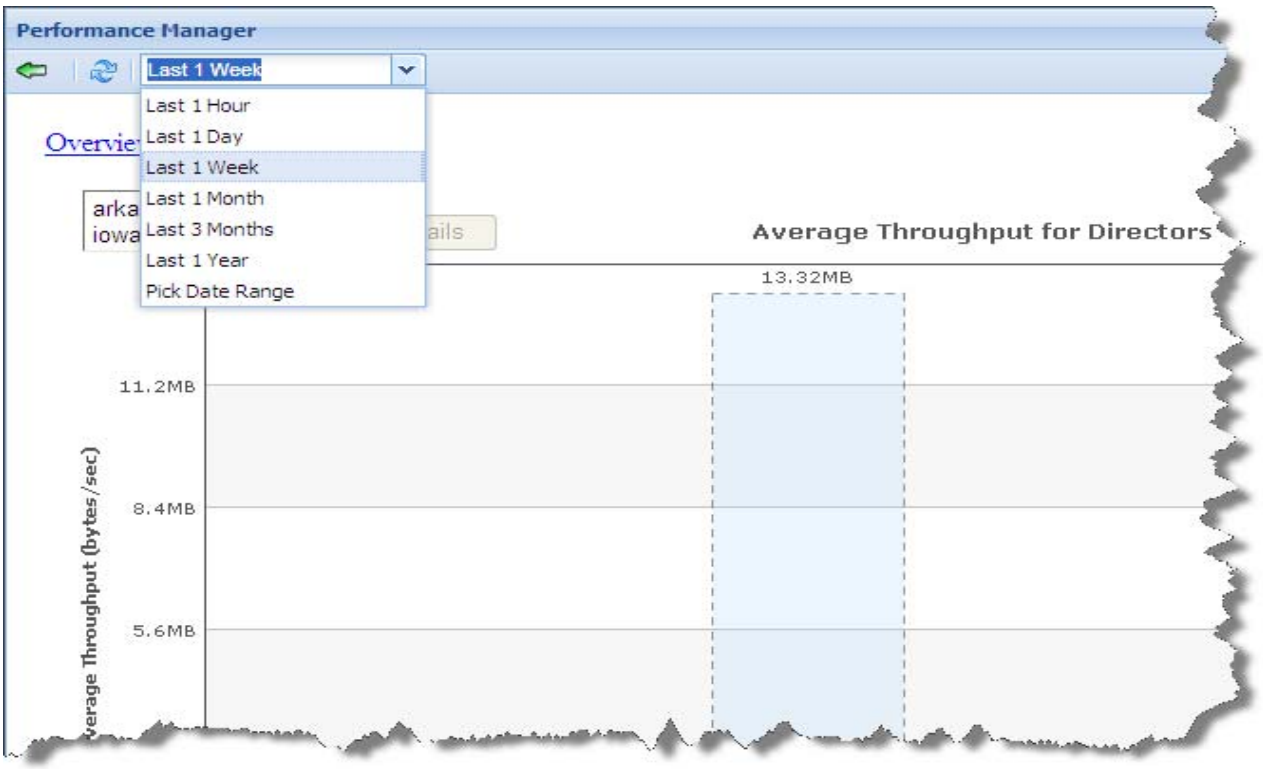

Figure 23 Average Throughput for Directors—Options

If you want specify a date range, choose the last option, *Pick Date Range*, and choose a start date and time and an end date and time from the ***Start*** and ***End*** dropdowns as shown in Figure 24.

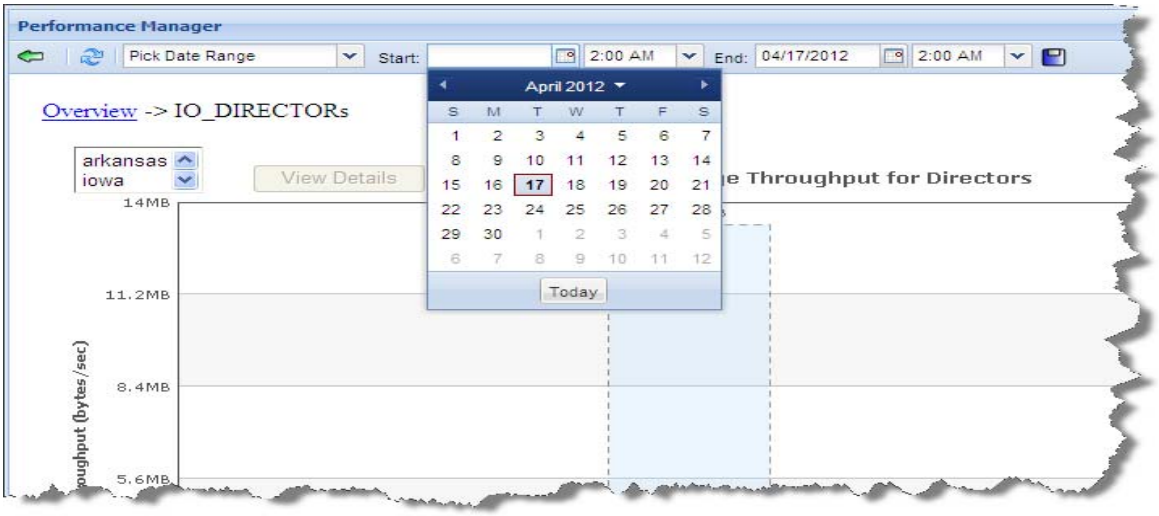

Figure 24 Average Throughput for Directors—Choosing a Date Range

Domain-restricted Average Throughput for Directors

For sites that have implemented Domain restrictions, this graph only displays if you have one or more Directors in your Domain. If there are Directors in the Domain, this graph shows all of the average statistics for the Directors (not just those statistics belonging to an individual's Domain).

Fabric Director Details

To view additional Director details, choose a Director (or multiple Directors) from the dropdown or click on one or more Fabric Directors on the All Fabric Directors graph and click the ***View Details*** button. This selection displays the *Average Throughput for I/O Cards* and *Historical Throughput for I/O Cards* on the Oracle Fabric Director(s) for the selected time frame as shown in Figure 25. If you selected multiple Directors, the bread crumb contains *Overview ->IO Director ->Selected IO_Directors*.

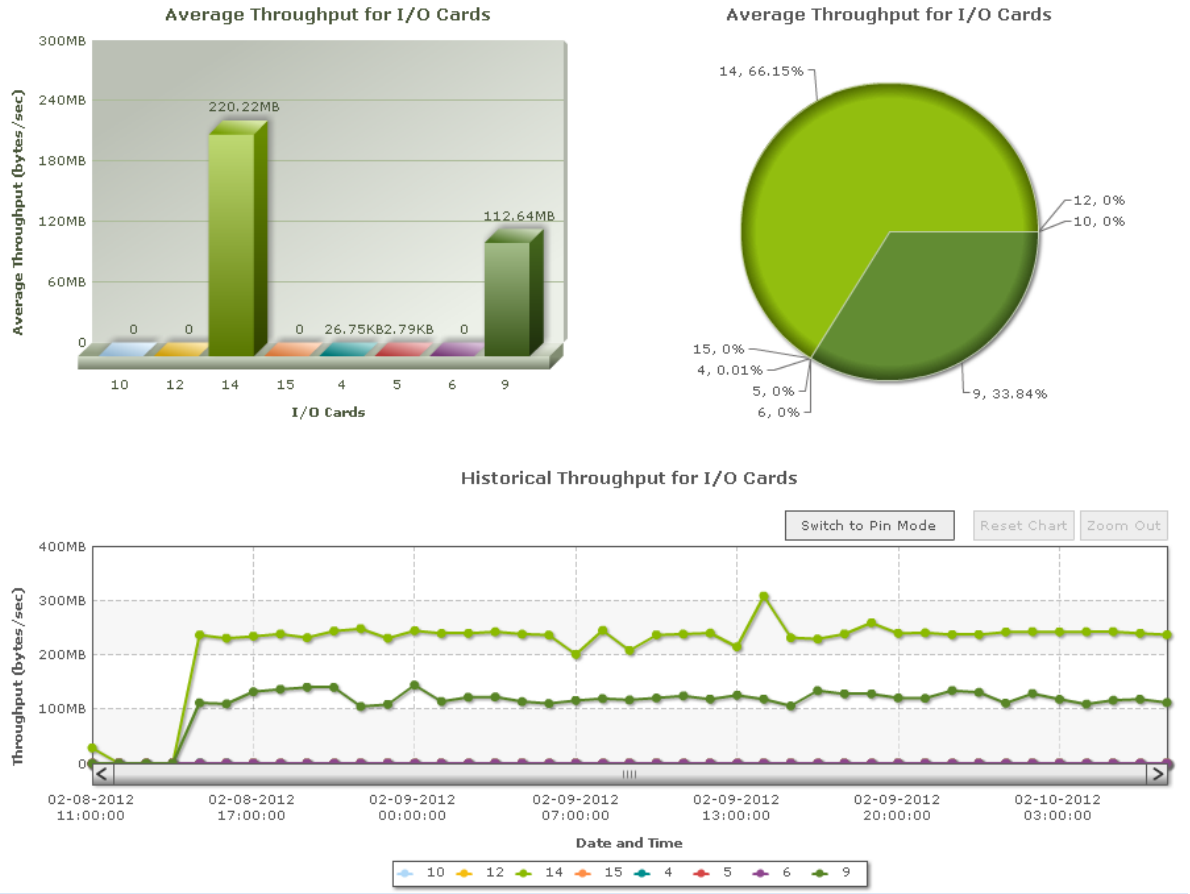

Figure 25 Fabric Director Details—I/O Cards

If you scroll down on this page, you can see the Average Throughputs for I/O Ports and Historical Throughput for I/O Ports on the Directors for the selected time frame as shown in Figure 26.

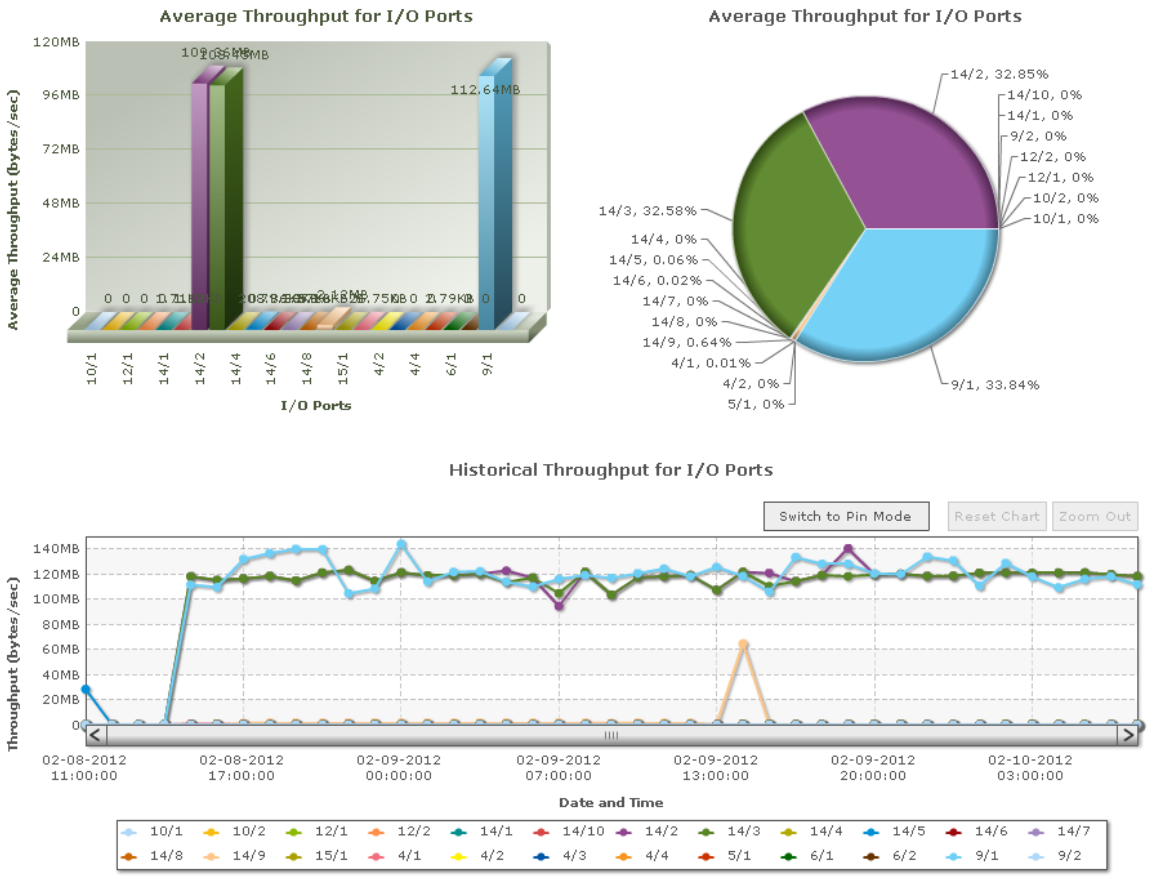

Figure 26 Fabric Director Details—I/O Ports

You can then view the port details by clicking on one of the I/O ports in this graph. The Port Details Graph, lists all virtual resources that belong to the current Domain and groups all virtual resources that are not in the Domain as one big virtual resource called *all Vstars Not in Domain*.

Virtual Resource Details

To view the average throughput for vNICs and vHBAs and historical throughput for vNICs and vHBAs terminated on a particular port for the selected time frame, double-click on that vNIC or vHBA. The I/O Port Details page, which shows the servers' ingress and egress throughput for each vNIC and vHBA on the Virtual Resource Detail page, is displayed as shown in Figure 27.

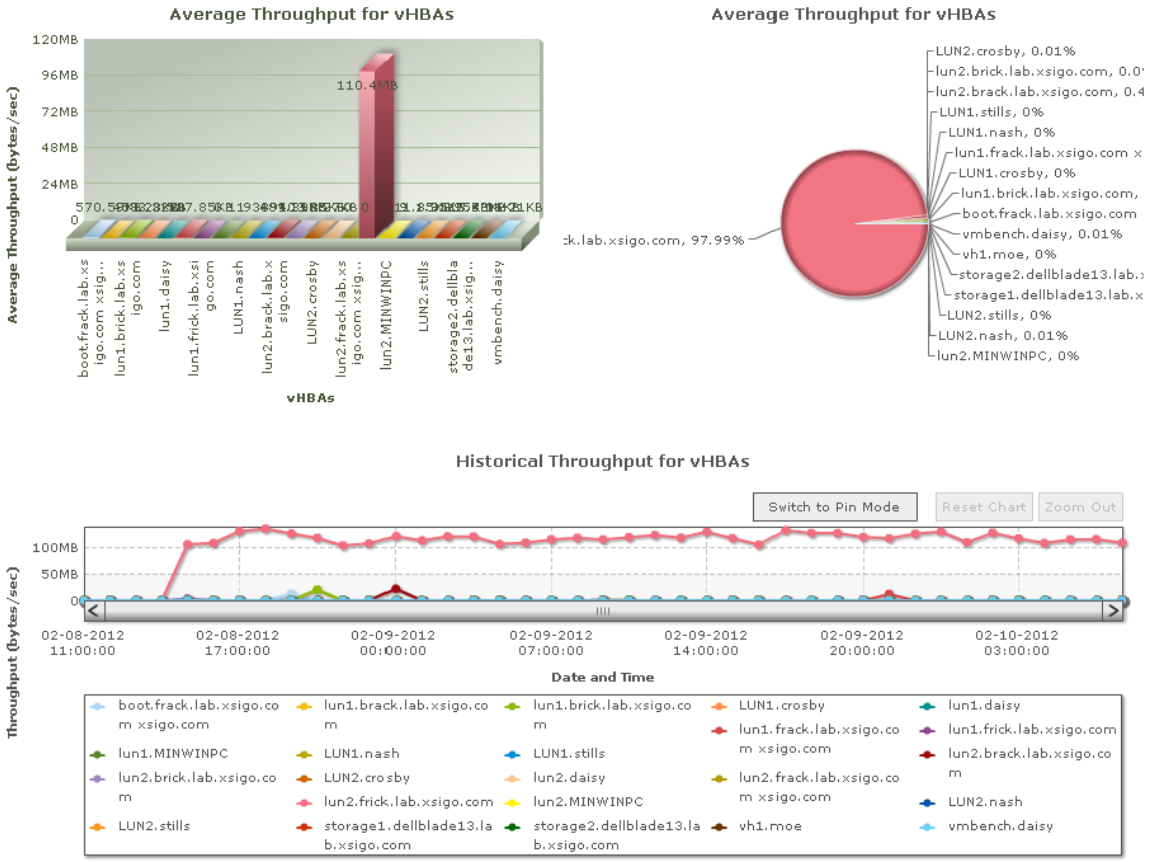

Figure 27 Viewing I/O Port Details

Domain-restricted Virtual Resource Details

For sites that have implemented Domain restrictions, this graph shows all vNICs and vHBAs in the Domain separately and all vNICs and vHBAs that are not in the Domain Groups together as one object on all three graphs (average column, pie, and total line charts).

Obtaining Cloud Information

This section describes Oracle's Fabric Manager Performance Monitoring information you can obtain for each Cloud in your Fabric Manager environment, including:

Historical Throughput for Clouds

This graph provides historical statistics for all Clouds managed by Oracle's Fabric Manager for the past week. The graph shows the throughput (in bytes per second) for all Clouds, all Storage, and all Networks as shown in Figure 28.

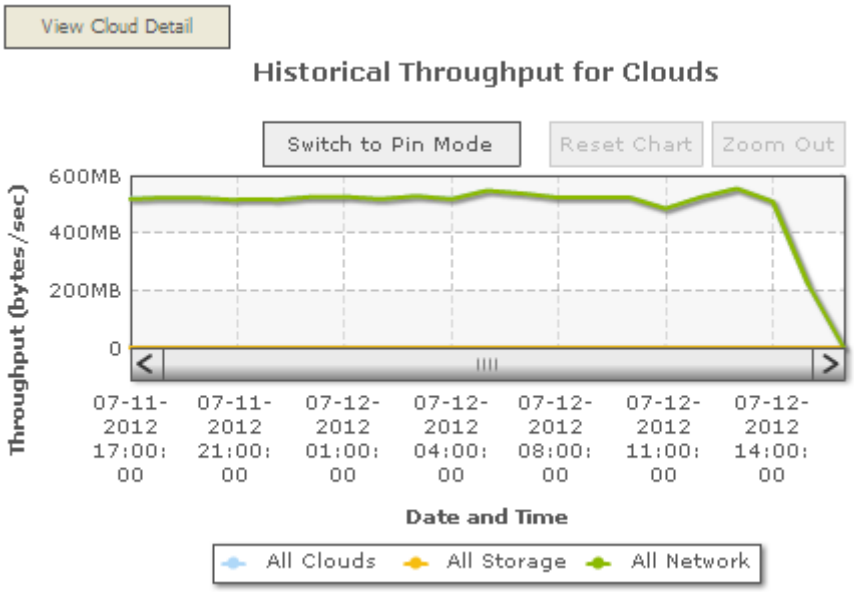

Figure 28 Historical Throughput for Clouds

Domain-restricted Historical Throughput for Clouds

For sites that have implemented Domain restrictions, this graph shows all statistics for of the Domain Clouds (not the statistics only belonging to an individual Domain).

Average Throughput for Network Clouds

To view the average throughput for a Network Cloud, either double-click on the ***Historical Throughput for Clouds*** graph and when prompted choose ***Network Clouds***, or click the ***View Network Cloud Detail*** button (shown in Figure 28). The Average Throughput for Network Clouds window is displayed as shown in Figure 29.

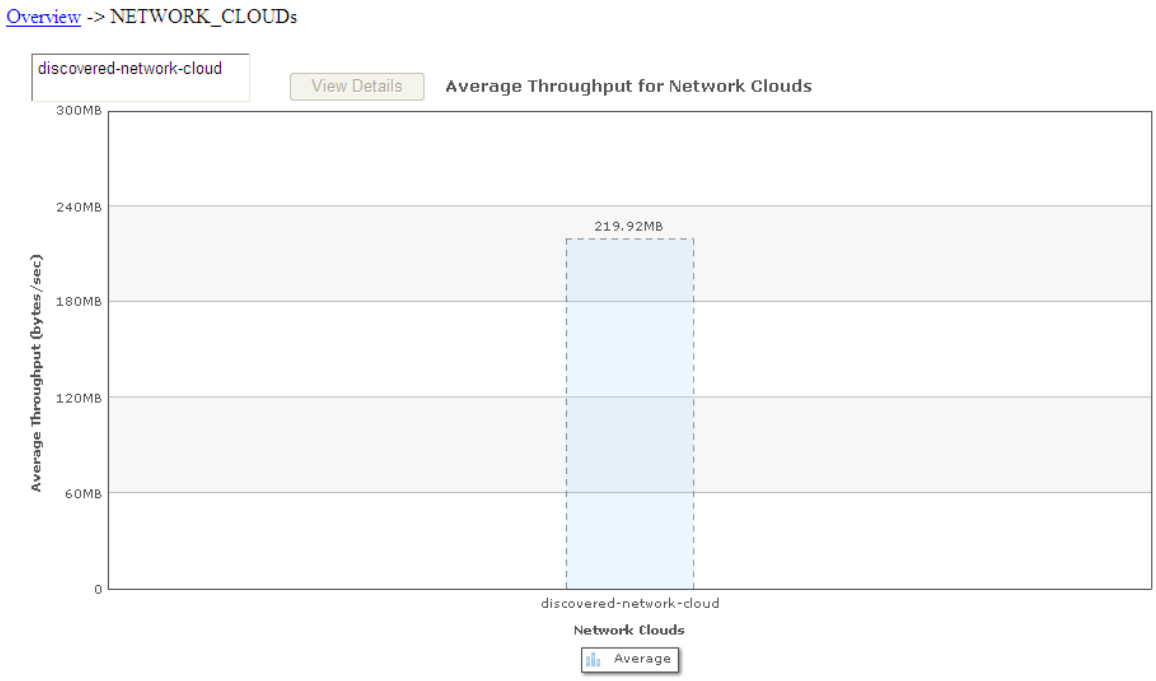

Figure 29 Average Throughput for Network Clouds

You can choose to view the average throughput for Network Clouds for several different date ranges including the last hour, day, week, month, three months, and year by choosing that range from the dropdown shown in Figure 30.

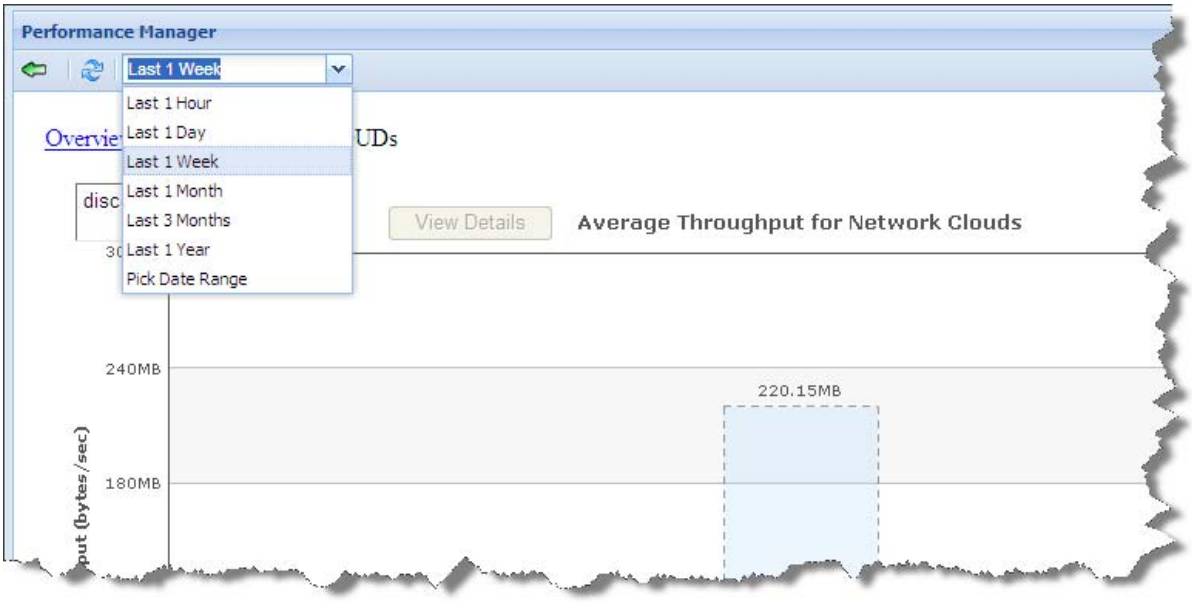

Figure 30 Average Throughput for Network Clouds—Options

If you want to specify a date range, choose the last option, *Pick Date Range*, and choose a start date and time and an end date and time from the ***Start*** and ***End*** dropdowns as shown in Figure 31.

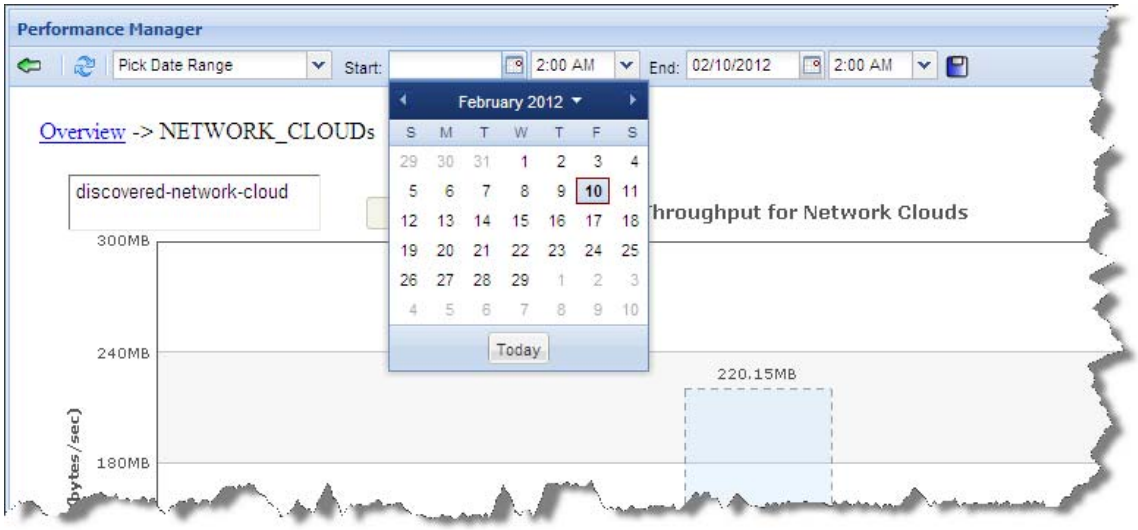

Figure 31 Average Throughput for Network Clouds—Choosing a Date Range

Domain-restricted Average Throughput for Network Clouds

For sites that have implemented Domain restrictions, this graph shows all virtual resources belonging to the current Domain and groups all virtual resources not in the Domain as one big virtual resource called *all Vstar Not in Domain*.

Network Cloud Details

There are two ways to view details about a Network Cloud:

- by selecting that Cloud (or multiple clouds) from the dropdown
- choosing (by selecting) the Network Cloud or Clouds in the All Network Clouds graph and clicking the ***View Details*** button.

This window provides the Average Throughputs for vNICs and Historical Throughput for vNICs belonging to the selected Cloud(s) for the specified time frame as shown in Figure 32. If you selected multiple servers, the bread crumb contains *Overview ->Network_Cloud->Selected Network_clouds*.

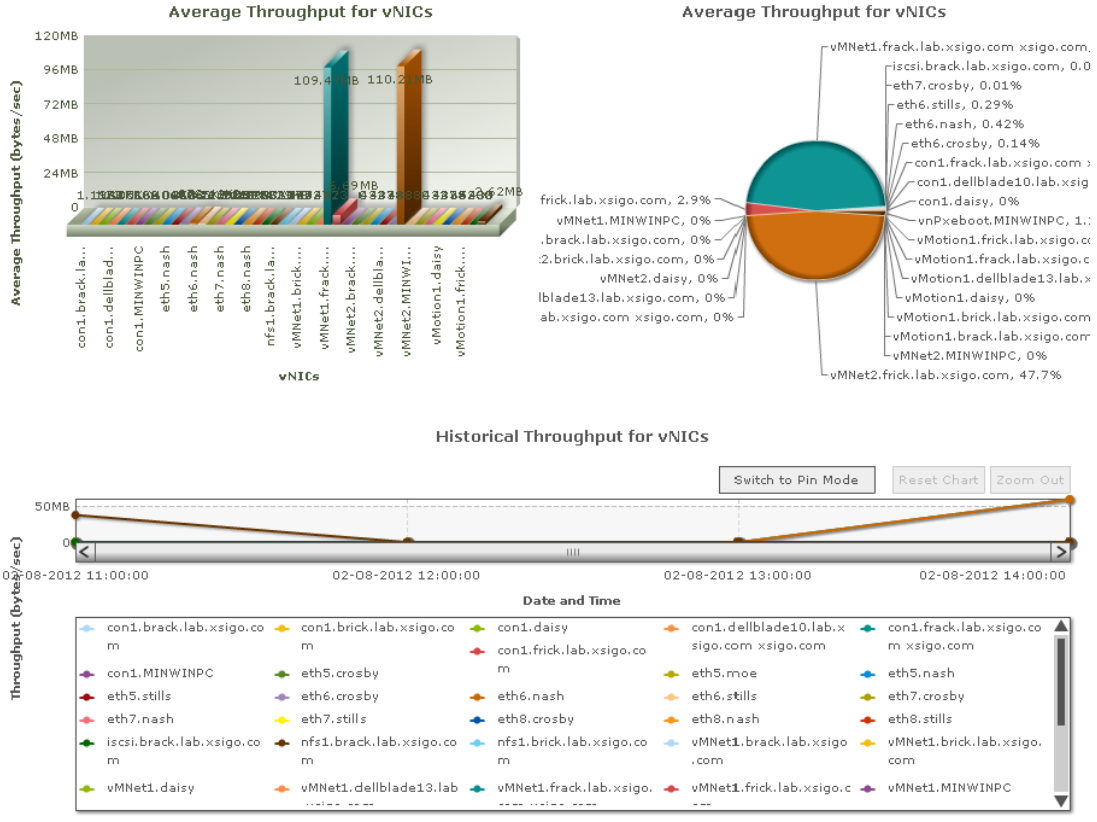

Figure 32 Network Cloud Details

Domain-restricted Network Cloud Details

For sites that have implemented domain restrictions, this graph shows all vNICs in the Domain, separately, and all vNICs not in the Domain grouped together as one object on all three graphs (average column, pie, and total line charts).

vNIC Details Page

To view further details about a particular vNIC, double-click on that vNIC to display the vNIC Details page, which shows the servers' ingress and egress throughput for that vNIC, as shown in Figure 33.

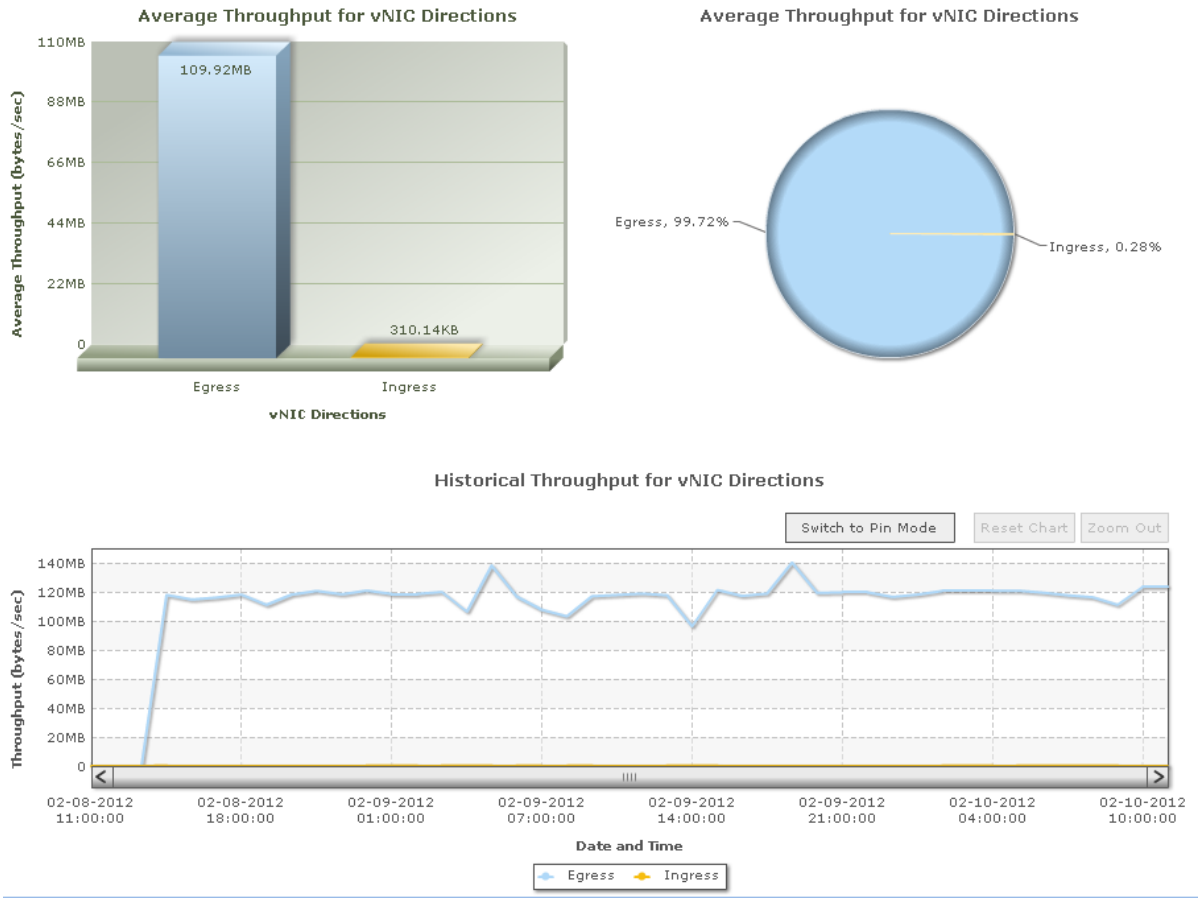

Figure 33 vNIC Details

Average Throughput for Storage Clouds

There are two ways to view details about a Storage Cloud:

- by selecting that Cloud (or multiple clouds) from the dropdown
- choosing (by clicking on) the Storage Cloud or Clouds in the All Storage Clouds graph and clicking the ***View Storage Cloud Details*** button.

The Average Throughput for Storage Clouds window is displayed as shown in Figure 34. If you selected multiple servers, the bread crumb contains *Overview ->Storage_Cloud->Selected Storage_clouds*.

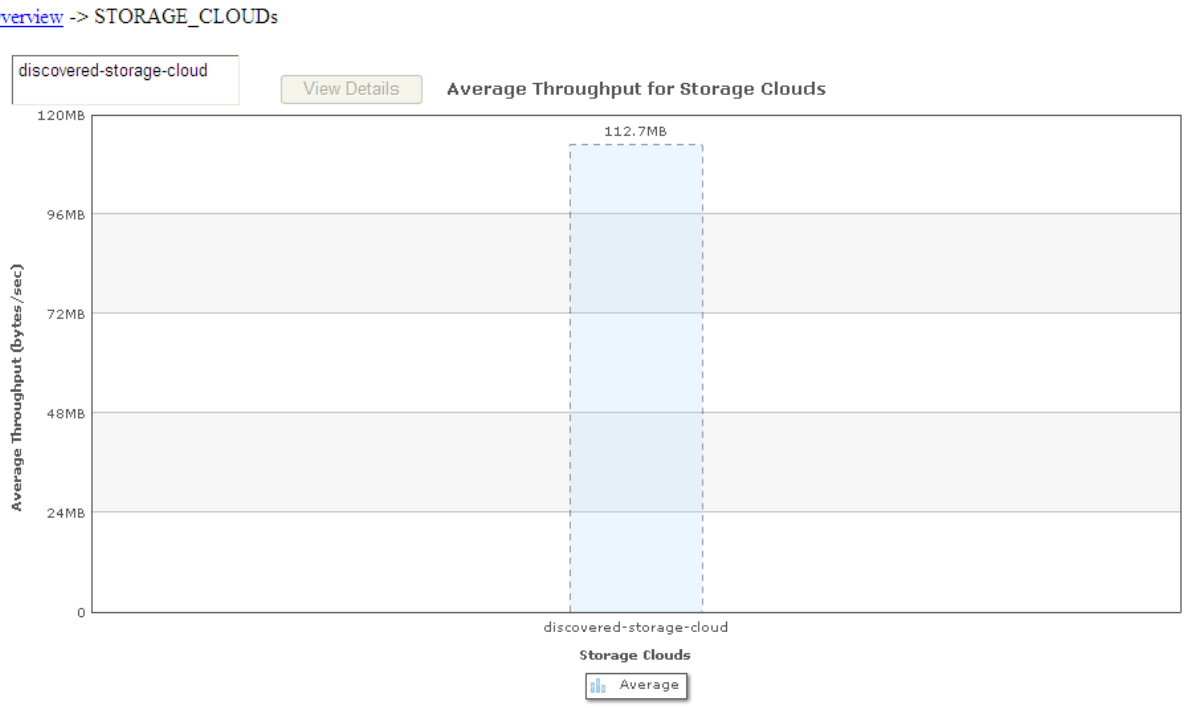

Figure 34 Average Throughput for Storage Clouds

You can choose to view the average throughput for Storage Clouds for several different date ranges including the last hour, day, week, month, three months, and year by choosing that range from the dropdown shown in Figure 35.

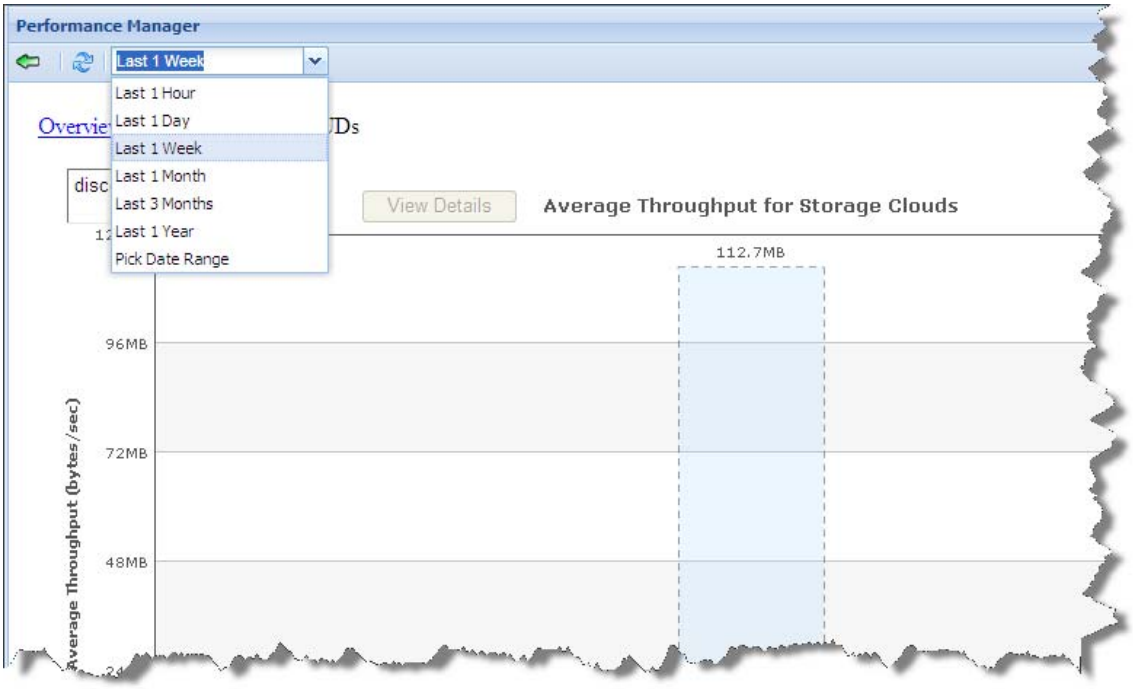

Figure 35 Average Throughput for Storage Clouds—Options

If you want specify a date range, choose the last option, *Pick Date Range*, and choose a start date and time and an end date and time from the ***Start*** and ***End*** dropdowns as shown in Figure 36.

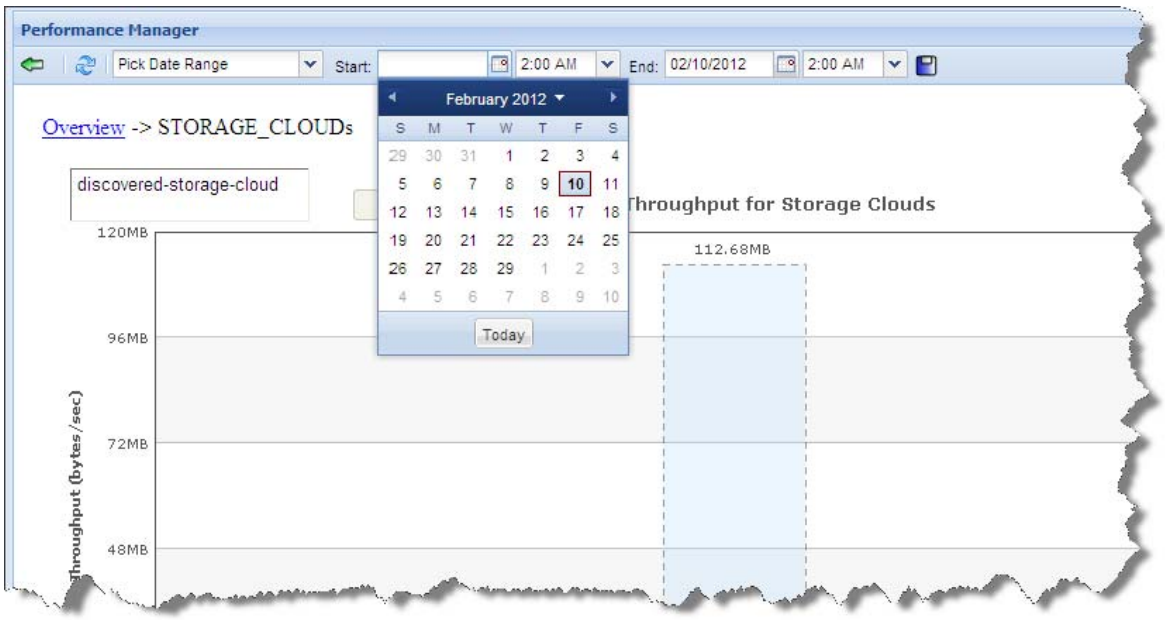

Figure 36 Average Throughput for Storage Clouds—Choosing a Date Range

Domain-restricted Average Throughput for Storage Clouds

For sites that have implemented Domain restrictions, this graph shows all virtual resources belonging to the current Domain and groups all virtual resources not in the Domain as one big virtual resource called *all Vstar Not in Domain*.

Storage Cloud Details

You can view details about a Storage Cloud by selecting that Cloud from the dropdown list and clicking the ***View Details*** button. This window provides the Average Throughput for vHBAs and Historical Throughput for vHBAs belonging to the selected Cloud(s) for the specified time frame as shown in Figure 37.

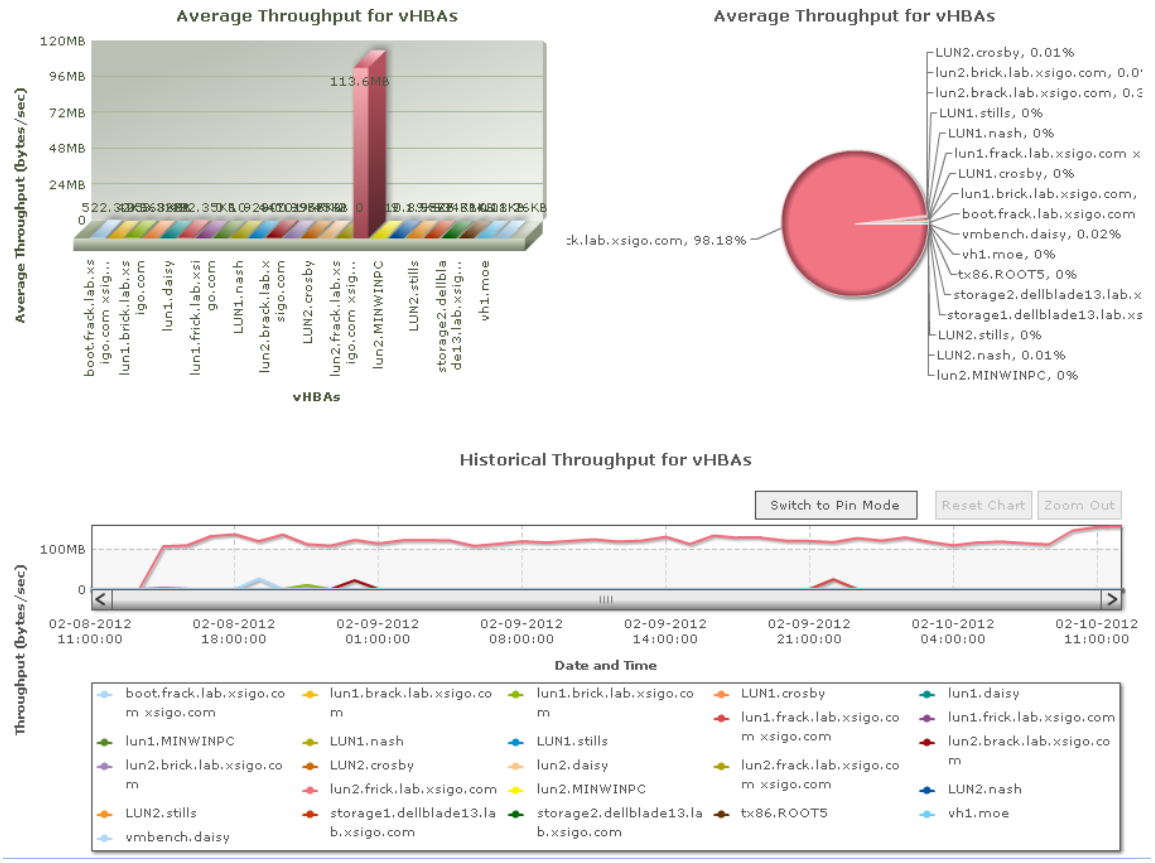

Figure 37 Storage Cloud Details

Domain-restricted Storage Cloud Details

For sites that have implemented domain restrictions, this graph shows all vHBAs in the Domain, separately, and all vHBAs not in the Domain grouped together as one object on all three graphs (average column, pie, and total line charts).

vHBA Details

To view further details about a particular vHBA, double-click on that vHBA to display the vHBA Details page, which shows the servers' ingress and egress throughput for the vHBA on the Virtual Resource Detail page, as shown in Figure 38.

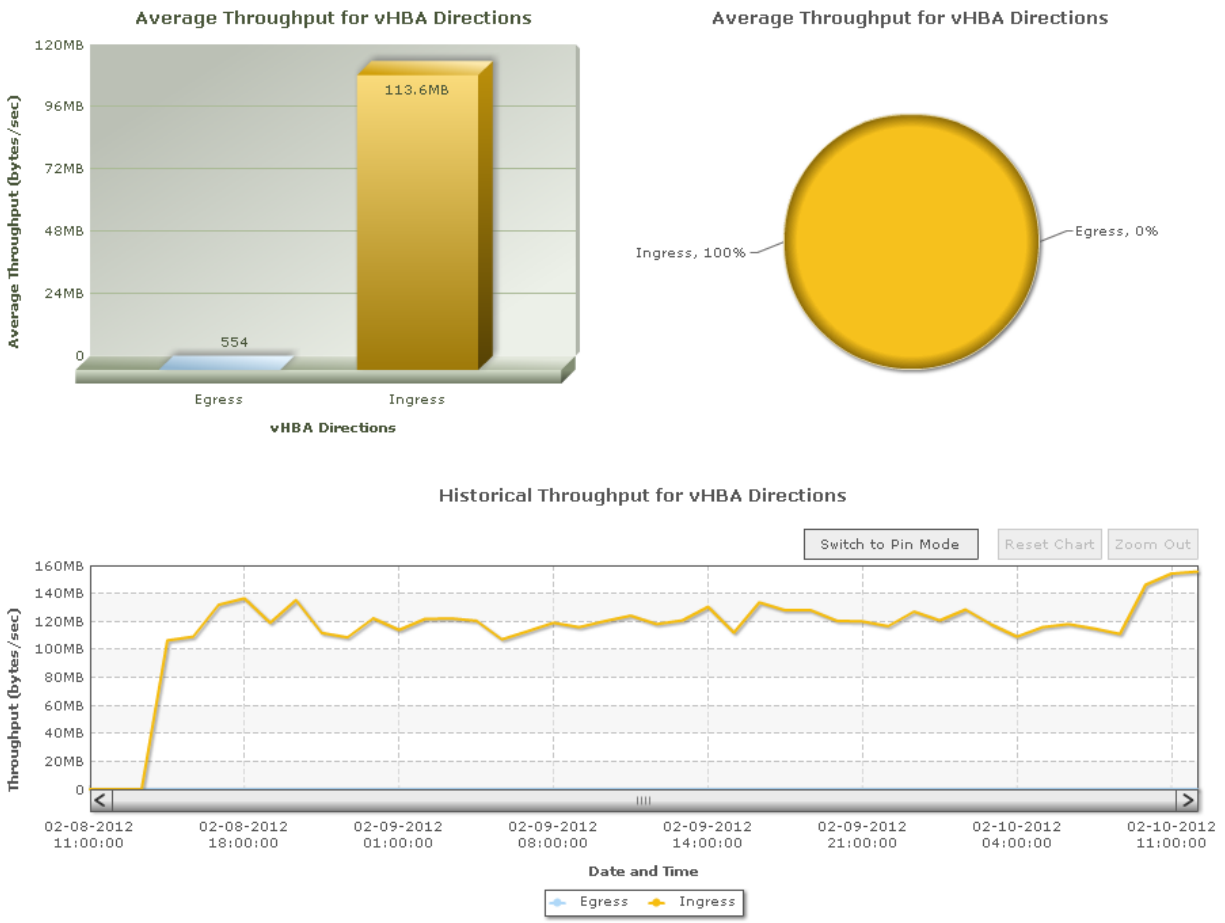

Figure 38 vHBA Details Page

Table 1 provides a glossary of terms used in this document.

Table 1 Terms and Definitions

Term	Definition
Bread crumbs	As you drill further in to the charts to view data at a more granular level, Fabric Performance Monitoring displays your drill-down level location using bread crumbs so that you can easily get back to data that you have previously displayed.
Domain-restricted	A Performance Monitoring feature that enables administrators to restrict which performance statistics appear for a user. If a user is part of a Non-Default Domain, that user can only see the statistics for resources defined for that Domain.
I/O Module	Hot-swappable module that provides connectivity to traditional Ethernet and Fibre Channel infrastructures, putting traffic from vNICs and vHBAs on the wire.
Initial Configuration Wizard	Step-by-step process for configuring the Fabric Director and its services, presented at first logon when at factory defaults.
Pin Mode	A feature of Adobe Fusion Charts (used to implement the charts in Fabric Performance Monitoring) that allows you to select a portion of a chart to compare the pinned segment of the chart with the rest of the chart by scrolling and dragging the pinned segment to any part of the graph.
Server Profile	Container for the virtual I/O configuration of a physical server, including (but not limited to) vNICs, vHBAs, PXE and SAN boot properties, and phone-home configuration.
vHBA	Virtual HBA. An instance of a host bus adapter presented to a physical server, configured within a server profile.
vNIC	Virtual NIC. An instance of a network interface presented to a physical server, configured within a server profile.
XgOS	The operating system that runs on Oracle Fabric Directors.
Zoom Mode	A feature of Adobe Fusion Charts that enables you to zoom in to the chart to view the data more granularity.

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