vizioncore

vFoglight™

formerly vCharter Pro™

Cartridge for VMware Reference Guide

DELL

© 2008 Vizioncore, Inc. ALL RIGHTS RESERVED.

This guide contains proprietary information protected by copyright. The software described in this guide is furnished under a software license or nondisclosure agreement. This software may be used or copied only in accordance with the terms of the applicable agreement. No part of this guide may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording for any purpose other than the purchaser's personal use without the written permission of Vizioncore, Inc.

If you have any questions regarding your potential use of this material, contact:
Vizioncore, Inc
975 Weiland Ave
Buffalo Grove, IL 60089
www.vizioncore.com
email: info@vizioncore.com

Refer to our Web site for regional and international office information.

Trademarks

Vizioncore, the Vizioncore logo, and vFoglight are trademarks and registered trademarks of Vizioncore, Inc in the United States of America and other countries. Other trademarks and registered trademarks used in this guide are property of their respective owners.

Third Party Contributions

For a list of third-party components and licenses, see Appendix: License Credits.

Disclaimer

The information in this document is provided in connection with Vizioncore products. No license, express or implied, by estoppel or otherwise, to any intellectual property right is granted by this document or in connection with the sale of Vizioncore products. EXCEPT AS SET FORTH IN VIZIONCORE'S TERMS AND CONDITIONS AS SPECIFIED IN THE LICENSE AGREEMENT FOR THIS PRODUCT, VIZIONCORE ASSUMES NO LIABILITY WHATSOEVER AND DISCLAIMS ANY EXPRESS, IMPLIED OR STATUTORY WARRANTY RELATING TO ITS PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. IN NO EVENT SHALL VIZIONCORE BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL OR INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION OR LOSS OF INFORMATION) ARISING OUT OF THE USE OR INABILITY TO USE THIS DOCUMENT, EVEN IF VIZIONCORE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Vizioncore makes no representations or warranties with respect to the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Vizioncore does not make any commitment to update the information contained in this document.

Cartridge for VMware Reference Guide
September 2008
Cartridge Version 5.2.1

Table of Contents

Introduction to this Guide 7
About vFoglight 8
About this Guide 8
vFoglight Documentation Suite 8
Core Documentation Set 9
Feedback on the Documentation 10
Text Conventions 10
About Vizioncore Inc. 11

Contacting Dell 12

vFoglight Rules 25
Overview of Rules 26
Thresholds 27
Agent Rules 27
VMW Agent Data Updates 27
VMW Agent Messages 28
VMW Agent Updates 29
Cluster Rules 30
VMW Cluster CPU Utilization 30
VMW Cluster Disk IO 31
VMW Cluster Memory Utilization 32
VMW Cluster Network IO 33
VMW Cluster Percent Ready 35
VMW Cluster Redundancy Verification 36
Datacenter Rules 37
VMW Datacenter CPU Utilization 38

VMW Datacenter Disk IO ... 39
VMW Datacenter Memory Utilization ... 40
VMW Datacenter Network IO ... 41
VMW Datacenter Percent Ready ... 42
Datastore Rule ... 43
VMW Datastore Estimated Fill Time ... 43
Resource Pool Rules ... 44
VMW Resource Pool CPU Utilization ... 44
VMW Resource Pool Disk IO ... 46
VMW Resource Pool Memory Utilization ... 47
VMW Resource Pool Network IO ... 48
VMW Resource Pool Percent Ready ... 49
ESX Server Rules ... 51
VMW ESX Server Balloon Memory Deflation ... 52
VMW ESX Server CPU 0 High Utilization ... 53
VMW ESX Server CPU Utilization ... 54
VMW ESX Server Disconnected ... 55
VMW ESX Server Disk IO ... 56
VMW ESX Server Heap Free Memory ... 57
VMW ESX Server Memory Utilization ... 58
VMW ESX Server Memory Utilization Upward Trend ... 59
VMW ESX Server Network IO ... 60
VMW ESX Server Consumed Vs. Granted Memory ... 61
VirtualCenter Rules ... 63
VMW VirtualCenter CPU Utilization ... 63
VMW VirtualCenter Disk IO ... 64
VMW VirtualCenter Memory Utilization ... 65
VMW VirtualCenter Network IO ... 66
VMW VirtualCenter Percent Ready ... 67
Virtual Machine Rules ... 69
VMW Virtual Machine Active Vs. Granted Memory ... 70
VMW Virtual Machine Balloon Memory Deflation ... 71
VMW Virtual Machine Balloon Memory Target ... 72
VMW Virtual Machine Consumed Vs. Granted Memory ... 73
VMW Virtual Machine CPU Utilization ... 74

VMW Virtual Machine Disk Command Aborts 76
VMW Virtual Machine Disk IO 77
VMW Virtual Machine Logical Drive Estimated Fill Time 78
VMW Virtual Machine Memory Allocation Versus Limit 79
VMW Virtual Machine Memory Swapping 80
VMW Virtual Machine Memory Utilization 81
VMW Virtual Machine Network IO 82
VMW Virtual Machine Power State Change 83
VMW Virtual Machine VMware Tools 84
VMW Virtual Machine Zero Page Memory Detection 85

vFoglight Views 87
Overview of Views 88
Virtual Infrastructure View 89
At A Glance View 90
vmExplorer Primary View 91
Summary View 92
Utilizations Views 93
Resource Pools Relationship Tree View 94
Related Objects Views 95
Actions Panel 97
Navigation View 98
Infrastructure Overview 99
VirtualCenter Messages View 100
Agents View 101
Alarms Overview 102
Alarms List View 103
Report Templates View 104
Scheduled Reports View 105
Generated Reports View 106

Index 107

Introduction to this Guide

This chapter provides information about what is contained in the *vFoglight Cartridge for VMware Reference Guide*. It also provides information about the vFoglight documentation suite and Vizioncore Software.

This chapter contains the following sections:

About vFoglight....8
About this Guide....8
vFoglight Documentation Suite....8
Text Conventions....10
About Vizioncore Inc....11

About vFoglight

vFoglight is an application management solution that reduces or eliminates service disruptions to unify IT and the business. Unlike other solutions, it provides a correlated, 360 degree view of your applications from end user to database and from service levels to infrastructure—to source the root cause of every incident impacting your business and fix them quickly. vFoglight correlates data from multiple perspectives into a single version of the truth to provide deep insight into the service relationships that exist between end users, the business and infrastructure components. Its unique adaptive technology rapidly adjusts to change for improved application performance and service levels, reduced operational cost and risk, and enhanced visibility for all stakeholders.

About this Guide

vFoglight ships with predefined rules and views that help you monitor your virtual infrastructure. The *vFoglight Cartridge for VMware Reference Guide* lists those rules and views, and provides a definition for each.

This guide is intended for any user who wants to learn more about any vFoglight rule or view.

This *Cartridge for VMware Reference Guide* is organized as follows:

Chapter 1, vFoglight Rules — Lists and describes the predefined rules included with vFoglight.

Chapter 2, vFoglight Views — Lists and describes the predefined views included with vFoglight

vFoglight Documentation Suite

The vFoglight documentation suite is made up of the core documentation set plus the documentation set for each vFoglight cartridge that you deploy. Documentation is provided in a combination of online help, PDF, and HTML.

- **Online Help:** You can open online help by selecting the Help tab in the action panel.
- **PDF:** The *Getting Started Guide, What's New Guide, System Requirements and Platform Support Guide, Installation and Setup Guide* set, *Administration and*

Configuration Guide, *vFoglight User Guide*, *Command-Line Reference Guide*, *Transition Guide*, *Web Component Guide*, and *Web Component Tutorial*, are provided as PDF files. In addition, the cartridges ship with PDF guides. The PDF guides are installed in the *docs* directory of your vFoglight installation directory. Adobe® Reader® is required.

- **HTML:** Release Notes are provided in HTML.

Core Documentation Set

The core documentation set consists of the following:

- *Release Notes* (HTML)
- *Getting Started Guide* (PDF)
- *What's New Guide* (PDF)
- *System Requirements and Platform Support Guide* (PDF)
- *Installation and Setup Guide* set (all in PDF format):
  - Installation and Setup Guide — *Installing on Windows with an Embedded MySQL Database*
  - Installation and Setup Guide — *Installing on Windows with an External MySQL Database*
  - Installation and Setup Guide — *Installing on Windows with an External Oracle Database*
  - Installation and Setup Guide — *Installing on a UNIX System with an Embedded MySQL Database*
  - Installation and Setup Guide — *Installing on a UNIX System with an External MySQL Database*
  - Installation and Setup Guide — *Installing on a UNIX System with an External Oracle Database*
- *Administration and Configuration Guide* (PDF and online help)
- *vFoglight User Guide* (PDF and online help)
- *Command-Line Reference Guide* (PDF and online help)
- *Transition Guide* (PDF)
- *Web Component Guide* (PDF and online help)
- *Web Component Tutorial* (PDF and online help)

- *Web Component Reference* (online help)

When you deploy vFoglight, the documentation set gets installed along with the other vFoglight files. The online help is integrated automatically with the help for vFoglight. When you open the help, the vFoglight name is displayed in a top level entry within the table of contents.

Feedback on the Documentation

We are interested in receiving feedback from you about our documentation. For example, did you notice any errors in the documentation? Were any features undocumented? Do you have any suggestions on how we can improve the documentation? All comments are welcome. Please submit your feedback to the following email address:

infor@vizioncore.com

Please do not submit Technical Support related issues to this email address.

Text Conventions

This section outlines an approach for using this guide, reviews the text conventions that are used, and summarizes the rest of the documentation set.

The following table summarizes how text styles are used in this guide:

Convention	Description
`Code`	Monospace text represents code, code objects, and command-line input. This includes: • Java language source code and examples of file contents • Classes, objects, methods, properties, constants, and events • HTML documents, tags, and attributes
`Variables`	Monospace-plus-italic text represents variable code or command-line objects that are replaced by an actual value or parameter.
Interface	Bold text is used for interface options that you select (such as menu items) as well as keyboard commands.

Convention	Description
Files, components, and documents	Italic text is used to highlight the following items: • Pathnames, file names, and programs • Figure captions • The names of other documents referenced in this guide

About Vizioncore Inc.

Vizioncore was formed in July 2002 as a consulting and software-development company with the mission to create easy-to-use software solutions that performed reliable and repeatable automation of datacenter functions specifically for the Citrix platform. A main corporate goal was to enable business partners to offer solutions that targeted real-world IT issues and provided the best possible installation and automation for their clients' systems.

Vizioncore's solutions have proved successful in organizations from small to mid-sized businesses to large enterprises, in a wide variety of vertical industries, including Financial Services, Government, Healthcare, Manufacturing, and High Tech. Vizioncore, Inc. can be found in offices around the globe and at www.vizioncore.com.

Contacting Dell

Note: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Visit http://support.dell.com.
2. Verify your country or region in the Choose A Country/Region drop-down menu at the bottom of the page.
3. Click Contact Us on the left side of the page.Note: Toll-free numbers are for use within the country for which they are listed.
4. Select the appropriate service or support link based on your need.
5. Choose the method of contacting Dell that is convenient for you.

Country (City) International Access Code Country Code City Code	**Service Type**	**Area Codes,** Local Numbers, and Toll-Free Numbers Web and E-Mail Addresses
Anguilla	Web Address E-Mail Address Technical Support., Customer Service, Sales	www.Dell.com/ai la-techsupport@dell.com toll-free: 800-335-0031
Antigua and Barbuda	Web Address E-Mail Address Technical Support., Customer Service, Sales	www.Dell.com.ag la-techsupport@dell.com 1-800-805-5924
Aomen	Technical Support Dell™ Dimension™, Dell Inspirion™, Dell Optiplex™, Dell Lattitude™, and Dell Precision™Servers and Storage	0800-105 0800-105
Argentina (Buenos Aires) International Access Code: 00 Country Code: 54 City Code: 11	Web Address E-Mail Address for Desktop/ Portable Computers E-Mail Address for Servers and EMC® Storage Products Customer Service Technical Support Technical Support Services Sales	www.dell.com.ar la-techsupport@dell.com la_enterprise@dell.com toll-free: 0-800-444-0730 toll-free: 0-800-444-0733 toll-free: 0-800-444-0724 0-800-444-3355
Aruba	Web Address E-Mail Address Technical Support., Customer Service, Sales	www.Dell.com/aw la-techsupport@dell.com toll-free: 800-1578
Australia (Sydney) International Access Code: 0011 Country Code: 61 City Code: 2	Web Address Contact Dell Web Address Technical Support., Customer Service, Sales	support.ap.dell.com support.ap.dell.com/contactus 13DELL-133355

Austria (Vienna) International Access Code: 900 Country Code: 43 City Code: 1	Web Address	Support.euro.dell.com
	E-Mail Address	Tech_support_central_europe@dell.com
	Home/Small Business Sales	0820 240 530 00
	Home/Small Business Fax	0820 240 530 49
	Home/Small Business Customer Service	0820 240 530 14
	Home/Small Business Support	0820 240 530 17
	Preferred Accounts/Corporate Customer	0820 240 530 16
	Service Preferred Accounts/Corporate Customer	0820 240 530 17
	Switchboard	0820 240 530 00
Bahamas	Web Address	www.dell.com/bs
	E-Mail Address	la-techsupport@dell.com
	Technical Support., Customer Service, Sales	toll-free: 1-866-874-3038
Barbados	Web Address	www.dell.com/bb
	E-Mail Address	la-techsupport@dell.com
	Technical Support., Customer Service, Sales	1-800-534-3142
Belgium (Brussels)	Web Address	Support.euro.dell.com
	General Support	02 481 92 88
	General Support Fax	02 481 92 95
	Customer Service	02 713 15 65
	Corporate Sales	02 481 91 00
	Fax	02 481 91 99
	Switchboard	02 481 91 00
Bolivia	Web Address	www.dell.com/bo
	E-Mail Address	la_techsupport@dell.com
	Technical Support., Customer Service, Sales	toll-free: 800-10-0238
Brazil International Access Code: 00 Country Code: 55 City Code: 51	Web Address	www.dell.com/br
	E-Mail Address	BR_TechSupport@dell.com
	Customer Service and Tech Support	0800 970 3355
	Technical Support Fax	51 2104 5470
	Customer Service Fax	51 2104 5480
	Sales	0800 722 3498
British Virgin Islands	Technical Support, Customer Service, Sales	toll-free: 1-866-278-6820
Brunei Country Code: 673	Technical Support (Penang, Malaysia)	604 633 4966
	Customer Service (Penang, Malaysia)	604 633 4888
	Transaction Sales (Penang, Malaysia)	604 633 4955
Canada (North York, Ontario) International Access Code: 011	Online Order Status Web Address	www.dell.ca/ostatus
	AutoTech (automated Hardware and Warranty Support)	support.ca.dell.com
	Customer Service	toll-free:1-800-247-9362
	Home/Home Office	toll-free:1-800-847-4096
	Small Business	toll-free:1-800-906-3355
	Medium/Large Business, Government, Education	toll-free:1-800-387-5757
	Hardware Warranty Phone Support	
	Computers for Home/Home Office	toll-free:1-800-847-4096
	Computers for Small/Medium/Large Business Government	toll-free:1-800-387-5757
	Printers, Projectors, Televisions, Handheld, Digital	1-877-335-5767
	Jukebox, and Wireless Sales	toll-free:1-800-999-3355
	Home and Home Office Sales	toll-free:1-800-387-5752
	Small Business	toll-free:1-800-387-5755
	Medium/Large Business, Government	1 866 440 3355
	Spare Parts and Extended Service	
Cayman Islands	E-Mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	1-877-262-5415

Chile (Santiago) Country Code: 56 City Code: 2	Web Address E-Mail Address Sales and Customer Support	www.dell.com/cl la-techsupport@dell.com toll-free: 1230-020-4823
China (Xiamen) Country Code: 86 City Code: 592	Technical Support Web Address Technical Support E-Mail Address Customer Service E-Mail Address Technical Support Fax Technical Support – Dimension and Inspiron Technical Support – OptiPlex, Lattitude and Dell Precision Technical Support – Servers and Storage Technical Support – Projectors, PDAs, Switches, Routers, etc Technical Support – Printers Customer Service Customer Service Fax Home and Small Business Preferred Accounts Division Large Corporate Accounts GCP Large Corporate Accounts Key Accounts Large Corporate Accounts North Large Corporate Accounts North Government and Education Large Corporate Accounts East Large Corporate Accounts East Government and Education Large Corporate Accounts Queue Team Large Corporate Accounts South Large Corporate Accounts West Large Corporate Accounts Spare Parts	support.dell.com.cn support.dell.com.cn/email customer_cn@dell.com 592 818 14350 toll-free: 800 858 2969 toll-free: 800 858 0950 toll-free: 800 858 0960 toll-free: 800 858 2920 toll-free: 800 858 2311 toll-free: 800 858 2060 592 818 1308 toll-free: 800 858 2222 toll-free: 800 858 2557 toll-free: 800 858 2055 toll-free: 800 858 2628 toll-free: 800 858 2999 toll-free: 800 858 2955 toll-free: 800 858 2020 toll-free: 800 858 2669 toll-free: 800 858 2572 toll-free: 800 858 2355 toll-free: 800 858 2811 toll-free: 800 858 2621
Columbia	Web Address E-Mail Address Technical Support, Customer Service, Sales	www.dell.com/co la-techsupport@dell.com 01-800-915-4755
Costa Rica	Web Address E-Mail Address Technical Support, Customer Service, Sales	www.dell.com/cr la-techsupport@dell.com 0800-012-0231
Czech Republic (Prague) International Access Code: 00 Country Code: 420	Web Address E-Mail Address Technical Support Customer Service Fax Technical Fax Switchboard	support.euro.dell.com czech_dell@dell.com 22537 2727 22537 2707 22537 2714 22537 2728 22537 2711
Denmark (Copenhagen) International Access Code: 00 Country Code: 45	Web Address Technical Support Customer Service – Relational Home/Small Business Customer Service Switchboard – Relational Switchboard Fax – Relational Switchboard – Home/Small Business Switchboard Fax – Home/Small Business	Support.euro.dell.com 7023 0182 7023 0184 3287 5505 3287 1200 3287 1201 3287 5000 3287 5001
Dominica	Web Address E-Mail Address Technical Support, Customer Service, Sales	www.dell.com/dm la-techsupport@dell.com toll-free: 1-866-278-6821

Dominican Republic	Web Address	www.dell.com/do
	E-Mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	1-800-156-1588
Ecuador	Web Address	www.dell.com/ec
	E-Mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales (Calling from Quito)	toll-free: 999-119-877-655-3355
	Technical Support, Customer Service, Sales (Calling from Guayaquil)	toll-free: 1800-999-119-877-655-3355
El Salvador	Web Address	www.dell.com/sv
	E-Mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	800-6132
Finland (Helsinki) International Access Code: 990 Country Code: 358 City Code: 9	Web Address	support@euro.dell.com
	E-Mail Address	fi_support@dell.com
	Technical Support	0207 533 555
	Customer Service	0207 533 538
	Switchboard	0207 533 533
	Sales under 500 employees	0207 533 540
	Fax	0207 533 530
	Sales over 500 employees	0207 533 533
	Fax	0207 533 530
France (Paris) (Montpellier) International Access Code: 00 Country Code: 33 City Codes: (1) (4)	Web Address	Support.euro.dell.com
	Home and Small Business	
	Technical Support	0825 387 270
	Customer Service	0825 832 833
	Switchboard	0825 004 700
	Switchboard (calls from outside of France)	04 99 75 40 00
	Sales	0825 004 700
	Fax	0825 004 701
	Fax (calls from outside of France)	04 99 75 40 01
	Corporate	
	Technical Support	0825 004 719
	Customer Service	0825 338 339
	Switchboard	55 94 71 00
	Sales	01 55 94 71 00
Germany (Frankfurt) International Access Code: 00 Country Code: 49 City Code: 69	Web Address	support.euro.dell.com
	E-mail Address	tech_support_central_europe@dell.com
	Technical Support	069 9792-7200
	Home/Small Business Customer Service	0180-5-224400
	Global Segment Customer Service	069 9792-7320
	Preferred Accounts Customer Service	069 9792-7320
	Large Accounts Customer Service	069 9792-7320
	Public Accounts Customer Service	069 9792-7320
	Switchboard	069 9792-7000
Greece International Access Code: 00 Country Code: 49	Web Address	Support.euro.dell.com
	Technical Support	00800-44 14 95 18
	Gold Service Technical Support	00800-44 14 00 83
	Switchboard	2108129810
	Gold Service Switchboard	2108129811
	Sales	2108129800
	Fax	2108129812
Grenada	Web Address	www.dell.com/gd
	E-Mail Address	la-techsuppo@dell.com
	Technical Support, Customer Service, Sales	toll-free: 1-866-540-3355

Guatemala	Web Address	www.dell.com/gt
	E-Mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	1-800-999-0136
Guyana	E-Mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	toll-free: 1-877-270-4609
Hong Kong International Access Code: 001 Country Code: 852	Web Address	support.ap.dell.com
	Technical Support E-mail Address	support.dell.com.cn/email
	Technical Support - Dimension and Inspiron	00852-2969 3188
	Technical Support - OptiPlex, Latitude, and Dell Precision	00852-2969 3191
	Technical Support - Servers and Storage	00852-2969 3196
	Technical Support - Projectors, PDAs, Switches, Routers, etc .	00852-3416 0906
	Customer Service	00852-3416 0910
	Large Corporate Accounts	00852-3416 0907
	Global Customer Programs	00852-3416 0908
	Medium Business Division	00852-3416 0912
	Home and Small Business Division	00852-2969 3105
India	Dell Support Website	support.ap.dell.com
	Portable and Desktop Support	
	Desktop Support E-mail Address	india_support_desktop@dell.com
	Portable Support E-mail Address	india_support_notebook@dell.com
	Phone Numbers	080-25068032 or 080-25068034 or your city STD code + 60003355 or toll-free: 1-800-425-8045
	Server Support	
	E-mail Address	india_support_Server@dell.com
	Phone Numbers	080-25068032 or 080-25068034 or your city STD code + 60003355 or toll-free: 1-800-425-8045
	Gold Support Only	
	E-mail Address	eec_ap@dell.com
	Phone Numbers	080-25068033 or your city STD code + 60003355 or toll-free: 1-800-425-9045
	Customer Service	
	Home and Small Business	India_care_HSB@dell.com toll-free : 1800-4254051
	Large Corporate Accounts	India_care_REL@dell.com toll free : 1800-4252067
	Sales	
	Large Corporate Accounts	1600 33 8044
	Home and Small Business	1600 33 8046

Ireland (Cherrywood) International Access Code: 00 Country Code: 353 City Code: 1	Web Address	Support.euro.dell.com
	Technical Support	
	E-mail Address	dell_direct_support@dell.com
	Business computers	1850 543 543
	Home computers	1850 543 543
	At Home Support	1850 200 889
	Sales	
	Home	1850 333 200
	Small Business	1850 664 656
	Medium Business	1850 200 646
	Large Business	1850 200 646
	E-mail Address	Dell_IRL_Outlet@dell.com
	Customer Service	
	Home and Small Business	204 4014
	Business (greater than 200 employees)	1850 200 982
	General	
	Fax/Sales fax	204 0103
	Switchboard	204 4444
	U.K. Customer Service (dealing with U.K.only)	0870 906 0010
	Corporate Customer Service (dial within U.K. only)	0870 907 4499
	U.K. Sales (dial within U.K. only)	0870 907 4000
Italy (Milan) International Access Code: 00 Country Code: 39 City Code: 02	Web Address	Support.euro.dell.com
	Home and Small Business	
	Technical Support	02 577 826 90
	Customer Service	02 696 821 14
	Fax	02 696 821 13
	Switchboard	02 696 821 12
	Corporate	
	Technical Support	02 577 826 90
	Customer Service	02 577 825 55
	Fax	02 575 035 30
	Switchboard	02 577 821
Jamaica	E-mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales (dial from within Jamaica only)	1-800-440-920

Japan (Kawasaki) International Access Code: 001 Country Code: 81 City Code: 44	Web Address	support.jp.dell.com
	Technical Support - Dimension and Inspiron	toll-free: 0120-198-26
	Technical Support outside of Japan - Dimension and Inspiron	81-44-520-1435
	Technical Support - Dell Precision, OptiPlex, and Latitude	toll-free: 0120-198-433
	Technical Support outside of Japan - Dell Precision, OptiPlex, and Latitude	81-44-556-3894
	Technical Support - Dell PowerApp™, Dell PowerEdge™, Dell PowerConnect™, and Dell PowerVault™,	toll-free: 0120-198-498
	Technical Support outside of Japan - PowerApp, PowerEdge, PowerConnect, and PowerVault	81-44-556-4162
	Technical Support - Projectors, PDAs, Printers, Routers	toll-free: 0120-981-690
	Technical Support outside of Japan - Projectors, PDAs, Printers, Routers	81-44-556-3468
	Faxbox Service	044-556-3490
	24-Hour Automated Order Status Service	044-556-3801
	Customer Service	044-556-4240
	Business Sales Division - up to 400 employees	044-556-1465
	Preferred Accounts Division Sales - over 400 employees	044-556-3433
	Public Sales - government agencies, educational institutions, and medical institutions	044-556-5963
	Global Segment Japan	044-556-3469
	Individual User	044-556-1657
	Individual User Online Sales	044-556-2203
	Individual User Real Site Sales	044-556-4649
	Switchboard	044-556-4300
Korea (Seoul) International Access Code: 001 Country Code: 82 City Code: 2	Web Address	Support.ap.dell.com
	Technical Support, Customer Service	toll-free: 080-200-3800
	Technical Support - Dimension, PDA, Electronics, and Accessories	toll-free: 080-200-3801
	Sales	toll-free: 080-200-3600
	Fax	2194-6202
	Switchboard	2194-6000
Latin America	Customer Technical Support (Austin, Texas, U.S.A.)	512 728-4093
	Customer Service (Austin, Texas, U.S.A.)	512 728-3619
	Fax (Technical Support and Customer Service) (Austin, Texas, U.S.A.)	512 728-3883
	Sales (Austin, Texas, U.S.A.)	512 728-4397
	SalesFax (Austin, Texas, U.S.A.)	512 728-4600 or 512 728-3772
Luxemborg International Access Code: 00 Country Code: 352	Web Address	Support.euro.dell.com
	Support	3420808075
	Home/Small Business Sales	+32 (0)2 713 15 96
	Corporate Sales	26 25 77 81
	Customer Service	+32 (0)2 481 91 19
	Fax	26 25 77 82
Macao Country Code: 83	Technical Support	toll-free: 0800 105
	Customer Service (Xiamen, China)	34 160 910
	Transaction Sales (Xiamen, China)	29 693 115

Malaysia (Penang) International Access Code: 00 Country Code: 60 City Code: 4	Web Address	Support.ap.dell.com
	Technical Support - Dell Precision, OptiPlex, and Latitude	toll-free: 1800 880 193
	Technical Support - Dimension, Inspiron, and Electronics and Accessories	toll-free: 1800 881 306
	Technical Support - PowerApp, PowerEdge, PowerConnect, and PowerVault	toll-free: 1800 881 386
	Customer Service	toll-free: 1800 881 306 (option 6)
	Transaction Sales	toll-free: 1800 888 202
	Corporate Sales	toll-free: 1800 888 213
Mexico International Access Code: 00 Country Code: 52	Web Address	www.dell.com/mx
	E-mail Address	la-techsupport@dell.com
	Customer Technical Support	001-877-384-8979 or 001-877-269-3383
	Sales	50-81-8800 or 01-800-888-3355
	Customer Service	001-877-384-8979 or 001-877-269-3383
	Main	50-81-8800 or 01-800-888-3355
Montserrat	E-mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	Toll-free: 1-866-278-6822
Netherlands Antilles Netherlands (Amsterdam) International Access Code: 00 Country Code: 31 City Code: 20	E-mail Address	la-techsupport@dell.com
	Web Address	support.euro.dell.com
	Technical Support	020 674 45 00
	Technical Support Fax	020 674 47 66
	Home/Small Business Customer Service	020 674 42 00
	Relational Customer Service	020 674 43 25
	Home/Small Business Sales	020 674 55 00
	Relational Sales	020 674 50 00
	Home/Small Business Sales Fax	020 674 47 75
	Relational Sales Fax	020 674 47 50
	Switchboard	020 674 50 00
	Switchboard Fax	020 674 47 50
New Zealand International Access Code: 00 Country Code: 64	Web Address	Support.ap.dell.com
	E-mail Address	Support.ap.dell.com/contactus
	Technical Support, Customer Service, Sales	0800 441 567
Nicaragua	Web Address	www.dell.com/ni
	E-mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	001-800-220-1377
Norway (Lysaker) International Access Code: 00 Country Code: 47	Web Address	Support.euro.dell.com
	Technical Support	671 16882
	Relational Customer Service	671 17575
	Home/Small Business Customer Service	231 62298
	Switchboard	671 16800
	Fax Switchboard	671 16865
Panama	Web Address	www.dell.com/pa
	E-mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	011-800-507-1264
Peru	Web Address	www.dell.com/pe
	E-mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	0800-50-669

Poland (Warsaw) International Access Code: 011 Country Code: 48 City Code: 22	Web Address E-mail Address Customer Service Phone Customer Service Sales Customer Service Fax Reception Desk Fax Switchboard	support.euro.dell.com pl_support_tech@dell.com 57 95 700 57 95 999 57 95 999 57 95 806 57 95 998 57 95 999
Portugal International Access Code: 00 Country Code: 351	Web Address Technical Support Customer Service Sales Fax	Support.euro.dell.com 707200149 800 300 413 800-300-410 or 800-300 -411 or 800-300-412 or 21-422-07-10 21-424-01-12
Puerto Rico	Web Address E-mail Address Technical Support, Customer Service, Sales	www.dell.com/pr la-techsupport@dell.com 1-877-537-3355
St. Kitts and Nevis	Web Address E-mail Address Technical Support, Customer Service, Sales	www.dell.com/kn la-techsupport@dell.com toll-free: 1-866-540-3355
St. Lucia	Web Address E-mail Address Technical Support, Customer Service, Sales	www.dell.com/lc la-techsupport@dell.com toll-free: 1-866-464-4352
St. Vincent and the Grenadines	Web Address E-mail Address Technical Support, Customer Service, Sales	www.dell.com/vc la-techsupport@dell.com toll-free: 1-866-464-4353
Singapore International Access Code: 005 Country Code: 65	NOTE: The phone numbers in this section should be called from within Singapore or Malaysia only. Web Address Technical Support - Dimension, Inspiron, and Electronics and Accessories Technical Support - OptiPlex, Latitude, and Dell Precision Technical Support - PowerApp, PowerEdge, PowerConnect, and PowerVault Customer Service Transaction Sales Corporate Sales	 support.ap.dell.com toll-free: 1 800 394 7430 toll-free: 1 800 394 7488 toll-free: 1 800 394 7478 toll-free: 1 800 394 7430 (option 6) toll-free: 1 800 394 7412 toll-free: 1 800 394 7419
Slovakia (Prague) International Access Code: 00 Country Code: 421	Web Address E-mail Address Technical Support Customer Service Fax Tech Fax Switchboard (Sales)	support.euro.dell.com czech_dell@dell.com 02 5441 5727 420 22537 2707 02 5441 8328 02 5441 8328 02 5441 8328 02 5441 7585
South Africa (Johannesburg) International Access Code: 09/091 Country Code: 27 City Code: 11	Web Address E-mail Address Gold Queue Technical Support Customer Service Sales	support.euro.dell.com dell_za_suppor@dell.com 011 709 7713 011 709 7710 011 709 7707 011 709 7700

Spain (Madrid) International Access Code: 00 Country Code: 34 City Code: 91	Web Address	Support.euro.com
	Home and Small Business	
	Technical Support	902 100 130
	Customer Service	902 118 540
	Sales	902 118 541
	Switchboard	902 118 541
	Fax	902 118 539
	Corporate	
	Technical Support	902 100 130
	Customer Service	902 115 236
	Switchboard	91 722 92 00
	Fax	91 722 95 83
Sweden (Upplands Vasby) International Access Code: 00 Country Code: 46 City Code: 8	Web Address	support.euro.dell.com
	Technical Support	08 590 05 199
	Relational Customer Service	08 590 05 642
	Home/Small Business Customer Service	08 587 70 527
	Employee Purchase Program (EPP) Support	020 140 14 44
	Technical Support Fax	08 590 05 594
Switzerland (Geneva) International Access Code: 00 Country Code: 41 City Code: 22	Web Address	Support.euro.dell.com
	E-mail Address	Tech_support_central_Europe@dell.com
	Technical Support – Home and Small Business	0844 811 411
	Technical Support – Corporate	0844 822 844
	Customer Service – Home and Small Business	0848 802 202
	Customer Service – Corporate	0848 821 721
	Fax	022 799 01 90
	Switchboard	022 799 01 01
Taiwan International Access Code: 002 Country Code: 886	Web Address	support.ap.dell.com
	E-mail Address	support.dell.com.cn/email
	Technical Support - OptiPlex, Latitude, Inspiron, Dimension, and Electronics and Accessories	toll-free: 0080 186 1011
	Technical Support - Servers and Storage	toll-free: 0080 160 1256
	Customer Service	toll-free: 0080 160 1250 (option 5)
	Transaction Sales	toll-free: 0080 165 1228
	Corporate Sales	toll-free: 0080 165 1227
Thailand International Access Code: 001 Country Code: 66	Web Address	Support.ap.dell.com
	Technical Support (OptiPlex, Latitude, and Dell Precision)	toll-free: 1800 0060 07
	Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault)	toll-free: 1800 0600 09
	Customer Service	toll-free: 1800 006 007 (option 7)
	Corporate Sales	toll-free: 1800 006 009
	Transaction Sales	toll-free: 1800 006 006
Trinidad/Tobago	Web Address	www.dell.com/tt
	E-mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	toll-free: 1-888-799-5908
Turks and Caicos Islands	Web Address	www.dell.com/tc
	E-mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	toll-free: 1-877-441-4735

U.K.(Bracknell) International Access Code: 00 Country Code: 44 City Code: 1344	Web Address	upport.euro.dell.com
	E-mail Address	dell_direct_support@dell.com
	Customer Service Website	support.euro.dell.com/uk/en/ECare/form/home.asp
	Sales	
	Home and Small Business Sales	0870 907 4000
	Corporate/Public Sector Sales	01344 860 456
	Customer Service	
	Home and Small Business	0870 906 0010
	Corporate	01344 373 185
	Preferred Accounts (500-5000 employees)	0870 906 0010
	Global Accounts	01344 373 186
	Central Government	01344 373 196
	Local Government & Education	01344 373 199
	Health	01344 373 194
	Technical Support	
	Corporate/Preferred Accounts/PCA (1000+ employees)	0870 908 0500
	Other Dell Products	0870 353 0800
	General	
	Home and Small Business Fax	0870 907 4006
Uruguay	Web Address	www.dell.com/uy
	E-mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	toll-free: 000-413-598-2521
U.S.A. (Austin, Texas) International Access Code: 011 Country Code: 1	Automated Order-Status Service	toll-free: 1-800-433-9014
	AutoTech (portable and desktop computers)	toll-free: 1-800-247-9362
	Hardware and Warranty Support (Dell TV, Printers, and Projectors) for Relationship customers	toll-free: 1-877-459-7298
	Consumer (Home and Home Office) Support for Dell products	toll-free: 1-800-624-9896
	Customer Service	toll-free: 1-800-624-9897
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Financial Services Web Address	www.dellfinancialservices.com
	Financial Services (lease/loans)	toll-free: 1-877-577-3355
	Financial Services (Dell Preferred Accounts [DPA])	toll-free: 1-800-283-2210
	Business	
	Customer Service	toll-free: 1-800-624-9897
	Employee Purchase Program (EPP)	toll-free: 1-800-695-8133
	Customer s Support for printers, projectors, PDAs, and MP3 players	toll-free: 1-877-459-7298
	Public (government, education, and healthcare)	
	Customer Service and Support	toll-free: 1-800-456-3355
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Dell Sales	toll-free: 1-800-289-3355 or toll-free: 1-800-879-3355
	Dell Outlet Store (Dell refurbished computers)	toll-free: 1-888-798-7561
	Software and Peripherals Sales	toll-free: 1-800-671-3355
	Spare Parts Sales	toll-free: 1-800-357-3355
	Extended Service and Warranty Sales	toll-free: 1-800-247-4618
	Fax	toll-free: 1-800-727-8320
	Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired	toll-free: 1-877-DELLTTY (1-877-335-5889)

U.S. Virgin Islands	Web Address	www.dell.com/vi
	E-mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	toll-free: 1-877-702-4360
Venezuela	Web Address	www.dell.com/ve
	E-mail Address	la-techsupport@dell.com
	Technical Support, Customer Service, Sales	0800-100-4752

1

vFoglight Rules

The vFoglight Cartridge for VMware includes a number of predefined rules that capture the expert knowledge of our virtualization specialists and are used to monitor the health of your virtual infrastructure. vFoglight allows you to modify these rules or create your own flexible rules that can be applied to complex, interrelated data from multiple sources within your distributed system.

In this chapter, rule descriptions are organized into logical groupings. To see a rule description, select the appropriate grouping from the sections listed below.

This chapter contains the following sections:

Overview of Rules 26
Thresholds 27
Agent Rules 27
Cluster Rules 30
Datacenter Rules 37
Datastore Rule 43
Resource Pool Rules 44
ESX Server Rules 51
VirtualCenter Rules 63
Virtual Machine Rules 69

Overview of Rules

vFoglight allows you to create flexible rules that can be applied to complex, interrelated data from multiple sources within your distributed system. You can associate several different actions with a rule, configure a rule so that it does not fire repeatedly, and associate a rule with schedules to define when it should and should not be evaluated.

Different types of data can be used in rules, including registry variables, raw metrics, derived metrics, and topology object properties.

There are two types of rules in vFoglight: simple rules and multiple-severity rules. A simple rule has a single condition, and can be in one of three states: *Fire*, *Undefined*, or *Normal*. A multiple-severity rule can have up to five severity levels: *Undefined*, *Fatal*, *Critical*, *Warning*, and *Normal*.

Rule conditions are regularly evaluated against monitoring data (metrics and topology object properties collected from your monitored environment and transformed into a standard format). Therefore, the state of the rule can change if the data changes. For example, if a set of monitoring data matches a simple rule's condition, the rule enters the *Fire* state. If the next set does not match the condition, the rule exits the *Fire* state and enters the *Normal* state.

A rule condition is a type of expression that can be true or false. When it evaluates to true, the rule is said to fire, causing any actions that are associated with the rule or severity level to be performed. You can configure a rule to perform one or more actions upon entering or exiting each state. When a multiple-severity rule fires, an alarm also appears in vFoglight.

See "Introduction to Rules" and "Creating and Editing Rules" in the *vFoglight Administration and Configuration Guide* for more information.

Thresholds

Many of the rules listed and described in this chapter have thresholds (standard deviations, utilization percentages, etc.) defined within them. Those thresholds are default values predefined in the registry.

Agent Rules

This section lists and describes the agent rules.

Rules in this section:

- "VMW Agent Data Updates" on page 27
- "VMW Agent Messages" on page 28
- "VMW Agent Updates" on page 29

VMW Agent Data Updates

Purpose

An alarm fires when the agent does not report on data (dataType) in the appropriate amount of time (timeDiffSecs).

Scope

VMWAgentDataUpdate

Rule Definition

Conditions	State	Action
The agent reports on the data in the appropriate amount of time.	Normal	None
The agent does not report on the data in the appropriate amount of time.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- vmAgents Dashboard; see the *vFoglightUser Guide*
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Agent Messages

Purpose

This rule converts agent messages into vFoglight alarms.

Scope

VMWAgent

Rule Definition

Conditions	State	Action
There are no agent messages with a severity value of either 2, 3, or 4.	Normal	None
When there is an agent message with a severity value of 2, an alarm fires displaying the message.	Warning	None
When there is an agent message with a severity value of 3, an alarm fires displaying the message.	Critical	E-mail VMW admin
When there is an agent message with a severity value of 4, an alarm fires displaying the message.	Failure	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- vmAgents Dashboard; see the *vFoglight User Guide*
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Agent Updates

Purpose

An alarm fires when the agent does not report any data in the specified amount of time (timeDiffSecs).

Scope

VMWAgent

Rule Definition

Conditions	State	Action
The agent reports data in the specified amount of time.	Normal	None
The agent does not report any data in the specified amount of time.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- vmAgents Dashboard; see the *vFoglight User Guide*
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

Cluster Rules

This section lists and describes the cluster rules.

Rules in this section:

- "VMW Cluster CPU Utilization" on page 30
- "VMW Cluster Disk IO" on page 31
- "VMW Cluster Memory Utilization" on page 32
- "VMW Cluster Network IO" on page 33
- "VMW Cluster Percent Ready" on page 35
- "VMW Cluster Redundancy Verification" on page 36

VMW Cluster CPU Utilization

Purpose

This rule monitors for spikes, dramatic drops, and sustained high levels in CPU utilization for a cluster.

Scope

VMWCluster

Rule Definition

Conditions	State	Action
The CPU utilization is no more than 2.2 standard deviations (NumSTDevs) from the mean CPU utilization and the CPU utilization is at 75% or less.	Normal	None
The CPU utilization is more than 2.2 but no more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 75% but not greater than 83%.	Warning	None
The CPU utilization is more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 83%.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Cluster Disk IO

Purpose

This rule monitors for spikes and dramatic drops in disk IO for a cluster.

Scope

VMWCluster

Rule Definition

Conditions	State	Action
The disk usage is no more than 2.2 standard deviations (NumSTDevs) from the mean disk usage.	Normal	None
The disk usage is more than 2.2 but no more than 2.8 standard deviations from the mean disk usage.	Warning	None
The disk usage is more than 2.8 standard deviations from the mean disk usage.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89

- “vmExplorer Primary View” on page 91
- “Summary View” on page 92
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Cluster Memory Utilization

Purpose

This rule monitors for spikes and dramatic drops in memory utilization for a cluster.

Scope

VMWCluster

Rule Definition

Conditions	State	Action
The memory utilization is no more than 2.2 standard deviations (NumSTDevs) from the mean memory utilization.	Normal	None
The memory utilization is more than 2.2 but no more than 2.8 standard deviations from the mean memory utilization.	Warning	None
The memory utilization is more than 2.8 standard deviations from the mean memory utilization.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91

- “Summary View” on page 92
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Cluster Network IO

Purpose

This rule monitors for spikes and dramatic drops in network IO for a cluster.

Scope

VMWCluster

Rule Definition

Conditions	State	Action
The network usage is no more than 2.2 standard deviations (NumSTDevs) from the mean network usage.	Normal	None
The network usage is more than 2.2 but no more than 2.8 standard deviations from the mean network usage.	Warning	None
The network usage is more than 2.8 standard deviations from the mean network usage.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92

- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Cluster Percent Ready

Purpose

This rule fires an alarm to report that when a virtual machine within the cluster is requesting CPU cycles from the ESX Server on which it is running, it is not receiving them some percentage of the time. This will impact performance on the virtual machine.

Scope

VMWCluster

Rule Definition

Conditions	State	Action
When the virtual machine requests CPU cycles, it is only not receiving them 2% or less of the time.	Normal	None
When the virtual machine requests CPU cycles, it is not receiving them greater than 2% but no greater than 8% of the time.	Warning	None
When the virtual machine requests CPU cycles, it is not receiving them greater than 8% but no greater than 12% of the time.	Critical	E-mail VMW admin
When the virtual machine requests CPU cycles, it is not receiving them greater than 12% of the time.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99

- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Cluster Redundancy Verification

Purpose

This rule fires an alarm to report that if an ESX Server within the cluster fails, the remaining servers in the cluster may not or do not have enough available CPU and/or memory to handle the increased workload.

Scope

VMWCluster

Rule Definition

Conditions	State	Action
The cluster has sufficient redundant CPU and memory capacity to handle the failure of a single ESX Server.	Normal	None
Although the cluster can handle the failure of a single ESX Server, either the resulting combined CPU utilization or the resulting combined memory utilization on the remaining servers, or both, would be beyond the warning threshold. The resulting alarm message will indicate the values of both of the new combined utilizations.	Warning	None
If an ESX Server within the cluster fails, the remaining servers do not have the capacity to handle the increased workload. The resulting alarm message will indicate the values of both of the new combined utilizations.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91

- “Summary View” on page 92
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

Datacenter Rules

This section lists and describes the datacenter rules.

Rules in this section:

- “VMW Datacenter CPU Utilization” on page 38
- “VMW Datacenter Disk IO” on page 39
- “VMW Datacenter Memory Utilization” on page 40
- “VMW Datacenter Network IO” on page 41
- “VMW Datacenter Percent Ready” on page 42

VMW Datacenter CPU Utilization

Purpose

This rule monitors for spikes, dramatic drops, and sustained high levels in CPU utilization for a datacenter.

Scope

VMWDatacenter

Rule Definition

Conditions	State	Action
The CPU utilization is no more than 2.2 standard deviations (NumSTDevs) from the mean CPU utilization and the CPU utilization is at 90% or less.	Normal	None
The CPU utilization is more than 2.2 but no more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 90% but not greater than 93%.	Warning	None
The CPU utilization is more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 93%.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Datacenter Disk IO

Purpose

This rule monitors for spikes and dramatic drops in disk IO for a datacenter.

Scope

VMWDatacenter

Rule Definition

Conditions	State	Action
The disk usage is no more than 2.2 standard deviations (NumSTDevs) from the mean disk usage.	Normal	None
The disk usage is more than 2.2 but no more than 2.8 standard deviations from the mean disk usage.	Warning	None
The disk usage is more than 2.8 standard deviations from the mean disk usage.	Critical	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Datacenter Memory Utilization

Purpose

This rule monitors for spikes and dramatic drops in memory utilization for a datacenter.

Scope

VMWDatacenter

Rule Definition

Conditions	State	Action
The memory utilization is no more than 2.2 standard deviations (NumSTDevs) from the mean memory utilization.	Normal	None
The memory utilization is more than 2.2 but no more than 2.8 standard deviations from the mean memory utilization.	Warning	None
The memory utilization is more than 2.8 standard deviations from the mean memory utilization.	Critical	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Datacenter Network IO

Purpose

This rule monitors for spikes and dramatic drops in network IO for a datacenter.

Scope

VMWDatacenter

Rule Definition

Conditions	State	Action
The network usage is no more than 2.2 standard deviations (NumSTDevs) from the mean network usage.	Normal	None
The network usage is more than 2.2 but no more than 2.8 standard deviations from the mean network usage.	Warning	None
The network usage is more than 2.8 standard deviations from the mean network usage.	Critical	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Datacenter Percent Ready

Purpose

This rule fires an alarm to report that when a virtual machine within the datacenter is requesting CPU cycles from the ESX Server on which it is running, it is not receiving them some percentage of the time. This will impact performance on the virtual machine.

Scope

VMWDatacenter

Rule Definition

Conditions	State	Action
When the virtual machine requests CPU cycles, it is only not receiving them 2% or less of the time.	Normal	None
When the virtual machine requests CPU cycles, it is not receiving them greater than 2% but no greater than 8% of the time.	Warning	None
When the virtual machine requests CPU cycles, it is not receiving them greater than 8% but no greater than 12% of the time.	Critical	E-mail VMW admin
When the virtual machine requests CPU cycles, it is not receiving them greater than 12% of the time.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99

- "Alarms Overview" on page 102
- "Alarms List View" on page 103

Datastore Rule

This section describes datastore rules.

Rules in this section:

- "VMW Datastore Estimated Fill Time" on page 43

VMW Datastore Estimated Fill Time

Purpose

This rule fires an alarm to report about when the datastore is likely to reach full capacity, based on its present growth rate.

Scope

VMWDatastore

Rule Definition

Conditions	State	Action
At the present growth rate, the datastore will not reach its capacity within the next month (within the next 672 hours).	Normal	None
At the present growth rate, the datastore will reach its capacity within the next month (within the next 672 hours).	Warning	None
At the present growth rate, the datastore will reach its capacity within the next week (within the next 168 hours).	Critical	E-mail VMW admin
At the present growth rate, the datastore will reach its capacity within the next 48 hours.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

Resource Pool Rules

This section lists and describes the resource pool rules.

Rules in this section:

- “VMW Resource Pool CPU Utilization” on page 44
- “VMW Resource Pool Disk IO” on page 46
- “VMW Resource Pool Memory Utilization” on page 47
- “VMW Resource Pool Network IO” on page 48
- “VMW Resource Pool Percent Ready” on page 49

VMW Resource Pool CPU Utilization

Purpose

This rule monitors for spikes, dramatic drops, and sustained high levels in CPU utilization for a resource pool.

Scope

VMWResourcePool

Rule Definition

Conditions	State	Action
The CPU utilization is no more than 2.2 standard deviations (NumSTDevs) from the mean CPU utilization and the CPU utilization is at 75% or less.	Normal	None

Rule Definition

The CPU utilization is more than 2.2 but no more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 75% but not greater than 83%.	Warning	None
The CPU utilization is more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 83%.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Resource Pools Relationship Tree View" on page 94
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99

- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Resource Pool Disk IO

Purpose

This rule monitors for spikes and dramatic drops in disk IO for a resource pool.

Scope

VMWResourcePool

Rule Definition

Conditions	State	Action
The disk usage is no more than 2.2 standard deviations (NumSTDevs) from the mean disk usage.	Normal	None
The disk usage is more than 2.2 but no more than 2.8 standard deviations from the mean disk usage.	Warning	None
The disk usage is more than 2.8 standard deviations from the mean disk usage.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92
- “Resource Pools Relationship Tree View” on page 94
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102

- “Alarms List View” on page 103

VMW Resource Pool Memory Utilization

Purpose

This rule monitors for spikes and dramatic drops in memory utilization for a resource pool.

Scope

VMWResourcePool

Rule Definition

Conditions	State	Action
The memory utilization is no more than 2.2 standard deviations (NumSTDevs) from the mean memory utilization.	Normal	None
The memory utilization is more than 2.2 but no more than 2.8 standard deviations from the mean memory utilization.	Warning	None
The memory utilization is more than 2.8 standard deviations from the mean memory utilization.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92
- “Resource Pools Relationship Tree View” on page 94
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99

- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Resource Pool Network IO

Purpose

This rule monitors for spikes and dramatic drops in network IO for a resource pool.

Scope

VMWResourcePool

Rule Definition

Conditions	State	Action
The network usage is no more than 2.2 standard deviations (NumSTDevs) from the mean network usage.	Normal	None
The network usage is more than 2.2 but no more than 2.8 standard deviations from the mean network usage.	Warning	None
The network usage is more than 2.8 standard deviations from the mean network usage.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92
- “Resource Pools Relationship Tree View” on page 94
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99

- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Resource Pool Percent Ready

Purpose

This rule fires an alarm to report that when a virtual machine within the resource pool is requesting CPU cycles from the ESX Server on which it is running, it is not receiving them some percentage of the time. This will impact performance on the virtual machine.

Scope

VMWResourcePool

Rule Definition

Conditions	State	Action
When the virtual machine requests CPU cycles, it is only not receiving them 2% or less of the time.	Normal	None
When the virtual machine requests CPU cycles, it is not receiving them greater than 2% but no greater than 8% of the time.	Warning	None
When the virtual machine requests CPU cycles, it is not receiving them greater than 8% but no greater than 12% of the time.	Critical	E-mail VMW admin
When the virtual machine requests CPU cycles, it is not receiving them greater than 12% of the time.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92
- “Resource Pools Relationship Tree View” on page 94
- “Related Objects Views” on page 95

- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

ESX Server Rules

This section lists and describes the ESX Server rules.

Rules in this section:

- "VMW ESX Server Balloon Memory Deflation" on page 52
- "VMW ESX Server CPU 0 High Utilization" on page 53
- "VMW ESX Server CPU Utilization" on page 54
- "VMW ESX Server Disconnected" on page 55
- "VMW ESX Server Disk IO" on page 56
- "VMW ESX Server Heap Free Memory" on page 57
- "VMW ESX Server Memory Utilization" on page 58
- "VMW ESX Server Memory Utilization Upward Trend" on page 59
- "VMW ESX Server Network IO" on page 60
- "VMW ESX Server Consumed Vs. Granted Memory" on page 61

VMW ESX Server Balloon Memory Deflation

Purpose

This rule monitors for servers working excessively to reclaim memory. To better balance memory utilization across servers within a cluster, you can add more physical resources to a server or you can use VMotion to move a virtual machine from one server to another.

Scope

VMWESXServerMemory

Rule Definition

Conditions	State	Action
The balloon has not been growing excessively and is deflating normally.	Normal	None
The balloon has reached 20% of the server's memory over the course of the last 90 minutes and has failed to deflate to less than 5% over the last 15 minutes.	Warning	None
The balloon has reached 20% of the server's memory over the course of the last 90 minutes and has failed to deflate to less than 12% over the last 15 minutes.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW ESX Server CPU 0 High Utilization

Purpose

This rule monitors for situations in which an incomplete SOAP message sent to the Web services API results in a dramatic increase in CPU usage on CPU 0 within an ESX Server or VirtualCenter.

Scope

VMWESXServerProcessor

Rule Definition

Conditions	State	Action
The CPU usage on CPU 0 is not greater than 95%.	Normal	None
The CPU usage on CPU 0 is greater than 95%.	Fatal	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW ESX Server CPU Utilization

Purpose

This rule monitors for spikes, dramatic drops, and sustained high levels in CPU utilization for an ESX Server.

Scope

VMWESXServerCPUs

Rule Definition

Conditions	State	Action
The CPU utilization is no more than 2.2 standard deviations from the mean CPU utilization and the CPU utilization is at 90% or less.	Normal	None
The CPU utilization is more than 2.2 but no more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 90% but not greater than 93%.	Warning	None
The CPU utilization is more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 93%.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW ESX Server Disconnected

Purpose

This rule checks for a loss of connectivity between the VirtualCenter and an ESX Server that had virtual machines running on it.

Scope

VMWESXServer

Rule Definition

Conditions	State	Action
The ESX Server, which has virtual machines running on it, is currently connected to the VirtualCenter.	Normal	None
The ESX Server, which had virtual machines running on it, is no longer connected to the VirtualCenter.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW ESX Server Disk IO

Purpose

This rule monitors for spikes and drops in disk IO for an ESX Server.

Scope

VMWESXServerStorage

Rule Definition

Conditions	State	Action
The disk usage is no more than 2.2 standard deviations (NumSTDevs) from the mean disk usage.	Normal	None
The disk usage is more than 2.2 but no more than 2.8 standard deviations from the mean disk usage.	Warning	None
The disk usage is more than 2.8 standard deviations from the mean disk usage.	Critical	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW ESX Server Heap Free Memory

Purpose

This rule monitors heap memory in the vmkernal and fires an alarm when the heap memory for a particular ESX Server drops below a predefined amount.

If the amount of heap memory in the vmkernal for a particular ESX Server drops to the critical level, you may want to add more physical memory to the server or use VMotion to better balance memory utilization across servers within the cluster.

Scope

VMWESXServerMemory

Rule Definition

Conditions	State	Action
The amount of free memory in the vmkernal for the ESX Server is 10,240 KB or more.	Normal	None
The amount of free memory in the vmkernal for the ESX Server is less than 10,240 KB but not less than 6,144 KB.	Critical	E-mail VMW admin
The amount of free memory in the vmkernal for the ESX Server is less than 6,144 KB.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW ESX Server Memory Utilization

Purpose

This rule monitors for spikes and dramatic drops in memory utilization for an ESX Server.

Scope

VMWESXServerMemory

Rule Definition

Conditions	State	Action
The memory utilization is no more than 2.2 standard deviations (NumSTDevs) from the mean memory utilization.	Normal	None
The memory utilization is more than 2.2 but no more than 2.8 standard deviations from the mean memory utilization.	Warning	None
The memory utilization is more than 2.8 standard deviations from the mean memory utilization.	Critical	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW ESX Server Memory Utilization Upward Trend

Purpose

This rule monitors for upward trends in memory utilization for an ESX Server.

Scope

VMWESXServerMemory

Rule Definition

Conditions	State	Action
Over the last ten minutes the mean memory has not increased (relative to the historical mean memory) by any more than 1%.	Normal	None
Over the last ten minutes the mean memory has increased (relative to the historical mean memory) by more than 1% but not by more than 2%.	Warning	None
Over the last ten minutes the mean memory has increased (relative to the historical mean memory) by more than 2% but not by more than 3%.	Critical	None
Over the last ten minutes the mean memory has increased (relative to the historical mean memory) by more than 3%.	Fatal	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99

- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW ESX Server Network IO

Purpose

This rule monitors for spikes and dramatic drops in network IO for an ESX Server.

Scope

VMWESXServerNetwork

Rule Definition

Conditions	State	Action
The network usage is no more than 2.2 standard deviations (NumSTDevs) from the mean network usage.	Normal	None
The network usage is more than 2.2 but no more than 2.8 standard deviations from the mean network usage.	Warning	None
The network usage is more than 2.8 standard deviations from the mean network usage.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102

- “Alarms List View” on page 103

VMW ESX Server Consumed Vs. Granted Memory

Purpose

This rule compares the amount of memory that is being requested by the virtual machines on an ESX Server to the amount of memory available on the the ESX Server.

If the application workload of the ESX Server is requesting an excessive amount of the available memory resources, you must either add memory to the ESX Server or use VMotion to better balance the virtual machines across the servers within the cluster.

Scope

VMWESXServerMemory

Rule Definition

Conditions	State	Action
The virtual machines on the server are requesting just 75% or less of the memory the server has available.	Normal	None
The virtual machines on the server are requesting more than 75% but no more than 83% of the memory the server has available.	Warning	None
The virtual machines on the server are requesting more than 83% but no more than 90% of the memory the server has available.	Critical	E-mail VMW admin
The virtual machines on the server are requesting more than 90% of the memory the server has available.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92

- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VirtualCenter Rules

This section lists and describes the VirtualCenter rules.

Rules in this section:

- "VMW VirtualCenter CPU Utilization" on page 63
- "VMW VirtualCenter Disk IO" on page 64
- "VMW VirtualCenter Memory Utilization" on page 65
- "VMW VirtualCenter Network IO" on page 66
- "VMW VirtualCenter Percent Ready" on page 67

VMW VirtualCenter CPU Utilization

Purpose

This rule monitors for spikes, dramatic drops, and sustained high levels in CPU utilization for a VirtualCenter.

Scope

VMWVirtualCenter

Rule Definition

Conditions	State	Action
The CPU utilization is no more than 2.2 standard deviations (NumSTDevs) from the mean CPU utilization and the CPU utilization is at 90% or less.	Normal	None
The CPU utilization is more than 2.2 but no more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 90% but not greater than 93%.	Warning	None
The CPU utilization is more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 93%.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “VirtualCenter Messages View” on page 100
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW VirtualCenter Disk IO

Purpose

This rule monitors for spikes and dramatic drops in disk IO for a VirtualCenter.

Scope

VMWVirtualCenter

Rule Definition

Conditions	State	Action
The disk usage is no more than 2.2 standard deviations (NumSTDevs) from the mean disk usage.	Normal	None
The disk usage is more than 2.2 but no more than 2.8 standard deviations from the mean disk usage.	Warning	None
The disk usage is more than 2.8 standard deviations from the mean disk usage.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91

- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “VirtualCenter Messages View” on page 100
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW VirtualCenter Memory Utilization

Purpose

This rule monitors for spikes and dramatic drops in memory utilization for a VirtualCenter.

Scope

VMWVirtualCenter

Rule Definition

Conditions	State	Action
The memory utilization is no more than 2.2 standard deviations (NumSTDevs) from the mean memory utilization.	Normal	None
The memory utilization is more than 2.2 but no more than 2.8 standard deviations from the mean memory utilization.	Warning	None
The memory utilization is more than 2.8 standard deviations from the mean memory utilization.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Related Objects Views” on page 95

- “Actions Panel” on page 97
- “Navigation View” on page 98
- “VirtualCenter Messages View” on page 100
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW VirtualCenter Network IO

Purpose

This rule monitors for spikes and dramatic drops in network IO for a VirtualCenter.

Scope

VMWVirtualCenter

Rule Definition

Conditions	State	Action
The network usage is no more than 2.2 standard deviations (NumSTDevs) from the mean network usage.	Normal	None
The network usage is more than 2.2 but no more than 2.8 standard deviations from the mean network usage.	Warning	None
The network usage is more than 2.8 standard deviations from the mean network usage.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98

- “VirtualCenter Messages View” on page 100
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW VirtualCenter Percent Ready

Purpose

This rule fires an alarm to report that when a virtual machine within the VirtualCenter is requesting CPU cycles from the ESX Server on which it is running, it is not receiving them some percentage of the time. This will impact performance on the virtual machine.

Scope

VMWVirtualCenter

Rule Definition

Conditions	State	Action
When the virtual machine requests CPU cycles, it is only not receiving them 2% or less of the time.	Normal	None
When the virtual machine requests CPU cycles, it is not receiving them greater than 2% but no greater than 8% of the time.	Warning	None
When the virtual machine requests CPU cycles, it is not receiving them greater than 8% but no greater than 12% of the time.	Critical	E-mail VMW admin
When the virtual machine requests CPU cycles, it is not receiving them greater than 12% of the time.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Related Objects Views” on page 95
- “Actions Panel” on page 97

- “Navigation View” on page 98
- “VirtualCenter Messages View” on page 100
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

Virtual Machine Rules

This section lists and describes the virtual machine rules.

Rules in this section:

- "VMW Virtual Machine Active Vs. Granted Memory" on page 70
- "VMW Virtual Machine Balloon Memory Deflation" on page 71
- "VMW Virtual Machine Balloon Memory Target" on page 72
- "VMW Virtual Machine Consumed Vs. Granted Memory" on page 73
- "VMW Virtual Machine CPU Utilization" on page 74
- "VMW Virtual Machine Disk Command Aborts" on page 76
- "VMW Virtual Machine Disk IO" on page 77
- "VMW Virtual Machine Logical Drive Estimated Fill Time" on page 78
- "VMW Virtual Machine Memory Allocation Versus Limit" on page 79
- "VMW Virtual Machine Memory Swapping" on page 80
- "VMW Virtual Machine Memory Utilization" on page 81
- "VMW Virtual Machine Network IO" on page 82
- "VMW Virtual Machine Power State Change" on page 83
- "VMW Virtual Machine VMware Tools" on page 84
- "VMW Virtual Machine Zero Page Memory Detection" on page 85

VMW Virtual Machine Active Vs. Granted Memory

Purpose

This rule compares the amount of physical memory that is actively being used by the virtual machine to the amount of memory granted to the virtual machine by the vmkernal.

If active memory approaches the granted memory value in the virtual machine's configuration, you should consider increasing the granted memory value.

Scope

VMWVirtualMachineMemory

Rule Definition

Conditions	State	Action
The virtual machine is actively using only 75% or less of the memory it has been granted by the vmkernal.	Normal	None
The virtual machine is actively using more than 75% but no more than 85% of the memory it has been granted by the vmkernal.	Warning	None
The virtual machine is actively using more than 85% but no more than 90% of the memory it has been granted by the vmkernal.	Critical	E-mail VMW admin
The virtual machine is actively using more than 90% of the memory it has been granted by the vmkernal.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97

- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Virtual Machine Balloon Memory Deflation

Purpose

This rule monitors for virtual machines working excessively to reclaim memory.

To better balance memory utilization across hosts in a cluster, you can add more physical resources to a host or you can use VMotion to move a virtual machine from one host to another.

Scope

VMWVirtualMachineMemory

Rule Definition

Conditions	State	Action
The balloon has not been growing excessively and is deflating normally.	Normal	None
The balloon has reached 20% of the host's memory over the course of the last 90 minutes and has failed to deflate to less than 5% over the last 15 minutes.	Warning	None
The balloon has reached 20% of the host's memory over the course of the last 90 minutes and has failed to deflate to less than 12% over the last 15 minutes.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92
- “Related Objects Views” on page 95

- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine Balloon Memory Target

Purpose

This rule monitors the ability of the virtual machine to swap memory locally in order to free it up for reclamation. If the virtual machine is having no trouble swapping memory normally, the balloon (and therefore the balloon target) is not excessively large. If the virtual machine is having trouble swapping memory, the balloon is excessively large.

Scope

VMWVirtualMachineMemory

Rule Definition

Conditions	State	Action
The balloon target is 33% or less of the virtual machine's configured memory.	Normal	None
The balloon target is greater than 33% but not greater than 50% of the virtual machine's configured memory.	Warning	None
The balloon target is greater than 50% of the virtual machine's configured memory.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95

- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine Consumed Vs. Granted Memory

Purpose

This rule compares the amount of memory that is being requested by virtual machines (the application workload) to the amount of memory granted to the virtual machines by the ESX Server.

If the application workload of the ESX Server is requesting an excessive amount of the available memory resources, you must either add memory to the ESX Server or use VMotion to better balance the virtual machines across the servers within the cluster.

Scope

VMWVirtualMachineMemory

Rule Definition

Conditions	State	Action
The virtual machine is consuming 75% or less of the memory it has been granted by the ESX Server.	Normal	None
The virtual machine is consuming more than 75% but no more than 83% of the memory it has been granted by the ESX Server.	Warning	None
The virtual machine is consuming more than 83% but no more than 90% of the memory it has been granted by the ESX Server.	Critical	E-mail VMW admin
The virtual machine is consuming more than 90% of the memory it has been granted by the ESX Server.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine CPU Utilization

Purpose

This rule monitors for spikes, dramatic drops, and sustained high levels in CPU utilization for a virtual machine.

Scope

VMWVirtualMachineHostCPUs

Rule Definition

Conditions	State	Action
The CPU utilization is no more than 2.2 standard deviations (NumSTDevs) from the mean CPU utilization and the CPU utilization is at 75% or less.	Normal	None
The CPU utilization is more than 2.2 but no more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 75% but not greater than 83%.	Warning	None

Rule Definition

The CPU utilization is more than 2.8 standard deviations from the mean CPU utilization, or the CPU utilization is greater than 83%.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine Disk Command Aborts

Purpose

This rule monitors for situations in which a disk command has been aborted because these may be an indication of hardware problems.

Scope

VMWVirtualMachineHostStorage

Rule Definition

Conditions	State	Action
There are no disk command aborts to report.	Normal	None
A disk command abort has occurred.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine Disk IO

Purpose

This rule monitors for spikes and dramatic drops in disk IO for a virtual machine.

Scope

VMWVirtualMachineHostStorage

Rule Definition

Conditions	State	Action
The disk usage is no more than 2.2 standard deviations (NumSTDevs) from the mean disk usage.	Normal	None
The disk usage is more than 2.2 but no more than 2.8 standard deviations from the mean disk usage.	Warning	None
The disk usage is more than 2.8 standard deviations from the mean disk usage.	Critical	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine Logical Drive Estimated Fill Time

Purpose

This rule fires an alarm to report on when the logical drive for the virtual machine is likely to reach full capacity, based on its present growth rate.

Scope

VMWVirtualMachineLogicalDisk

Rule Definition

Conditions	State	Action
At the present growth rate, the logical drive will not reach its capacity within the next month (within the next 672 hours).	Normal	None
At the present growth rate, the logical drive will reach its capacity within the next month (within the next 672 hours).	Warning	None
At the present growth rate, the logical drive will reach its capacity within the next week (within the next 168 hours).	Critical	E-mail VMW admin
At the present growth rate, the logical drive will reach its capacity within the next 48 hours.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99

- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Virtual Machine Memory Allocation Versus Limit

Purpose

This rule monitors for virtual machines that have a memory limit that is lower than their memory allocation, which could result in poor performance on the virtual machine.

Scope

VMWVirtualMachineMemory

Rule Definition

Conditions	State	Action
The virtual machine has a memory limit that is higher than its memory allocation.	Normal	None
The virtual machine has a memory limit that is lower than its memory allocation.	Critical	None

Views Displaying Alarms Based on this Rule

- “Virtual Infrastructure View” on page 89
- “vmExplorer Primary View” on page 91
- “Summary View” on page 92
- “Related Objects Views” on page 95
- “Actions Panel” on page 97
- “Navigation View” on page 98
- “Infrastructure Overview” on page 99
- “Alarms Overview” on page 102
- “Alarms List View” on page 103

VMW Virtual Machine Memory Swapping

Purpose

This rule monitors for the swapping in and out of virtual machine memory.

Scope

VMWVirtualMachineMemory

Rule Definition

Conditions	State	Action
The virtual machine has not moved any of its memory from its physical pages to the VMware swap file within the ESX Server.	Normal	None
The virtual machine has moved some of its memory from its physical pages to the VMware swap file within the ESX Server. This may adversely affect the virtual machine's performance.	Critical	None
The virtual machine is actively using memory that it has moved to the VMware swap file. This will adversely affect the virtual machine's performance.	Fatal	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine Memory Utilization

Purpose

This rule monitors for high memory utilization for a virtual machine.

Scope

VMWVirtualMachineMemory

Rule Definition

Conditions	State	Action
The memory utilization is less than 85%.	Normal	None
The memory utilization is equal to or greater than 85% and less than 90%.	Warning	None
The memory utilization is equal to or greater than 90% and less than 93%.	Critical	E-mail VMW admin
The memory utilization is equal to or greater than 93%.	Fatal	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine Network IO

Purpose

This rule monitors for spikes and dramatic drops in network IO for a virtual machine.

Scope

VMWVirtualMachineHostNetwork

Rule Definition

Conditions	State	Action
The network usage is no more than 2.2 standard deviations (NumSTDevs) from the mean network usage.	Normal	None
The network usage is more than 2.2 but no more than 2.8 standard deviations from the mean network usage.	Warning	None
The network usage is more than 2.8 standard deviations from the mean network usage.	Critical	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine Power State Change

Purpose

This rule fires an alarm if a virtual machine has been suspended or powered off recently.

Scope

VMWVirtualMachine

Rule Definition

Conditions	State	Action
The virtual machine has not been suspended or powered off recently.	Normal	None
The virtual machine has been suspended recently.	Warning	None
The virtual machine has been powered off recently.	Critical	E-mail VMW admin

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine VMware Tools

Purpose

This rule fires an alarm if the VMware tools on a virtual machine are out of date or not running properly.

You should always keep the VMware tools on each virtual machine up-to-date to enable the collection of all relevant data.

Scope

VMWVirtualMachine

Rule Definition

Conditions	State	Action
The VMware tools on the virtual machine are up-to-date and running properly.	Normal	None
The VMware tools on the virtual machine are either out of date or not running properly.	Warning	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

VMW Virtual Machine Zero Page Memory Detection

Purpose

This rule monitors for any virtual machines that have a large amount of memory that is only zero memory.

Scope

VMWVirtualMachineMemory

Rule Definition

Conditions	State	Action
The virtual machine does not have overcommitted memory resources.	Normal	None
The virtual machine may have overcommitted memory resources; more than 33% of its memory is filled with zeros. It is likely that the memory allocated to this virtual machine can be reduced without any impact on performance.	Warning	None

Views Displaying Alarms Based on this Rule

- "Virtual Infrastructure View" on page 89
- "vmExplorer Primary View" on page 91
- "Summary View" on page 92
- "Related Objects Views" on page 95
- "Actions Panel" on page 97
- "Navigation View" on page 98
- "Infrastructure Overview" on page 99
- "Alarms Overview" on page 102
- "Alarms List View" on page 103

2

vFoglight Views

The vFoglight Cartridge for VMwareships with predefined views to help you monitor your application server environment. This chapter provides quick reference information about each view.

The chapter contains the following sections:

Overview of Views 88
Virtual Infrastructure View 89
At A Glance View 90
vmExplorer Primary View 91
Summary View 92
Utilizations Views 93
Resource Pools Relationship Tree View 94
Related Objects Views 95
Actions Panel 97
Navigation View 98
Infrastructure Overview 99
VirtualCenter Messages View 100
Agents View 101
Alarms Overview 102
Alarms List View 103
Report Templates View 104
Scheduled Reports View 105
Generated Reports View 106

For more detailed information about the each view, along with detailed descriptions of the Cartridge for VMware dashboards, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Overview of Views

vFoglight displays monitoring data in views that group, format, and display data. The main types are described below.

Dashboards are top-level views that do not receive data from other views. Dashboards usually contain a number of lower-level views. The dashboards supplied with vFoglight, as well as those created by users, are available in the navigation panel.

Lower-level views in vFoglight can be added to dashboards or can be accessed by drilling down from a dashboard. They receive and display data directly from the vFoglight Management Server or from other views. Some views filter or select data that appears in other views in the same dashboard. Some are tree views with expandable nodes for selecting servers, applications, or data.

Virtual Infrastructure View

The vmExplorer Dashboard provides a Virtual Infrastructure View. The Virtual Infrastructure View is located in the navigation panel at the left of the vFoglight GUI, under the dashboards list.

Purpose

The Virtual Infrastructure View provides an organized view of the various virtual infrastructure objects that are monitored by vFoglight. It serves as a navigational tool, and it also presents pertinent alarm information.

When you select an object from the Virtual Infrastructure View, all of the views in the vmExplorer Dashboard are updated with information pertaining to that object.

Content and Embedded Views

The Virtual Infrastructure View contains two embedded views: the Topology View and the Hierarchy View.

Within the Topology View, all of the virtual infrastructure objects are organized into a tree using object type (or topology type) containers for branches. The top-level objects in the Topology View are always the VirtualCenters.

Within the Hierarchy View, each VirtualCenter object is organized into a tree that has the same hierarchical structure as the VirtualCenter and displays the objects (Datacenters, Clusters, Resource Pools, Virtual Machines, Folders, etc.) within the VirtualCenter as branches.

Mouse-over Status Popups

When you hover the cursor over an object in the Virtual Infrastructure View, you see a popup that provides a summary of the present state of that object.

For more detailed information about the Virtual Infrastructure View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

At A Glance View

The vmExplorer Dashboard provides an At A Glance View. The At A Glance View is located in the navigation panel of the vFoglight GUI, below the Virtual Infrastructure View.

Purpose

The At A Glance View provides key statistical information for the object that is selected in the Virtual Infrastructure View (that is, for the object that is being viewed in the vmExplorer Dashboard).

Content and Embedded Views

The content of the At A Glance View depends on the object that is being viewed in the vmExplorer Dashboard.

The At A Glance View may or may not contain the following embedded views:

- Top 5 CPU View - shows the top five CPU-consuming virtual machines for the selected object
- Top 5 Memory View - shows the top five memory-consuming virtual machines for the selected object
- Top 5 Disks View - shows the top five virtual machines in terms of disk activity for the selected object
- Top 5 NIC View - shows the top five virtual machines in terms of NIC activity for the selected object
- Top 5 Ready View - shows the top five virtual machines in terms of percent-readiness for CPU cycles for the selected object
- Status View - provides a brief summary of the present status of the parent object for a selected Virtual Machine

For more detailed information about the At A Glance View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

vmExplorer Primary View

The vmExplorer Dashboard has a Primary View that takes up the entire display panel of the vFoglight GUI.

Purpose

The vmExplorer Primary View is the most content-intensive view in vFoglight. It provides access to summary (of alarm, resource, and other) information for the object being viewed in the vmExplorer Dashboard, as well as detailed information on performance with respect to the four core ESX infrastructure resources: CPU, memory, disk usage, and network usage.

It provides navigational links that can be used to view a variety of valuable information pertaining to the object being viewed.

Content and Embedded Views

The metrics and the amount of detail displayed in the Primary View vary depending on the type of object you select.

Also, due to the ability to change the information displayed in the Primary View through the use of the navigational links and to the fact that the Primary View consists of several embedded views, the Primary View can change quite a lot in appearance and content.

The Primary View may or may not contain the following embedded views:

- Summary View
- Utilizations View
- Resource Pools Relationship Tree View
- Related Objects View

Each of these views is described in this chapter.

For more detailed information about the vmExplorer Primary View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Summary View

The Summary View is provided as part of the vmExplorer Dashboard Primary View. If you select the Summary navigational link from the top of the vmExplorer Primary View (that is, from the Primary View heading), the Summary View is displayed just below the heading.

Purpose and Content

Typically, the Summary View provides a brief description of the object being viewed in the vmExplorer Dashboard, an overview of its available compute resources, and a count (if applicable) of the objects that are contained within it.

Sometimes the Summary View includes a graph. For example, if you select a collection of ESX Servers (that is, the ESX Servers container for a particular VirtualCenter) from the Topology View, the Summary View displays a graph that illustrates the combined CPU consumption for all of the ESX Servers in the collection.

Within a collection of objects Summary View, you can hover the cursor over any graph to see an exact unit measurement that corresponds to the placement of the cursor, and you can click any metric or chart to see a popup with a detailed chart.

For more detailed information about the Summary View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Utilizations Views

A Utilizations View is provided in both the vmExplorer and the vmMonitor Dashboards.

In the vmExplorer Dashboard, the Utilizations View is part of the Primary View and is typically located at the center of the Primary View.

In the vmMonitor Dashboard, the Utilizations View is not considered part of another View and is typically located at the center of the dashboard.

Purpose and Content

In the vmExpolorer Dashboard, the Utilizations View provides numerical and graphical representations of utilization metrics associated with the single object (Datacenter, Cluster, Server, Resource Pool, Virtual Machine, or Datastore) or collection of objects of a particular type (Datacenters, Clusters, Servers, Resource Pools, Virtual Machines, or Datastores) that is selected.

In the vmMonitor Dashboard, the Utilizations View only provides numerical and graphical representations of utilization metrics associated with single objects.

The metrics and the amount of detail displayed on the Utilizations View vary depending on the type of object that is being viewed.

In the vmExplorer Dashboard, a Utilizations View may not appear at all depending on the object or collection of objects selected from the Virtual Infrastructure View and on the navigational link selected from the vmExplorer Primary View heading.

Within a single object Utilizations View, you can hover the cursor over any metric to see a description of that metric, and you can click any metric or chart to see a popup with a detailed chart.

In the vmExplorer Dashboard, within a collection of objects Utilizations View, you can hover the cursor over any graph to see an exact unit measurement that corresponds to the placement of the cursor, and you can click any metric or chart to see a popup with a detailed chart.

For descriptions of the various metrics available in the Utilizations View and elsewhere in vFoglight, refer to “vFoglight Rules” on page 25.

For more detailed information about Utilizations Views, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Resource Pools Relationship Tree View

The Resource Pools Relationship Tree View is provided in the vmExplorer Dashboard. If you select a Resource Pool container from the Topology View on the Virtual Infrastructure View and you click the Summary navigational link within the vmExplorer Primary View, a Resource Pools Relationship Tree View is displayed in the Primary View. A Resource Pools Relationship Tree contains every Resource Pool that belongs to the Clusters within the associated VirtualCenter.

Purpose and Content

The Resource Pools Relationship Tree View is useful if you want to see how the Resource Pools within the Clusters are laid out or if you want to take a look at the utilization statistics for each configured Resource Pool on the VirtualCenter.

The default Resource Pools Relationship Tree simply displays the names of the various Resource Pools and their parent/child relationships.

You can use the Normal Zoom Level button on the mini map at the top right of the Relationship Tree to zoom into a more detailed version of the Tree. You can use the Minimized Zoom Level button on the mini map to zoom back out again.

You can browse through a Relationship Tree by clicking and dragging the rectangular shadow provided on the mini map.

For more detailed information about the Resource Pools Relationship Tree View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Related Objects Views

At least one Related Objects View is provided in both the vmExplorer and the vmMonitor Dashboards.

In the vmExplorer Dashboard, Related Objects Views are part of the Primary View and are typically located at the bottom of the Primary View. In the vmExplorer Dashboard, more than one Related Objects View may appear at a time.

In the vmMonitor Dashboard, the Related Objects View is not considered part of another view and is located at the right of the dashboard. Only one Related Objects View appears on the vmMonitor Dashboard.

Purpose and Content

Related Objects Views provide summary information on either the parent or child objects or both (whichever are applicable) of the object being viewed in the dashboard.

In the vmExplorer Dashboard, Related Objects Views differ from each other and may not appear at all depending on the object or collection of objects selected from the Virtual Infrastructure View and on the navigational link selected from the vmExplorer Primary View heading.

In the vmExplorer Dashboard, Related Objects Views for an individual object display tables that list either the parents or descendents or both (whichever are applicable) of the selected object and provide pertinent summary details about each one. The Related Objects View for a collection of objects displays a table that lists all of the objects in the selected collection and provides pertinent summary details about each one. You can sort Related Objects View tables by a particular column by clicking the corresponding column heading. If you select an object from the table by clicking on one of the table rows, all of the views in the vmExplorer Dashboard get updated with information about that object.

In the vmMonitor Dashboard, the Related Objects View provides Status Views of summary details for either the parents or descendants or both (whichever are applicable) of the object being viewed in the dashboard. The information presented varies slightly depending on the object that is being viewed. Within the vmMonitor Related Objects View, if you click an object's icon, all of the views in the vmMonitor Dashboard are updated with information about that object.

In the vmMonitor Dashboard, the combination of the Related Objects View and the breadcrumbs at the top of the dashboard provide you with an effective way to traverse up and down through the various virtual infrastructure object levels and view all of the available metrics vFoglight provides for the virtual infrastructure.

For more detailed information about Related Objects Views, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Actions Panel

The actions panel is located at the far right of the vFoglight GUI.

Purpose and Content

The actions panel provides you with easy access to a number of useful functions. However, it only provides additional vFoglight related actions and tasks when you are viewing the vmExplorer Dashboard.

The vFoglight actions and tasks available in the actions panel vary depending on the object displayed in the vmExplorer Dashboard, and are located under the Actions, Other Actions, and Tasks headings.

Under Actions, the actions panel may provide the following additional vFoglight related actions:

- Find ESX Servers
- Find Virtual Machines
- Run Migration Modeler
- View Virtual Infrastructure Alarms

Under Tasks, the actions panel may provide the following additional vFoglight related tasks:

- Object Monitor
- View Alarms
- Top CPU Consumers
- Top Memory Consumers

For more detailed information about the actions panel with respect to vFoglight and any associated actions or tasks, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Navigation View

The vmMonitor Dashboard provides a Navigation View, which is located at the top of the dashboard.

Purpose and Content

The Navigation View displays an icon and an object type name that together indicate the type of object that is being examined.

The vmMonitor Dashboard does not provide a direct hierarchical structure in which you can change between objects. Instead, the Navigation View has a drop-down menu with which objects from the current level may be selected. In order to traverse up or down through the infrastructure, an administrator can use the breadcrumbs at the top of the vmMonitor Dashboard or select from the various objects on the Related Objects View.

The Navigation View also contains an alarm summary which is located at the far right of the view.

For more detailed information about the Navigation View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Infrastructure Overview

The vmMonitor Dashboard provides an Infrastructure Overview, which is located toward the top left of the dashboard.

Purpose and Content

The Infrastructure Overview is provided at the VirtualCenter, DataCenter, and Cluster levels. This view contains information about the descendent or child objects of the object being viewed in the vmMonitor Dashboard.

The Infrastructure Overview provides a simple mechanism that you can use to see the total number of the various types of child objects within the selected object and the outstanding alarm with the highest severity that exists for an object of each type.

The number on each disk indicates the number of descendent objects of that type that exist within the selected object. The disk color indicates the status of the outstanding alarm with the highest severity that exists for an object of that type. These disk colors correspond to the colors used throughout vFoglight to indicate alarm severity.

If you click any of the disks, a popup appears that displays a current alarm list for the corresponding object type. If you then click an alarm message, you are taken to a vmMonitor Dashboard for the object to which the message corresponds.

The Infrastructure Overview provides a simple way for an administrator to troubleshoot problems within the virtual infrastructure.

For more detailed information about the Infrastructure Overview, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

VirtualCenter Messages View

The vmMonitor Dashboard provides a VirtualCenter Messages View, which is located toward the bottom of the dashboard.

Purpose and Content

vFoglight receives VirtualCenter messages (including status changes and VirtualCenter alarms, if configured) and presents them in the vmMonitor Dashboard.

Note These messages are not generated by vFoglight.

The VirtualCenter Messages View displays these VirtualCenter messages for the dashboard time range specified. For specific information about dashboard time ranges, refer to the *vFoglight User Guide*.

If you click a message within the VirtualCenter Messages View, you are taken to a vmMonitor Dashboard for the object to which the message corresponds. You can always use the breadcrumbs at the top of the vmMonitor Dashboard to navigate back up through the virtual infrastructure.

For more detailed information about the VirtualCenter Messages View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Agents View

The Agents View is the only view in the vmAgents Dashboard.

Purpose and Content

The Agents View displays information on the various agent systems that are collecting and sending details to vFoglight. This view can be used to verify that agents are properly reporting information at regular intervals to vFoglight.

The Agents View also contains an alarm summary that shows you the number of alarms of each severity that are presently outstanding for agents.

For more detailed information about the Agents View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Alarms Overview

The vmAlarms Dashboard provides an Alarms Overview, which is located at the top of the dashboard.

Purpose and Content

The Alarms Overview provides a quick and easy way for you to view vFoglight alarms grouped by object and severity level. You can use this Overview to monitor alarms and to identify the sources of problems within the virtual infrastructure. If you click any of the alarm counts for a particular object, a popup displaying just the alarms for that object appears.

For more detailed information about the Alarms Overview, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Alarms List View

The vmAlarm Dashboard provides an Alarms List View, which takes up the majority of the dashboard.

Purpose and Content

Each alarm row in the Alarms List contains an object icon that identifies the source of the alarm, an alarm icon that indicates the severity of the alarm, the time that the alarm occurred, and the text of the alarm. The columns are sortable so that alarms can be listed in order by source, severity, time or message. Simply click a column heading to sort the table by that column.

If you click an alarm's severity icon, a popup for acknowledging or clearing that alarm is displayed. If you click the message or any other column in the row, a vmMonitor Dashboard displaying information pertaining to the corresponding object appears.

For more detailed information about the Alarms List View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Report Templates View

The vFoglight Report Browser Dashboard provides a Report Templates View, which is located at the left of the dashboard.

Purpose and Content

The Report Templates View provides a list of templates that can be used to create reports that are scheduled to run against a particular object.

For more detailed information about the Report Templates View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Scheduled Reports View

The vFoglight Report Browser Dashboard provides a Scheduled Reports View, which is located at the top right of the dashboard.

Purpose and Content

The Scheduled Reports View lists the reports that have been configured by an administrator to run at regular intervals. It also provides you with an interface you can use to create and schedule a report to run.

For more detailed information about the Scheduled Reports View, including a procedure for scheduling reports, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Generated Reports View

The vFoglight Report Browser Dashboard provides a Generated Reports View, which is located at the bottom right of the dashboard.

Purpose and Content

The Generated Reports View lists reports that have run and are available for viewing in PDF format.

Once a report is generated it is displayed in the Generated Reports View. Simply click **pdf** in the View column of the Generated Reports View to view the generated report. To view a pdf file, Adobe Acrobat Reader must be installed on the system that is accessing the Report Browser Dashboard.

For more detailed information about the Generated Reports View, see the chapter titled Interacting with vFoglight in the *vFoglight User Guide*.

Index

A

Actions Panel 97
Agent Data Updates Rule 27
Agent Messages Rule 28
agent rules 27
Agent Updates Rule 29
Agents View 101
Alarms List View 103
Alarms Overview 102
At A Glance View 90

C

cartridge 10
Cluster CPU Utilization Rule 30
Cluster Disk IO Rule 31
Cluster Memory Utilization Rule 32
Cluster Network IO Rule 33
Cluster Percent Ready Rule 35
Cluster Redundancy Verification Rule 36
cluster rules 30
core 9

D

Datacenter CPU Utilization Rule 38
Datacenter Disk IO Rule 39
Datacenter Memory Utilization Rule 40
Datacenter Network IO Rule 41
Datacenter Percent Ready Rule 42
datacenter rules 37
Datastore Estimated Fill Time Rule 43
datastore rules 43
documentation 9, 10

E

ESX Server Balloon Memory Deflation Rule 52
ESX Server Consumed Vs. Granted Memory Rule 61
ESX Server CPU 0 High Utilization Rule 53
ESX Server CPU Utilization Rule 54
ESX Server Disconnected Rule 55
ESX Server Disk IO Rule 56
ESX Server Heap Free Memory Rule 57
ESX Server Memory Utilization Rule 58
ESX Server Memory Utilization Upward Trend Rule 59
ESX Server Network IO Rule 60
ESX Server rules 51

F

feedback 10

G

Generated Reports View 106

I

Infrastructure Overview 99

N

Navigation View 98

R

Related Objects Views 95
Report Templates View 104
Resource Pool CPU Utilization Rule 44
Resource Pool Disk IO Rule 46
Resource Pool Memory Utilization Rule 47
Resource Pool Network IO Rule 48
Resource Pool Percent Ready Rule 49
resource pool rules 44
Resource Pools Relationship Tree View 94
rules
  Agent Data Updates 27
  Agent Messages 28
  Agent Updates 29
  Cluster CPU Utilization 30
  Cluster Disk IO 31
  Cluster Memory Utilization 32
  Cluster Network IO 33
  Cluster Percent Ready 35
  Cluster Redundancy Verification 36
  Datacenter CPU Utilization 38
  Datacenter Disk IO 39
  Datacenter Memory Utilization 40
  Datacenter Network IO 41
  Datacenter Percent Ready 42
  Datastore Estimated Fill Time 43
  ESX Server Balloon Memory Deflation 52
  ESX Server Consumed Vs. Granted Memory 61
  ESX Server CPU 0 High Utilization 53
  ESX Server CPU Utilization 54
  ESX Server Disconnected 55
  ESX Server Disk IO 56
  ESX Server Heap Free Memory 57
  ESX Server Memory Utilization 58
  ESX Server Memory Utilization Upward Trend 59
  ESX Server Network IO 60
  overview 26
  Resource Pool CPU Utilization 44
  Resource Pool Disk IO 46
  Resource Pool Memory Utilization 47
  Resource Pool Network IO 48
  Resource Pool Percent Ready 49
  Virtual Machine Active Vs. Granted Memory 70
  Virtual Machine Balloon Memory Deflation 71
  Virtual Machine Balloon Memory Target 72
  Virtual Machine Consumed Vs. Granted Memory 73
  Virtual Machine CPU Utilization 74
  Virtual Machine Disk Command Aborts 76
  Virtual Machine Disk IO 77
  Virtual Machine Logical Drive Estimated Fill Time 78
  Virtual Machine Memory Allocation Versus Limit 79
  Virtual Machine Memory Swapping 80
  Virtual Machine Memory Utilization 81
  Virtual Machine Network IO 82
  Virtual Machine Power State Change 83
  Virtual Machine VMware Tools 84
  Virtual Machine Zero Page Memory Detection 85
  VirtualCenter CPU Utilization 63
  VirtualCenter Disk IO 64
  VirtualCenter Memory Utilization 65
  VirtualCenter Network IO 66
  VirtualCenter Percent Ready 67

S

Scheduled Reports View 105
Summary View 92
support 11

T

technical support 11
text conventions 10

U

Utilizations Views 93

V

views
  Actions Panel 97
  Agents 101

Alarms List 103
Alarms Overview 102
At A Glance 90
Generated Reports 106
Infrastructure Overview 99
Navigation 98
overview 88
Related Objects 95
Report Templates 104
Resource Pools Relationship Tree 94
Scheduled Reports 105
Summary 92
Utilizations 93
Virtual Infrastructure 89
VirtualCenter Messages 100
vmExplorer Primary 91
Virtual Infrastructure View 89
Virtual Machine Active Vs. Granted Memory Rule 70
Virtual Machine Balloon Memory Deflation Rule 71
Virtual Machine Balloon Memory Target Rule 72
Virtual Machine Consumed Vs. Granted Memory Rule 73
Virtual Machine CPU Utilization Rule 74
Virtual Machine Disk Command Aborts Rule 76
Virtual Machine Disk IO Rule 77
Virtual Machine Logical Drive Estimated Fill Time Rule 78
Virtual Machine Memory Allocation Versus Limit Rule 79
Virtual Machine Memory Swapping Rule 80
Virtual Machine Memory Utilization Rule 81
Virtual Machine Network IO Rule 82
Virtual Machine Power State Change Rule 83
virtual machine rules 69
Virtual Machine VMware Tools Rule 84
Virtual Machine Zero Page Memory Detection Rule 85
VirtualCenter CPU Utilization Rule 63
VirtualCenter Disk IO Rule 64
VirtualCenter Memory Utilization Rule 65
VirtualCenter Messages View 100
VirtualCenter Network IO Rule 66
VirtualCenter Percent Ready Rule 67
VirtualCenter rules 63
Vizioncore Software 11
vmExplorer Primary View 91