Cisco Data Center and Foundation Remote Management Services (RMS)

Report Guide

October, 2012

Contents

1. Introduction

This document contains an overview of the reporting capabilities for Cisco® Datacenter and Foundation Remote Management Services (RMS). Included are report details to help customers gain an ideal perspective on their Cisco Business Service deployment and thus make better decisions.

Cisco Data Center and Foundation Remote Management Services help you realize the full benefits offered by your converged network by identifying and resolving issues faster and with greater accuracy, while retaining as much visibility and control as you desire through support from Cisco experts.

Built on the principles of out-tasking, Cisco Data Center and Foundation Remote Management Services help you to maximize the value of your network using ITIL® standards with a comprehensive, consistent, and coherent framework for IT services management. It provides monitoring, issue resolution, and around-the-clock management of converged data center infrastructure and Cisco optimization, application acceleration, and load balancing technologies. This document summarizes the attributes reporting for Cisco Data Center and Foundation solutions. Reports are generated from SNMP polling statistics or XML data.

Audience: This guide is for Cisco Remote Management Services customers and partners.

Scope: This guide provides details for the following reports:

- Server and virtual machine (VM) reports
- Network level reports
- Top 10 reports
- Service level reports (MTTx)

1.1 Server and VM Reports

Table 1. Data Center Standard Server and VM Reports

Report List
Cisco UCS® Device Specific Real-Time Reports
Virtualization Infrastructure Report
Virtualization Server Candidate Report
Server System Reports and Operating Systems
VM Utilization Projection Report
VM Health Report
VM Top Utilization Report
VM Migration Report
VM Interface Utilization Report
VM Compliance Report
Server Performance Summary report
Server Asset Details Report
Server CPU Report
File Service Performance Details Report
Server Performance Report

1.2 Network Level Reports

Table 2. Network Level Reports

Report List
DCN Device Specific Real-Time Reports
ATM PVC Traffic
Element Availability Summary
Cisco Catalyst® Backplane
Cisco Sensor
Device ICMP
Device IP Statistics
Interface Volume Health
Interface Error Discards
Interface Throughput Utilization
Frame Relay Throughput or Errors
Interface LAN Errors
Interface Multicast
Interface DS1 and DS3

1.3 Top 10 Reports

Table 3. Top 10 Standard Reports

Report List
Interface Utilization Error Out monthly
Interface Utilization Error In monthly
Interface Utilization Discard Out monthly
Interface Utilization Discard In monthly
Interface Utilization MEG's Out monthly
Interface Utilization MEG's In monthly
VM Top Utilization CPU, Memory and Swap report

1.4 Service Level Objectives (SLO) Reports

Table 4. SLO Standard Reports

Report List
Mean Time To Notify MTTN
Mean Time to Begin Analysis MTTBA
Mean Time To Isolate MTTI
Mean Time To Resolve MTTR

2. Data Center and Foundation Reports

Tables five through nine describe the content for each data center and foundation report.

2.1 Report Details

Table 5. Server and VM Reports

Report	Description
UCS Device Specific Real-Time Reports	Real-time, device specific reports that can look back at up to 13 months of data on up to 1500+ statistics for every UCS component/dn. Historical statistics include min/max/average for each component. Users can create custom reports in HTML, PDF, Microsoft Word, or CSV formats for user defined time periods
Virtualization Infrastructure Report	Examples include: VMware ESX//ESXI server information VMs grouped by ESX//ESXI Server and showing info for each VM, including: guest OS; CPU allocation and utilization; memory allocation and utilization; bandwidth utilization; file systems
Virtualization Server Candidate Report	Trended utilization info for virtualization server candidates according to user-defined thresholds
Server System Reports and Operating Systems	Cisco RMS has MS Windows server reports for multiple operating systems with customized views per user. Common views for servers include dashboards with availability status*, physical and virtual memory stats, CPU usage, interface utilization, file system utilization, configuration reports and change alerts, installed software, running processes, services running/not running, open ports, hardware profile (*processors, disks, memory, installed components)
VM Utilization Projection Report	Trended and projected utilization info for ESX//ESXI servers and VMs
VM Health Report	Health and availability for VMs showing CPU, memory and network activity
VM Top Utilization Report	VMs with heavy resource utilization
VM Migration Report	For each VM a history of where it was, where it is now and when it moved
VM Interface Utilization Report	Bandwidth utilized by each VM and each ESX//ESXI server
VM Compliance Report	Software titles running on each VM; all VMs and physical machines with specified software titles
Server Performance Summary Report	A set of tables that consist of summaries of CPU utilization, file system (disk) utilization, memory utilization, swap memory utilization, traffic, and reach-ability for all of the monitored servers in the network by day, week, or month
Server Asset Details Report	Reports listing identification information on all managed servers • Server Name • Model • Manufacturer • Operating system • Operating system revision • Total Random Access Memory • Percent of memory used • Amount of RAM available • Total virtual memory • Percent of virtual memory used • Amount of virtual memory available
Server CPU Report	Reports listing the following information for each server under management: • CPU type • CPU speed • CPU number • CPU utilization • CPU load
File Service Performance Details Report	Reports listing the following information for each logical storage volume under management: • Server Operating System • Volume name (logical partition) • Volume size

Report	Description
	• Percent of volume used • Amount of volume available
Server Performance Report	Reports showing: • Real time, daily, weekly, and monthly graphs • CPU utilization, memory utilization, traffic in and out, and file system (disk) utilization and file system (disk) availability
Modular Server Performance	Tabular report giving real-time daily, weekly, and monthly view; includes CPU utilization, memory utilization, traffic in/out, and number of active processes with sums for each of the columns

Table 6. Network Level Reports

Report	Description
DCN Device Specific Real-Time Reports	Real-time, device specific reports that can produce up to 13 months of statistics data. Users can create custom reports in HTML, PDF, Microsoft Word, or CSV formats for user-defined time periods (See Table 9)
ATM PVC Traffic	Examples include inbound throughput (bps), outbound throughput (bps), inbound volume (PDUs), outbound volume (PDUs), inbound CRC errors (PDUs), reassembly timeouts (PDUs)
Element Availability Summary	Examples include interface availability (percent) and device availability (percent)
Cisco Catalyst Backplane	Backplane bandwidth utilization percentage
Cisco CPU Memory Usage	Examples include CPU utilization (%), memory pool utilization (%), memory pool free, memory pool largest free
Cisco Sensor	Examples include voltage level, voltage status, fan state, power supply state, temperature level, temperature status
Device ICMP	Examples include ICMP messages received (per second), ICMP messages sent (per second), ping replies received (per second), ping replies sent (per second), pings sent (per second), ping replies received (per second)
Device IP Statistics	Examples include IP packets received (per second), IP packets forwarded (per second), IP out requests (per second), no route (per second), fragmentation failures (per second), reassembly failures (per second)
Interface Volume Health	Examples include inbound volume (octets), outbound volume (octets), inbound errors, outbound errors, unknown protocols
Interface Error Discards	Examples include delivered (inbound) packets, inbound errors, inbound discards, outbound errors, outbound discards
Interface Throughput Utilization	Examples include inbound utilization (percent), outbound utilization (percent), inbound throughput (bps), outbound throughput (bps)
Frame Relay Throughput or Errors	Examples include inbound throughput (bps), outbound throughput (bps), inbound or outbound volumes, inbound outbound FECN/BECN, discard priority and availability (percent)
Interface LAN Errors	Examples include inbound abort, inbound CRC, inbound frame, inbound giants, inbound ignored, inbound overrun
Interface Multicast	Examples include inbound unicast packets per second, outbound unicast packets per second, inbound multicast packets per second, outbound multicast packets per second, inbound broadcast packets per second, outbound broadcast packets per second
Interface DS1 and DS3	Examples include errors per second, unavailable seconds, severe errors per second, severe error frame seconds

Table 7. Top 10 Reports

Report	Description
Interface Utilization Error Out monthly	Examples include, outbound utilization (percent), outbound throughput (bps), for Interface errors.
Interface Utilization Error In monthly	Examples include inbound utilization (percent), outbound utilization (percent), inbound throughput (bps), outbound throughput (bps)
Interface Utilization Discard Out monthly	Examples include inbound utilization (percent), outbound utilization (percent), inbound throughput (bps), outbound throughput (bps)
Interface Utilization Discard In monthly	Examples include inbound utilization (percent), outbound utilization (percent), inbound throughput (bps), outbound throughput (bps)
Interface Utilization MEGs Out monthly	Examples include inbound utilization (percent), outbound utilization (percent), inbound throughput (bps), outbound throughput (bps)

Report	Description
Interface Utilization MEGs In monthly	Examples include inbound utilization (percent), outbound utilization (percent), inbound throughput (bps), outbound throughput (bps)
VM Top Utilization CPU, Memory and Swap report	Provides the top most utilized VMs based on resources for CPU, memory and Swap per blade or chassis

Note: The top ten reports are scheduled and sent to the customer upon request.

Table 8. Service Level Objective Reports

Report	Description
MTTR % tickets resolved within goal (P1/2=4hrs.; P3=24hrs.; P4=120 hrs.	Report to show %/count of tickets resolved within SLA/SLO goals
MTTR Incident Time to Resolve stratum (<2 hrs., 2-4 hrs., 4-8 hrs., 8-12, 12-24 hrs.>24 hrs.)	Report to show MTTResolve for incident tickets
MTTR Mean Time to Resolve	Report to show the mean time from alarm to resolution
MTTR Mean Time to Resolve by priority	Report to show the mean time from alarm to closure, categorized by priority
MTTR Mean Time to Resolve by priority (managed/non-managed)	Report to show the mean time from alarm to closure, categorized by priority and whether the device is managed or non-managed
MTTR Mean Time to Resolve by segment (LAN/WAN)	Report to show the mean time from alarm to closure, categorized by LAN vs. WAN
MTTR Mean Time to Resolve 90% in less than 4 hours (on qualifying outages)	Report to show the mean time from alarm to closure, and if resolution was completed in <= 4 hours
MTTI % tickets within isolate SLO (by priority and theater) P1-P3<=60 mins.; P4<=240 mins.	Report to show %/count of tickets isolated within SLO goals, categorized by priority and theater/region
MTTN % tickets within notify SLO (by priority,theater) P1-P4 <= 20 mins.	Report to show %/count of tickets in which notification to client occurred within SLO
MTTN Mean Time to Notify	Report to show the mean time from alarm to customer notification
MTTN Mean Time to Notify by priority	Report to show the mean time from alarm to customer notification, categorized by priority
MTTN Mean Time to Notify 90% within 20 mins.	Report to show the mean time from alarm to customer notification, and if notification was completed <= 20 minutes
MTTBA Mean Time to Begin Analysis	Report to show the mean time from alarm to start of incident activity

Table 9. DCN Device Specific Real-Time Reports

Report	Description
Foundation Environmental Events	Examples include traps and syslogs for power supplies, fan failures, memory, temperature, and shutdown/init failures
Foundation Threshold Crossing Alarms	Several types of polling statistics can be alarmed by average percentage, raw numbers, minimum or maximum values over a set time period, or number of polls
Wireless and APs	Examples include monitoring of various hardware and environmental alarms for all WLCs or APs, Up/down status and any association management messages of all access points. Any AP faults that include upgrades, boot failures, DHCP issues, 802.11 Subsystem Messages, Inter-Access Point Protocol Messages, Local Authenticator Messages, WDS Messages, or Mini IOS Messages
WAAS or ACNS Events	Examples include WCCP service/cache lost or no-memory/socket, content engine failures for disk, read/write,

Report	Description
	overloads, various types of WAAS alarm books for critical, major, and minor events
ACE Events	Examples include real server state alarms or VIP state changes, context, or license problems
GSS Events	Examples include DNS events, peer status, core crashes, or keep alive events
CSS Events	Examples include DNS events, peer status, core crashes, or keep alive events
AXG Events	Examples include disk usage/failure, CPU overload, xmlAcceleratorStatus, software notification, crypto event
WAAS Mobile	Examples include health events, service/process failures, server start/stop, cache alarms, blackbox/system reports
Nexus Switches	Examples include high capacity alarms, topology changes/root, environmental alarms, link events
CRS/XR12000	Examples include enhancements to routing events, environmental alarms, fiber alarms, and foundation link events
ASR	Examples include support for MPLS events, full foundation support for routing and link alarms, environmental alarms
UCS Faults	Consuming all faults raised by the UCS system. Examples include adapter unit problems, chassis environmental alarms, UCS blade equipment and bios alarms, various fan/power supply alerts, memory alarms, servers discovered/removed/unassociated, port problems, NIC failures, storage capacity, and disk concerns
VMWare Faults	Examples include ESX/ESXi and Virtual Center/Sphere errors, Virtual Center/Sphere system utilization, high availability, and DRS performance
vMotion Sickness	Examples include vMotion failures where VM oscillation or flapping occurs
UCS Configuration	Examples include tracking and alarming on state change for a subset of devices exposed through the API
Storage Fiber Switches	Examples include FC Interface Status, FC Interface Errors, FC Switch Status, SNMP Uptime, FC Interface Utilization, SNMPTrap Handler. Generic monitor that allows for the capture of SNMP Traps from a storage head device and maps to error conditions
SAN Standard	Examples include SAN Array DiskGroup Status, SAN Hardware Status, SAN Diskshelf Status, and SAN Controller Status
NAS NetApp and EMC	Examples include faults for NetApp and EMC on the following NVRAM, Fan, Temperature, CPU, Disk, Disk Status, and Shares. EMC also includes more hardware and array status alerts

2.2 Report Examples

Figure 1. VM Health Report

VM Health Report

Generation Time	January 17, 2012, 2:01 pm
Report Context	CPU/Memory/Swap Utilization and File System Information (Names, Bytes Used, Percent Used)
Statistic Type	Maximum of Averaged Hourly Polled Values
Hours Included	24 Hours Everyday
Show File Systems with Utilization >=	75%
Time Range	One week starting 2012-01-08

ORGANIZATION: TSPM Demo

VMware ESX SERVER: VMware ESXi [3]

Device Name			CPUs	CPU %	RAM	Physical Memory %	Virtual Memory %	File System Utilizations
tspm-b200m2-1 [30]					0			

Virtual Machines Hosted on tspm-b200m2-1 [30]

Device Name	VM Display Name	VM Guest OS	CPUs	CPU %	RAM	Physical Memory %	Virtual Memory %	File System Utilizations
tspm-rhel54-1 [41]	tspm-rhel54-1 [1816777]	E: tools not running	1	2%	249	56%	0%	
tspm-rhel54-2 [43]	tspm-rhel54-2 [1816769]	E: tools not running	1	2%	249	58%	0%	
tspm-vcenter-1 [49]	tspm-vcenter-1 [1816774]	winNetStandard64Guest	1	19%	1023	96%	68%	
tspm-win2003r2-1 [28]	tspm-win2003r2-1 [1816772]	winNetStandard64Guest	1	1%	1023	27%	6%	
tspm-win2008r1-1 [31]	tspm-win2008r1-1 [1816778]	winLonghorn64Guest	1	1%	4095	13%	5%	

Figure 2. VM Infrastructure Report

VM Infrastructure Report

Generation Time	January 17, 2012, 2:01 pm
Report Context	Device Asset, Performance, and SLA Data
Statistic Type	Maximum of Averaged Hourly Polled Values
Hours Included	24 Hours Everyday
Time Range	One week starting 2012-01-08

ORGANIZATION: TSPM Demo

ESX Server: tspm-b200m1-1 [25]

Asset Information

Make	VMWare	**Operating System**	Cisco IOS 10	**Asset Serial Number**		**Asset Type**	
Model	ESX	**ESX Version**	4.1.0	**Asset Tag**	RE221887210400TX#THQEwuN8AxMA9	**Asset Function**	
CPUs	**CPU % Used**	**RAM Size (MB)**	**RAM % Used**	**Swap Space (MB)**	**Swap % Used**		
		0					

VM Guest: tspm-win2008r2-1 [37]

VM Organization	TSPM Demo	**ESX Server of VM**	tspm-b200m1-1 [25]	**VM Guest OS**	windows7Server64Guest	**VM State**	poweredOn
	CPU % Used	**RAM Size (MB)**	**RAM % Used**	**Swap Space (MB)**	**Swap % Used**		
	1%	4096	11%	9011	5%		

ESX Server Allocation Totals for its VMs (may be over-subscribed)

RAM Allocated (MB)	**4096**	**RAM Percent**	N/A	**Swap Allocated (MB)**	**9011**	**Swap Percent**	N/A

Figure 3. VM Top 10 Utilization for CPU, Memory, and Swap

VM Top 10 Utilization for CPU, Memory, and Swap

Generation Time	January 17, 2012, 2:01 pm
Report Context	CPU/Memory/Swap Utilization
Statistic Type	Maximum of Averaged Hourly Polled Values
Hours Included	24 Hours Everyday
Report Type	Top 10 in each category
Time Range	One week starting 2012-01-08

CPU TOP 10

Organization	Device Name	ESX Server	VM Display Name	VM Guest OS	CPU	Physical Memory	Virtual Memory
TSPM Demo	tspm-vcenter-1 [49]	VMware ESXi [3]	tspm-vcenter-1 [1816774]	winNetStandard64Guest	**19%**	96%	68%
TSPM Demo	tspm-rhel54-1 [41]	VMware ESXi [3]	tspm-rhel54-1 [1816777]	E: tools not running	**2%**	56%	0%
TSPM Demo	tspm-rhel54-2 [43]	VMware ESXi [3]	tspm-rhel54-2 [1816769]	E: tools not running	**2%**	58%	0%
TSPM Demo	tspm-rhel54-3 [44]	VMware ESXi [4]	tspm-rhel54-3 [1816784]	rhel5Guest	**2%**	55%	0%
TSPM Demo	tspm-win2008r2-3 [40]	VMware ESXi [4]	tspm-win2008r2-3 [1816782]	windows7Server64Guest	**1%**	11%	5%
TSPM Demo	tspm-win2008r2-4 [39]	VMware ESXi [5]	tspm-win2008r2-4 [1816786]	windows7Server64Guest	**1%**	11%	5%
TSPM Demo	tspm-win2008r2-1 [37]	VMware ESXi [6]	tspm-win2008r2-1 [1816768]	windows7Server64Guest	**1%**	11%	5%
TSPM Demo	tspm-win2003r2-3 [29]	VMware ESXi [4]	tspm-win2003r2-3 [1816783]	winNetStandard64Guest	**1%**	25%	5%
TSPM Demo	tspm-win2003r2-1 [28]	VMware ESXi [3]	tspm-win2003r2-1 [1816772]	winNetStandard64Guest	**1%**	27%	6%
TSPM Demo	tspm-win2008r1-1 [31]	VMware ESXi [3]	tspm-win2008r1-1 [1816778]	winLonghorn64Guest	**1%**	13%	5%

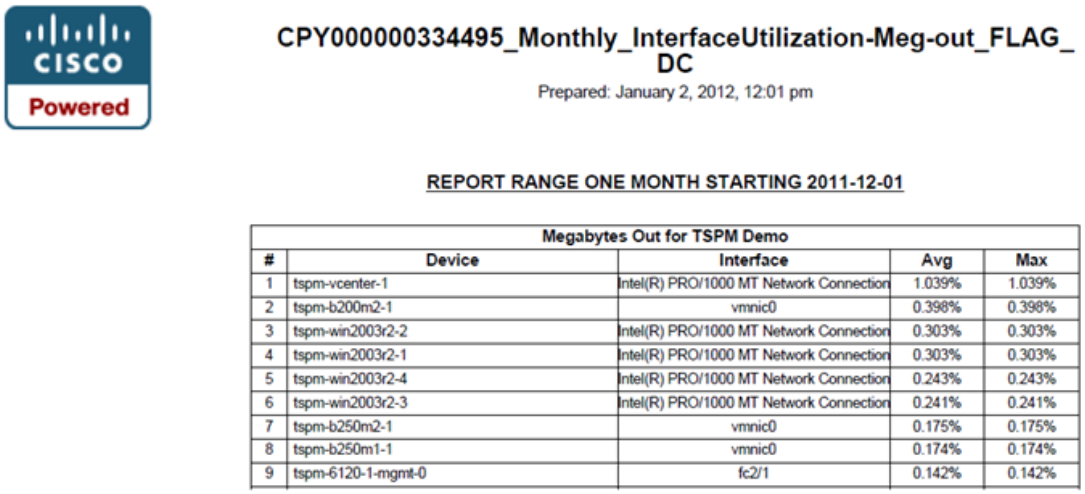
PHYSICAL MEMORY TOP 10

Organization	Device Name	ESX Server	VM Display Name	VM Guest OS	CPU	Physical Memory	Virtual Memory
TSPM Demo	tspm-vcenter-1 [49]	VMware ESXi [3]	tspm-vcenter-1 [1816774]	winNetStandard64Guest	**19%**	96%	68%
TSPM Demo	tspm-rhel54-2 [43]	VMware ESXi [3]	tspm-rhel54-2 [1816769]	E: tools not running	**2%**	58%	0%
TSPM Demo	tspm-rhel54-1 [41]	VMware ESXi [3]	tspm-rhel54-1 [1816777]	E: tools not running	**2%**	56%	0%
TSPM Demo	tspm-rhel54-3 [44]	VMware ESXi [4]	tspm-rhel54-3 [1816784]	rhel5Guest	**2%**	55%	0%
TSPM Demo	tspm-win2003r2-1 [28]	VMware ESXi [3]	tspm-win2003r2-1 [1816772]	winNetStandard64Guest	**1%**	27%	6%
TSPM Demo	tspm-win2003r2-4 [27]	VMware ESXi [5]	tspm-win2003r2-4 [1816788]	winNetStandard64Guest	**1%**	26%	6%
TSPM Demo	tspm-win2003r2-3 [29]	VMware ESXi [4]	tspm-win2003r2-3 [1816783]	winNetStandard64Guest	**1%**	25%	5%
TSPM Demo	tspm-win2008r1-3 [34]	VMware ESXi [4]	tspm-win2008r1-3 [1816780]	winLonghorn64Guest	**1%**	14%	5%
TSPM Demo	tspm-win2008r1-4 [33]	VMware ESXi [5]	tspm-win2008r1-4 [1816785]	winLonghorn64Guest	**1%**	13%	5%
TSPM Demo	tspm-win2008r1-1 [31]	VMware ESXi [3]	tspm-win2008r1-1 [1816778]	winLonghorn64Guest	**1%**	13%	5%

VIRTUAL MEMORY TOP 10

Organization	Device Name	ESX Server	VM Display Name	VM Guest OS	CPU	Physical Memory	Virtual Memory
TSPM Demo	tspm-vcenter-1 [49]	VMware ESXi [3]	tspm-vcenter-1 [1816774]	winNetStandard64Guest	**19%**	96%	68%
TSPM Demo	tspm-win2003r2-1 [28]	VMware ESXi [3]	tspm-win2003r2-1 [1816772]	winNetStandard64Guest	**1%**	27%	6%
TSPM Demo	tspm-win2003r2-4 [27]	VMware ESXi [5]	tspm-win2003r2-4 [1816788]	winNetStandard64Guest	**1%**	26%	6%
TSPM Demo	tspm-win2008r2-4 [39]	VMware ESXi [5]	tspm-win2008r2-4 [1816786]	windows7Server64Guest	**1%**	11%	5%
TSPM Demo	tspm-win2008r2-3 [40]	VMware ESXi [4]	tspm-win2008r2-3 [1816782]	windows7Server64Guest	**1%**	11%	5%
TSPM Demo	tspm-win2008r2-1 [37]	VMware ESXi [6]	tspm-win2008r2-1 [1816768]	windows7Server64Guest	**1%**	11%	5%
TSPM Demo	tspm-win2003r2-3 [29]	VMware ESXi [4]	tspm-win2003r2-3 [1816783]	winNetStandard64Guest	**1%**	25%	5%
TSPM Demo	tspm-win2008r1-3 [34]	VMware ESXi [4]	tspm-win2008r1-3 [1816780]	winLonghorn64Guest	**1%**	14%	5%
TSPM Demo	tspm-win2008r1-1 [31]	VMware ESXi [3]	tspm-win2008r1-1 [1816778]	winLonghorn64Guest	**1%**	13%	5%
TSPM Demo	tspm-win2008r1-4 [33]	VMware ESXi [5]	tspm-win2008r1-4 [1816785]	winLonghorn64Guest	**1%**	13%	5%

Figure 4. Network Level Report – Interface Throughput Utilization



CPY000000334495_Monthly_InterfaceUtilization-Meg-out_FLAG_DC

Prepared: January 2, 2012, 12:01 pm

REPORT RANGE ONE MONTH STARTING 2011-12-01

Megabytes Out for TSPM Demo				
#	Device	Interface	Avg	Max
1	tspm-vcenter-1	Intel(R) PRO/1000 MT Network Connection	1.039%	1.039%
2	tspm-b200m2-1	vmnic0	0.398%	0.398%
3	tspm-win2003r2-2	Intel(R) PRO/1000 MT Network Connection	0.303%	0.303%
4	tspm-win2003r2-1	Intel(R) PRO/1000 MT Network Connection	0.303%	0.303%
5	tspm-win2003r2-4	Intel(R) PRO/1000 MT Network Connection	0.243%	0.243%
6	tspm-win2003r2-3	Intel(R) PRO/1000 MT Network Connection	0.241%	0.241%
7	tspm-b250m2-1	vmnic0	0.175%	0.175%
8	tspm-b250m1-1	vmnic0	0.174%	0.174%
9	tspm-6120-1-mgmt-0	fc2/1	0.142%	0.142%

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