Lenovo Upward Integration Module for Zenoss Service Dynamics SNMP ZenPacks 1.0

February 2015

User Guide

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Chapter 1. Introduction

ZenPack is a plug-in deployed on Zenoss framework to monitor devices. The Lenovo Upward Integration Module for Zenoss delivers two SNMP ZenPacks for monitoring Chassis Management Module (CMM) and Integrated Management Module (IMM) devices.

IMM and CMM ZenPacks provide custom modeling of System X Server and Flex System Chassis. The information is collected through SNMP protocol.

Intended audience

The audience for this guide are the network administration engineers at Lenovo customer sites who install, configure, and use Zenoss and ZenPacks.

Conventions used in this guide

Several conventions are used in this publication for special terms, actions, commands, and paths.

This guide uses the following conventions:

Bold

- Interface controls (such as, check boxes, push buttons, radio buttons, spin buttons, fields, folders, icons, list boxes, items inside list boxes, multicolumn lists, containers, menu choices, menu names, tabs, property sheets, and labels)
- Keywords and parameters in text

Italic

• Citations (such as, titles of publications)

Monospace

- Examples and code examples
- Commands
- Message text and prompts addressed to the user
- Text that the user must type

Monospace Italic

• Variables

Pre-requisites

You must install Zenoss 4.2.5 (Resource Manager 4.2.5).

You can download the ZenPack via Passport Advantage after you purchase the license.

Supported devices

Servers with IMM2 and Chassis with CMM are supported.

Daemons

The following daemons are used by IMM and CMM ZenPacks:

- ZenModeler: The ZenModeler daemon is used to model devices. The ZenModeler daemon iterates over a list of devices in the system and attempts to model components of each device.
- By default, Zenoss remodels each known device every 720 minutes (12 hours). You can change this interval by editing the value of Modeler Cycle Interval in the collector's configuration.
- ZenPerfSNMP and ZenCommand: These daemons collect the performance data from devices for displaying in graphs. By default, Zenoss polls device every 300 seconds (5 minutes). You can change this interval by editing the SNMP Collection Interval in the device configuration properties.

Chapter 2. Features

This chapter explains the following features for IMM and CMM ZenPacks:

- Discovery and inventory collection
- Monitoring
- Trap support

Discovery and inventory collection

Discovery and inventory collection are supported for IMM or CMM ZenPacks.

To view details for a single device, click its name in the device list. The device Overview page appears.

IMM

When the IMM ZenPack discovers an IMM device, following information is displayed on the Overview page:

Overview page	Description
Manufacturer,	Device Title, Tag, Serial Number
information	Hardware Manufacturer, Hardware Model, OS Manufacturer, OS Model
	SNMP SysName, SNMP Location, SNMP Contact, SNMP Description
Other information	IMM Hostname, System UUID, Machine Level VPD Machine Type, OS Failure Capture Tftp Server, OS Failure Capture File Name, OS Failure Capture Save Start, OS Failure Capture Save Status, fuelGauge Power Capping Policy Setting, fuelGauge Static Power Pcap Soft Min, fuelGauge Static Power Pcap Min, fuelGauge Static Power Pcap Current Setting, fuelGauge Static Power Pcap Max, fuelGauge Static Power Pcap Mode, fuelGauge Static Max Power

Devices Networks Processes	IP Services Windows Services Network Map Manul	acturers	Page Tips
X3750M4 /Server/IMM 9.111.66.120	TO AT OO UP O PRODUCE STATUS PRODU	oduction Normal ICTION STATE PRIORITY	
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Software Custom Properties Administration Monitoring Templates Device (/Server)	Location <u>edit</u> : <u>/Shangai</u> Links: <u>Console: 9.111.66.120</u>	China Lab 03 SNMP Contact: 03 David 05 SNMP Description: 03 Linux IMM2-e41113d93725 fut	S Failure Capture The Server : S Failure Capture The Name S Failure Capture Save Status : No capture S Failure Capture Save Status : No capture Idicauge Power Capping Policy Setting: No Power Limit •
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Figure 1: Overview page (IMM)

IMM ZenPack collects inventory of the following components:

Component	Attributes
Disk	ID, FRU Name, Health Status
LEDs	ID, Identifier, Label, State, Color
Chassis Component Log VPD	ID, FRU#, FRU Name, Serial #, Manufacturer, Action, Time Stamp
CPU VPD	Description, Speed, Identifier, Type, Family, Cores, Threads, Voltage, Data Width, Health Status
Memory VPD	ID, Description, Part #, Serial #, Manufacture Date, Memory Type, DMM Size, Health Status
Fuel Gauge Power Policy Information	ID, Power Policy Name, Power Supply Failure Limit, Max Power Limit (watts), Estimated Utilization, Power Policy Activate
Fan	ID, Description, Fan Speed, Critical Low Limit, Critical High Limit, Non-Critical High Limit, Non- Critical High Limit, Non-Recoverable Low Limit, Non-Recoverable High Limit, Health Status
Voltage	ID, Description, Current Reading, Nominal Reading, Non-Recoverable High Limit, Critical High Limit, Non-Critical High Limit, Health Status

Component	Attributes
Power Trending Information	ID, Power Trending Time Stamp, Power Trending Sample Average, Power Trending Sample Minimum, Power Trending Sample Maximum
Host MAC Address VPD	ID, Description, MAC Address
Temperature	ID, Description, Current Reading, Nominal Reading, Non-Recoverable High limit, Critical High Limit, Non-Critical High Limit, Health Status
Power Module	ID, Power FRU Name, Power Part Number, Power FRU Number, Power FRU Serial Number, Power Health Status
Firmware VPD	ID, Firmware Type, Version, Release Date
Logged In Users	ID, User ID, Access Method
Chassis Component VPD	ID, FRU Number, FRU Name, Serial Number, Manufacturing ID
System Health	ID, Severity, Description
Adapter Generic Table	ID,VPD Product Name, Slot Number, Location, Card Interface
Adapter N/W Function Table	ID, N/W VPD Product Name, VPD Product Name, VPD Manufacturer, VPD UUID, VPD Model, VPD Serial #, VPD FRU #, VPD Part #, FoD UID, Support Hot Plug, Physical Port #, Max Port #, Port #, Max Data Width, Package Type, PCI Bus #, PCI Device #, PCI Function #, PCI Vendor ID, PCI Bus't, PCI Device Type, PCI Revision ID, PCI SubSystem Vendor ID, PCI SubSystem Device ID, PCI Slot Designation
Adapter N/W Port Table	ID, N/W VPD Product Name, Physical Port #, Physical Port Connector, Physical Port Burned Address, Port #, Max Data Size, Permanent Address, N/W Address, Link Technology, vNIC Mode, Max Speed, Protocol Type, Current Protocol, FCoE Permanent Address, FCoE N/W Address, Connection Type, Role, Target Relative Port #

Component	Attributes
Adapter GPU Function Table	ID,GPU VPD Product Name, ADAP VPD Product Name, VPD Manufacturer, VPD UUID, VPD Model, VPD Serial #, VPD FRU #, VPD Part #, FoD UID, Support Hot Plug, Video Memory Size, Video Memory Type, Chip #, Max Data Width, Package Type, PCI Bus No, PCI Device No, PCI Function No, PCI Vendor ID, PCI Device ID, PCI Device Type, PCI Revision ID, PCI Sub Vendor ID, PCI Sub Device ID, PCI Slot Designation
Adapter GPU Chip Table	ID, VPD Product Name, Chip No, Name, Family, Manufacturer, Cores Enabled, Max Clock Speed, External Bus Clock Speed, Address Width, Data Width, Form Factor, Model, Serial No, FRU No, Part No, Unique ID
Adapter RAID Function Table	ID, RAID VPD Product Name, ADAP VPD Product Name, VPD Manufacturer, VPD UUID, VPD Model, VPD Serial #, VPD FRU #, VPD Part #, FoD UID, Support Hot Plug, Max Data Width, Package Type, PCI Bus No, PCI Device No, PCI Function No, PCI Vendor ID, PCI Device ID, PCI Device Type, PCI Revision ID, PCI Sub Vendor ID, PCI Sub Device ID, PCI Slot Designation
Adapter Firmware Table	ID, VPD Product Name, Name, Classification, Description, Manufacture, Version, Release Date, Software ID
Raid Controller	ID, Name, VPD Prod Name, FW Pkg Version, Battery Backup, VPD Manufacture, VPD UUID, VPD Machine Type, VPD Model, VPD Serial No, VPD FRU No, VPD Part No
Raid Drive	ID, Drive Name, Drive State, Slot No, Device ID, Disk Type, Media Type, Drive Speed, Current Temperature, Health Status, Drive Capacity
Raid Controller Firmware	ID, Firmware Name, Ctrl Name, Description, Manufacture, Firmware Version, Release Date
Raid Drive Firmware	ID, Firmware Name, Drive Name, Description, Manufacture, Firmware Version, Release Date

Component	Attributes
Raid Storage Pool	ID, Storage Pool Name, Controller Name, Raid State, Capacity, Volumes, Drives
Raid Volume	ID, Volume Name, Controller Name, Volume Status, Capacity, Strip Size, Volume Bootable
Flash Dimm	ID, FRU Name, Health Status, Operational State, Capacity, Model Type, Part Number, FRU Serial Number, Manufacture ID, Temperature, Warranty Writes, Write Endurance, FW Level

Note: The Details section displays additional columns which are not displayed in the grid.



Figure 2: Details (IMM)

CMM

When the CMM ZenPack discovers a CMM device, following information is displayed on the Overview page:

Overview page	Description
Manufacturer,	Device Title, Tag, Serial Number
information	Hardware Manufacturer, Hardware Model, OS Manufacturer, OS Model
	SNMP SysName, SNMP Location, SNMP Contact, SNMP Description
Chassis License Key	Feature, Feature Type, Description, System, License ID, Validation, Status, Time Limit, Usage Limit
Other information	System UUID, Hot Air Recirculation Monitoring, Hot Air Recirculation Temp Delta Threshold, System Health, Front Panel System Error LED (fault LED), Front Panel Information LED (check Log LED), Front Panel Identity LED (identify LED), Power Domain One Power Trending Period, Switch Power Trending Period, Switch Power Trending Switch ID, Chassis Fan Power Trending Period, Chassis Fan Power Trending ID, Chassis Total DC Power Available, Chassis Total Power In Used, Chassis Total Thermal Output, Chassis Power Service Mode, Passive Air Filter Status, Passive Air Filter Month Frequency, Passive Air Filter Replace Date, Blade Power Trending Period, Blade Power Trending Blade ID, Blade Power Trending Topology Path, Chassis Thermal Trending Period, Chassis Power Trending Period

Devices Networks Processes IP Se	ervices Windows Services Network Map Manufa	cturers	Page Tips
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Ownstaw Events Components Disk (3) Classis Component Log VPD (10) C PL VPD (2) Memory VPD (2) Fan (12) Votage (4) Prower Trending Information (24) Monte VPD (2) Fan (12) Votage (4) Power Module (2) Firmmware VPD (7) Chassis Component VPD (52) Temperature (11) Graphs Modeler Pluxins	Device ID: 9.111.66.120 Uptime: 484.06h.36m/228 First Seen: 2014/07/02.05.14.40 Last Change: 2014/07/02.05.3.46 Model Time: 2014/07/02.05.3.46 Locking: Unacked Memory/Swap: Unknown/Unknown	Device Tille: X3750M4 Production State: Production State: Production State: Profity: Normal Tag: System x3750 M4 Serial Number: 23D4797 Save Cancel StMP SysName: Oth	Acck Slot:
Configuration Properties Dynamic View Software Custom Properties Administration Monteting Templates Derice ((Server)	None Groups sdf: (92) Locaton sdf: ISbangai Links: Console: 9.111.65.120	SMMP Sensice MM SMMP Location: Sy China Lab SMMP Contact: OS David SMMP Description: OS Linux MM2-e4113433725 (ref	M Hostname: IMM2-4411303725 stem UUID: 005026AC000387051E332E41F13DA6896 chine Level VPD Machine Type: 8722 3 Failure Capture Titp Server : Failure Capture Tite Kamer. Incent mapped 5 Failure Capture Save Status: No capture UGauge Fower Capping Policy Setting, No Power Limit
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Figure 3: Overview page (CMM)

The CMM ZenPack collects inventory of the following components:

Component	Attributes
Blade Led Details	Bay Number, Component Type, Label, State, Location
Fuel Gauge Power Domain One	Index, Bay#, Blade Primary Slot, Status, Name, State, Currently Allocated Power, Maximum Allocated Power, Minimum Allocated Power, CPU Duty Cycle, Throttle, Power Capabilities, Measured or Static, Topology Path.
Power Module Health	Index, Exists, State, Details, Description
Fuel Gauge Blade Power Trending	Index, Sample ID, Time Stamp, Maximum Power, Minimum Power, Average Power, Topology ID
Logged In Users	Logged In User ID, Access Method Used
Chassis Fan LED	Fan ID, Fan Exists, Fan Error Led
Component Inventory	Topology Path, Instance, Description, Machine Type Model, Machine Serial, Asset ID, Part Number, FRU Number, Serial Number, Manufacture, Hardware Revision, Manufacture Date, UUID
Chassis Fan LED	Fan ID, Fan Exists, Fan Error Led

Component	Attributes
Fuel Gauge Power Domain One Power Trending	Time Stamp, Average Power
Blade Led	Blade Index, Blade ID, Blade Exists, Blade Power State, Blade Health State, Blade Name, Blade Fault, Blade Check Log, Blade Identity
Hot Air Recirculation	Topology Path, Index, Name, Sensor Label, Sensor Reading, Exceeded Status
Fuel Gauge	Domain #, Status, Power Modules, Policy Setting, Total Power, Allocated Power, Remaining Power, Power In Use, Fuel Gauge Power In Used Maximum, Fuel Gauge Power In Used Low
Rear Led Card Thermal Trending	Time Stamp, Temperature
Fuel Gauge Chassis Power Trending	Time Stamp, Average Power
Fuel Gauge Chassis Fan Power Trending	ID, Time Stamp, Maximum Power, Minimum Power, Average Power
Fuel Gauge Chassis Fan Cooling Zone	Cooling Zone, Cooling Zone Status, Cooling Zone Component
License Key	Component Index, Index, Description, Time Stamp, License ID, Other Info, Status
System Health	Severity, Description, Date Time, Aux Data, Event ID
Fuel Gauge CFM Thermal Trending	Time Stamp, Current CFM, Maximum CFM
Chassis Fans	ID, Speed, State, Speed RPM, Controller State, Cooling Zone
Fan Pack	Exists, State, Fan Count, Average Speed (%), Average Speed RPM, Controller State
Inventory Mgmt Activity VPD	FRU Number, Serial Number, Manufacturing ID, Bay Number, Action, Time Stamp, Module Name, Topology Path

Component	Attributes
Switch Module LED	Slot, Label, State, Location
Blade MAC Address VPD	Displays blade MAC address and its expansion cards (daughter cards) - 9 MAC Addresses are displayed
Fuel Gauge Power Policy	Power Domain#, Policy Name, Power Supply Failure Limit, Maximum Power Limit, Estimated utilization (%), Activate
Fuel Gauge Switch Power Trending	ID, Time Stamp, Maximum Power, Minimum Power, Average Power
Fuel Gauge EHI Thermal Trending	ID, Time Stamp, Maximum EHI, Minimum EHI, Average EHI
Fuel Gauge Blade Details	ID, Maximum Power Configuration, Effective Clock Rate, Power Saver Mode, Dynamic Power Saver, Dynamic Power Favor performance Over Power, Power Control, Pcap Minimum, Pcap Guarantee, Pcap Maximum,
Component Disk Drive	Topology Path, Description

Note: The Details section displays additional columns which are not displayed in the grid.

Devices Networks Processes	IP Services	Windows Services	Network Ma	p Manufacturers				********	Page Tips
9.111.68.27 / <u>Server/CMM</u> 9.111.68.27	▼ 2 ▲	3 () 0	Up 🕛	Production PRODUCTION STATE	Normal PRIORITY				
Overview	- Hot Air	Recirculation	Sele	:t •				Q Type to filter.	
Events	Events	Topology Path	Index 🔶	Name	Sensor Label	Sensor Reading	Exceeded Status	Threshold Sensor Reading I	Maximum
 Components 	0	Chassis 1 Blade 13		Node 13	Inlet 1 Temp	18.00	no		<u>-</u>
Blade Led Details (256)	0	Chassis 1 Blade 8 BL.	1	Node 08 - 01 (TCD_B109)	Inlet Temp	21.50	no		
FG Power Domain1 (34)	0	Chassis 1 Blade 1	1	Node 01 (b072_Blacktip)	Inlet Temp	22.50	no		
Power Module Health (6)	0	Chassis 1 Blade 7	1	Node 07	Inlet Temp	23.00	no		
FG Blade Power Trending (12)	0	Chassis 1	1	Chassis	Chassis Ambient	23.50	no		
Loggedin Users (28)		Chassis 1 Blade 8 Bl.	1	Node 08 - 02 (TCD B109)	Inlet Temp	20.00	no		
Component Inventory (79)		Chassis 1 Blade 11	1	Node 11 (node03)	Inlet 1 Temp	23.00	00		
Chassis Fan LED (10)		Chassis 1 Blade 3	1	Node 03 (TCT_B069Con	Inlet 1 Temp	20.50	no		
FG PD1 Power Trending (12)									
Blade Led (14)	Display:	Graphs	~			Range:	Hourly	😽 🛛 Reset 📋 Link Graphs? 🖌	🛛 Refresh 🔹
Hot Air Recirculation (15)									1-
Fuel Gauge (1)	Hot Air			<	Zoom In Zoom Out	>			
Rear Led Card Thermal Trending (12)		20				1-1-1-1-1-1-1			
G Chassis Power Trending (12)	ade	15							
G Chassis Fan Power Trending (12)	igre	10							
Chassis Fan Cooling Zone (30)	ent	5							
License Key (3)	U	0							
System Health (21)		21:40 22:00	22:20	22:40 23:00 23:20	23:40 00:00	00:20			
CFG CFM Thermal Trending (12)	Hot	1014-07-02 21:21:30 t Temp Threshold-Hi	151 .gh	to 2	14-07-03 00:31:0	8 151			
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Clauraters Marst Astritus VDD (169)									
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Switch Module LED (9)	¥								
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Figure 4: Details (CMM)

Monitoring

You can view the performance graphs for IMM and CMM devices.

The Graphs view shows performance graphs defined for the device. To access graphs, select Graphs in the left panel.

IMM

IMM ZenPack provides graphs for the following components:

Component	Attributes	Threshold
Temperature	System Temperature -Nominal Reading (Degree C)	
	System Temperature - Current Reading (Degree C)	Threshold-high
Voltage	System Voltage – Nominal Reading (Volts)	
	System Voltages – Current Reading	Threshold-high
Fan	System Fan Speed	Threshold Fan Speed Minimum Threshold Fan Speed Maximum
Fuel Gauge (displayed at device level)	 Fuel gauge information displays the following: Fuel Gauge Power Remaining Fuel Gauge Power Consumption Other Fuel Gauge Total Thermal Output Fuel Gauge Total Power In Use 	

СММ

CMM ZenPack provides graphs for the following components:

Component	Attributes	Threshold	
Chassis Fan	Chassis Fan Speed RPM	Fan Speed Warning Level Threshold Fan Speed Error Level Threshold	
	Chassis Fan Speed (% of maximum)	Fan Speed Threshold- Low Fan Speed Threshold- High	
Fan Pack	Fan Pack Average Speed RPM		
	Fan Pack Average Speed	Fan Pack Speed Threshold-High Fan Pack Speed Threshold-Low	
Fuel Gauge Blade Details	 Fuel Gauge Blade details Blade Details Pcap Min Blade Details Pcap Guaranteed Min Blade Details Pcap Max 		
Fuel Gauge	Fuel Gauge information Fuel Gauge Power In Used 		
	 Fuel Gauge Power Fuel Gauge Allocated Power Fuel Gauge Remaining Power Fuel Gauge Total Power 	FG Power In Use Threshold-High FG Power In Use Threshold-Low	

Component	Attributes	Threshold
Fuel Gauge Power Domain One Power Trending	 Fuel Gauge Power Domain Power Power Domain One Power Trending Sample Average 	
Hot Air Recirculation	Hot Air • Sensor Reading	Hot Temp Threshold- High

Trap support

Trap support is provided on IMM and CMM devices.

IMM

The SNMP v1 traps for IMM devices are as follows:

- ibmSpTrapTempC
- ibmSpTrapVoltC
- ibmSpTrapPowerC
- ibmSpTrapHdC
- ibmSpTrapRdpsC
- ibmSpTrapRdpsN
- ibmSpTrapFanC
- ibmSpTrapTempN
- ibmSpTrapVoltN
- ibmSpTrapOsToS
- ibmSpTrapAppS
- ibmSpTrapPoffS
- ibmSpTrapPonS
- ibmSpTrapBootS
- ibmSpTrapLdrToS
- ibmSpTrapPFAS
- ibmSpTrapRLogin
- ibmSpTrapSysLogS
- ibmSpTrapIhcC
- ibmSpTrapNwChangeS
- ibmSpTrapCPUC
- ibmSpTrapMemoryC
- ibmSpTrapCPUN
- ibmSpTrapMemoryN
- ibmSpTrapHardwareC

- ibmSpTrapHardwareN
- ibmSpTrapPowerN
- ibmSpTrapFanN

СММ

The SNMP v1 traps for CMM devices are as follows:

- mmTrapTempC
- mmTrapVoltC
- mmTrapTampC
- mmTrapMffC
- mmTrapPsC
- mTrapHdC
- mmTrapVrmC
- mmTrapLogFullN
- mmTrapRdpsN
- mmTrapSffC
- mmTrapTempN
- mmTrapVoltN
- mmTrapSecDvS
- mmTrapPostToS
- mmTrapOsToS
- mmTrapAppS
- mmTrapPoffS
- mmTrapPonS
- mmTrapBootS
- mmTrapLdrToS
- mmTrapPFAS
- mmTrapRemoteLoginS
- mmTrapMsC
- mmTrapRmN
- mmTrapKVMSwitchS
- mmTrapSysInvS
- mmTrapSysLogS
- mmTrapIhcC
- mmTrapNwChangeS
- mmTrapBlThrS
- mmTrapPwrMgntS
- mmTrapBladeC
- mmTrapIOC
- mmTrapChassisC
- mmTrapStorageC
- mmTrapFanC
- mmTrapBladeN

- mmTrapION
- mmTrapChassisN
- mmTrapStorageN
- mmTrapPowerN
- mmTrapFanN
- mmTrapBladeS
- mmTrapIOS
- mmTrapChassisS
- mmTrapStorageS
- mmTrapPowerS
- mmTrapFanS
- mmTrapPwrDOS

Chapter 3. Enable monitoring

This chapter explains about how to add an IMM or CMM device and enable monitoring on it.

Adding an IMM or CMM device

To add an IMM or CMM device, follow these steps:

- 1. From the Navigation menu, select Infrastructure. The Devices page appears.
- 2. Select **Add a Single Device** from (Add Devices). The **Add a Single Device** dialog appears.
- 3. Enter information or make selections to add the device:
 - Name or IP Enter the network (DNS) name or IP address of the IMM or CMM device.
 - Device Class Select a device class to which this device belongs.
 For example, if the new device is an IMM device, then select /Server/IMM and if the new device is a CMM device, select /Server/CMM
 - Collector By default, this is localhost. Select a collector for the device.
 - Model By default, this option is selected. De-select this option if you do not want the device to be modeled when it is added.
- 4. Click **Add**. When the job completes, the device is added in the selected device class.
- 5. Navigate to the newly added device.
- 6. Select **Configuration Properties** in the left panel.
- 7. Change the values of various configuration properties.

For SNMP V1 enabled device, change the following configuration properties:

- **zSnmpCommunity** Enter the SNMP community string here
- o zSnmpVer Select V1
- o **zSnmpMonitorIgnore** Select False

For SNMP V3 enabled device, change following configuration properties:

- **zSnmpAuthPassword** Enter the shared private key used for authentication
- **zSnmpAuthType** Select either MD5 or SHA signatures to authenticate SNMP requests
- o zSnmpMonitorIgnore Select False
- o **zSnmpPort** Enter 161 (This is default port)
- zSnmpPrivPassword Enter the shared private key used for encrypting SNMP requests

- **zSnmpPrivType** Select either DES or AES cryptographic algorithm
- zSnmpSecurityName The Security Name (user) to use when making SNMPv3 requests
- o **zSnmpVer** Select ∨3

Abbreviations

The following table lists the abbreviations along with the expanded forms of those abbreviations:

Abbreviation	Expanded form
CFM	Cubic feet per minute
EHI	Exhaust heat index
FRU	Field replaceable unit
Рсар	Power capping
VPD	Vital product data