Solutions Overview

The IT infrastructure is more critical to business success than ever before. The responsibility of keeping the infrastructure available and performing properly falls on the operations team. With so many systems, layers, and technologies, keeping monitoring systems in synch with the dynamic infrastructure is increasingly difficult – putting monitoring functionality at risk at the point of time it is most needed.

Zenoss helps companies deal with the ever-changing, dynamic IT environment by providing a comprehensive solution that monitors the whole infrastructure – physical and virtual – with a single product.

Powerful
- Broad coverage of the IT stack (Networks, Servers, Applications, Services, Virtualization)
- Deep monitoring for root cause determination on any managed device
- Complete IT Management Operations Functionality (Inventory, Availability Monitoring, Performance Management, Event & Fault Management, Reporting, and Alerting)
- Scalability supporting management of 25,000+ devices

Agile
- Quick adaptation to the managed environment and management systems
- Integrated monitoring of physical, virtual, internal, and external resources
- Fast, easy deployment on demand – when needed
- Low-risk, fast evaluation

Affordable
- Elimination of up-front license fees
- Reduced deployment and on-going support services costs
- Lower Total Cost of Ownership (TCO) – by as much as 70%

FEATURES
- Physical and Virtual Monitoring in a Single Pane of Glass
- Discovery of all devices, virtual machines, configuration settings, and installed software
- Centralized Event Management displays events from various sources into one screen
- Configuration change detection
- Predictive threshold setting automatically discovers abnormal device behavior
- User customizable Web Portal
- Interactive Live and Historical Reports

"Zenoss looks like a strong competitor for large frameworks"
-- Forrester Research

Full Operational Awareness
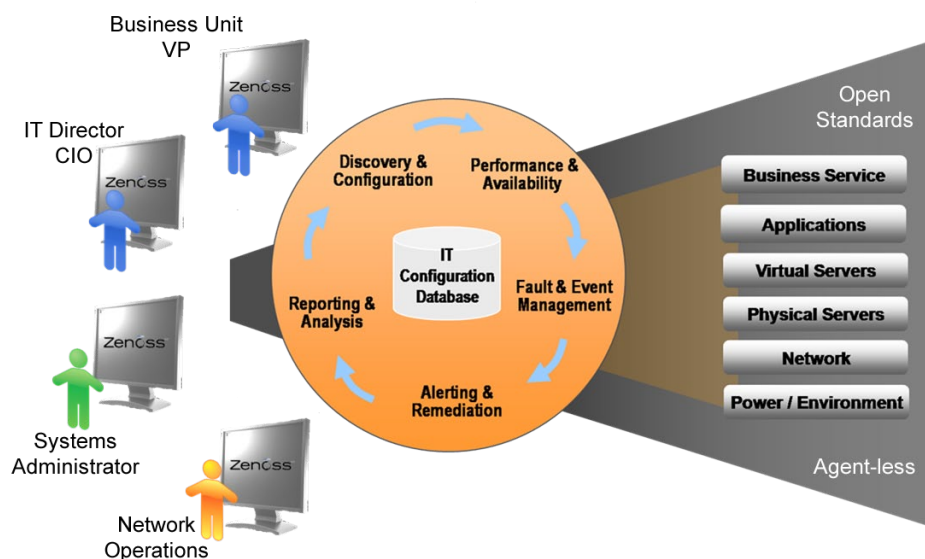
The Zenoss solution includes the complete set of IT systems management functionality:
- Asset discovery and inventory
- Availability & Performance Monitoring
- Event & Fault Management
- Alerting & Remediation
- Reporting
- Change Detection

All IT stakeholders, from executives to developers, can see the information they need in a view appropriate for their business requirements.

When problems occur, operators drill down into the appropriate system (operating systems, J2EE apps, databases, etc.) to determine the root cause.

Inventory, Discovery, Modeling & Change Detection
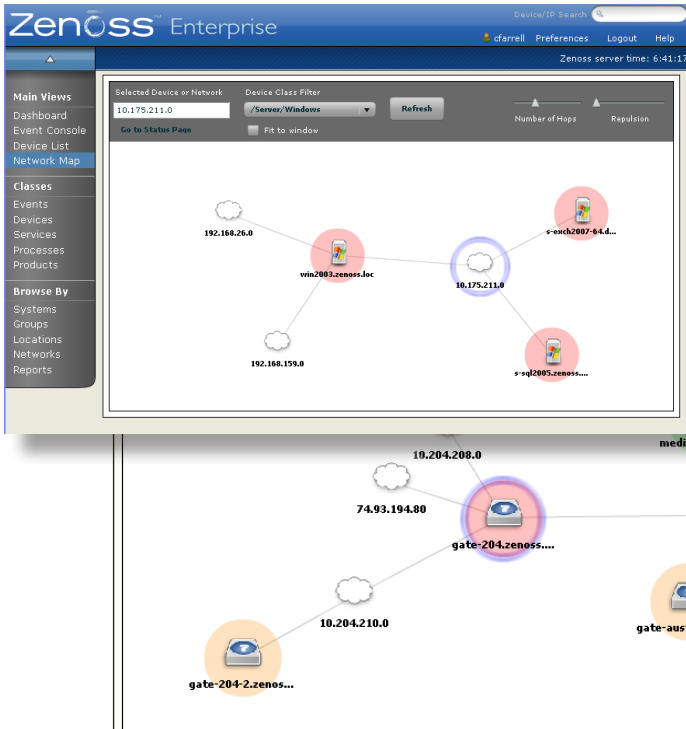
To properly manage the infrastructure, the IT operations team must know what components are actually installed in the environment. Zenoss inventory management automates the processes of device discovery, configuration detection, monitoring setup, and change detection. Features include:

- Automatic discovery of IT components,
- Detection of infrastructure changes (new devices, deleted devices, moved devices)
- Configuration change detection for managed devices (drivers, software versions, installed software, operating systems parameters, etc.)
- Dynamic network topology map with all managed devices and servers,
- Automated updating of the configuration database and map(s) when changes occur

Zenoss finds all the network devices and servers in the infrastructure, maps the relationships between all components, and determines device configuration information. All this data is stored in the Zenoss Configuration Database, including:
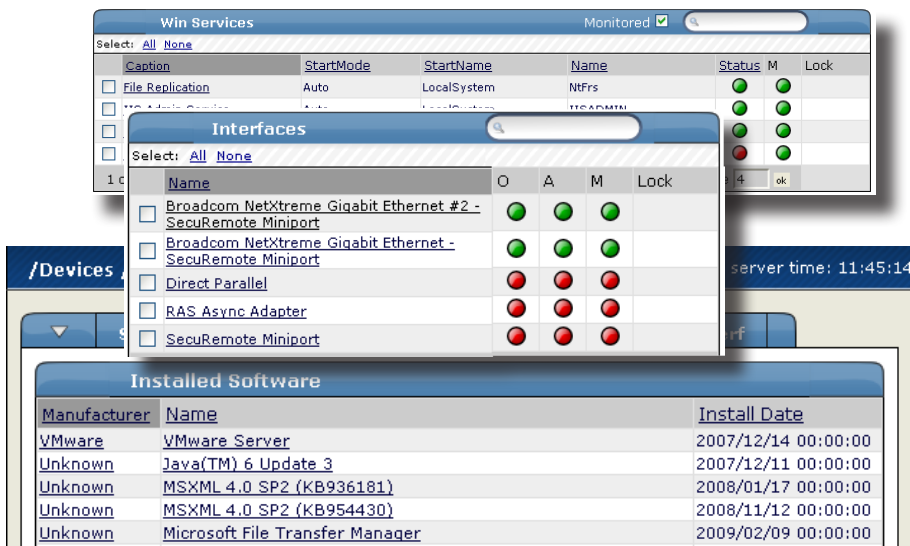
- Device / Server Model, Type, & Manufacturer
- Physical or Virtual IP Address
- Operating system settings
- Installed software list
- Configuration data

The Zenoss Topology Map updates in real-time as devices are added, deleted, or moved.

Operators can make any device the center of the map by double-clicking.

Color-coded circles indicate device status (rolling up availability, performance, and event status).

Individual sub-systems (such as "routers" or "windows servers") can be isolated.

Model-based Management

Discovery is just the first step in Zenoss' model-based management. Afterward, devices are put through the Zenoss modeling engine to initialize monitoring and reporting configuration, based on the type of device (App Server, e-mail, etc.):

- Availability monitoring protocol selection and initial configuration are automatically setup
- Report templates specify and display the proper performance metrics

Operations teams get the following benefits from Zenoss discovery and modeling:

- Fast deployment with automated discovery, modeling, and monitoring setup
- Confidence in configuration specifications and installed software
- More complete coverage of the mission critical infrastructure

Operators can dive deep into individual servers using Zenoss' complete Server inventory of services, interfaces, installed software, and more

Managing Critical Infrastructure

When the IT infrastructure has problems, the business processes that rely on those IT systems suffer. Application slowdowns, unplanned outages, and long down-times can result in dissatisfied customers or even lost business. Proactively monitoring availability and performance of the infrastructure components helps minimize outages and optimize performance. Zenoss gives operators real-time views of device availability, response time, throughput, resource usage, and more.

Availability Monitoring

- Active heartbeat monitors regularly check each managed device, server, and service to ensure that everything is operating as expected
- Multiple protocols are checked for each device
  - ICMP
  - SNMP
  - Windows services
  - Windows processes
  - Linux/Unix processes
  - TCP/IP services (HTTP, SMTP, etc.)
  - TCP/IP ports
- URL heartbeat checks ensure that Web pages are ready for end users
- All availability and performance status information is rolled up into a single status on the dashboard
  Red (Critical), Orange (Error), Yellow (Warning), Green (OK)
- The dashboard includes an integrated Google map so operations can geographically see the status of the entire IT infrastructure, from a single site to a globally distributed environment
- Operations staff drill down from the dashboard / map to the Network topology map, specific device or network route to perform root cause analysis.

Performance Management
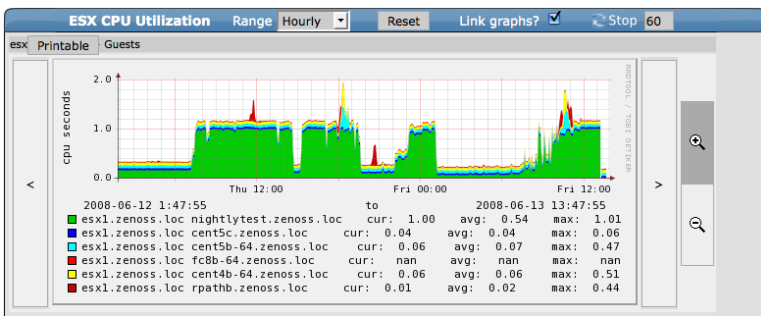
Performance Graphs (live or historical) can include data from one device or as many as desired by the operations team
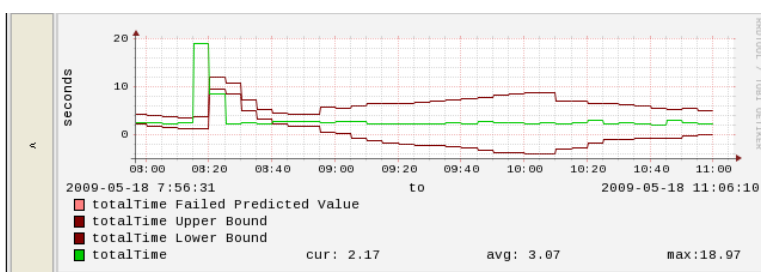

- Performance graphs depict resource usage, throughput, and overall performance of any device, service, or application.
- Custom performance reports give operators a view of all pertinent data on a single screen
- Aggregate performance graphs deliver time-synched views across multiple devices, systems, and applications
- Click-through drill-down allows operators to perform root cause analysis directly from the reporting screen
- Predictive Thresholding automatically sets warning targets based on standard operational performance
- End user performance is checked with synthetic transactions for several critical transaction types
  - Web Page / Application Requests
  - E-mail
  - Database Queries

Zenoss Predictive Thresholding saves operations teams time and effort in determining appropriate alerting levels

Event & Fault Management

Operations teams are event driven most of the time, even when dealing with performance monitoring. Errors, faults, threshold alerts, and other critical messages that occur during the day are what drive an operator's ongoing activities. In heterogeneous environments, this can lead to swivel chair management (using different tools to monitor different components) since events can come from any system -- and any source -- at any time. Zenoss makes operations staff more efficient with a central Event Console that integrates events, faults, errors, and alerts from every system and every source into a single screen. The coordinated Event Console delivers complete visibility into all system-wide events, as well as key functionality to make dealing with errors, events, and faults more efficient throughout the day
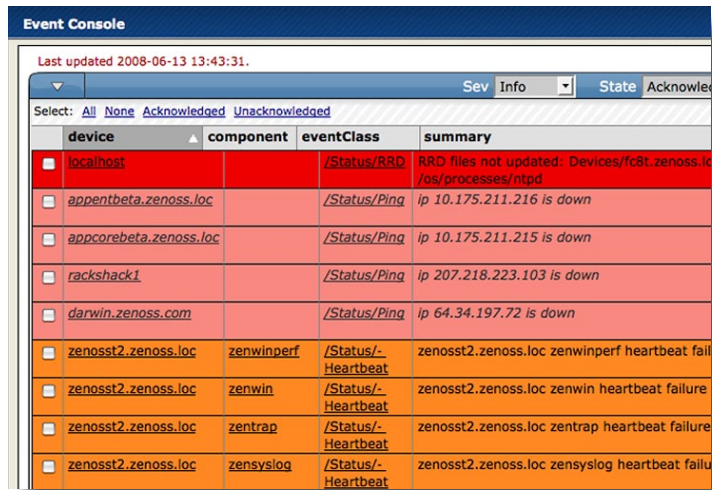

- Automatically correlates multiple events based on time and topological relationships
- Supports multiple concurrent users with "Acknowledge / Answer" capabilities right on the screen
- Data sources include syslogs, Zenoss Alerts, script files, J2EE Events, SNMP traps, etc.
- IT business processing rules can be automatically executed based on standard operational procedures
- Start time, counts, and more data on multiple events allow Zenoss to eliminate multiple alerts for the same root cause
- When an issue is dealt with, a the event converts to a "Clear" state (green), critical for integration with help desk solutions

Historical records of events are easily searched based on time, device, event type, etc.

All event classes appear together in the single UI screen:

Critical *(Red)* Error *(Orange)* Warning *(Yellow)* Info *(Blue)* Debug *(Grey)* Clear *(Green)*

After an issue is solved, a Clear Event is generated to all desired management tools
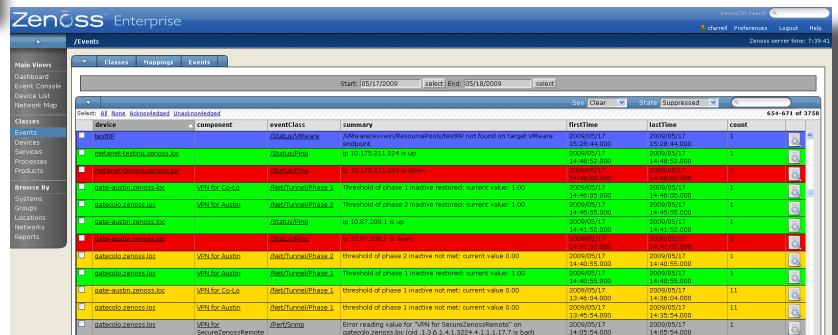
Event Correlation

Many events, especially warning messages, occur multiple times during

component	eventClass	summary	firstTime	lastTime	count
ReportServerSvc	/Status/WinService	Windows Service 'ReportServerSvc' is down	2009/05/17 11:26:16.000	2009/05/18 07:55:14.000	1229
SQLSERVERAGENT	/Status/WinService	Windows Service 'SQLSERVERAGENT' is down	2009/05/17 11:26:15.000	2009/05/18 07:55:14.000	1229

a single incident. To avoid event storms, Zenoss combines multiple instances of an event (and related activity, as determined by Zenoss statistical analysis) into a single alert. The count of each event instance is updated without additional alerts occurring. Events that last abnormally long are escalated to a new level, sending additional alerts to operations staff when necessary. .

Collaborative Management

Zenoss' Event Console makes operations teams more efficient. The centralized event management screen helps increase IT operational efficiency by providing a common methodology for dealing with events, as well as a common language around which to talk about the entire infrastructure. The entire operations team understands what events are occurring, how they should be handled, and which team members are actually solving the problems. IT Directors gain control with the Zenoss Event Console, especially when dealing with remote teams located around the globe.

When an operator acknowledges an event they are resolving, Zenoss updates the color (and status) of the event in the console, which prevents duplication of effort within the team. At any given time, the operations team -- and their management team -- can see which events are under investigation, who is addressing the issues, and which issues are not being handled.

Reporting & Alerting

Maintaining a high performance environment requires all stakeholders to proactively ensure that the activities, devices, and transactions for which each is responsible are operating correctly. Zenoss interactive reports allow each stakeholder to see key metrics (such as service levels and response times) with minimal configuration effort. Real-time alerts when problems occur allow the operations team to maintain that high level of performance.
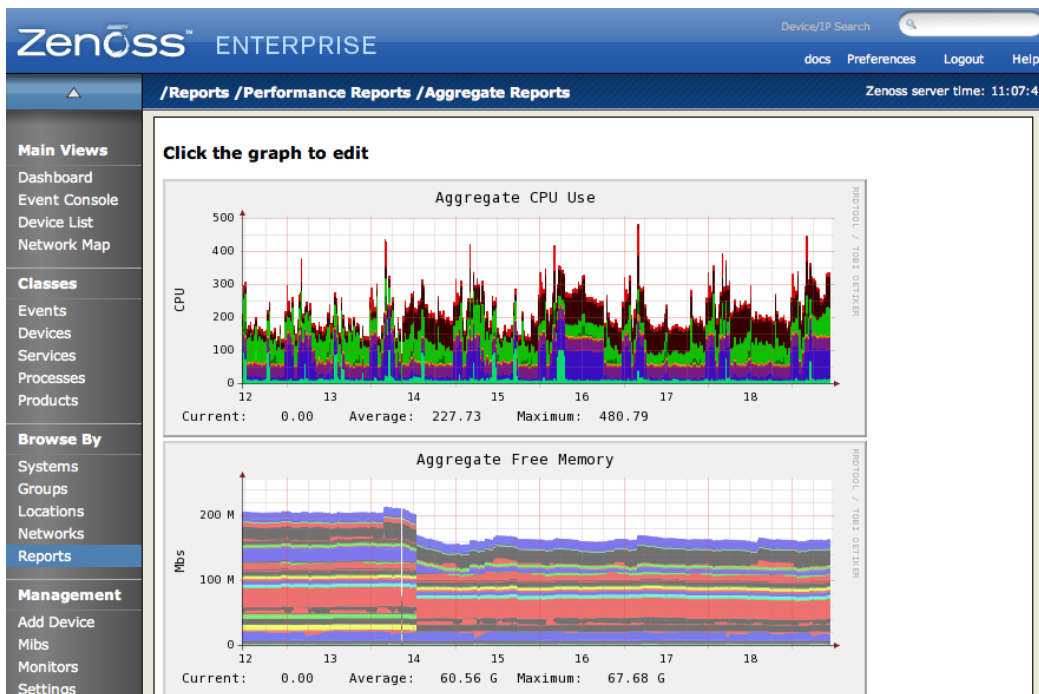
- Service Level and Performance Reports allow operations staff and IT management to provide proof to the business stakeholders that the infrastructure is operating as promised
- Real-time alerts notify the operations team when problems occur
- Zenoss automatically takes appropriate corrective action (i.e. cycle a server) for certain alerts
- Predictive Thresholding analyzes the infrastructure performance and alerts the operations team when behavior falls outside standard operational performance
- Related "downstream" errors are suppressed if routers or servers "in front" of a system are known to be down

The Zenoss "All Device" Report gives an instant live view into the status of every device in the infrastructure.

This includes physical and virtual devices, as well as services at all layers of the IT infrastructure, delivering all data on a single pane of glass

The interactive real-time reports can be sorted on any attribute

Operations Staff use the "Aggregate Performance" Report to get synchronized availability and performance data for all devices

Operators can drill down to specific time slices to examine a spike or dip in further detail

Operations staff can click into specific device information from the reporting screen, quickly moving to root cause determination

The report is easily modified to aggregate a smaller subset of devices, a user-defined group (i.e., HR infrastructure), or even just display data for one device

Dates and times are synchronized so that operators can visually see the relationships between multiple metrics

Managing the Virtual Infrastructure

Zenoss delivers VMware and physical infrastructure monitoring in a single pane of glass - with a single product. The extension of the Zenoss modeling engine to the VMware VI3 and vSphere 4 infrastructure enables additional management capabilities:

- Auto-discovery of the complete VMware Infrastructure
- Integration with VMware Virtual Center (vCenter)
- Availability, Performance, and Event Monitoring for VMware Infrastructure *(ESX Servers • Virtual Machines • ESX Clusters • VMware Data Stores)*
- Virtual and Physical Resource Usage (CPU, Memory, Disk, etc.)
- Power and Availability status for each virtualized service
- Real-time VMotion detection (when VMs switch ESX servers)

Zenoss VMware management also includes visibility at the Physical-to-Virtual (P2V) Crossover Point, giving operations teams running a virtual environment even more power

- More complete and accurate reporting of physical and virtual performance
- One source of truth for all performance and availability data
- All required information needed to triage problems in the virtual infrastructure

Each Virtualized Service is individually monitored

Real-time VMotion Detection

A VMotion is when a Virtual Machine (Guest) has to move to a new ESX Server (Host). VMotions occur during resource optimization, failover, or disaster recovery scenarios. This powerful VMware function creates IT management problems that could result in lost performance data or even allow service problems to go undetected.

Zenoss eliminates the management issues caused by VMotions with real-time VMotion detection. Not only does Zenoss display all VMotions in the central Zenoss Event Console, but the solution also keeps the VM's historical data no matter what ESX server it is on.

component	eventClass	summary	lastTi...
t-cent5-64.ze...	/VMware/-Migration	Migration of virtual machine t-cent5-64.zenoss.loc from esx6.zenoss.loc to esx4.zenoss.loc completed	2009/... 18:16...

Operations staff receive multiple benefits from Zenoss real-time VMotion detection around performance monitoring, reporting, and dealing with any issues that occur:

- See continuous performance data for all services and applications running in a specific virtual machine
- Run Comparison reports (performance and availability) from before and after VMotion activity
- Save time trying to locate and/or correlate performance data across multiple virtual hosts
- Stay up-to-date since Zenoss always has the latest physical and virtual resource usage
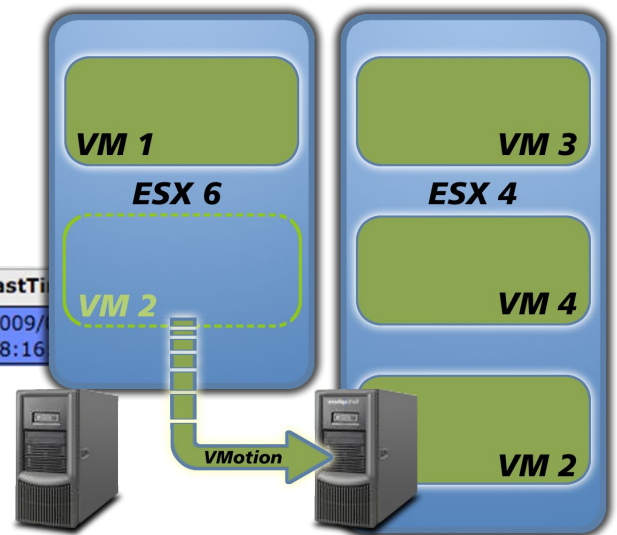
Zenoss detects Virtual Machine movement between hosts (called VMotion), notifying users through the central Zenoss Event Console and maintaining the integrity of all management data

What Zenoss Monitors

The following is a list of sample devices, application protocols, and other resources monitored by Zenoss.
Support for new devices, networks, systems, applications, and more is constantly added. Open standards and APIs allow organizations with special needs to create their own plug-ins quickly and easily.

NETWORK DEVICES
Alvarion WiFi
BigIP LTM Virtual Server
BlueCoat Appliances
Brocade Switches
Cisco IP SLA
Cisco Security Appliance
Colubris Wireless
Fortigate
Funkwerk
IronPort Email Security & Relay Appliances
Juniper
LTM Virtual Server
MRV wireless
Netasq
NetScreen
Nortel
Raytalk Wireless
SourceFire

APPLICATION SERVERS
BEA WebLogic
ColdFusion MX
IBM WebSphere
Java Virtual Machine
JBoss Application Server
ANY JMX Enabled App Server
Apache Tomcat App Server

HARDWARE
APC UPS PowerNet
Dell Servers
Eltek Power Systems
HP ProCurve Switches
HP Servers
HARDWARE (contd)
HP Systems Insight Manager Agents
HP Temperature Sensors
Netbotz
Powerware UPS
Sentry Cabinet Power Distribution Unit (CDU)
Websensor

OPERATING SYSTEMS
IBM AIX
BSD
HP/UX
Suse Linux
Redhat Linux
Apple Mac OSX
NetWare Loadable Module
Sun Solaris
Microsoft Windows
VMware ESX

VIRTUALIZATION
Citrix XenServer
VMware Virtual Infrastructure
VMware vSphere 4
VMware Virtual Center
VMware vCenter Server

WEB SERVERS
Apache Web Server
Server Load Balancing Virtual Server
Squid
Web (HTTP) Transactions

PBX
Asterisk

STORAGE
EMC Celerra
NetApp

SECURITY
LDAP Queries
ASSP Anti-Spam
VPN Tunnels

CRM
Sugar CRM

MESSAGING
JMS

MICROSOFT TECHNOLOGIES
Microsoft Active Directory
Microsoft Exchange
Microsoft IIS
Microsoft SQL Server
MS Terminal Services
Window Services

DATABASES
MySQL
Oracle
PostgreSQL
Microsoft SQL Server
Generic SQL Queries
Round-trip SQL time (active)

PROTOCOLS
DIG
DNS
FTP
Generic Printer Monitor
IRC
Jabber
NNTP
NTP
RPC

HELP DESK
Remedy

NETWORK MANAGEMENT
Cyclades Console Servers
Nagios
RANCID

Zenoss Delivers Business Value

With business success relying on the performance and availability of the IT infrastructure, it is imperative for IT operations teams to have an effective monitoring solution. An incomplete (or missing) monitoring solution can result in dissatisfied customers, excessive workload, or even lost revenue.

Zenoss helps organizations avoid those problems while creating operational efficiencies to help maximize the ROI on infrastructure investments.

Virtualization, Cloud, and SOA Monitoring

New IT infrastructure technology initiatives are designed to deliver improved value, efficiency, and flexibility. Zenoss helps ensure that the technology behind these initiatives operates properly and delivers on that value. Whether deploying a virtual infrastructure, a service oriented architecture, or cloud-based applications, operations teams get the comprehensive monitoring they need from Zenoss in a single product, eliminating the challenges and operational inefficiencies of dealing with different products for different areas of their IT Infrastructure.

Maximize IT Infrastructure ROI

Zenoss delivers an effective monitoring and management solution that helps IT organizations achieve the best financial return possible from their infrastructure investments. The end result of a well-managed infrastructure using the Zenoss solution is:

- Higher Availability
- Better Performance
- Improved Customer Satisfaction
- Operational Cost Savings

5 REASONS COMPANIES CHOOSE ZENOSS

1. **Great Cost Savings**
   - The right functionality at the right cost
   - Cost-effective scalability
2. **Proven Reliability and Scalability**
   - Ability to handle 25,000+ devices
   - Large customers managing mission critical infrastructure today
3. **Easy to Deploy, Use and Maintain**
   - All features delivered in single product
   - 100% browser based User Interface
   - Agent-less monitoring
4. **World Class Support**
   - Experts in all aspects of Zenoss and in IT Management
5. **Highly Adaptable**
   - Open standards, APIs, and plug-in architecture enable easy extension to meet business requirements

A Sample of Zenoss Customers

Zenoss' award-winning solution is used to manage some of the world's largest mission critical infrastructures. Large retailers, leading technology companies, international banks, and service providers (large and small) make up an impressive client list of companies using Zenoss to make sure their IT infrastructure operates properly.

Zenoss customers include industry leaders from around the globe