Infrastructure Management - Whitepaper

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Primer on IM (Infrastructure Management)

What is Infrastructure Management?

Enterprises experience shrinking of geographical boundaries everyday and along with the growth come the hardship in monitoring and managing the whole enterprise IT infrastructure at an affordable total cost of ownership.

Infrastructure Management (IM) or Infrastructure Management Services (IMS) is a growing service offering among the outsource providers to deliver IT infrastructure management services remotely either from onshore, near-shore or from offshore locations. These are also termed as Managed Services. When these services are delivered remotely from an offshore location, it is known as Remote Infrastructure Management (RIM). Organizations offering these services are termed as Infrastructure Management Service Providers.

Remote Infrastructure Management deals with managing IT infrastructure and applications remotely, taking proactive steps and remedial actions so that all the IT services are available 24×7x365 to the customers. Following are some services that form part of IMS Service Provider’s service portfolio:

- Network Monitoring & Management Services
- Server Monitoring & Management Services
- Application Monitoring Services
- Storage Services
- IP Telephony Services
- Desktop & IT Helpdesk Services
Market Background & Dynamics

Various analyst agencies estimate Infrastructure Management Services to have a total market potential of $20 Billion to $50 billion.

Datacentre outsourcing, network management, IT security outsourcing, telecom and application monitoring and management fall under the purview of IMS. The key focus areas for IT outsourcing are - network management, end user management, data centre management, helpdesk and IT services management, identity and access management, managed security.

Why do it? - Motivation for various players

- **Motivation for SMB/enterprises** - Align spending with business value
  - Why Focus on Non-core area?
  - Lower & Predictable Cost : CAPEX v/s OPEX
  - Reduced risk - Staffing, expertise & availability of IT services

- **Motivation for IM Service Providers**
  - Increased business & customer mindshare
  - Goal: Become IT team for their customers
IM Service Providers’ Objectives

- High Availability of IT services 7x24x365
- Quickly identify, isolate & trouble-shoot specific problem
- Competitive Priced Service Offerings

Challenges for IM Service Providers - Pain Areas & the Need

In order to make their service offerings attractive to their customers, the IM Service Provider needs to offer higher availability of IT systems, which translates into higher quality of SLAs to their customers. These are often measured for availability of customer’s IT asset based on metrics such as MTBF, MTTR, response time, etc. The monitoring platform that the IM Service Provider uses and their SLA with the tool vendor play a vital role in meeting their customer SLAs. Hence the decision on which tools to use is of utmost importance for the IM Service Provider to carefully consider & arrive at.

Tools Expectations:
- Breadth of coverage for functionality (network, server, apps)
- Easy to use tools (to improve their SLA responsiveness)
- Should scale as customer base increases

Cost Expectations
- Affordable pricing for tools
- Affordable platform (hardware, OS, DB)

Vendor & SLA Expectations
- Fewer vendors meeting Tools Expectations
- Back-to-back support SLA with Tool Vendors
ManageEngine Infrastructure Management Solution (IMS)

The ManageEngine IMS is a unified platform for Infrastructure Management Service Providers to use for monitoring their customer’s network. This can be used as the single platform to monitor IT assets for small/medium businesses to large enterprises.

For a Managed Service Provider, the most critical need is to be able to identify, isolate & trouble-shoot specific problem be it network, server, application or any other IT infrastructure component. ManageEngine IMS provides a unified view of the enterprise-wide customer network with complete visibility into each component. Being a multi-tenant solution enables the IM Service provider to use it as the single platform that can monitor and manage all of their customer’s networks.

The Solution takes a modular approach of being able to build the Service Provider’s monitoring capability as they grow. It provides capability to manage basic network components (router, switches, firewall, etc.) as well as applications, servers, etc. It also has a trouble-ticketing module that can be used as the ITIL helpdesk for the monitoring system.

ManageEngine IMS Offering
ManageEngine IMS - Solution Architecture

ManageEngine IMS uses a scalable, agent less, distributed server-probe architecture that can scale to monitor tens of thousands of interfaces, switch ports or several applications. It consists of two components: the Central Server and the Probe Server. The probe server is deployed in the remote locations where the resources are to be monitored and is responsible for all network facing functions. The central server consolidates data from all remote probe servers to provide a single, comprehensive Network Operating console for the whole enterprise network management needs. Both the Central & Probe server use RDBMS to store all data.

The probe server deployed at each site performs all the network-facing functionalities like discovery, mapping, fault monitoring to report these to the central server located at the Operations Center/NOC/Datacenter. By delegating the network monitoring functions to the Probe Server, the architecture not only reduces the bandwidth consumed on the WAN side but also ensures strong security by not opening up un-necessary ports to monitor the network infrastructure.
Unified Presentation & Web Portal

All monitoring information is presented in a unified single console. This console is a web portal & can be accessed from anywhere via secure HTTPS. Similarly, the helpdesk also provides a web portal to view & manage status of tickets.

Secure & Robust communication interfaces

A robust persistence mechanism ensures 0% data loss between the probe and central servers even when there is a connection loss between the servers. Communication between the central server and the remote probe is done through XML over HTTPS. This facilitates functioning of the remote probes even behind proxy servers and firewalls.

Enterprise-class Scalability

The flexible central server/remote probe architecture enables the administrator to scale monitoring to tens of thousands of resources. No matter how big the network or number of devices, by adding more probes, the central server can easily consolidate & report network health over large network environments. If there is a need to monitor more resources, additional probes can be deployed.

Agent less & Non-Intrusive Monitoring

The probe uses a combination of protocols to monitor network devices & server components. By doing this, it can remotely monitor the managed resources without deploying agent on the managed resources. This avoids any overheads due to agent deployment.

Security

- Passwords are encrypted
- Secure (HTTPS) means of communication between Central Server & Probe
- Uses authenticated mechanisms
- Role based privileges - Admin and Operator/User role
High Availability and Redundancy

IMS can be configured in a redundant mode (active-standby) that allows the management service to be highly available & enables higher reliability of the overall system.
ManageEngine IMS - Features Highlights

Health Monitoring
- Monitoring metrics for Network, Servers, Applications
- Reporting on key metrics, Trend Analysis
- Intelligent alert correlation, color coded alerts
- Notification through standard means (e-mail, SMS, Etc.,)
- Root cause analysis of critical alerts
- Configurable action on alerts

Unified and Holistic Dashboard Views
It provides a unified & consolidated view from a web-based portal providing in-depth visibility into the customer’s network.

SLA Management
With SLA Management the Service Manager can associate availability of managed resources (server, applications, etc) with contracts already agreed upon. Administrators can also associate SLAs for individual Business Applications or for any other network component. He/she can define SLOs for Availability and other metrics and keep tabs on overall application performance. SLA Violations can also be escalated via email.
ITIL based Help Desk

- Integrated helpdesk for seamless operation
- Account and contact management
- Business rules for assigning tickets
- Knowledge Base
- Customer survey

Customer based reporting
The central server acts as a network operating console with site-based inventory on the device health and availability as well as providing a centralized, global view of the whole enterprise network.

- In-built management reports
- Out-of-box Current, Historic (week/monthly/yearly) and Custom reports
- Graphs for trend analysis and planning Top ‘N’, Min, Max, Average
- Scheduling of reports
ManageEngine IMS - List of Monitored Resources

Network Devices
- Router monitoring
- Switch monitoring
- Switch Port Mapper
- Firewall monitoring
- Wireless Access Point monitoring
- UPS monitoring
- Printer monitoring
- Domain Controllers
- Storage Devices

Databases
- Oracle Monitoring
- Sybase Monitoring
- MS SQL Server Monitoring
- MySQL Monitoring
- DB2 Monitoring
- Database Query Monitoring

Servers
- VMware ESX monitoring
- Windows Monitoring
- Solaris Monitoring
- AIX Monitoring
- AS400 / iSeries Monitoring
- HP-Unix/Tru64 Unix Monitoring
- Mac OS Monitoring
- Linux Monitoring
- FreeBSD / Open BSD Monitoring
- User Defined Custom Monitoring

Application Servers
- Application Performance Management
- Microsoft .NET Monitoring
- Oracle Application Server Monitoring
- JBoss Monitoring
- Tomcat Monitoring
- WebLogic Monitoring
- WebSphere Monitoring
- SliverStream Monitoring
- GlassFish Server Monitoring
Middleware / Portal

- IBM WebSphere MQ Monitoring
- MS Office SharePoint Monitoring
- WebLogic Integration Monitoring

ERP Systems

- SAP CCMS Monitoring
- SAP Server Monitoring
- NMT Monitoring
- Oracle EBS Monitoring

Java, J2EE Monitoring

- J2EE Web Transactions
- Java Runtime Monitoring
- JMX | SNMP Consoles

Web Services / SOA

- Web Services (SOA) Monitoring
- Apache Monitoring
- IIS Monitoring
- PHP Monitoring
- Web Server Monitoring
- Website / URL Monitoring

Services

- Event Log Monitoring
- Windows Performance Monitoring
- Active Directory Monitoring
- LDAP Server Monitoring
- DNS Monitoring
- Ping
- Windows Services
- FTP/SFTP Monitoring
- SNMP Monitoring
- Telnet Server

Mail Server

- Exchange Server Monitoring
- Mail Server Monitoring

Other Managed Resources

- File/Directory monitoring
- URL monitoring
- Process monitoring
- Script Monitoring
ManageEngine IMS - Deployment Architecture

IMS can be configured in a redundant mode (active-standby) that allows the management service to be highly available & higher reliability of the overall system.

ManageEngine Monitoring Solution with ManageEngine Helpdesk

- IMS Central Server (active & standby) resides in Central NOC.
- IMS Probe Server (active & standby) resides in each of the remote site to manage the customer network.
- ManageEngine IMS Helpdesk resides on a separate server in the NOC.
- IMS Probe Server collects all the monitoring information, processes it & sends it back to the IMS Central Server via secured HTTPS connection.
- IMS Probe Server will monitor the Network Devices & servers via SNMP, SSH, or WMI.
- IMS Probe Server can monitor any applications, network services (DNS, DHCP, etc.) via the port that the application or network service uses.
- Both the Central & Probe server use RDBMS to store all data.
About ManageEngine

ManageEngine is the leader in low-cost enterprise IT management software. The ManageEngine suite offers enterprise IT management solutions including Network Management, HelpDesk & ITIL, Bandwidth Monitoring, Application Management, Desktop Management, Security Management, Password Management, Active Directory reporting, and a Managed Services platform. More than 40,000 organizations from different verticals, industries, and sizes use ManageEngine to take care of their IT management needs cost effectively. ManageEngine is a division of ZOHO Corporation. For more information, please visit www.manageengine.com

More information on ManageEngine Infrastructure Management solution can be found at http://www.manageengine.com/ims. For further enquiries please contact  ims-eval@manageengine.com