NEC

*Master****S****cope*

SystemManager

Server Management Software

November, 2015

NEC Corporation,
Cloud Platform Division,
MasterScope Group

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NEC brings together and integrates technology and expertise to create
the ICT-enabled society of tomorrow.
We collaborate closely with partners and customers around the world,
orchestrating each project to ensure all its parts are fine-tuned to local needs.

Every day, our innovative solutions for society contribute to
greater safety, security, efficiency and equality,
and enable people to live brighter lives.

Index

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1. Product Overview

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MasterScope Product Lineup

MasterScope is a series of Integrated System Management Software products which enables simple operation and supports controlling whole IT system.

Corporate Management		
Integrated Management	Cloud Management	Asset Management
MISSION CRITICAL OPERATIONS	Virtual DataCenter Automation Cloud Manager	AssetSuite

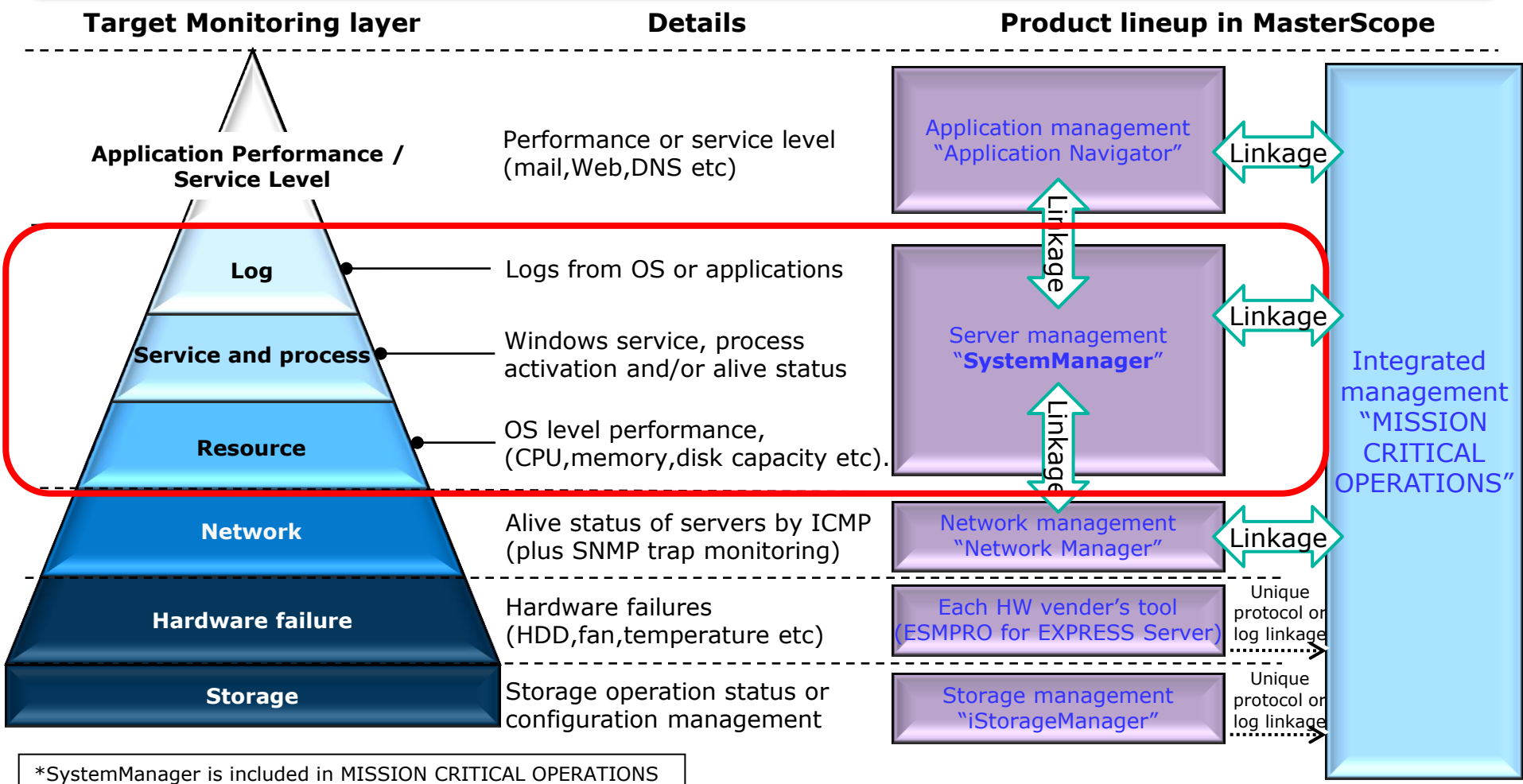| Operations Management			
Job Management	Software Deployment	Platform Management	Backup
JobCenter PrintCenter V	DeploymentManager	NEC SigmaSystemCenter	NetBackUp NetWorker Symantec Enterprise Vault

System Management			
Server Management	Network Management	Storage Management	Application Management
SystemManager	Network Manager	iStorageManager Performance Monitor Suite	Application Navigator

*SystemManager is included in MISSION CRITICAL OPERATIONS

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MasterScope Products Monitoring Layer

MasterScope offers integrated system management for Network, Hardware, and Application layer.

Target Monitoring layer	Details	Product lineup in MasterScope
Application Performance / Service Level	Performance or service level (mail,Web,DNS etc)	Application management "Application Navigator"
Log	Logs from OS or applications	Server management "**SystemManager**"
Service and process	Windows service, process activation and/or alive status	
Resource	OS level performance, (CPU,memory,disk capacity etc).	
Network	Alive status of servers by ICMP (plus SNMP trap monitoring)	Network management "Network Manager"
Hardware failure	Hardware failures (HDD,fan,temperature etc)	Each HW vender's tool (ESMPRO for EXPRESS Server)
Storage	Storage operation status or configuration management	Storage management "iStorageManager"

Linkage — Integrated management "MISSION CRITICAL OPERATIONS"

Unique protocol or log linkage

*SystemManager is included in MISSION CRITICAL OPERATIONS

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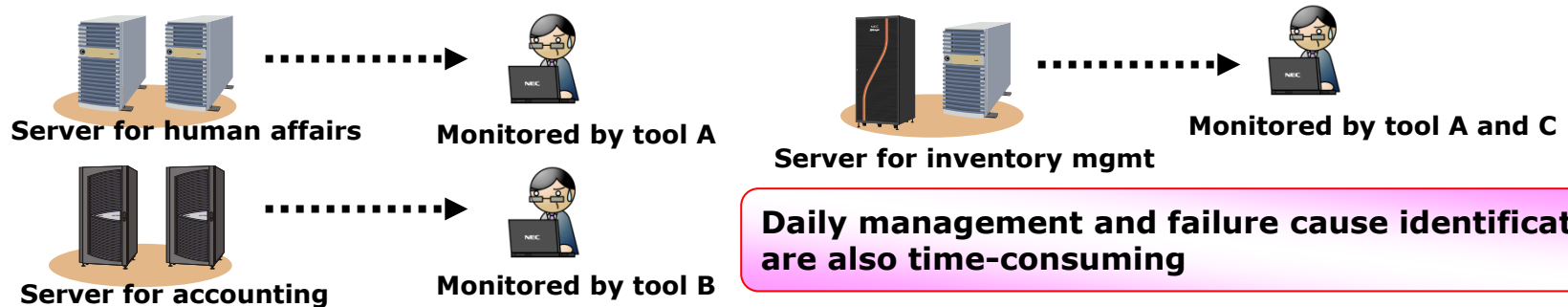# 2. Advantages & Problem Solving

Common issues in server management

➔ Servers used by individual business unit, are under distributed management.
➔ Efficient and unified management is required.

1. Missing Alerts
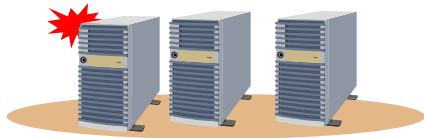
Problem resolution become more time consuming due to lack of failure awareness

2. Multiple tools are used to manage heterogeneous environment

Server for human affairs

Monitored by tool A

Server for inventory mgmt

Monitored by tool A and C

Server for accounting

Monitored by tool B

Daily management and failure cause identification are also time-consuming

3. Poor usability discourages utilization

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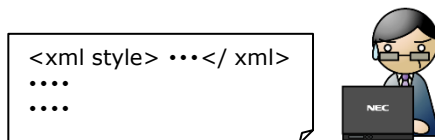
Not intuitive, difficult to understand, and learning how to use is very time-consuming. Additionally, settings modification also requires script development...

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MasterScope SystemManager

Use MasterScope SystemManager, to centralize individual monitoring activities and enhance efficiency, improve rationality of operations

(1) System components not monitored correctly means administrator could not be aware of warnings/failures.

(2) Various tools for heterogeneous system and platforms

(3) Settings modification and operation is too difficult to master

MasterScope SystemManager is the solution!

Servers for human affairs management

Servers for accounting operation

Servers for inventory management

MasterScope SystemManager

Failures appear at servers for human affairs mgmt!

(1)Quick notifying admins by mail and turning light*.

(2)Centralized monitoring each server's operation

(3)Easy setup and usage
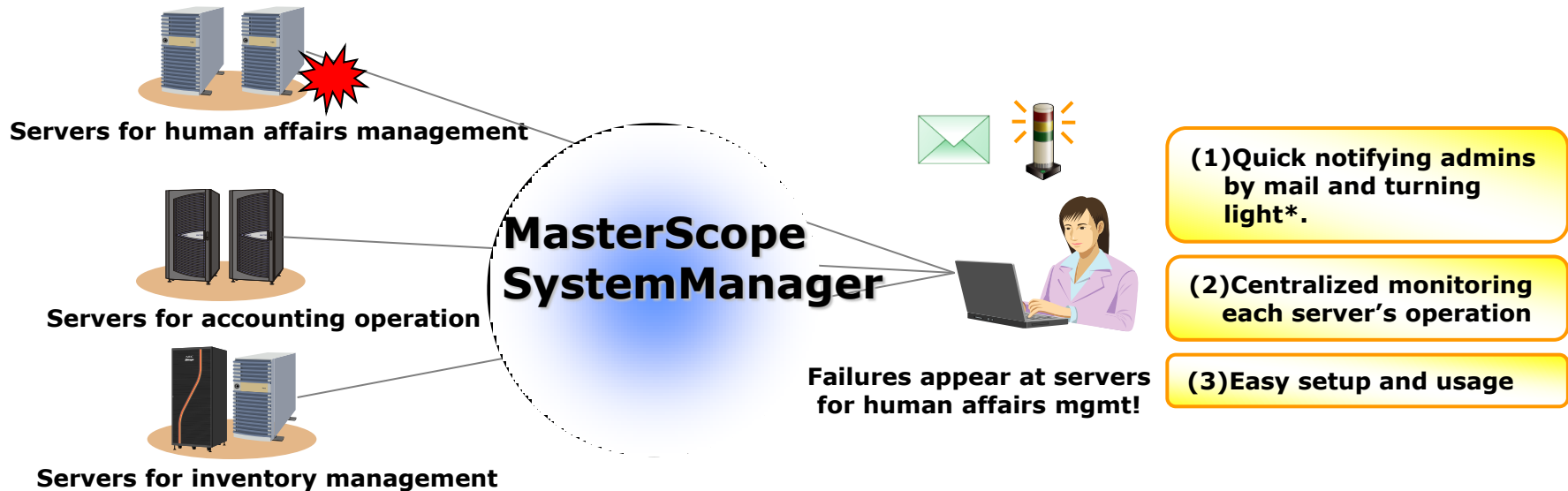
*Turning light: NEC's product integration partner
Please refer to http://www.patlite.com/

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Example: user requirements and how SystemManager satisfies it

User requirements	MasterScope SystemManager's approaches
To be aware of and react when failures initiate	Solved by "Monitoring" + "Intelligent notification"
To monitor by single tool (or UI) even in heterogeneous environment	Compatibility with multiple-vendors (Windows, Linux (Redhat, SuSE), Unix)
Necessary functions for servers monitoring are fully equipped and easy to understand.	All-in-one monitoring and easy configuration by GUI.

Terminal for monitoring **Server for monitoring and mgmt**

View

MG

Notify system admins by mail
(servers of human affairs: team A)

AG   AG   AG   AG   AG

DB   **Web**   **AP**   **Forms**   **DB**
Unix   Linux   Win   Win   Unix

Servers for human affairs mgmt   **Servers for form system**

Notify system admins by mail and turning light
(servers of form system: team B)

Monitor services, processes, performance, log on each server.

* MG: Manager, AG: Agent

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Advantages of MasterScope SystemManager

1 **Simple configuration**   Functions required for server management are provided for all-in-one and easy configuration

2 **Sophisticated usability**   Easily understandable GUI enable settings and monitoring from single interface.

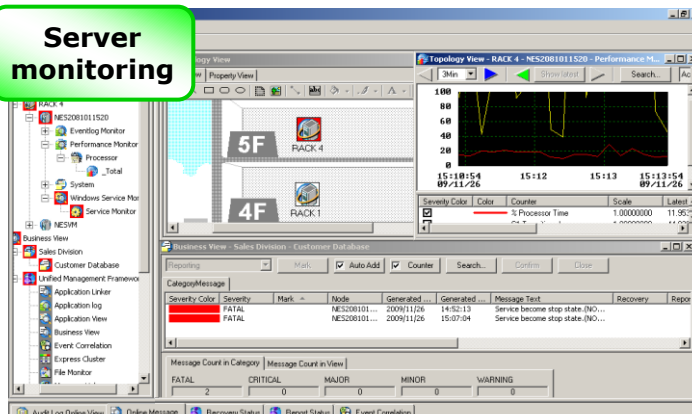**3** **Superior scalability**   Good compatibility with multi-vendor platforms and perfect collaboration with MasterScope family

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1 **Simple configuration**   Functions required for server management are provided for all-in-one and easy configuration

Log monitoring	**Detect danger/failure from OS/Applications log.**
Process/Service monitoring	**Detect abnormal termination of Applications**
Performance monitoring	**Monitor performance change on CPU/Memory**
Configuration management	**Manage HW/SW configuration**
Intelligent notification	**Notify admin by mail/turning light**
Message filtering	**Narrow down messages by filter settings**
Log auditing	**Manage operations by itself**

All in One

- Easy in purchase/introduce/operate, Only one product for server failure monitoring and configuration management.
- Compatible with multi-vendor platforms.

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② **Sophisticated usability** Easily understandable GUI enable settings and monitoring from single interface.

Service
Process
Logs
Performance
Configuration

Performance

Message

Service Status

Message from all servers
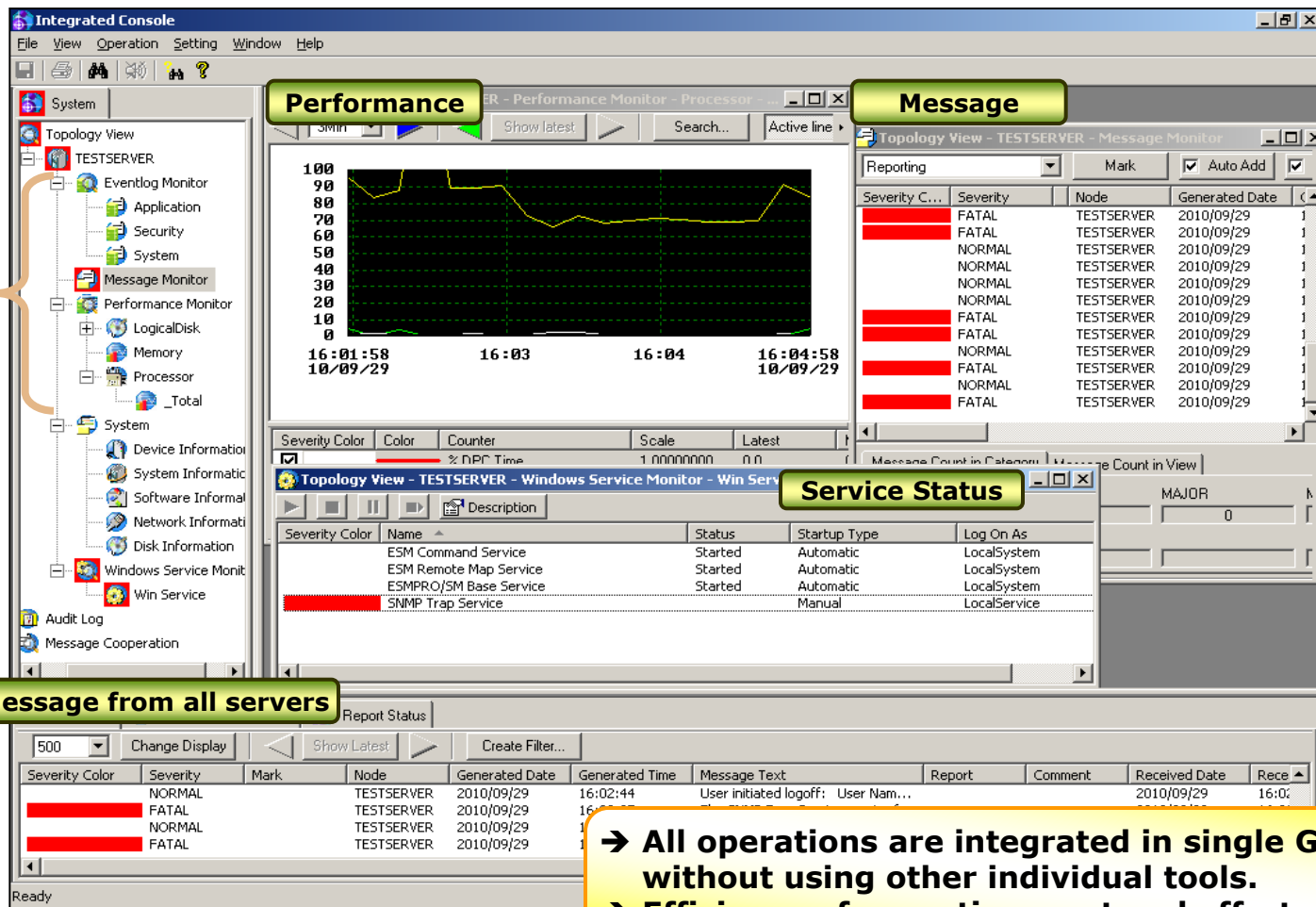
➔ **All operations are integrated in single GUI without using other individual tools.**
➔ **Efficiency of operation, cost and effort are improved**

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Advantages of MasterScope SystemManager 3/3

3 **Superior scalability**

Good compatibility with multi-vendor platforms and perfect collaboration with MasterScope family

Management console

The same monitoring GUI in different platforms

Redundant servers with Manager (implemented by clusters)

redundancy

Servers with Manager

Compatible with server increase and platform scaling (Windows, Linux, UNIX)

Monitored servers

Windows

Scaling

Scaling

UNIX

Linux

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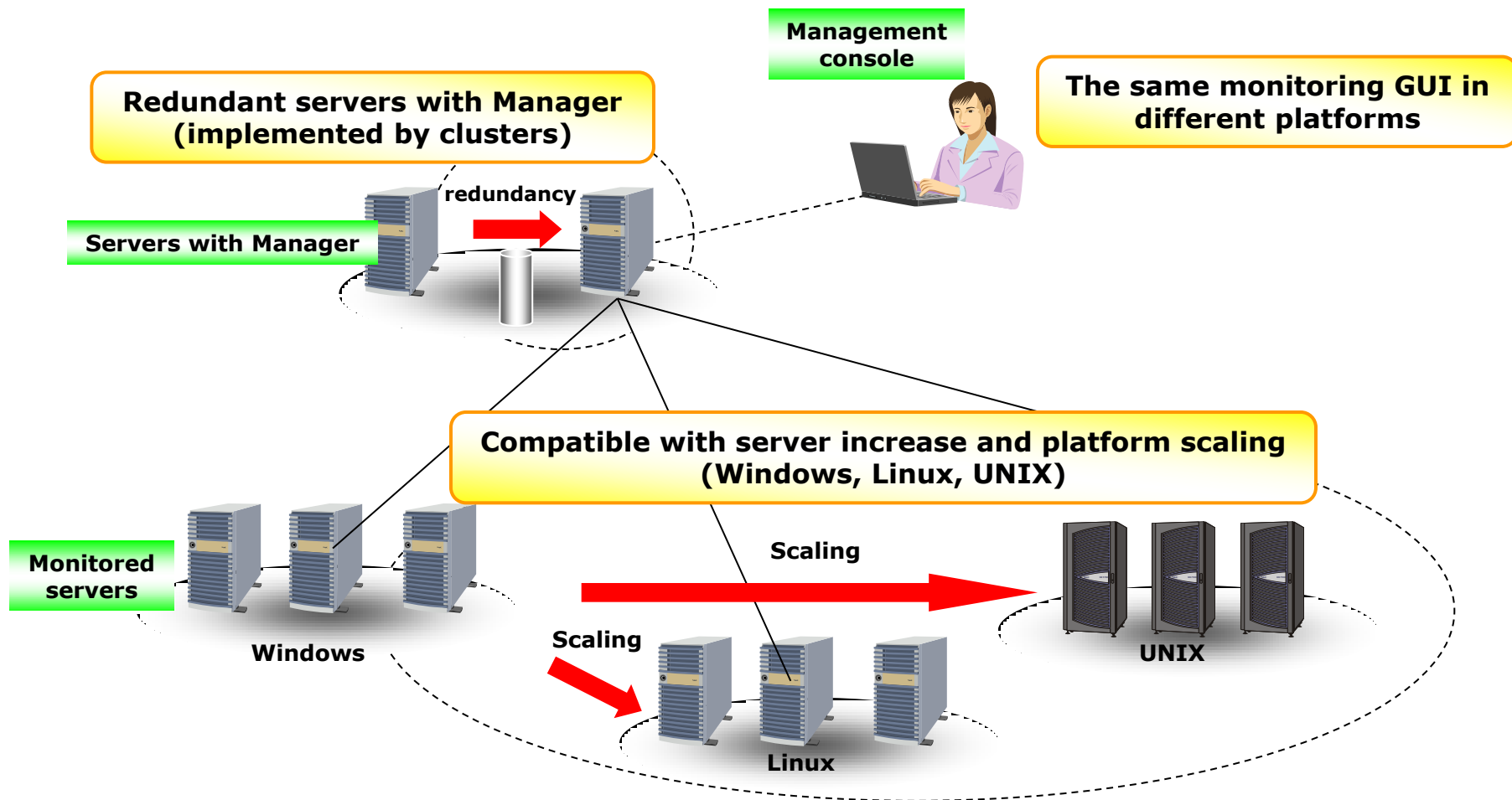
3 **Superior scalability**

Good compatibility with multi-vendor platforms and perfect collaboration with MasterScope family

As requirements in server/network/application performance monitoring increases integration of products and centralized configuration/monitoring is required.

Server monitoring

Network monitoring

Application performance monitoring
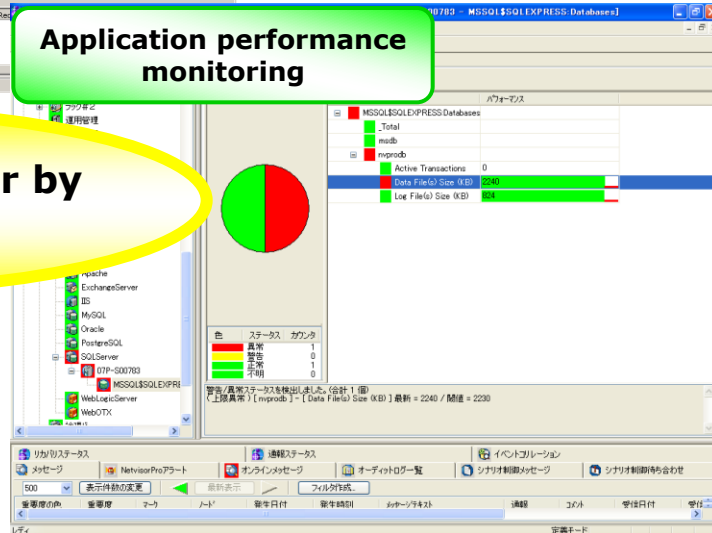
To setup and Monitor by single GUI

- ●Message mgmt is integrated even after system scaling

- ●Usability is kept well even after system scaling

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3. Functions

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Function overview

Functions	Details
Service Process Monitoring	• Live monitoring of process or services.
Process Monitoring	• Monitoring of Existing process.
Performance Monitoring	• Displaying the workload of each server graphically (CPU/Memory/HDD usage rate etc). • Monitoring by threshold value and alerting operators. • Storing the operation status data to support failure analysis.
Log monitoring (Event log/syslog/application log)	• Monitoring OS messages. • Agent filters the same messages in order to avoid message rush. • Message management by filtering log file output of applications. • Displaying the log file contents.
File/Directory Monitoring	• Monitoring quota and change of file/directory
Configuration Management	• Displaying configuration of agent-installed machine.
Report Function	• Via flasher or e-mail it reports certain messages, status change of monitoring process/service, exceeding the resource threshold etc.
User Management	• Permission for each user
Log Auditing	• Managing different operations resume on the SystemManager

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Easy Process of Identifying Failure

System Configuration /Status

1. Confirmation of health status of servers

Report by email and flasher

2. Check message index. Detailed message by double-click.

3. Refer to message details

Message Detail

Message | Option | Help

Description: SAMAPP
Severity: WARNING

Date/Time
Generated: 2009/01/22 12:04:01   Received: 2009/01/22 12:02:10

Message Text:
[ERROR] 01/22/2009 12:03:56 info test
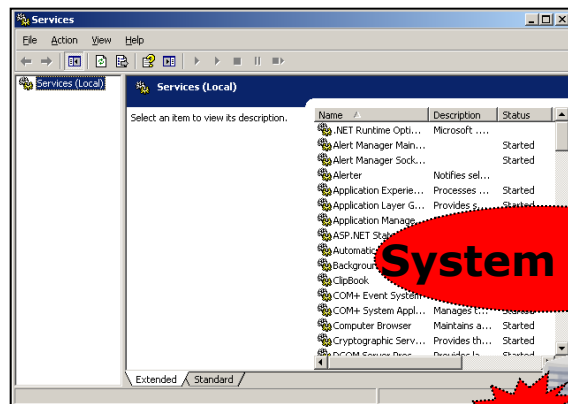
Application: SampleApp
Object: ALL 001
Message ID: ALL 001
Category: Application

WEB HELP   User Help...   Confirm
Previous   Next

OK   Cancel   Help

Messages from all servers

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Service / Process monitoring

Monitors each processes and services on server and notifies admin by alerts if anomaly detected.
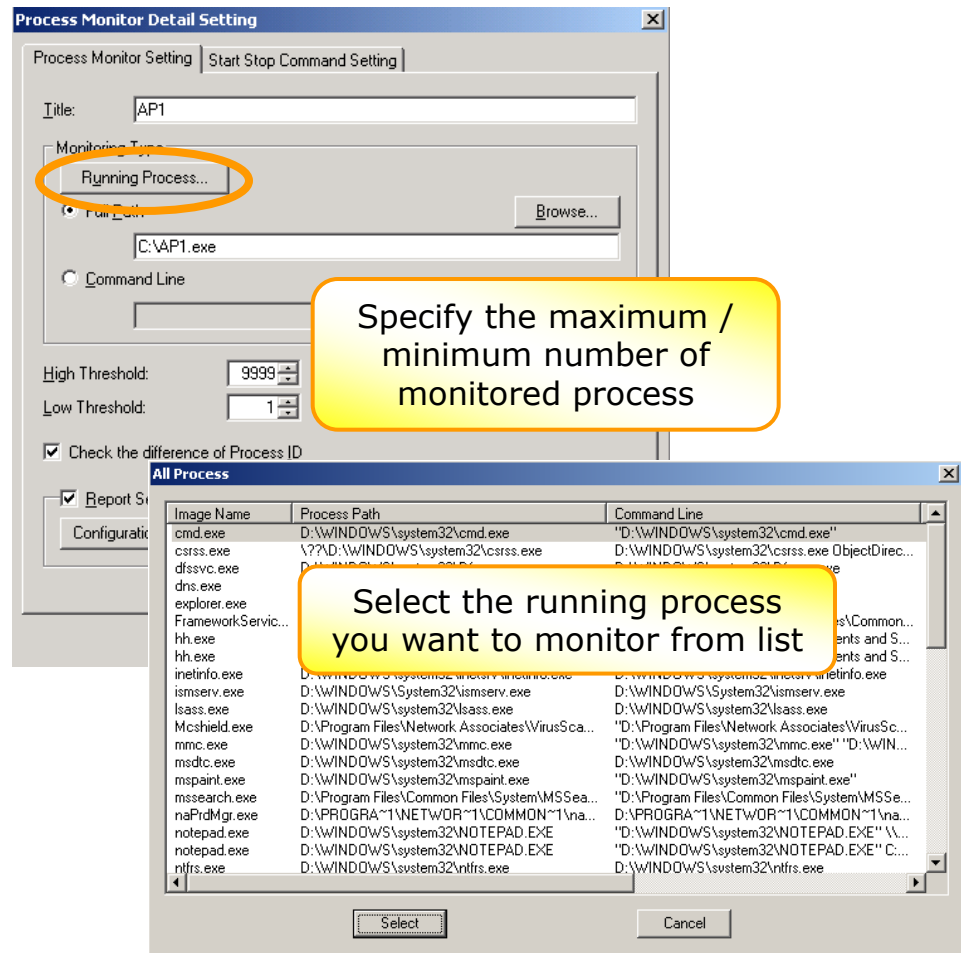

System down

Visually know status of service/process

Improve usability of system information by grouping

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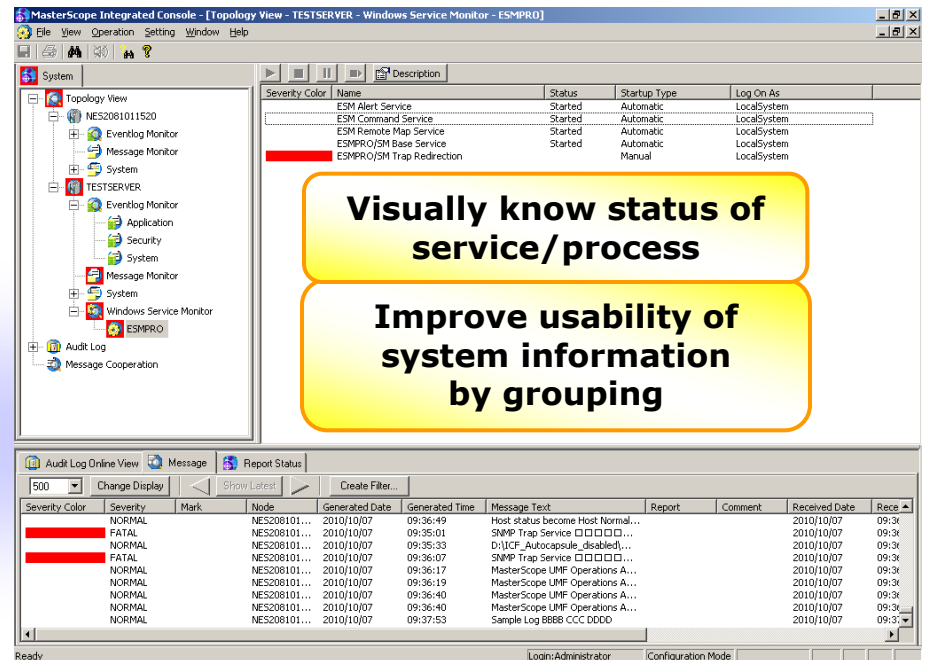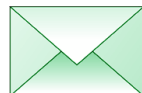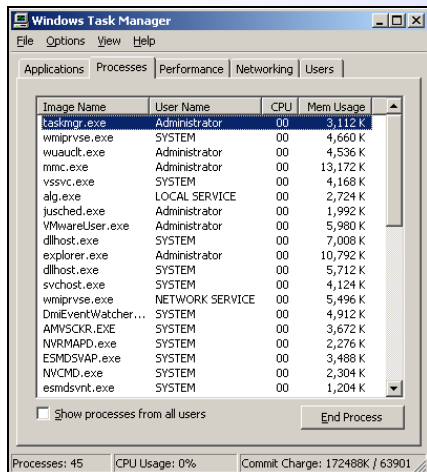
Service / Process setup image

■Service monitoring setup

Only check the service you want to monitor

■Process monitoring setup

Specify the maximum / minimum number of monitored process

Select the running process you want to monitor from list

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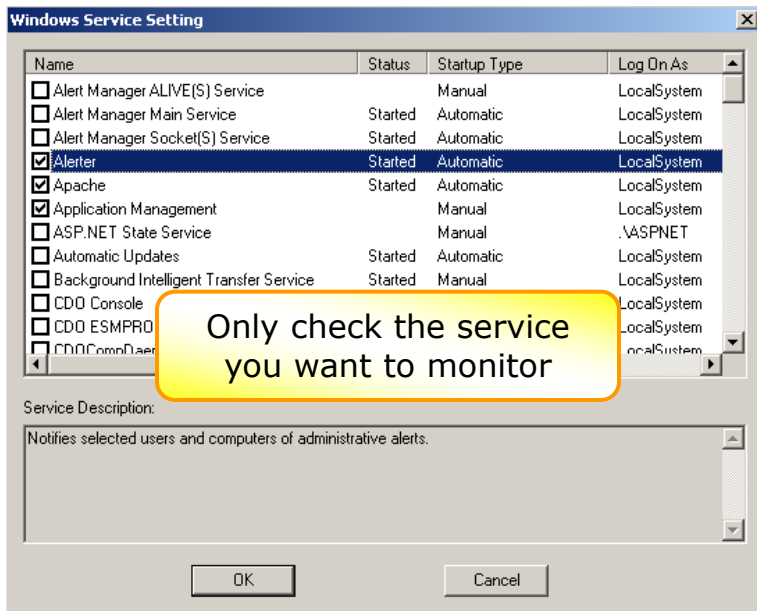
Performance monitoring

Monitor OS information (like CPU utilization, memory and disk space) by simply setting thresholds to warning and anomaly notifications.

Available threshold setting could be selected from following patterns:
- **Sequential**: event occurs while exceeding threshold
- **Continuous**: event occurs while exceeding threshold continuously specified number of times
- **Average**: event occurs while exceeding threshold by average value from specified number of times.
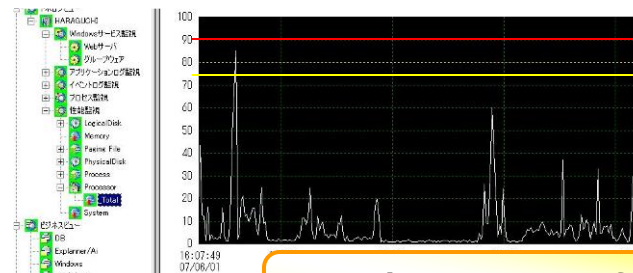
Monitor system performance with two level threshold settings

threshold exceeding!

Threshold monitoring

Notify

Example:
If available MEM become less than 50Mbytes, please notify admins with anomaly.
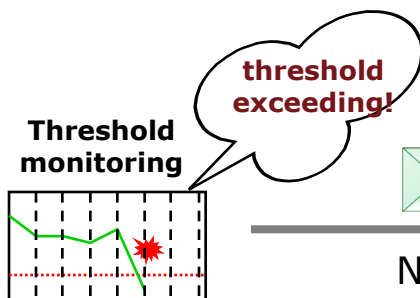
Performance data

CSV

Performance data accumulation enables

Tendency/Resource analysis
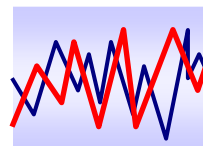
Performance data accumulation could be utilized in operations status/failure analysis

Performance data accumulation could be simply enabled by checking on settings boxes
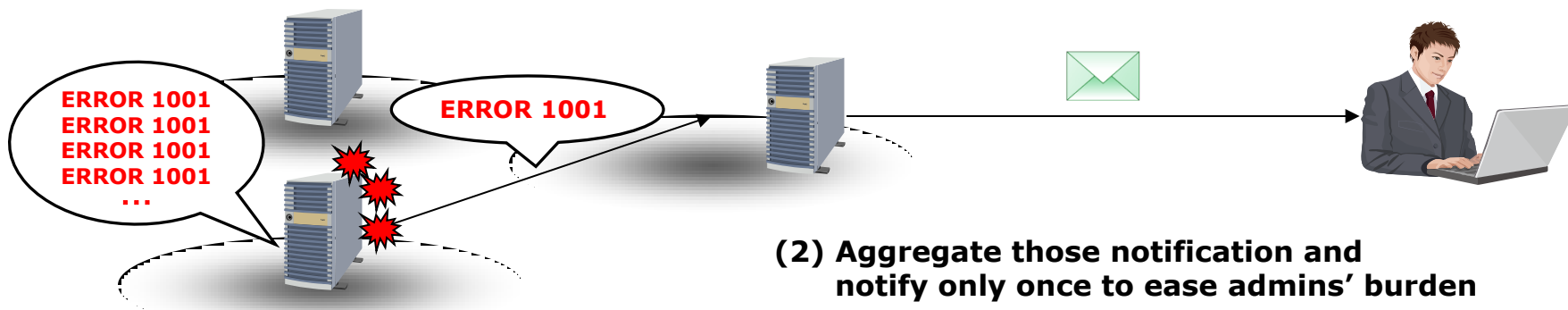
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Log monitoring (event log/syslog/application log)

Monitor all text-based log/syslog/event log, and notifies admin on specified information with the keyword filtering.

ERROR
2008/03/14
10:25:00 xxxx

event log

↑ keyword filter settings

Notify admins while keyword "ERROR" appears

syslog

Specified log could be accessible remotely

Centrally monitor necessary system information only

text based log

*Some text-based log file will be generated as another file in some unintentional situations (its size exceed some values, date change, etc). MasterScope SystemManager is capable of monitoring this type of text-based log.

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(Ref) Keyword filtering

"Message Filtering" for log monitoring (application log/syslog/event log) includes functions that are mentioned in the following table.
➔ Integration of these functions extract important messages efficiently, furthermore it aggregates notifications and to reduce number of messages.

ERROR 1001
ERROR 1001
ERROR 1001
ERROR 1001
...

ERROR 1001

(2) Aggregate those notification and notify only once to ease admins' burden

(1) Same notification occurs frequently

Functions	Detail
Filter for extraction	Notify if keywords included in specified filter
Filter for deletion	Notify if keywords included in specified filter
Reduction of same notification	Aggregately notify if multi messages sent from the same log (by pending the continuous messages)

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Files, directories monitoring

Prevent disk depletion by monitoring size of files, and also enable early detection toward deletion/modification for system required files

- Monitor targeted agents' files, directories regarding their existence, used space, modification.
- Changes the color of icon if utilization of file exceeds specified value, or file is deleted.
- Notification/Warning is possible if its status change (includes file modification)

<Example: monitoring log files/folders>

Disk C

Program Files

Log

Archive.log

If used space of disk c exceeds 80% to send warning msg (performance monitoring)

If used space of folder exceeds 2Mbytes to send warning msg

If size of specified file exceeds 1Mbyes to send warning msg

Manage and monitor status change of files by each group.

- **Change color while size of file exceed specified value.**
- **Notify admins if status changes (file modification is also included)**

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Report Function

- Sends Status notification/warning by e-mail and turning lights
- Objective/message content are also customizable flexibly.

As failures detected, notified by turning light/e-mail.

Notification target and level of importance is adaptively customizable.

Report Setting

Satlite Setting | E-Mail Setting | Action Setting

☑ Report to E-Mail

Policy Name

Update

Send To:

Send Cc:

Subject:

E-Mail Policy Setting

Policy Name: SQL Error

Mail Server

mail.test.ccom

Update   Add   Delete

Send To: dummyaccount@nec.com

Send Cc: dummyaccount2@nec.com

Subject: Critical Error f

Message: Edit...

Encode: Unicode (UT

OK

Message Text

This mail transmitted by the automatic operation.

GENERATEDDATE :$GENERATEDDATE$
GENERATEDTIME :$GENERATEDTIME$

NODE   :$NODE$
SEVERITY   :$SEVERITY$
APPLICATION :$APPLICATION$
OBJECT   :$OBJECT$

MESSAGEID :$MESSAGEID$
MESSAGETEXT :$MESSAGETEXT$

OK   Cancel

Parameters used by the MasterScope

Contents	Parameters
Occurrence date	$GENERATEDDATE$
Occurrence time	$GENERATEDTIME$
Node	$NODE$
Severity	$SEVERITY$
Application name	$APPLICATION$
Object name	$OBJECT$
Message ID	$MESSAGEID$
Message text	$MESSAGETEXT$

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Centrally manage and view the monitored servers via console

Even if communication with agent is not available configuration will be viewable.
**➔Helps while failure occurs***

* Initial communication is required.

| Item	Detail
Device information	Device name and its vendor information (ie. HDD)
System information	OS version, host name, CPU information, etc.
Software information	Installed software with its version.
Network information	IP, MAC address, network identifier, etc.
Disk information	Drive name, available space, etc.

Note: acquirable information is dependent on platforms

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Assigns operating permission to each user to prevent operating mistakes and security
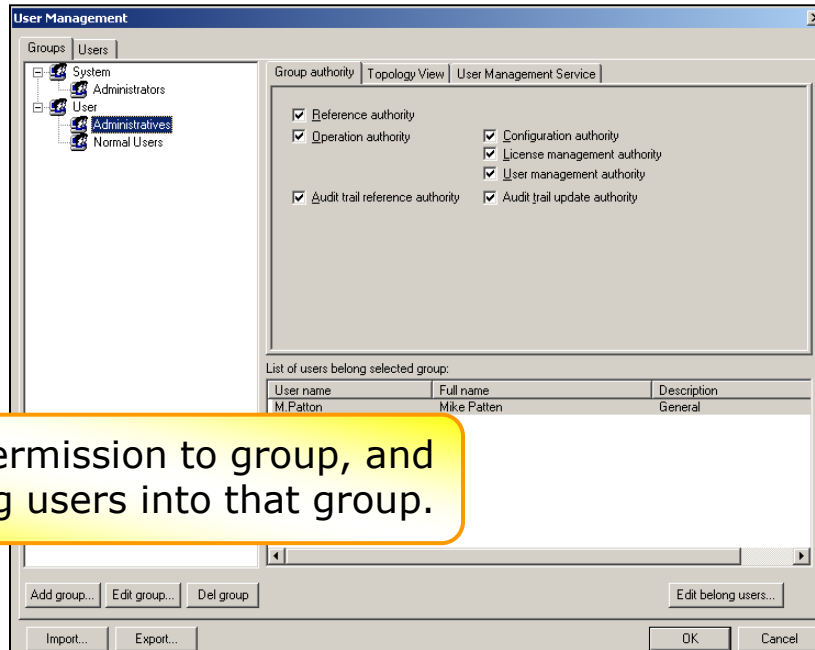
Set permission to group, and adding users into that group.
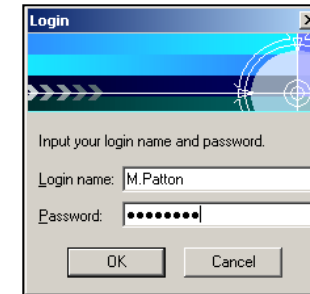
"M. Patton"
-> Administration authority

"B. Osborn"
-> Operation authority

"K. Cobain"
-> Reference authority

Check all operations by referring to audit logs.

Permission	Details
Confirm	Permission of only referring system information
Operate	Permission of message confirming, process/windows service startup and stop operation
Change definition	Permission of switching to "Configuration mode" to modify system definitions
License management	Permission of registering and managing licenses
User management	Permission of creating user/group and permission assigning

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Audit Logs Management

Operations at SystemManager is recorded by "When/Who/What", and notifies admin as per the requirement

- Operations at MasterScope SystemManager (including monitored nodes, manager's GUI, automatic operations) are recordable as audit logs for future tracing.
- These Logs could be displayed by different categories, and notification settings could be specified by categories.

Tree view for audit logs mgmt
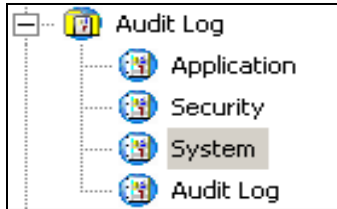
| Category	Log details
Application	Record logs outputted from applications ("MasterScope MISSION CRITICAL OPERATIONS" is required)
Security	Record audit logs from user management
System	Record audit logs from SystemManager
Audit logs	Record audit logs from this function itself

"Who" operated

"What" is operated (apply, create, add, modify, delete, refer, execute, notify)

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MasterScope SystemManager Products Line

**For various scales and configurations of system:
MasterScope SystemManager provides "View", "Manager" and "Agent"**

View `View`

Manager `MG`

Agents `AG`
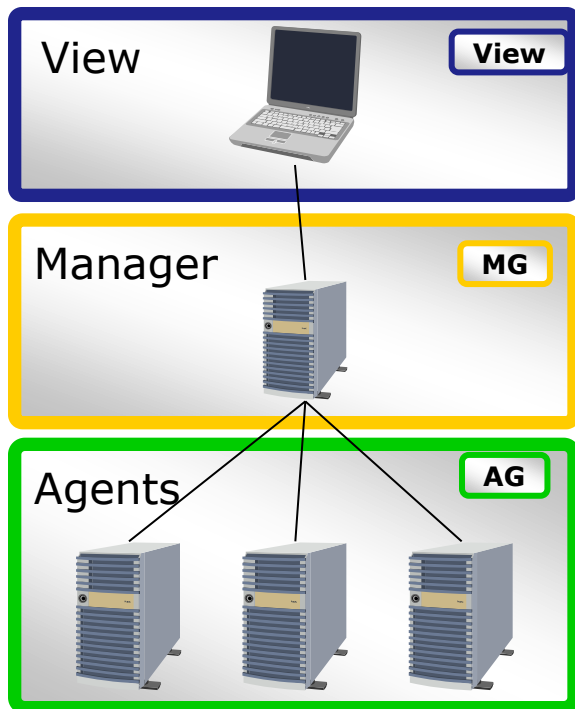
◆MasterScope SystemManager (View) `View`

**UI used for setting monitor function, and for the monitoring
operations. ("View" shall be connected to Manager)**

◆MasterScope SystemManager (Manager) `MG`

**MasterScope SystemManager's "Manager" used to manage
agent information centrally.
(Monitor settings shall be operated via "Manager")**

◆MasterScope SystemManager (Agents) `AG`

**Introduces monitoring status and logs to the servers and
notifies "Manager" while failure detection.**

Option (for cluster environment) `HA`

◆MasterScope SystemManager Agent HA Option

**Constitutes multiple Managers in cluster environment,
number of monitored agents as "HA Option" is required**

Realize simple and integrated system operation

If you have any questions about MasterScope,
please contact below by e-mail

NEC: global@soft.jp.nec.com

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