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MasterScope SystemManager G 8 Optional Features

August, 2018

Cloud Platform Division

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greater safety, security, efficiency and equality,
and enable people to live brighter lives.

Document Overview

This document introduces optional features of MasterScope SystemManager G 8 released in July 2018.

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1. SystemManager G Optional Features

Optional Features of MasterScope SystemManager G

Registering additional licenses enable extended features, flexibly changing monitoring levels and targets based on requirements.

Extended Features (optional)

Message Classification
Filter failure messages by user defined rules

Event Correlation Analysis
Detect failures with complex rules

Manager Hierarchization
Integrated monitoring with multiple managers

Operation Control
Command execution by user defined triggers

Workflow Control
Command execution by workflow control

Web Console
Monitoring with web browser

Custom Performance Monitoring
Threshold monitoring of command results

Hypervisor Monitoring
Monitoring performance and logs of ESXi

No additional installation is required!

Application Monitoring
Monitoring applications

IT Service Response Monitoring
Monitoring response from remote servers

Cloud Service Monitoring
Monitoring cloud environments

Basic Features

Management /Operation Features

- **Message management**
- **Notification control**
- **Schedule control**
- **Command Execution**

Monitoring Features

- **Service/process monitoring**
- **Performance monitoring**
- **Log monitoring**
- **File size monitoring**
- **Service port monitoring**

Higher monitoring level, larger target scale

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2. Overview and Effects of Optional Features

[Management/Control Features]
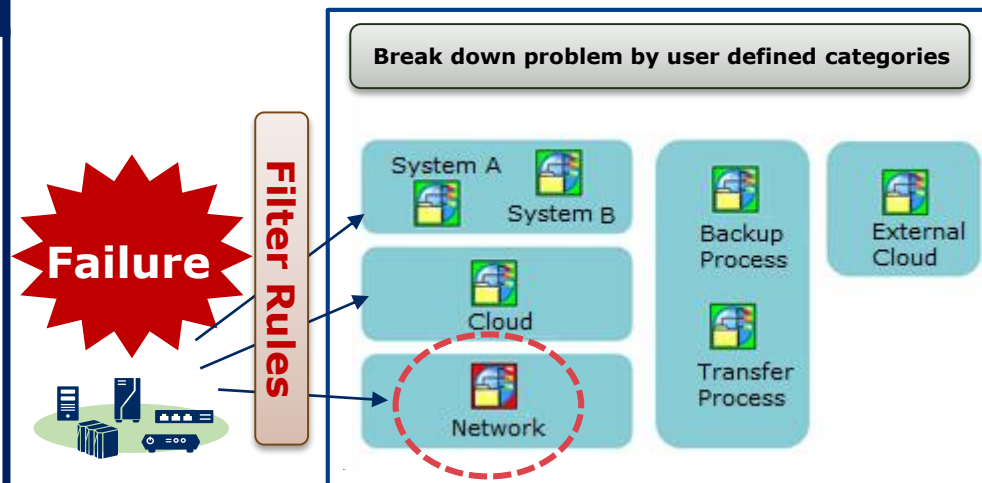
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Message Classification (BusinessView Option)

Feature Overview

This feature filters and displays detected failure messages based on user defined rules. Folder icons can be freely placed, helping break down problems. Severity and display name can be redefined by rules.

Monitoring, notification, command control, and troubleshooting are configured per folder.

This is required by event correlation analysis and manager hierarchization features.

Break down problem by user defined categories

Failure

Filter Rules

System A
System B
Backup Process
External Cloud
Cloud
Transfer Process
Network

Effects and Use Case

Customer's Problem

Operators are not sure if they should handle failure messages immediately during night time or they can wait until the next morning.

Effects

● Classify information by failure severity
● Visualize the impact of a failure
● Categorize monitoring by departments and customers
● Standardize operation by showing graphical troubleshooting steps

Example

Operation based on severity

Urgent Problems

Trivial Issues

Operation Information
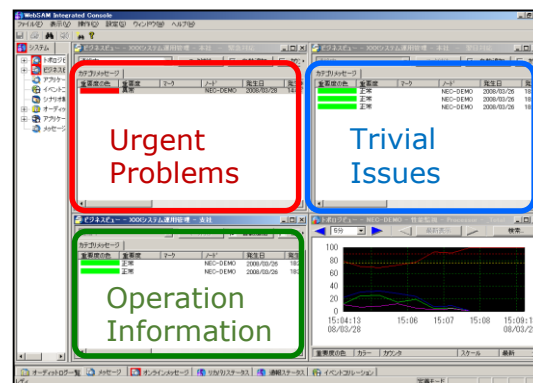
Display troubleshooting steps for the severity.

Urgent
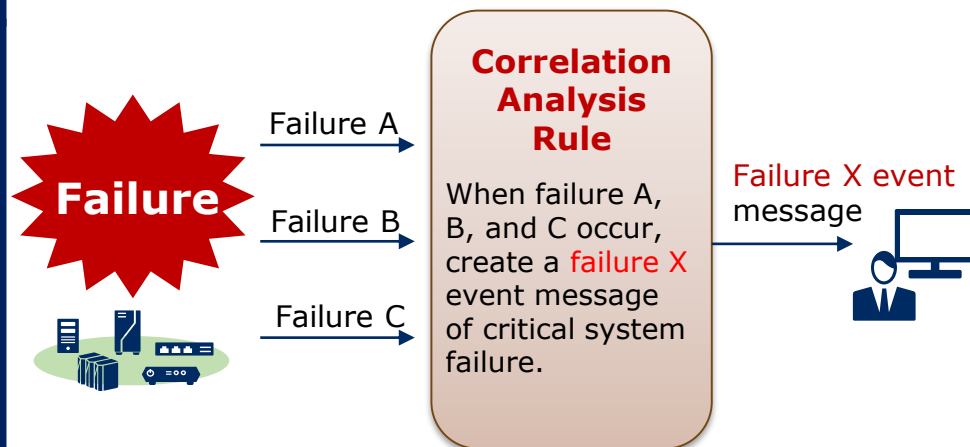1. Please contact NEC and tell them management #. Phone: 03-xxxx-xxxx Management #: YM01xxxx

2. Call information service department. Register the information with the incident DB.

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Event Correlation Analysis (EventCorrelation Option)

Feature Overview

This feature creates a new event message when a detected event message matches the specified rule. Rules are defined by fields such as "number and time of occurrences," "negation," and "order, parallel, OR." For example, a judgment like "If message B is not output within 2 hours after message A is output, create a message C to notify a failure" can be automated.

This feature requires BusinessView option.

Failure

Failure A
Failure B
Failure C

Correlation Analysis Rule

When failure A, B, and C occur, create a failure X event message of critical system failure.

Failure X event message

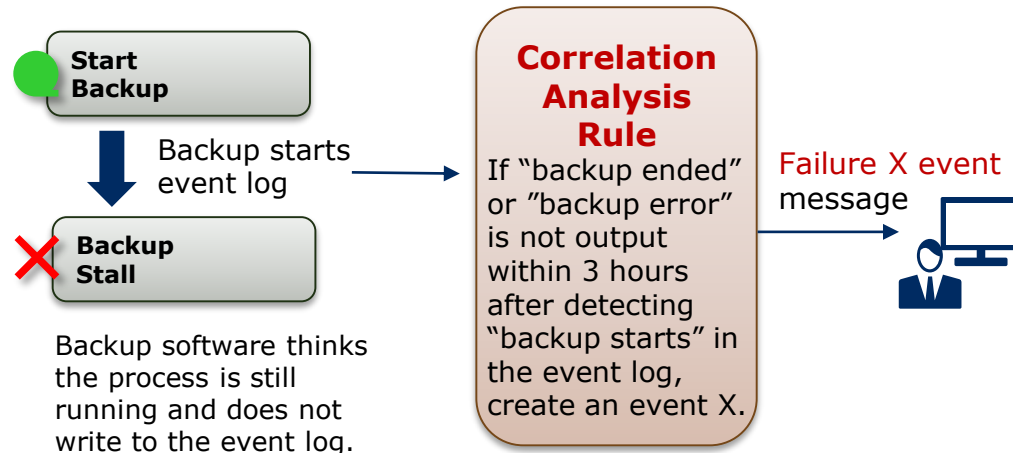## Effects and Use Case

Customer's Problem

Failures such as backup stall do not output error messages and they need to be detected.

Effects

● Detect failures that cannot be detected by conventional monitoring
● Automate detection of failures that require complicated judgments based on multiple messages
● Suppress detection of intermittent failures
● Standardize operation by automation
● Reduce the number of messages and operator's workload by suppressing identical messages

Example — Monitoring backup stall

Start Backup

Backup starts event log

Backup Stall

Backup software thinks the process is still running and does not write to the event log.

Correlation Analysis Rule

If "backup ended" or "backup error" is not output within 3 hours after detecting "backup starts" in the event log, create an event X.

Failure X event message

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Manager Hierarchization (Hierarchical Manager Option)

Feature Overview

This feature aggregates messages from multiple managers by configuring managers in lower layers to notify failure messages in the specified categories to the manager in the upper layer.

Along with the workflow control feature, commands can be executed from a manager in the upper layer to a manager in the lower layer.

This feature requires BusinessView option.

Display failure messages of manager A and B in Business View

Upper Level Manager
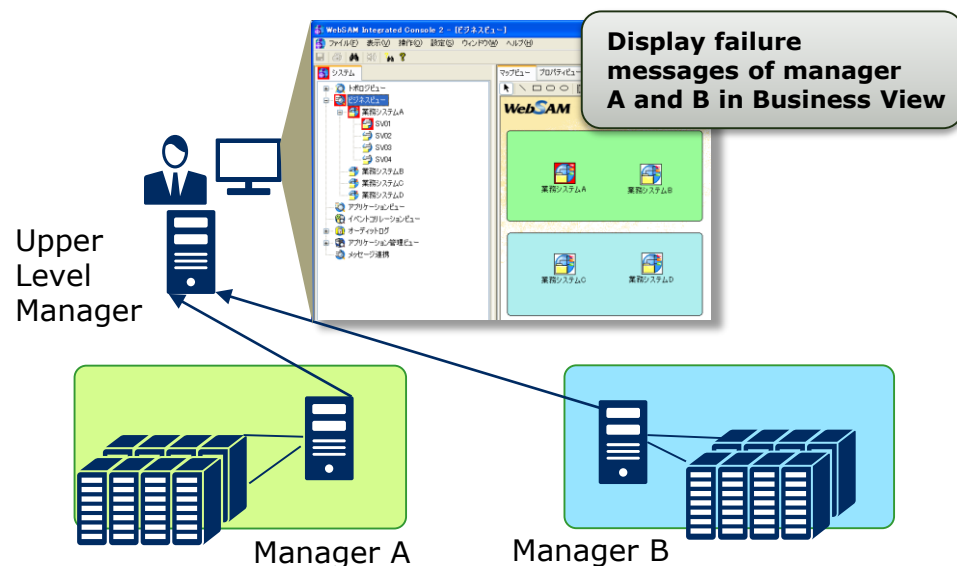
Manager A   Manager B

## Effects and Use Case

Customer's Problem

DR environment is normally used for operations, but the information is separate from the main site.

Effects

● Aggregate messages detected by managers in different sites.
● Place multiple managers as BCP
● When each user system has a manager in datacenter, operator can manage the integrated information.

Example

Integrated management of DR

Manager Hierarchization

Main site   DR site   DR site
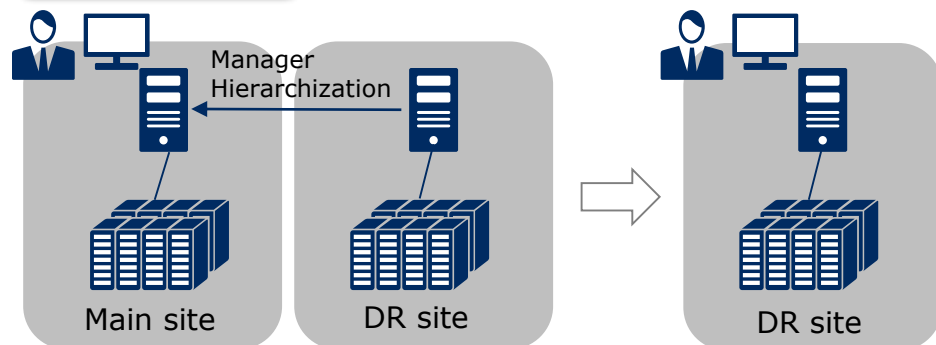
DR environment is normally used for operations and the status is managed by manager in the main site.

Manage by manager in DR site in the case of DR

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Operation Control (Operations Option)

Feature Overview

Standard features of SystemManager G provide command execution on any target nodes triggered by a single failure event. This optional feature enables predefined command execution by schedule or manual operation.

Command management feature provides predefined command list and email notification of command execution, streamlining daily routine work, and preventing operational mistakes and overload.

Manual trigger

Schedule trigger

SystemManager G Manager

Failure trigger   Command execution

Delet log files   Move log files   Test Connection   Apply patches
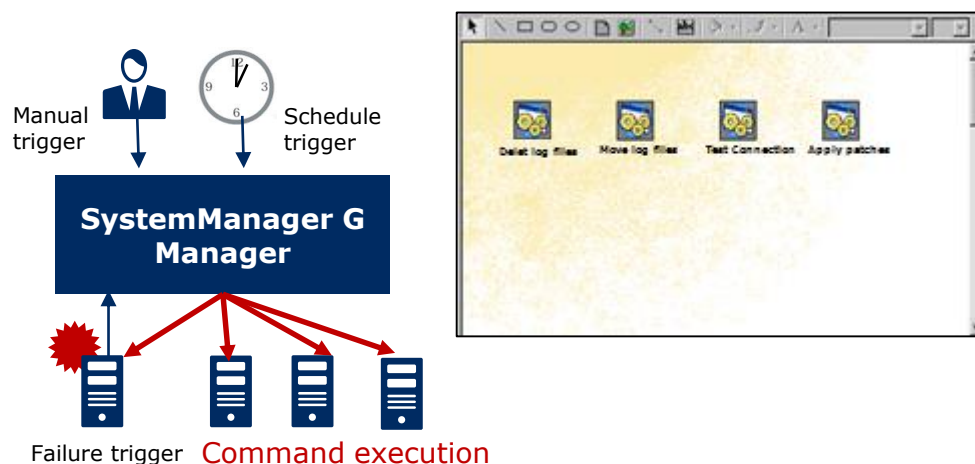
Effects and Use Case

Customer's Problem

Outsourcing monitoring operators have limited access to servers, but they need to maintain servers as monitoring operators.
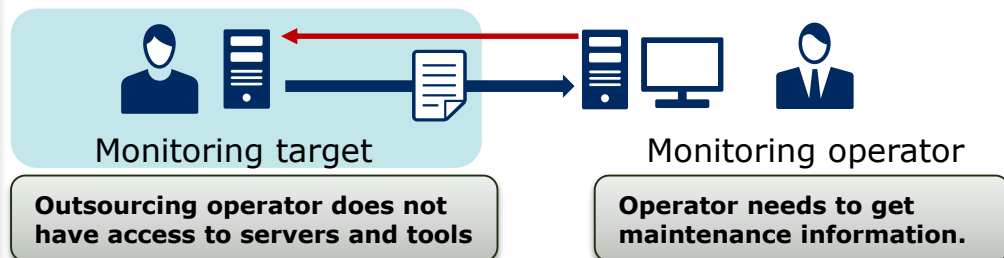
Effects

● Enable operators to execute batch without logging in servers.
● Reduce routine work such as deleting logs and prevent operational mistakes.

Example

Streamline routine work and prevent mistakes

Execute command from monitoring terminal to collect maintenance logs.

Monitoring target

Monitoring operator

Outsourcing operator does not have access to servers and tools

Operator needs to get maintenance information.

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Workflow Control (Workflow Option)

Feature Overview

Standard features of SystemManager G provide command execution on any target nodes triggered by a single failure event. This optional feature enables multiple operations defined in work scenarios (flows).

Execution is triggered by manual, schedule, or multiple event conditions. Work scenario is composed of multiple command executions and branches. Command results can be input to branch conditions.

Manual trigger

Schedule trigger

SystemManager G Manager

Failure trigger   Command execution as in flow
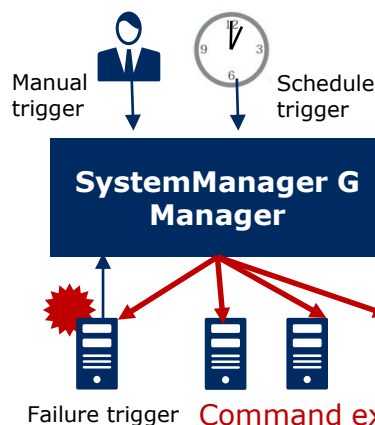
A flow consists of parts such as branch, parallel processing, and synchronized processing.

START   Action 1   Prallel branch   Action 2

Action 3
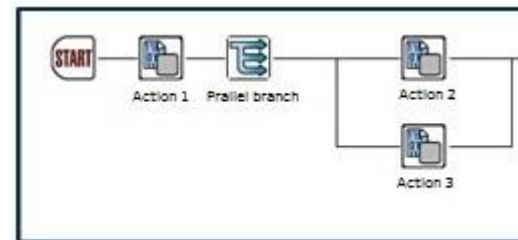
Effects and Use Case

Customer's Problem

●It takes time to stop applications and servers in order for maintenance. Manual operation caused mistakes and the process needs to be improved.
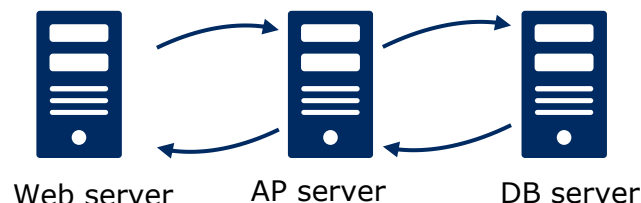
Effects

●Operations such as rebooting multiple servers, stop/start business applications, and stop/start monitoring are automated and the executing status is visualized.
●Complicated operations of multiple commands can be automated and streamlined, reducing mistakes.

Example

Automate periodic maintenance that requires power operation in order.

| Stop Monitoring | Stop Web AP | Stop DB | Reboot | Start DB | Start Web AP | Start Monitoring |

Web server   AP server   DB server

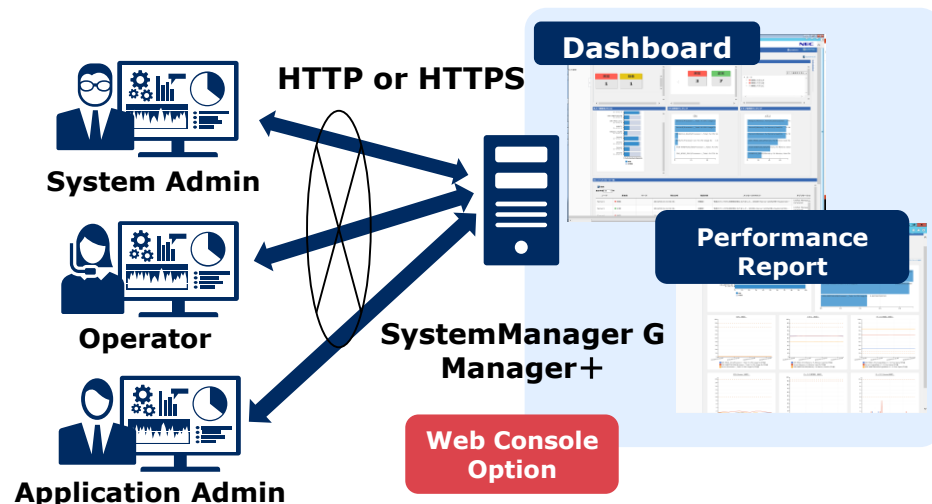\Orchestrating a brighter world   **NEC**

Web Console (Web Console Option)

Feature Overview

This feature provides a console to support operations on a web browser. Dashboard and performance reports optimize the information and realize flexible monitoring.

Dashboard is customizable with widgets to get a quick view of the system status.

Performance reports can be organized by tabbed pages, visualizing frequently used reports such as current server status and monthly reports easily.

HTTP or HTTPS

System Admin

Operator

Application Admin

SystemManager G Manager+

Dashboard

Performance Report

Web Console Option

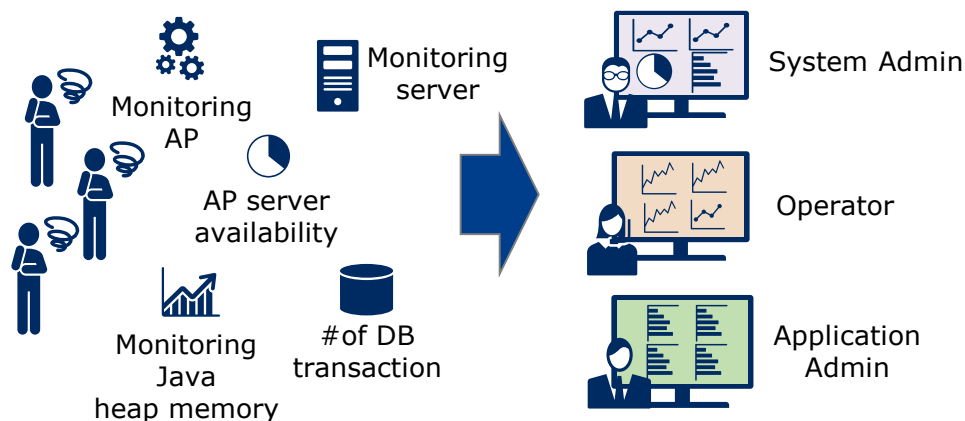## Effects and Use Case

Customer's Problem

●It takes users time to check the same information on multiple pages everyday. Each user (ex. admin, operator) needs different information and no screen is perfect for everyone.
●To extract the overloaded servers, it takes time to check every performance graph.

Effects

●Dashboard is customized for each user. There is no need to check multiple screens.
●Performance reports can be organized by tabbed pages, allowing users to access information quickly.

Example

Optimized for each user.
Easy to find abnormal status.

Monitoring AP

Monitoring server

AP server availability

Monitoring Java heap memory

#of DB transaction

System Admin

Operator

Application Admin

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2. Overview and Effects of Optional Features

[Monitoring Features]

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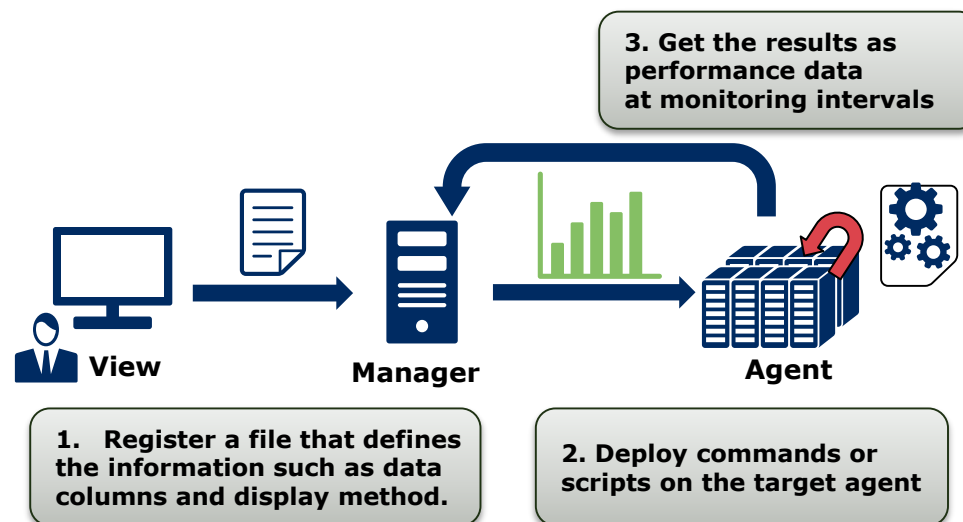
Custom Performance Monitoring (Customizable Performance Monitoring Option)

Feature Overview

Standard features of SystemManager G provide monitoring of performance information collected from OS. This option enables to accumulate output results (numerical data) of commands and programs as performance data, and data is used to display graphs, reports, and threshold monitoring.

For example, this option enables monitoring applications implemented by customers.

3. Get the results as performance data at monitoring intervals

View Manager Agent

1. Register a file that defines the information such as data columns and display method.

2. Deploy commands or scripts on the target agent
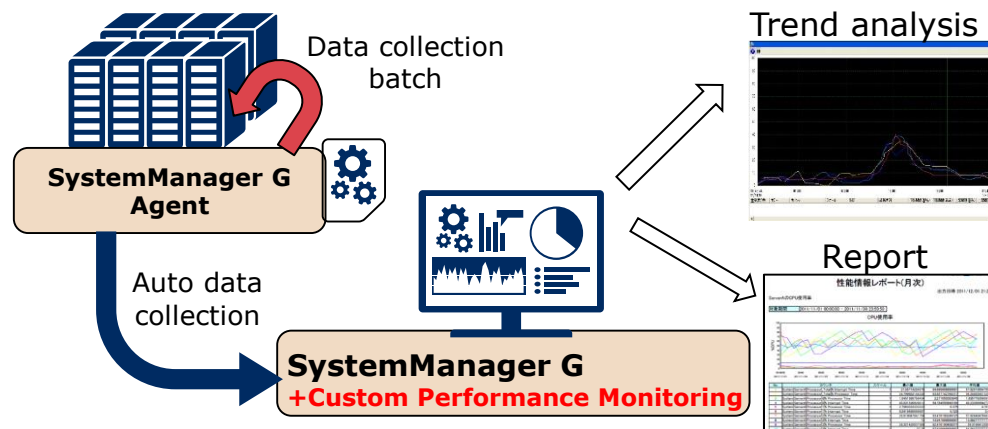
Effects and Use Case

Customer's Problem

●There is an application to collect information such as the number of users, incidents, and accesses. The results are manually summarized and analyzed.

Effects

●Data collected manually or by original tools can be collected automatically and processed for trend analysis.
●Monitoring customer's original application improves service level.
●Systems with different monitoring tools can be integrated.

Example Automate manual process and analysis

Data collection batch

SystemManager G Agent

Auto data collection

SystemManager G
+Custom Performance Monitoring

Trend analysis

Report

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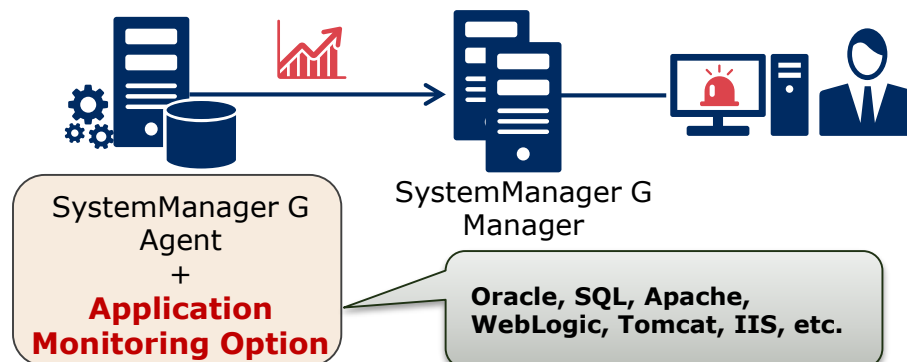# Application Monitoring (Application Monitoring Option)

Feature Overview

Standard features of SystemManager G provide monitoring of the information from OS. This option enables to monitor the performance information of an application that cannot be obtained by OS.

Monitoring templates for supported applications are provided for a quick start.

Along with BusinesView Option, templates to show troubleshooting for error logs are provided.

Monitor application performance.
Notify threshold access.

SystemManager G Agent
+
Application Monitoring Option

SystemManager G Manager

Oracle, SQL, Apache, WebLogic, Tomcat, IIS, etc.

Effects and Use Case

Customer's Problem

●Servers were monitored and working fine, but application performance was degraded, and users complained. It took time to investigate and determine the cause without enough information.

Effects

●Monitoring a variety of applications enables them to detect problems that cannot be detected by monitoring only servers.

Example

Common performance issues of DB and required monitoring settings
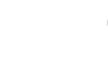
Not responding

**Is cache hit ratio low?
Is library hit cache ratio low?**

Slow data update

Is buffer busy waits high?

Overall control of performance and failures

**Is I/O performance low?
Is redo log waits high?**

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IT Service Response Monitoring (IT Service Response Monitor Option)

Feature Overview

Standard features of SystemManager G provide monitoring of the performance inside servers. This option provides monitoring of response from remote host.

For example, Option for HTTP provides monitoring of the response in each page by probe (repetitive simulation of users).

Other options are for Email, DNS, TCP, and FTP.

Request
Response

Probe
Data
Web server

SystemManager G Manager
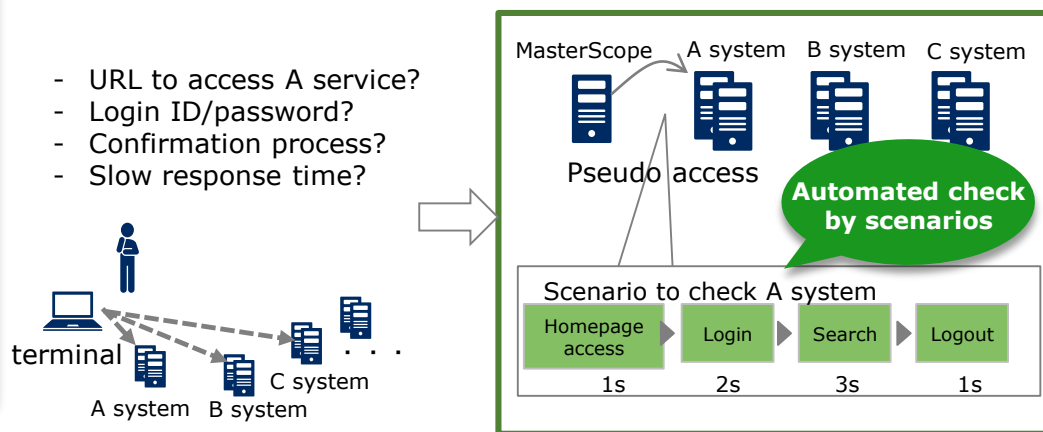System Admin
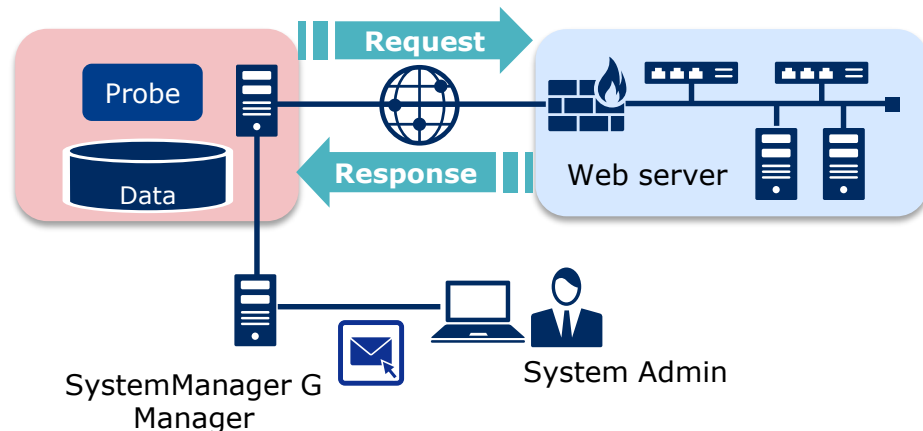
Effects and Use Case

Customer's Problem

●It takes time to check the status of web service manually every day.
●E-commerce website needs comparison of response during sales campaign and normal times for service level improvement.

Effects

●Checking the system status is automated.
●Report quality is improved by quantification.
●Performance bottlenecks are identified. Symptoms analysis by time of day.
●HTML comparison monitoring can detect unexpected updates (defacement) of web site.

Example

Automate manual process to check each system.

- URL to access A service?
- Login ID/password?
- Confirmation process?
- Slow response time?

terminal
A system   B system   C system
. . .

MasterScope   A system   B system   C system

Pseudo access

Automated check by scenarios

Scenario to check A system

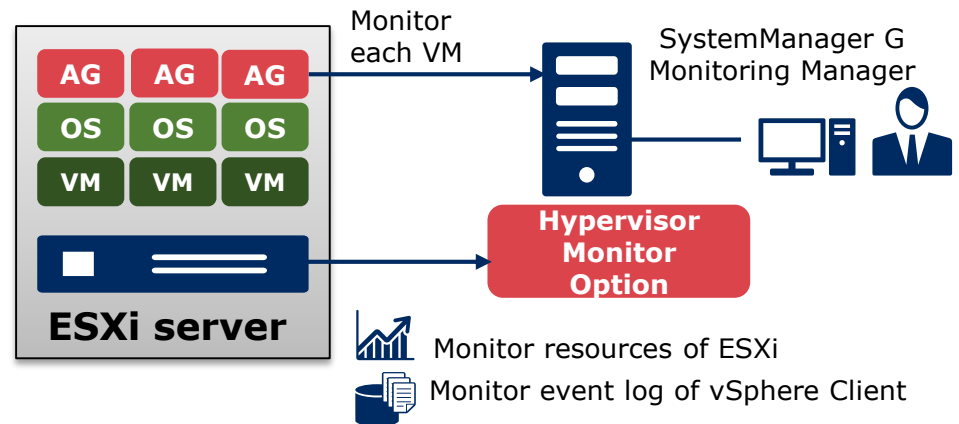| Homepage access	Login	Search	Logout
1s	2s	3s	1s

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Hypervisor Monitoring (Hypervisor Monitor for vmware)

Feature Overview

OS and applications of virtual machines are monitored by SystemManager G Agent. Monitoring of ESXi where Agent cannot be installed is enabled remotely by this option.

It can monitor the performance information of virtual environments such as memory balloon size and free space in datastores.

AG	AG	AG
OS	OS	OS
VM	VM	VM

ESXi server

Monitor each VM → SystemManager G Monitoring Manager

Hypervisor Monitor Option

Monitor resources of ESXi
Monitor event log of vSphere Client
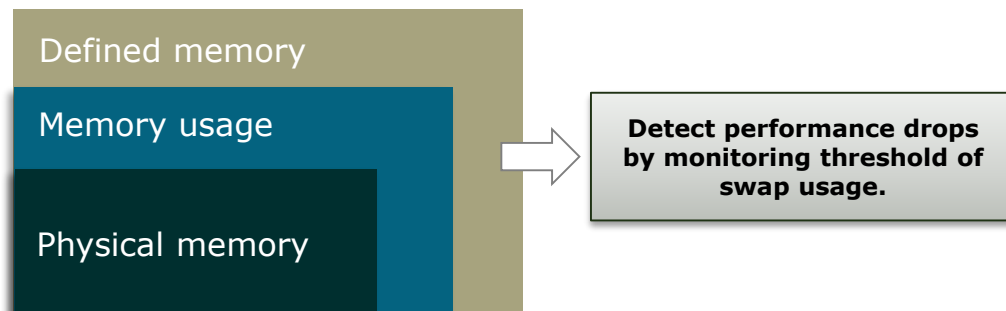
Effects and Use Case

Customer's Problem

●Monitoring only virtual OS cannot identify the bottlenecks because it is different from the actual resource allocation by the hypervisor.
●Data can be checked by vCenter, but monitoring needs to be integrated.

Effects

●Monitoring the features of virtual environments is enhanced.
●Integrated monitoring of virtual environments.

Example — Monitor memory overcommit

Memory overcommit allows a virtual machine to use more memory than the physical host has available. Memory swap files are slower to read from than actual memory, which can lead to performance issues.
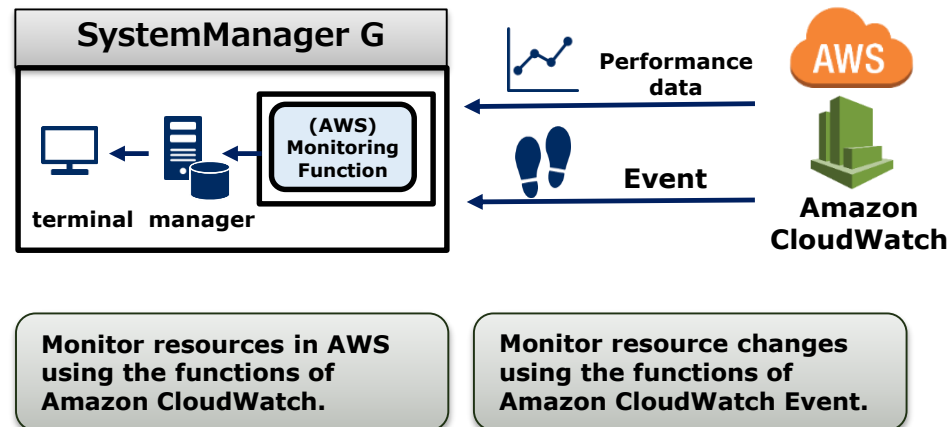
Defined memory

Memory usage

Physical memory

→ Detect performance drops by monitoring threshold of swap usage.

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Cloud Service Monitoring (Cloud Monitor for Amazon Web Services)

Feature Overview

This option provides monitoring of events and performance data in cloud environments using cloud service API. For example, virtual machines in cloud can be monitored by agents. With this option, AWS services such as RDS and EBS that cannot use agents can be monitored.

This enables the integrated monitoring of on-premise environments and cloud service environments.

SystemManager G

(AWS) Monitoring Function

terminal   manager

Performance data

Event

AWS

Amazon CloudWatch

Monitor resources in AWS using the functions of Amazon CloudWatch.

Monitor resource changes using the functions of Amazon CloudWatch Event.

Effects and Use Case

Customer's Problem

●Resource usage needs to be managed for billing.

Effects

●Monitoring the data space of Amazon S3 to prevent unexpected charges.
●Monitoring the threshold of data for cloud billing using a graph prevents excess billing charges.
●Monitoring the cloud service enables to identify the cause when there is an error.

Example   Monitor cloud storage

Amazon S3 has no limit on data usage, which can lead to expensive bills. This is prevented by threshold monitoring of S3 bucket size.
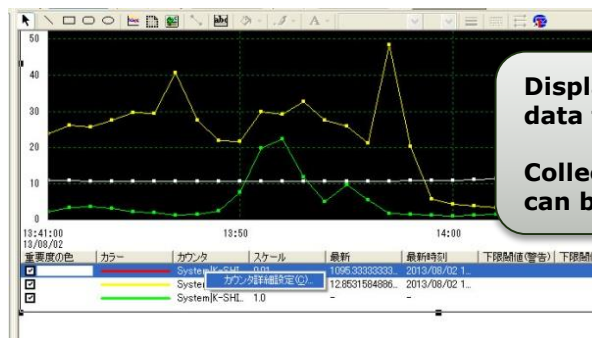
Display and compare graphs of data for different time periods.

Collected resource information can be accumulated.

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