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IBM Enterprise2013

Automation and Operational Monitoring for z/VM and Linux Guests

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Agenda

- **Introduction to recommended practices and examples**
- **Brief overview of product being used**
  - IBM Operations Manager for z/VM
    - What's new in V1.5 – available this week (October 25, 2013)
    - Hands-on Lab at Enterprise2013
      - zCT038, Wednesday 9:00am
- **Recommended practices in detail**
  - Live demonstrations
    - Configuration and sample code
- **Considerations for z/VM V6.2 Single System Image**
- **Summary**
  - Reference information
  - Additional demos
    - Configuration options and sample code for all demos

Managing z/VM and Linux on System z

- **Security**
  - RACF and zSecure Manager for z/VM
- **Performance monitoring**
  - OMEGAMON XE on z/VM and Linux
- **Automation and operational monitoring**
  - Operations Manager for z/VM
  - Including integration with existing monitoring and alert systems
- **Backup and recovery**
  - Backup and Restore Manager for z/VM
  - Tape Manager for z/VM
  - Tivoli Storage Manager

Recommended Practices – Operational Management

View and issue commands on consoles of Linux guests and CMS service machines

- Operations staff monitoring multiple consoles or a central console of alerts
- System programmers debugging a problem on a guest or service machine

Generate alerts and/or automatically recover from

- Abend, termination, or error messages
- Service machine disks approaching full
- Critical user IDs or guests being logged off or entering error state
- Spool and/or page space approaching full

Schedule automated system maintenance procedures

- Spool cleanup based on policies
- Minidisk cleanup (from logs), including archiving
- Orderly startup and shutdown
  - Relocation of critical guests to another SSI member
- Backups of z/VM system

Automation Demos Available

1. **Send an e-mail based on a console message**
2. **Send an alert to Netcool/OMNIbus based on a console message, hold and unhold messages**
   a. Using POSTZMSG interface to Netcool/OMNIbus
   b. Using SNMP interface to Netcool/OMNIbus
3. **Send a message or email if spool approaches full**
   a. Send a message if spool usage is too high on any member of an SSI Cluster
   b. Send an email if spool usage is too high on a single system
4. **View and clean up spool files**
5. **Automated spool cleanup**
6. **Archiving DIRMAINT's log files when disk gets full**
7. **Process a file of test messages as a console**
8. **Process Linux syslog data as a console**
9. **Create a central operations console on one z/VM system**
10. **Create a central operations console across multiple z/VM systems**
    a. When the systems are in an SSI cluster
    b. When the systems are not in an SSI cluster
11. **Integration with OMEGAMON XE on z/VM and Linux - take action based on CPU usage of Linux guest**
12. **Monitor service machines for logoff – and autolog them**
13. **Send an email if page space approaches full**
14. **Monitor SSI connectivity between 2 cluster members**
15. **Suppress passwords on Linux consoles**
16. **Autolog a Linux Guest and Send Message if Doesn't Start Successfully**
17. **View consoles of Linux guests, Linux syslog data, and CMS user IDs or service machines**

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Automation and Operational Monitoring for z/VM and Linux Guests

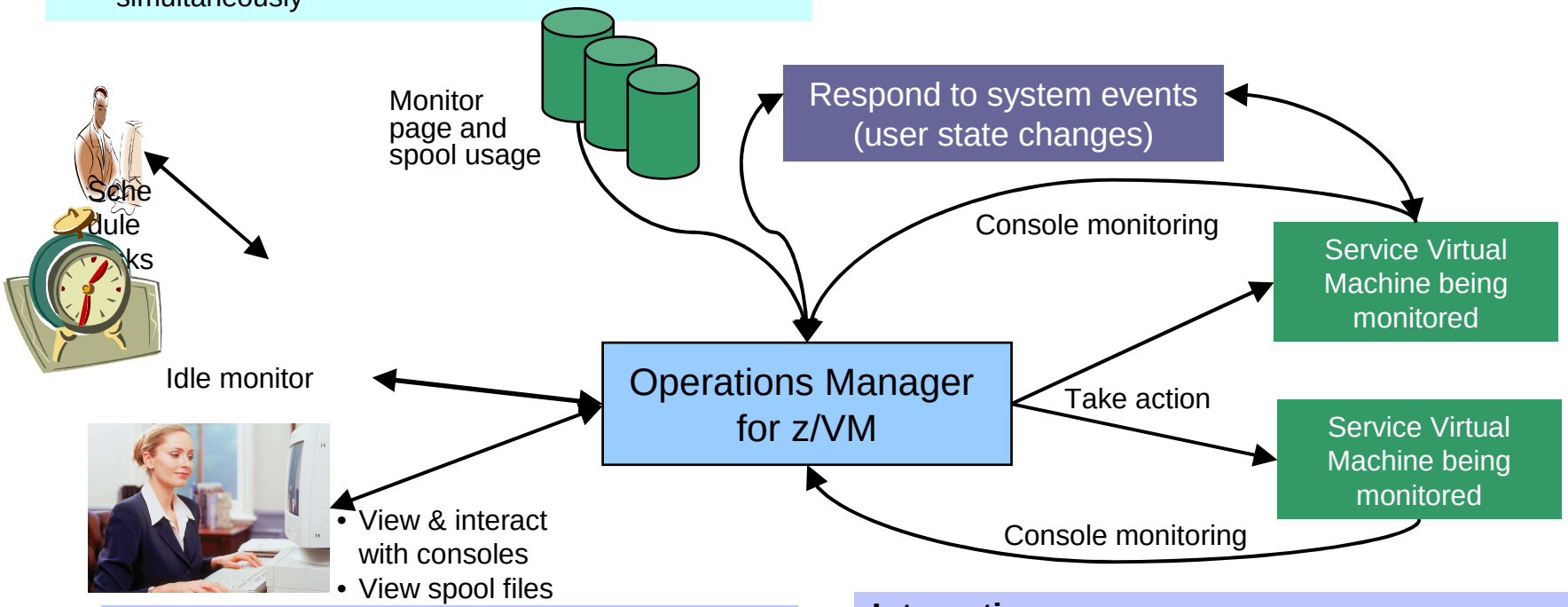
Product Overview

IBM Operations Manager for z/VM

Operations Manager for z/VM

Increase productivity
- Authorized users to view and interact with monitored virtual machines without logging onto them
- Multiple users view/interact with a virtual machine simultaneously

Improve system availability
- Monitor virtual machines and processes
- Take automated actions based on console messages
- Reduce problems due to operator error



Automation
- Routine activities done more effectively with minimal operations staff
- Schedule tasks to occur on a regular basis

Integration
- Fulfill take action requests from performance monitoring products (e.g. OMEGAMON XE on z/VM and Linux)
- Send alerts to email, central event management systems (e.g. Netcool/OMNIbus), etc.

Features and Functions

- **Monitor service machine consoles**
- **Monitor page space and spool usage**
- **Monitor system events**
- **Schedule events/actions**
- **Take actions automatically based on monitoring results**
- **View and interact with monitored consoles from authorized user IDs**
- **Find and view spool files**
- **Dynamic configuration**
- **Separation of access control**

Dynamic Configuration

- **Initial configuration file loaded at startup**
  - May imbed other configuration files
  - Filename can be a substitution variable for the system name
- **Most configuration options can be updated while Operations Manager is running**
  - Add, delete, or change:
    - Rules, actions, monitors, schedules, holidays, groups, user authorization
  - Suspend or resume rules, monitors, schedules
- **Multiple methods**
  - CMS command interface
  - (Re)load a new or updated configuration file
  - Commands in action routines
- **Sample configuration files provided**
  - Includes some of the demos in this presentation
    - Operations Manager configuration statements
    - Sample REXX code

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Automation and Operational Monitoring for z/VM and Linux Guests

View and Issue Commands on Consoles

Linux Guests and CMS Service Machines

Monitor Service Machine Consoles

Operations Manager

slog Message 1
slog Message 2
slog Message 3
…

syslog data

OPER Message 1
OPER Message 2
OPER Message 3
…

OPERATOR

LNX Message 1
LNX Message 2
LNX Message 3
…

LINUX

TCP Message 1
TCP Message 2
TCP Message 3
…

TCPIP

TEST Message 1
TEST Message 2
TEST Message 3
…

Test Data

Data space 1

TEST Message 1
TEST Message 2
TEST Message 3

Data space 2

OPER Message 1
OPER Message 2
OPER Message 3

Data space 3

LNXA Message 1
LNXA Message 2
LNXA Message 3

Data space 4

TCP Message 1
TCP Message 2
TCP Message 3

Data space 5

slog Message 1
slog Message 2
slog Message 3
…

Data space 6

OPER Message 1
LNX Message 1
LNX Message 2
TCP Message 1
slog Message 1
OPM Message 1
TEST Message 1
OPER Message 2
…

Daily log

OPER Message 1
LNX Message 1
LNX Message 2
TCP Message 1
slog Message 1
OPM Message 1

View and Interact with Consoles

- **Authorized users can view live consoles of monitored service machines & guests**
  - Multiple users can view the same console simultaneously
  - No need to logon to the user ID to see its console
    - No interruption of the user ID
  - No need to create and close console files of disjointed data
  - Test data and Linux syslog data treated as a “console”
  - Views can be defined to look at a group of consoles in one view
  - **Can specify a date and time range for your view within currently available data**
  - Can request a copy of the current console data for a user or set of users
  - **Format of date in the view is based on requestor’s CP DATEFORMAT setting**
- **Full screen mode**
  - Scroll up and down to view and search historical data
  - Auto scroll (on or off) as new output is displayed on the console
  - From command line, issue commands back to the monitored console
- **Amount of data that is visible depends on specified or default data space size**
  - **Or date/time range specified**
- **Rules/actions may modify the view**
  - Suppress messages from the console
  - Hold or highlight messages with color, blinking, etc.
- **Authorized users can view the log file**
  - Can also request a copy of the log file from today or a previous day

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17. **View consoles of Linux guests, Linux syslog data, and CMS user IDs or service machines**

Scenario 17:
View Live Consoles of Linux Guests, Linux Syslog Data, CMS Service Machines

- **Configure user IDs / guests to be monitored by Operations Manager**
- **Route syslog data from a Linux guest to Operations Manager**
- **From authorized user, view the live console data of**
  - OPERATOR
    - Issue VM commands on OPERATOR's console
  - A Linux guest
    - Issue Linux commands on the guest's console
  - Linux syslog data

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Automation and Operational Monitoring for z/VM and Linux Guests

Generate Alerts and/or Automatically Recover From

Abend Messages
Termination Messages
Error Messages

Monitor Service Machine Consoles

Operations Manager

slog Message 1
slog Message 2
slog Message 3
…

syslog data

OPER Message 1
OPER Message 2
OPER Message 3
…

OPERATOR

LNX Message 1
LNX Message 2
LNX Message 3
…

LINUX

TCP Message 1
TCP Message 2
TCP Message 3
…

TCPIP

TEST Message 1
TEST Message 2
TEST Message 3
…

Test Data

Data space 1
TEST Message 1
TEST Message 2
…

Data space 2
OPER Message 1
OPER Message 2
…

Data space 3
LNX Message 1
LNX Message 3
…

Data space 4
TCP Message 1
TCP Message 2
…

Data space 5
slog Message 1
slog Message 2
slog Message 3
…

Filtered

Data space 6
OPER Message 1
LNX Message 1
LNX Message 2
TCP Message 1
slog Message 1
OPM Message 1
TEST Message 1
OPER Message 2
…

Daily log
OPER Message 1
LNX Message 1
LNX Message 2
TCP Message 1
slog Message 1
OPM Message 1

Unfiltered

Monitor Service Machines

- **Define rules to**
  - Scan console messages for text matching
    - Includes column, wildcard, and exclusion support
    - Optionally restrict to specific user ID(s)
  - Take actions based on matches
- **Multiple rules can apply to one message**
  - Rules processed in order of definition in the configuration file
  - FINAL option available to indicate no additional rules should be evaluated

Executing Actions

- **Define action(s) to be triggered**
  - Specify action to take as part of the console rule definition
    - Action is taken when match is found
  - Types of actions
    - Change color, highlight, hold, or suppress a console message
    - CP or CMS commands
    - REXX EXECs
    - Write data out on a TCP/IP port
      - E.g. send data to a syslog daemon/server
- **Dynamically include data about the triggering event in the action**
  - Available to the action via substitution variables
- **Take multiple actions based on one message**
  - Chain actions together
  - Limit the number of times an action is taken in a specified period of time

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Scenario 1:
Send an Email if Abend or Fatal Message Occurs

- **Watch all monitored consoles for an error message that includes the word “fatal” or “abend”**
  - Message must also contain the word “mail” (for demo purposes only)
- **Send an email if one of the words appears on a console**
- **Dynamically include in the email**
  - Host name of z/VM system where the error occurred
  - User ID that received the error message
  - Indicator of whether the word was fatal or abend
  - Full text of the error message

Scenario 2a:
Send an Alert to OMNIbus – Using POSTZMSG

- **Watch all monitored consoles for an error message that includes the word “fatal” or “abend”**
  - Message must also contain the word “omni” (for demo purposes only)
- **Send an alert to OMNIbus if one of the words appears on a console**
  - Use POSTZMSG, running on Linux guest
    - Do not trigger the action if the message is on this guest
- **Dynamically include in the alert**
  - User ID that received the error message
  - Indicator of whether the word was fatal or abend

Scenario 2b:
Send an Alert to OMNIbus – Using SNMP

- **Watch all monitored consoles for an error message that includes the word “abend”**
  - Message must also contain the word “snmp” (for demo purposes only)
- **If this word appears on a console**
  - Change the message to red and hold it
  - Send an alert to OMNIbus, using SNMPTRAP command on z/VM
  - Automatically unhold the message after 4 minutes
- **Dynamically include in the alert**
  - IP address of the z/VM system where the error occurred
  - User ID that received the error message
  - Text of the abend message

Scenario 6:
Detecting Disk Full Conditions of Logging IDs

- **Operations Manager monitors the console of a user ID that does logging**
  - DIRMAINT, for example
- **Disk full or early warning message triggers a rule/action in Operations Manager**
  - Quiesce or shut down DIRMAINT
  - Send the log files to a separate service machine
  - Erase the log files from DIRMAINT's logging disk
  - Restart DIRMAINT
  - Separately, other service machine automatically archives all files it receives (in Archive Manager for z/VM)
  - Log files are safely archived in Archive Manager and DIRMAINT is running with a clean log disk
- **Get a copy of the console for further review/debugging**

Scenario 7:
Process a File of Test Messages as a Console

- **Create a file containing lines of test messages**
  - Test rules and actions without creating critical conditions
- **Use Operations Manager to send the file for processing**
  - Treat it as the console of one user
  - Send it again, treating it as the console of another user
  - Notice triggered rules and actions are different
- **View the “consoles” of these two users**

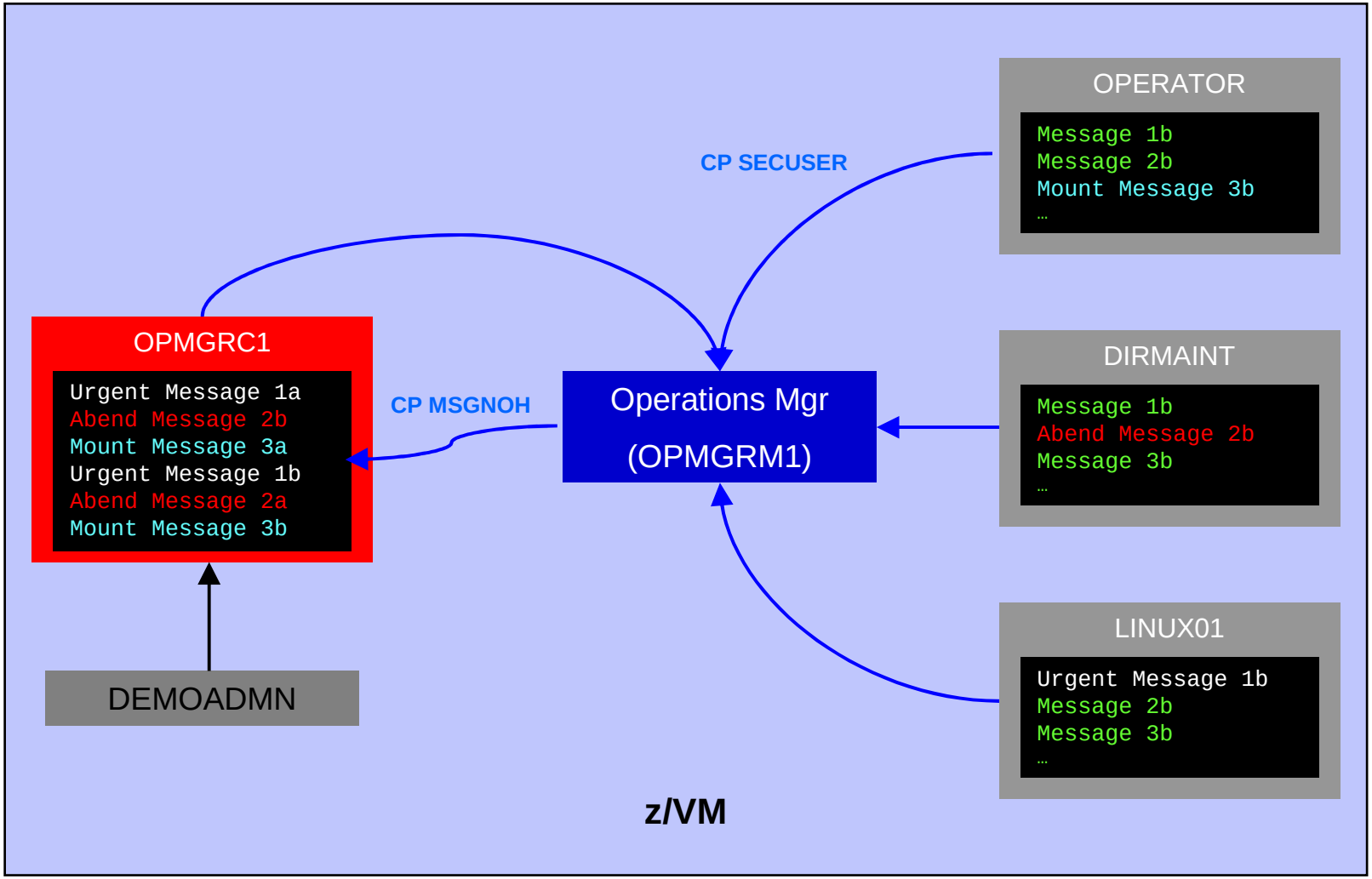
Scenario 8:
Process Linux Syslog Data as a Console

- **Route syslog data from a Linux guest to Operations Manager for z/VM**
  - Supports syslogd, syslog-ng, rsyslog
  - syslog-ng and rsyslog include hostname or IP address in message
- **Treat it as the console of a “fake” user ID**
- **Trigger rules and actions based on syslog data**
- **View the “console” containing syslog data**
- **Option to create one console per syslog or combine multiple syslogs into one console**

Scenario 9:
Create a Central Operations Console on One z/VM System

- **Use Operations Manager to watch for error, warning, fatal messages on service machine consoles**
  - DIRMAINT, TCP/IP, RACF, etc.
  - Linux guests
  - Linux syslog
- **Route these messages to a central operations console**
- **Operations staff watches operations console for signs of trouble**
  - Operations staff or system programmers view individual service machine or guest consoles for more details when needed

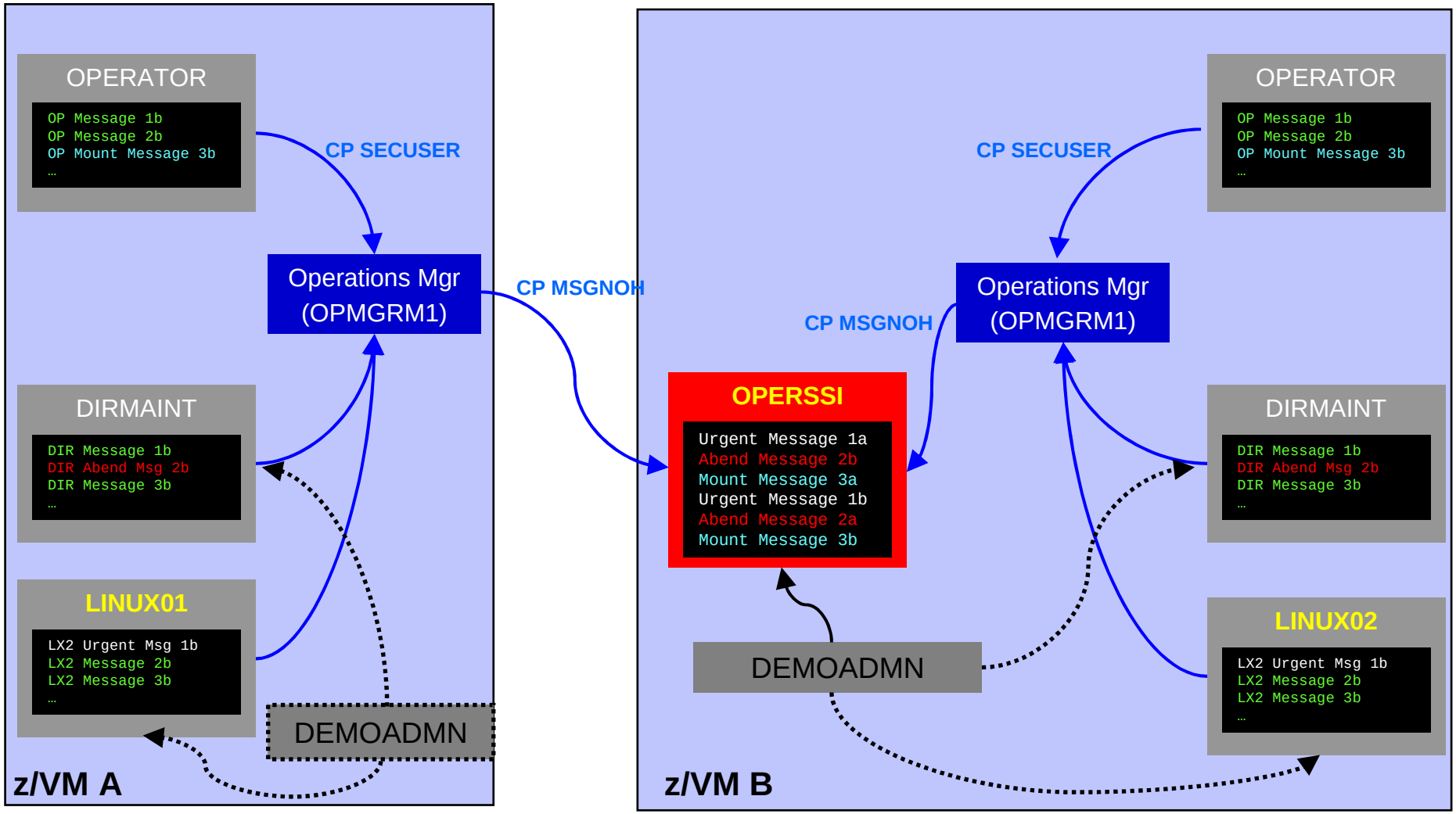
Creating a Central Console on One z/VM System



Scenario 10a:
Create a Central Operations Console across multiple z/VM systems in an **SSI cluster** – Includes relocation of Linux and CMS guests

- **Use Operations Manager to watch for error, warning, fatal messages on service machine consoles on one or more systems in an SSI cluster**
  - OPERATOR, DIRMAINT, TCPIP, RACF, etc.
  - Linux guests
  - Linux syslog
- **Route these messages to a central operations console on one of the z/VM systems**
- **Operations staff watches one operations console for signs of trouble across multiple z/VM systems**
  - Operations staff or system programmers view individual service machine or guest consoles for more details when needed

Creating a Central Console Across Multiple Members of SSI Cluster



Single Configuration Users: LINUX01, LINUX02, OPERSSI, DEMOADMN
Multiconfiguration (IDENTITY) Users: OPERATOR, DIRMAINT, OPMGRM1

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Generate Alerts and/or Automatically Recover From

Critical User IDs or Guests Logging Off
Critical User IDs or Guests Enter Error State

Respond to System Events

- **Create monitors for z/VM system events (*VMEVENT) related to user IDs**
  - Class 0
    - 0 - Logon
    - 1 - Logoff
    - 2 - Failure condition (including CP READ and Disabled Wait)
    - 3 - Logoff timeout started
    - 4 - Forced sleep started
    - 5 - Runnable state entered (VM READ)
    - 6 - Free storage limit exceeded
    - 9 - Outbound relocation started
    - 10 - Inbound relocation started
    - 11 - Outbound relocation complete
    - 12 - Inbound relocation complete
    - 13 - Outbound relocation terminated
    - 14 - Inbound relocation terminated
    - 15 – Timebomb exploded
- **Additional classes also supported**
- **Optionally restrict to specific user ID(s)**
- **Specify the action associated with the event**
  - Actions specified are the same as those for schedules, console rules, and other monitors

Automation Demos Available

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Scenario 12:
Monitor Service Machines for LOGOFF Status – and AUTOLOG them

- **Monitor specific service machines to make sure they stay logged on**
  - – Demo will monitor TSTADMN2 user ID
    - Could monitor a group of user IDs
  - – If it changes from logged on to logged off status, then restart it
- **Dynamically pass the user ID to the action**
  - – Re-use action for multiple monitors or user IDs

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Automation and Operational Monitoring for z/VM and Linux Guests

Generate Alerts and/or Automatically Recover From

Spool Space Approaching Full
Page Space Approaching Full

Monitor Page and Spool Usage, View Spool Files

- **Create page and spool space monitors to trigger actions when**
  - Percent of spool usage falls within a specified range
  - Percent of spool usage increases at a specified rate
  - Percent of page space usage falls within a specified range
  - Percent of page space usage increases at a specified rate
- **Actions triggered can be the same actions used by console monitoring**
- **For spool files, authorized users can**
  - Display a list of spool files based on one or more attributes
    - Owner
    - Size
    - Date created
  - From the list, the user can
    - Sort the list on any of the available columns
    - View the contents of an individual spool file
    - Purge, transfer, or change a spool file

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Scenario 3a: Send a Message if Spool Usage is Too High on Any Member in an SSI Cluster

- **Operations Manager monitors the spool usage (percent full) on each member of a cluster**
  - For demo purposes, spool monitor is currently defined but suspended (not active)
  - We'll dynamically resume (re-activate) the spool monitor
    - Must reactivate on each member of a cluster
  - Demo monitor requires spool to only be 5% full
- **Usage exceeds the specified limit**
- **Automatically send a message to a central console for the entire cluster**
  - Send a maximum of 3 messages per hour
- **Message includes the member name and % full**
- **For demo purposes, suspend (de-activate) the spool monitors when complete**
- **Demonstrate which spool files are visible on each member**

Scenario 3b:
Send an Email if Spool Usage is Too High

- **Operations Manager monitors the spool usage (percent full)**
  - For demo purposes, spool monitor is currently defined but suspended (not active)
  - We'll dynamically resume (re-activate) the spool monitor
  - Demo monitor requires spool to only be 25% full or higher
- **Usage exceeds the specified limit**
- **Automatically send an e-mail to someone who can evaluate and take action**
- **For demo purposes, suspend (de-activate) the spool monitor when complete**

Scenario 4:
Find and View Spool Files – Clean up the Spool

- **Authorized user specifies spool search criteria**
  - By user ID
  - By date
  - By file size
- **Result list presented**
  - Sort
  - Open/view a specific spool file
  - Purge, modify metadata, or transfer a file

Scenario 13:
Monitor Page Space – Send Email if Usage Too High

- **Operations Manager monitors the page space usage (percent full)**
  - For demo purposes, page space monitor is currently defined but suspended (not active)
  - We'll dynamically resume (re-activate) the page space monitor
  - Demo monitor requires the page space be only 0% full
- **Usage exceeds the specified limit**
- **Automatically send an e-mail to someone who can evaluate and take action**
- **For demo purposes, suspend (de-activate) the page space monitor when complete**

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Automation and Operational Monitoring for z/VM and Linux Guests

Schedule Automated System Maintenance Procedures

Monitor for Rules, Monitors and Schedules that Were Not Triggered

Spool Cleanup Based on Policies
Backups
Disk Cleanup
Orderly Startup and Shutdown

Schedule Events and Actions

- **Define schedules**
  - Hourly, daily, weekly, monthly, or yearly, nth weekday of the month
  - Once on specified month, day, year, and time
  - **Based on ISO week definitions (week number; even, odd, first, last week)**
  - At regular intervals
    - Every x hours and y minutes
  - Within a specified window of time
    - Specify start time
    - Specify conflicting schedules
    - Specify maximum time to defer this schedule
  - Within limits
    - Restrict to specific days of the week: Monday through Sunday plus holidays
    - Restrict to certain hours of the day

- **Specify the action associated with the schedule**
  - Actions specified are the same as those for console rules and all other monitors

Idle Monitors

- **Define idle monitors**
  - Watch for idle rules, schedules, and monitors
    - Rule, schedule, or monitor **not** triggered ***n*** number of times within specified period of time
- **Specify the action associated with the idle monitor**
  - Actions specified are the same as those for schedules, console rules, other monitors

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Scenario 5:
Automated Spool Clean Up

- **Use z/VM SFPURGER utility to manage spool files based on criteria, e.g.**
  - User ID
  - Days in spool
  - Class
  - Number of records
- **Automate SFPURGER execution**
  - Regularly scheduled using Operations Manager
  - Triggered by Operations Manager spool monitor

Scenario 14:
Monitor SSI Connectivity between Two Members of a Cluster

- **Create a schedule to query ISLINKs between two members of a cluster**
- **If less than 4 links up, send message to consolidated SSI console (OPERSSI)**
  - For demo purposes, we'll dynamically deactivate a link then reactivate it when done

Scenario 16:
Autolog a Linux Guest and Send Message if Doesn't Start Successfully

- **Define a schedule and action to start a Linux guest**
- **Define a rule looking for the application specific message indicating up and ready for work**
- **Define an idle monitor for the above rule**
  - If "up and ready" message is not found within 1 minute, then send message to central console
- **Idle monitor is suspended until schedule is triggered**
  - Before autologging the Linux guest, automatically resume idle monitor
- **Idle monitor is automatically suspended again once it is triggered**

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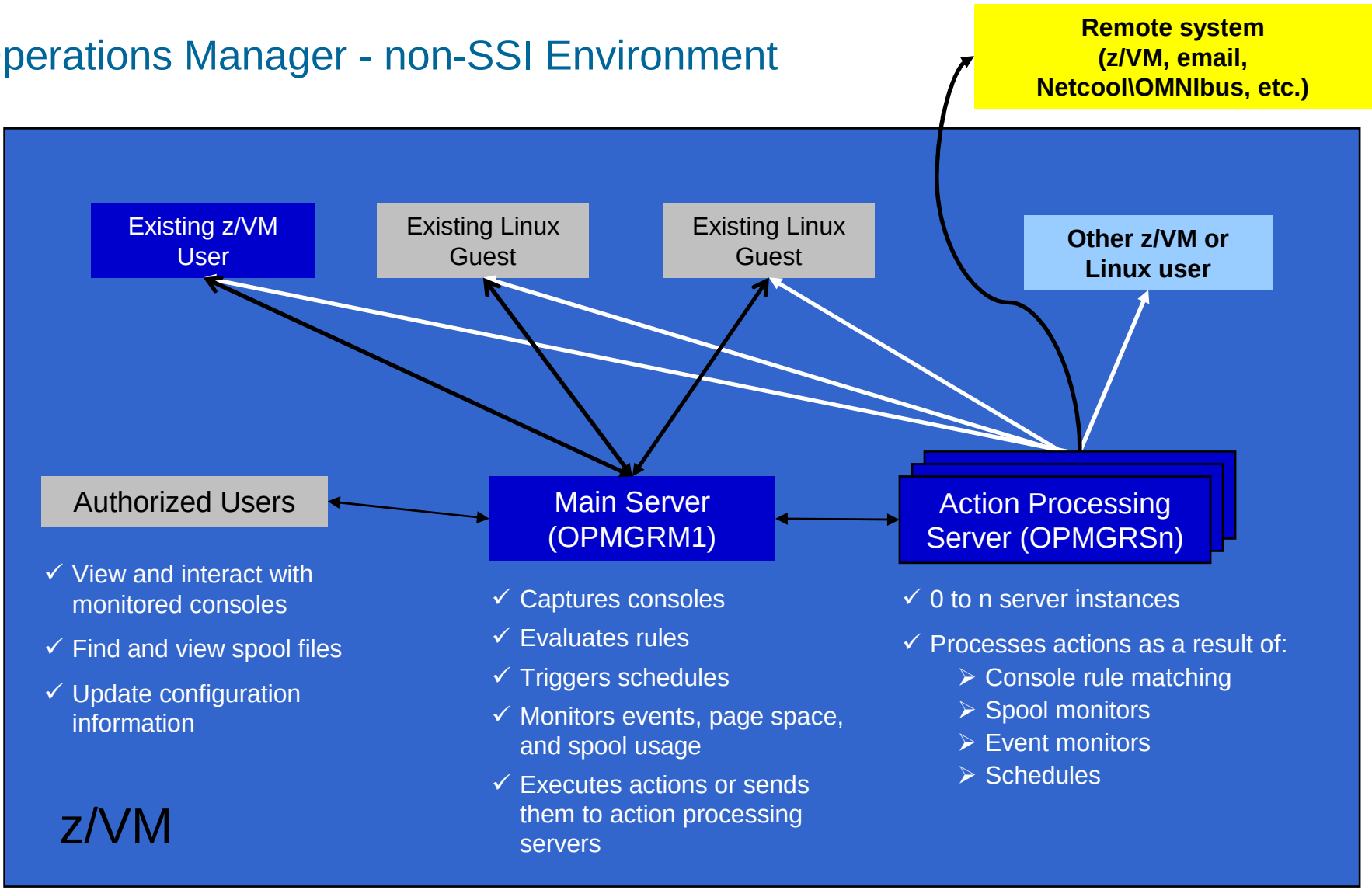
SSI vs non-SSI Considerations

Operations Manager - non-SSI Environment



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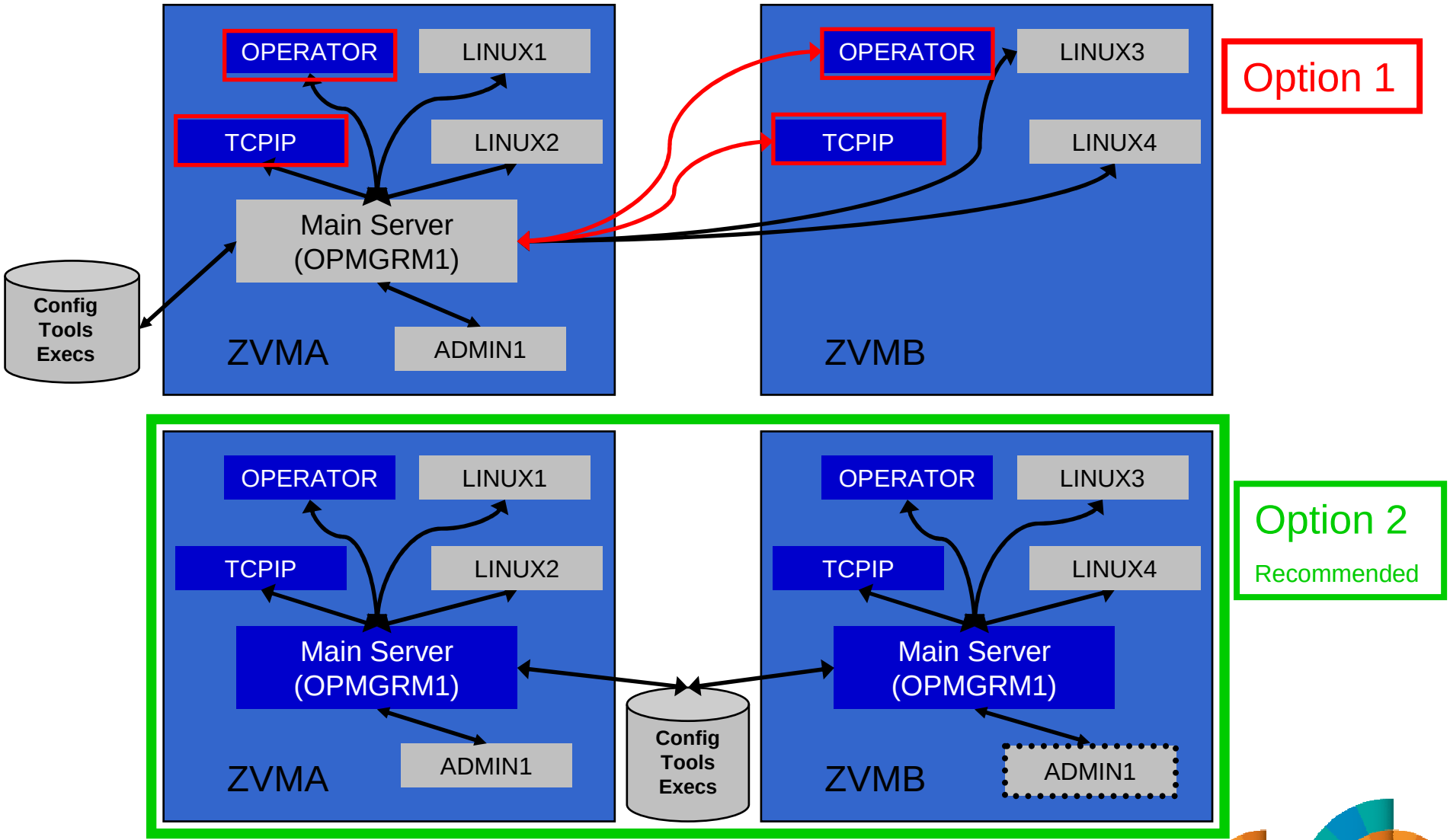
SSI Considerations for
Console Monitoring

Single Config User

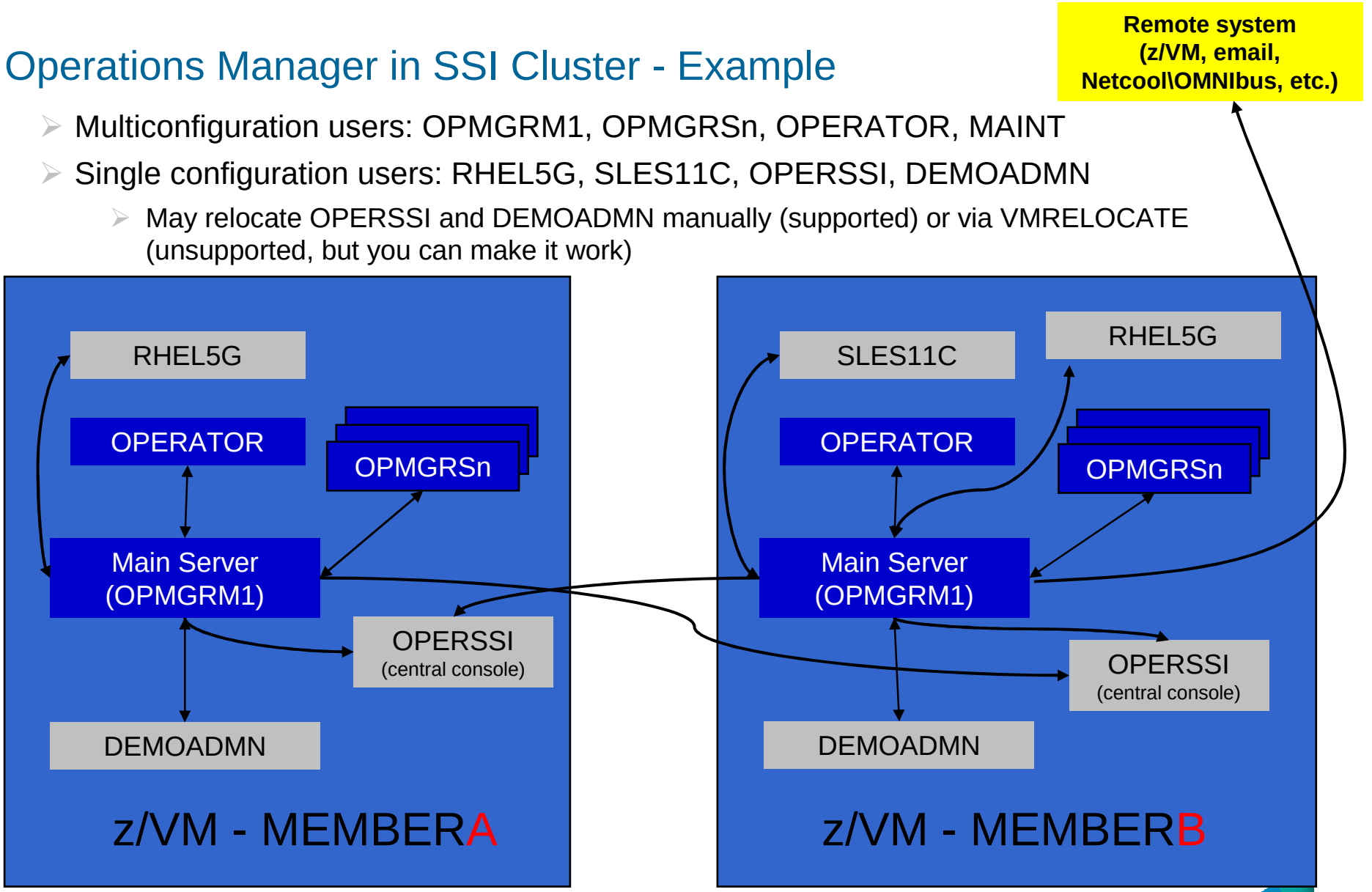
Multiconfig User

SSI Considerations for Console Monitoring



Operations Manager in SSI Cluster - Example

- Multiconfiguration users: OPMGRM1, OPMGRSn, OPERATOR, MAINT
- Single configuration users: RHEL5G, SLES11C, OPERSSI, DEMOADMN
  - May relocate OPERSSI and DEMOADMN manually (supported) or via VMRELOCATE (unsupported, but you can make it work)



Relocating OPERSSI and DEMOADMN (CMS Users) …

- **VMRELOCATE for CMS user IDs not officially supported**
- **Can be done for some CMS users**
  - Create single configuration user ID for z/VM system disks
  - Copy MAINT 190, 19D, 19E to minidisks owned by this new user ID
  - Relocateable CMS user must IPL from identical NSS (CMS) or minidisk (190)
    - Use SPXTAPE to copy CMS NSS
      - VMRELOCATE uses checksum of NSS to determine if identical
      - CMS NSS includes date/time it was loaded
    - Or, have relocateable CMS users IPL 190 instead of IPL CMS

OPERSSI DIRECT

```
USER OPERSSI …
…
OPTION CHPIDVIRTUALIZATION ONE
…
IPL 190
…
LINK CMAINT 0190 0190 RR
LINK CMAINT 019D 019D RR
LINK CMAINT 019E 019E RR
…
```

PROFILE EXEC

```
/* PROFILE EXEC for OPERSSI */
…
'SET RELPAGE OFF'
…
```


… Relocating OPERSSI and DEMOADMN (CMS Users)

- **Beware**
  - It's worth repeating … VMRELOCATE for CMS user IDs not officially supported
  - All members of the cluster must be kept at same z/VM (or at least CMS) code level
  - If IPL 190, will use more memory as each user ID will have private copy of CMS
  - SET RELPAGE OFF may have a negative impact on overall system performance
  - Only works for "basic" CMS users
    - All relocation rules still apply
    - E.g. user IDs connecting to VMCF or IUCV can't relocate

Monitor Service Machines - Considerations

- **Consoles received by Operations Manager via SECUSER or OBSERVER**
  - Prefer SECUSER
    - OBSERVER won't detect CP and VM READ messages
    - Output of actions on OBSERVEd console may not be viewable in console
  - OBSERVER allows Operations Manager to receive console output even if user is logged on
- **Single System Image allows SECUSER and OBSERVER across members of cluster**
  - Content does not contain member name information
  - Rules, actions, and users wouldn't be able to distinguish between IDENTITY users on multiple members
  - Creates single point of failure on one member
- **Recommendation for z/VM V6.2 Single System Image environments**
  - Have all consoles monitored by an Operations Manager server on the same member as the monitored guest (i.e. all Operations Manager servers are IDENTITY users)
    - Requires action processing servers (OPMGRSn) to be on same member as main server
  - Share configuration data on minidisk owned by single configuration user
    - For example: VMTOOLS 198
    - Master configuration file unique to each member
    - Imbed common file(s) used by all members
  - Request a copy of the current console of a remote user
    - `SMSG OPMGRM1 at membername VIEWCON USER(userid),MODE(RDR)`

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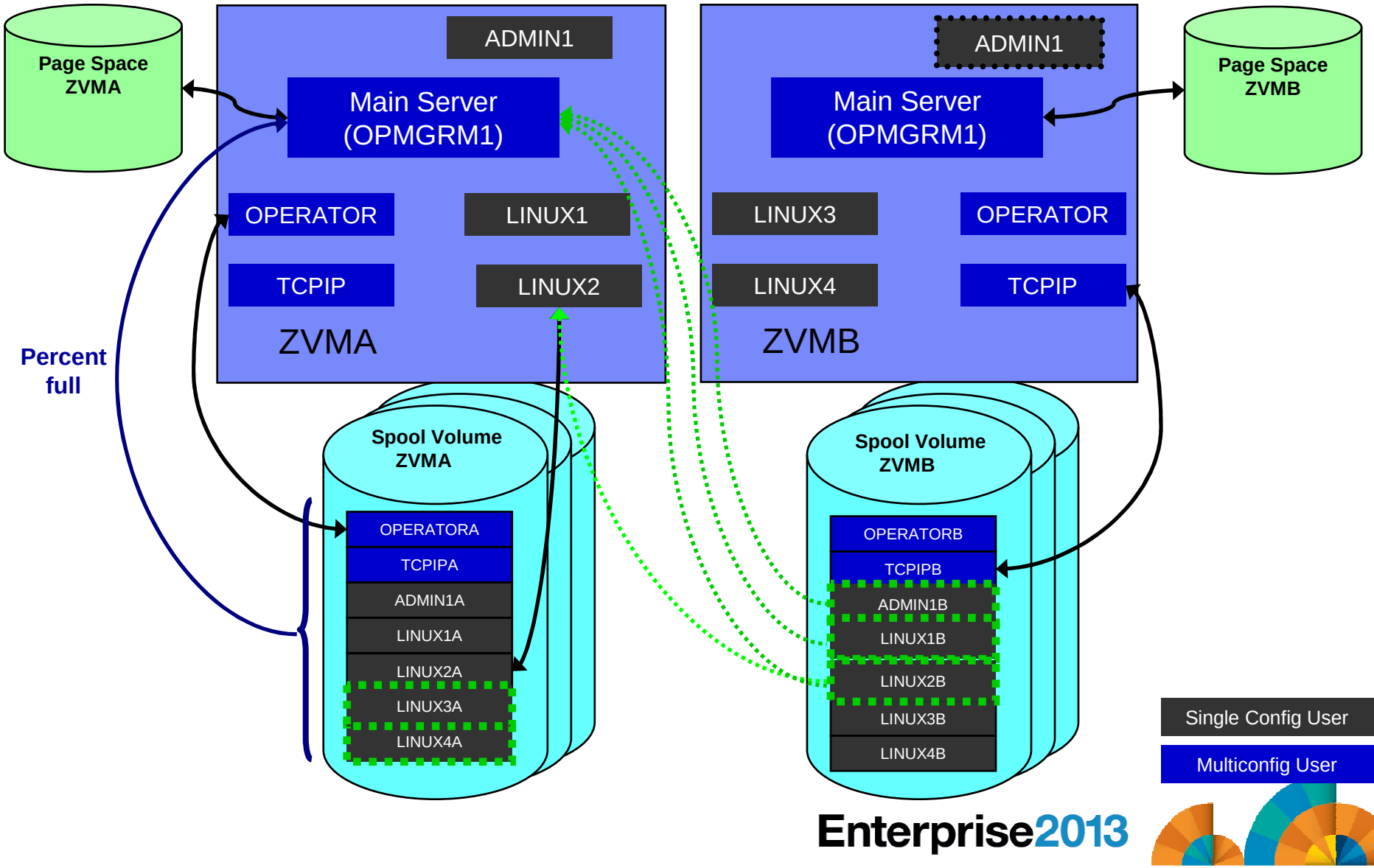
Automation and Operational Monitoring for z/VM and Linux Guests

SSI Considerations for

Page Space Monitoring
Spool Space Monitoring
Viewing and Managing Spool Files

SSI Considerations for Spool and Page Space Monitoring



Spool and Page Space Monitoring - Considerations

- **Page space is local**
  - Separate space for each member and only visible to the local member
  - No impact from SSI
- **Spool data**
  - Spool files are placed on spool volumes owned by the member where the spool file was created
  - Users see their own spool data no matter where they are logged on and where the data was created

Spool and Page Space Monitoring - Considerations

- **Users and applications (like Operations Manager) who can see all spool files need to be aware:**
  - Spool data for multiconfiguration users
    - Only spool files owned by the local instance of that user are visible on the local member
    - No visibility to spool files owned by other instances of that user on other members
  - Spool data for single users

Single configuration user Status	Spool files created on **this** member	Spool files created on **other** members
User logged off	Visible	Not visible
User logged onto **this** member	Visible	Visible
User logged onto **another** member	Visible	Not visible

Spool and Page Space Monitoring - Considerations

- **Recommendation**
  - Have an Operations Manager server on each member to monitor spool and page space
  - Be aware of spool files visible in Operations Manager but not resident on this member's spool volumes
    - Indicated with "+" in VIEWSPL

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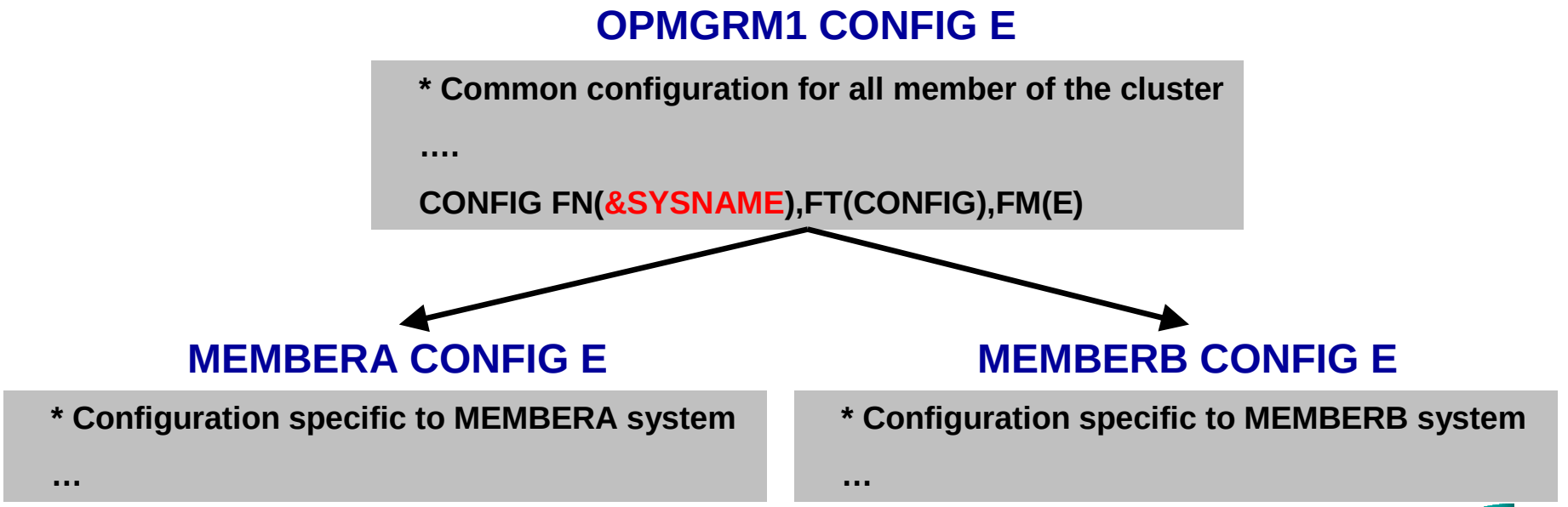
SSI Considerations for

Managing Configuration Files

Managing Configuration Files

- **Put all configuration files on a shared disk**
  - Minidisk owned by a single configuration user (not an Operations Manager service machine)
  - SFS
- **Create a common configuration file used by all members**
  - All Operations Manager servers on all members load this file
- **Imbed a unique configuration file based on the system name of this member**
- **Request configuration file reload from user IDs on other members of a cluster**
  - Use `SMSG OPMGR1 at <member> CONFIG …`



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Automation and Operational Monitoring for z/VM and Linux Guests

Summary

References
Additional Demos
Screenshots of All Demos

Recommended Practices – Operational Management

View and issue commands on consoles of Linux guests and CMS service machines

- Operations staff monitoring multiple consoles or a central console of alerts
- System programmers debugging a problem on a guest or service machine

VIEWCON

Generate alerts and/or automatically recover from

- Abend, termination, or error messages
- Service machine disks approaching full

Rules

Schedules

Event monitors

- Critical user IDs or guests being logged off or entering error state
- Spool and/or page space approaching full

Spool/Page monitors

Schedules

Schedule automated system maintenance procedures

- Spool cleanup based on policies

SFPURGER

Rules, Archive Mgr

- Minidisk cleanup (from logs), including archiving
- Orderly startup and shutdown

Rules, monitors

  - Relocation of critical guests to another SSI member
- Backups of z/VM system

Backup Manager

Summary

- **Use Operations Manager to**
  - Automate daily operations
  - Integrate your z/VM and Linux on System z environment with existing enterprise monitoring and alerting
  - Prevent problems rather than react to them
  - Automate reactions to problems when they can't be prevented
  - Improve problem determination procedures
  - Increase programmer and operator productivity
  - Continue to monitor locally with improved management of clusters
- **Sometimes several alternatives for monitoring for the same event**
  - Console message (rules)
  - Scheduled healthchecks (schedules)
  - User ID status changes (event monitor)
- **Actions allow integration with other platforms and products**

Reference Information

- **Product Web site**
  - Start at http://www.ibm.com/software/stormgmt/zvm/
  - Product pages include
    - Publications
    - Pre-requisites
    - Announcements
    - Presentations
    - White papers
    - Support
- **e-mail**
  - Mike Sine, sine@us.ibm.com, Technical Marketing
  - Tracy Dean, tld1@us.ibm.com, Product Manager
- **White papers on Operations Manager website (Library page)**
  - Routing Linux syslog data
  - Sending alerts from Operations Manager to Netcool/OMNIbus
  - Using Shared File System to store Operations Manager configuration files and automation EXECs
  - Automatically logging on a user at Linux system boot time for easier console management and action execution

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Automation and Operational Monitoring for z/VM and Linux Guests

Demonstration Scenarios

Automation Demos Available

1. **Send an e-mail based on a console message**
2. **Send an alert to Netcool/OMNIbus based on a console message, hold and unhold messages**
   a. Using POSTZMSG interface to Netcool/OMNIbus
   b. Using SNMP interface to Netcool/OMNIbus
3. **Send a message or email if spool approaches full**
   a. Send a message if spool usage is too high on any member of an SSI Cluster
   b. Send an email if spool usage is too high on a single system
4. **View and clean up spool files**
5. **Automated spool cleanup**
6. **Archiving DIRMAINT's log files when disk gets full**
7. **Process a file of test messages as a console**
8. **Process Linux syslog data as a console**
9. **Create a central operations console on one z/VM system**
10. **Create a central operations console across multiple z/VM systems**
    a. When the systems are in an SSI cluster
    b. When the systems are not in an SSI cluster
11. **Integration with OMEGAMON XE on z/VM and Linux - take action based on CPU usage of Linux guest**
12. **Monitor service machines for logoff – and autolog them**
13. **Send an email if page space approaches full**
14. **Monitor SSI connectivity between 2 cluster members**
15. **Suppress passwords on Linux consoles**
16. **Autolog a Linux guest and send message if doesn't start successfully**
17. **View consoles of Linux guests, Linux syslog data, and CMS user IDs or service machines**

धन्यवाद

Hindi

多謝

Traditional Chinese

감사합니다

Korean

Спасибо

Russian

Gracias

Spanish

Thank You

English

Obrigado

Brazilian Portuguese

شكراً

Arabic

Danke

German

Grazie

Italian

多谢

Simplified Chinese

Merci

French

நன்றி

Tamil

ありがとうございました

Japanese

ขอบคุณ

Thai