CYBERARK®

# PAM Administration

## System Monitoring and Common Administrative Tasks

# Agenda

By the end of this session, you will be able to:

- Monitor the system health via various methods:
  - REST
  - Email
  - SIEM
  - SNMP
- Monitor replications
- Perform common administrative tasks related to system maintenance

# System Monitoring

- Monitoring components via REST and the System Health pane
- Monitoring components via email notifications
- Monitoring components via SIEM
- Monitoring components via SNMP
- Monitoring replications

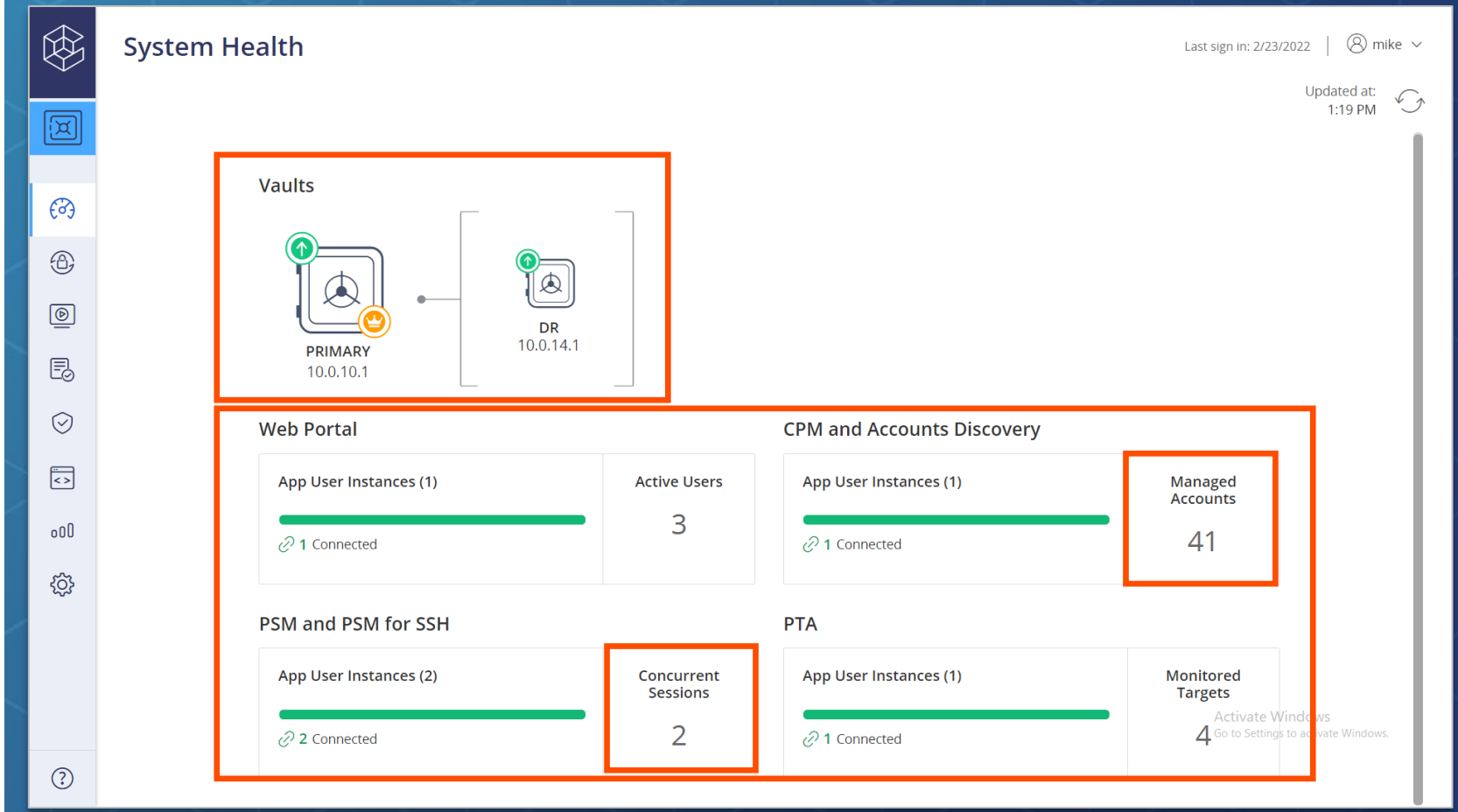
# Monitoring System Health via REST

# System Health

The **System Health** page provides information on:

- The health of the **Primary** and **DR Vaults**
- Connectivity status for **PVWA, CPM, PSM** and **PTA**
- Accounts managed by **CPM**
- **PSM** concurrent sessions

You can export consolidated information about the system health using the **REST API**



# System Health - Components

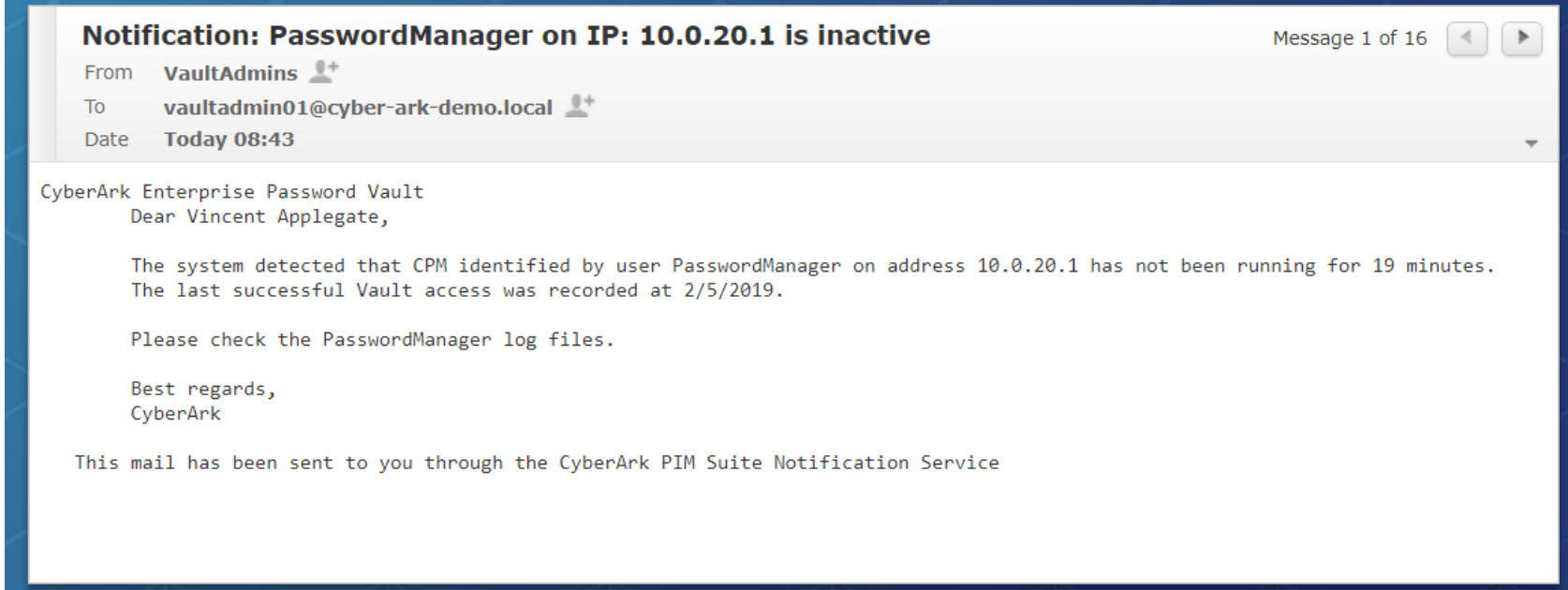
The following information is provided for each component:

- **IP Address**
- **Version**
- **Component User**
- **Connectivity Status:**
  - Connected
  - Disconnected
- **Last Log On Date:**
  - The date when this component user last logged on to the Vault

# Monitoring via Email Notifications

# Best Practice – Monitoring Components

- After installing the components, you can configure email notifications to be sent out if the component's user or users become disconnected.
- This should be done for all component users you wish to monitor.
- Examples include:
  - ***PVWAAppUser***
  - ***PasswordManager***
  - ***DR***
  - ***Backup***



**Notification: PasswordManager on IP: 10.0.20.1 is inactive**

Message 1 of 16

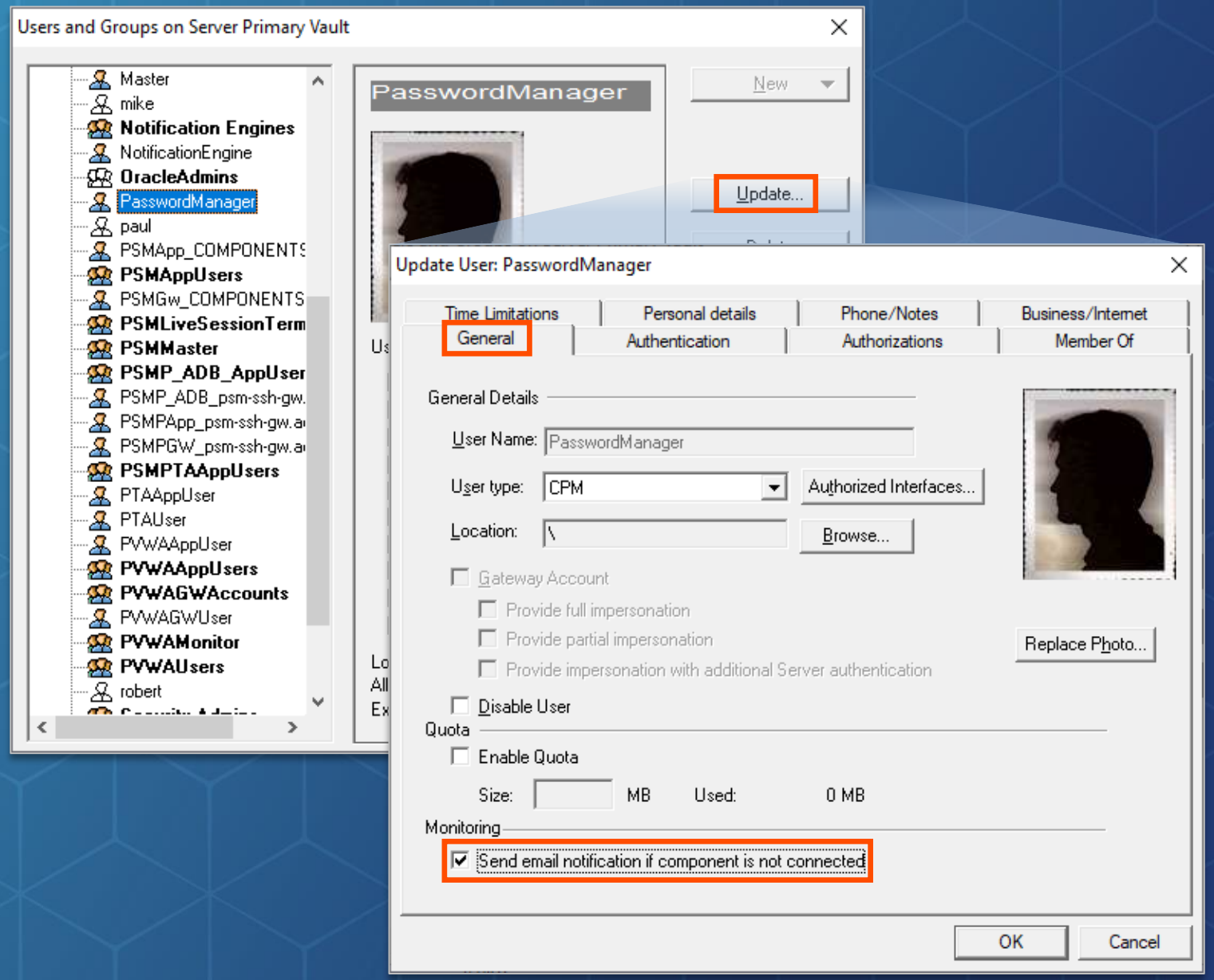
From **VaultAdmins**
To **vaultadmin01@cyber-ark-demo.local**
Date **Today 08:43**

```
CyberArk Enterprise Password Vault
        Dear Vincent Applegate,

        The system detected that CPM identified by user PasswordManager on address 10.0.20.1 has not been running for 19 minutes.
        The last successful Vault access was recorded at 2/5/2019.

        Please check the PasswordManager log files.

        Best regards,
        CyberArk

   This mail has been sent to you through the CyberArk PIM Suite Notification Service
```

# Enabling Component Monitoring – 1

Use the **PrivateArk Client** to enable monitoring of a specific **CyberArk** component user account:

- Select the user and click **Update**
- In the **General** tab, check the box for: ***Send email notification if component is not connected***



# Enabling Component Monitoring – 2

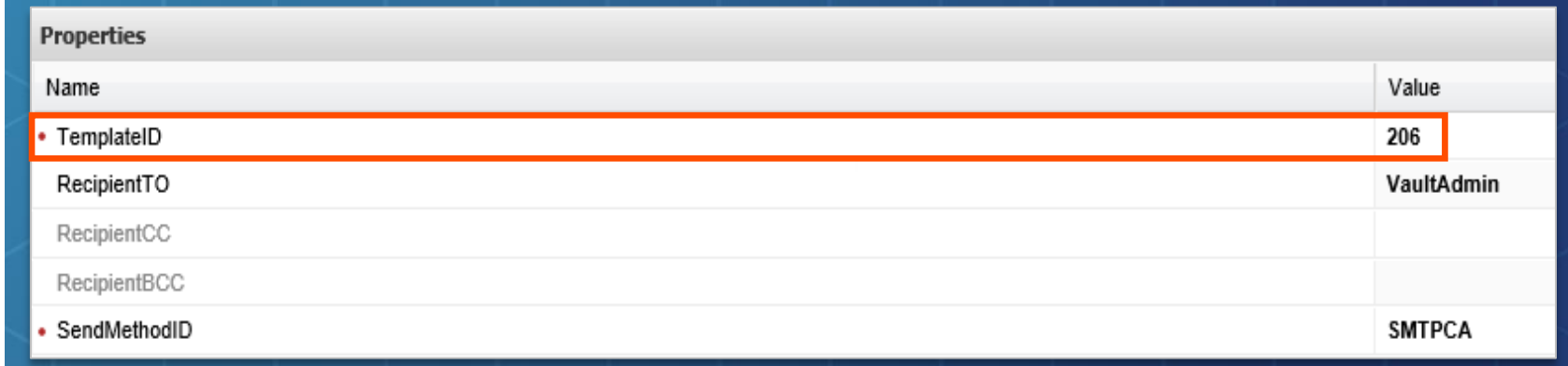
There is an email template that you can customize by going to:

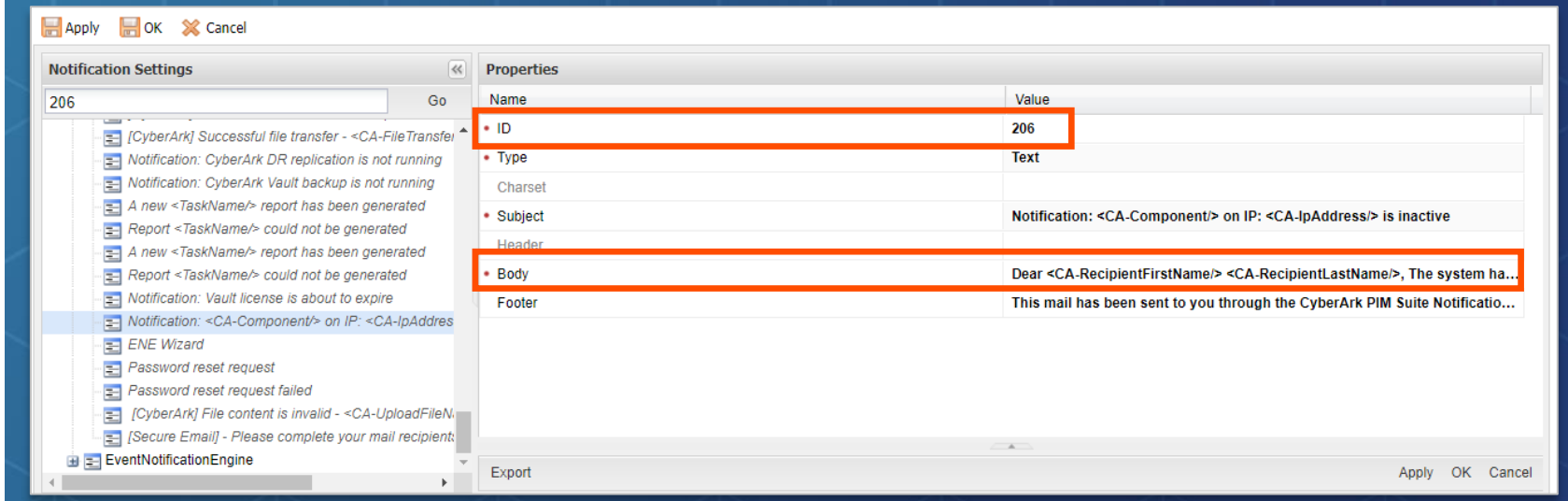
**Options /**

**Notification Settings /**

**Notification Agent Rules**

- Locate the rule **Component is inactive** - Template ID: **206**
- Searching for "206" will bring you to the template, where you can edit the ***Body*** parameter



# Enabling Component Monitoring – 3

In **dbparm.ini**, you will need to add the parameter:

***ComponentMonitoringInterval***

A value of ***1*** means one minute will pass between the checks specified in the parameter:

***ComponentNotificationThreshold***

C:\Users\mike\Desktop\dbparm.ini - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

10-0-30-2, PSM Address.645030ce-afd1-4b51-b4f0-8b8bd947cf0d.rdp | dbparm.ini

```
33  MaxTasksAllocation=
    8(CPM,AIMApp,AppPrv):7-23,16(CPM,AIMApp,AppPrv):23-7,1(PTAApp)
34
35  ComponentNotificationThreshold=
    PIMProvider,Yes,30,1440;AppProvider,Yes,30,1440;OPMProvider,Yes,30,14
    40;CPM,Yes,720,1440;PVWA,Yes,90,1440;PSM,Yes,30,1440;DCAUser,Yes,60,2
    880;SFE,Yes,10,2880;FTP,Yes,60,2880;ENE,Yes,60,360
36
37
38
39  UserLockoutPeriodInMinutes=-1
40  MaskUserIsSuspendedMessage=No
41  TerminateOnDBErrorCodes=2003
42  AllowedVirusSafeFileTypes=
    DOC,DOT,XLS,XLT,EPS,BMP,GIF,TGA,TIF,TIFF,LOG,TXT,PAL,,
43  *AceServersIP=1.1.1.1,1.1.1.2
44  *AceServerPort=
```

MS ini file | length : 2,236 lines : 58 | Ln : 37 Col : 30 Pos : 1,622 | Windows (CR LF) | UTF-8 | INS

# Enabling Component Monitoring – 4

- In the event of a loss of communication between the component and the **Vault**, there will now be an **ITAlog** error indicating the component's loss of communication
- And because we have enabled email notifications, Vault Admins will also get a notification in their in-box.

| | | |
|---|---|---|
| 05/02/2019 | 08:56:06 | ITATS433E IP Address 10.0.20.1 is suspended for User PasswordManager. |
| 05/02/2019 | 08:56:21 | ITATS433E IP Address 10.0.20.1 is suspended for User PasswordManager. |
| 05/02/2019 | 08:56:36 | ITATS433E IP Address 10.0.20.1 is suspended for User PasswordManager. |
| 05/02/2019 | 08:56:49 | ITATS433E IP Address 10.0.20.1 is suspended for User PasswordManager. |
| 05/02/2019 | 08:56:51 | ITATS433E IP Address 10.0.20.1 is suspended for User PasswordManager. |
| 05/02/2019 | 08:57:06 | ITATS433E IP Address 10.0.20.1 is suspended for User PasswordManager. |
| 05/02/2019 | 08:57:21 | ITATS433E IP Address 10.0.20.1 is suspended for User PasswordManager. |
| 05/02/2019 | 08:57:46 | ITATS433E IP Address 10.0.20.1 is suspended for User PasswordManager. |
| 05/02/2019 | 08:57:57 | ITATS319W Firewall contains external rules. |
| 05/02/2019 | 09:03:58 | ITADB487W Component User PasswordManager has not accessed the Vault for 39 minutes. |
| 05/02/2019 | 09:08:58 | ITATS433E IP Address 10.0.20.1 is suspended for User PasswordManager. |

# Monitor via SNMP
# With Remote Control Agent

# Remote Control

The **CyberArk Vault Remote Control** feature enables users to carry out a number of remote operations on the **Vault**, **DR Vault**, and **ENE** components. It comprises two elements:

| | |
|---|---|
| **Remote Control Agent** | • Installed as part of the **Vault**, both the **Primary** and **DR**. |
| **Remote Control Client** | • A utility that runs from a command line interface.<br>• Executes tasks on a **Vault** component where the **Remote Control Agent** is installed.<br>• Does not require any other **Vault** components to be installed on the same computer, not even the **PrivateArk Client**. |

# Remote Monitoring


- **The Remote Control Agent** can use **SNMP** to send Vault traps to a remote terminal. This enables users to receive both Operating System and **Vault** information:

| Operating System Information | Component-specific Information |
|---|---|
| • CPU, memory, and disk usage<br>• Event log notifications<br>• Service status | • Primary and DR Vault status<br>• Primary and DR Vault logs |

- CyberArk provides two **MIB** files (for SNMP v1 and SNMP v2) that describe the SNMP notifications that are sent by the **Vault**. These files can be uploaded and integrated into the enterprise monitoring software.  These MIB files are included on the **Privileged Account Security Installation CD**.

# Remote Monitoring – SNMP Parameters

For a complete list of parameters, refer to the **Privileged Account Security Reference** guide:
https://docs.cyberark.com

| Parameter | |
|---|---|
| SNMPCommunity | |
| Description | The name of location where the SNMP traps originated. |
| Acceptable Values | String |
| Default Value | - |
| MonitoredEventLogNames | |
| Description | The names of the event logs of activities that have taken place since the Server started, such as Application, Security, and System.<br>In Linux, specify the following files:<br>/var/log/messages and /var/log/kernel |
| Acceptable Values | String |
| Default Value | - |
| SNMPTrapsThresholdCPU | |
| Description | The interval in seconds between checks for CPU usage and the usage percentage threshold for SNMP traps, and the type of alerts that are written in the log. The threshold, retries, retriesinterval and state-full values are optional. |
| Acceptable Values | Interval > 0,Threshold >= 0,[Retries > 0,RetriesIntervals>0,State-full – Yes/No] |
| Default Value | 200,90,3,30,NO |

| Remote Monitoring | |
|---|---|
| SNMPHostIP | |
| Description | The IP address of the remote computer where SNMP traps will be sent. |
| Acceptable Values | IP address (supports multiple entries) |
| Default Value | - |
| SNMPTrapPort | |
| Description | The port through which SNMP traps will be sent to the remote computer. Specify either port 161 or 162. |
| Acceptable Values | Port |
| Default Value | 162 |
| SNMPTrapInterval | |
| Description | The number of seconds that pass between notifications. |
| Acceptable Values | Number |
| Default Value | 30 |

# Remote Administration

The **Remote Control Agent** allows administrators to do the following from the Client:

- Retrieve logs
- Set parameters
- Restart the Vault
- Restart services
- Reboot the Vault server
- Retrieve machine statistics such as memory and processor usage

| **Vault commands:** | |
|---|---|
| Start Vault | Start a Vault on the remote machine. |
| /Last | Starts the Vault with the last known good configuration files. |
| Stop Vault | Stop a Vault on the remote machine. |
| /Normal | Wait for active tasks to complete before stopping the Vault. This is the default. |
| /Immediate | Force active tasks to complete before stopping the Vault. |
| /Terminate | Stop the Vault without completing active tasks. |
| Restart Vault | Restarts a Vault on the remote machine. |

| **ENE commands:** | |
|---|---|
| Start ENE | Start the ENE service. |
| Stop ENE | Stop the ENE service. Before stopping, the ENE service will send out notifications for all the activities that it has already recognized. |
| Status ENE | Show activity status of the ENE service on the remote machine. |
| GetLog ENE | Show the ENE log file on the remote machine. |
| /LogFile Trace/Console | Whether the ENE log file will be ENETrace.log or ENEConsole.log. |

| **DR Vault commands:** | |
|---|---|
| Start PADR | Start a DR Vault on the remote machine. |
| Stop PADR | Stop a DR Vault on the remote machine. |
| Restart PADR | Restarts a DR Vault on the remote machine. |
| Status PADR | Show activity status of a DR Vault on the remote machine. |
| GetLog PADR | Shows the Disaster Recovery Vault log file, PADR.log, on the remote machine. |

# Monitor via SIEM

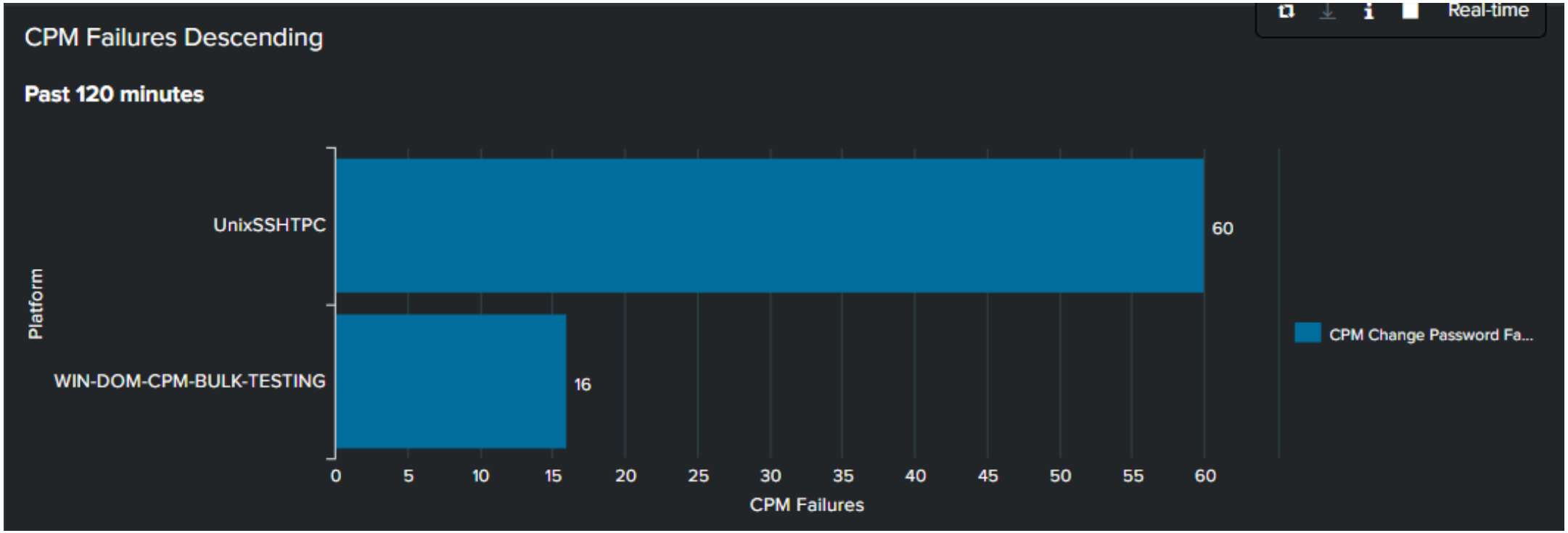
# Vault Health Monitoring via SIEM

To increase the visibility of CyberArk's solution, measurements can be sent from the **Vault** via the syslog protocol and can be aggregated in a SIEM tool.

- The **Vault** can be configured to send health statistics to SIEM applications such as Splunk and ArcSight. This is done by setting the ***SendMonitorMessage*** parameter in *dbparm.ini* to ***yes***.
- Statistics include transaction queue/execution time, number of tasks, CPU usage, and more.
- You should create a baseline specific to your environment to identify system trends and thresholds.
- Monitor statistics regularly in order to detect variations from your baseline.

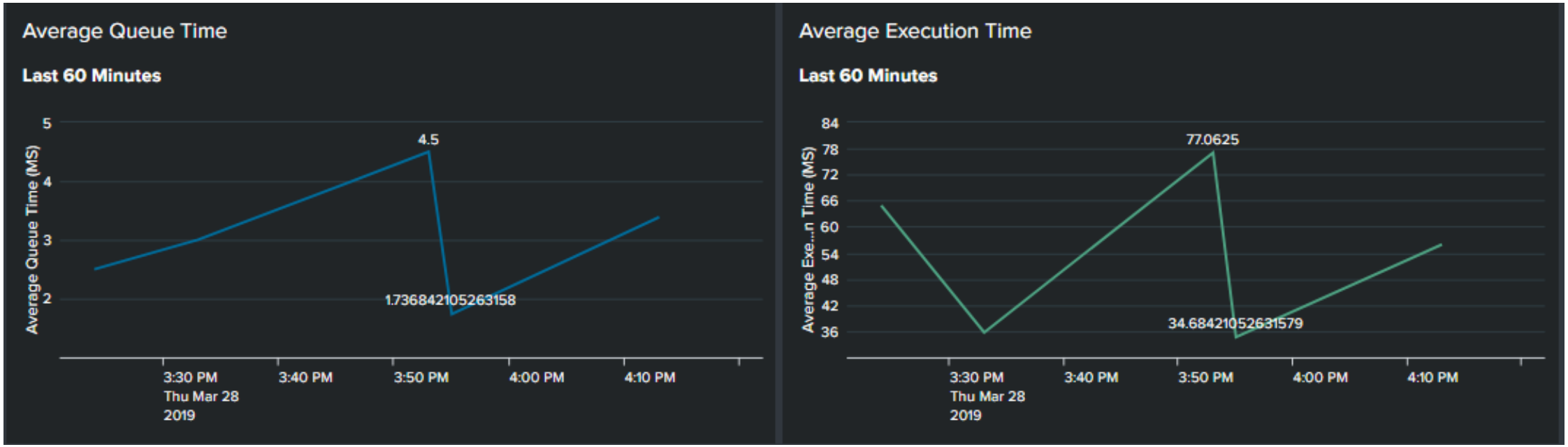
# Application Monitoring Sample Dashboards (Splunk)

- Shows systemic issues with specific platforms
- Additional drill-down can show trends for specific error messages
- Platforms at top of list can be prioritized to address most widespread issues first



# Application Monitoring Sample Dashboards (Splunk)

- Shows overall Vault activity over time
- Can be customized by time range
- Trends can be stacked to compare current loads to historical loads
- Visualizes impact from various replication cycles and EVD jobs



# Monitoring Replications

# Monitoring Backup and DR Replications

It is critical to be notified ASAP when Backup and DR operations fail.

- The **Vault** can be configured to send email notifications when the **Backup** and **DR** users fail to connect after a specific time period.
- By default, these notifications are sent to the members of the **Vault Admins** group, although they can be sent to any predefined recipients.
- In addition, a relevant message will be written **in ITALog.log.**

# Enabling Backup Monitoring

To activate the Backup Status Notification, you need add the ***BackupNotificationThreshold*** parameter to ***dbparm.ini***

```
BackupNotificationThreshold=Yes,Yes,48,24,12
```

- Configures the **Vault** to monitor missing replication
- Sends notifications whenever a missing replication is detected according to the following timeframes
- First notification will be sent 48 hours after the missing procedure is detected
- Subsequent notifications will be sent every 24 hours after that
- The backup replication status will then be checked every 12 hours

# Enabling Monitoring of DR Replications

To activate DR monitoring, you need add the ***DRNotificationThreshold*** parameter to ***dbparm.ini***

```
DRNotificationThreshold=Yes,Yes,2,24,30m
```

- Configures the **Vault** to monitor missing DR User connections
- Sends notifications whenever a missing connection is detected according to the following timeframes
- First notification will be sent 2 hours after the missing procedure is detected
- Subsequent notifications will be sent every 24 hours after that
- The DR status will then be checked every 30 minutes

# Common Tasks

- Rotate CPM Logs
- Clearing Safe history
- Other common tasks

# CPM Log Rotation

During daily **CPM** operations, the log files folder and its subfolder can grow to a huge amount of data.

- Extremely large log files can lead to disk space issues on the **CPM** Server and can make troubleshooting difficult
- All the **CPM** log files can be automatically uploaded to a Safe in the **Vault** on a regular basis, according to a predefined time period.

| | |
|---|---|
| LogCheckPeriod | ▶ The interval in hours after which the log files will be uploaded to the Vault |

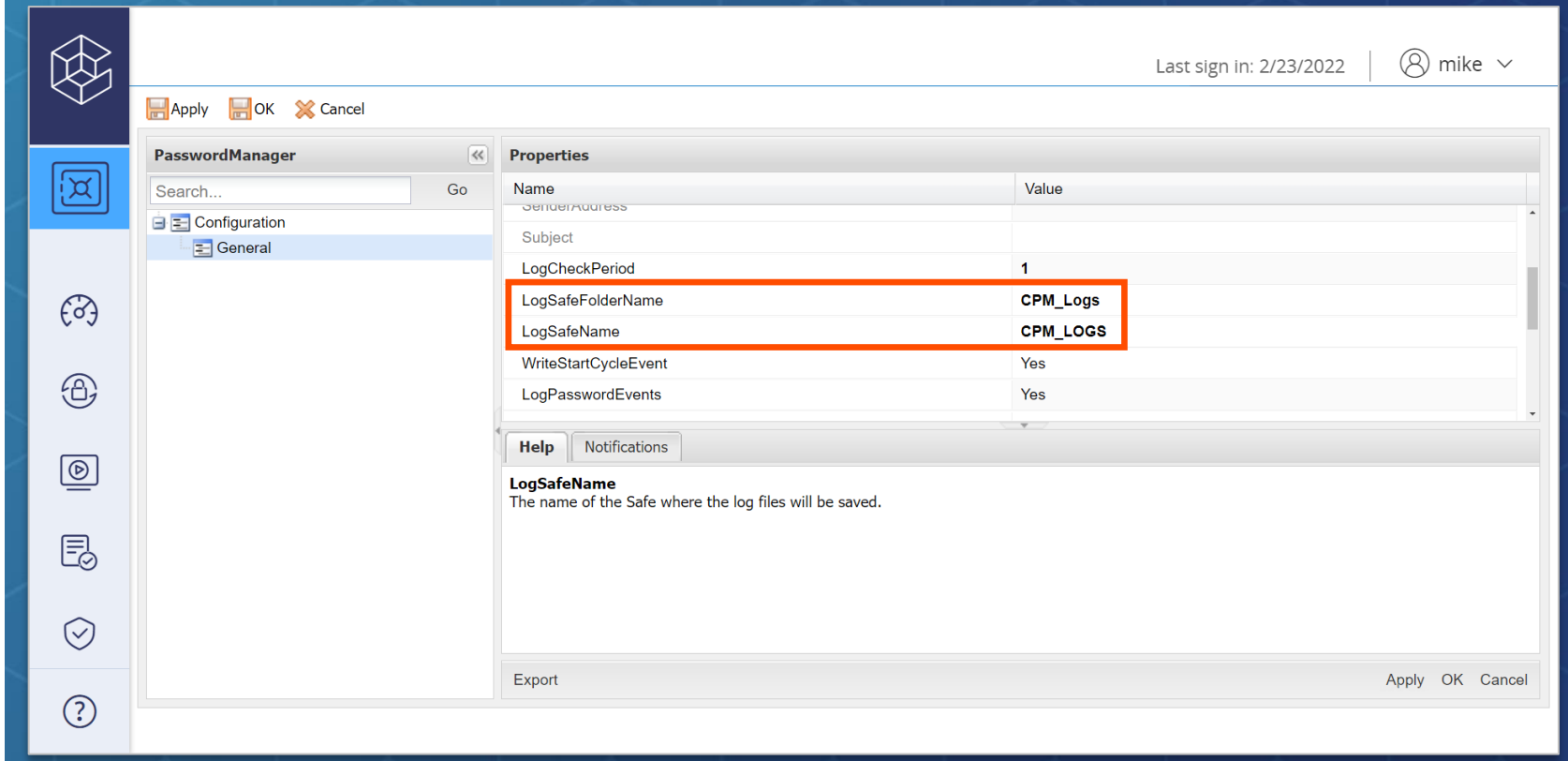
- It is recommended to upload **CPM** logs to a Safe

| | |
|---|---|
| LogSafeName | ▶ The name of the safe where the log files will be saved |

- And then automatically purge old and obsolete logs files

# CPM Log Rotation - Configuration

Configure the CPM to archive logs to the **Vault** periodically using the **LogCheckPeriod, LogSafeName** and parameters in **CPM Settings.**



# CPM Log Deletion

In order to keep the log files on the local drive to a minimum:

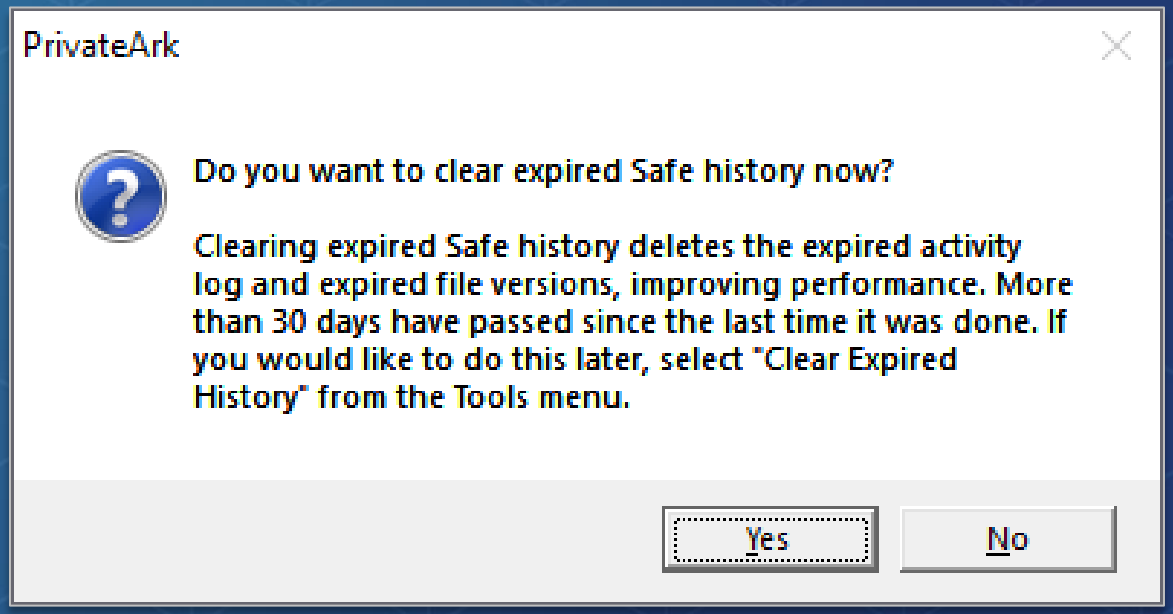
- The log files that have already been copied to the **Safe** can be deleted regularly from the **CPM** server logs directory
- The **DeleteFiles** utility – **deletefiles.exe** – is intended for this purpose

**NOTE:** This will only delete files named ***pm*.log*** and ***pm_error*.log*** files in the ***\Old*** subfolder of the ***\Logs*** folder

- You should configure a Scheduled Task to run **deletefiles.exe** on the **CPM** server to purge log files automatically (Prior to 11.5, otherwise this is now automated)
- Third-party log files in the **ThirdParty** subfolder of ***\Logs\Old*** are deleted automatically, based on the value configured in the **OldLogRetention** parameter

# Clearing Safe History

- Periodically, you need to clear the **Safe** history
- Only file versions and **Safe** history logs that have been held for longer than the time specified in the ***Safe Properties History*** window can be deleted
- To clear the **Safe History**, select **Clear Expired History** from the **Tools** menu in the PrivateArk Client, then **Safe**
- When you open a **Safe** via the **PrivateArk Client**, you will be prompted to clear expired Safe history



# Recommended Tasks

## WEEKLY

- Check ITAlog.log once a week for a month. If not much noise is found, change interval to every two weeks.
- If you don't know what **Normal** looks like, it is harder to identify when something **Abnormal** occurs.
- Use **M&R** guide and search the Customer Community to understand messages.
- Example of noise
  - Messages "ITATS319W Firewall contains external rules." will appear every 15 min with the default value in the ***dbparm.ini: MonitorFWRulesInterval***.

## QUARTERLY

- Check license capacity to make sure you are not approaching license limits.
- Check free space to make sure systems have adequate capacity.
  - If space is limited, check monthly or every other month.

# Recommended Tasks

## QUARTERLY

- Review, manage, test directory mappings.
- Periodically (quarterly, annually) test Master account and password login procedure.
- Periodically (quarterly, annually) test DR/BC failover procedures, including PW reset disk for the Vault host administrator.

## ANNUALLY

- Schedule a formal **CyberArk Security Services Health Check** annually / periodically.

# Recommended Tasks

- Use the built-in capabilities of Syslog and SIEM to monitor your environment.
- Use Remote Control Agent for monitoring via SNMP.
- Know where the logs are.
- **Diagram your environment with server names, IPs, and server function, and current CyberArk version.**
- Make sure archive logs setting is adequate for the amount of time traces and LC (Logic Container) logs that need to be archived.
  - Ideally having 24 hours of archived traces would be preferred from a support perspective.
  - Vault traces and LC logs are located in the same archive folder.
    - Make sure you provide Support with the correct log when requested.
- Have a tool like LogExpert to read logs and search logs for troubleshooting.

**Check the Visio/PowerPoint Stencils here:**

https://cyberark-customers.force.com/s/article/Official-Visio-and-PowerPoint-CyberArk-icons

# Recommended Tasks

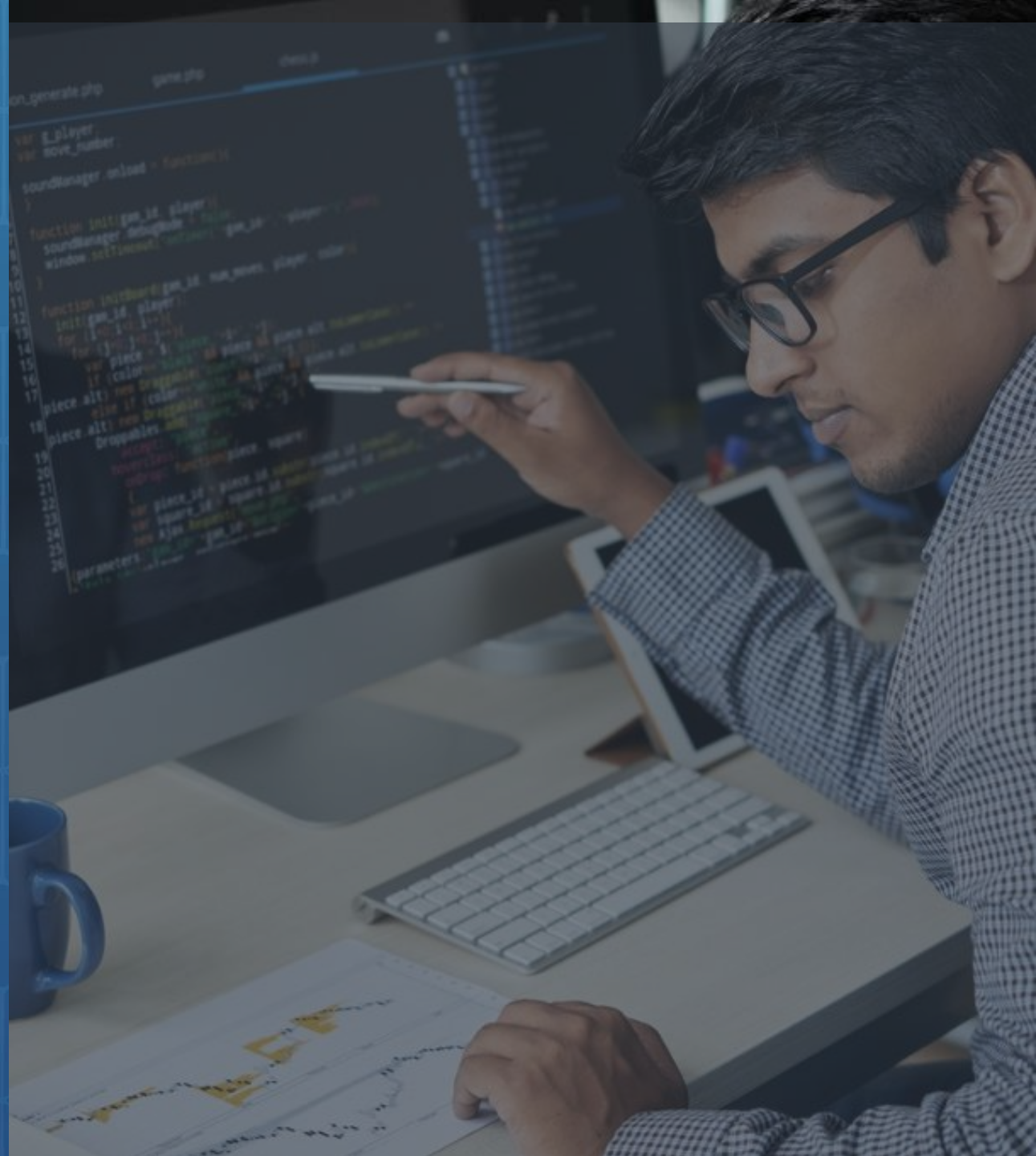
- Make sure the **CPM**s are configured to auto-rotate logs.
- Configure the ***Send Email Notification if Component is not Connected*** option.

# Summary

# Summary

In this session, we covered:

- Monitoring various CyberArk components
- Common Administrative Tasks



# Additional Resources

**Documentation**

CyberArk Technical Community

Support Vault

You may now complete the following exercise:

**Common Administrative Tasks**

- Rotating CPM Logs