

How-to: Monitor OS processes with MAI

Using SAP Solution Manager 7.1 and SAPOscol

Introduction: All your applications have a process on OS level as a baseline. Making sure this process is running smoothly is a first step to monitor the availability of your application. With the OS Collector SAPOscol the monitoring of processes is possible since a long time. In the older days, these monitored processes were visible in CCMS. This guide describes how you can leverage the process monitoring capability of SAPOscol with SAP Solution Manager 7.1 Monitoring and Alerting Infrastructure and create custom metrics to monitor the processes of your SAP and non-SAP applications.

Contents

.....	1
Prerequisites	2
Install Diagnostics Agent and SAP Hostagent	2
Create a Technical System in LMDB.....	2
Enable OS Process Monitoring in SAPOscol	3
Create Configuration File	3
Place File in PROCMON Folder	4
Gather Monitored Processes in Wily Introscope Enterprise Manager	5
Create Custom Metrics for the Monitored Processes	7
Obtain metric directly from SAPOscol.....	7
Assign Template to Technical System	11
Result	12

PREREQUISITES

Install Diagnostics Agent and SAP Hostagent

SAPOscol is running in the context of the SAP Hostagent. The SAP Hostagent itself is not communicating directly with SAP Solution Manager, but rather provides the collected information to the Diagnostics Agent, which then send it to Solution Manager or via the Introscope Hostagent to Wily Introscope Enterprise Manager.

Therefore it is necessary to install a Diagnostics Agent on the 3rd party host. Please refer to SAP note [1448655](#) for the installation guide for the Diagnostics Agent. The SAP Hostagent is usually installed together with the Diagnostics Agent. If you want to install the SAP Hostagent separately please refer to SAP note [1031096](#).



To successfully use SAPOscol for OS process monitoring please refer to SAP note [1915401](#) and make sure you run at least SAP Hostagent patch 163.

Create a Technical System in LMDB

If your managed system is a non-SAP system and doesn't have SLD data suppliers that make sure it is created in LMDB automatically, you will have to create a technical system in LMDB manually. How to create a non-SAP system in LMDB is described in the guide "Creating Unspecific Cluster Systems for TechMon and BPMon in LMDB" under <http://wiki.scn.sap.com/wiki/display/TechOps/System+Monitoring+-+How-to+Guides>

ENABLE OS PROCESS MONITORING IN SAPOSCOL

The first step is to enable the monitoring of the OS processes in SAPOscol.

Create Configuration File

What processes you want to monitor is defined in an *procmon.ini file. The file can start with any name, as long as it ends with procmon.ini.

The content of the file has the following pattern:

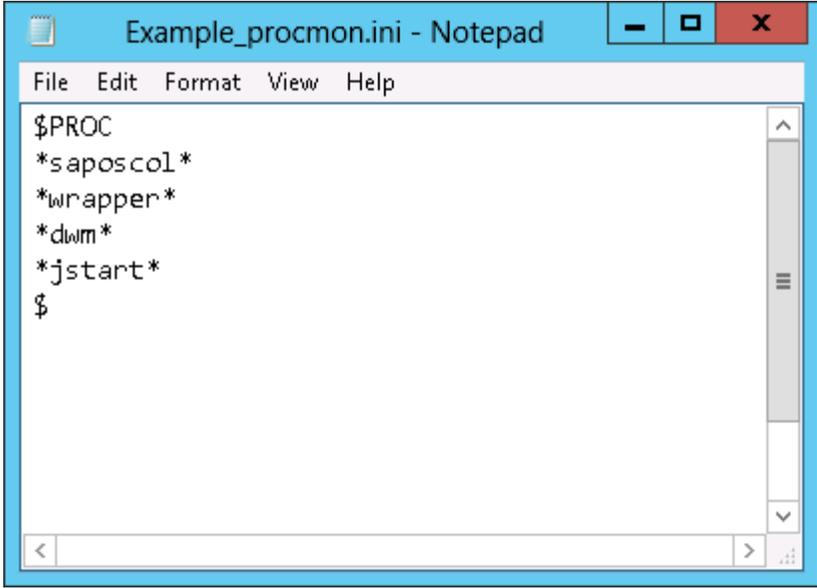
```
$PROC
*name pattern* [USER=<user>] [MTE_CLASS=<MTE class>] [MTE_NAME=<MTE-Name>]
[CUSTOMGROUP=<attribute group>]
$
```

The parameters have the following meaning:

Parameter	Meaning
Name pattern (mandatory)	Pattern of the name of the monitored process; you can use the wildcard character asterisk (*); it is not possible to monitor all processes by entering only the wildcard character asterisk. (max. 40 characters)
User (Optional)	User under whose name the process is running; you can use the wildcard character asterisk (*). (max. 20 characters)
MTE_Class (Optional)	MTE class to which the nodes are to belong; you can create your own monitors in which precisely the desired processes are displayed by assigning the process names to an MTE class. (max. 30 characters). Only relevant for CCMS metrics.
MTE_Name (Optional)	MTE name under which the monitoring object for the monitored process name is displayed in the alert monitor; if you do not set this parameter, Name Pattern is used as the MTE name. (max. 40 characters). Only relevant for CCMS metrics.
Custom Group (Optional)	Attribute group to which the attributes of a monitored process name are to belong; you can simplify the maintenance of the threshold values using an assignment to an attribute group. (max. 30 characters). Only relevant for CCMS metrics.

 The parameters MTE_Class, MTE_Name and Custom Group don't need to be set. They relate to CCMS and we will consume the collected data directly from the SAP Hostagent or via Wily Introscope.

A valid pattern would be:



```
Example_procmon.ini - Notepad
File Edit Format View Help
$PROC
*saposcol*
*wrapper*
*dwm*
*jstart*
$
```

Place File in PROCMON Folder

After creating the file you have to place it in a specific folder for SAPOscol to pick it up.

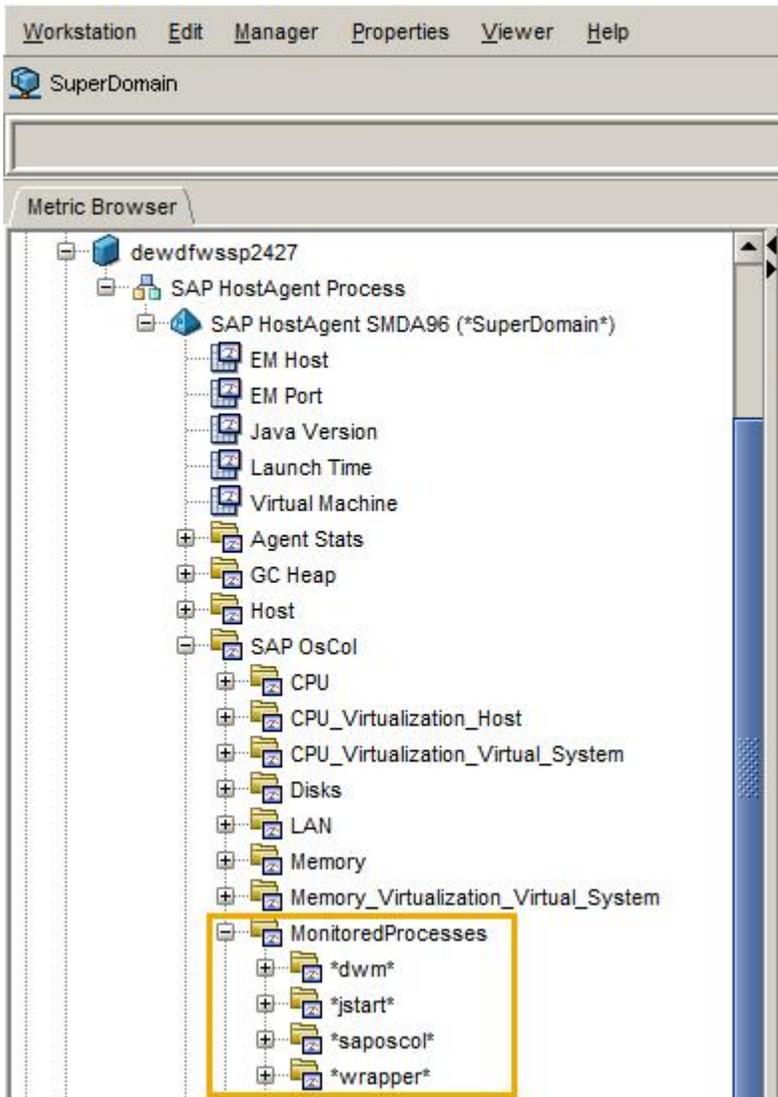
For Unix you have to place it in the folder `/usr/sap/tmp/procmon/`.

For Windows you have to place the file in the folder `<drive>:\usr\sap\PRFCLOG\procmon\`.

After placing the files you should restart SAP Hostagent and then the Diagnostics Agent. SAPOscol also reads the contents of the configuration files every five minutes. After changing these files, you do not need to restart SAPOscol again.

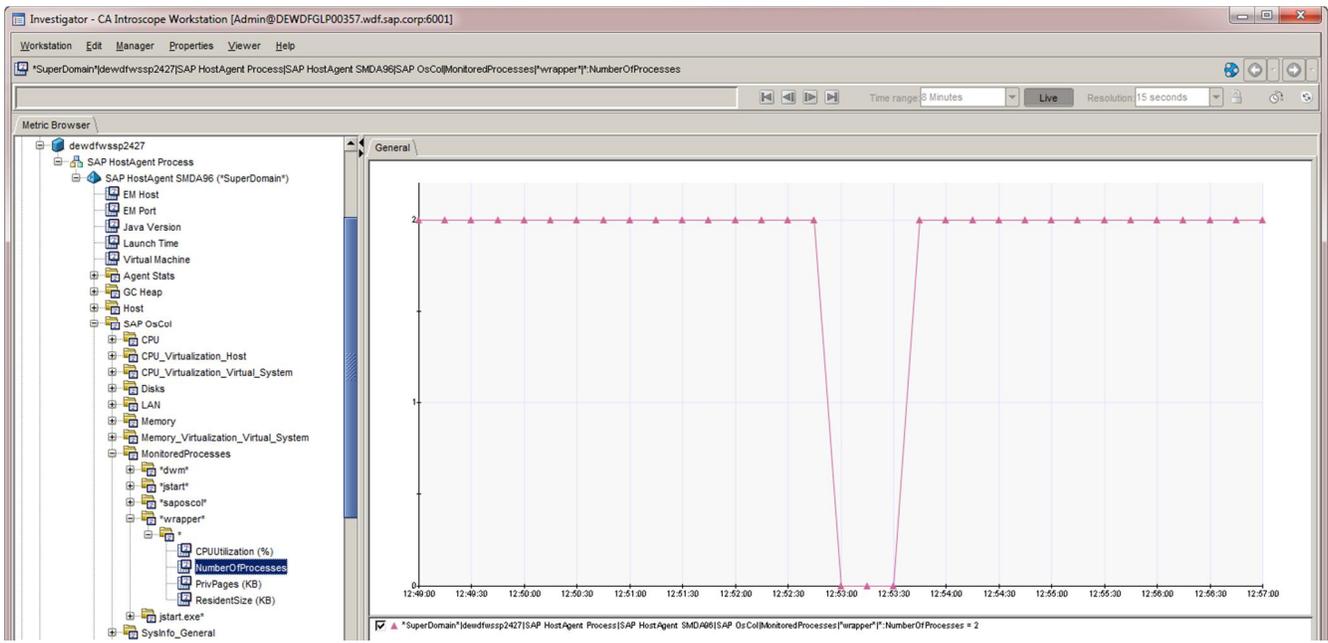
GATHER MONITORED PROCESSES IN WILY INTROSCOPE ENTERPRISE MANAGER

After SAPOscol has picked up the information in the file you can see the monitored processes in Wily Introscope Enterprise Manager.



For each monitored process the following metrics are collected:

Metric	Description
CPUUtilization (%)	Total of the CPU usage of the above processes, as a percentage.
NumberOfProcesses	Number of running processes that fulfill the conditions for process name and user (if restricted)
PrivPages (KB)	Total of the entire memory (physical and virtual) that is assigned to the above processes (only on Windows platforms)
ResidentSize (KB)	Total physical memory that is assigned to the above processes



CREATE CUSTOM METRICS FOR THE MONITORED PROCESSES

To add this information to the Monitoring and Alerting Infrastructure in SAP Solution Manager, you have to create a custom metric in your monitoring template.

You have two options to obtain the metrics for technical monitoring.

Obtain metric directly from SAPOscol

The easiest straight forward way is to obtain the metric for you monitored processes directly from SAPOscol via the Diagnostics Agent. The data collector you would use to do this is the “SapOsCol GetProcPattern (Push)” collector.

The data collector has the following configurable parameters:

Parameter

Meaning

PROCESS_PATTERN (mandatory)

the name of the process(es) as regular expression

KEY_FIG (mandatory)

an individual property of the process information, the following properties are available:

- CPUUtilization \(\%\)
- PrivPages \(\KB\)
- ResidentSize \(\KB\)
- NumberOfProcesses

You can add the custom metric to an existing custom template or create a new one. If your managed system is a non-SAP system, you have to create a custom template for “Generic Product version”.

The screenshot shows the 'Create Custom Template' wizard in SAP Solution Manager. The wizard is at step 4, 'Template Maintenance'. The 'Generic Product version' template is selected in the left-hand 'Templates' tree. The main area shows the configuration for this template, including Name, Version, and Default Settings.

After creating the new template you can now add metrics to it.

Switch to Expert Mode to be able to create custom metrics.

The screenshot shows the 'Non-SAP Metrics' configuration page in SAP Solution Manager. The page is in 'Expert Mode'. The 'Name' field is set to 'Non-SAP Metrics'. The 'Based on' field is set to 'Generic Product version'. The 'Auto-Incidents' and 'Auto-Notifications' fields are set to 'Use Global Settings'.

Now you can create a new metric.



Enter the required information:

Custom Metric Creation Wizard

1 Specify Metric Attributes 2 Assignments

Previous Next Cancel

Overview Data Collection Data Usage Threshold Validity Others

Name: * Wrapper process status
Managed Object Type: Technical System
Product: Generic Product version
Category: * Availability
Class: * Metric
Data type: Integer
Unit:
Active:

Custom description

The number of wrapper processes.

B I Insert Symbol Insert URL Insert Image
Insert MIME Link Preview

On the Data Collection tab select the data collector and enter the name of the process you want to monitor. Please make sure that you enter the process name as regular expression. For wildcard this means, instead of using "*" you must use ".".

Overview **Data Collection** Data Usage Threshold Validity Others

Collection Interval: * 5 Minutes 5 Minutes Advanced
Data Collector: * Diagnostic Agent (push)
Data Provider: * SapOsCol GetProcPattern

Collector Input Parameters

Parameter ID	Parameter Name	Parameter Value	Configure
KEY_FIG	Key Figure	Number of Processes	<input checked="" type="checkbox"/>
PROCESS_PATTERN	Process Pattern	.*wrapper.*	<input checked="" type="checkbox"/>

Metric Path: PROCESS_PATTERN

On the tab Data Usage you decide whether you want to use the data for alerting (Send values to Event Calculation Engine) or for reporting (Send values to SAP Netweaver Business Warehouse). You can also select both.

The screenshot shows the 'Custom Metric Creation Wizard' at step 1, 'Specify Metric Attributes'. The 'Data Usage' tab is selected. It contains the following options:

- Send values to Event Calculation Engine
- Send values to SAP NetWeaver Business Warehouse
- BW Mapping Rule: * Default BI-mapping rule

The value which is returned by the data collector is an integer value. So you have to choose the threshold accordingly. If you want to create an alert, if there are no processes anymore, select the threshold as shown below.

The screenshot shows the 'Custom Metric Creation Wizard' at step 1, 'Specify Metric Attributes', with the 'Threshold' tab selected. The configuration is as follows:

- Threshold Type: * Numeric Threshold (Green/Red)
- Monitored Value: Average Value
- Trigger if value: Falls below or equals threshold
- Value: 0

Enter a technical name on tab others. The technical name should start with Z.

The screenshot shows the 'Custom Metric Creation Wizard' at step 1, 'Specify Metric Attributes', with the 'Others' tab selected. It displays the following details:

Package:	STMP	Technical Name: *	Z_WRAPPER_STATUS
Metric ID:	005056912DBF1EE3888CAF799BF203A7	Version:	0001
Template ID:	005056912DBF1EE3888CA1986165C39A	Template Version:	0999
Original Metric ID:	005056912DBF1EE3888CAF799BF203A7	Original Metric Version:	0001

Click the Next button. Currently we don't have a custom alert so just click Finish and save your template.

The screenshot shows the 'Custom Metric Creation Wizard' at step 2, 'Assignments'. The 'Finish' button is highlighted. Below the wizard, a 'Filter Settings' section shows a description: 'No custom alert(s) found'.

To actually make use of the metric we need to create a custom alert for the custom metric.

The screenshot shows a menu for creating an alert. The 'Alert' option is highlighted. The breadcrumb path is: System > Generic Product version > Non-SAP Metrics.

Make sure the category of your custom alert matches the category of you custom metric. Otherwise it cannot be assigned to it.

Custom Alert Creation Wizard

1 Specify Alert Attributes 2 Assignments

◀ Previous Next ▶ Cancel

Overview Incidents Notifications Third-Party Components Auto Reactions Rule Others

Name: * Wrapper Process not available

Managed Object Type: Technical System

Product: Generic Product version

Category: * Availability

Severity: 5 - Medium

Do not Group Individual Occurrences: *i*

Active:

Custom description

The only other thing to maintain here is the technical name on tab "Others".

Custom Alert Creation Wizard

1 Specify Alert Attributes 2 Assignments

◀ Previous Next ▶ Cancel

Overview Incidents Notifications Third-Party Components Auto Reactions Rule Others

Package: STMP Alert Name: * Z_WRAPPER_NOTAVAIL

Alert ID: 005056912DBF1EE3888CFA046DB183E1 Version: 0001

Template ID: 005056912DBF1EE3888CA1986165C39A Template Version: 0999

Original Alert ID: 005056912DBF1EE3888CFA046DB183E1 Original Alert Version: 0001

Click Next and select your custom metric from the list. Then click Finish.

Custom Alert Creation Wizard

1 Specify Alert Attributes 2 Assignments

◀ Previous Finish ▶ Cancel

Clear Assignments Filter Settings

Description

Wrapper process status

Now the metric is assigned to the alert.

Template Settings Incidents Notifications Third-Party Components Metrics Alerts Metrics, Events, Alerts Hierarchy

Change Settings Restore Settings Delete Filter

Name	Category	Type	Evaluation Method	Alert Relevance	Active	Modified	Custom-created
▼ Wrapper Process not available	Availability	Alert		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
▼ Wrapper Process not available	Availability	Summarization Event	Worstcase Rule	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Wrapper process status	Availability	Metric	Numeric Threshold (Green/Red)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ASSIGN TEMPLATE TO TECHNICAL SYSTEM

The last step is to assign the metric to the technical system. Select you system(s) from the list in the step “Define Scope” and click Next.

The screenshot shows the SAP configuration wizard at step 5, "Define Scope". The progress bar at the top indicates the following steps: 1 Overview, 2 Configure Infrastructure, 3 Standard Users, 4 Template Maintenance, and 5 Define Scope (highlighted in yellow). Below the progress bar are buttons for "Read Only", "Previous", "Next", "Save", and "Reset". The main content area is titled "Technical Systems (177)" and includes tabs for "Technical Scenarios", "Databases", and "Hosts". There are also buttons for "Export", "Show Details", and "Remove Monitoring", along with "Refresh" and "Filter Setting" options. A table lists technical systems with columns for "Technical System", "Extended System ID", "System Type", "Auto. Conf. Status", "Monitoring Status", "Reporting Status", and "Update Needed". One system, "3rd Party System", is highlighted in orange.

Technical System	Extended System ID	System Type	Auto. Conf. Status	Monitoring Status	Reporting Status	Update Needed
3rd Party System	3RD	Unspecific Cluster System	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Assign you template to the system and click generate and activate.

The screenshot shows the SAP configuration wizard at step 6, "Setup Monitoring". The progress bar at the top indicates the following steps: 6 Setup Monitoring (highlighted in yellow), 7 Reporting, and 8 Complete. Below the progress bar are buttons for "Read Only", "Previous", "Next", "Save", and "Reset". The main content area is titled "Managed Objects" and includes buttons for "View: Tree View", "Refresh", "Restore Defaults", "Apply and Activate", "Configure Managed Object", and "Directory Browser". A table lists managed objects with columns for "Managed Object Name", "Type", "Assign Templates", "Setup Status", "Installed Products", "Assigned Templates", "MO-Specific", and "Assignment Status". One object, "3RD-UNSPECIFIC", is highlighted in orange. A pop-up window titled "Selected Template per Installed Product" is open, showing a table with columns for "Installed Product" and "Selected Template". The "Generic Product" is selected, and the "Non-SAP Metrics" template is chosen.

Managed Object Name	Type	Assign Templates	Setup Status	Installed Products	Assigned Templates	MO-Specific	Assignment Status
3RD-UNSPECIFIC		Assign Templates	<input type="checkbox"/>		Non-SAP Metrics	<input type="checkbox"/>	<input type="checkbox"/>
3RD-UNSPECIFIC~Instance_1 on dewdfwssp2427		Assign Templates	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
• dewdfwssp2427		Assign Templates	<input type="checkbox"/>	Windows Server 2012 (64 bit)	Windows	<input type="checkbox"/>	<input type="checkbox"/>

Installed Product	Selected Template
Generic Product	Non-SAP Metrics

RESULT

The screenshot displays the SAP System Monitoring application. On the left, a system hierarchy shows '3AS-UNSPECIFIC' (rating 2) connected to '3AS-UNSPECIFI...' and 'dewdfwssp2427' (rating 1). The main 'Details' pane on the right shows the following metrics:

- Events/Metrics:**
 - 3AS-UNSPECIFIC**
 - System Availability:**
 - Wrapper Process not available (Rating: 2, Value: 2)
 - Wrapper process status (Rating: 2, Value: 2)
 - Status propagated from Technical Instance
 - System Performance:**
 - High CPU utilization:**
 - CPU Utilization of Wrapper Process (Rating: 4)
 - Top CPU processes:
 - Process Pattern="dwm*" (Rating: 4, Value: 4)
 - Process Pattern="jstart*" (Rating: 206, Value: 206)
 - Process Pattern="saposcol*" (Rating: 15, Value: 15)
 - Process Pattern="wrapper*" (Rating: 22, Value: 22)
 - Process Pattern="jstart.exe*" (Rating: 206, Value: 206)
 - High Memory Consumption:**
 - Wrapper Process Memory Consumption (Rating: 75556, Value: 75556)
 - System Exceptions:**
 - Status propagated from Technical Instance

The OS processes are monitored via the system monitoring application. In case of problems, alerts are generated.

The screenshot shows the 'Alert Details' window in SAP. It displays a table of alerts for the '3AS-UNSPECIFIC' category. The table has the following columns: Alert Name, Category, Managed Object, Type, Current, Priority, Worst, Total, Changes, Problem Analysis, and Status.

Alert Name	Category	Managed Object	Type	Current	Priority	Worst	Total	Changes	Problem Analysis	Status
High CPU utilization	3AS-UNSPECIFIC	3AS-UNSPECIFIC	High	High	High	High	6	2		High
High Memory Consumption	3AS-UNSPECIFIC	3AS-UNSPECIFIC	High	High	High	High	1	1		High

Below the table, there is a section for 'Alerts - "High CPU utilization" at "3AS-UNSPECIFIC"'. It includes a timeframe selector and a table of incident details:

Rating	No. ...	Status	Processor	Comments	Incident ID	Incident Sta...	Start Date and TL...	End Date and Time	Incident Type	Notificati...	Wor...	Reaso...
High	1	Transferred			8000006786	New	18.09.2013 17.5...	18.09.2013 17.5...				
High	5	Transferred			8000006784	New	18.09.2013 17.3...	18.09.2013 17.5...				Re-con...

