



Template Maintenance – File System Monitoring Variants

Applicable Releases:

SAP Solution Manager 7.1 SP1 and higher

SAP Solution Manager Scenarios:

Technical Monitoring

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Document History

Document Version	Description
1.0	First official release of this guide
1.1	Additional examples for Windows file systems

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1 Overview

The goal of this document is to show how to customize a template to monitor only specific file systems and also how change the monitoring threshold for each variant.

1. Adding the file system variants

The file system monitoring configuration uses regular expression to filter the monitoring result set of the SAP Host Agent. The filtering is done by SMD Agent. The example below uses a simple example by defining a metric group for each file system you intend to monitor. You could create one metric grouping and use a complex regular expression however the advantage of the simple approach is that you can have different configurations such as different thresholds for each monitored file system.

You can either create a new host template for your OS by extending a SAP template or modify an existing template.

1.1 Simple Regular Expression

1.1.1 Unix Technical System

In the first simple example you we will add a variant to monitor one particular file system using the regular expression:

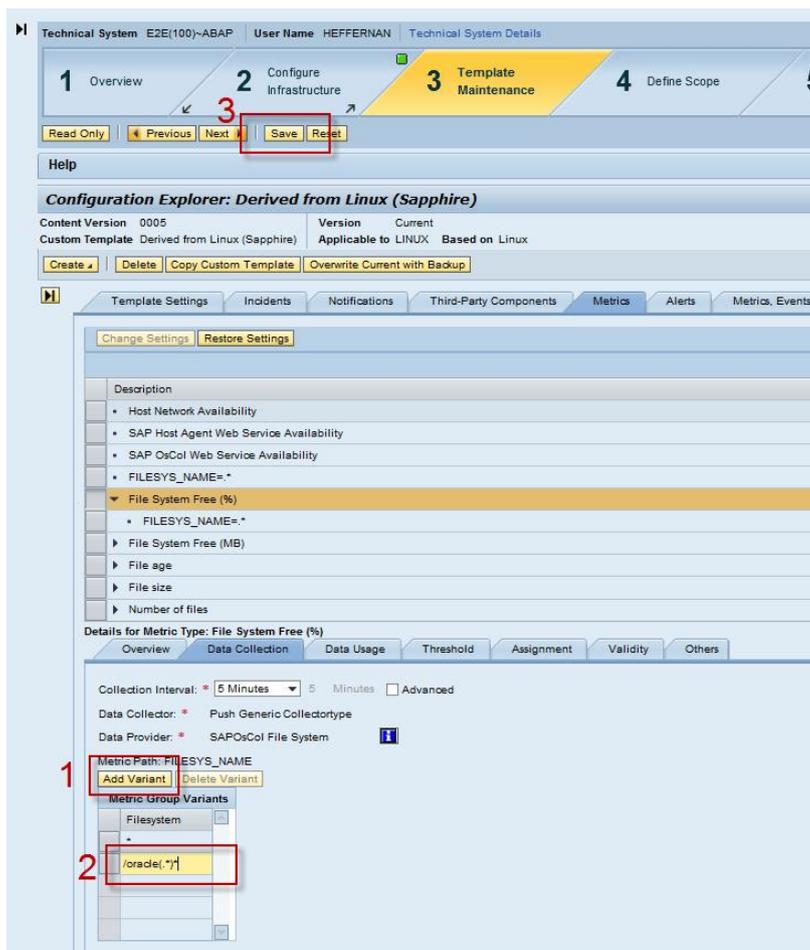
```
/oracle(.*)*
```

Once you have selected your OS template you follow the instructions below:

1. You go you to edit mode and then select the expert mode.
2. Select the metric tab
3. Select the metric "File System Free (%)"

You then select on the Data Collection tab for this metric and add a variant. If you want to monitor the file system for oracle on Unix or Linux you would use the regular expression (valid for Linux or Unix):

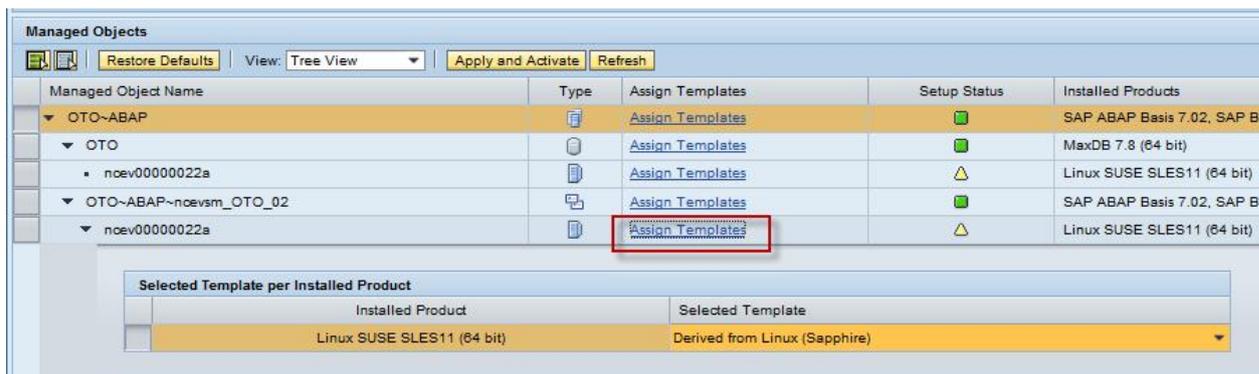
```
/oracle(.*)*
```



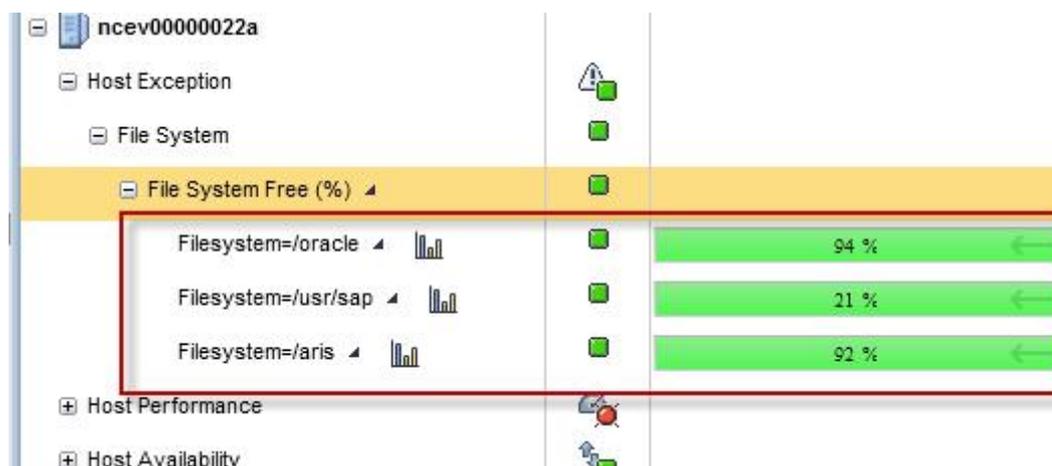
4. This can be done for every file system intended to be monitored. For example, here we monitor Oracle, SAP and Aris:

File System Free (%)	Exceptions	<input checked="" type="checkbox"/>
• FILESYS_NAME=.*	Exceptions	<input type="checkbox"/>
• FILESYS_NAME=/aris(/.*)*	Exceptions	<input checked="" type="checkbox"/>
• FILESYS_NAME=/oracle(/.*)*	Exceptions	<input checked="" type="checkbox"/>
• FILESYS_NAME=/usr/sap(/.*)*	Exceptions	<input checked="" type="checkbox"/>

- It is important to deactivate the default metric variant “.*” from the list of metric groups associated for this metric otherwise you will still see the all file systems monitored by the SAP Host Agent. You can see this in the screenshot shown above.
- After this the Technical Monitoring setup needs to be done for the system selecting the option “Assign Template” and selecting the template you have just modified or created:



- It is possible to have any template that is created as the default template. One could use this template as a default assignment for the OS if this OS is prelevant within the landscape. This is can be done in Step 4 Template Maintenance.
- Once the set up is complete it could take 5 to 10 minutes before it is possible to see the new monitoring take effect:



1.1.2 Windows Technical System

In the first simple example you we will add a variant to monitor one particular file system using the regular expression:

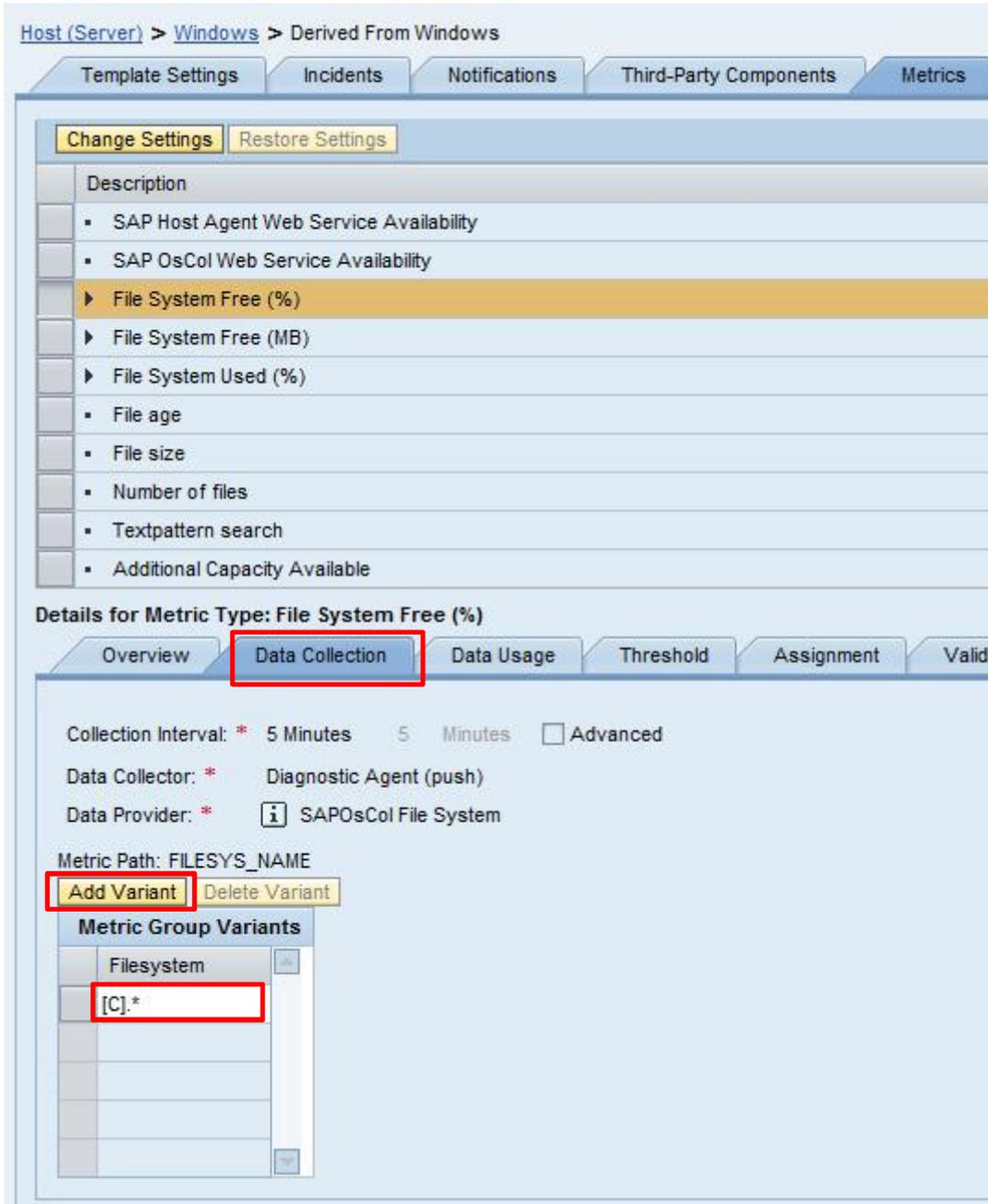
Ex: [C].*

To monitor drives from C to F, the example is as follows [C-F].*

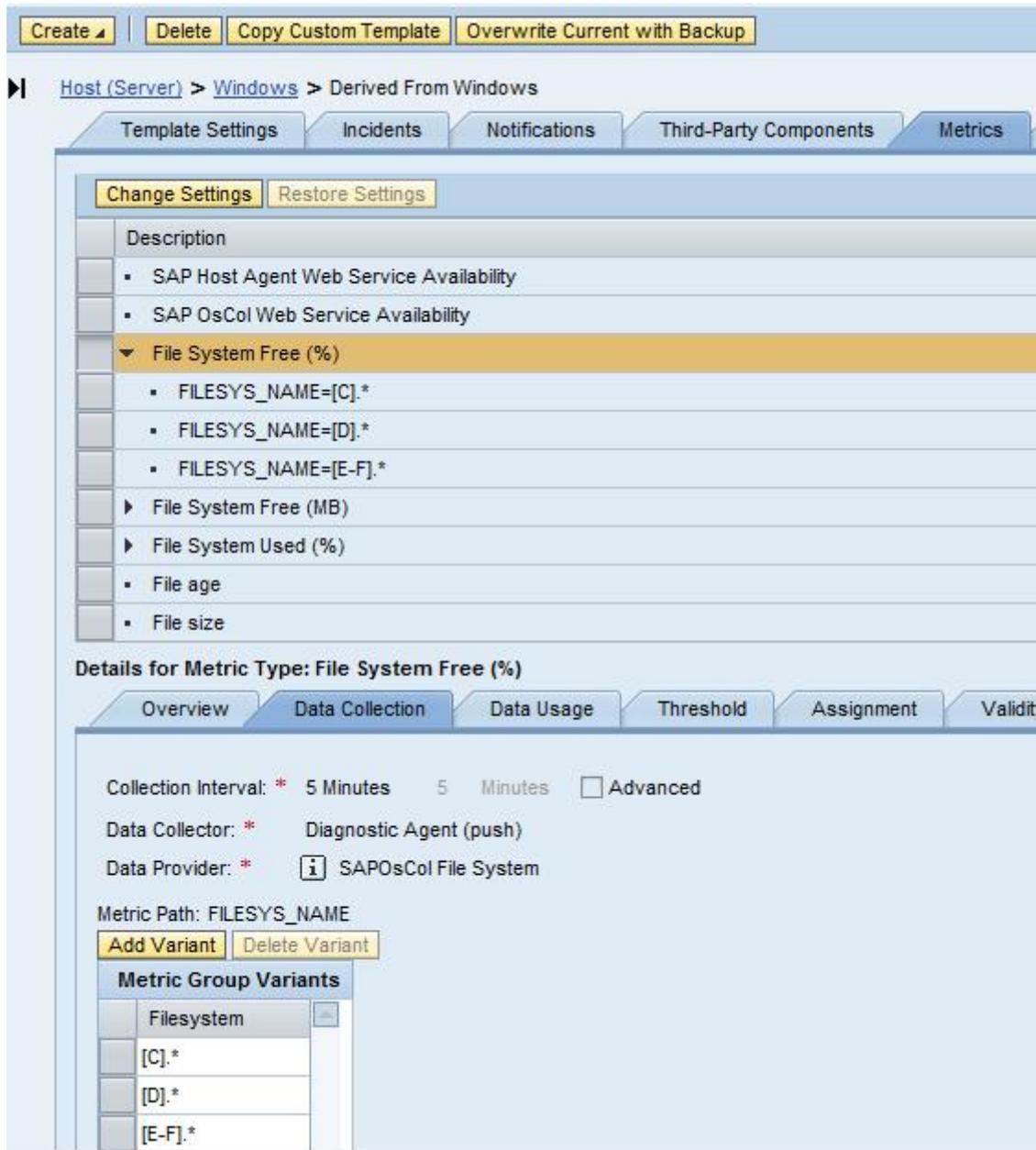
Once you have selected your OS template you follow the instructions below:

- You go you to edit mode and then select the expert mode.
- Select the metric tab
- Select the metric “File System Free (%)”

You then select on the Data Collection tab for this metric and add a variant. If you want to monitor the file system for C drive you would use the regular expression (valid only for Windows): [C].*



4. This can be done for every file system intended to be monitored. For example, here we monitor D drive, E and F drive simultaneously.



5. After this the Technical Monitoring setup needs to be done for the system selecting the option “Assign Template” and selecting the template you have just modified or created:

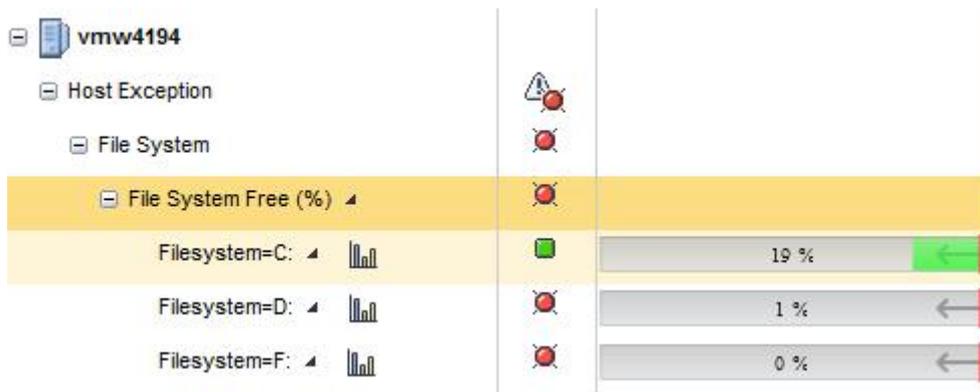
View: Tree View | Refresh | Restore Defaults | Apply and Activate

Managed Objects

Managed Object Name	Type	Assign Templates	Setup Status	Installed Products				
PIU~ABAP		Assign Templates	■	SAP ABAP Basis 7.30				
PIU		Assign Templates	■	Oracle 11.2 (64-bit)				
vmw4194		Assign Templates	▲	Windows Server 2008 R2 (64 bit)				
<p>Selected Template per Installed Product</p> <table border="1"> <thead> <tr> <th>Installed Product</th> <th>Selected Template</th> </tr> </thead> <tbody> <tr> <td>Windows Server 2008 R2 (64 bit)</td> <td>Derived From Windows</td> </tr> </tbody> </table>					Installed Product	Selected Template	Windows Server 2008 R2 (64 bit)	Derived From Windows
Installed Product	Selected Template							
Windows Server 2008 R2 (64 bit)	Derived From Windows							
PIU~ABAP~vmw4194_PIU_00		Assign Templates	■	SAP ABAP Basis 7.30				
vmw4194		Assign Templates	▲	Windows Server 2008 R2 (64 bit)				
PIU~ABAP~vmw4194_PIU_02		Assign Templates	■	SAP ABAP Basis 7.30				
vmw4194		Assign Templates	▲	Windows Server 2008 R2 (64 bit)				

6. It is possible to have any template that is created as the default template. One could use this template as a default assignment for the OS if this OS is prelevant within the landscape. This is can be done in Step 4 Template Maintenance.

7. Once the set up is complete it could take 5 to 10 minutes before it is possible to see the new monitoring take effect:



1.2 Negative Regular Expression

1.2.1 Unix Example

In this example one can create a variant to exclude certain file systems. A regular expression such as:

```
(?:(!/oracle(/.*)*)(?!/aris(/.*)*).*)
```

The example above will show everything the SAP Host Agent monitors with the exception of the file systems oracle and aris. Below is an example of the configuration:

Description	Category	Active	Modified	Custom-created
Host Network Availability	Availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAP Host Agent Availability	Availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAP Host Agent Web Service Availability	Availability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAP OsCol Web Service Availability	Availability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
File System Free (%)	Exceptions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FILESYS_NAME=(?:(!/oracle(/.*)*)(?!/aris(/.*)*).*)	Exceptions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
FILESYS_NAME=*	Exceptions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
File System Free (MB)	Exceptions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
File age	Exceptions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
File size	Exceptions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

And this will result in a complete file system monitoring with exception of the above folders which can be seen in the example below:

File System	Free Space (%)
Filesystem=/	16 %
Filesystem=/boot	76 %
Filesystem=/dev	99 %
Filesystem=/dev/shm	95 %
Filesystem=/home	97 %
Filesystem=/hpqc	93 %
Filesystem=/install	31 %
Filesystem=/opt	74 %
Filesystem=/sapdb	5 %
Filesystem=/tmp	44 %
Filesystem=/usr/sap	22 %
Filesystem=/var	88 %

1.2.2 Windows Example

In this example one can create a variant to exclude certain file systems. A regular expression would be like this [^<Drive>].*

Example: [^D].*

The example above will show everything the SAP Host Agent monitors with the exception of the D drive file system. Below is an example of the configuration:

The screenshot shows the SAP Host Agent configuration interface. The 'Metrics' tab is selected, and the 'File System Free (%)' metric is highlighted. Below this, the 'Details for Metric Type: File System Free (%)' section is visible, with the 'Data Collection' sub-tab active. The configuration includes a collection interval of 5 minutes, a diagnostic agent as the data collector, and SAPOsCol File System as the data provider. The metric path is FILESYS_NAME. A 'Metric Group Variants' table is shown with the following entries:

Filesystem
*
[^D].*
[C-F].*

And this will result in a complete file system monitoring with exception of the above folders which can be seen in the example below:

⊕ System Availability		
⊕ System Performance		
⊕ System Configuration		
⊕ System Exceptions		
⊕ PIU~ABAP~vmw4194_PIU_00		
⊕ PIU~ABAP~vmw4194_PIU_02		
⊕ PIU		
⊖ vmw4194		
⊖ Host Exception		
⊖ File System		
⊖ File System Free (%) ▲		
Filesystem=C: ▲		19 %
Filesystem=F: ▲		0 %
⊕ File System Used (%) ▲		
⊕ Host Performance		
⊕ Host Availability		

2. Changing the individual thresholds

It is possible to change the threshold of each individual file system being monitored i.e. each variant. In order to do this you should select the metric (as explained previously) and then the variant for your file system below the metric in the table:

The screenshot shows the SAP Template Maintenance interface. At the top, there are tabs for Template Settings, Incidents, Notifications, Third-Party Components, Metrics, Alerts, Metrics, Events, Alerts Hierarchy, and Managed Objects. Below these tabs, there are buttons for 'Change Settings' and 'Restore Settings'. The main area displays a table of metrics and their variants. A red box labeled '1' highlights the row for the variant 'FILESYS_NAME=/oracle/*'. Below this, the 'Details for Metric Type: FILESYS_NAME=/oracle/*' dialog is open, showing 'Default Threshold Settings' and 'Work mode Specific Threshold Settings'. A red box labeled '2' highlights the 'Default Threshold Settings' section, which includes fields for 'Threshold Type', 'Monitored Value', 'Trigger if value', and two percentage thresholds (1% and 5%).

Description	Category	Active
• SAP Host Agent Availability	Availability	<input type="checkbox"/>
• SAP Host Agent Web Service Availability	Availability	<input checked="" type="checkbox"/>
• SAP OsCol Web Service Availability	Availability	<input checked="" type="checkbox"/>
File System Free (%)	Exceptions	<input checked="" type="checkbox"/>
• FILESYS_NAME=*	Exceptions	<input type="checkbox"/>
• FILESYS_NAME=/oracle/*	Exceptions	<input checked="" type="checkbox"/>
• FILESYS_NAME=/usr/sap/*	Exceptions	<input checked="" type="checkbox"/>
File System Free (MB)	Exceptions	<input type="checkbox"/>
File age	Exceptions	<input type="checkbox"/>

Default Threshold Settings

Threshold Type: * Numeric Threshold (Green/Yellow/Red)

Monitored Value: Average Value

Trigger if value: falls below threshold

1 Percentage

5 Percentage

Work mode Specific Threshold Settings

Work mode: Planned Downtime

Threshold Type: * Numeric Threshold (Green/Yellow/Red)

Monitored Value: Average Value

Trigger if value: falls below threshold

1 Percentage

5 Percentage

In the example above I have selected the oracle file system and in the default threshold settings it is possible to change the thresholds. It is also possible to define different threshold for the different work modes that might come into effect for your Technical System such as downtime or peak times.