



IBM ECM System Monitor Field Guides

First steps setting up monitoring

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Content

- Introduction 3
- Overview 3
- Disclaimer 3
- Purpose of this guide..... 4
- Requirements 4
- Step by Step procedure..... 5
 - 1. Setup Subsystems for a Content Platform Engine 5
 - 2. Setup of a monitoring situation / probe 18
 - 3. Recommended Probes for CPE 28
- Contact Information 29

Introduction

Overview

This guide describes in detail, how IBM ECM System Monitor (ESM) can be used to setup a useful monitoring after the installation of the software. The setup is described exemplarily for a FileNet Content Platform Engine.

Disclaimer

The content of this document is based on ESM Version 5.5.9.0. The descriptions and guidelines in this document are for informational purposes only. Up-to-dateness, content completeness, appropriateness and validity for all possible scenarios cannot be guaranteed. All information is provided on an as-is basis. The author is not liable for any errors or omissions in this document or any losses, injuries and damages arising from its use.

If you are planning to setup or configure ESM or to adjust an existing installation, it is absolutely necessary to take into account current security whitepapers, release notes and announcements from the official IBM ECM System Monitor product documentation website.

Purpose of this guide

This guide describes the first steps that need to be done to provide a useful monitoring solution after the software has been installed. As an example during this procedure we will be using a setup for a CPE System.

Requirements

- ESM Version 5.5.9.0 or later (already installed)
- Agent with same version as server that can be used for monitoring (already installed)

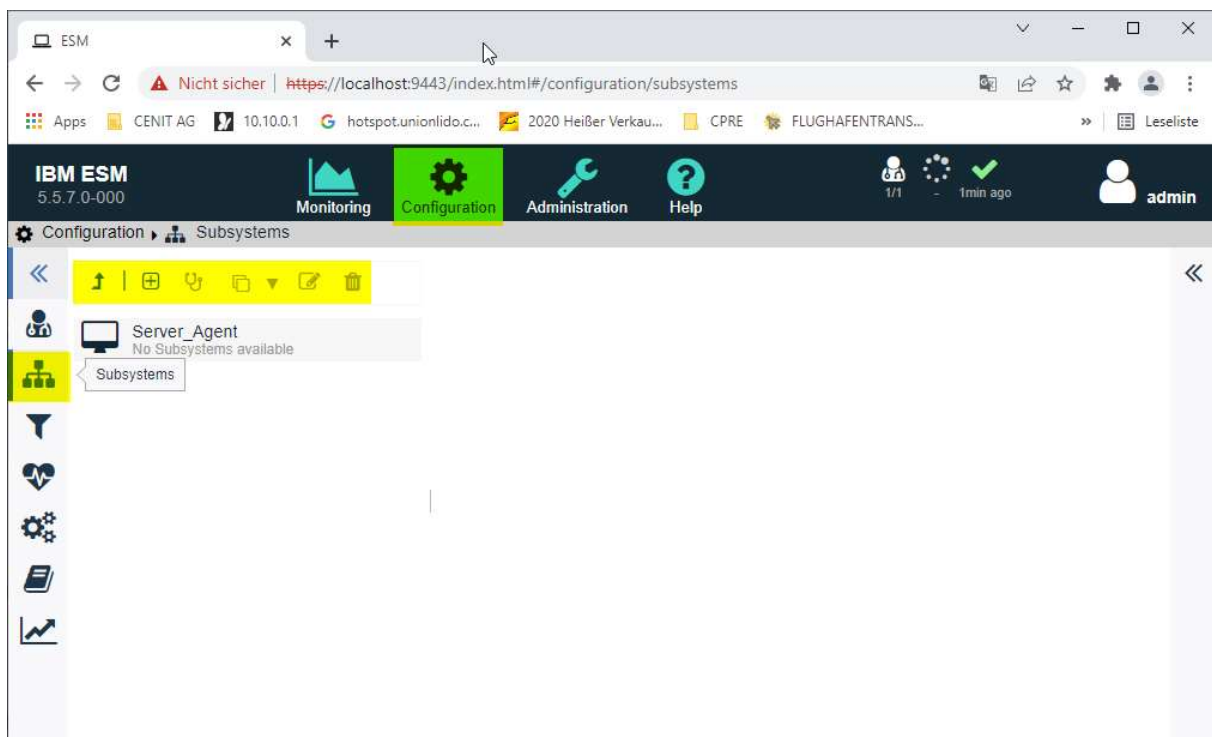
Step by Step procedure

1. Setup Subsystems for a Content Platform Engine

For the various products you can monitor within ESM you can find a so called subsystem in ESM. A subsystem handles the setup information of the products. Information like users, URLs, paths etc. will be configured here. Within a subsystem other subsystems can be referenced so that it can use the information of the other subsystem. Example: A subsystem for an object store can reference a database subsystem with information about the object store database.

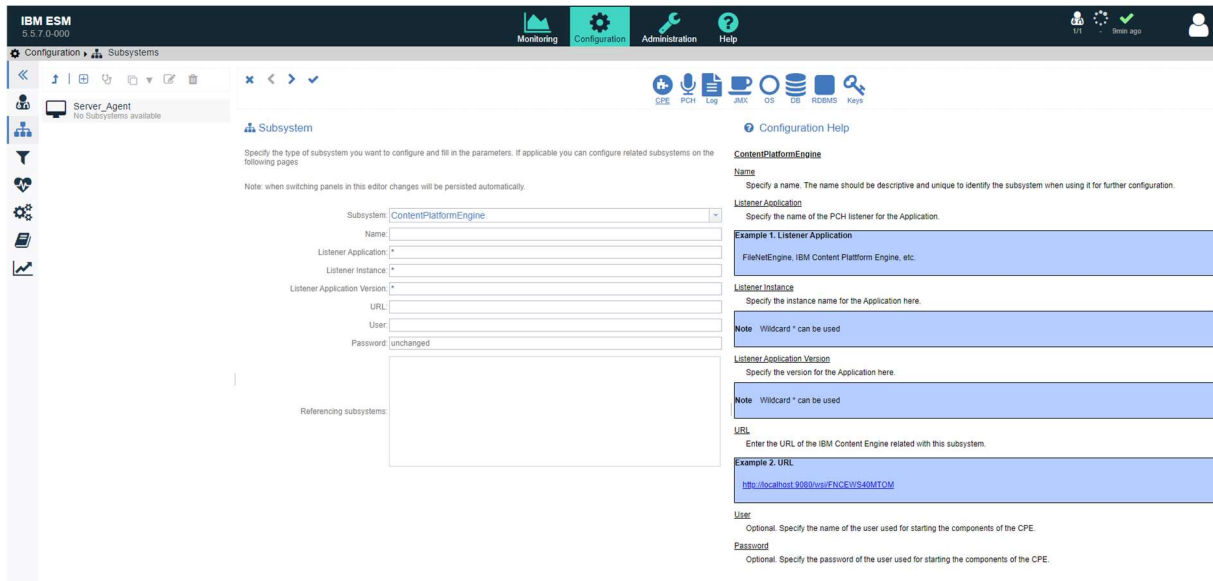
Before you actually can monitor the products you have to complete the setup of the corresponding subsystem. In this example we will cover this for a Content Engine Platform.

First login to your ESM console and switch to the configuration dashboard. On the left side you will find an icon that represents subsystems. With the buttons above the list, you can create, copy or delete subsystems (hover over them to get a better info).



We start with the creation of a subsystem with this icon: 

After clicking the icon the so called subsystem editor opens. First start with the selection of the subsystem. In our case ContentPlatformEngine.



Above the actual editor you can see different icons for the other subsystems that can be referenced within a CPE subsystem. During the setup you can switch to the next possible subsystem or save the setup with these icons from top:


CPE Subsystem

Let us continue with filling out the parameters for the CPE:

Subsystem

Specify the type of subsystem you want to configure and fill in the parameters. If applicable you can configure related subsystems on the following pages

Note: when switching panels in this editor changes will be persisted automatically.

 Subsystem:

Name:

Listener Application:

Listener Instance:

Listener Application Version:

URL:

User:

Password:

Referencing subsystems:

Name: Specify a name that is unique and can easily be identified. – CPE55

Working Directory	E:\IBM\WebSphere\AppServer\profiles\AppSrv01
J2EEUtil	com.fileNet.apiimpl.util.J2EEUtilWS
Server Startup Context	System
Config Values	com.fileNet.gcd.ProductVersion "5.5.0"
	com.fileNet.gcd.ProductName "IBM FileNet Content Platform Engine"
	com.fileNet.gcd.ProductGuid "3f8e6ad03cc94a259465fce2bae4a47e"
	com.fileNet.gcd.DomainType 0
	com.fileNet.gcd.ProductInstance E:\IBM\FileNet\ContentEngine
PCH Listener	5.0.0.146 pch511.146
INSO Version	8.5.3_OIT_p26438252.001
Content Search Services Client Version	5.2.1.8FP008-1.1-6137
Liquent	4.0.0.0 August 8, 2014

Listener Application: The information can be derived from the FileNet Engine page of your CPE. It is the information that is given in the Config Values section for ProductName. In this case it is important to specify the exact wording (with "" if given) - "IBM FileNet Content Platform Engine".


Listener Instance: This information can also be derived from the page but is only needed if you run several CPE instances on one host. We do leave the * here.

Listener Version: Same thing as for the Listener Instance.

URL: Specify the API URL of your CPE here. If you use a secure connection you must reference a keystore subsystem that contains the certificates for the connection: -
<https://smcw2k16p8-55:9443/wsi/FNCEWS40MTOM>

User: Specify an account that has privileges to read from the API – p8admin.

Password: Specify the password for the account – passwords are always stored in encrypted format only!!!





The CPE subsystem setup is completed, so we can continue with the referenced subsystems by clicking 

Listener (PCH) Subsystem

The wizard automatically loads the editor for the Listener (PCH) subsystem:






The subsystem can have Listener references. Set them up here.

Referenced subsystem	Referencing subsystems (linked are highlighted)
----------------------	---

As you can see, there is again the button for adding a subsystem. You can decide if you want to add or not add the Listener Subsystem to your CPE Subsystem configuration. Already existing Listener Subsystems do show up in the table but are not highlighted if they are not referenced.

Let us add a new one and reference it. It can be used for monitoring the PCH (Performance Clearing House) counters of a CPE – Click on the  button and fill out the parameters:

Subsystem:

Name:

Listener Host:

Listener Port:

CPE55


Referencing subsystems:


Name: I usually like to reuse subsystems if I can. The PCH setup is normally the same for all systems. Therefore I call it LocalListener so I know it's running with localhost as listener host. Of course this can only be done if the Agent is running on the same host as the monitored product.

Listener host: Specify the hostname of the listener host here – localhost.



Listener Port: The default is 32775 and usually never changes.

Make sure that your CPE Subsystem (CPE55) is referenced.

Click on the  button to save the setup of the PCH subsystem – it should now be shown in the table and the reference to the CPE55 should be highlighted:

 Listener

The subsystem can have Listener references. Set them up here.


Referenced subsystem	Referencing subsystems (linked are highlighted)
 LocalListener	CPE55 

You can add additional PCH subsystems if needed.

Save by clicking. 





Continue with the next one by clicking on:  Usually only one PCH subsystem is needed.

Logfile Subsystem

The next subsystem is the Logfile Subsystem. The mechanism how this works is the same for all referenced subsystems – always click on  to add the subsystem or highlight one from the already available subsystems if it fits in your setup. Of course you can also skip this step if you do not want to monitor this part:

Logfile

The subsystem can have Logfile references. Set them up here.

Referenced subsystem	Referencing subsystems (linked are highlighted)
----------------------	---

Specify the parameters for Name and LogfileName (Full path including file name). As you can see in this example, I could also reference this in the Server_Agent (Type Host) subsystem.




Subsystem:

Name:

Logfile Name:

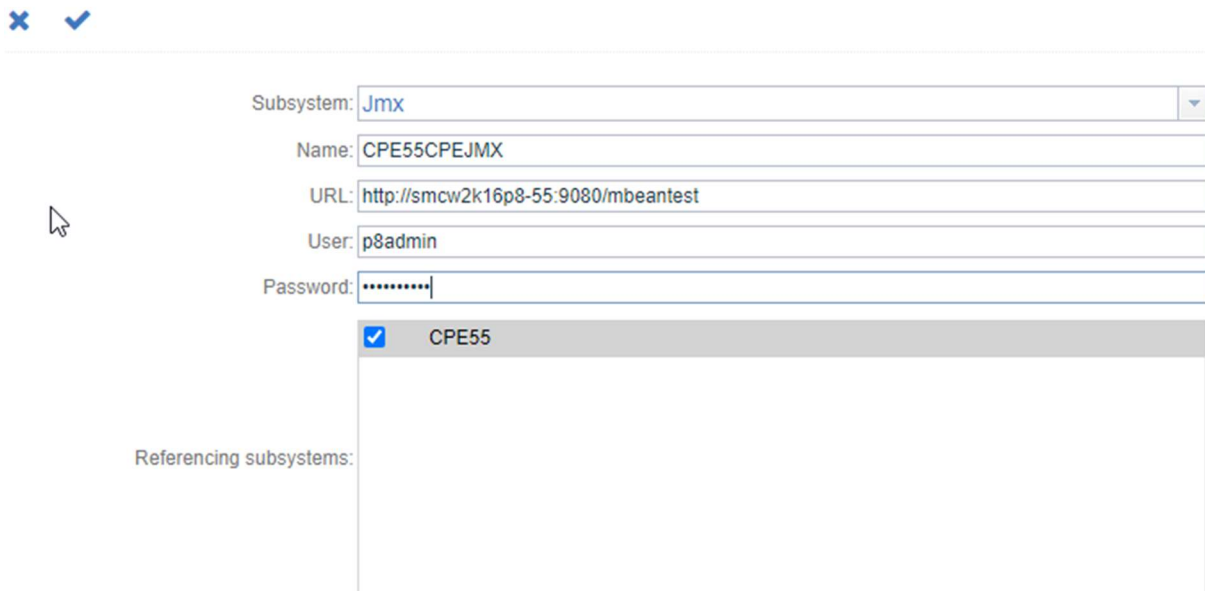
Referencing subsystems:

- CPE55
- Server_Agent

Repeat this for all Logfiles of your CPE. Possible logs are Websphere SystemOut and SystemError logs, the p8_server_error log (now ce_system0.log in newer CPE versions) and various others. Check the *Probe and Situation Guide* for all possible logs. Once finished click on  to proceed with the next subsystem.

JMX Subsystem

The next subsystem is the JMX Subsystem. To be able to use it, a small application must be installed in the JVM where your CPE (works for other applications as well) is running. Check out the configuration guide for a how to of the installation. The setup of the subsystems is as follows:



✕ ✓

Subsystem:

Name:

URL:

User:

Password:

Referencing subsystems:

<input checked="" type="checkbox"/>	CPE55
-------------------------------------	-------

URL: During the installation of the app the context root is defined, in my case this is mbeantest. Therefore my URL is http://smcw2k16p8-55:9080/mbeantest. It will always be the hostname and port of the application you want to monitor and the context root for the app that you specified.

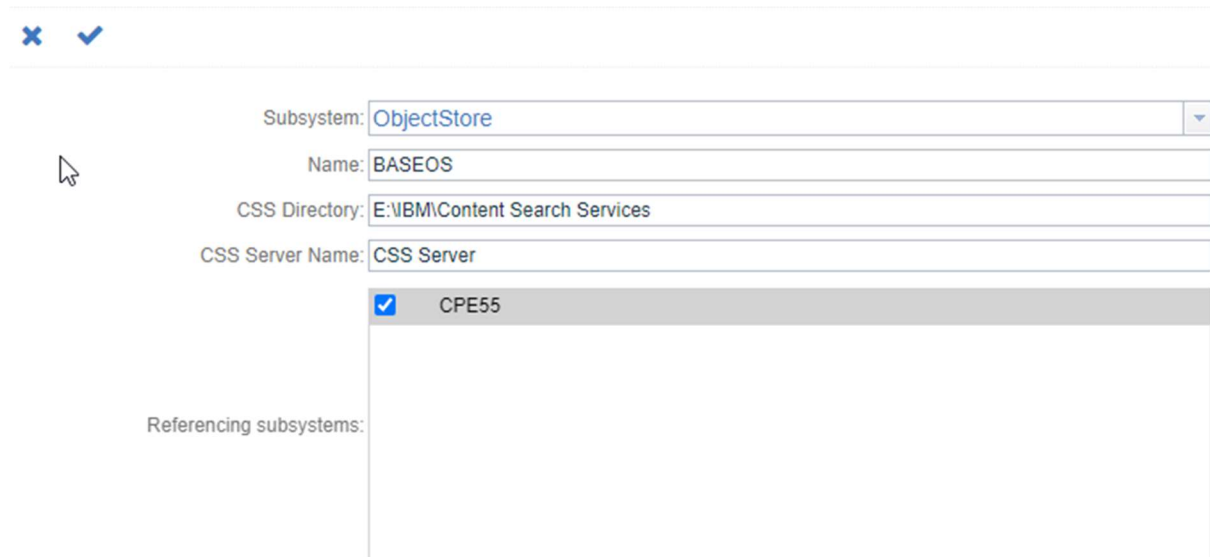
User: The user given here is also defined during the app installation. It can be an already existing account – the account needs auditor and monitor roles in Websphere.

Save by clicking. ✓

Once finished click on  to proceed with the next subsystem.

Object Store Subsystem

The next subsystem is the Object Store Subsystem. You should setup one Object Store subsystem for each object store that runs in this CPE context. The procedure is still the same:



Subsystem: ObjectStore

Name: BASEOS

CSS Directory: E:\IBM\Content Search Services

CSS Server Name: CSS Server

Referencing subsystems:

- CPE55


Name: Best is if you use the symbolic name of your object store here

CSS Directory: Optional - Specify the directory of the CSS Server installation. The directory should contain the css-servers.xml file. This folder can be located on a different Host than your CPE.

CSS Server Name: Enter the real CSS server name. Verify the server name, check the file css-servers.xml. This file can be located on a different Host than your CPE.

Save by clicking. 

Repeat this setup for all of your object stores.

Once finished click on  to proceed with the next subsystem.

Database Subsystem

The next subsystem is the Database Subsystem. You should setup one Database subsystem for each databases that runs in this CPE context (DB for Objectstore, GCD etc.).

Select the DB Type from the subsystem drop down. Database is a generic subsystem, there a preconfigured subsystems for Mssql, Db2, Oracle and PostgreSql.

✕ ✓

Subsystem:

Name:

Database Name:

Database Username:

Database Password:

Database Schema:

Database Port:

JDBC Connection Template:

CPE55

BASEOS

Referencing subsystems:

Name and Database Name: Usually I use the DB Name for both here.

Database Username: Specify a user name that has the required permissions for executing the data base operations. The permissions needed for probes can be found at the very end of the *Probes and Situation Guide*.

Database Password: Specify the password for the DB user here.

Database schema: Specify the schema that was used in the Database for this connection.

Database Port: Specify the port for the connection.

JDBC Connection Template: Each DB Type has its own connection template. The parameters like \$DatabaseHost, \$DatabasePort and \$DatabaseName are automatically replaced with the information given above or in the (later on created) RDBMS subsystem.

Note: Each Database usually only belongs to one other subsystem, so the reference should usually only reference one other subsystem. In this case the reference is done for the object store as the DB belongs to the object store and not the CPE. A database for GCD would be referenced with the CPE.

Save by clicking. 

Repeat this setup for all of your object stores.

Once finished click on  to proceed with the next subsystem.

RDBMS Subsystem

The next subsystem is the RDBMS Subsystem. You should use the corresponding RDBMS subsystem for the databases subsystems you have just created.

Select the RDBMS Type from the subsystem drop down. Rdbms is a generic subsystem, there are preconfigured subsystems for MssqlRdbms, Db2Rdbms, OracleRdbms and PostgreSQLRdbms.

✕ ✓

Subsystem:

Name:

Database Host:

JDBC Driver Class:

FNBASEDB


Referencing subsystems:

Name: Specify a name that is unique and that easily can be identified.

Database Host: Specify the hostname of the DB Server here.

JDBC Driver Class: Prefilled with default setup information for Mssql, Db2, Oracle and PostgreSQL.

Reference all of your previously created DBs here and save by clicking. ✓

Once finished click on  to proceed with the next subsystem.

Keystore Subsystem

The last subsystem in this process is the Keystore Subsystem. It is only needed if secure connections need to be established. Otherwise this subsystem can be skipped. The URL I have specified for the CPE Subsystem is a secure URL. Therefore I need this subsystem.

The Keystore Subsystem is a “smart” subsystem. You can either specify a keystore file (that contains the needed certificates) with keystore type and password or just specify a folder where you located the certificate files. The folder can be relative to the Agent installation directory.



Subsystem:

Name:

Filename:

Type:

Password:

Input Directory:

Referencing subsystems:

- CPE55
- CPE55CPEJMX
- FNBASEDB

Note: Probes that are using the CPE API need the certificates imported in the cacerts keystore of the agent JRE. This is currently the only possibility to get these working.


Once finished click on  to finish subsystem setup.

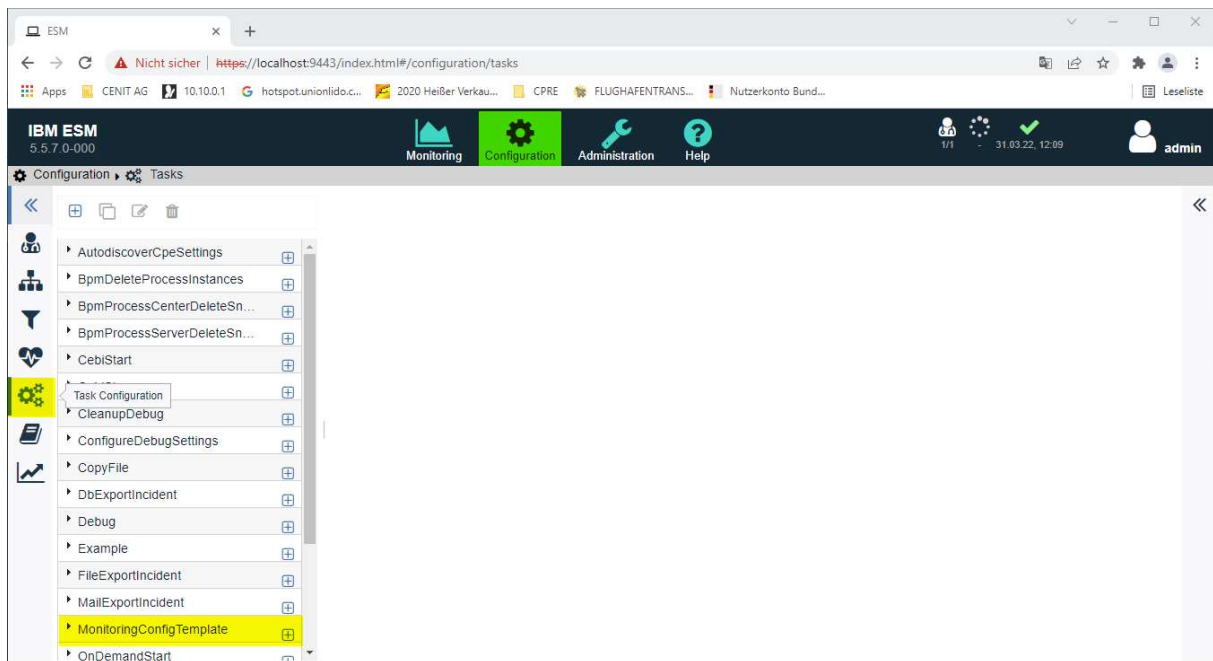
2. Setup of a monitoring situation / probe

Semi-automatic setup using a task

ESM offers the possibility to automatically setup monitoring probes. A so called MonitoringConfigTemplate Task is available that can be used to create a set of situations and probes. The evaluation of the probes follows our best practice implementations. Nevertheless the created situation setup often needs manual adjustments. E.g the CEHealthPage situation will have all possible parameters checked, but not all will be active on your system.

Check out the *Task Guide* for a detailed table for the probes and situations that will be created.

For running the task switch to the task configuration in the configuration dashboard and click on  next to the Monitoring ConfigTemplate task:



The task editor will open:

Specify a name and select the Agent in the Agent Name parameter that should be used to execute the probes. Furthermore specify the subsystem for which the templates should be created.

In the Agent and Schedule section keep the setup as it is:

Task Configuration

Select the type of the task and enter its configuration data.

*Name

active

Task:

Agent Name:

Subsystem:

Agent

Select the location where the Task should run.

Schedule

If active when and how often should the Task be executed?

Interval Cron

Start:

End:

Interval:

Click on to execute the task ad-hoc and create the situation and probe setup. Important: Do not make it active! Active means the task continuously runs based on the schedule. You can save the task if you like.

Be careful, running the task twice with the same setup means the situations and probes are created two times on the system ...

Running the task completes with this result:

The screenshot shows the 'Task Configuration' window for a task named 'CreateCPEProbes'. The task state is 'SUCCEEDED' and it started on 31. März 2022 at 15:48:23. To the right, the 'Task Details' table provides further information:

Label	Value
Active	true
Code	
End Time	31. März 2022 um 15:48:23 Mitteleuropäische Sommerzeit
Error	
Name	CreateCPEProbes
Result	
Run ID	1ea04de7-17f8-495d-bc2c-3aa874809510
Start Time	31. März 2022 um 15:48:23 Mitteleuropäische Sommerzeit
State	SUCCEEDED
ID	3fd2672-2595-4b4b-88ce-9d01464e1611

You should now see a list of situations in the Configuration Dashboard when clicking on the Situation Groups Icon on the left side.


The screenshot shows the IBM ESM Configuration Dashboard. The left sidebar displays a list of situation groups under 'All Situations', including:

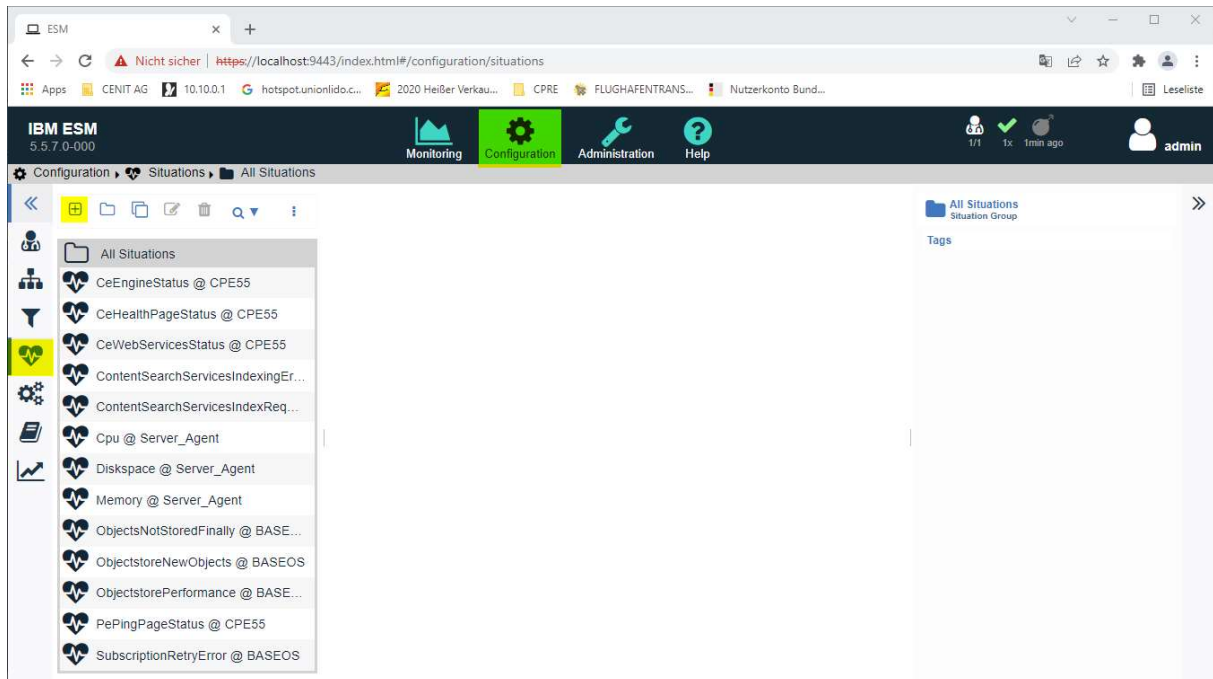
- CeEngineStatus @ CPE55
- CeHealthPageStatus @ CPE55
- CeWebServicesStatus @ CPE55
- ContentSearchServicesIndexingEr...
- ContentSearchServicesIndexReq...
- Cpu @ Server_Agent
- Diskspace @ Server_Agent
- Memory @ Server_Agent
- ObjectsNotStoredFinally @ BASE...
- ObjectstoreNewObjects @ BASEOS
- ObjectstorePerformance @ BASE...
- PePingPageStatus @ CPE55
- SubscriptionRetryError @ BASEOS

Please check all of the created setups if they fit your needs!

Manual setup of situations and probes

Instead of using the templates and adjusting them manually you can also create a situation/probe setup completely manually.

Switch to the Configuration Dashboard and select the Situation Groups Icon on the left. Above the available list you have several action buttons. This one  is for creating a new situation setup and will open the situation editor.



The situation editor will also open if you double click on an already existing situation and it looks like this.

Probe Configuration

Select the subsystem you want to monitor and the type of the probe that should be used.

Subsystem:

Probe:

Name:

active:

Objectstore:

Agent Assignment

Select the location where the Probe should run.

Schedule

This probe is connected permanently and listens for external events.

Configuration Help

CeAdvancedStorageDirectReplicasFailed

Description

This probe returns the number of failed direct replicas for the given Object Store based on the following Listener path:

`/USER/<objectstore>/Advanced Storage/Connectivity Task/Replicas Failed Direct/Total Count`

Recommended Schedule

This probe does not need a schedule, since the probe will automatically receive new data as it becomes available. This is just a placeholder in this case.

Parameters

ObjectStore

Object Store to be checked.
Use as a wildcard:

- will check all Object Stores
- will check all Object Stores whose names start with

It has a total of 3 configuration pages. The pages can be switched by clicking on or

First Page:

From the subsystem drop down select the subsystem for which you want to setup a probe.

From the probe drop down select the probe that you want to setup.

The Name is usually given automatically based on the subsystem and probe you have specified. Of course it can be adjusted.

The active check needs to be checked if the probe should start with monitoring. Otherwise the probe is only configured, but does not do any monitoring (it is inactive).

Depending on the probe there can be 0 to n additional parameters that need to be filled in. All of them are described in the Configuration Help on the right side of this page.

Schedule: Some probes can be scheduled, others (so called callback probes) run permanently because they are listening on something, such as logfile or listener (PCH) probes.

Example first page of a CeHealthPageStatus Probe:



Probe Configuration

Select the subsystem you want to monitor and the type of the probe that should be used.

Subsystem:

Probe:

Name:

active:

Check Global Configuration Database:

Check Directory Configurations:

Check Pe Connection Points:

Check Pe Isolated Regions:

Check Fixed Content Devices:

Check Object Stores:

Check Storage Areas:

Check Content Cache Areas:

Check Sites:

Custom CE URL:

Agent Assignment

Select the location where the Probe should run.

Schedule

If active when and how often should the Probe be executed?

Interval Cron

Start:

End:

Interval:

Second Page:

The second page offers you to set up the Evaluation based on the possible return values of the probe. The possible return values are usually also described in the configuration help on the first page.

The first entry from the evaluation that matches a sample information is the one that wins. In this example from the CeHealthPageStatus probe the first check is if there is something written in the error slot. If not, it will check if the value is 0 and then in a third check if the value is 1. The severity is set depending on the matching line.

If a probe returns an arbitrary value e.g. for a CPU Usage and you want to alert based on a certain threshold, make sure to have the correct order in the evaluation.

Situation

A situation evaluates a probe's samples and yield incidents. Assign tags here to organize those incidents on the dashboard.

CeHealthPageStatus @ CPE55

Server_Agent Agent_Server_Agent Probe:CeHealthPageStatus @ CPE55 Subsystem:CPE55 Add tag

Evaluation

Define the mapping of probe sample content to incident fields. Use conditional mappings to specify the interpretation of a sample's fields.

Shared Evaluation:

Base Fields: severity=WARNING, message=Sample.message, error=Sample.error, value=Sample.value, source=Sample.source, classification=Sample.classification

Mappings

Condition	Statements
error matches .+	Set Severity to Critical
value == 0	Set Severity to Critical
value == 1	Set Severity to Harmless


Else: Set severity to FATAL

Escalate and Filter Duplicates

Define when duplicates of occurrences shall lead to escalation of the situation and how duplicates can be trimmed to single incidents.

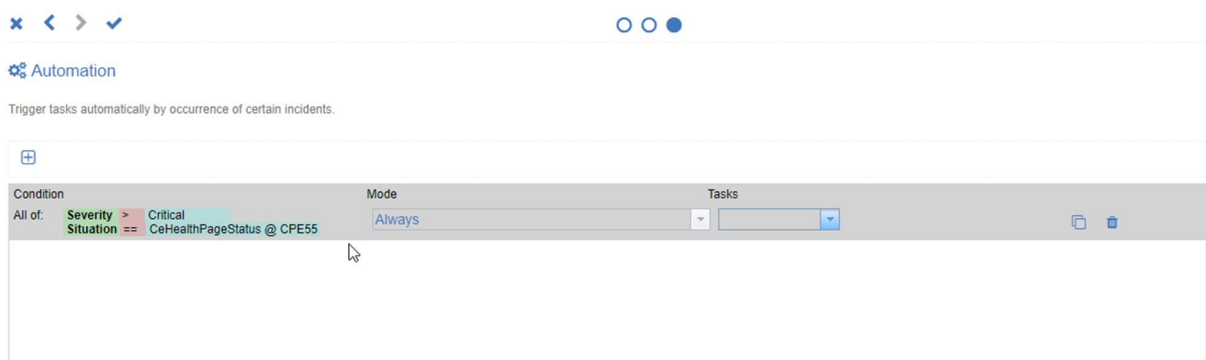
Escalation: <input type="checkbox"/>	Duplicate Filter: <input type="checkbox"/>
Period: 3.600 Second(s)	Period: 3.600 Second(s)
Matching message characters: 15	Matching message characters: 15
Matching error characters: 15	Matching error characters: 15
Escalate after x duplicates: 15	Pass every nth duplicate: 15
Mode: Once	


Third Page:

The third page offers you the possibility to set up automation tasks. Clicking on the  adds a new line to the table. Specify for which condition the automation should be executed.

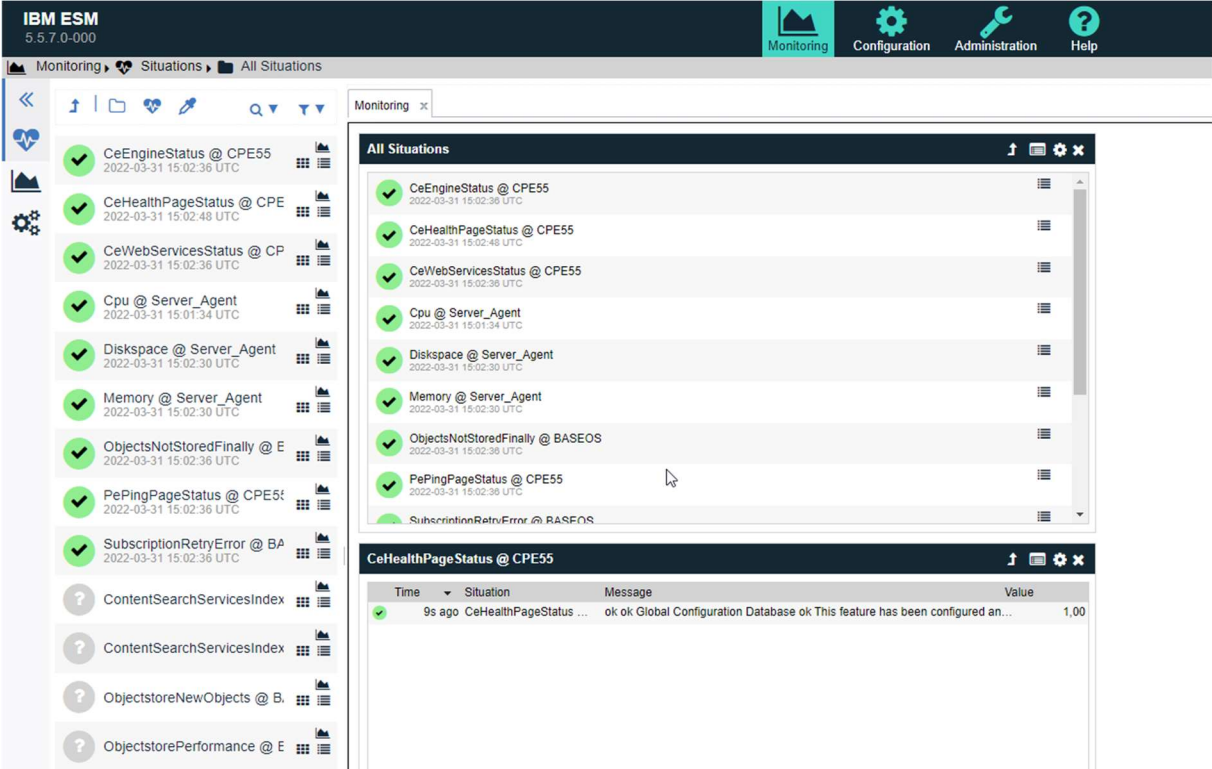
Mode “always” means every time the condition matches then the selected task will be executed. Mode “once” means that only when the matching condition changes then the task will be executed.

This mechanism can e.g. be used for sending an email or forwarding the information to third party products – depending on the task(s) that are executed.



Once finished click on  to finish the situation / probe setup.

Congratulations: The setup of your first probes is done and hopefully when you review them in the Monitoring console they look like this:



3. Recommended Probes for CPE

The following probes are recommended for a CPE system. Please refer to the online help if you need additional help in setting them up.

- **ProcessCount**
 - Availability of Websphere processes
- **CPUUsage per process**
 - CPU utilization of Websphere processes
- **MemoryUsage per process**
 - Memory utilization of Websphere processes
- **CE HealthPage Status**
 - Overall status of CPE (GCD, Object Stores, PE Connection Points ...)
- **CE Webserver Status**
 - Availability of the CPE Webservice
- **CE Engine Status**
 - Availability of CE Engine Services
- **LDAPConnection**
 - Connectivity to LDAP system
- **LDAP Performance**
 - LDAP logon time in milliseconds
- **ObjectStoreStorageAreaStatusSql**
 - Availability of Storage Areas
- **ObjectStoreStorageAreaInformationSql**
 - Count of objects (by Storage Area)
- **ObjectStore Performance**
 - Time to logon to an CE through WCM API and/or to search for documents in an object store
- **ObjectStoreLoadDocumentPerformance**
 - Time to load a specific document from an object store through WCM API.
- **Log Files**
 - p8srverror.log – CPE related application log
 - SysErr.log – Errors logged by Websphere

Please check out the Field Guide *Console Design Considerations* to see what different dashboard options are available to provide meaningful event information to different types of users, such as FileNet administrators or supervisors. You can find this and other field guides on the CENIT website: https://www.cenit.com/en_EN/products-solutions/eim/processing-file-and-document-management/software/ibm-ecm-system-monitor/ibm-esm-field-guides.html

Contact Information

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