

# System Center Configuration Manager 2007 Client Management Pack 2.0 For System Center Operations Manager 2007

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**Feedback:**

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**Disclaimer:**

- You are free to modify this management pack to suit your environments.
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- Even though this management pack has been fully tested, you may use it at your own risk. The Author does not hold any responsibility for any damages it may cause in your environments.

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## 1 Introduction

System Center Configuration Manager (SCCM) 2007 Client Management Packs 2.0.0.0 provides basic monitoring of SCCM 2007 clients.

This set of management packs is intended fill the gap of the official Microsoft System Center Configuration Manager 2007 management pack and focus monitoring the SCCM clients in SCCM infrastructures. These managements pack also provides ability to implement customised monitors to monitor the configurations and baselines of SCCM clients in your organisation's SCCM infrastructures according to your organisation's standard. i.e.

- Monitors SCCM site assignment, make sure SCCM clients are assigned to the correct primary site in a multi-sites environment.
- Monitors SCCM client versions to make sure all required SCCM client hotfixes are applied.
- Monitors and make sure any SCCM clients that should be configured as Branch Distribution Points (BDP) are actually configured as BDP.
- Make sure SCCM Client cache size is configured according to your company's standard.

There are 2 separate sealed management packs (.MP) in this set:

- **TYANG System Center Configuration Manager 2007 Library**
  - Custom Data Source, Probe Action and Write Action modules
  - Custom monitor types
  - SCOM console actions for SCCM clients
  - SCCM client object discovery
- **TYANG System Center Configuration Manager 2007 Monitoring**
  - Pre-Configured monitors and rules
  - Folders and Views

## 2 Pre-requisites and Limitations

### 2.1 Pre-requisites

- SCOM agent is installed on All SCCM clients that you wish to monitor.
- Some workflows contain PowerShell scripts. Therefore PowerShell needs to be installed / enabled and allow script executions on the SCCM clients that are being monitored.
- Other SCCM components (i.e. Site Server, SQL DB, Management Point, SMS Provider, etc.) **DO NOT** need to be monitored by SCOM. This management pack does not connect to any of these systems whatsoever (except Management Point HTTP Response Monitor).

### 2.2 Limitations

- This management pack DOES NOT work for SCCM 2012 clients. This is mainly due to the fact that SCCM 2007 is only a 32-bit application and most of the scripts in these management packs only read HKLM\SOFTWARE\Wow6432Node key when running on a 64-bit OS. Additionally, I have not fully tested any of the management pack components in SCCM 2012. I am planning to update this management pack to support SCCM 2012 after it has been RTM'd.

- Most of the workflows in this management pack is not remotable (Not suitable for SCOM Agentless monitoring). Therefore SCOM agent is required on any SCCM client that you wish to be monitored.

### 3 Overview

The System Center Configuration Manager 2007 Client Management Packs not only provides various out-of-box preconfigured monitors / rules, but also provides some custom modules / workflows which allow you to build your own monitors to suit your System Center Configuration Manager 2007 environments. These management packs extends what [Microsoft System Center Monitoring Pack For Configuration Manager 2007 SP2 v6.0.6000.3](#) has to offer for SCCM client monitoring. This includes:

#### 3.1 Pre-Configured Monitors and Rules:

- Recreated the SMS Agent Host service monitor and included diagnostic and recovery task to automatically restart the service when it has stopped.
- Checks the availability of Management Point of which the SCCM client connects to via HTTP response. The SCCM Management Point HTTP Response Monitor runs hourly to check the HTTP response of the active MP for the SCCM client and generates alerts if HTTP error responses received over 2 consecutive times.
- Checks the version of SCCM clients and generates alert if the version number is lower than 4.00.6487.2157 ([KB977384](#), prerequisite for SCCM 2007 R3)
- Checks SCCM Clients Advertisement Execution history every 30 minutes. If there were any advertisements have been executed over the last 30 minutes, trigger Hardware Inventory so any newly installed applications will be inventoried and stored in SCCM site database. Additionally, if any failed advertisement executions are found, a Critical alert is generated.

#### 3.2 Custom Modules and Monitor Types:

- SCCM Client Property Value Check 2-State Monitor Type. This monitor type can be used to build monitors to monitor SCCM client properties. (i.e. Monitor any SCCM clients that are not assigned to the correct site or Cache Size is not configured according to your organisation's standard, etc..)
  - This monitor type Supports the following Properties:
    - SiteCode (SCCM Client Site Code)
    - Version (SCCM Client version)
    - GUID (SCCM client GUID)
    - ManagementPoint (MP that SCCM client is connected to)
    - ProxyMP (Proxy MP that SCCM client is connected to)
    - InternetMP (Internet MP that SCCM client is connected to)
    - LogsLocation (path to SCCM client log files)
    - CacheLocation (path to SCCM client cache)
    - CacheSize (The maximum size of SCCM client cache folder in MB)
    - HTTPPort (The HTTP Port for SCCM Client)
    - EnableAutoAssignment (if auto site assignment is enabled (true or false))

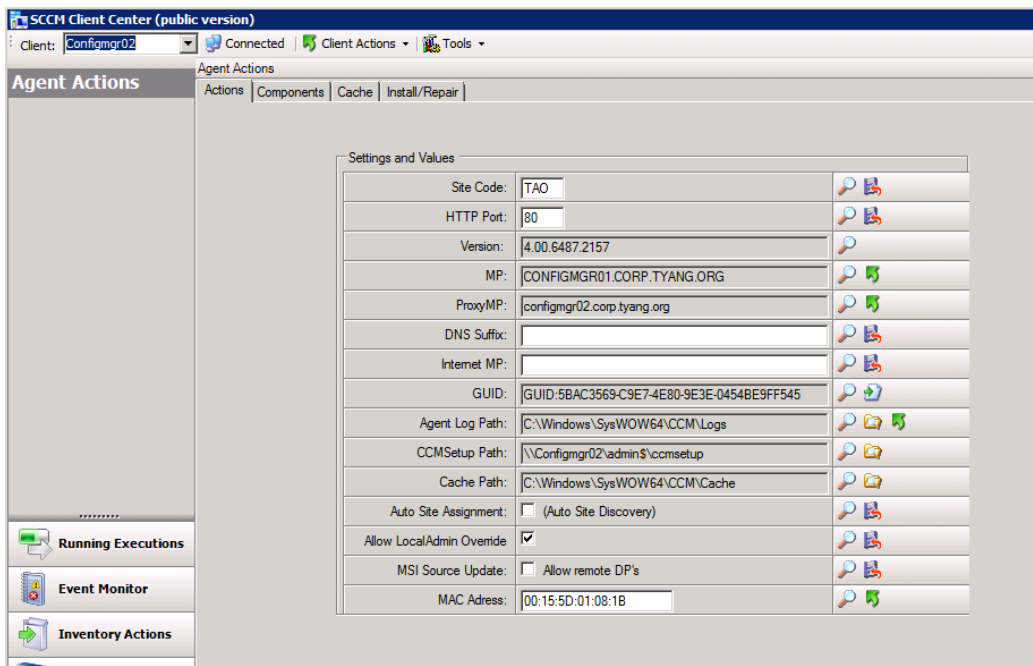
- AllowLocalAdminOverride (if the SCCM client allows local admin override (true or false))
    - IsBDP (If the client is a branch distribution point (true or false))
  - This monitor type Supports the following Comparison Operators:
    - eq (Equal to)
    - ne (Not equal to)
    - gt (Greater-than)
    - lt (Less-than)
    - ge (Greater-than or equal to)
    - le (Less-than or equal to)
    - IsNull (Is Null value)
    - NotNull (Not Null value)
- Write Action module to initiate SCCM client actions
- Write Action module to repair SCCM client
- Other Probe Action modules and Data Source modules that were used by pre-configured monitors and rules.

### 3.3 More Comprehensive Object Discoveries

This SCCM client object discovery in this management pack discovers pretty much every SCCM client properties that are visible in the industry well-known utility [SCCM Client Center](#).

Below is a comparison of the properties that SCCM Client Center can check VS. SCCM Client properties been discovered by this management pack VS. what are been discovered from Microsoft's official management pack:

#### SCCM Client Center 2.0.4.0:



## System Center Configuration Manager 2007 Client Management Pack v2.0.0.0:



### TYANG SCCM Client properties of CLIENT02.corp.tyang.org

Name	CLIENT02.corp.tyang.org
Path name	CLIENT02.corp.tyang.org\CLIENT02.corp.tyang.org
SCCM Site Code	TAO
SCCM Client Version	4.00.6487.2157
SCCM Client GUID	461c6f27-b8f0-4ebf-ac64-73716786b006
Management Point	CONFIGMGR01.CORP.TYANG.ORG
Proxy Management Point	configmgr02.corp.tyang.org
Internet Management Point	
Logs Location	C:\Windows\SysWOW64\CCM\Logs
Cache Location	C:\Windows\SysWOW64\CCM\Cache
Cache Size in MB	5120
HTTP Port	80
Allow Local Admin Override	True
Branch Distribution Point Role	False
Auto Site Assignment	False

## Microsoft Official Configuration Manager 2007 SP2 Management Pack v6.0.6000.3:

### Detail View



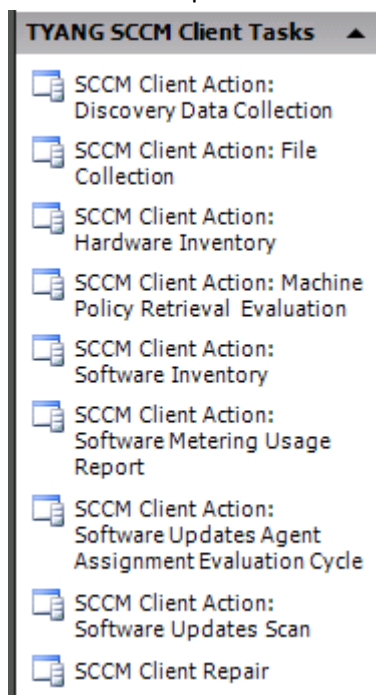
### ConfigMgr Client properties of CONFIGMGR02

Name	CONFIGMGR02
Path name	CONFIGMGR02.corp.tyang.org\CONFIGMGR02
Site Code	TAO
Version	4.00.6487.2000
Name	CONFIGMGR02

### 3.4 SCOM Agent Actions for SCCM Clients

A number of SCCM Client actions have been built into this management pack. The following SCCM client actions can be initiated via SCOM Operations Console and Web Console:

- Discovery Data Collection
- File Collection
- Hardware Inventory
- Machine Policy Retrieval Evaluation
- Software Inventory
- Software Metering Usage Report
- Software Updates Agent Assignment Evaluation Cycle
- Software Updates Scan
- SCCM Client Repair



## 4 Pre-Configured Monitors and Rules

### 4.1 TYANG SCCM Client Service Monitor

<b>Type</b>	Basic Service Monitor
<b>Description</b>	The "TYANG SCCM Client Service Monitor" monitors the state of SMS Agent Host service (CcmExec)
<b>Generate Alerts</b>	Yes, Priority: Medium, Severity: Critical
<b>Recovery Task</b>	Restarts CcmExec service when it stops.

## 4.2 SCCM Management Point HTTP Response Monitor

This monitor checks the availability of Management Point of which the SCCM client connects to via HTTP response. The SCCM Management Point HTTP Response Monitor runs hourly to check the HTTP response of the active MP for the SCCM client and generates alerts if HTTP error responses received over 2 consecutive times.

### 4.2.1 “SCCM Management Point HTTP Response Monitor” Workflow Explained:

This monitor firstly runs a script to check the Management Point, Proxy Management Point and the Internet Management Point’s address for the client, and determines the active management point in this order:

1. Internet Management Point
2. Proxy Management Point
3. Management Point

Once the active management point’s address is determined, the monitor runs another script to check the HTTP response to the management point ([http://<ManagementPoint>/sms\\_mp/.sms\\_aut?mplist](http://<ManagementPoint>/sms_mp/.sms_aut?mplist)).

Finally, if the HTTP response code does not equal to 200, the script marks a property bag value “status” to “Error” and if the script detects “status” as “Error” for 2 consecutive times, the monitor changes state to Critical and a Critical alert is raised.

### 4.2.2 Customising “SCCM Management Point HTTP Response Monitor”

This monitor can be customised via overrides.

- ResolveTimeoutSeconds
  - HTTP time out in seconds for management point name resolution.
- ConnectTimeoutSeconds
  - HTTP time out in seconds for connecting to management point.
- SendTimeoutSeconds
  - HTTP Send timeout in seconds
- ReceiveTimeoutSeconds
  - HTTP receive time out in seconds
- Interval Seconds
  - Monitor execution interval in seconds
- ConsolidationNumberOfSample
  - sNumber of consecutive failures before monitor state change.
- ConsolidationInterval
  - Note: This value has to be set according to the formula:  
**(ConsolidationNumberOfSamples \* Interval) + (ConsolidationNumberOfSamples \* Interval) / 10.** Or to simplify, **ConsolidationNumberOfSamples \* Interval \* 1.1.**  
(<http://blogs.technet.com/b/jonathanalmquist/archive/2011/06/24/windows-service-monitoring-reduce-false-alerts-part-2.aspx>)



### 4.3 TYANG SCCM Client Version Monitor

This monitor utilise the monitor type “**SCCM Client Property Value Check 2-State Monitor Type**” which was defined in TYANG System Center Configuration Manager 2007 Library and checks the SCCM client version. It generates alerts when the version number is lower than **4.00.6487.2157**, which is the version number for SCCM 2007 R3.

#### 4.3.1 TYANG SCCM Client Version Monitor Configuration

According to the configuration Schema of “SCCM Client Property Value Check 2-State Monitor Type”, this monitor is configured as below:

<Configuration>

<IntervalSeconds>14400</IntervalSeconds>

<PropertyToCheck>Version</PropertyToCheck>

<Operator>ge</Operator>

<CorrectPropertyValue>4.00.6487.2157</CorrectPropertyValue>

</Configuration>

As shown above, this monitor runs every 14400 seconds (4 hours). It checks the “Version” property of SCCM client and compare with correct value of 4.00.6487.2157. If the version is greater than and equals to the correct value, the health state of this mornitor is healthy, otherwise it’s Critical and an alert is generated.

#### 4.3.2 Customising TYANG SCCM Client Version Monitor Configuration

Below values can be modified via overrides:

- IntervalSeconds
- SyncTime
- CorrectPropertyValue

### 4.4 SCCM Client Advertisements Execution History Alert Rule

This rule checks SCCM Client advertisements execution history since last check and generates alerts if failed executions are detected. Additionally, this rule will also initiate SCCM client hardware inventory action if any advertisement executions were detected since last check.

#### 4.4.1 Customising SCCM Client Advertisements Execution History Alert Rule

This rule can be modified via overrides. Below are the parameters available for override:

- IntervalSeconds
- SyncTime
- InitiateHInvCondition
  - Conditions for initiating hardware inventory. Possible values are:
    - **OnSuccess** - Initiate Hardware Inventory When Success Advertisement Executions are found

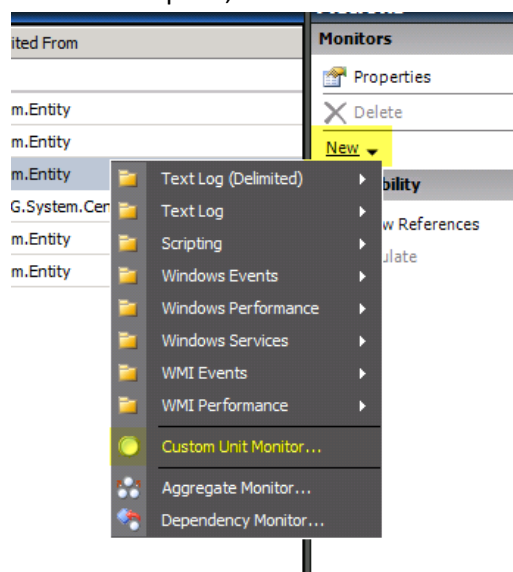
- **OnFailure** - Initiate Hardware Inventory When Failed Advertisement Executions are found
- **Both** - Initiate Hardware Inventory When ANY Advertisement Executions are found
- **None** - Do not Initiate Hardware Inventory

## 5 Creating Custom SCCM Client Property Monitors

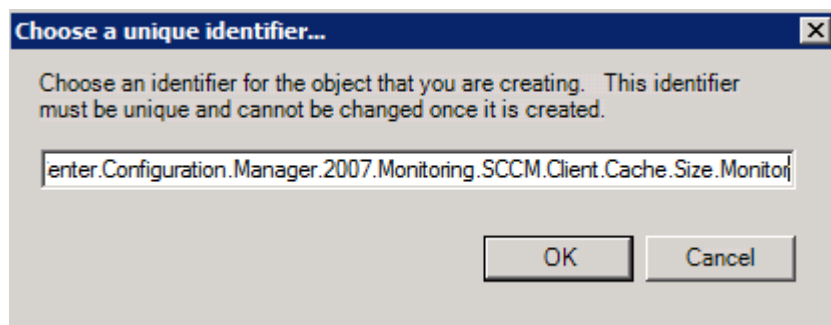
Customised monitors can be created to monitor various SCCM Client properties using “SCCM Client Property Value Check 2-State Monitor Type” from TYANG System Center Configuration Manager 2007 Library management pack.

### 5.1 Instructions to creating a custom SCCM Client Property Monitor

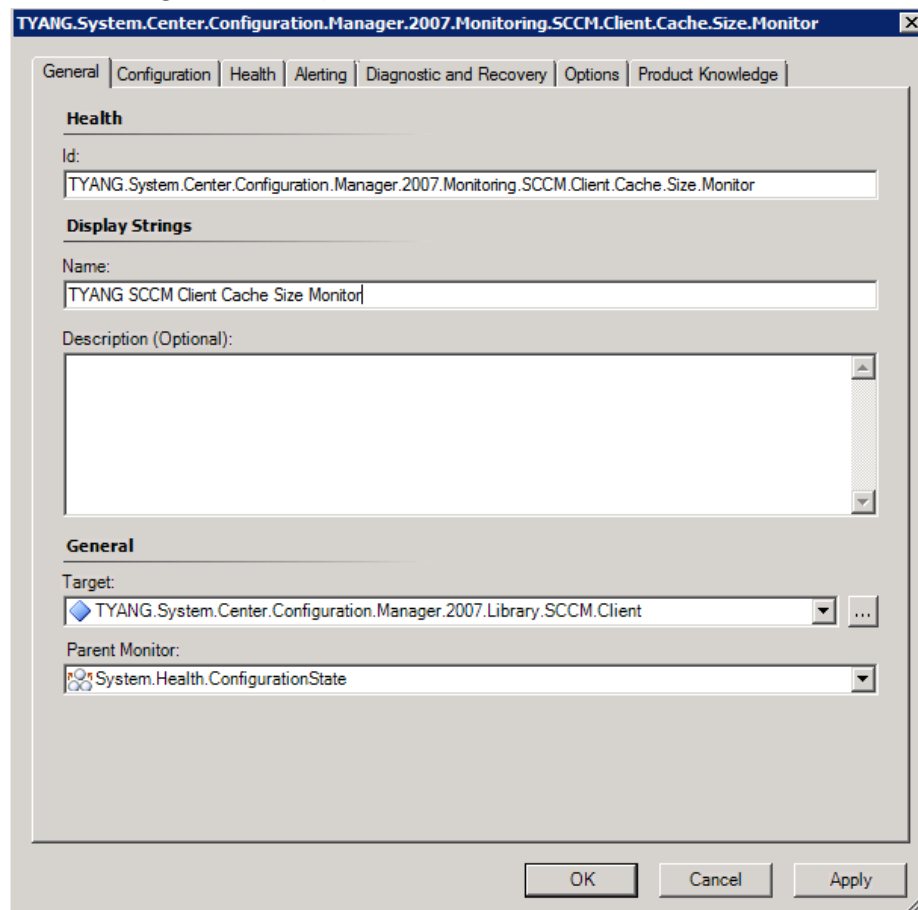
1. In SCOM 2007 R2 Authoring console, create a new management pack or reuse the unsealed version of the existing “TYANG System Center Configuration Manager 2007 Monitoring” management pack. If creating a new management pack, please add “**TYANG System Center Configuration Manager 2007 Library**” management pack as a reference management pack.
2. If the monitor is targeting a subset of the “TYANG SCCM Client” that are discovered by the System Center 2007 Client Management Pack, please create a separate class and its associated discoveries in the “TYANG System Center Configuration Manager 2007 Monitoring” management pack. i.e. create a class and its discovery based on your organisation’s naming convention (Please refer to Appendix A on how to create object discovery based on computer name). Alternatively, the new monitor can be target to the “TYANG SCCM Client” object class and create groups to disable / enable the monitor to the correct target SCOM agents.
3. In Authoring Console “Health Model” pane, click **Monitors → New → Custom Unit Monitor**.



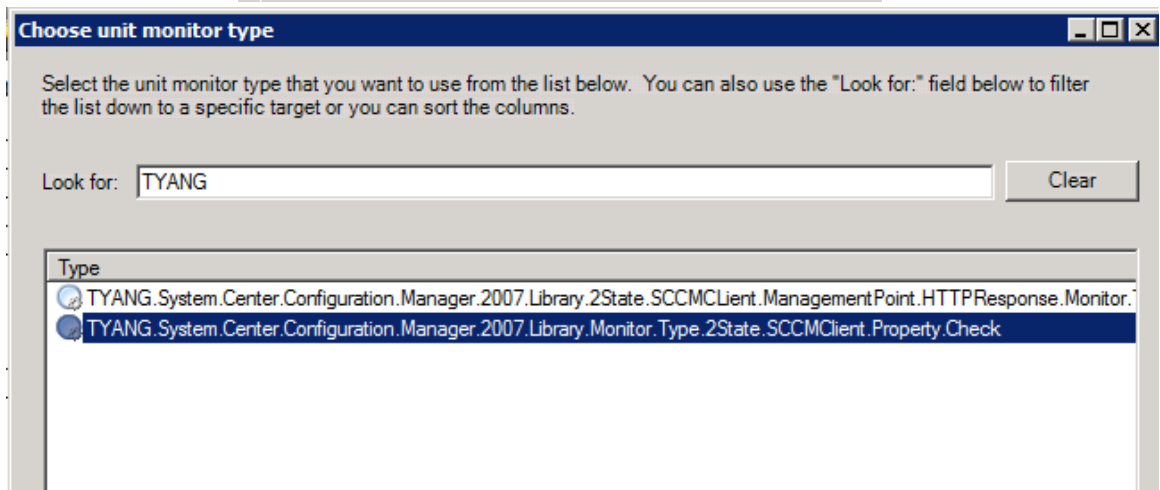
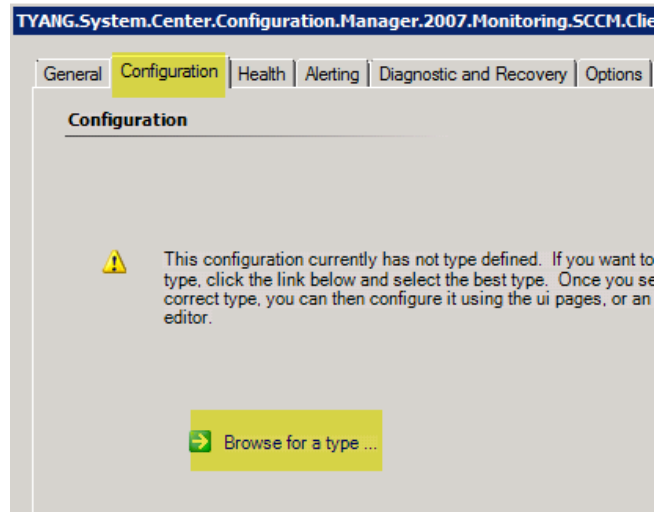
4. Name the monitor unique identifier



5. Enter the Name of the monitor and choose the monitoring target. Set Parent Monitor (i.e. System.Health.ConfigurationState)



- Under "Configuration" tab, click "**Browse for a type**" and choose monitor type "**TYANG.System.Center.Configuration.Manager.2007.Library.Monitor.Type.2State.SCCMClient.Property.Check**"



7. Configure the following parameters:

- **IntervalSeconds**
- **PropertyToCheck**

Available Properties:

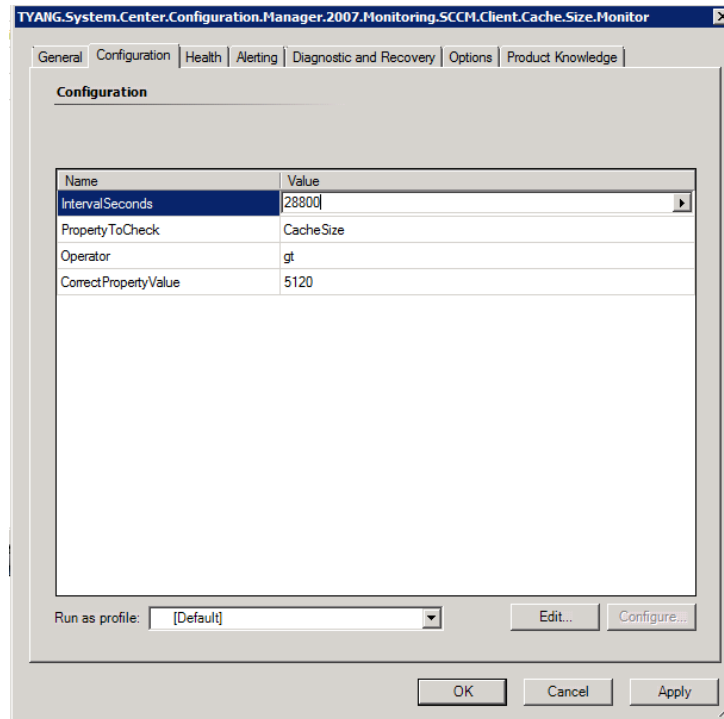
<b>Property Name</b>	<b>Description</b>	<b>Type</b>
<b>SiteCode</b>	SCCM Client Site Code	String
<b>Version</b>	SCCM Client Version	String
<b>GUID</b>	SCCM Client GUID	String
<b>ManagementPoint</b>	MP that SCCM client connects to	String
<b>ProxyMP</b>	Proxy MP that SCCM client connects to	String
<b>InternetMP</b>	Internet MP that an Internet based SCCM client connects to	String
<b>LogsLocation</b>	Path to SCCM Client Log Files	String
<b>CacheLocation</b>	Path to SCCM Client Cache	String
<b>CacheSize</b>	Maximum SCCM client cache size in MB	Integer
<b>HTTPPort</b>	HTTP Port for SCCM Client	Integer
<b>EnableAutoAssignment</b>	If auto site assignment is enabled	Boolean (true or false)
<b>AllowLocalAdminOverride</b>	If the SCCM client allows local admin override	Boolean (true or false)
<b>IsBDP</b>	If SCCM client is configured as Branch Distribution Point	Boolean (true or false)

- **Operator**

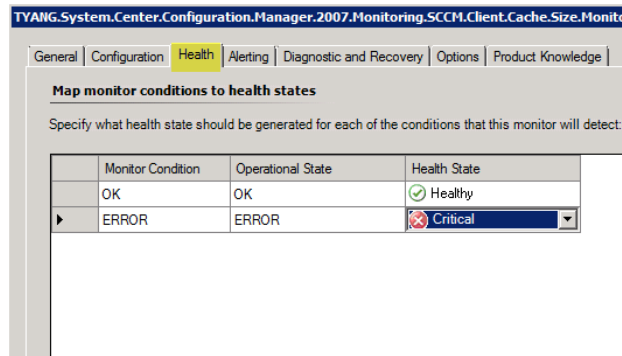
<b>Comparison Operator Name</b>	<b>Description</b>
<b>eq</b>	Equals To
<b>ne</b>	Not Equals To
<b>gt</b>	Greater-Than
<b>lt</b>	Less-Than
<b>ge</b>	Greater-Than or Equals To
<b>le</b>	Less-than or Equals To
<b>IsNull</b>	Value is Null
<b>NotNull</b>	Not Null Value

- CorrectPropertyValue
  - i. The correct property value (When monitor is at healthy state)

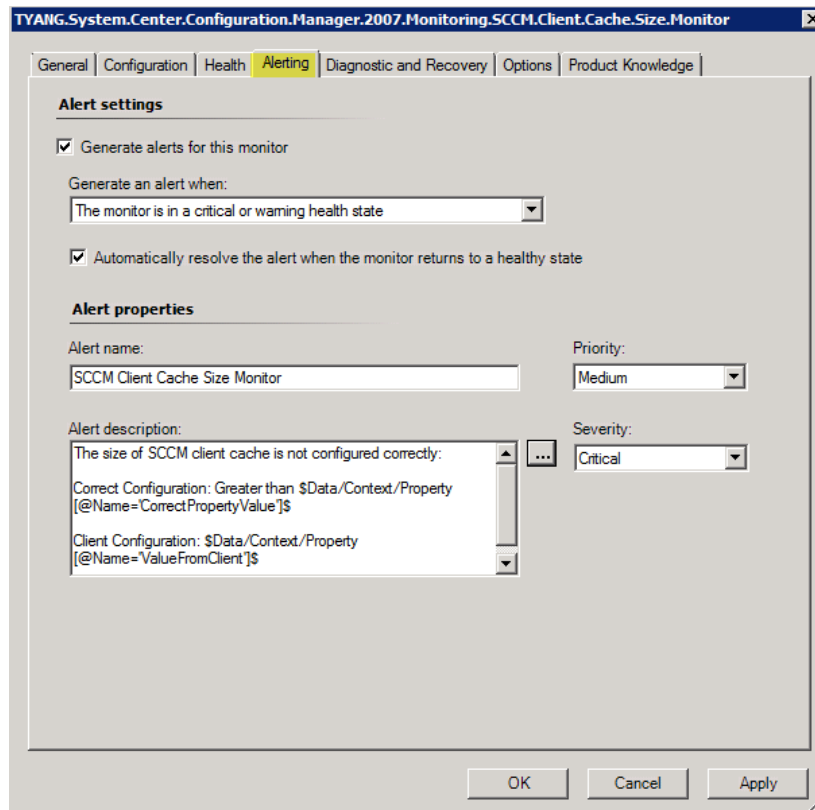
i.e:



## 8. Define monitor health states



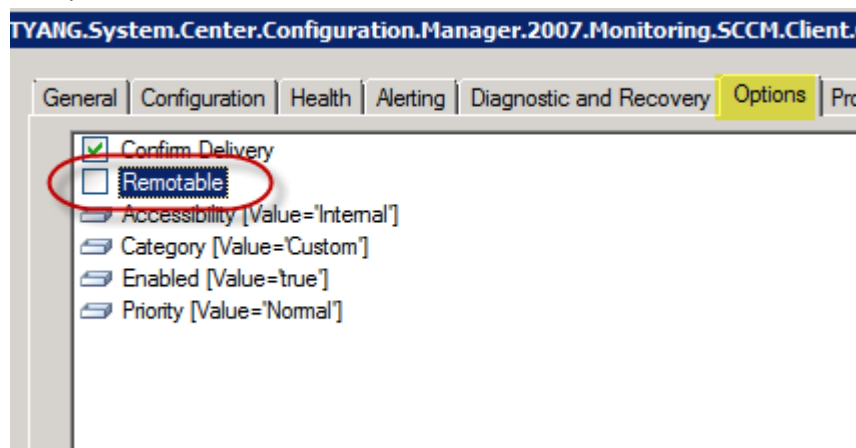
9. If required, configure Alert for this monitor:



The following property bag values are passed out from the workflow and can be used in alert description:

- `$Data/Context/Property[@Name='ValueFromClient']`
- `$Data/Context/Property[@Name='Operator']`
- `$Data/Context/Property[@Name='CorrectPropertyValue']`

10. In Options tab, untick “Remotable” as this monitor does not work for SCOM agentless monitored computers.



11. Create a Production Knowledge article for this monitor if it is required.

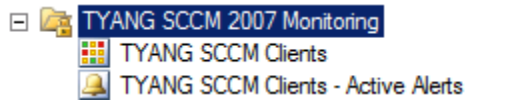
12. Once all additional monitors are created, seal the management pack using your own key.

## 6 Other Management Pack Objects

### 6.1 Views and Folders

Below views and folders are created in the “TYANG System Center Configuration Manager 2007 Monitoring” management pack:

- State View for “TYANG SCCM Client” objects
- Alert view for active alerts for “TYANG SCCM Client” objects



### 6.2 Group

An Instance group is created for the TYANG SCCM Client class: **TYANG All SCCM Client Instance Group**.

Name	Sub-groups
TYANG All SCCM Client Instance Group	0

### 6.3 Agent Tasks

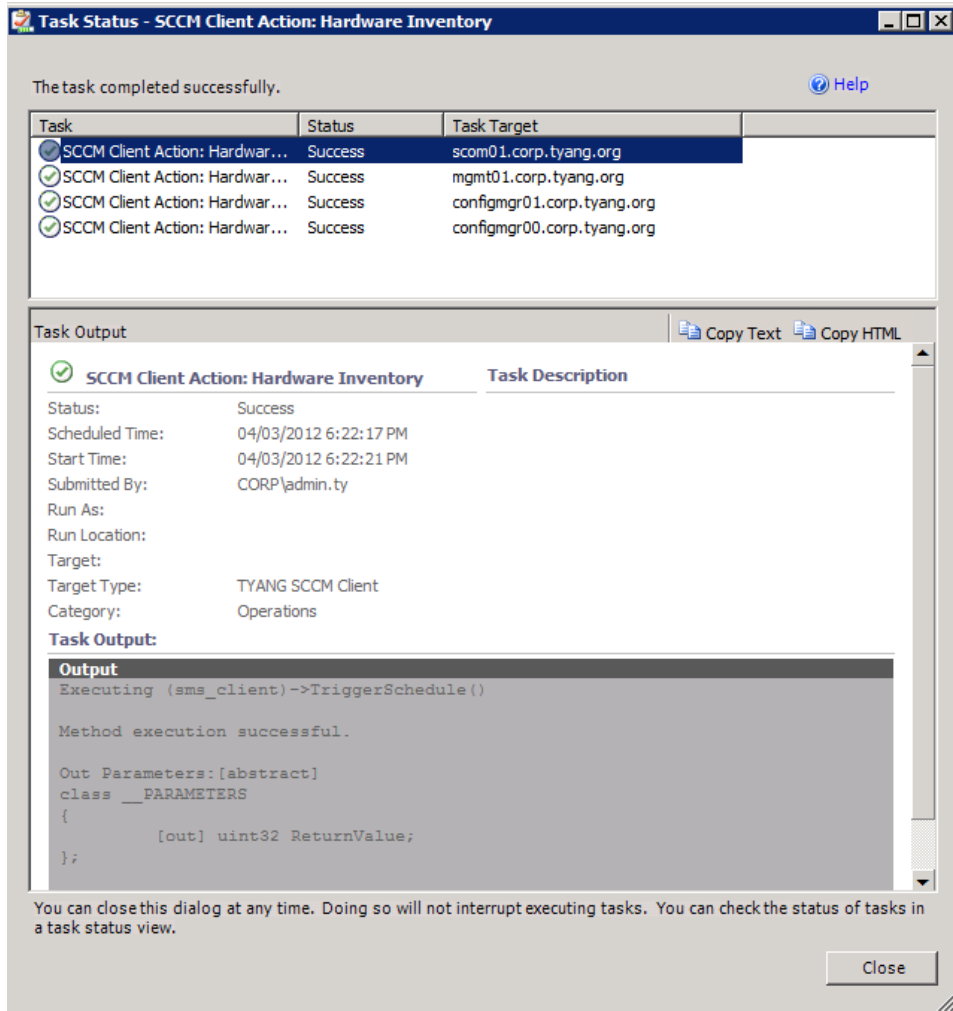
As previously stated in section 2.4, a number of SCCM client agent actions are created as SCOM agent tasks, which can be triggered manually via SCOM operations console and web console. These client actions are:

- Discovery Data Collection
- File Collection
- Hardware Inventory
- Machine Policy Retrieval Evaluation
- Software Inventory
- Software Metering Usage Report
- Software Updates Agent Assignment Evaluation Cycle
- Software Updates Scan
- SCCM Client Repair



Any of these actions can be initiated on multiple SCCM clients. These agent tasks provides same functionality as the famous SCCM right click tools which allows SCCM administrators initiate client actions on multiple SCCM clients at once:

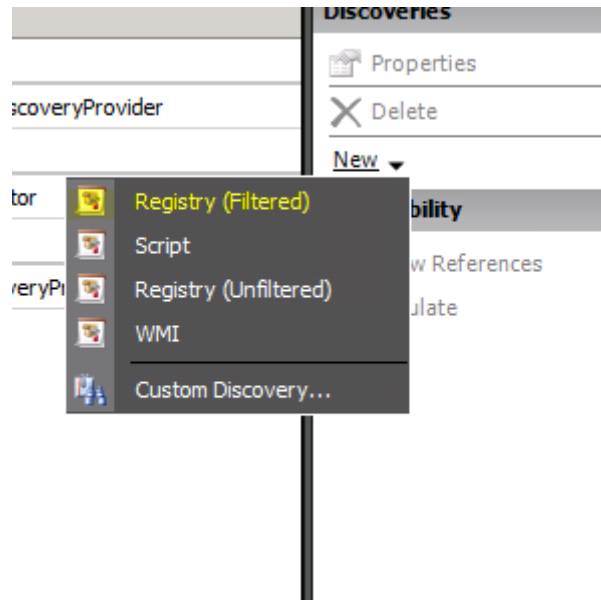
I.e. Initiating Hardware Inventory action on multiple SCCM Clients:



## Appendix A: Creating Object Discovery Based on Computer Name

Below are the steps to create an object discovery based on computer name

1. In Authoring Console, Under “**Health Model**” pane, click **Discoveries** and then Click **New** and “**Registry (Filtered)**”.



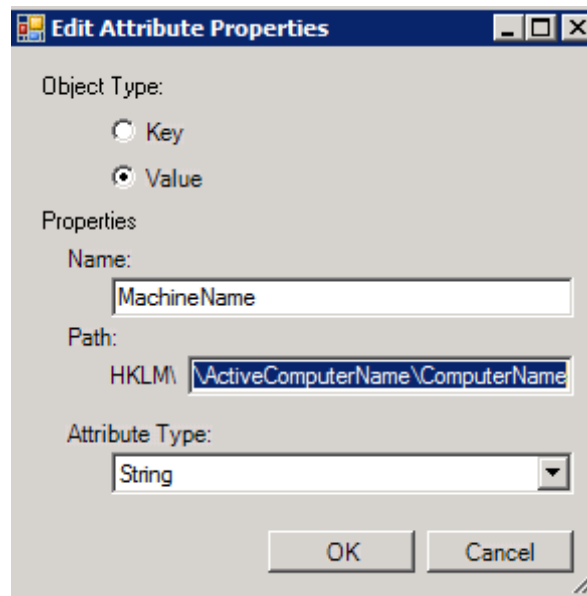
2. In the wizard, fillout Element ID, Display Name, Target (TYANG SCCM Client) and leave the Category to “Discovery”.
3. Configure schedule (Note, the computer name is hardly changed, therefore the frequency of this discovery can be very low, i.e. Once a day Please do not set the schedule too frequent as add unnecessary loads to the SCOM agents).
4. In the “**Computer Name**” step, leave it as default and click **Next**

5. In Registry Probe Configuration, Click Add:

- Object Type: **Value**
- Properties
  - i. Name: **MachineName**
  - ii. Path:

HKLM\SYSTEM\CurrentControlSet\Control\ComputerName\Active  
ComputerName\ComputerName

iii. Attribute Type: String



6. In “Build Event Expression” step, click “Insert” then

- Parameter Name: **Values/MachineName**
- Operator: **Matches regular expression**
- Value: **<Regular expression based on your naming convention>**

**Note:** For more information regarding to Regular Expression support in SCOM 2007, please refer t this document:

<http://www.opsmanjam.com/OpsManJam%20Library/Featured%20Articles/Regular%20expression%20support%20in%20SCOM%202007.docx>

7. In Discovery Mapper step, choose the class you created under Class ID, and map all associated properties (same as TYANG SCCM Client class).

## Credit

The source code of “[SCCM Client Center Automation Library](#)” was used as reference when authoring this management pack. Thanks to the author of SCCM Client Center Automation Library and SCCM Client Center, Roger Zander.