Handbook

EPO

- Introduction & overview -

- Installation -

- (First) use -

- Configuration -

- Administration -

Handboek

Date	: October 2019
Version	: Version 12.5
Author	: Auxzenze
Document	: Handbook EPO 12.5 English.docx

Copyright

Handboek

Contents

auxzenze IT MAKES SENSE

Handboek

Handboek

Handboek

Handboek

1 Introduction

1.1 General description

EPO-Framework is intelligent software which monitors vital processes and warns at a very early stage for deviations of the Service Level thresholds.

EPO is the suite of all business solutions which Auxzenze produced through the years as custom software. The common theme of all those business solutions has become the SLA-framework EPO-Elements.

Ready to use

EPO-Elements is ready to use (out-of-the-box), you can get setup in a few hours and:

- Monitor service levels
- Use the helpdesk for supporting customer communication including process monitoring
- Monitor servers measuring basic system information like CPU, memory, disk space, services and event logs.

Configuration

EPO-Elements can easily be configured:

- For applications or network services (contracts) to monitor
- For monitoring VOIP-chains
- For monitoring servers outside your own network (for example as a service to customers)
- For monitoring kpis or financial figures
- To send notifications by email, text or application.

Scripting

Through configuration and small custom scripts EPO Elements can be used:

- for the planning of monitoring of vital (services) chains
- to connect directly for individual communication needs
- to connect to existing technical monitoring resources
- to enrich technical monitoring to monitor the way users experience (create virtual users)
- to create report templates use in your own report generator
- to monitor vital company processes “agentless” (without installing software)

1.2 Aim of the handbook EPO

The aim of this user manual is present a first stop for EPO users.

Described is:

1) **The installation** (of the server, client and probes)
2) **The first use** (how the helpdesk, chain monitoring or remote monitoring can be implemented)
3) **EPO-functionality** (enumerating descriptions of all EPO-functions)
4) **Configuration** (change settings of several EPO-items, such as: server, client and probes)
5) **Administration** (backup, restore and resolving problems)

1.3 Additional information

At the Auxzenze website and EPO Forum you can find additional information on EPO Elements. Please report “missing information” to us (info@Auxzenze.nl)

1.3.1 EPO-Website

The most recent version of the product leaflets is available at the website http://www.auxzenze.nl/epo-monitoring-software/.

The Internet site contains among other things:

- Examples
- Leaflets with general information
- Product fact sheets with more technical specifications

1.3.2 EPO-Forum

The most recent version of the software is available on the EPO Elements Forum www.epo-elements.nl.

The EPO-forum contains (among other things):

1. Answers on frequently asked questions
2. A probe library with examples.
3. The most recent version of this handbook

2 EPO - Business Monitoring

2.1 General

EPO has been built with the vision that monitoring from the interests of the organization will be more effective than simply monitor all technical system events.

EPO has also been developed to offer “The strength of open source” but with the professionalism of Enterprise management…

Therefore EPO contains the functionality which is necessary for:

- Business Monitoring
- Chain Monitoring
- Remote Monitoring
- Room Monitoring
- Early Financial Warning
- Helpdesk/CustomerCare including ITIL-process monitoring
- And use your own scripts

Or every combination of the above mentioned functionalities.

EPO has been developed for managers and ICT experts:

- General and financial manager who want to monitor their contracts with their customers.
- Process managers and controllers who want to monitor their internal processes.
- Service proposers who want to supply remote services.
- Central systems or building administrators who have ongoing sensual guarding necessary for (technical) spaces where they daily does not come anymore.
- Financial controllers who want real-time monitoring of the monthly key figures and who want to be able to react also real-time.
- Helpdesk employees and process managers who want to - on the base of Keep-IT-Simple - organize their customer contacts and get their helpdesk processes under control and keep it that way.

2.2 Method

Common used management software often gives an excess of data concerning systems and network components. Whereas only a small part of it is really relevant. Moreover this superabundance takes away the visibility on what is really important.

For this reason Auxzenze states that successful monitoring does not start at technique, but starts from the view of the company processes and the thresholds defined by the management. That is how desired performances (service Levels) can be made measurable. EPO have been developed to measure only the important components that really matter for your organization.

EPO focuses on the company processes. Thus EPO can verify continuously if orders are being rapidly enough processed or that computer systems are available within agreed uptimes. For the industry EPO can check production processes. In combination with Check-it's eNose EPO can monitor exposures of gases. Thus EPO cooperates closely with every system that can collect and pass on information. Moreover there are plug-ins for functions such as time recording, helpdesk recording, monitoring of several processes and much more.

2.3 Services

An EPO-Server typically contains the following components:

1	EPO Diaspora		Started	Automatic
2	EPO Mail Gateway	Allows EPO components to send e-mail through a SMTP mail server	Started	Automatic
3	EPO Message Transport	Regulates all communication between the EPO components	Started	Automatic
4	EPO Probe	Performs the monitoring and data gathering operations for EPO	Started	Automatic
5	EPO Server	EPO Server stores data and provides the interface for the business clients	Started	Automatic
6	EPO SMS Gateway	Allows EPO components to send SMS-text messages	Started	Automatic

A machine installed with only the EPO-Probes contains the following components:

1	EPO Diaspora		Started	Automatic
3	EPO Message Transport	Regulates all communication between the EPO components	Started	Automatic
4	EPO Probe	Performs the monitoring and data gathering operations for EPO	Started	Automatic

A Desktop with the EPO GUI will not contain any service components.

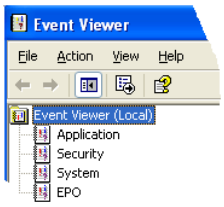
A short description of the services:

1. EPO Diaspora (optional for server and probe installation)
   The software distribution layer. With EPO Diaspora you can update (already existing!) EPO probed machines.
   Distributed software updates travel through the EPO message transport layer.
2. EPO Mail Gateway (optional for server installation)
   With this option it is possible to send email by a relaying mail server
3. EPO Message Transport
   Forms the transport layer between agent and database. Remote probes (agents) communicate with the local EPO message transport layer, which ensures the expedition of information to the database. The communication goes by means of a Postbox mechanism. At down the messages are stored in the local postbox until information can be forwarded (*store and forward*).

4. EPO Probe (optional for server installation)
   Obtains basic Windows information (CPU, disk space, services) from the operating system and offers this to the transport layer (message service). Can be configured to retrieve additional information such as SNMP-information, scripts, SQL statements, windows performance counters, ping values, …
   At down: no information is gathered until service is started. Already existing probes will show blue in the EPO Business tree indicating the state “Unknown”.
5. EPO Server
   Ensures the communication with EPO-clients (EPOGui.exe). Ensures the processing of the data offered by the probes. Contains also the escalation manager functionality.
   At down: EPO-Clients cannot start because they can make no connection with the database. The probes will continue with their measurements. Measurements send by the probes by means of the EPO message transport layer will be stored locally on the server. When the EPO server service is started it will process the measurements retroactive.
6. EPO SMS Gateway (optional for server installation)
   With this option it is possible to send SMS-messages by GSM-modem or room monitoring unit (which has a local GSM-modem included).

2.4 Logging

The EPO-services log to the Windows Event Viewer (e.g. windows \ start \ run “eventvwr.exe”)



More detailed log information (informationals and debug messages) can be found under:

- …\ Program files\ the Early Warning Company \ EPO \ Logs

Logs will be saved according the round robin method in default 10 files per component (server, transport layer and probe). Look for the latest date time stamp to find the newest log.

2.5 Data transport (administration of the Postboxes)

Agents, or probes as we call them, (ntlog, probe and scheduled scripts) communicate their results by means of messages. These messages are forwarded by means of store-and-foreward-mechanism called the EPO transport layer. When the network connection is temporarily down or EPO services are not running messages are kept in local postboxes.

To show the content of the local EPO-Postboxes on an EPO probed computer:

(directory… \ EPO \ tools \): “EPOMsgcmd.exe list”

Other commands will show when just starting epomsgcmd.exe with no parameters:

```
EPO Message Command Tool version x.x revision y
Copyright (c) 2002-2006 Auxzenze

Usage:
  EPOMsgCmd [<options>] [-xsl <file>] locate [xml]
  EPOMsgCmd [<options>] [-xsl <file>] debug [html]
  EPOMsgCmd [<options>] [-xsl <file>] list [xml]
  EPOMsgCmd [<options>] [-xsl <file>] extract <postboxname>
  EPOMsgCmd [<options>] [-xsl <file>] extractall <postboxname>
  EPOMsgCmd [<options>] store [<postboxname>]
  EPOMsgCmd [<options>] storelist <filename> [<postboxname>]
  EPOMsgCmd [<options>] flush! [/Y] [<postboxname>]
  EPOMsgCmd [<options>] flushall! [/Y]
  EPOMsgCmd [<options>] registerresolve <resolvename> <postboxname>
  EPOMsgCmd [<options>] info [routes]
  EPOMsgCmd [<options>] setnetworkkey
  EPOMsgCmd [<options>] createnetworkkeyfile <filename>
  EPOMsgCmd roundtriptest <target> [Alarm|High|Normal|Low] [<nr tests>]

Options:
  -s <server>[:<port>[#<sourceport>]] to specify a server/port to connect to.
  -k <hex-key>|none              sets the connection encryption key.
  -kp <passphrase>               sets the connection encryption key.
  -kf <file>                  sets the connection encryption key.
Default connection is: bin://127.0.0.1:7472
Encryption default setting is disabled
```

NB this command can also be used to test the (EPO) connection by asking the postboxes of a remote EPO probed machine:

E.g.: epomsgcmd –s <ipaddress of remote EPO probed server> list

2.6 EPO clients

The EPO Windows client can be used from each network that has connection to the network with the EPO-server.

For example by means of the Internet, VPN (or other closed networks).

It is necessary for the client to be able to connect on tcp port 7471 to the EPOserver.

2.6.1 **Web view (Enterprise users)**

Another way to connect to your monitoring data is through the EPO web client which we call the “EPO Webview”. You can use your favorite browser on your device of choice to connect to EPO. The

browser needs to support modern web standards like html5 and CSS3. How to configure the EPO Webview can be read in chapter xxx.

2.7 Probes (agents)

EPO has the following standard probes (agent):

- Windows server (CPU, memory: (physical and logically), disk space, EventLogs, services, tasks and processes)
- SNMP (ip-address & ObjectID)
- Windows Performance Counters
- Ping (availability and response time)
- Interface (command scripts, perl, SQLcommands, .net,…)
- HTTP (including automated substitution of parameters and variables for virtual user)
- ITIL proces monitoring (service levels for open incidents, problems, …)
- Backup job states
- Scripts (doscmd, perl, .net, visual basic, queries, …)

Only valid for EPO room monitoring:

- e-Nose (fragrance of burned electronics, Scorching, Volatile Organic Compounds cigarette smoke, etc.);
- Temperature; air humidity; leak water (airco, roof, water piping,…); Voltage level (for or after the UPS);
- Optional devices: webcam, door contact, fingerprint unit.

See chapter 9 “EPO Probes”, page 60 for how to configure the EPO probes.

2.7.1 Agentless

EPO monitored components, like servers, applications, etc., can also be monitored agentless (no EPO agent/probe installed on the monitored server itself). From the EPO-server (or a random other EPO probed machine) scripts can be scheduled (see the probe library for examples) which monitor the components remotely. EPO supports all known script languages through its external open interface.

For example: batch commands, SQL queries, PowerShell scripts, Perl or any other (scripting) language.

See paragraph 9.8 “External Probe” on page 69 for how to use this open interface.

2.8 Business Views

All measurements monitored by the EPO probes have their own service-levels (norms or thresholds). Measurements are mapped upon the EPO Business tree with colors indicating the state of the measurement according the individual service levels. All individual or combined states can be visualized into any picture.

Figure 1 EPO Business views examples

The way it works is that you can import your own picture, made by any picture editing software or programs like Microsoft Visio, and link the individual measurements with their state (and color) to a fenced of part of the picture. EPO will fill the corresponding state color into the linked part of the picture real-time and will update the state when needed. These Business Views can be used for the EPO-slideshow or EPO-screensaver to visualize the state of your Business 24x7. These Business Views fit in to normal desktop monitors but also on large wall televisions.

See chapter 7 for a full explanation of EPO Business Views.

2.9 System management/helpdesk CustomerCare

The built-in helpdesk module CustomerCare can be used for:

- Registration of incidents, change requests, problems, tasks, activities and other customer reports.
- Incident monitoring on Service-Level Agreements.
- Automated import of automatic registrations of returning line tasks
- Administration of spend helpdesk time
- SLA-reporting + invoice appendix spend helpdesk time

2.10 License points

EPO element contains out-of-the-box sufficient license points (100 EPoints) to aim for one of the key features:

- CustomerCare – helpdesk
- Chain monitoring
- Or remote monitoring.

EPO-license points (EPoints) are dynamically usable. EPoints can be used for enabling functionality, probes (agent) and clients.

The quantity required license points is not stipulated by what is installed, but by what is monitored (= what is in the business tree) and the number of simultaneously started EPO User clients:

1) Every end node in the business tree (= simple Managed object) costs 1 license point.
2) Exceptions are:

- The standard information of windows server: cpu, disk space, memory, eventlog and all services (max 5 EPoints per server)
- SNMP-information of a router/switch (max. 3 EPoints per router/switch)
- Performance counters (max. 3 EPoints per device)
- Xenserver/VmWare probes (max. 5 EPoints per host)
- Hyper-V probe (max. 5 EPoints per host)
- The (process monitoring of the) helpdesk module CustomerCare (50 EPoints)*
  *free since EPO 8.5

Simple Managed objects cost 1 EPoint for every time the Managed object has been incorporated in the business tree:

- EPO ICMPPing/availability or latency monitoring of an IP-address
- EPO HTTP-monitoring of a web address
- EPO openInterface monitoring with an external script
- EPO performance Counters

The license points for the use of the EPO business client, for example:

- EPO Administrator client : 20 – 29 EPoints*
- EPO User client : 15 EPoints per concurrent user*
- EPO Viewer client (read only) : 5 EPoints per concurrent user*

In the EPO Elements User Client the defined role (with rights) will determine the number of used license points. The EPO Webview doesn't use any ePoints yet, but can be used by 5 users concurrently.

The required license points for room monitoring:

- EPO room monitoring : license by means of the hardware

2.10.1 License points in use

The standard node "License Overview" shows the total number of license points that is in use. In the graph is shown:

- **Total owned EPoints**
  The line which reflects how many EPoints are bought and therefore how many EPoints can be used.
- **Business tree**
  The quantity EPoints which is in use in business tree
- **Client**
  The quantity EPoints which is in use by (*concurrent*) users.
  NB 15 EPoints have been reserved permanently for one user.
-

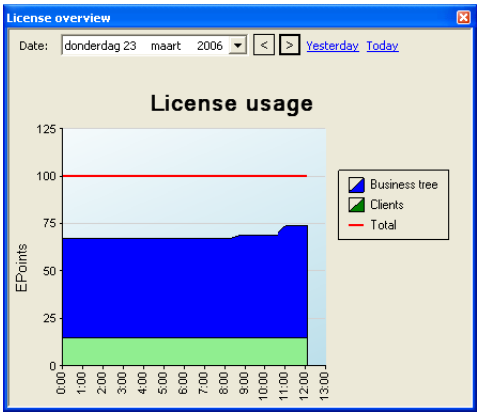
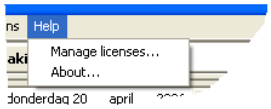


Figure 2 License points in use

The use of license points can be also be subject for proactive monitoring.

2.10.2 License overview

The menu option “Help \Manage Licenses…” will show an overview over the obtained licenses.



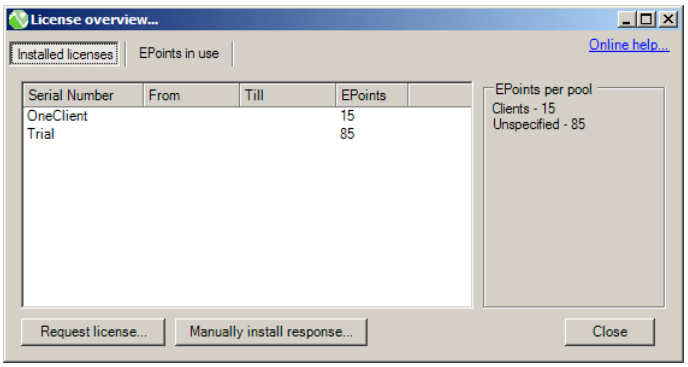
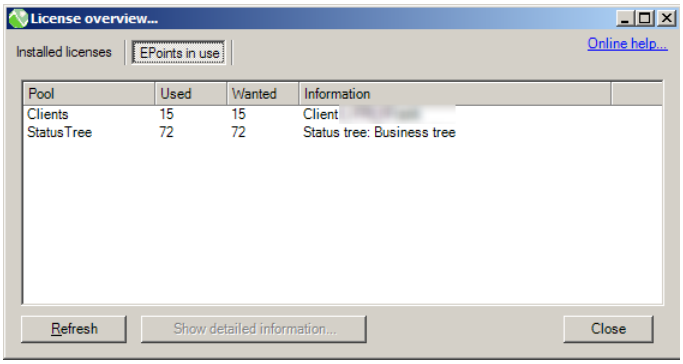


Figure 3 License overview

NB every installation of EPO element contains in advance the first 15 EPoints that are needed for starting at least one EPO user client.

License points in use

Select “Epoints in use”, select a pool and select “Show detailed information” for specific EPoint calculation.



2.11 Language

In the logon window you can select a language (English and Dutch). The labels of the Business tree and dropdown menus in the Helpdesk module can be set by the user in any language.

For the Business Tree: build the tree (menu option: edit \ Business tree \ …) in your desired language.

For the dropdown menu's in the Helpdesk module: define your own items (menu CustomerCare \ lookuptables \ …).

3 Installation

3.1 System requirements

- Windows: version: XP, 2000, 2003, Vista, 2008(R2), 7, 8, 2012(R2), 10, 2016
- CPU: minimum speed: 1 GHz
- Free disk space: minimum as from 10 GB
- Memory: min. 1 GB
- Microsoft .Net Framework: version 2.0 sp1 or higher

3.2 System recommendations

- CPU: recommended speed: as from 2 GHz
- Free disk space: recommended as from 80 GB
- Disks: SCSI, SAS or SSD
- Memory: > 2 GB

Optimal performance of EPO Elements is obtained by using EPO on a server without other applications.

3.3 Support for 64 bit

All EPO components can be used on 64bit operating systems.

3.4 Database

EPO Elements uses a file database for storing measurements. All other data items like tree definitions, thresholds and service windows are stored by default in a firebird database.

EPO CustomerCare standard is installed with the database Firebird (http://firebird.sourceforge.net/).

Advantages of this database:

- For free, compact and easy to maintain.
- Commercially independent
- Supported platforms on Linux, Windows, and several Unix

Organizations that want make (further) reports on the helpdesk registrations with a report generator such as for example Crystal reports are recommended to use another database, for example Microsoft SQLServer or PostgreSQL.

EPO CustomerCare can also use other databases, for example:

- Microsoft SQLServer
- Microsoft Desktop Edition (MSDE)
- Microsoft access
- Oracle
- PostgreSQL

3.5 Installation preparation

- Use an installation account with administrator rights
- Backup up the EPO directory.

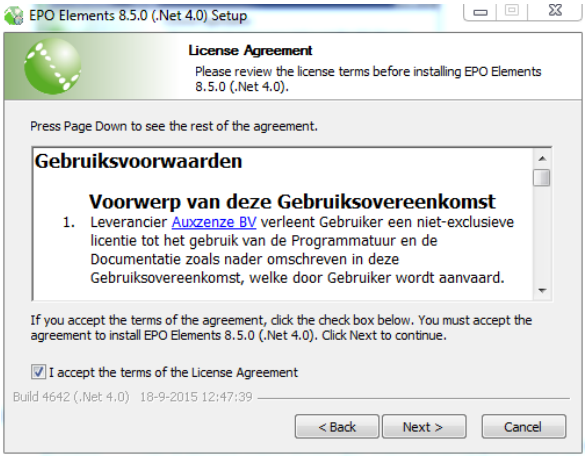
3.6 Installation

1. Run “EPO element v.v-bbbb Setup.exe”. Where v.v the version and bbbb the build number.

1. EPO Elements v.v-bbbb Setup.exe. Welcome screen

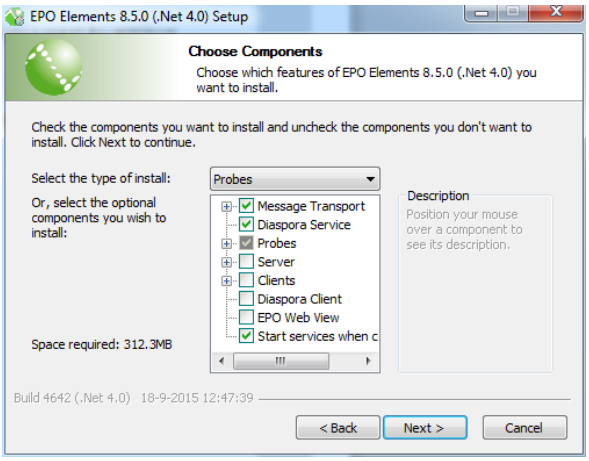
Click <Next>.

2. Click if you agree with the mentioned terms the checkbox “I accept …”



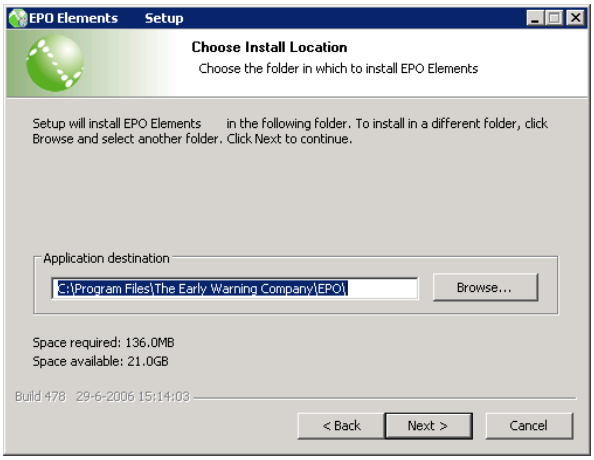
3. Click<Next>

4. Select the required type of installation:
   - probes : for a device from which (or from where) you want to retrieve information
   - client : for the operators
   - or full : for the server or for a stand-alone demonstration.



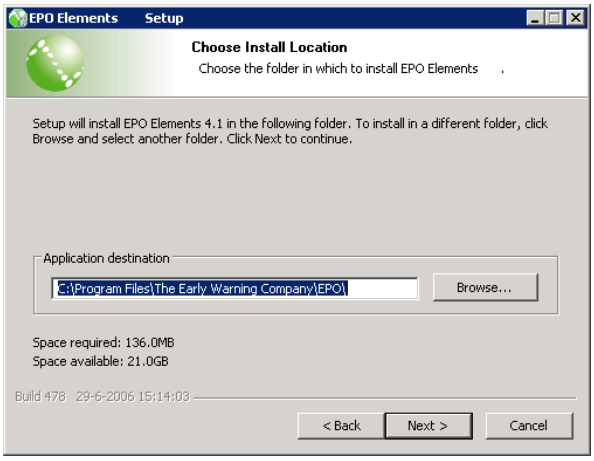
Click <Next>

5. If needed, change the installation path.



Click <Next>

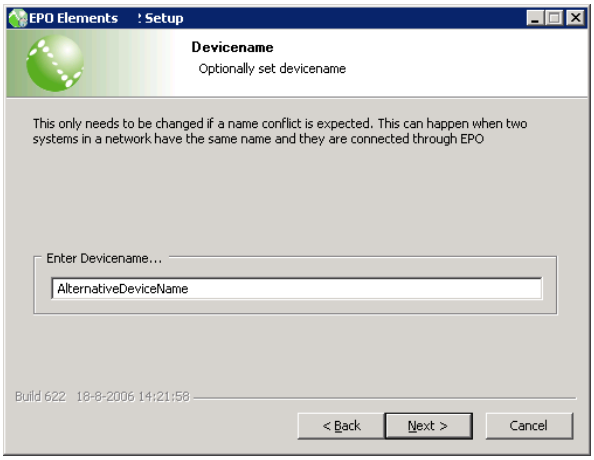
6. If needed, change the path where the data must be stored.



Click <Next>

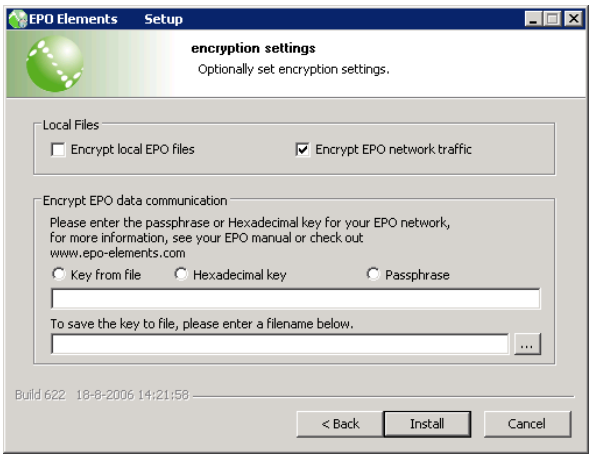
7. If needed, modify the name which the machine in the EPO network is identified with. This is necessary for identifying the desired measurement when measurements are mapped to the Business tree. Therefore the devicename must

be unique. Default: the server name.



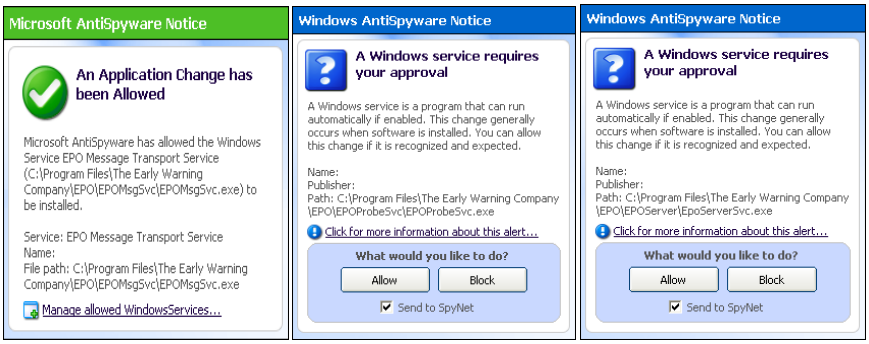
Click <Next>

8. Encryption Settings. The setting files and the data communication can be encrypted.

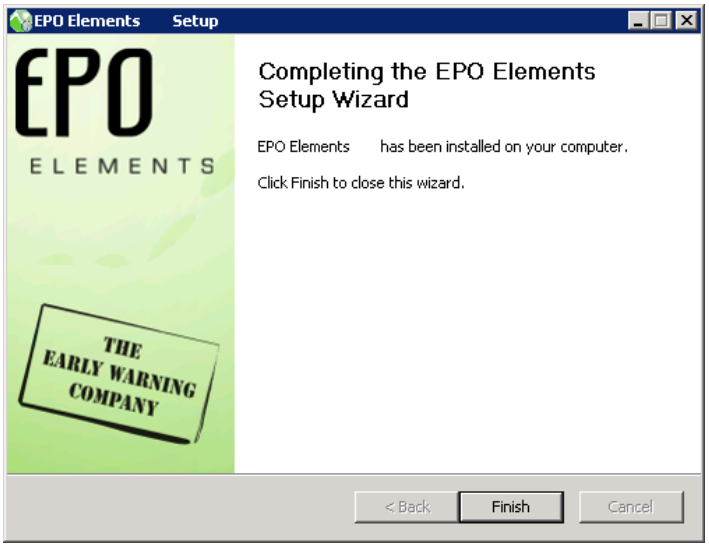


Click <Install> to start the installation

9. If anti-malware/anti-virus software is installed, these should allow the EPO installation to install de EPO services. The software will possibly ask for authorization.
   Examples:



10. Click <Finish> to conclude the installation successfully.



EPO Elements is now ready for use.

See paragraph 2.3, “Services”, page 12, for an overview of which components are installed during the EPO installation.

3.6.1 **Upgrade**

All EPO Elements 4.x versions can be upgraded during the 5.x installation with preservation of all probe data, the business trees, thresholds, service windows and helpdesk registrations. The installation detects which version is already installed. Changes in database or measurement structure can be applied during the installation process.

Make a complete backup of the program AND data directories for failover purposes.

Setup detects which components are already installed and will reselect these checkboxes in the option list. Reapplying the setup.exe will first uninstall all already installed options and then install the selected options. Uninstall and reinstall an option will not harm the configuration for that item.

3.6.2 Automatic installation

The installation wizard has been built with NSIS (Nullsoft Install system)

EPO components can be installed without interaction *(*silent *and* unattended). The installation options can be supplied in an .ini file:

```
[Settings]

;INSTDIR="C:\Program files\The Early Warning Company\EPO"

;INSTDATADIR="C:\Program files\The Early Warning Company\EPO\Data"

;DEVICENAME=

;LocalEncryption=1

;NetworkKey=AFB5B8A65E25BB81AFB5B8A65E25BB81

;NetworkKeyFile=

;DefaultConfigFile="Default.probeset"

;CustomEpoMsgSvcConfig=

StartServices=1


[Components]

EPOMsgSvc=1

EPODiasporaSvc=1

EPOProbeSvc=1

EPOProbeSvc_Windows=1

EPOProbeSvc_Common=1

EPOProbeSvc_Network=1

EPOProbeSvc_Security=0

;EPOProbeSvc_Checkit=0

;EPOProbeSvc_DemoData=0

;EPOProbeSvc_Version3=0

;EPOServerSvc=1
```

```
;EPOMailGatewaySvc=1

;Client_User=1

;Client_Viewer=0

;Client_Diaspora=0
```

; Means ignore rest of the line and if item already installed leave it unchanged

=0 means don't install item and uninstall if installed

=1 means install item and reinstall item if installed

Use:

Setup.exe [/S] /options =<**complete** ini path>

For example:

EPO element setup.exe /options=C:\Projects\EPO\Setup\Installoptions.ini

An EPO.fdb premade database file located in the same directory as the setup.exe will automatically be installed when the setup is run.

3.7 EPO User client through the internet

The EPO client can also connect to the EPO server through the internet or other network connection types.

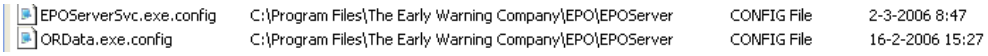
Required configuration:

Description	Configuration
By means of VPN	No extra configuration is necessary. The EPO User client discovers the available EPO-servers. (by UDP broadcast). Optionally: specify the server address (by resolvable name or ip)
Direct	By means of NAT (Native Address Translation) the relevant network components can be configured to make the connection possible. Intermediate firewalls and routers/switches between the domains must be set open for: - EPO : port 7471 TCP.

3.8 Post install points

3.8.1 Security

The following configuration files contain accounts and passwords for the used database:



Hint: Protect these configuration files by limiting access.

3.9 Uninstall

Use the Uninstall-EPO-application in the standard EPO program files folder for removing the EPO components.

Or use the Windows control panel to remove EPO.

3.10 Encryption

EPO can protect both the local settings files as well as the network communication by means of encryption. EPO uses 256 bit Rijndael encryption (AES). During the installation you can indicate what should be protected.

You can specify a key yourself in hexadecimal. It is also possible to use a passphrase. This will be converted to a key. The third possibility is reading a key from a file. This file can be generated from the installation by specifying a filename in the bottom field. The file can be used then as an import at another installation to simplify the roll out.

Another way to generate the key file is using the tool EPOMsgCmd.exe from the tools directory.

With the option - kf you can specify a key file to modify the current security key. In the same way it is possible to specify a passphrase with - kp and – k.

4 Use

The First Use Wizard will help you making the first definitions that are necessary.

4.1 First Use Wizard

The First Use Wizard is shown if an EPO client is started when there are no users defined in the EPO User manager.

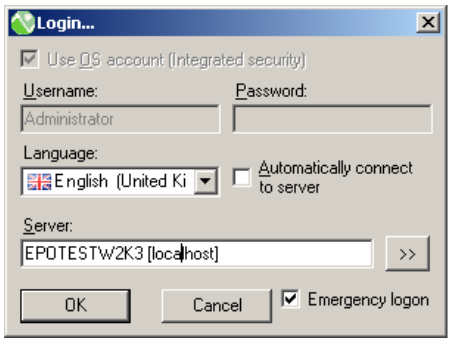
The following subjects will be handled:

- Introduction
- License activation
- Group definition with default security settings
- User administration with Active Directory import option
- Demonstration installation with live data
- Service Window definitions
- Business Tree selection

Which steps are already performed is kept in a server file called 'ExecutedFirstUseSteps.txt' in the …\EPO\data-directory (default c:\program files\the early warning company\epo\data).

4.2 Emergency Logon

In case you lost access to EPO Elements there is a back door build into EPO. This option is only visible if you start an EPO Client as an OS administrator on the EPO Server:

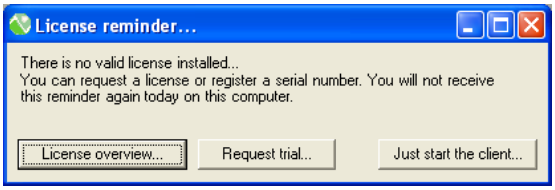


Select the option "Emergency logon". As a result the EPO User client is started with minimal menu options, just enough to make the necessary changes to the user base.

4.3 License activation

The activation of the license can be carried out with a proper Internet connection within a couple of minutes.

Step 1



- Select Request trial in the License reminder…: or (if the User Client is already started)
- Select the menu "Help \ Manage licenses…" and click afterwards the button "Request license"

The license can be activated in two ways:

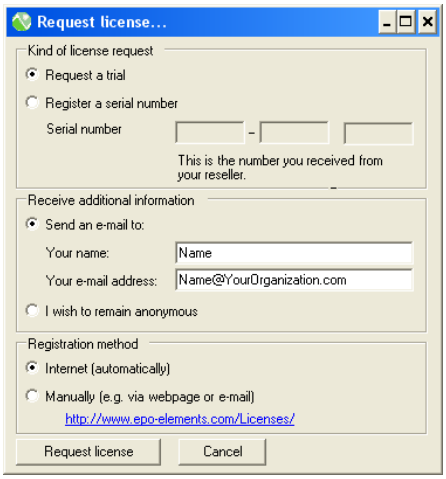
1) Temporary activation by means of a trial license.

2) By means of the serial number obtained at purchase of the software

4.3.1 Request a trial

Step 2a

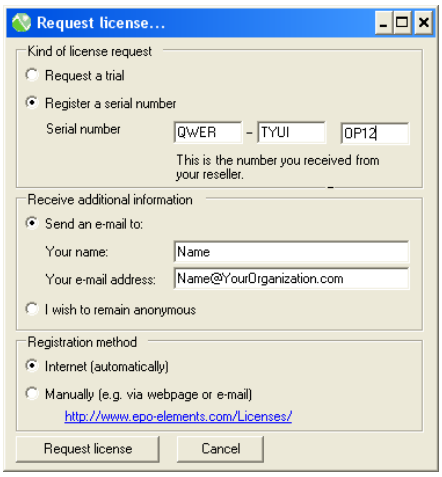
Specify the name and the e-mail address of the applicant or choose to remain anonymous:



4.3.2 Register a serial number

Step 2b

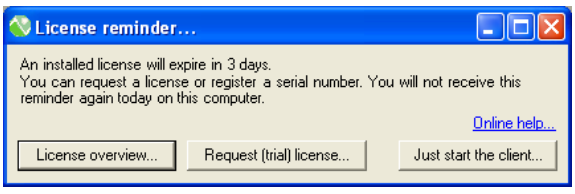
Specify the serial number that you have obtained by means of your reseller.



Click on Request license. The license has been now activated.

4.3.3 Reminder

The trial license can be used for 14 days and can be renewed once.



4.4 Basic information

4.4.1 EPO Status information

Node color	EPO State	Meaning
Green	*Normal*	The node and all underlying nodes meet their specified thresholds *
Yellow	*Warning*	The node (or one of the underlying nodes) contains a value which exceeds the warning threshold *
Red	*Critical*	The node (or one of the underlying nodes) contains a value which exceeds the critical threshold *
Black	*Down*	The node (or one of the underlying nodes) contains a monitored component which does not react to the information requests from the EPO-probe *
Blue	*Unknown*	The status of the node (or of the underlying nodes) cannot be determined *
White	*None*	- The node is empty - or the node and all underlying nodes have no thresholds specified.

* NB nodes can be specified explicitly not to propagate.

4.4.2 Propagation rules

Nodes

The worst status of a node in the business tree is propagated upward, from the “leafs” up the branches. The order of the EPO statuses, from worst to best, is:

Down (black), Critical (red), Unknown (blue), Warning (yellow)

Service levels (SLA)

Service Levels (Service Level Agreement = SLA) are propagated on the base of the aggregation of all periods of unavailability of underlying nodes (according their thresholds).

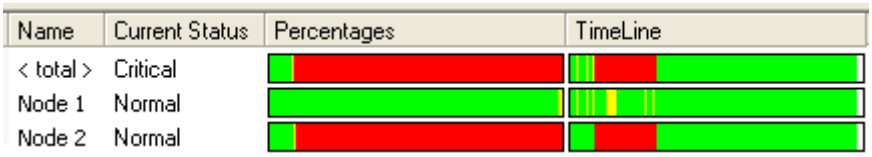


Figure 4 example of the aggregation of underlying SLA's

In the example above the first row (matching to the selected node in the business tree) is the sum of the periods of unavailability of the rows (= underlying nodes in the Business Tree) below.

4.4.3 Exceptions to the propagation rules

Exceptions to the standard propagation rules are as follows:

Node	State	Meaning
Dark green 	Maintenance	All underlying nodes have been placed in "Maintenance".
	Blockade (because of "Maintenance")	The (in red) node has been placed "Maintenance".
Dark grey 	Maintenance Window	All underlying nodes fall outside the Service Windows
	Blockade (because of Service Window)	The (in red) node falls outside the service Window

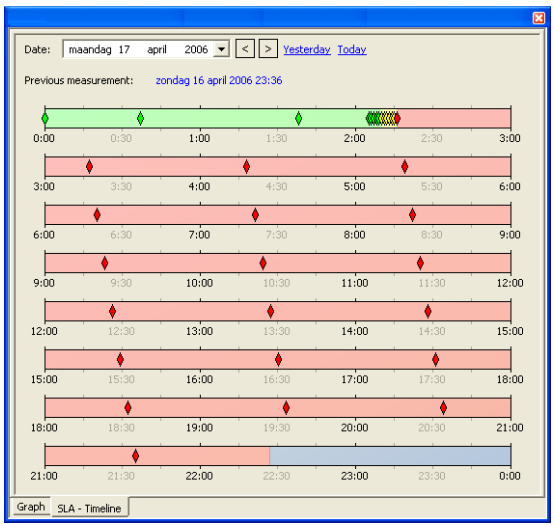
4.4.4 Propagation delay

Nodes also have the property "Propagation delay, Time". A node with this property set will not propagate its status until the time specified has passed. If the status changes back to Normal before the time has passed, the status will not be propagated at all. E.g.: A node has a delay of 2 minutes. At 3.00 the status changes to critical. The status will not be propagated until 3:02. At 3:01 the status reverts to Normal, so the critical status isn't propagated at all.

4.4.5 SLA timeline

Every node in the Business Tree has a SLA-timeline.

The SLA-timeline reflects the state information of a certain node on a certain day (the system date (=default) or a chosen day):



- From time 0:00 to 24:00 the state of the node by means of an indicating color at a certain time or during a certain period
- The color passages indicate the change of state.
- If it concerns an end node the performance indicators in the time line (the diamonds) reflect the state of the actual test moments (every diamond is a measurement in the database)
- The state of a node is stipulated by the established thresholds of the node. If it concerns not an end node the state is the aggregation of the underlying states.

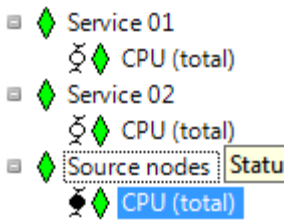
4.4.6 Measurements

The pattern in which the performance indicators (diamonds) are shown is stipulated by the configuration of the associated probe. It can be adjusted that measurements are passed on a fixed interval or that they passed on at sufficient deviation of the previous measurement.

4.4.7 Linked and leading nodes

It is possible to add multiple nodes in a business tree that use the same data, when, for example, your company has two services using, among other things, the same database server. If a property of that node needs to be changed, both nodes need to be edited separately. To facilitate this, a linked node may be created. A linked node is a copy of an existing node that inherits all properties of its leading node and will automatically have its properties changed when the properties of the leading node are. A linked node can be created by choosing copy from the right click menu and pasting a node as a linked node. The properties of this linked node can't be changed. A linked node has the following icon in front of it (edit mode only): . A leading node looks like this:

An example of a tree that utilizes linked and leading nodes can look like this:



4.5 Best practices using the business tree

Recommendations how to handle the EPO business tree:

1) Make sure the EPO business tree turns green again after an escalation solving the incident.

2) If a node in escalating state is different than *normal* for a longer time, you might want to do one of the following:
   - adjust the thresholds
   - place the node in a “Maintenance-group”
   - remove the node from the Business monitoring

4.6 First use of the Business Tree

One of the most important first steps is arranging the Business Tree.

The Business tree can be modified by:

- choose in the menu Edit the sub-menu Edit business Tree
- in the Business Tree with right mouse click “Enter edit mode”

4.6.1 **CustomerCare (helpdesk)**

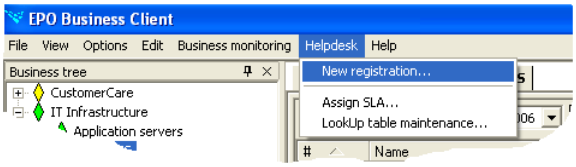
CustomerCare is the helpdesk support module. By means of simple recording and effective procedure monitoring appointments with customers can become complied with concerning the lead time of presented incidents, problems or questions.

CustomerCare has been developed support the registration process on basis of simplicity.

Example how CustomerCare can be used.

Make a registration of an incident report of a customer:

- choose from the menu helpdesk: New registration



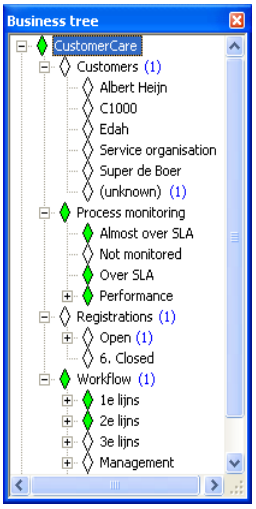
- Fill the relevant fields in: summary, description,…
- E.g. the persons involved (click on…):

  - the affected end user
  - the colleague to whom the recording is granted

Fill in the type of the recording: incident, change, problem,…

Mark that:

- As the affected end user at a customer has been selected and it has been chosen as priority that then the “need by date” is filled in by means of the SLA which has been coupled to the concerning customer.
- The person to whom the registration has been granted can access the registration in its own “todo – bucket” under workflow…



- There are under the CustomerCare-node four approaches to the (same) registrations:

1) From the customers point of view

- which registrations are open at a certain customer
- the possibility to be rapidly warned for certain customers as too much are open

2) From the process:

- which registrations are open
- which registrations are over the agreed time
- but especially which registrations will pass the due time stamp (according the SLA time).

3) From the registrations themselves: open, closed.

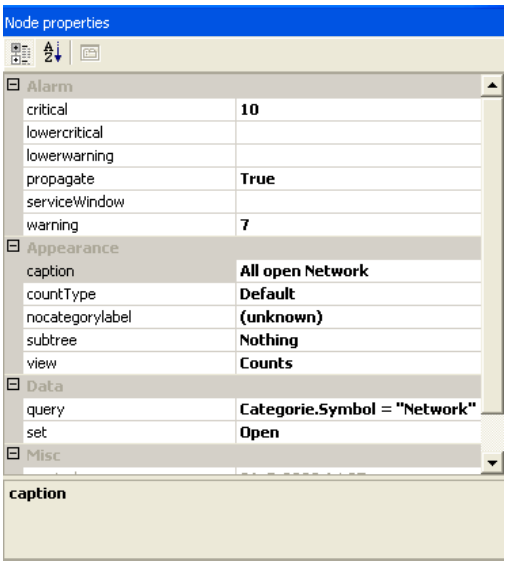
4) From the workflow/workload

- who has which registrations on its name
- who has too many registrations on its name

4.6.2 Additional CustomerCare Query

The CustomerCare default tree can be extended with additional views. In the Tree editor a node called “CustomerCare Query” can be dragged to the desired spot in the editable Business Tree from the Managed object.

Adjust the query with the required variable from CustomerCare.



Examples:

- Categorie.Symbol = “Network” for all registrations whereas the user selected “Network” as the category.
- Categorie.Symbol = “Citrix”
- RegistrationType.Symbol = “Incident”
- (NeedByDate >= Today()) AND (NeedByDate <= Today(timespan("23:59")))
- CloseDate.Date <= Now(timespan(“-12:00”))

Other variables that can be used:

- RegisteredBy.Symbol
- MonitorSLA.Symbol
- Categorie.Symbol
- RegistrationType.Symbol
- Impact.Symbol
- Priority.Symbol
- Status.Symbol
- Summary.Symbol
- Description.Symbol
- ExternalReference.Symbol
- Solution.Symbol
- Notes.Symbol
- Assignee.Symbol
- Requestor.Symbol
- AffectedEndUser.Symbol
- Publish.Symbol

4.6.3 **Room monitoring***

The Room monitoring Unit can be connected in two ways through a TCP network:

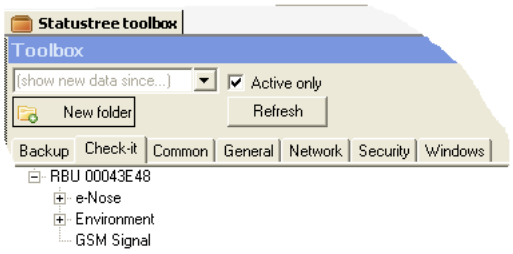
- In the same network segment is an EPO Checkit probe installed.
- The Unit can connect through port 2000 with an EPO Checkit probe somewhere else.

Figure 5 Checkit Room monitoring unit (RBU)

The Checkit will retrieve a ipaddress by means of DHCP (default). You can supply a fixed ip address by starting the “RBU IP Configurator”. The ip address is visible in its LCD display.

The Checkit probe can be activate by means of the EPO User client: select the menu “Edit \ Probe configuration”, Select a device in the same segment (where EPO-probes are installed), select the green probe icon and selected and enabled the “Checkit probe”.

Afterwards (after a couple minutes) the newly discovered Checkit (RBU) is selectable by means of drag-and-drop in the Toolbox Window in the TAB page “Checkit”.



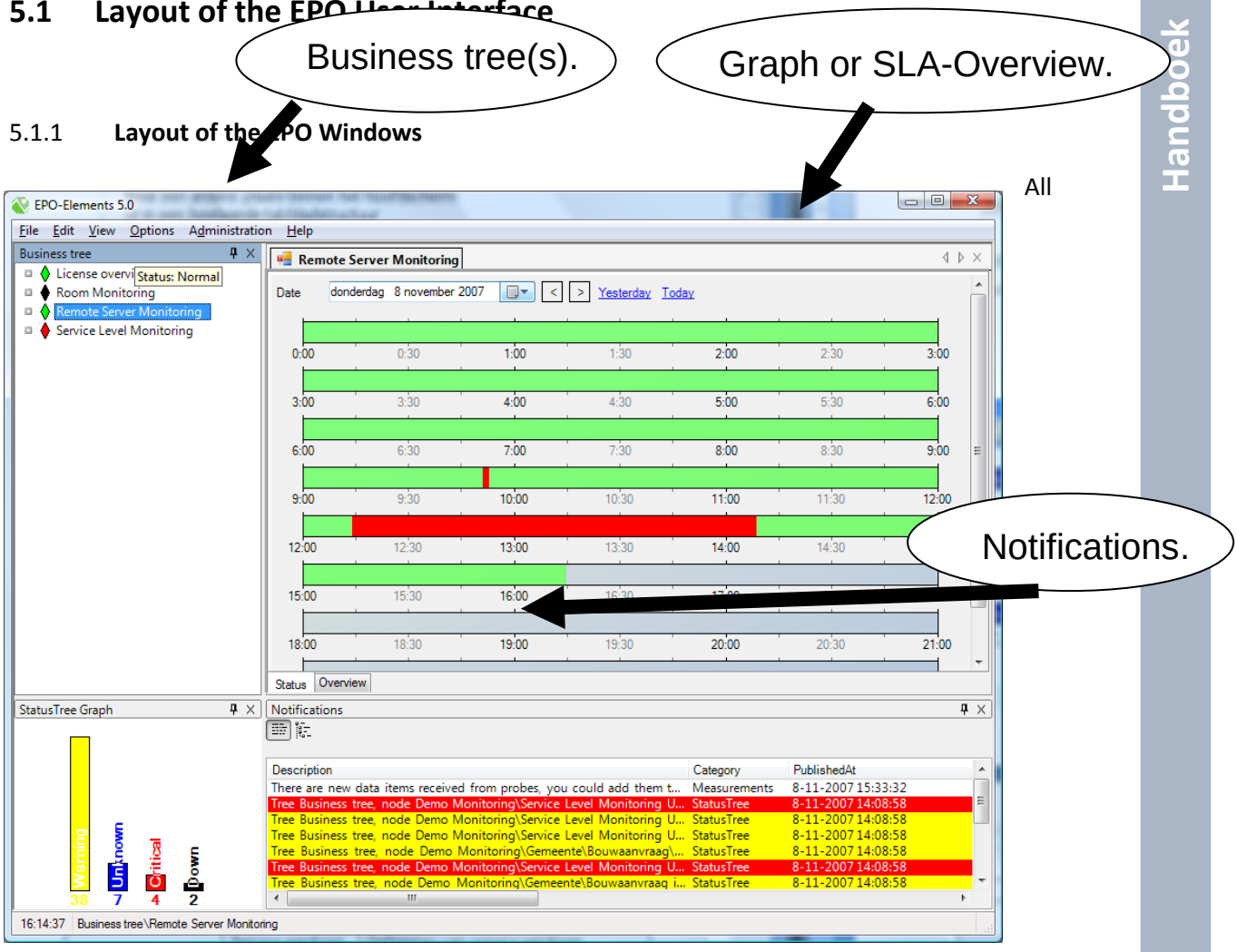
*No longer available

5 EPO-Functionality

In this chapter EPO-functionality is listed by describing all menu items.

5.1 Layout of the EPO User Interface

5.1.1 Layout of the EPO Windows

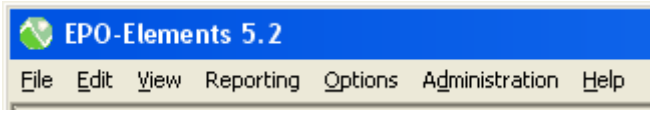


All windows (Business tree, StatusTree Graph, Notifications, …) and separate tab pages can be drag-and-dropped:

- towards another place in the main window
- or to another existing tab structure
- or outside the main window (multiple screens)

5.2 EPO-menu structure

Short description of EPO functions.



Menu	Sub-menu	Description
Edit	Probe configuration…	To configure: - Probes - Room monitoring Units (RBU's) - Network/communication - eMail/SMS-gateway
	Business trees	To change a business tree: - Nodes (new, delete, change) - Thresholds
	Business Views	Add your own pictures and let them be filled with actual state colors.
	Find	Find a node in the currently opened business tree.

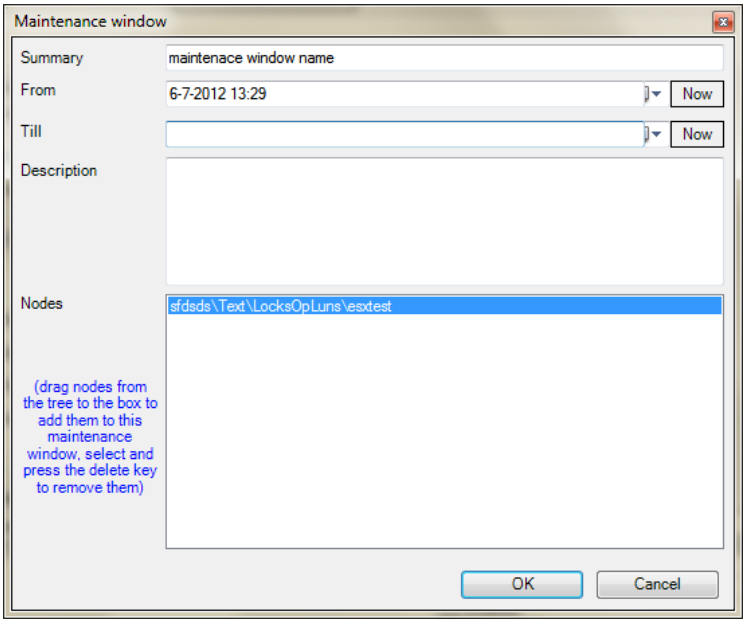
Menu	Sub-menu	Description
View	Business Trees	Select Business Tree to view
	Status Tree Graph	To show a diagram bar with number of actual notifications
	Task Panel	<not used yet>
	Notification…	List containing all notifications (states other than normal).

Menu	Sub-menu	Description
Options	Layout Locked	Prevent sub windows to be dragged
	Auto connect to server	Reuse connection settings next time

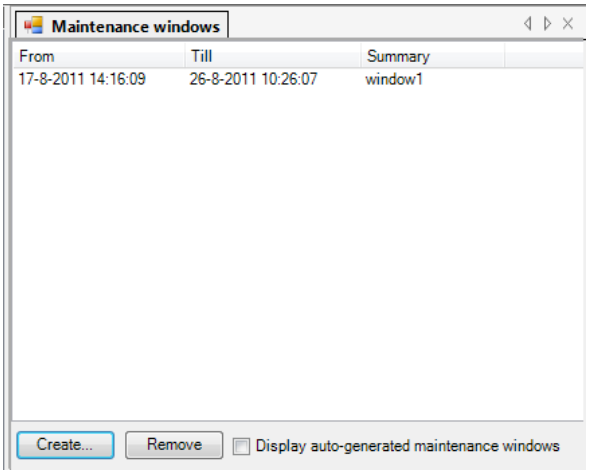
Menu	Sub-menu	Description
Administration	Maintenance Windows…	Lists of temporarily disabled tree nodes. Typically used when components are being serviced.
	Service window…	Definitions of services windows. Can be applied to nodes (in edit business tree mode) to prevent propagation outside specified period.
	Users & Groups…	Definitions of users, groups and (allowed) functionality.
	Measurement database…	Archive the measurement database
	Business trees…	Administration of the Business trees (add, remove and map to allowed groups)
	Escalation rules…	Definitions of escalation rules (trigger an escalation to email, SMS or application)

5.2.1 Maintenance Windows

When a node temporarily needs to be disabled because of planned maintenance, a maintenance window can be created. The easiest way to do this is by right clicking on a node and selecting “Set node in maintenance”. A new maintenance window is created starting now and containing the node. More nodes can be added by clicking and dragging them into the nodes list.



A maintenance window is closed when the “till” date is in the past. To close a maintenance window now, press the “Now” button.



The maintenance window overview window contains a list of all maintenance windows. You can remove a maintenance window completely by clicking “remove”. This is not recommended, however, when you use SLA reporting. When a maintenance window is removed, the statuses the node(s) in the maintenance widow had will count towards the SLA calculation.

Maintenance windows can be generated from a script. If for example a reboot is scheduled, a script can put the nodes affected in maintenance. Usage is as follows:

EPOMsgCmd inmaintenance <full node path>

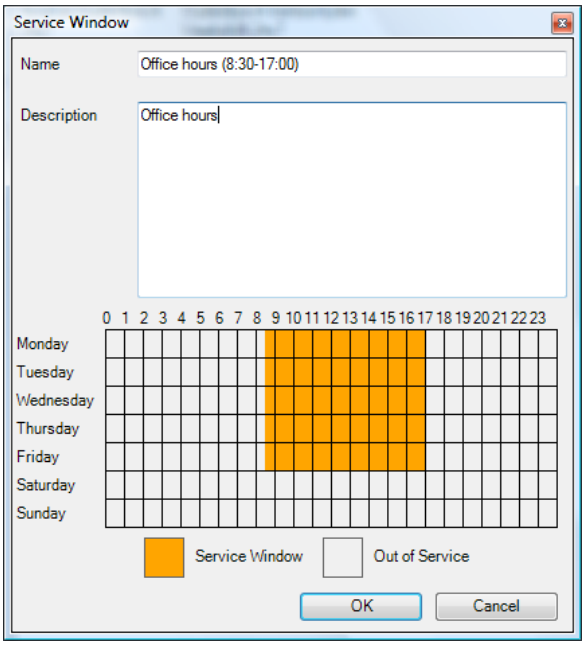
EPOMsgCmd outofmaintenance <full node path>

EPOMsgCmd ismaintenance <full node path>

Ismaintenance can be used to check whether a node is in maintenance or not.

5.2.2 Service Window

Service windows are used to limit escalations to the service hours.



Defined service windows can be applied to:

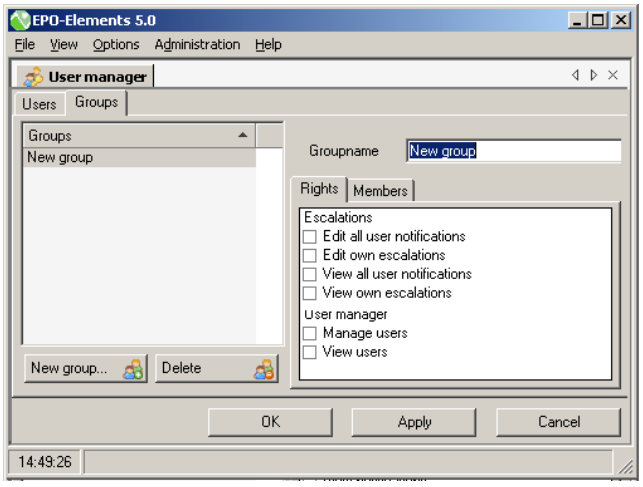
- A business tree node,
  escalations will only be propagated within the service window.
  See §4.4.3, “Exceptions to the propagation rules”, page 34.
- An escalation rule,
  actions will only be activated within the service window

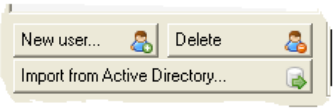
Use the create button to define a new service window.

Drag a square with the mouse for the desired service window or click for individual time slots (smallest period is 6 minutes).

5.2.3 User Manager

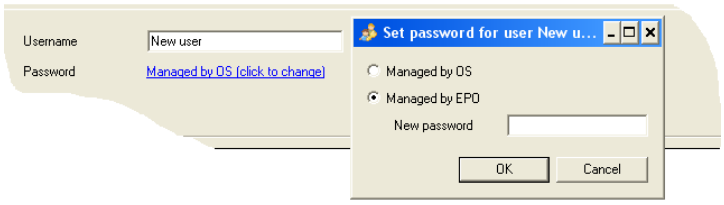
Use the user manager to define users, groups and allowed functionality.





Users can be imported from Microsoft's Active Directory if the EPO Server is part of a domain.

EPO can also manage an own user database.

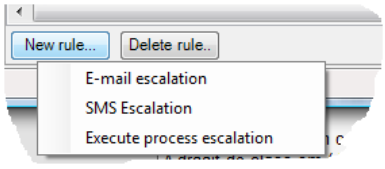


Password: choose whether the password should be managed by the Operating System (default) or by EPO.

5.2.4 **Escalation rules**

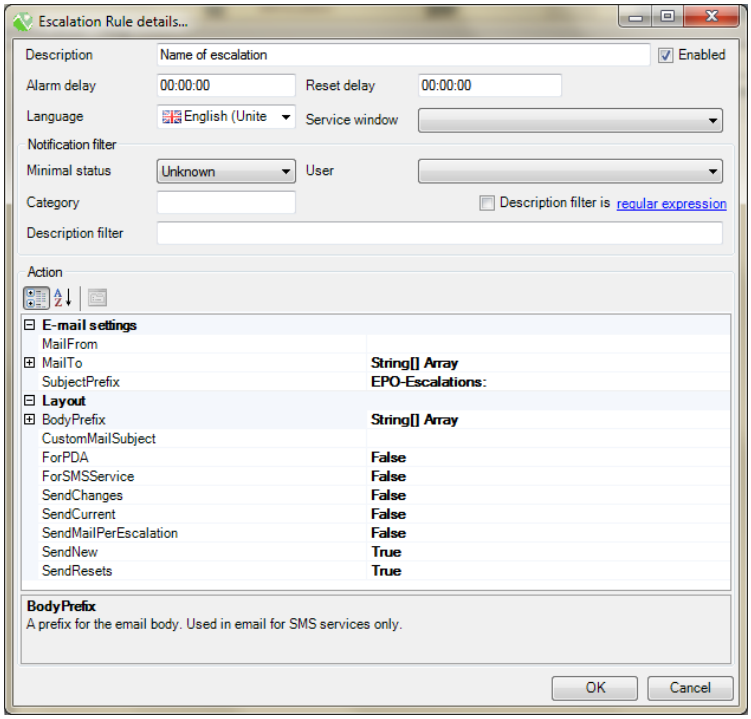
A notification is raised after a threshold value is violated (all visible in the window Notifications). An escalation rule can be used to activate an action as follow-up.

Use the "New rule…"-button to define a new escalation rule.
Choose the desired follow up action:



- E-mail (requires a mail server that allows relaying for the EPO server)
- SMS (additional hardware is needed)
- Execution of an process

For configuring the email gateway see § 11.6, "EPO Mail gateway", page 121 for specifying a smtp server.



The most straightforward and therefore the simplest way of using an escalation rule is to specify only:

- Description : title of the definition
- Minimal Status : perform the escalation action for this state and worse
- Description Filter : unique string identifying the notification (by example the (unique) node path from the business tree (right mouse click on node and choose “copy to clipboard” and paste over here))

All settings:

Alarm delay (hh:mm:ss) : the alarm (action) will only be executed when the error status (minimal status) is raised for this entire period. This is typically used to prevent single measurements to escalate and also used in combination with “Reset delay” to prevent a burst of notifications lead to a burst of escalations (messages).

Reset delay (hh:mm:ss) : amount of time the monitored item should be in “a not error state” before performing the reset (action). This means that after the monitored item is not any longer in an error state and after this amount of time has been elapsed the reset (action) is performed. New Alarm

(actions) will only be performed after the reset delay. This is typically used in combination with "Alarm delay" to prevent a burst of notifications lead to a burst of escalations (messages).

Service Window: the escalations rule is only active in the defined service window (time frame)

Minimal status: the escalations is only triggered for notifications that apply to the specified status AND worse (the list order is sorted from less to worse). Use "None" if the Status is already part of the description filter.

User: the escalation is only triggered for this specified user or all users if nothing is specified.

Category: <not used yet>

Regular Expression

Description filter: expression to define which notifications should escalate to the defined action. The filter can contain:

- A string defining one or more notifications to escalate on
  (by example the customer name to define one rule for all nodes for that particular customer or the text "CPU" to define one rule for all CPU escalations)
- A more advanced (regular) expression (a regular expression (= a sort of advanced wildcard))

The description filter is applied to the description of the notifications.
To build a description filter use the node path (or a part from it) from a Business Tree (right mouse click Business Tree – copy node path to clipboard) or use the notification description (right click on a notification – copy description to clipboard).

Syntax of the description of a Notification:

(Tree <name>, node <complete node path> is <status>).

Use normal text for straight forward text compare and use the more advanced characters of regex to define patterns like:

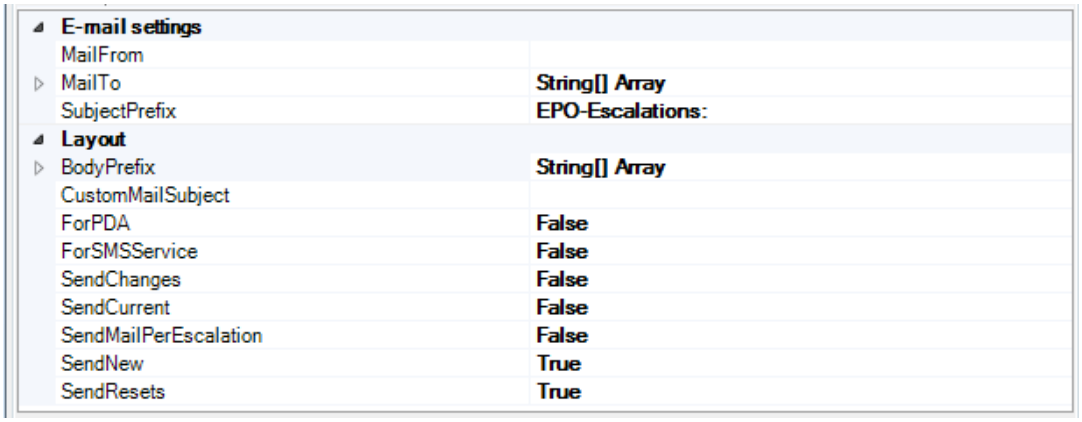
- ^text : text should align start of the notification description

text$: text should align end of the notification description

For more advanced definitions see one of the many tutorials on the web for regular expressions.

Each escalation type has its own Action properties

Email escalation



MailFrom: The sender mail address of the mail, required

MailTo: A list of recipients

SubjectPrefix: A text that is prepended to the subject

CustomMailSubject: Usable when “SendMailPerEscalation” is true. Creates a custom mail subject and does not use the email body. The subject can be used with the following placeholders that are replaced by their corresponding data

- {STATUS} : The EPO Status of the notification
- {CATEGORY}: The Category of the notification
- {TEXT}: The text column of the notification
- {DATAKEY}: The data key of the data the notification is based on (Status Tree notification only)
- {PATH[Number]}: A path of a node is the complete text of all parent nodes of the node added together with a ‘/’ I between. E.g. rootnode/company/server/harddisk/C. Number corresponds with the part of the path. PATH[1] translates to rootnode.
- {NFnodepropertyname}: NFCaption translates to the Caption of the node that caused the notification.
- {DATE}: The date the notification is published
- {TIME}: The time the notification is published

ForPDA: The formatting is changed to increased readability on a small screen.

ForSMSService: The formatting is minimized to fit in a text message

SendChanges: The action is performed when the notification has changed

SendNew: The action is performed when the notification is new

SendCurrent: The action is performed when the escalation manager is triggered*.

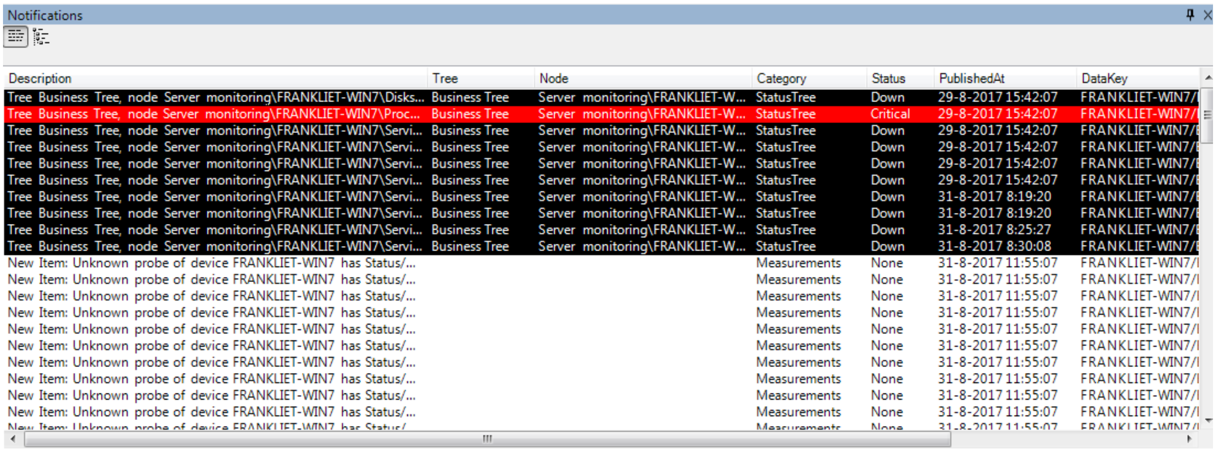
SendReset: The action is performed when the notification is removed.

SendMailPerEscalation: Send one email per escalation. (Default is one email when the escalation manager is triggered*)

*The escalation manager is triggered at a certain interval and when there is a change in the list or status of notifications

5.3 Notifications

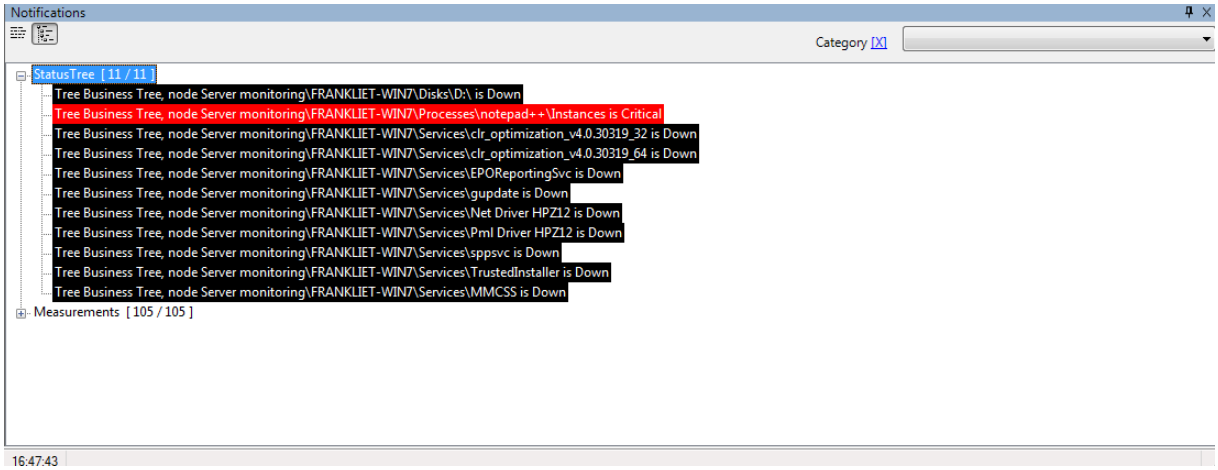
The notification window



Description	Tree	Node	Category	Status	PublishedAt	DataKey
Tree Business Tree, node Server monitoring\FRANKLIET-WIN7\Disks...	Business Tree	Server monitoring\FRANKLIET-W...	StatusTree	Down	29-8-2017 15:42:07	FRANKLIET-WIN7/
Tree Business Tree, node Server monitoring\FRANKLIET-WIN7\Proc...	Business Tree	Server monitoring\FRANKLIET-W...	StatusTree	Critical	29-8-2017 15:42:07	FRANKLIET-WIN7/
Tree Business Tree, node Server monitoring\FRANKLIET-WIN7\Servi...	Business Tree	Server monitoring\FRANKLIET-W...	StatusTree	Down	29-8-2017 15:42:07	FRANKLIET-WIN7/
Tree Business Tree, node Server monitoring\FRANKLIET-WIN7\Servi...	Business Tree	Server monitoring\FRANKLIET-W...	StatusTree	Down	29-8-2017 15:42:07	FRANKLIET-WIN7/
Tree Business Tree, node Server monitoring\FRANKLIET-WIN7\Servi...	Business Tree	Server monitoring\FRANKLIET-W...	StatusTree	Down	29-8-2017 15:42:07	FRANKLIET-WIN7/
Tree Business Tree, node Server monitoring\FRANKLIET-WIN7\Servi...	Business Tree	Server monitoring\FRANKLIET-W...	StatusTree	Down	29-8-2017 15:42:07	FRANKLIET-WIN7/
Tree Business Tree, node Server monitoring\FRANKLIET-WIN7\Servi...	Business Tree	Server monitoring\FRANKLIET-W...	StatusTree	Down	31-8-2017 8:19:20	FRANKLIET-WIN7/
Tree Business Tree, node Server monitoring\FRANKLIET-WIN7\Servi...	Business Tree	Server monitoring\FRANKLIET-W...	StatusTree	Down	31-8-2017 8:19:20	FRANKLIET-WIN7/
Tree Business Tree, node Server monitoring\FRANKLIET-WIN7\Servi...	Business Tree	Server monitoring\FRANKLIET-W...	StatusTree	Down	31-8-2017 8:25:27	FRANKLIET-WIN7/
Tree Business Tree, node Server monitoring\FRANKLIET-WIN7\Servi...	Business Tree	Server monitoring\FRANKLIET-W...	StatusTree	Down	31-8-2017 8:30:08	FRANKLIET-WIN7/
New Item: Unknown probe of device FRANKLIET-WIN7 has Status/...			Measurements	None	31-8-2017 11:55:07	FRANKLIET-WIN7/
New Item: Unknown probe of device FRANKLIET-WIN7 has Status/...			Measurements	None	31-8-2017 11:55:07	FRANKLIET-WIN7/
New Item: Unknown probe of device FRANKLIET-WIN7 has Status/...			Measurements	None	31-8-2017 11:55:07	FRANKLIET-WIN7/
New Item: Unknown probe of device FRANKLIET-WIN7 has Status/...			Measurements	None	31-8-2017 11:55:07	FRANKLIET-WIN7/
New Item: Unknown probe of device FRANKLIET-WIN7 has Status/...			Measurements	None	31-8-2017 11:55:07	FRANKLIET-WIN7/
New Item: Unknown probe of device FRANKLIET-WIN7 has Status/...			Measurements	None	31-8-2017 11:55:07	FRANKLIET-WIN7/
New Item: Unknown probe of device FRANKLIET-WIN7 has Status/...			Measurements	None	31-8-2017 11:55:07	FRANKLIET-WIN7/
New Item: Unknown probe of device FRANKLIET-WIN7 has Status/...			Measurements	None	31-8-2017 11:55:07	FRANKLIET-WIN7/
New Item: Unknown probe of device FRANKLIET-WIN7 has Status/...			Measurements	None	31-8-2017 11:55:07	FRANKLIET-WIN7/
New Item: Unknown probe of device FRANKLIET-WIN7 has Status/...			Measurements	None	31-8-2017 11:55:07	FRANKLIET-WIN7/

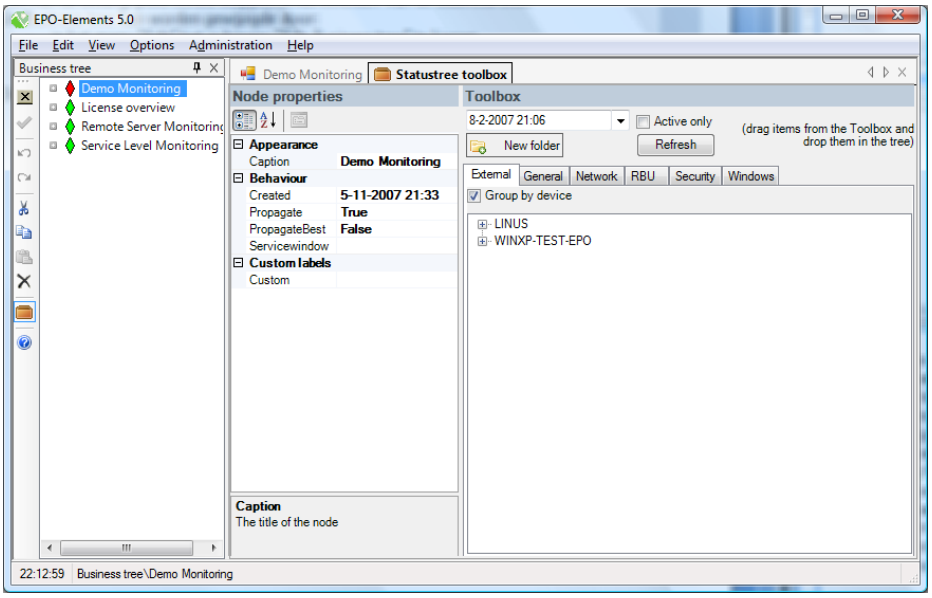
Notifications can come from several sources. The category column notes the source. Status tree notification are caused by changes in the Business trees. The category ‘Measurements’ displays notifications from the toolbox. The toolbox generates a notification when there’s new data available. The notifications disappear after a day.

Clicking the Tree icon changes the notification view from a list to a grouping structure.



Use the dropdown on the right to add more columns to group by.

6 Arranging the Business Tree



The Business Tree editor consists of three components:

1) **Left window: The business tree(s)**
   The Business Tree is the visualization of the measurements. Individual service levels (thresholds or norms) determine the state of the corresponding node. The Business tree can be modified, possible modifications are:
   - Add measurements
   - Specify individual thresholds.
   - Aggregate monitored components into a folder (drag the 'new folder' button)
   - Delete nodes or folders

   On "save" the modifications will be applied on the Business Tree (for all connected EPO User Clients).

2) **Middle window: Node properties**
   Properties determine the behavior of the node. For example: thresholds can be modified or propagation of its state can be blocked.

3) **Right window: The toolbox**
   The toolbox is the set of items with which the business tree can be extended. It contains templates, new folder structures but most of all: the measurement types monitored by the probes.

6.1 The Toolbox

The Toolbox consists of several categories (External, General, Network, RBU, Security and Windows). All components (and also compositions (folders) with components) can be drag-and-dropped to the editable business tree. The categories are:

1) **Windows**
   Results of the default windows probes (CPU, memory, disk, services, events)
   Drag-and-drop a complete windows server group to a place in the Business Tree.

2) **General**
   - Backup Monitoring
   - CustomerCare
   - Customer Care Query: can be used to make specific helpdesk views.
   - Folder: important element to make groups of monitored components that combine to one Service Level (SLA).
   - License Overview
   - Merge Folder

3) **Network**
   Results of the network probes: ping, SNMP and web(service)

4) **Hardware**

   Results of probes that monitor physical hardware. Current the only probe is a probe that monitors server hardware (HP/Dell/IBM etc.) that support the Redfish API

5) **RBU (Room monitor)**
   If you attached the Room Monitoring Unit from within this TAB you can drag-and-drop the measurements: temperature, voltage, humidity and from the eNose: scorching and Volatile Organic Compounds.

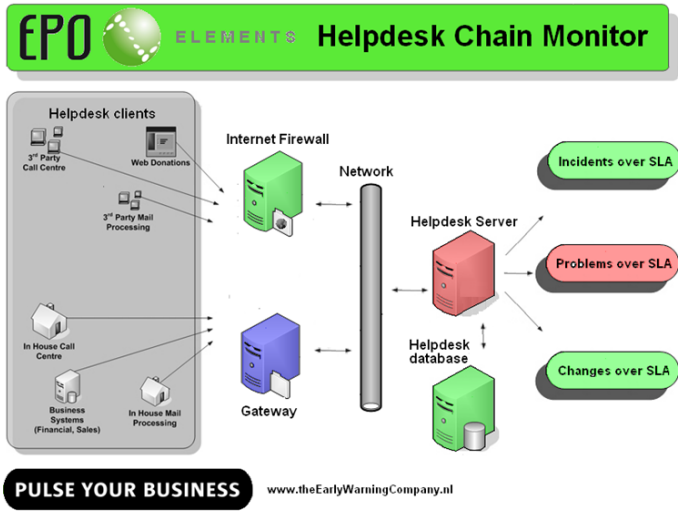
6) **Security**
   If you have connected a webcam it is possible to enable the photo function with the triggers from the room monitor (e.g.: door contact). It's also possible to use the motion detection capabilities in combination with email to send images to EPO.

7) **Common**
   Results of the open interface probes (external probes), the virtual machine probes (VMWare/XenServer/Hyper-V)

7 Visualizing monitored results into EPO Business Views

7.1 General

EPO Business Views work by importing your own picture (png, jpg or bmp from paintbrush, Microsoft Visio, AutoCAD, …) and link actual state colors to a part of the picture.



EPO will use the actual measurements with their norms (thresholds) and fill the corresponding state color into the linked part of the picture.

Notice that clicking on the object will bring you to the linked EPO node for analyzing which service level is superseded.

EPO Business Views are a fast way to real-time process visualization of your schemes, organization overview, process flows, KPI overviews and building maps.

These Business Views can be used for the EPO-slideshow or EPO-screensaver to visualize the state of your Business 24x7. These Business Views fit in to normal desktop monitors but also on large wall monitors.

7.2 How to make Business Views

Make sure that there are measurements and a business Tree then perform the next steps.

7.2.1 First create the actual Business View

1) Select menu option “Edit \ Business Views…”
2) Click the “Create”-button in Business View Window to create a new Business View.
3) Supply a name
4) Click the “Load image”-button to load a new picture (preferably .png, but also .bmp or .jpg)
5) Drag-and-drop a node from a Business Tree to a fenced part of the picture. As well end-nodes (the actual measurements with their state determined by their thresholds) as intermediate nodes (representing an chain of linked states) can be used
6) Use the link properties if necessary:
   - *FillOpacity* : the “see through” percentage
   - *Show normal state* : should green be visible?
   - *Status* : actual state (for testing purposes)
   - Display As : display as an EPO status (color) or a number (if applicable)
   - *BoundaryColor* : color of the fence (default black)
   - *Location* : the drop-coordinates
   - *Tolerance* : penetrating capacity of the boundary (percentage)
7) Click the OK-button when you are finished linking

7.2.2 Place the Business View into a Business Tree

1) Select menu option “Edit \ Business Trees\ <Business Tree where you want the Business View to be visible>
2) Select the node where you want the Business View to be visible (normally one of the top nodes).
3) Select the node property “BusinessView” and select in the drop down box the name you have given to the Business View during the creation of it.
4) Click the save button on the left of the Business Tree

7.2.3 Editing an existing Business View

1) Select menu option “Edit \ Business Views…”

2) Double click an existing Business View for editing

3) New picture: click the “Load image”-button. Pay attention to the fact that if objects in the picture are redrawn on another position the links should be applied again.

4) Check a Link: select with left mouse either the object or the link itself in the right corner above. As a result the link is visualized as a cross on the fill coordinates and the corresponding link in the right corner above is selected.

5) Remove link: select link in right corner above and right click mouse on it for deletion

6) Replace a link: select link in right corner above and right click mouse in picture for new fill point (this is an alternative for: delete link and drag-and-drop node again from Business Tree)

7) Additional nodes: drag-and-drop nodes from Business Tree

7.2.4 EPO Business View Client

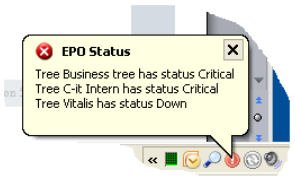
Use this client (if installed during the EPO Client installation) for a slide show of all or the selected Business Views. Use the menu option “File \ Options…” for selecting the properties like switch interval and zoom options.

7.2.5 EPO Business View Screensaver

Select in your Display properties of your monitor the EPOBusinessView screensaver (if installed during the EPO Client installation). Use the settings for login account information, selection of Business Views and the zoom options.

7.2.6 EPO Tray Icon

If installed during the EPO Client installation the tray icon presents the overall states of the selected Business Views.



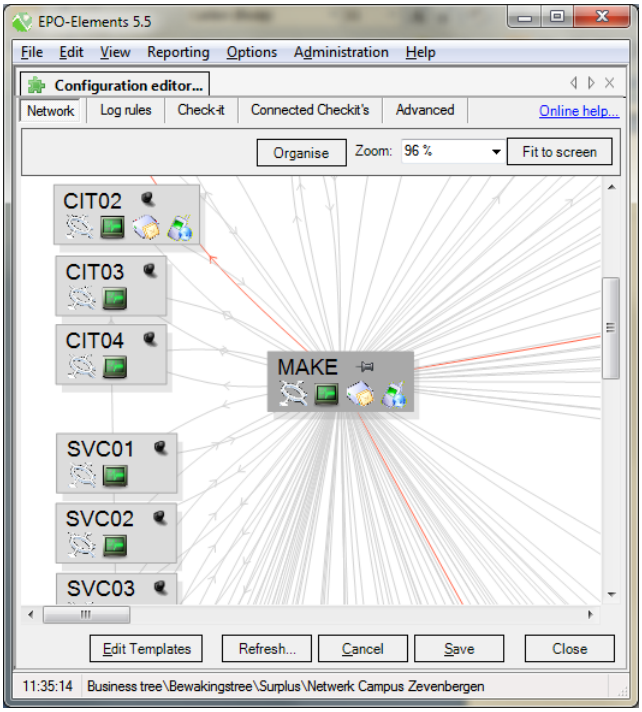
- *Connect…”* : for the login settings for connecting to EPO”.

- *Options…* : for settings like sound and selection.

8 EPO configuration editor

The probe configuration editor also includes a general screen for managing the EPO network. This chapter will explain the visual settings.

For details configuring (new) devices see chapter 11.5.

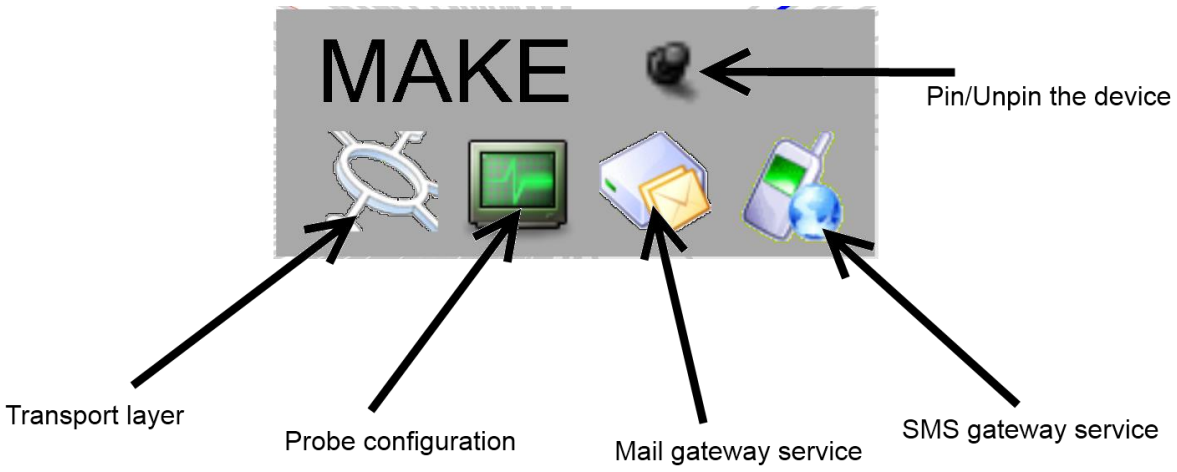


The editor is used for managing the EPO-network. Each device on the EPO-network has a grey icon with its EPO name and one or more icons. The device name is given when running the EPO setup, defaulting to the NetBIOS name. The EPO server is displayed in slightly darker grey.

Each device has lines running to and from it, signifying the connections between the various EPO devices. A grey line is an active connection, a red line an inactive one.

The view as seen with the EPO is client is de the state of the network known to the EPO server and might not be what other devices see. Knowing this is important when troubleshooting EPO-network related problems.

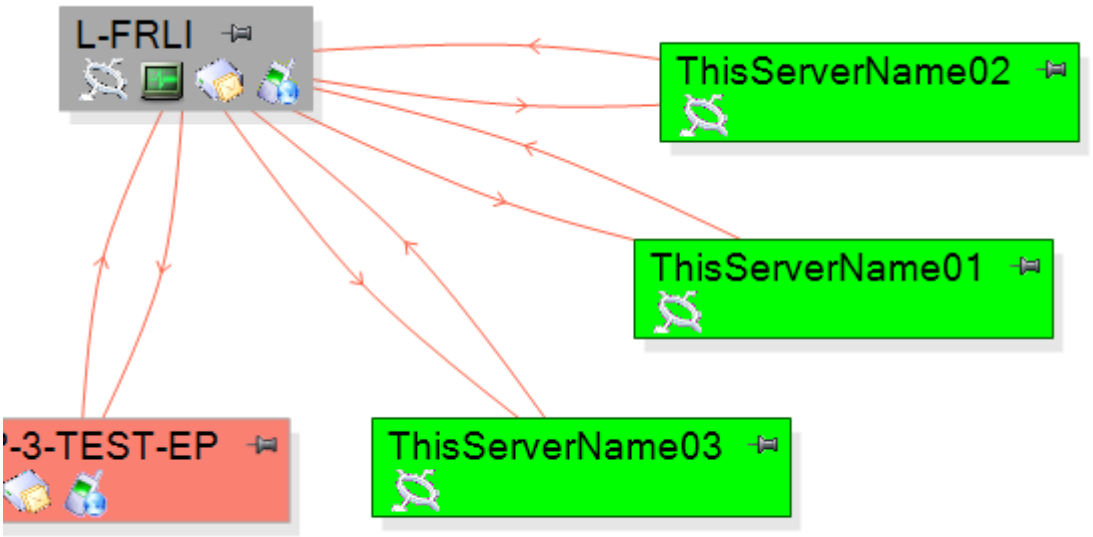
Devices can be organized automatically using the “Organize” button. Left clicking-and-dragging can be used to move a device. Devices can be pinned in place by clicking the pin icon in the top right corner of a device. The other icons on a device are, from left to right, configuration options for the EPO message transport layer, the probe service, the mail gateway service and the sms gateway service. These options are explained in their respective chapters.



The “fit to screen” button tries to fit all devices into the currently visible section of a window.

8.1 Finding a device

When the amount of devices increases, it can become hard to find a device you’re looking for. Typing a (part of a) device name will highlight all matching devices in green. So for example if you’re looking for the server named ThisServerName, you can find it by typing “server” when the network configuration editor window is active. If there are more devices with the same name the window will center and zoom to an area encompassing all matching devices.



9 EPO Probes

In the following paragraphs is described which information can be collected by the EPO probes.

9.1 How to add new probes

By means of the menu “edit probe configuration” probes can be added or changed.

EPO Probed computers have green icon (monitor-with-pulse-graph), Clicking this will lead to the probe settings for the selected computer.

The listed probes in the next image belong to the default monitor settings of EPO. The probes marked with checkbox are actively (on that selected server) and collect therefore measurements.

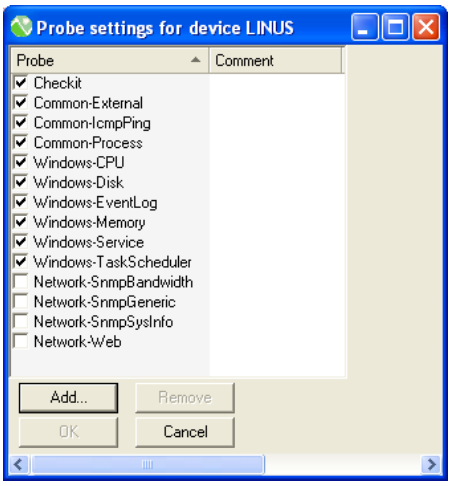
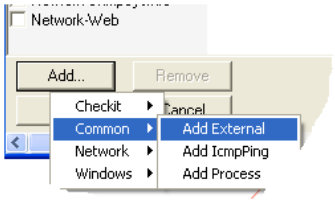


Figure 6 Standard EPO probes

A probe can be added by:

- Activate a not yet activated probe (select checkbox and configure…)
- By means of the add-button to add additional probes.

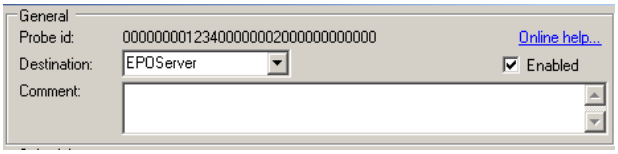


9.2 Use a template for probe settings

Probes and probe settings can be copied from one device (i.e. an example or template device) and be pasted to another device. To do so:

- Select one or more probes in the probe settings list and right mouse click + copy
- Open the probe settings of the target machine and choose right mouse click + paste.

9.3 Probes: General properties



There are a number of properties which apply to all probes.

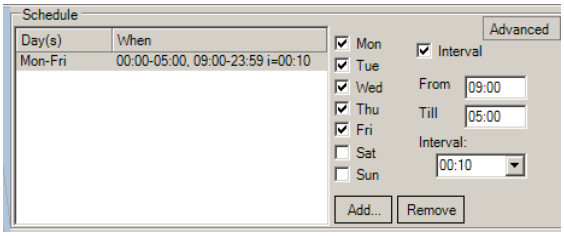
Destination: Sets the destination of the measurements of the probe, default is EPOServer, which is the default name of the EPO Server.

Enabled: switch the probe on or off.

Comment: gives a short name to the probe. This will be shown in the general probe settings window.

9.3.1 Advanced schedule settings

A number of probes have the possibility of advanced schedule settings.

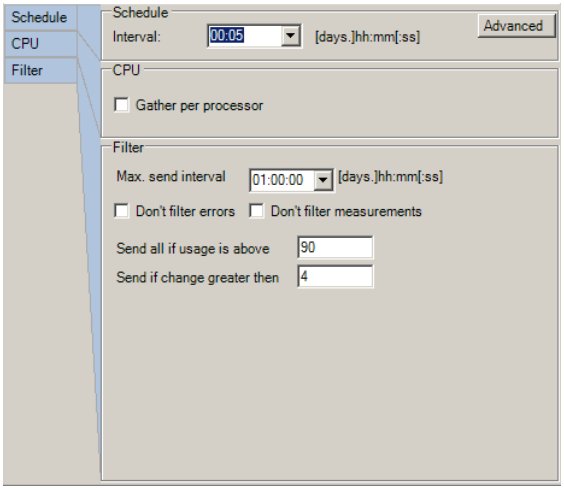


A schedule can be established with and without interval. Several schedules can also be established. In the example is a schedule defined for running the probe from Monday to Friday, between nine up to five o'clock with an interval of 10 minutes.

9.4 CPU Probe

The CPU probe reads the usage of the CPU from over the specified interval. The CPU-usage is the calculated average for this interval. The probe can cope with several logical or physical CPU's.

Settings



Interval: Time for which the average CPU-usage is calculated. With the advanced button more complicated schedules can be established.

Gather by processor: The measurement is sent for each processor or only as a calculated total.

Filter

Maximum. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

Send if change greater then: Filters measurements on base of change. As a new measurement is less than the indicating % or number of bytes compared to the last sent measurement, these new measurement will not be sent.

Send all if usage is above %: The percentage CPU usage above which measurements do not have be filtered.

9.5 Backup Probe

The backup probe retrieves jobs and their state from the backup tool itself. Unlike other EPO probes the backup probe is designed to automatically display new jobs automatically in a Business Tree.

This backup probe is designed for Arcserve and BackupExec. BackupExec supported versions up to 2012.

Installation

The backup probe should explicitly be selected during the installation.

The installation steps for new EPO Users:

1. Full install on the server (EPO Server, probes and clients)
2. Probe install on the backup server. Select the Backup probe during the setup process.
3. Additional client install (if necessary) on client desktop(s)
4. The first Administrator logon to EPO will start the Setup wizard.
   During the setup:
   - choose to create a Business Tree
   - choose to include the "Backup Monitoring" in the Business Tree.
5. As a result the backup probe will recognize existing backup jobs and it will continuously monitor their state. The results are automatically forwarded to the EPOServer from where it is viewable by the EPO clients.

The installation steps for updating EPO Users:

Alternative 1 (automated update and manual install the Backup Probe)

1. Upgrade the EPO Server
2. Use the EPO update manager Diaspora to update all probe machines
   As the default update only updates existing functionality the backup probe itself must be installed additionally: run the setup on the backup server(s) and during the setup fase where

the functionality is selected choose to install the additional backup probe.
(use alternative 2 if you want to automate the installation process)

3. Upgrade all EPO client desktops

4. Make the results available by editing the Business Tree and drag-and-drop from the toolbox (tab general) the item “Backup Monitoring”. EPO will dynamically present the jobs in that node. It is also possible, like other EPO data, to drag the individual jobs from out the Backup tab to normal EPO folders in the Business Tree.

Alternative 2 (automated update including the backup probe)

1. Upgrade the EPO Server

2. Edit the file installoptions.ini (packed with the downloaded setup)
Remove the “;” from the row “EPOProbeSvc_Backup” and specify “=1”

; means ignore rest of line and if item already installed leave it unchanged
=0 means don’t install item and uninstall item if installed
=1 means install item and reinstall item if installed

An example you could use:

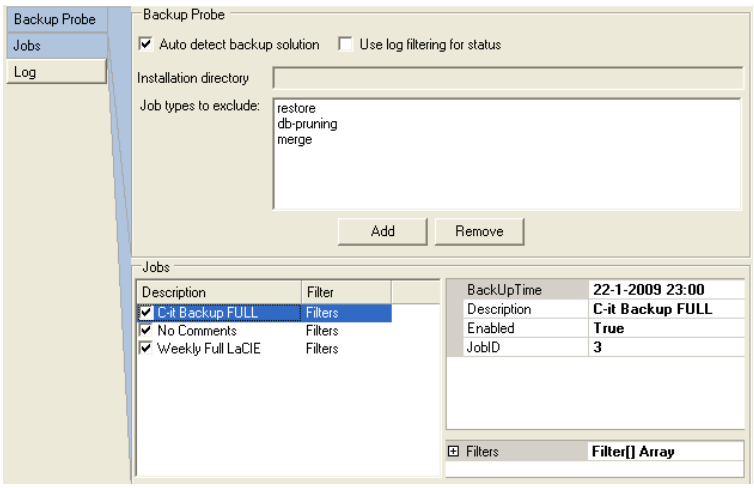
```
; usage:
;   <setup exe> [/S] [/options=<full ini path>] [/log=<full logfile path>]
; e.g.:
;   "EPO Elements x.x-xxx Setup.exe" /options="C:\Projects\EPO\Setup\InstallOptions.ini" /log="C:\LogFile.txt"

[Settings]
;; INSTDIR="C:\Program files\The Early Warning Company\EPO"
;INSTDATADIR="C:\Program files\The Early Warning Company\EPO\Data"
;DEVICENAME=
;LocalEncryption=1
;NetworkKey=AFB5B8A65E25BB81AFB5B8A65E25BB81
;NetworkKeyFile=
;; StartServices=1

[Components]
;; EPOMsgSvc=1
;; EPODiasporaSvc=1
;; EPOProbeSvc=1
;; EPOProbeSvc_Windows=1
;; EPOProbeSvc_Common=1
;; EPOProbeSvc_Network=1
;EPOProbeSvc_Security=0
EPOProbeSvc_Backup=1
;EPOProbeSvc_Checkit=1
;EPOProbeSvc_DemoData=0
```

```
;EPOProbeSvc_Version3=0
;EPOServerSvc=1
;EPOMailGatewaySvc=1
;Client_User=1
;Client_BusinessView=1
;Client_TrayIcon=1
;Client_Diaspora=0
```

NB This example is to be used for adding only the backup probe to existing probed machines. If you want to make install options that work also for new machines: remove from above mentioned example all double semicolons (;;)

3. Use the EPO update manager Diaspora to update the Probe machines
   - After installation in step 2 the default setting is that the backup probe is activated. If you don't want to activate the Backup probe on all your servers you can uncheck that probe in their probe configuration and in case of a lot of servers it is easier to use Alternative 1 or you can make different Install options (a special one for Backup machines).
4. See last step from Alternative 1

Settings



Auto detect backup solution: the backup tool will be discovered using registry settings from the tool itself.

Use Log filtering for status: if unchecked the backup tool will be asked for the states of the jobs. If checked you can specify filter settings (the triggers from the log file that will result in normal, warning or critical) yourself.

Installation Directory: if auto detect doesn't work the information can be specified manually.

Job types to exclude: specify jobs that don't need to be monitored.

Filters: the triggers that are used to filter the backup log for success or fail messages. These settings will only be used if "Use log filtering for status" is checked.

The results can be included into the Business Trees in two ways:

1) Automatically: Use from Statustree toolbox (edit mode of the Business Tree) the folder "Backup Monitor" from within the TAB "General" and drag this *container* for all new discovered backup nodes to the desired Business Tree.

2) Manually: this is the normal way the measurements are drag-and-dropped into the desired folder node.

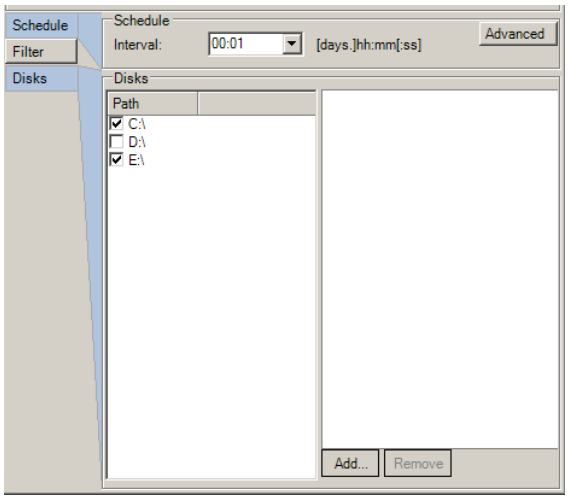
9.6 Disk Probe

The Disk probe measures the space usage of a logical drive.

At the first activation of the probe, these will produce a list with the available drives on that particular machine. Network drives are not captured and drives for removable media are, however, incorporated in the list but are default not activated.

Used space and free space values are both gathered, both absolute and as a percentage.

Settings



Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Filter

The measurements are forwarded to the EPOSERVER according the filter settings.

Maximum send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

Send if change greater then: Filters measurements on base of change. As a new measurement is less than the indicating % or number of bytes compared to the last sent measurement, these new measurement will not be sent.

Disks: With the Add and remove button new disks can be added which do not appear in the default list.

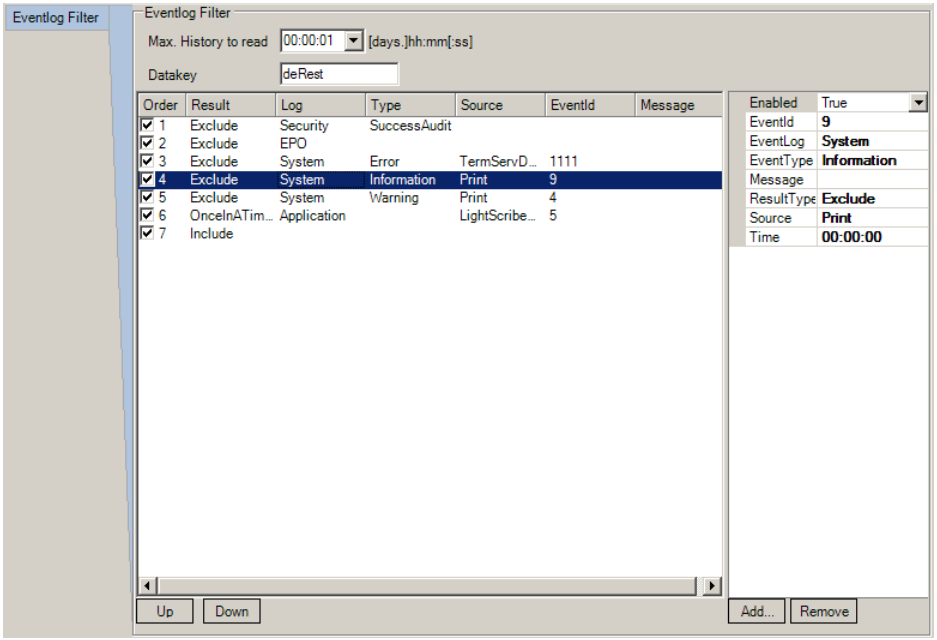
Disk Mounts

Disk mounts need to be added by hand. Click the Add button and enter the path where the disk is mounted. This will make the disk appear in EPO and have all properties local disks have as well.

9.7 Event log Probe

This probe registers events which occur in the windows event log of the probed machine. Events can be filtered to allow only certain events through.

Settings



Event log Filter

Max. History to read: Maximum period that the event log must be read in case of first activation or in case of restarting; 0 means the complete log.

Datakey: Key under which the data from these event log probe must be stored. It is possible to activate several probes and give each a separate filter, with this Datakey the results can be distinguished.

Filter

The event log probe knows its own filter method.

The filter has 4 options:

- Include,
- Exclude,
- OnceInATimeSpan and Time.

Include: Use events which meets the conditions

Exclude: Do not use events which meets the condition

OnceInATimeSpan and Time: Events which meet the conditions will be passed once every specified time.

Events will be distinguished by comparing the EventID, the Source, the type of entry and the text, where all numbers in the text are cleared.

Each filter can be established by means of up to 5 criteria: Eventlog, Source, EventID, Message and type.

Multiple filters can be set. Each new windows event will be evaluated according the list order. In the above mentioned example the first 5 filters define the type of messages that should be filtered out. The 6th filter defines that if the new event meets that settings it will only be passed to EPO once in the specified time.

Notice: the last filter should be an include definition otherwise no events will be passed.

9.8 External Probe

The External probe is the interface to your own commands or scripts (or example probes you can find in the probe library on the EPO Elements forum).

For EPO to create status or number data, the script result must contain certain key words. The key words are preceded by an indicator that shows the type of message EPO must create. Every message type has its own list of allowed key words.

Status message type	Example
[EPO: Status]	[EPO: Status]
Datakey=*KEY*	Datakey=*BackupCheck*
Status=*STATUS*	Status=*Normal*

Timestamp= Date Time *(optional)*	Timestamp=2007-01-15 08:00:00
[/EPO]	[/EPO]

Number message type	Example
[EPO: Number]	[EPO: Number]
Datakey= *KEY*	Datakey = *NumberOfFiles*
Number= *NUMBER*	Number = *5*
Timestamp= <date Time *(optional)*>	Timestamp= 2007-01-15 08:00:00
[/EPO]	[/EPO]

Text message type	Example
[EPO: Text]	[EPO: Text]
Datakey= *KEY*	Datakey= *backup-summary*
Status = *STATUS*	Status = *Critical*
Text = *TEXTROW1*	Text = *JOB Tuesday - Complete*
Text += *TEXTROW2*	Text += *backup unsuccessful*
Timestamp= <date Time *(optional)*>	Timestamp= 2007-01-15 08:00:00
[/EPO]	[/EPO]

NB Possible values for STATE can be found in 4.4.1

Datakey (a user defined label) is the key under which the measurements are stored in the EPO database. The datakey can be of the form text1/text2/text3. This will create a branch structure in the Toolbox (See chapter 6.1) and will facilitate the adding of nodes to a business tree by creating the branch structure from script.
If you need to add a '/' in a datakey you van escape the / with a +. So text1+/text2 will create a single datakey text1/text2. To escape + use ++.

Without a specified timestamp the timestamp is equal to the moment of the processing of the measurement. Optionally the timestamp can be given in the output of the script. The format of the Timestamp is: yyyy-mm-dd hh:nn:ss.

There is no limit to the amount of EPO messages a single script can create

All possible Status message keys:

key	Required	Description
datakey	X	Identifier
device		Name of the source device (default the EPO name of the server the external probe is run from
timestamp		Default = time at creation of the message
dontsend		No data is sent, but the EPO server is informed that the script run succeeded. Without this you need to send data or the EPO server will set the status to 'unknown'
status	X	Add an explicit status to the message, this status will be combined with the status coming from the thresholds (if set).

All possible Number message keys:

key	Required	Description
datakey	X	Identifier
device		Name of the source device (default the EPO name of the server the external probe is run from
timestamp		Default = time at creation of the message
number	X	Any number
dontsend		No data is sent, but the EPO server is informed that the script run succeeded. Without this you need to send data or the EPO server will set the status to 'unknown'
status		Add an explicit status to the message, this status will be combined with the status coming from the thresholds (if set).

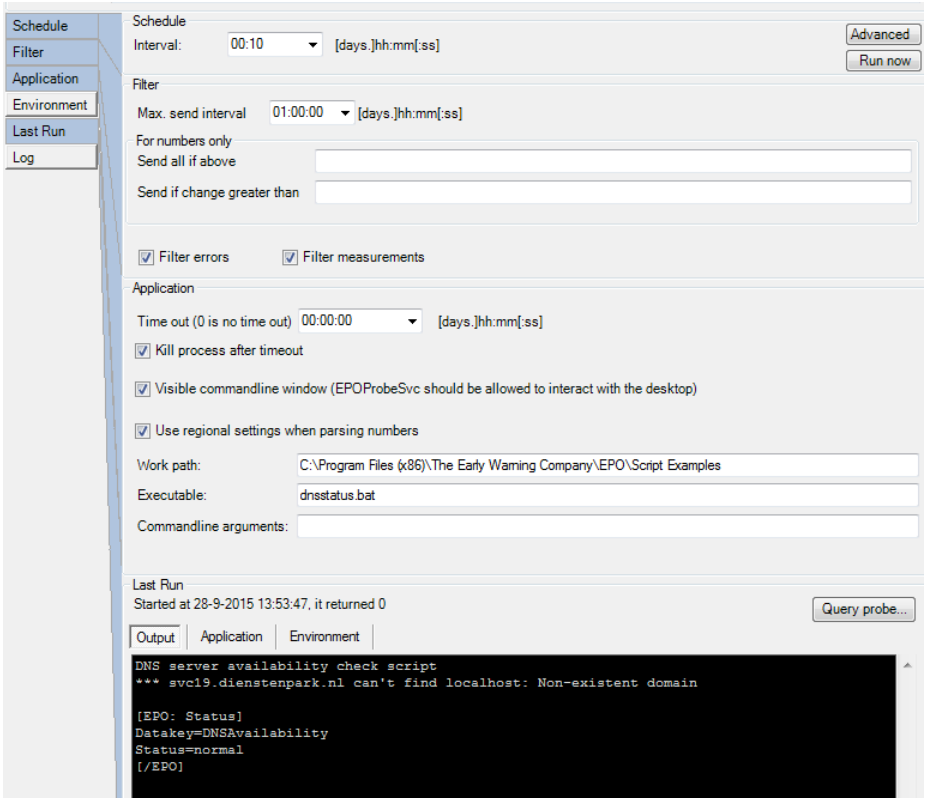
All possible Text message keys:

key	Required	Description
datakey	X	Identifier
device		Name of the source device (default the EPO name of the server the external probe is run from
timestamp		Default = time at creation of the message
text	X	Add valus as a text response. Special usage: The "Text+=" row can be used as frequently as is necessary. The text appears in the EPO User client

		as a tool tip at the measurement (diamond) and in a separate tab called 'list'. [text]text2send[/text] will also work and can span multiple lines
dontsend		No data is sent, but the EPO server is informed that the script run succeeded. Without this you need to send data or the EPO server will set the status to 'unknown'
status		Add an explicit status to the message, this status will be combined with the status coming from the thresholds (if set).

See the 'script examples directory' for real examples using the external probe.

Settings



Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Filter

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

For numbers only: (externals can return any kind of data, these properties only work for numbers)

Send all if above: Filter measurements based on the absolute size. While the number is below this value, the measurement is filtered.

Send if change greater then: Filters measurements based on change. When the number in a new measurement is less than the number in the measurement last sent, the new measurement will not be sent.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

Application

Timeout: How long is waited for the result of the external script.

Kill Process after timeout: if timeout occurs should the process be killed?

Visible command line window: should the output of the script be visible in the command line window on the machine where the script runs.

Use regional settings when parsing numbers: Sometimes you have no control over the way numbers are displayed and you're not able to change to regional settings. When this option is turned off numbers will always be interpreted in the same way (e.g. 3.14 equals pi and not 314). Default is: on.

Executable: complete name (extension included) of the application

Command line arguments: optional arguments

Work path: complete path to the executable

Example

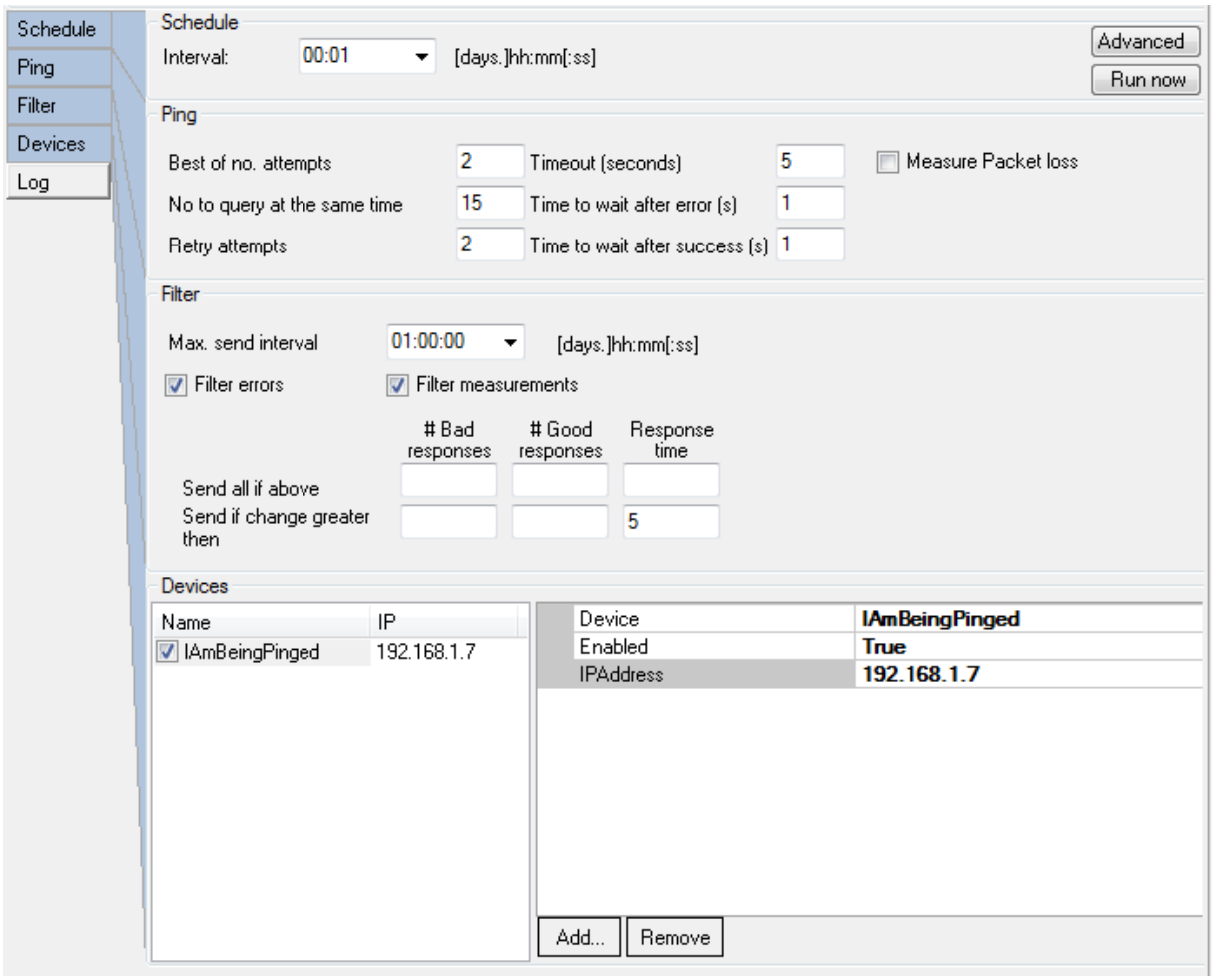
Look for script examples in the probe library on www.epo-elements.com.

Executable	: cscript.exe
Command line arguments	: yourVBscript.vbs param1 param2
Work path	: c:\programfiles\the early warning company\epo\scripts

9.9 ICMP (Ping) Probe

The ICMP probe pings from the probed machine to the specified other machines and measures the availability and the response time.

Settings



Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Ping

Best of no. attempts: The number of pings that will be used to take the best result. The best time is used.

No. to query ate the same time: Number of parallel pings for this probe. The total amount of pings is the result of (the number of devices x no. attemps).

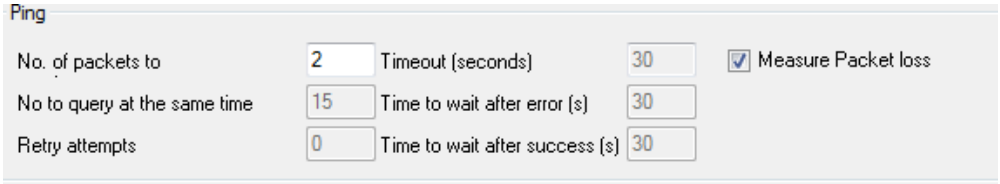
Retry attempts: how many times will a ping be repeated if there is no reply from the pinged device.

Timeout: Time whereupon 1 ping attempt is considered as failed.

Time to wait after error: Time to wait after failure before a new ping.

Time to wait after success: Time to wait after a successful attempt.

Measure Packet loss: Check this to measure the percentage of packets returned in the schedule interval. “Number of packets to (send)” set the number of packets to send in the schedule interval. The other properties are adjusted automatically.



Filter

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

Send all if above: If the number of good/wrong answers or the responsetime comes above this value the measurements are not filtered.

Send if change greater then: If the difference between the current measurement and the last which was not filtered, is larger than this value, the measurement will not be filtered.

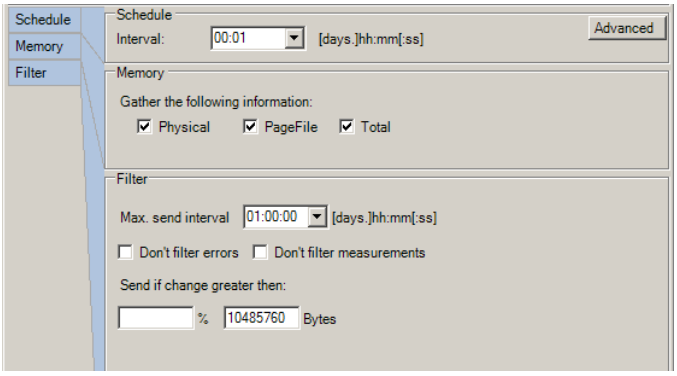
Devices

Add: Add a New device to ping. If no ipaddress is specified the device name will be used to ping to (only use this if the device name is resolvable to an ipaddress).

9.10 Memory Probe

The probe reads the memory usage (totally, used/available) of a system by interval. The probe can be configured to measure physical memory, page and virtual memory.

Settings



Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Gather the following information: Which of the three types of memory must be measured.

Filter

The measurements are forwarded to the EPOSERVER according the filter settings.

Maximum. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

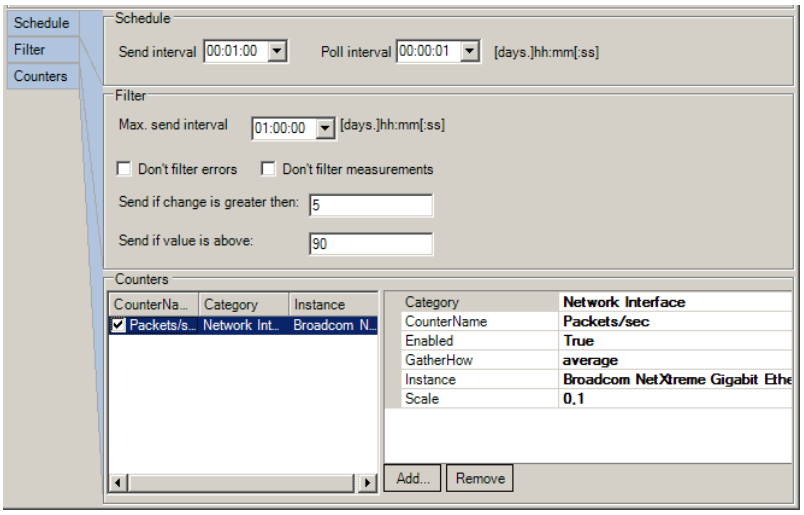
Don't filter measurements: the filter is not applied on regular measurements.

Send if change greater then: Filters measurements on base of change. As a new measurement is less than the indicating % or number of bytes compared to the last sent measurement, these new measurement will not be sent.

9.11 Performance counters Probe

With the performance counters probe is it possible to use the performance counters from the windows performance monitor (perfmon.exe).

Settings



Schedule

Send Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Pol Interval: the probe will gather data with this frequency according the *GatherHow* property.

Filter

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

Send all if above: If the value of the performance measuring comes above this value, the measurement is not filtered.

Send if change greater then: If the difference between the current measurement and the last which was not filtered, is larger than this value, the measurement will not be filtered.

Counters

Category: Performance counter category

Countername: Complete name of the performance counter. These must be entirely well spelled. Exact names of performance counters can be found using the perfmon tool (perfmon.exe).

Enabled: to switch measuring on and off.

GatherHow: Max/min: the largest or smallest number during the interval. Average: The average value measured during the interval.

Instance: performance counters instance name (not always present)

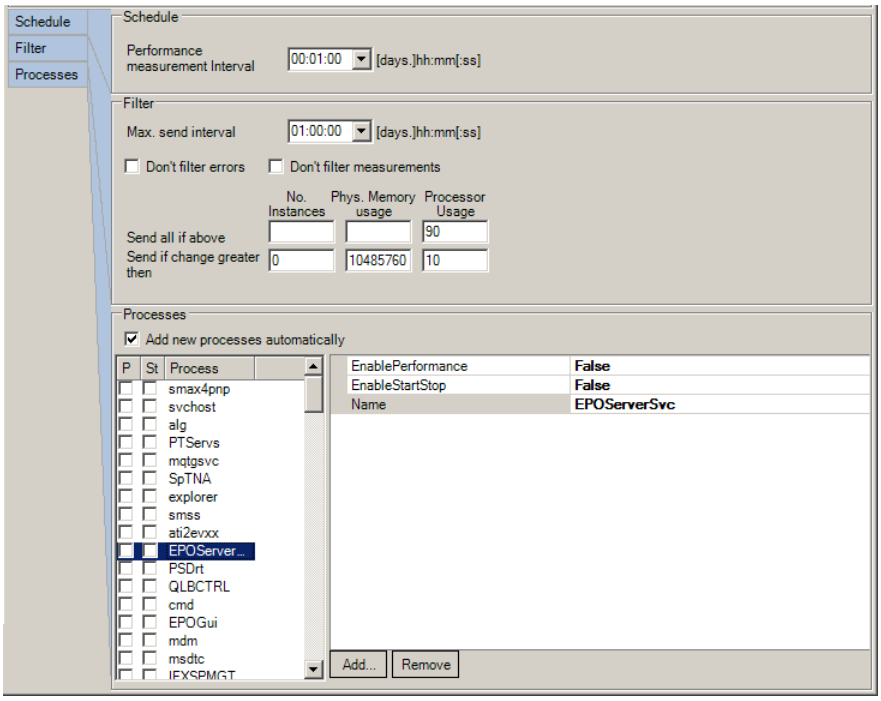
Scale: multiplying factor for the value of a measuring. The filter is applied afterwards.

Process Probe

Functional

The process probe passes information of the running processes on the probed machine to the EPO Server.

Settings



Schedule

Performance measurement Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Filter

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

Send all if above: If the number of active processes with the same name or the processor/memory usage raise above this level, the measurements are send to the EPOServer without considering the filter settings.

Send if change greater then: If the difference between the current measurement and the last which was not filtered, is larger than this value, the measurement will not be filtered.

Processes

Add new processes automatically: If this option is selected running processes are added to the list automatically. This change must be saved before the results become available (save probe settings and press the refresh button in the Configuration Editor)

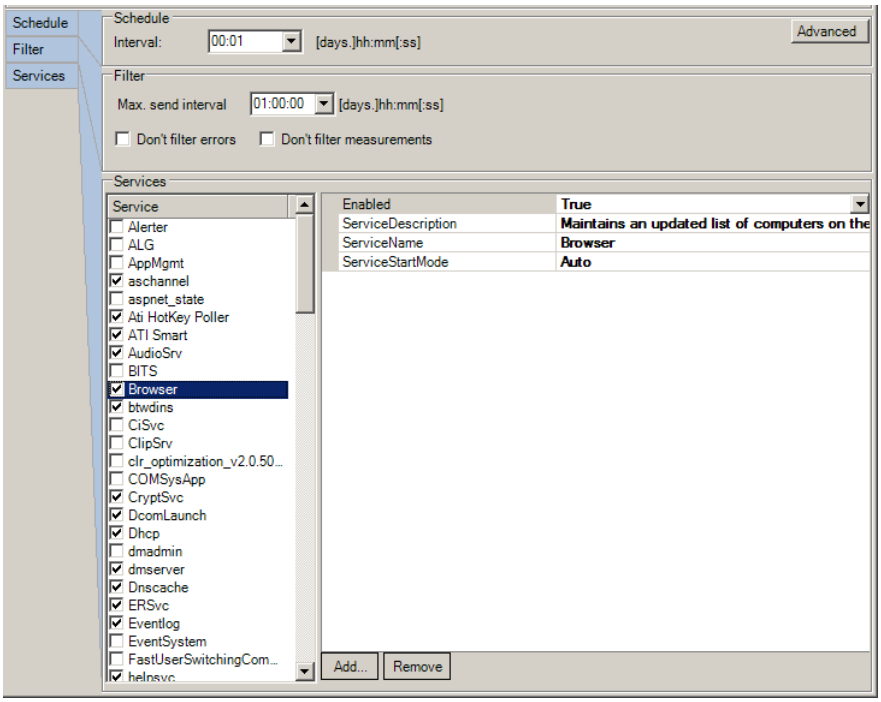
EnablePerformance/EnableStartStop: Manages by process if performance and/or the number of running instances are measured.

9.12 Service Probe

The service probe passes on the name and state of the services of the probed system.

The probe will also look for new services. By default only the services which are started automatically (at starting Windows), are passed on. At the first time to start the complete list with services is picked up.

Settings



Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Filter

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

Services

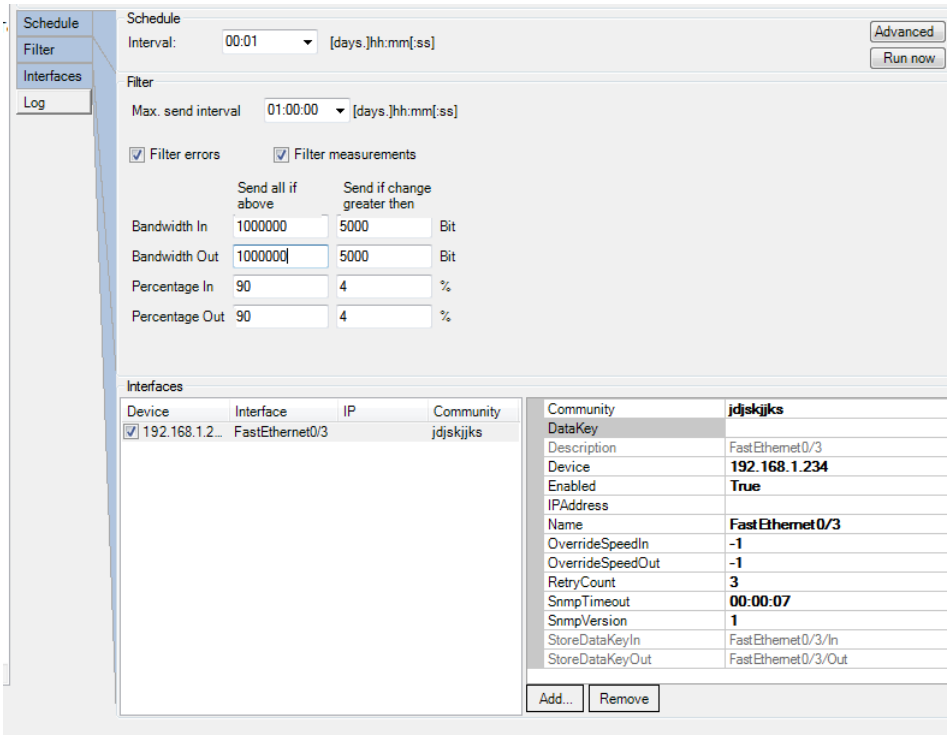
With the Add button new services can be added manually (normally this is not necessary because the probe will look periodically look for new services itself – new services are listed at the tail of the list).

9.13 SNMP Probes

There are three SNMP probes:

- Bandwidth usage probe.
- Sysinfo probe.
- Generic SNMP probe.

Settings SNMP Bandwidth probe



Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Filter

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

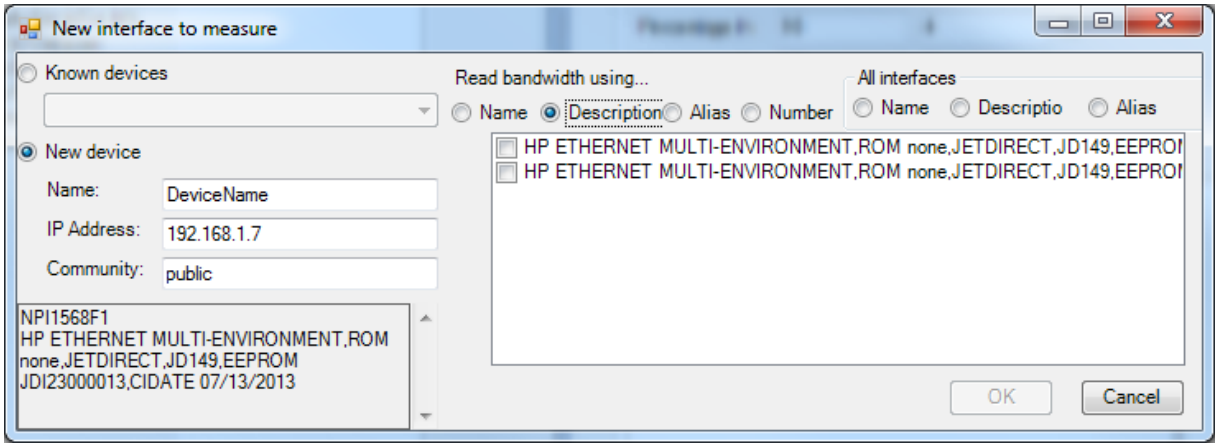
Don't filter measurements: the filter is not applied on regular measurements.

Send all if above: If the used bandwidth is more than this value, the measurements are not filtered. This can be either an absolute number or a percentage

Send if change greater then: If the difference between the current measurement and the last which was not filtered, is larger than this value, the measurement will not be filtered. This can be either an absolute number or a percentage

Interfaces

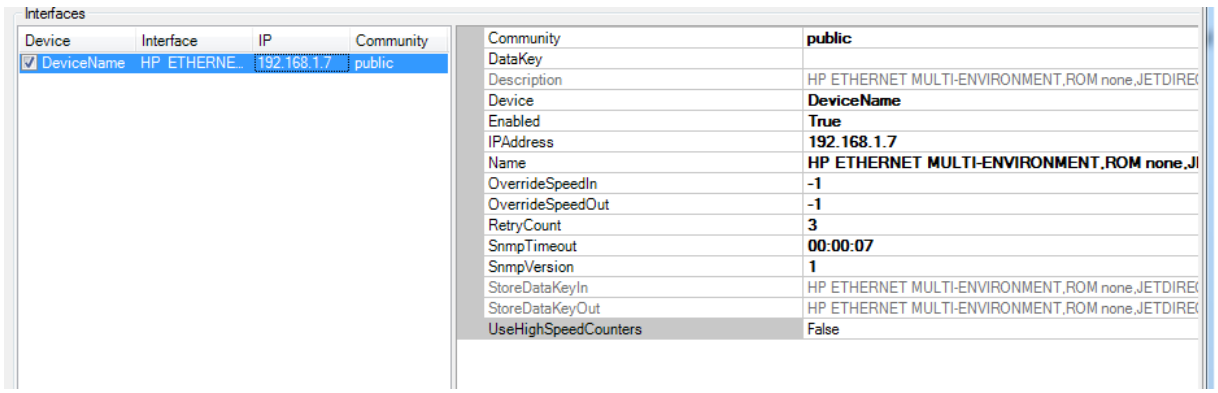
Add: adds a new bandwidth measurement. The next window appears:



Name: name for the device that will be queried.

IP Address: the IP address of the device that will be queried. If no IP address is specified the name of the device will be used.

The bandwidth is measured by interface. Interfaces can be added by means of their number, a description, the alias or their name. Not all options may be available.



Enabled: Each device can be turned on or off separately.

Override SpeedIn: for specifying the fixed maximum graph value instead of the dynamically calculated maximum.

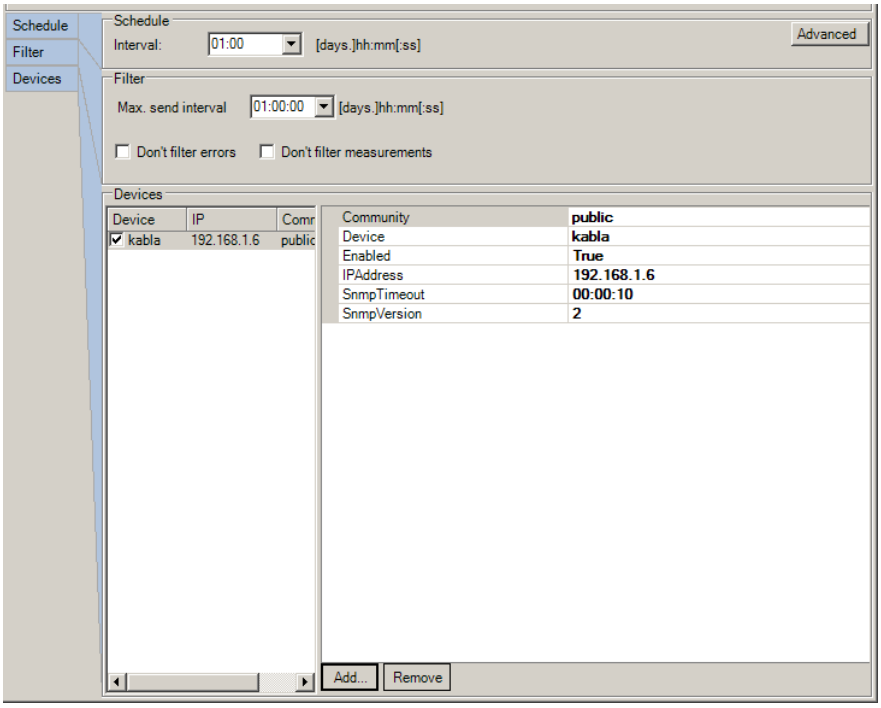
Override speed out: for specifying the fixed maximum graph value.

SnmpTimeout: Time which is waited for the SNMP query to be answered

SnmpVersion: The SNMP version to use.

UseHighSpeedCounters: Use 64bit counters. Not always available. Use this when bandwidth usage is very high and the standard 32bit counter overflows a lot.

Settings SNMP SysInfo probe



Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Filter

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

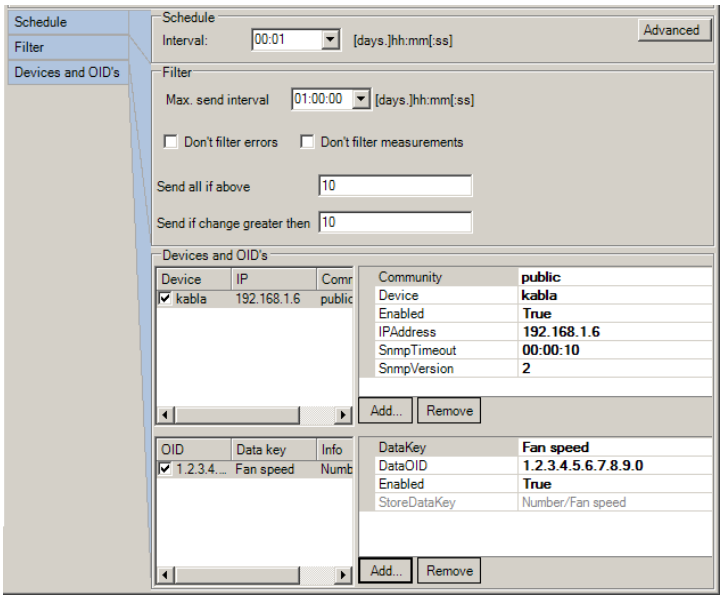
Devices

Enabled: Each device can be turned on or off separately.

SnmpTimeout: Time which is waited for the SNMP query to be answered.

SnmpVersion: The SNMP version to use.

Settings Generic SNMP probe



Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

The upper list shows the devices which must be measured. The bottom list shows the OID's.

Each device is queried with each OID. OID can be queried to retrieve as number or as text.

Filter

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

Devices and OID's

Enabled: Each device can be turned on or off separately.

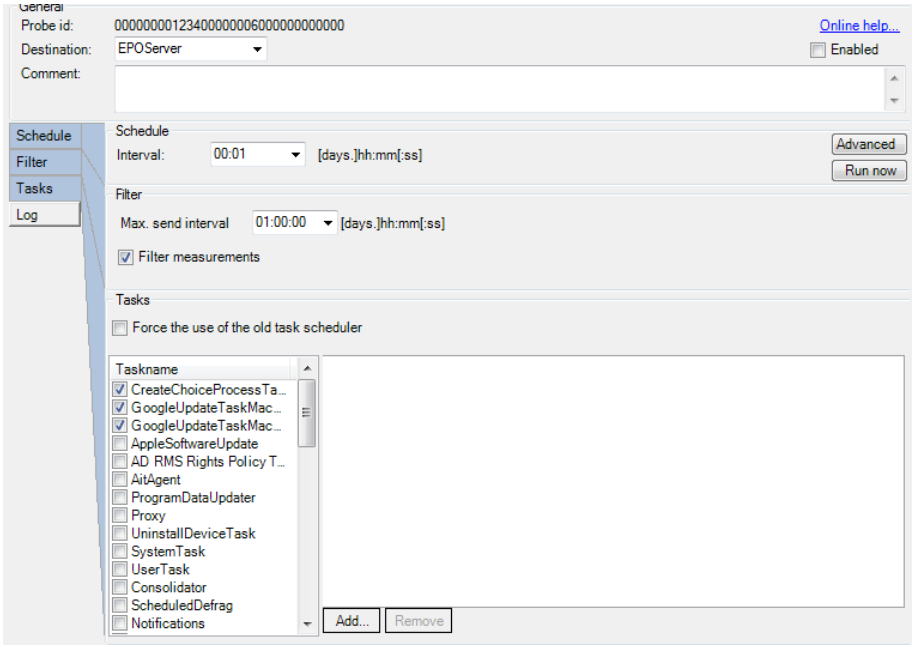
SnmpTimeout: Time which is waited for the SNMP query to be answered.

SnmpVersion: The SNMP version to use.

9.14 Task scheduler Probe

The task scheduler probe gives the list with tasks from the Task scheduler (planned tasks) and their associated state in Windows.

Settings



Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Filter

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter measurements: the filter is not applied on regular measurements.

Tasks

Force the use of the old taskscheduler: Starting Windows 2008 and Windows Vista, the taskscheduler in Windows has changed. Both the old and new taskscheduler are supported, but in certain circumstances it is possible to force the use of the old taskscheduler.

With the Add button new tasks can be added manually (normally this is not necessary because the probe will look periodically look for new tasks itself).

9.15 Virtual Email User (Email Probe)

General

The email probe can connect to an email server and send and receive email test messages.

Doing this the availability and performance of the mail process can be measured and monitored.

This email probe is designed for Microsoft Exchange.

Installation

The email probe is automatically installed when the EPO probes are installed. It is part of the common probes.

Important:

- The probe service must log on as a user which has an exchange account.
- Outlook must be installed on the same device
- Outlook must be configured with the above mentioned account to send and receive email.

9.15.1 Accounts

To enable the email probe to send email through one account and to read email through an other account one of both accounts should be enabled as a shared mailbox. This is because outlook doesn't support the use of two accounts at the same time.

The mailboxes (accounts) have to be configured in that way that one account is used for reading mail and the other for sending.

Settings

Mail2Read: a list with mailboxes to read.

Mailbox: Postbox/map from which to read the mail (default = inbox)

Mailer: Type of the mailserver.

Server: Address of the emailserver

SharedMailedBox: Name of the shared mailbox if that is used to read the mail (optional)

SourceID: Identifies the mail to collect. According settings in mail2Send.

UserAccount: Name of the mailbox/account.

Mail2Send:

Destination: List with emailaddresses to send mail to..

Mailer: Type of the mailserver.

Message: Subject of the email. Will be used by Mail2Read as SourceID. Optional, default=Devicename

Sender: Originator of the mail. Important if a shared mailbox is used.

Server: Address of the emailserver

SharedMailBox: if a shared mailbox is used for sending the mail specify the name here. *UserAccount*: Name of the mailbox to connect to.

9.16 Virtual web user (Web Probe)

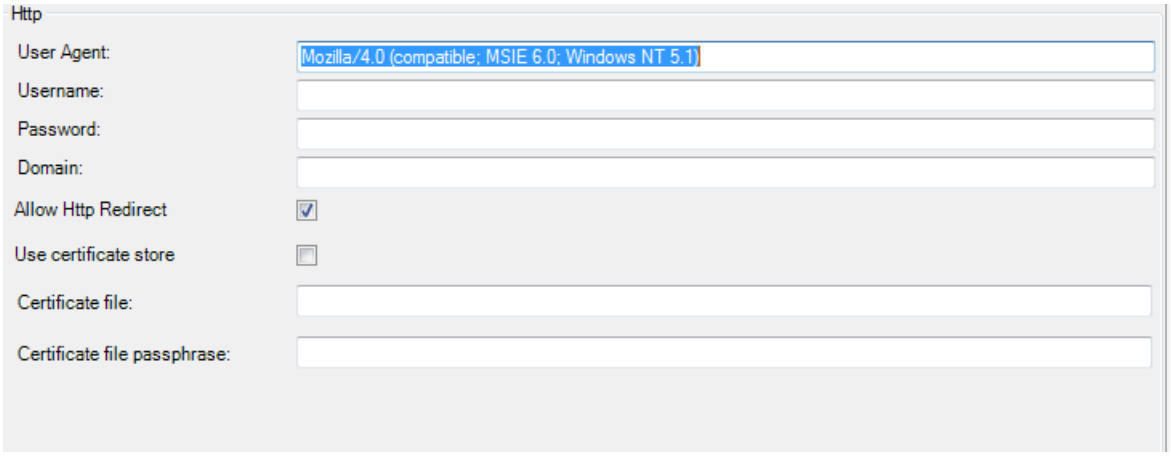
General

The virtual web user probe monitors the availability and the performance response of an internet site. It is possible to define a complete set of steps to simulate for example the complete action list of a virtual user for the monitored internet site.

Settings

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Http



User agent: The probe identifies himself.

Username/Password/Domain: Possible http authorization (differently than by means of a form)

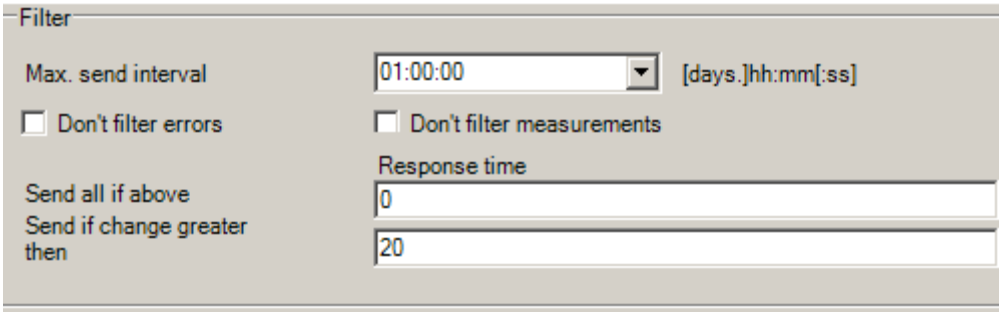
Allow Http Redirect: accept http redirect answers.

Use certificate store: Check this to use the certificate store for authenticating the probe.

Certificate file: A file storing a certificate used for authenticating the probe.

Certificate file passphrase: Some files require a password.

Filter



Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

Send all if above: As the response time is above this value, the measurements are filtered.

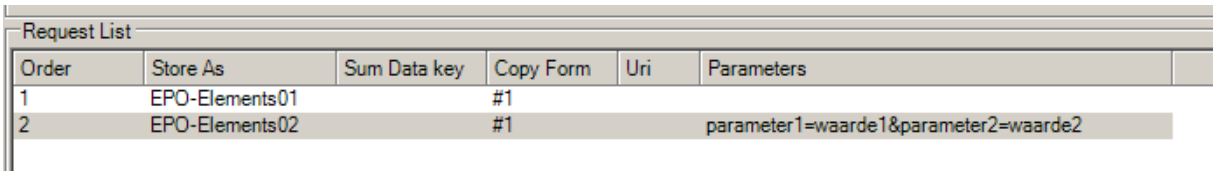
Send if change greater then: If the difference between the current measuring and the last which was not filtered, is larger than this value, the meeting will not be filtered.

Proxy

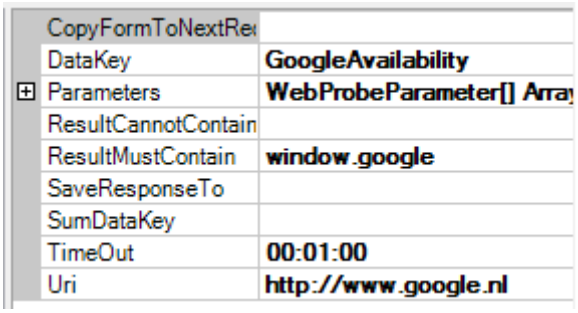
Proxy server: Optional, name or IP of the proxy server.

Proxy Username/Password/Domain: Possible authentication for the proxy server.

Request Sequence



This a list with HTTP requests for an Internet site. The requests will be executed in list order.



Copy form To Next Request: (optional) the HTTP response (form data) of the request will be copied to the next request. The page number or the form name can be used.

DataKey: (optional) name under which this result is stored.

Result Cannot Contain: (optional) if this text occur the result of the request will be down.

Result Must Contain: (optional) if this text doesn't occur the result of the request will be down.

Save Response To: (optional) file name where the HTTP response is stored.

Sum data Key: (optional) name for the added response times for all steps.

Timeout: (optional) time which is waited for HTTP response.

Uri: (optional) address of the Internet site

Parameters

Each step can give a list of parameters. By means of this parameters the http-variables in the form data can be automatically filled in. This way it is possible to automate a virtual user performing the necessary steps to test complete the functional working of a web application.

Name: Name of the parameter

Value: Value of the parameter

Type: How the parameter must be given: as a POST variable or HTTP header, in COOKIE or in the URL.

Responses

The responses tab show the response of each request step.

9.17 Webservice (SOAP) probe

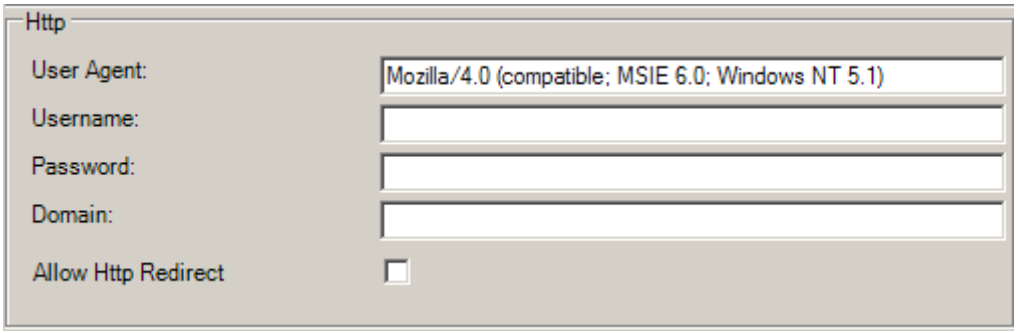
General

The Webservice probe is used to monitor web services through sending and receiving (SOAP) requests.

Settings

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

HTTP settings

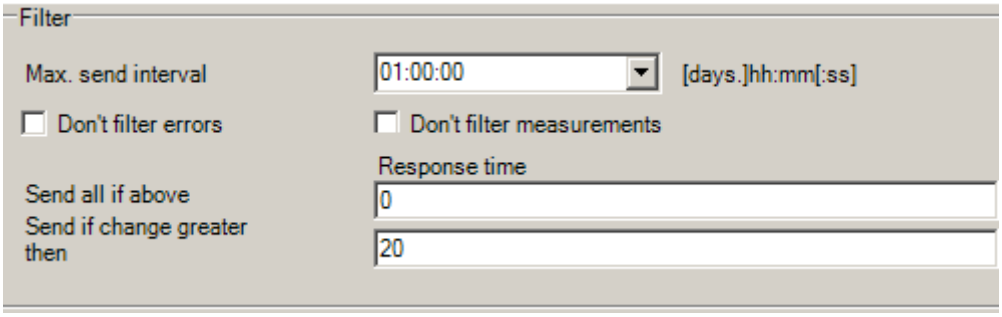


User agent: The probe identifies himself.

Username/Password/Domain: Possible http authorization (differently than by means of a form)

Allow Http Redirect: accept http redirect answers.

Filter



Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Don't filter errors: the filter is not applied for errors.

Don't filter measurements: the filter is not applied on regular measurements.

Send all if above: As the response time is above this value, the measurements are filtered.

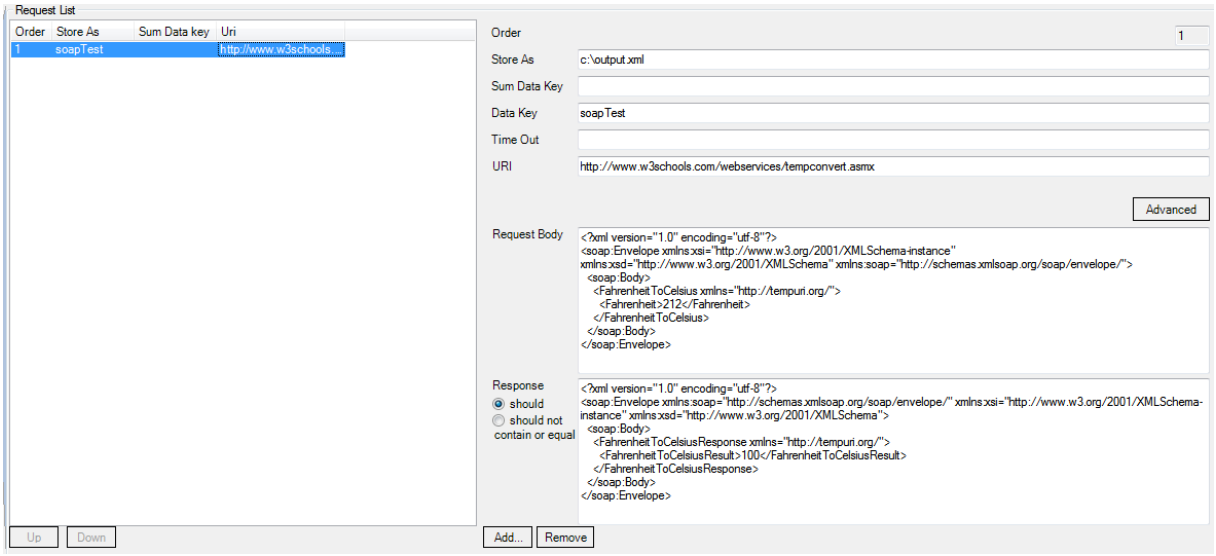
Send if change greater then: If the difference between the current measurement and the last which was not filtered, is larger than this value, the meeting will not be filtered.

Proxy

Proxy server: Optional, name or IP of the proxyserver.

Proxy Username/Password/Domain: Possible authentication for the proxy server.

Request list



Store As: (optional) Save the response to this file.

Sum Data Key: (optional) All response times of requests that are given the same data key will added and sent as a measurement with this data key.

Data key: (optional) name under which this result is stored. If this is omitted the uri will be used as key.

Time out: (optional) time which is waited for HTTP response.

URI: uri or url of the service you wish to monitor.

Request Body: The xml (SOAP) request to be sent to the web service

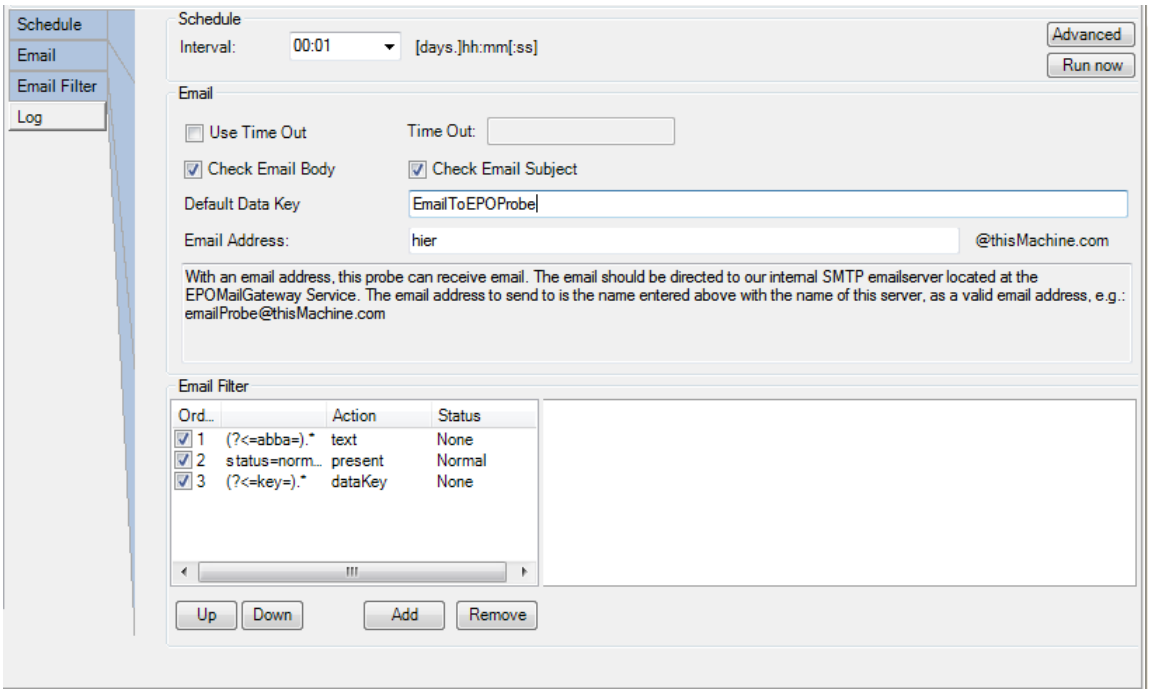
Response: Matched against the answer received from the web service. The matching results in a good (“normal”) status if it matches and a “down” status when it doesn’t or the other way around when “should not” is selected.

9.18 Email To EPO probe

General

The email probe can receive and then parse SMTP (text) email sent through the EPO mail gateway service. Parsing can lead to an EPO status or number. It's also able to build a datakey from the email text.

Settings



Schedule

Interval: Has no meaning with this probe.

Email

Use Time Out: When this is checked the email must be sent again before the time specified in the time out has passed. If it isn't, the EPO status will be sent.

Check Email body/subject: parse the text in the email body/subject.

Default data key: If the datakey isn't built from the email using the dataKey option, this property is used.

Email Address: used as the “name” part of the email address (in name@domain.com) that is used by this probe. Email sent to the EPO SMTP mail server is delivered using this name. The “domain” part is the name of the server on which the probe service runs.

Email Filter: A list of filters which are run one-by-one against every line in the email. If the filter matches, through a regular expression or a simpler “contains”, the action (from the action property) is performed.

Properties:

Actions

- Present; if the text is matched, the EPO status from the Status property will be sent to EPO.
- NotPresent; if the text isn’t matched, the Status property will be sent to EPO.
- Ignore; if the text is matched the entire email is skipped and no status or number is sent.
- Datakey; the text matched will be a part of the datakey. Additional parts of the datakey, which will be separated by a forward slash, may be made by adding more filters with the datakey action.
- Number; The matching text will be parsed as a number and sent to EPO.
- Text; The text matched will be added as text to the EPO message.
- Ignore; If this is matched the email will be skipped in its entirety.

Enabled

Enable or disable this filter rule.

Status

The EPO status the filter will return if this filter rule is matched

Text

The text against which the filter will be matched. The contents is dependent on the next property, TextType.

TextType

The text property is matched against a line of the email, in one of the following ways:

- Contains; The line has to contain the text.
- Startswith; The line has to start with the text.
- Endswith; The line has to end with the text.
- Regex; The line has the match the regex in text.

9.19 Virtual machine probe

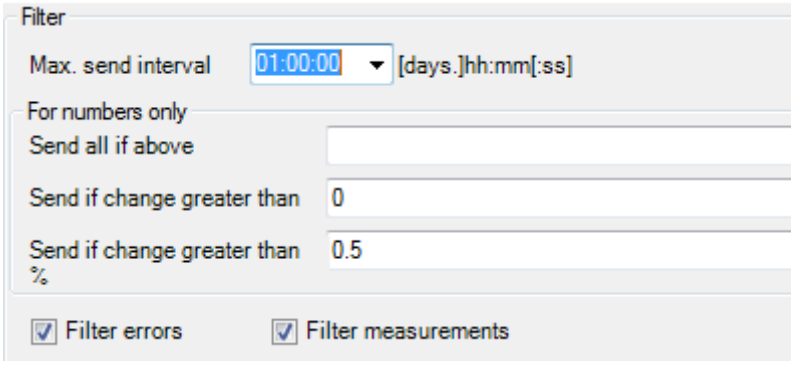
General

The virtual machine probe can read several information elements of an ESX server. When the probe is connected to a Vcenter server all ESX servers known to that server will be monitored.

Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Filter



For numbers only: (not all counters return a number)

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

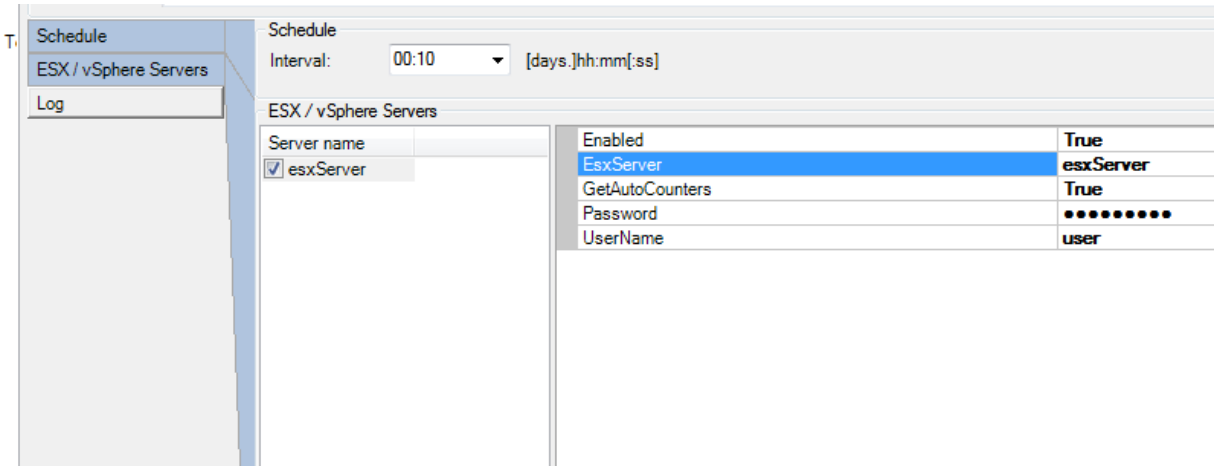
Filter errors: Filter error messages. When this is checked, error messages are sent to the EPO Server only once.

Filter measurements: The filter is applied to regular measurements.

Send all if above: While the response time is below this value, the measurements are filtered.

Send if change greater then: If the difference between the current measurement and the last measurement which was not filtered, is smaller than this value, the measurement is filtered.

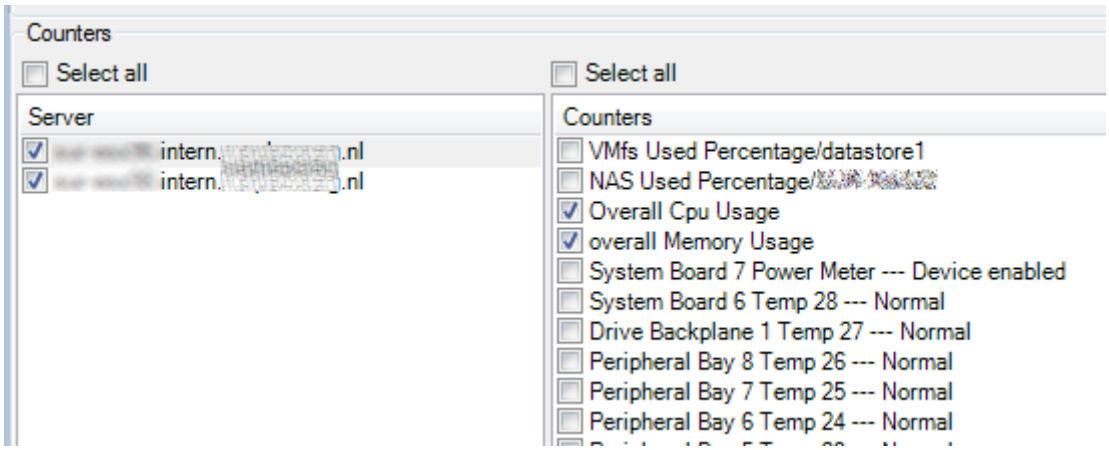
ESX Servers



Add all ESX server you want monitored here. ESXServer is the name or IP address of the server. GetAutoCounters isn't used anymore. The username and password are used to log on to the ESX server. Make sure the account has only the minimum of rights.

When a vCenter server is added, all ESX servers known to that server will be monitored.

Counters



Each ESX host is listed on the left, the counters on the right. Use the checkboxes to enable or disable gathering of that particular counter. The default is enabled for all counters.

9.20 XenServer probe

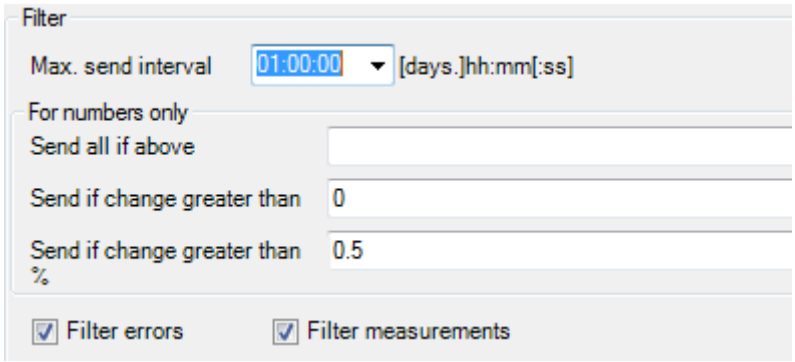
General

The Xenserver probe can monitor the Xenserver Virtualization platform. It will gather data like processor usage, memory, disk usage of each VM and of the Xenserver host.

Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Filter



For numbers only: (not all counters return a number)

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

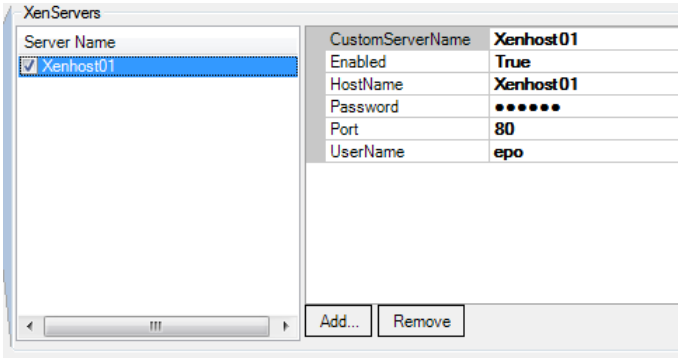
Filter errors: Filter error messages. When this is checked, error messages are sent to the EPO Server only once.

Filter measurements: The filter is applied to regular measurements.

Send all if above: While the response time is below this value, the measurements are filtered.

Send if change greater then: If the difference between the current measurement and the last measurement which was not filtered, is smaller than this value, the measurement is filtered.

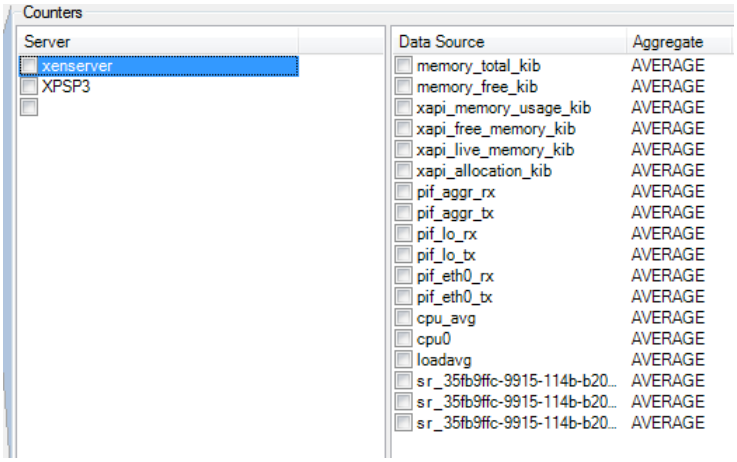
XenServers



Use add/remove to add or remove XenServer hosts.

CustomServerName: To differentiate between two XenServer hosts with the same name
Enable: Turn monitoring of this host on/off
HostName: The name of the XenServer host to monitor
Username/password: Make sure the user has the appropriate rights
Port: The probe uses a web interface. This is the port the web service is listening on

Counters



Use the checkboxes in front of the server and data sources to enable the gathering of that data from that source. Both the XenServer host and the VMS are listed in the Counters list.

9.21 Webcam probe

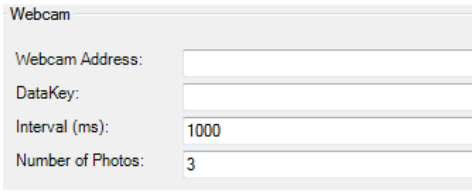
General

The webcam probe can actively take pictures through an IP based webcam as well as receive email sent by a motion detection enabled webcam. By triggering the probe to run when a signal is received from a Room monitoring Unit (RBU), it is possible to take pictures as well. This allows, for example, for pictures to be taken when a door is opened, showing the person entering.

Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Webcam



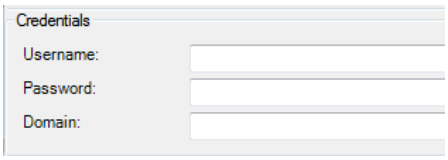
Webcam Address: the url of the webcam

DataKey: the name that is used in the toolbox of the EPO client

Interval: Time between two photos

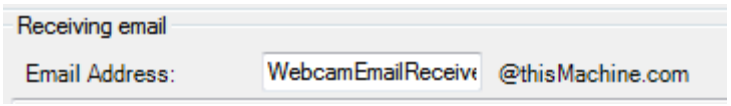
Numbers of photos: The number of photos that is taken when the probe runs.

Credentials



Webcams often have a form of account management. Enter the credentials here if needed.

Email Address



With an email address, the probe can receive email from a webcam. Many webcams can send webcam pictures through SMTP email when certain events happen (e.g. motion detection). The webcam should be configured to send to our internal SMTP emailserver located at the EPOMailGateway Service. The email address to send to is the name entered above with the name of this server, as a valid email address. E.g. Webcamprobe@thisMachine.com

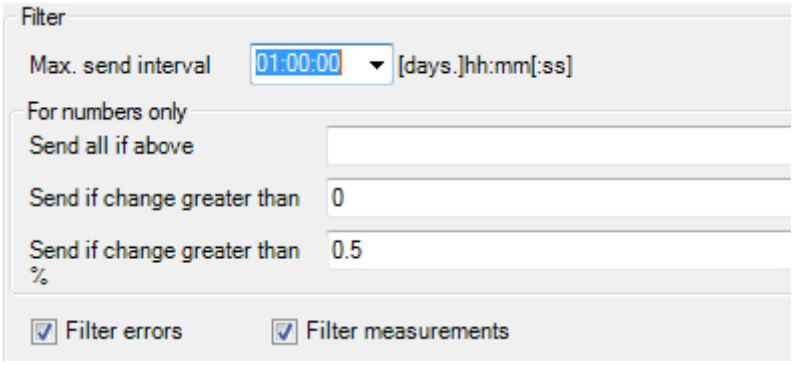
9.22 Hyper-v Probe

The Hyper-V probe gathers information specific for the Hyper-V hypervisor and virtual machines. One of biggest issues with monitoring Hyper-V environments is the use of dynamic memory in Hyper-V. The probe is able to accurately monitor the memory usage and pressure of Hyper-V virtual machines using Dynamic memory. For monitoring the Hyper-V host itself, you can use the standard EPO probes.

Schedule

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Filter



For numbers only: (not all counters return a number)

Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

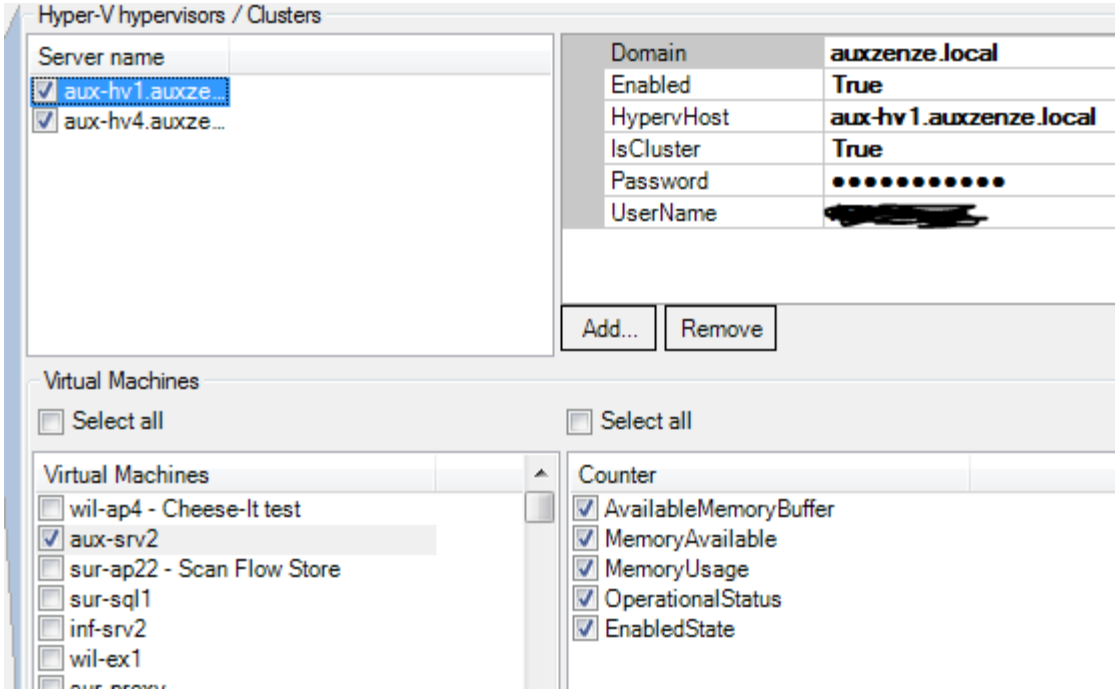
Filter errors: Filter error messages. When this is checked, error messages are sent to the EPO Server only once.

Filter measurements: The filter is applied to regular measurements.

Send all if above: While the response time is below this value, the measurements are filtered.

Send if change greater then: If the difference between the current measurement and the last measurement which was not filtered is smaller than this value, the measurement is filtered.

Hyper-V hypervisors/clusters



Add/Remove: Add or remove a hyper-V host connection. Both clusters and standalone Hyper-V hosts are supported. If a host is part of a cluster, all vm's of all hosts on the cluster are added.

Domain: The domain the hyper-V host is located on.

Enabled: Enable to monitor this host/cluster.

HypervHost: The name of the host to connect to. Use the FQN when connecting from another or no domain.

IsCluster: Check this to indicate that the host is part of a cluster

Username/Password: Account credentials to allow reading the measurement data from the hosts.

Virtual Machines: The list of virtual machines found on the Hyper-V host. For a cluster this list contains all Virtual machines in the cluster, even the virtual machines that are not made “highly available”.

Counters

At the moment there are 5 counters available per virtual machine. This will increase in time.

AvailableMemoryBuffer: When dynamic memory is enabled this will indicate the ratio of available memory buffer to the ideal memory buffer for the VM. The ideal memory buffer is the memory buffer set by the slider below the startup RAM and Maximum RAM properties in the memory configurator for a Hyper-V VM.

MemoryAvailable: The percentage of current memory available to the virtual machine. With dynamic memory enabled this is the ratio of available memory of the VM to the total physical memory assigned to the VM. When this number is negative the VM has no available memory and it will contain the ratio of memory needed for the VM to the total physical memory assigned to the VM.

MemoryUsage: The current memory usage of the virtual machine.

OperationalStatus: The current status of the virtual machine

EnabledState: Indicated whether the virtual machine is turned on/off or in an intermediate state.

9.23 Server hardware Probe

General

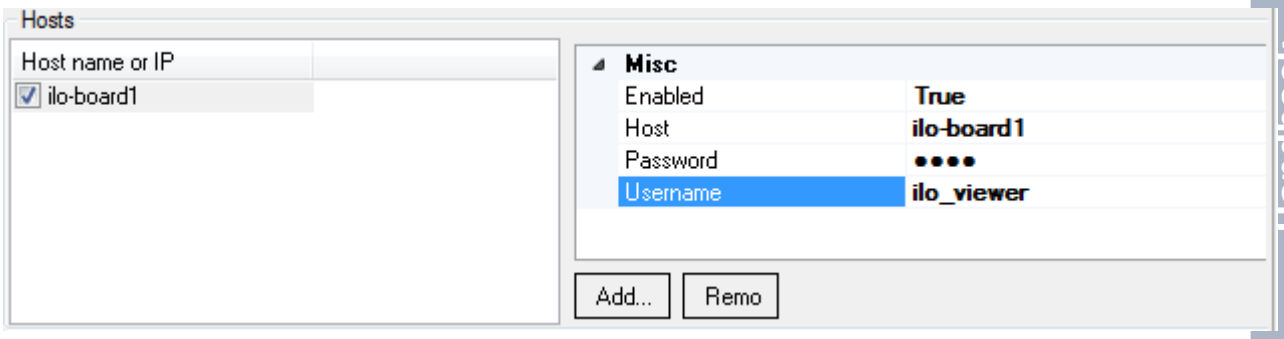
The hardware probe can gather telemetry data from server different brands of server hardware. The hardware needs to support the Redfish API.

For HP hardware you need to target the ILO interface. ILO4 firmware 2.3 and later supports Redfish.

Schedule

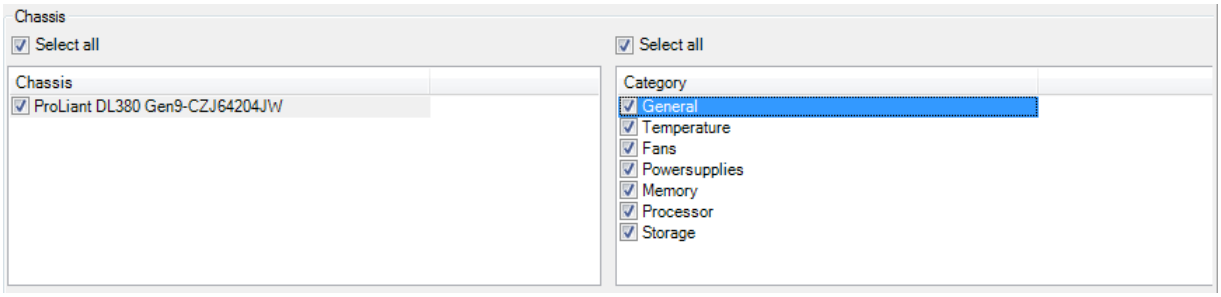
Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Hosts

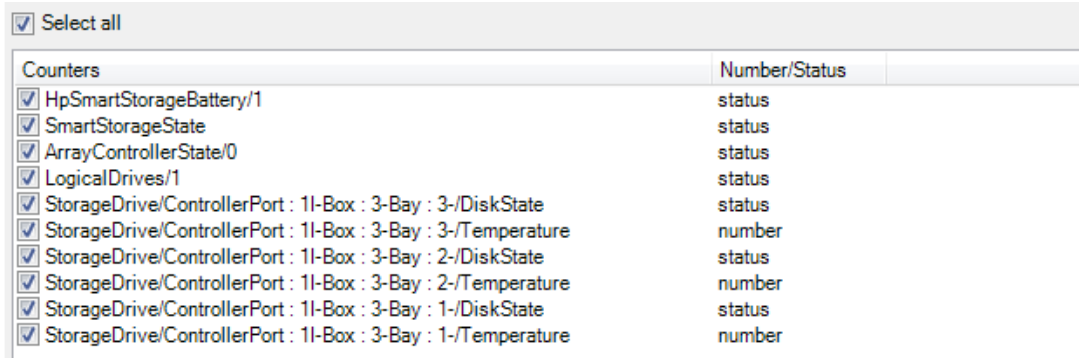


Click the 'add' button to add new hosts. Enter a username and password with reading rights.

After adding a new server, click save and wait for the other fields to be filled. This will require a refresh from the Configuration editor screen. When the data is fetched the other lists are filled and it will look something like this:



A server enclosure can contain multiple chassis'. A HP Proliant server has one Chassis, an IBM blade system has multiple. Each Chassis has a list of categories; each category has one or more Counters.

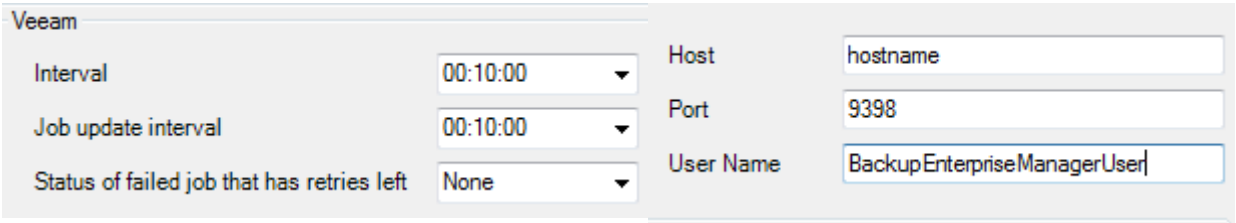


Counters that supply number measurements do not have a default threshold set; you can set the thresholds in de node properties.

9.24 Veeam backup probe

General

The Veeam backup probe is used for monitoring the backup jobs of most Veeam backup products, including "Veeam Backup & Replication". The probe uses the "Backup enterprise Manager" product to gather its data. This is a free tool used to centralize different instances of the "Backup &



Replication" product. After the tool has been installed the probe can be pointed to the enterprise manager host and port.

Veeam

To configure the probe, first enter the host name, port and a user name and password. These settings will be used to get the list of jobs.

Interval: the probe will measure with this frequency. The specified interval is the amount of time between the end of the last measurement and the start of a new measurement.

Job Update Interval: The probe will check for new jobs or changes to current jobs every time this interval elapses.

Status of failed job that has retries left: Veeam backup jobs can have retries set. When a job fails it will try again the amount of time specified in the retry setting. This property will set the status in EPO when there are retries left and the job has failed the current attempt. The default value is "none".

Host: The host name of the server where the "Backup Enterprise Manager" tool is installed.

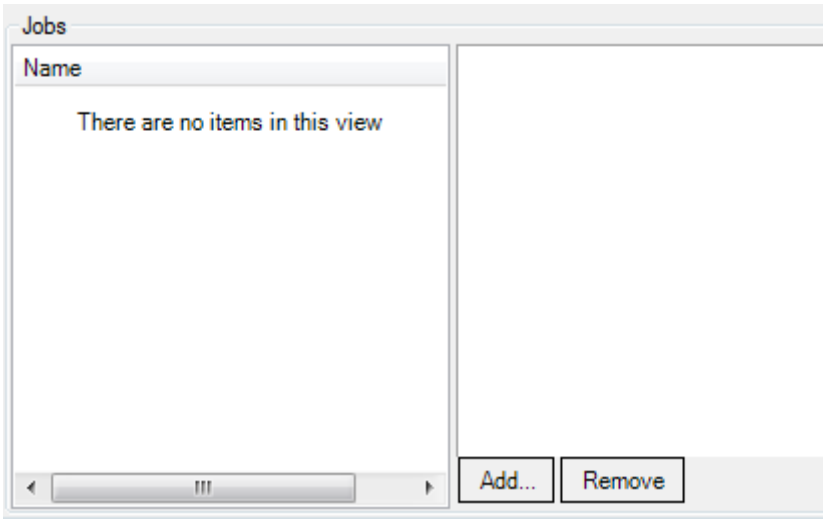
Port: The port the "Backup Enterprise Manager" listens on, default 9398

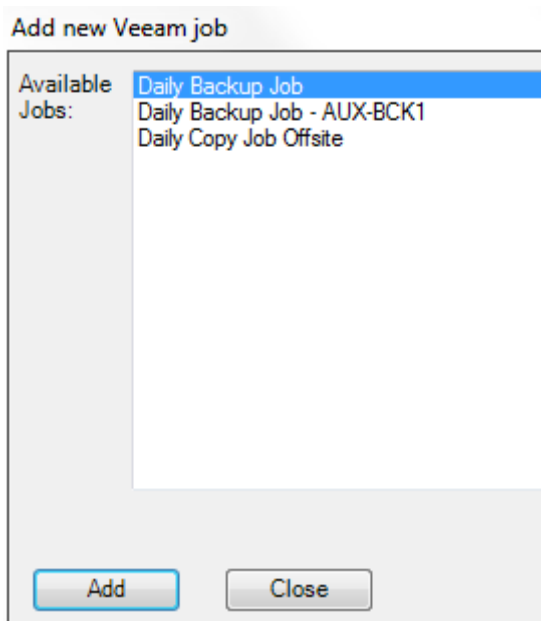
User name: The account to use. This account is created with the "Backup Enterprise Manager" tool.

Password: The password of the account used.

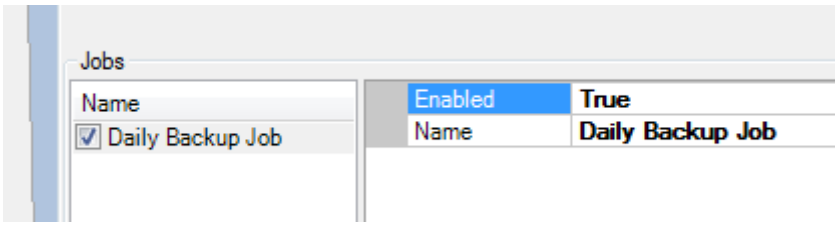
Jobs

Click on the Add button in the jobs section to bring up a list of jobs available.

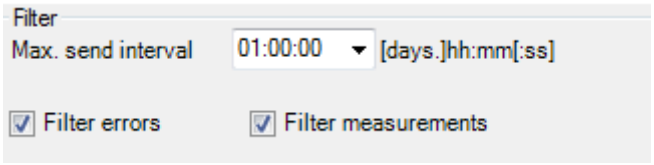




Select every job you wish to monitor and click “add”.
Added jobs are visible in the jobs list:



Filter



Max. Send interval: The maximum time whereupon a new measuring is always sent, independently of other filter settings.

Filter errors: Filter error messages. When this is checked, error messages are sent to the EPO Server only once.

Filter measurements: The filter is applied to regular measurements.

9.25 Event service (probe)

General

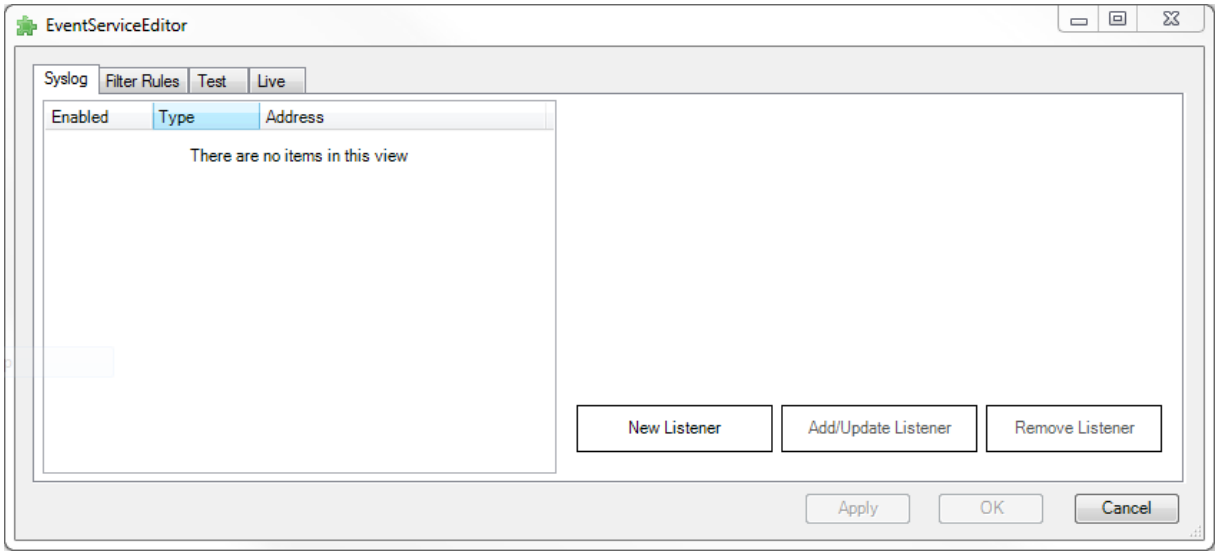
Events are a type of data that EPO can't really monitor using the traditional probe setup. The Event service was created for these kinds of situations. There are many different sources of events. EPO is already capable of processing Windows events. Other types of events, like events from Syslog sources can be monitored using the event service. Event sources are configured to send their events to the EPO event service. The event service then parses and filters the events. Rules can be created to create EPO status messages based on the events received. Messages are than forwarded to the EPO event service probe. The probe handles the heartbeat/keep alive and EPO message filtering.

Configuration

The Event service can be configured by clicking on the Event service icon in the configuration editor on a server where the service is installed.

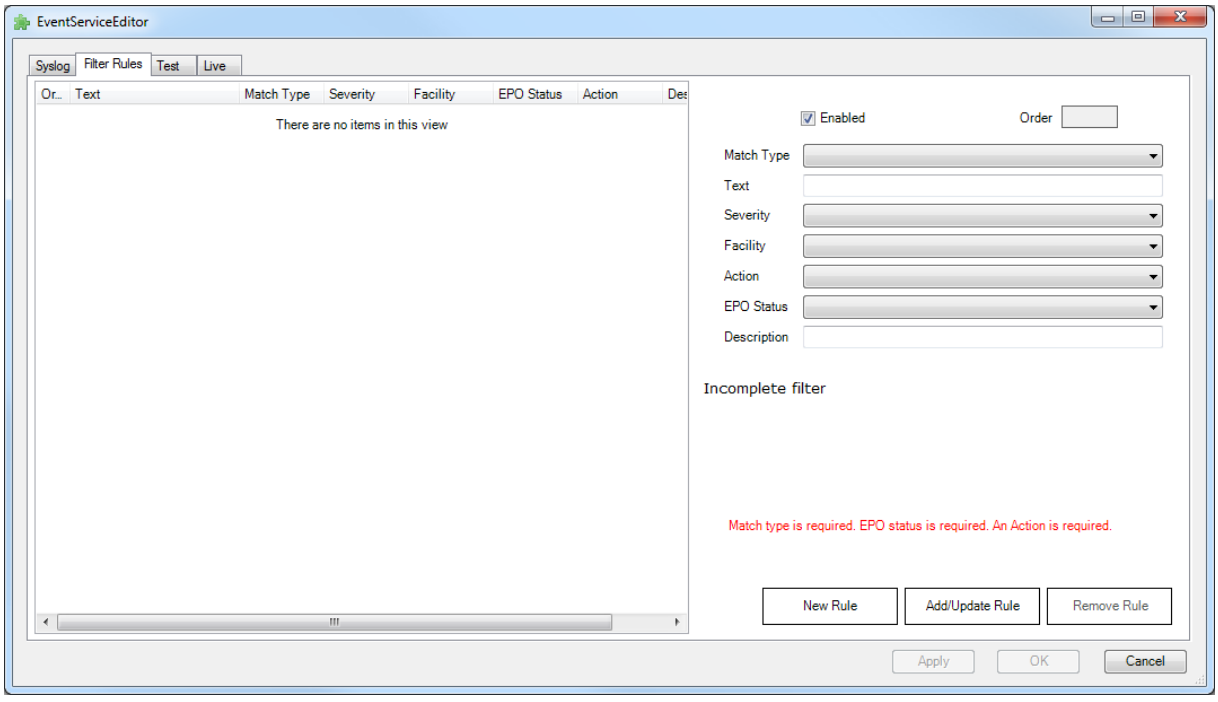
Syslog

Currently the service only supports Syslog messages. The dialog opens with the configuration of Syslog listeners.



By clicking “New Listener” a new listener can be configured. After entering the relevant data the “Add/Update” button has to be clicked to add the listener to the existing list. Finally, the apply button saves the settings to file.

Filtering



Incoming events need to be filtered and a response needs to be configured. Filter rules are executed from top to bottom, where the first matching rule is executed. The following properties can be set for each rule.

Match Type: The way the rule matches the “Text” property with the event message

Text: The text used to match an event to, see Match type

Severity: The Syslog severity property the event must have to match the rule

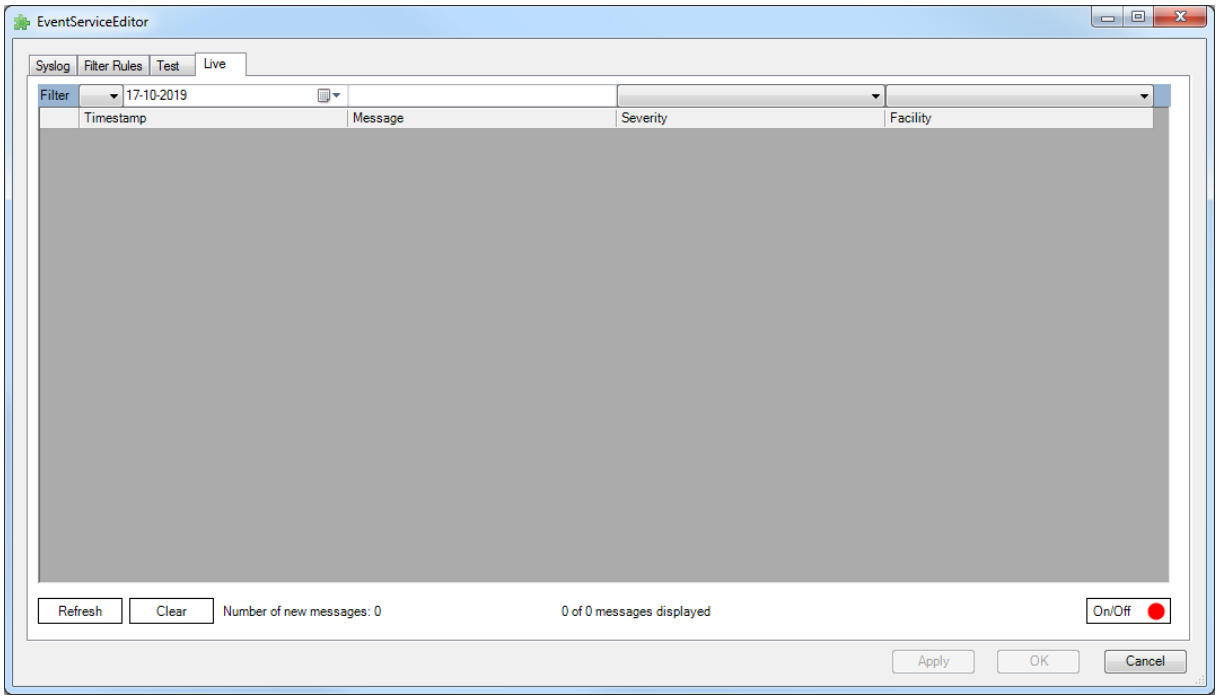
Facility: The syslog facility property the event must have to match the rule.

Action: What must be done when the event matched the rule

EPO Status: What EPO status must a resulting message have

Description: The key for data in EPO. EPO messages can be found in EPO using this name.

Live View



This is a live view of all incoming Syslog messages. The view can be used to build filter rules. Events are gathered in the background. When “refresh” is clicked those gathered messages are added to the view. ‘Clear’ empties the screen. On the top of the screen are options to filter the current list by e.g. date.

The “on/off” button activates or stops the live gathering of all syslog messages.

Reporting

EPO reports are defined in an EPO report file (erf). Such a report file contains a number of essential components:

- Data generators
- Data processors
- Data Result viewers

Data generators

The data generators ensure the delivery of the data from the EPO database. This can happen in a lot of different manners. For example measurement-data from the Business tree or data from the database firebird query or SQL query. The produced data is always delivered as a xml-file.

Data processors

The processors process the data supplied by the generators to the desired document. Thus for example the data can be converted with a XSL processor to html, XSL-FO or CSV. A XSL-FO file itself can be transposed by means of a pdf processor to a pdf document.

Data Result viewers

When all previous steps successfully have been carried out and a html or pdf file has been produced, the result can be reflected in a result viewer. At the moment we use a web browser because it can reflect several file formats. If it is not necessary to show a report then no result viewer has to be defined.

ERF is XML

An erf file is actually an xml-document describing (in XML definitions) the way a report is built. Such an erf is built as follows:

```
<?xml version="1.0" encoding="utf-8" ?>

<report type="EPO.Interfaces-Report">

<DataGenerators></DataGenerators>
```

<DataProcessors></DataProcessors>

<DataResultViewers></DataResultViewers>

<LeaveTempDirectory></LeaveTempDirectory>

<TempDirectoryName></TempDirectoryName>

<GeneratedDataFile></GeneratedDataFile>

</report>

<LeaveTempDirectory></<LeaveTempDirectory>

This value ascertains whether the temporary directory, which is used to store temporary files must continue to stand after successful generating the report, or have to be deleted. During the developing of a new report it is useful to set this property on true, so that the generated temporary data.xml can be investigated. After successful delivery of the the report this value can be set to false, so that only the report remains and all temporary files are removed.

<TempDirectoryName></TempDirectoryName>

Here the temporary directory is set. When for example a pdf file is made a xsl-fo temporary file is necessary, which is actually the source code of the pdf. This file is placed in the temporary map, and can after successful making the report it is removed.

This property is optional and is set default to the temp-directory of the pc. The report definition can also handle parameters. These are noted as $(nameparam1), $(nameparam2) etc.

EPO reports

EPO is provided with a few example reports which are installed on the server during the installation of EPO Elements 5.0. These reports become available in the client. With some knowledge of xml, xsl and xsl-fo (all standards itself) these reports can be adapted.

To make EPO reports

Start with adapting a working example report. A nice small example is the generating of a csv file (downloadable from the tools&add-on section on www.epo-elements.com (after logging in)).

Commandline option

EPOGui.exe ActionFile “C:\My Reports\Example CSV\report.action”.

In this action file the erf-file is linked and the report parameters (if present) are specified.

Advanced Report options

On the EPO elements forum we will discuss in the run to the next version of EPO advanced ways of using reports. Such as: parameter passing, batched reports, real-time graphs for linking into a live internet page and linking reports to the menu of the EPO GUI.

9.26 Report Scheduler

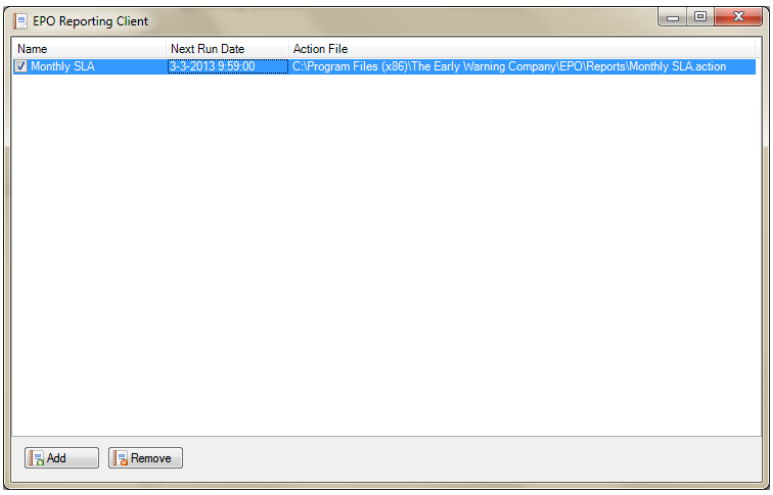
Starting from EPO 6.0 a report scheduler has been added. This tool is made up of two parts, a service which executes the reports and a Graphical User Interface that allows you to create schedules.

Setup

Both parts can be installed from the EPO setup by choosing EPO reporting service located underneath the “server” option. They will be installed in the “EPO User client” directory.
Open the file “EPOReportingService.exe.config” and edit the properties: Server, UserName, and Password. The server must be the EPO server with which the Reporting service must connect using the specified user name and password.
Finally, start the service.

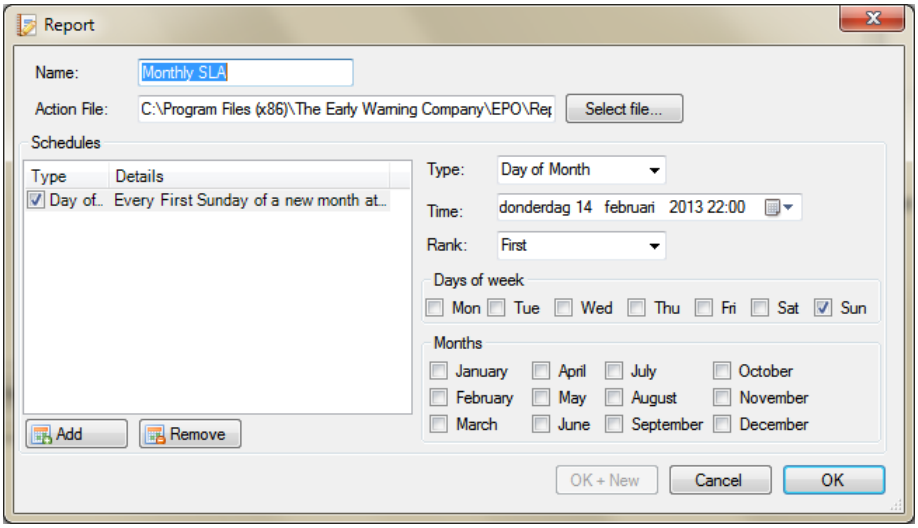
GUI

When you start the client you will be presented with the following user interface:



The central pane is a list of all reports that are scheduled. The next date and time a report will be generated is displayed. Reports are run starting with an action file which is displayed as well.

Using the two buttons on the bottom left of the window, reports can be added or removed. Adding a report will display the report schedule dialog.



Name: The name you wish to give the scheduled report
Action File: The .action file which is the file that contains the report to run and the variables to pass to the report.
Schedules: A list of schedules. A report can have multiple schedules. Three types are available: Daily, Weekly and Day of month. Depending on these other options become available.

Time: The time of day the report is run. The report is not run before the full date of this property.

Weekly:

Recurs every x: The report is run every week or every two or three weeks.
Days of week: Which day or days in a week the report is run.

Day of month:
The xth day of a new month

Rank: The report is run the first, second, third or last day as specified in the “days of week” property.
Months: Which months the report is run.

In the example above the report is run on the first Sunday of a new month.

10 Common EPO tasks

In this chapter regular used EPO-functionality is described.

10.1 How do I add a new server for remote monitoring?

Step	Description	Implementation	Result
1	Install the Windows probe on the server to monitor	See § 3.6, “Installation”, page 22.	- installed probe - working probe - measurements are inserted in to EPO-database
2	Add the new device to the Business Tree	- In EPO business client: edit business tree	- basic information of the windows probe is viewable and will be monitored according the (default) threshold values.

10.2 How do I add a new router bandwidth monitor?

Step	Description	Implementation	Result
1	Consider from which device the router will be monitored		
2	If not yet present install the EPO probes	See § 3.6, “Installation”, page 22.	Installed probe
3	Activate the EPO SNMP probe	See § 9.1, “How to add new probes”, page 60.	Activated SNMP bandwidth probe
4	Configure the probe	See §9.13, “SNMP Probes”, page 81.	Working bandwidth measuring.
5	Add the new test information to the Business tree.	- In EPO business client: edit business tree. - look at probed object	Information is shown in EPO business tree

10.3 How to adjust threshold values?

Step	Description	Implementation	Result
1	Modify the properties of a node in the Business tree	- select the node in the Business tree	Thresholds have been adapted.

		- right mouse button for edit this node - modify the desired property - save (and wait some moments) NB Modified thresholds will be used immediately but to see adapted thresholdlines you have to reselect the node.	

10.4 How do I monitor the availability of my IP-components?

Step	Description	Implementation	Result
1	Consider from where the router will be pinged		
2	If not yet present install the EPO probes on the machine from which the monitoring will take place	See § 3.6, “Installation”, page 22.	Installed probe
3	Activate the EPO (ICMP) ping probe	See § 9.1, “How to add new probes”, page 60.	Activated probe
4	Configure the probe	See § 9.9, “ICMP (Ping) Probe”, page 74.	Working bandwidth measuring.

5	Add the new test information to the Business tree.	- In EPO business client: edit business tree. - look at probed object	Information is shown in EPO business tree

10.5 How can I add my own script to the EPO monitor?

Step	Description	Implementation	Result
1	Adapt your script for sending the desired result (a status, a number or a piece of text.) to the standard output.	See § 9.8 ,"External Probe", page 69 for the output syntax.	EPO will understand the output and use it as an interface between your script and EPO.
2	Consider from where your script will be carried out		
3	If not yet present install the EPO probes	See § 3.6, "Installation", page 22.	Installed probe
4	Activate the EPO external probe	See § 9.1, "How to add new probes", page 60.	Activated probe
5	Configure the external probe	See § 9.8, "External Probe", page 69.	Script is carried out on the specified interval.
6	Add the new test information to the Business tree.	- In EPO business client: edit business tree. - look at probed object (External)	Information is shown in EPO business tree

11 EPO Configuration

11.1 Default thresholds

To change the default thresholds edit the file …\epo\server\TreeExtenders.module.
Remember to make, for safety reasons, a backup of this file first!

New settings will only be applied for newly dragged-and-dropped devices to the Business tree.

Example: to change the threshold “critical” for a CPU (default 95%) look for the item <Name>CPU.Critical</Name> and change the specified threshold to the desired value.
Restart the service EPO Server (net stop/start eposerversvc) to apply the changes you’ve made.

11.1.1 Scale of the graph

The scale of the graph is adapted automatically to be able reflect the highest value. It goes there at for:

- the measurements
- the threshold values

NB. When the threshold values differ a factor hundred or more from the measurements, then the measurements are not or hardly visible in the graph.

11.2 Configuration files

The following files contain configurable items for the several EPO components:

Name	In Folder	Type
EPOMsgCmd.exe.config	C:\Program Files\The Early Warning Company\EPO\EPOMsgSvc	CONFIG File
EPOMsgSvc.exe.config	C:\Program Files\The Early Warning Company\EPO\EPOMsgSvc	CONFIG File
EPOProbeSvc.exe.config	C:\Program Files\The Early Warning Company\EPO\EPOProbeSvc	CONFIG File
EPOServerSvc.exe.config	C:\Program Files\The Early Warning Company\EPO\EPOServer	CONFIG File
ORData.exe.config	C:\Program Files\The Early Warning Company\EPO\EPOServer	CONFIG File

NB. The configuration files have the name (+.config) of the service or executable where they belong to.

11.3 Data storage

In the file EPOServerSvc.exe.config in the server directory the StorageType can be modified from Binary to Xml:

```
<plugins>
        <PluginFactories>
            <item type= EPO.Plugin.SettingsManager >
                <SettingsPath>. \ Data \ SettingsManager</SettingsPath>
            </item>
            <item type= ePO.Interfaces MeasurementStoreFactories >
```

```
        <StoreFactories>
            <item type= ePO.Plugin.Measurements RawMeasurementStoreFactory >
                <BasePath>. \ Data \ ProbeData</BasePath>
                <Extention>edf</Extention>
                <StorageType>Binary</StorageType>
            </item>
            <item type= ePO.Plugin.Measurements TransformMeasurementStoreFactory >
            </item>
            <item type= ePO.Plugin.Measurements CombiningMeasurementStoreFactory >
            </item>
        </StoreFactories>
    </item>
    <item type= ePO.Plugin.Measurements RawMeasurementMessageReceiver >
    </item>
    <item type= EPO.Plugin.EPointManager >
    </item>
    <item type= EPO.Plugin.StatusTreeHost >
    </item>
  </PluginFactories>
</plugins>
```

11.4 Memory usage

EPO has been developed to:

- Use a large part of the available memory (caching)
- Release it if another application asks for it.

11.5 Probes and networking

EPO-probes (and therefore connections) can be defined concerning:

- VPN
- Internet
- ipforwarding
- Proxy firewall

11.5.1 To create an EPO network connection manually.

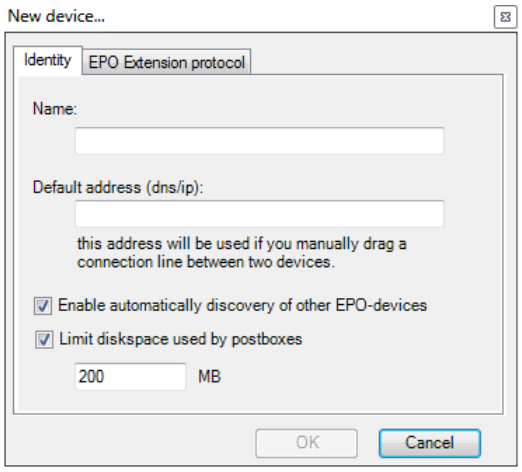
EPO systems locate each other automatically within the same subnet/segment only. If two EPO remote networks (a minimum of one probed machine on each side) have to be connected:

Start from the client which has a part of the network visible, the configuration editor (Edit->Edit probe Configuration)

Click with the right mouse button somewhere in the white area and choose Add new device…

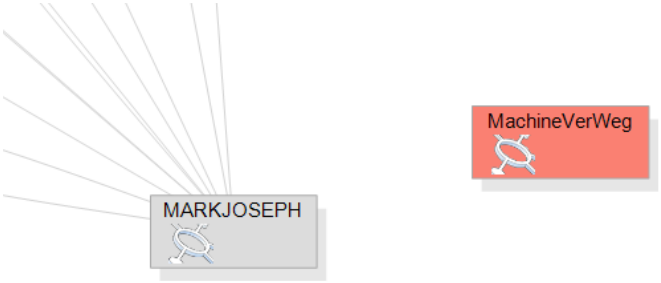
The supplied Name should match the name which was

supplied to the device during the installation of the EPO Probe (default the windows hostname), exactly. If the “DNS name” property is left empty, the name field will be used as DNS name also.

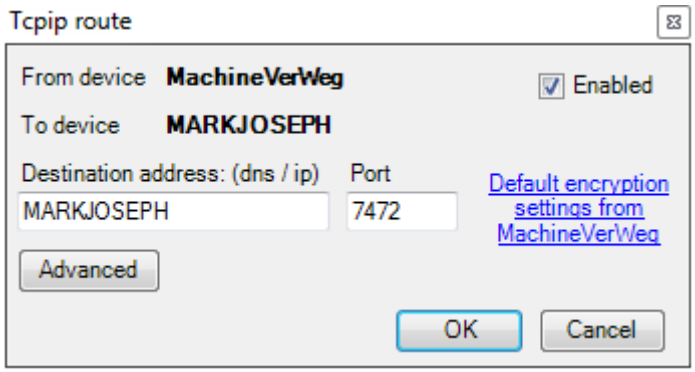


Enable automatic discovery of other EPO-Device: This device will try to find other EPO probes on the network automatically.
Limit disk space used by postboxes: postboxes can store EPO messages temporarily on disk, when the messages can’t be sent immediately. This can happen when network connection are unavailable.

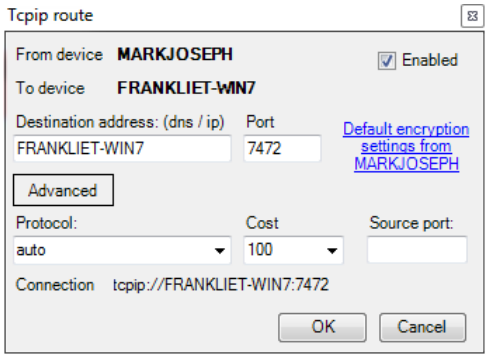
If “MachineVerWeg” is given as a Name then the result will be:



Afterwards, click with the right mouse button on MachineVerWeg and drag a connection line to the EPO-Server. The following window appears:



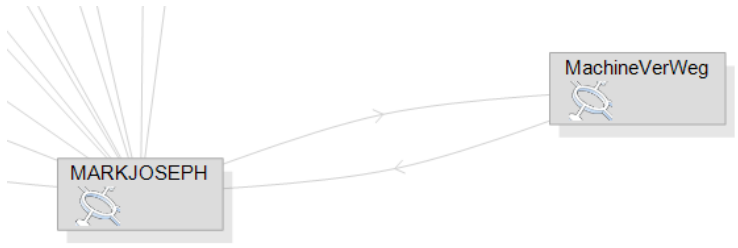
Enabled: If not checked this route is not used even when it is available.
Default encryption: Use the encryption settings supplied at installation, you can click this to change the encryption for this specific connection only. This can be used for example when you want to encrypt the connection that passes through the internet only.
Advanced: Show advanced settings



The source port needs only be filled in if you need to set the source port manually.
The *protocol* determines if the data concerning this connection must be sent in binary, ASCII or UTF-8.
The *Cost* gives a virtual value to the connection. The chosen route from one point on the network to another is calculated by the lowest total costs. Default is 100 for each connection.

Press OK and a connection line between both machines will appear after a few seconds (a red line indicates that there is no (or not yet a) connection.

The same has to be applied the other way around. When the colors of the lines are as in the next image, the connection is complete.



The remaining probed machines on the remote network at MachineVerWeg will also appear after some seconds.

11.5.2 To remove Devices

With the right mouse button on a device it can be removed.
The EPO server where the EPO-Client is linked (dark grey) cannot be removed.

11.5.3 Connection testing / troubleshooting

To test the existence of a connection:

- **Network connection (tcp/ip)**:
  Test this from within the EPO Server itself as well from the probed machine:
  telnet <destination> 7472
  expect result: emptied command screen (=OK)

- **Known Server connections**
  on the EPO-Server: EPOmsgcmd.exe info

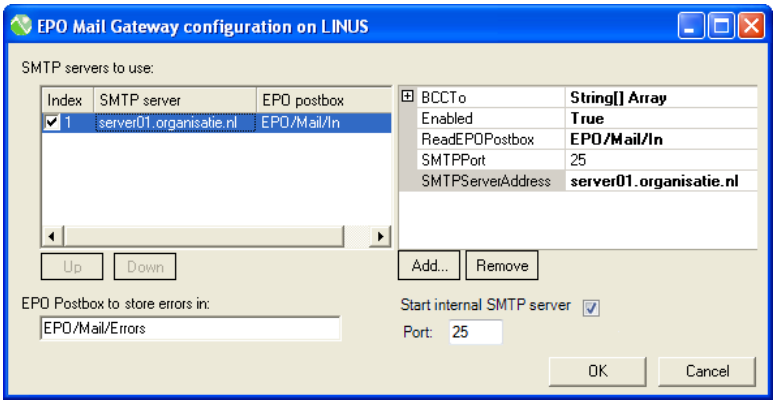
- **EPO Connection (EPO transport layer on top of tcp/ip):**
  on the EPO-Server: epomsgcmd info or epomsgcmd roundtriptest <device>
  start on the probe side: “epomsgcmd - s ipaddress_of_server: 7472 list”
  expected result: a list of Postboxes with numbers of messages for the specified devices.

11.6 EPO Mail gateway

The EPO mail gateway can be used to send e-mail from the escalation manager using the mail server of your choice.

To configure choose menu “Edit \ Edit probe configuration“…

Choose the yellow (most right) icon for the mail gateway configuration:



The selected SMTP-server should be configured to relay mail for the EPOserver.

11.6.1 **Receiving SMTP email**

The mail server is able to receive SMTP email as well. For this, enable the checkbox “Start internal SMTP server”. Devices/software capable of sending SMTP email should enter the EPO Mail gateway server address as the SMTP server. Mail received will be forwarded to an EPO probe. Currently there are two probes able to receive email. The webcam probe and the “email to epo” probe. Both have an email address property which is used as the local-part of an email address. The domain-part should be the name of the device on which the probe resides. The TLD part can be any one word. (e.g.: probeemail@machine.com). For more details on the probes see their respective chapters in this manual.

11.7 SMS Gateway

The SMS gateway is used for sending SMS messages from EPO. When the SMS gateway is installed on a device in the EPO network, the following icon is displayed:

When clicked you can add and configure the SMS capable devices.

The following devices are supported:

- RBU (Our room monitoring unit which has text message support)
- GSM modem
- SMS2Email; The SMS message is sent by email. Useful as a fallback option.
- Online service;
- Multimodem iSMS; A Hardware device for sending text messages

11.8 Configuring EPO for Citrix Provisioning server

The EPO probes can be installed on servers that are created using Citrix provisioning server.

Simply install EPO on the golden image and remove the device entry from the registry:

HKEY_LOCAL_MACHINE\SOFTWARE\The Early Warning Company\EPO\Networkkey

When all copies of the golden image have been created, open the network configuration screen in an EPO user client and add all devices. (Right mouse button click, add device. See 11.5.1). Save when done and go to the “settings” directory in the EPO server installation directory. Copy the file “EPOMsgSvc.Global-Network.settings” to the “settings” directory on the golden image. This is to make sure every created device is able to find the EPO server. When a new server is added this step has to be repeated.

11.8.1 **Encryption**

If encryption is used, a few more steps are required.
Create a script on the golden image with the following contents:

```
@echo off
regedit /S RemoveEPOKey.reg
IF "%COMPUTERNAME%"=="GOLDENIMAGE" goto end
echo %COMPUTERNAME%
net start epomsgsvc
net start epoprobesvc
"C:\Program Files (x86)\The Early Warning Company\EPO\Tools\epomsgcmd.exe" -k 335C6DBB35AD4BFA0F64149213820E50
setnetworkkey
:end
```

Replace GOLDENIMAGE with the real name of the Golden Image. Make sure the directory epomsgcmd is run from, is correct. Replace the key in the example with the real encryption key.
Create a .reg file named RemoveEPOKey.reg:

```
Windows Registry Editor Version 5.00
[HKEY_LOCAL_MACHINE\SOFTWARE\The Early Warning Company\EPO]
"NetworkKey"=-
```

Set the startup-type of the Probe service (epoprobesvc) and the message transport (epomgsvc) to “manual”.
Create a scheduled task that triggers on startup (with a 5 minute delay) that executes the created script.

12 Backup and restore of the database

12.1 Backup

It is easy to make a backup of EPO: just make a copy of the complete EPO directory. Use a tape or other backup device.

The EPO data files (EDF) can be copied during normal operation (no read locks).

Tip: for best performance of the backup process it is advisable to perform the archive function (actually it is compressing) of the EPO data (see also 13.1.1).

12.2 Restore

Stop all EPO services and place the files from the backup device to their original destination. Restart the EPO services.

12.3 Disaster recovery

To recover after a clean windows installation:

- Run the standard setup with the same components and specified installation path as the original installation.
  EXCEPT: DON'T START the services (last option of the third installation step – See § 3.6 section 4)
- Just place the files from the backup device to their original destination
- Start the EPO services

12.4 Migrate EPO Server

If you want (or are forced to because of a server crash) to move EPO (or the backup) to another computer then the easiest way of doing that is to give the new machine the same name and IP address as the old one. All other ways of migrating involve changing router configuration and the rediscovering of EPO devices.

13 Maintenance

To ensure the proper working of EPO Elements and to keep an optimal performance it is advised to give monthly attention to the following items.

13.1 Database maintenance

Information on the EPO database

The EPO data exist from two separated kept data collections:

1) **The measurements (probe results)**
   The measurements are kept in a so called flat file database. Exhaustive testing has shown that this makes little difference for the performance, but that administration of the data will be much easier. The folder structure is as follows:
   - At the highest level the data is divided per month (yyyy-mm)

- Below that, a folder is created for every device that has probes
- Below that for every probe a separate folder (DK_EPO_K<probe name>) is created
- The measurements themselves are stored in (.edf) files, numbered per day.

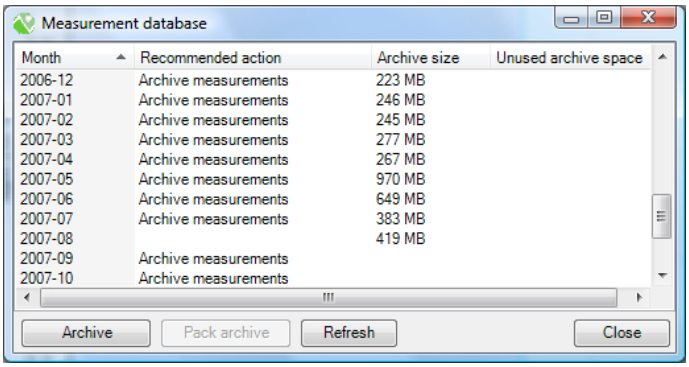
Double click on an edf-file will start the data viewer (the same data viewer that can be invoked from within the EPO GUI by right clicking a data node in the Business Tree and selecting “View Measurements”).

2) **The Business Tree and screen definitions**
This data is kept in an SQL-based database:
(default) c:\program files\the early warning company\epo\data\epo.fdb

13.1.1 Compress the measurement database

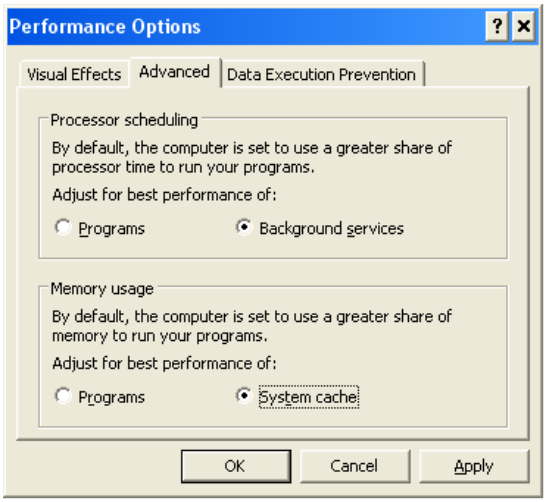
The EPO measurements files can be compressed to save disk space and to gain performance. Choose menu Administration \ Measurement database. Choose an archivable month and select the Archive-button. As a result all files are compressed to one remaining file in the probe data directory with extension eda (EPO Data Archive).

Tip: perform this action on every 1st of a new month on the end of the working day (because it will take a few hours to compress a whole month and it will use CPU power of the server). The archive process itself runs on the server so the client can be closed after initiating the archive process.



13.2 Performance maintenance

EPO can benefit most from the given system resources when the next settings are applied to the server system:



13.2.1 Optimal resources

For the optimal use of resources check the next items frequently:

- The used amount of memory should not exceed the physical memory. Swapping makes applications that use a lot of database access extremely slow.
- Other applications that run on the same computer can slow EPO down
- Compress data from last month

13.2.2 Optimal Database size

An enormous number of files in de database can slow the system, the full backup and EPO itself. If not necessary purge, move or delete data older than (+/-) 1 year.

13.2.3 Optimize probe measurements

Probes that produce enormous amount of data can slow down the system and EPO. Check if such situations occur by searching edf-files (EPO Data File) greater than 512 kB in the directory c:\program files\the early warning company\epo\data\probedata\ (default). NB It is normal behavior when eda-files (EPO Archive File) are (much) larger than several 100 MB's.

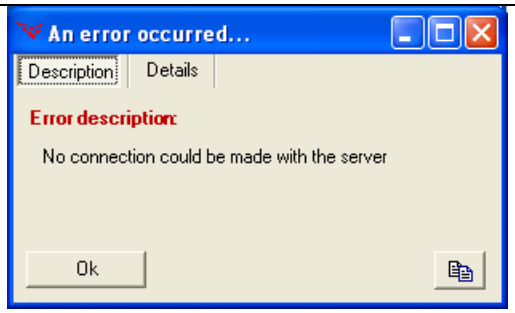
Double click on such files to investigate the nature of the burst messages. Known situations are the Windows event log which can produce 100s of messages every second!

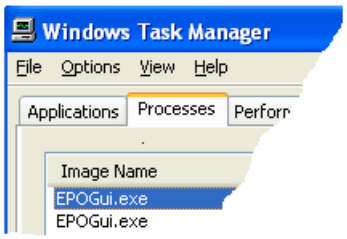
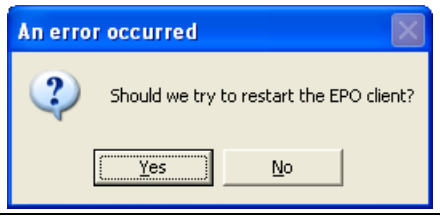
To solve such unwanted situations check the corresponding probe on the specified device (named in the data path). For the EPO Windows eventlog probe: filter the unwanted messages by adding a filter to the probe. Or even better prevent the messages from occurring by resolving the cause or prevent the source application logging those messages.

13.3 Problem solution

In this paragraph a number of possible solutions have been incorporated for known error states.

NB the EPO-Forum has the most recent versions of *FAQ-list* and *known issues*.

1. the EPO Client gives the Error message "No connection…" at start	
Situation	 EPO-Client can get no contact with EPO-Server, possible causes to be: 1. On EPO-Server the service EPO server is not started. 2. Network has been broken between EPO-Client and EPO-Server. 3. Firewalls prevent network contact between EPO-Client and EPO-Server 4. EPO-Client and EPO-Server are not in the same LAN-netwerk.
Possible solutions	1. Start the EPO server - service on the EPO-Server 2. Research the network connection. For example by ping EPO-server (ping.exe or tracert.exe) 3. Firewalls generally permit (default) within local network (LAN) all communication. The firewall should permit EPO communication for port 7472.

2. The Windows task manager indicates that the EPO Client is started twice	
Situation	As the EPO-Client is started there are 2 processes (EPOGui.exe) visible in the Windows task manager: 
Explanation	This is a normal situation. EPOGui.exe is started twice for standard. The first instance of the process EPOGui.exe is the actual client. The second instance only monitors the database connection and the active state of the first instance. If the first instance indicates an error state the second instance will ask for restarting the (first) client: 

3. There comes no information (anymore) from the Windows probe	
Situation	1. Node remains blue (=unknown) in the EPO business tree 2. Node turns into blue after another status. 3. The newly added probe does not become visible in “edit tree “ under probed object.
Possible cause	Measurements are not received by the EPO-server. Possible causes: 1) The EPO probe cannot link (temporarily) with the EPO-server 2) The network connection has been not yet permitted 3) If it is an remote probe the new device is not yet added to EPO
Solution directions	1) Research the tcp network connection from the probed machine: telnet EPOserver 7472 → clear screen = OK 2) Research EPO-connection with: epomsgcmd info or epomsgcmd - s <eposerver> roundtriptest <ip or name probed machine> 3) In case of missing device: Add the new device See § 11.5, “Probes ”, page 118.

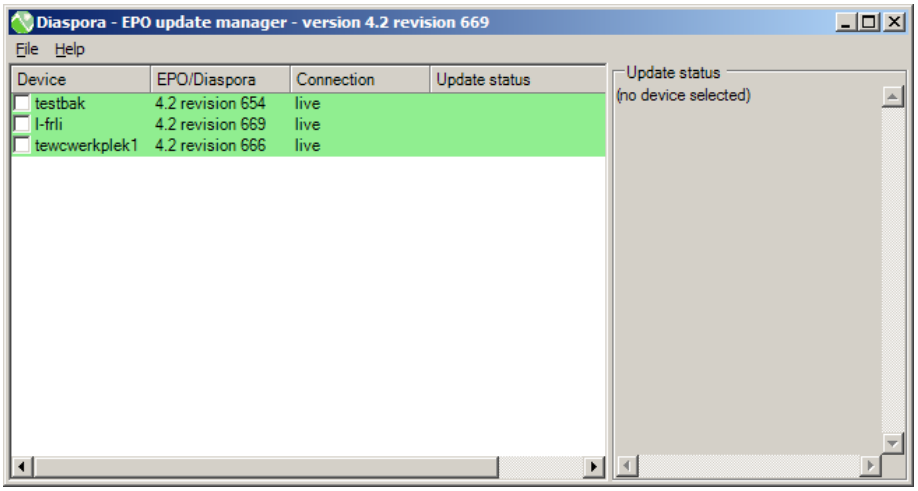
4. The whole Business View is colored	
Situation	The whole Business View is colored (instead of a single object)
Possible cause	1) The node is drag-and-dropped on a part that has no boundary 2) The boundary of the objects in the picture are not solid enough 3) The boundary has another color then the default color black
Solution directions	1) Remove link or choose a place in the picture that has boundaries 2) Select he link and choose a higher tolerance for the boundary (max 100%) 3) Select the proper boundary color

14 Diaspora

EPO has the possibility of updating itself by means of the software delivery tool “Diaspora”. Diaspora consists of 2 parts, a part that resides on the server side and a client part.

Diaspora sends the updates by means of the EPO transport layer.

The Diaspora client shows all devices (not EPO Clients) that are connected with the Diaspora service to the EPO message transport layer together with the devices that were discovered last time. These devices are stored in the file C:\Program Files\The Early Warning Company\EPO\Diaspora Client\KnownDevices.txt (default):



Remove the file KnownDevices.txt if the device list is outdated.
By means of “File->Send Update” a .diaspora file can be selected. Such a file has the following options:

```
[Transfer]
DontUpdateSelf=true

[Execute]
Application=DoDiasporaUpdate.cmd
Timeout=25

[Files]
Add=EPO-669 \ DoDiasporaUpdate.cmd
Add=EPO-669 \ EPO element 4.2-669 Setup.exe
AddMatch=EPO-669 \ NetworkKey.ekf
AddMatch=EPO-669 \ InstallOptions.ini
```

[Transfer]: certain options as DontUpdateSelf with which can be indicated if Diaspora itself can be updated.
[Execute]: Applications which must be run after the file transfer.
Timeout: Time out for the applications in minutes. Default is 20. If an application is still running after the time out has expired, the application is killed.

[Files]: The files which must be sent.
Add: The file with that exact name.
AddMatch: Adds the files with matching Wildcards as * and ?.

The update will be sent to all selected machines. As the update it is carried out the result of the implemented program will be given as feedback.

15 Frequently Asked Questions with the Answers

See www.epo-elements.nl for the last version.

Index

Handboek

auxzenze IT MAKES SENSE

F

H

I

L

M

N

O

P

Handboek

auxzenze IT MAKES SENSE