UXP

PROXY MONITORING AGENT MANUAL

1.1

VERSION HISTORY

Date	Version	Description
27.01.2014	0.1	Initial version
27.01.2014	0.2	Updated introduction and installation Reused relevant sections from central monitoring agent manual
28.01.2014	0.3	Minor tweaks and fixes Added short description of automatic configuration Added description of proxy monitor configuration and parameters
28.01.2014	0.4	Changes based on feedback
13.10.2015	1.0	Editorial changes
22.10.2015	1.1	Corrected port information and package name

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1 INTRODUCTION

This manual describes the tasks related to installation and configuration of the proxy configuration agent (PMA). In addition, it describes configuration that must be performed in Zabbix servers in order to successfully receive X-Road monitoring data. Installation, management and use of the Zabbix servers is not in scope of this manual. Refer to corresponding section of the Zabbix documentation [Zabbix 2.4 Manual].

1.1 TARGET AUDIENCE

The intended audience of this manual is X-Road systems administrators who are responsible for monitoring the X-Road system.

The document is intended for readers with a moderate knowledge of Linux server management, computer networks, and the X-Road working principles.

Basic user knowledge of the Zabbix distributed monitoring solution is required. Refer to corresponding section of the Zabbix documentation [Zabbix 2.4 Manual].

1.2 MONITORING X-ROAD SERVERS

The X-Road monitoring solution allows for easy access to information such as CPU load, memory consumption and number of successful and failed requests processed by security servers. Figure 1 shows the components of the monitoring solution.

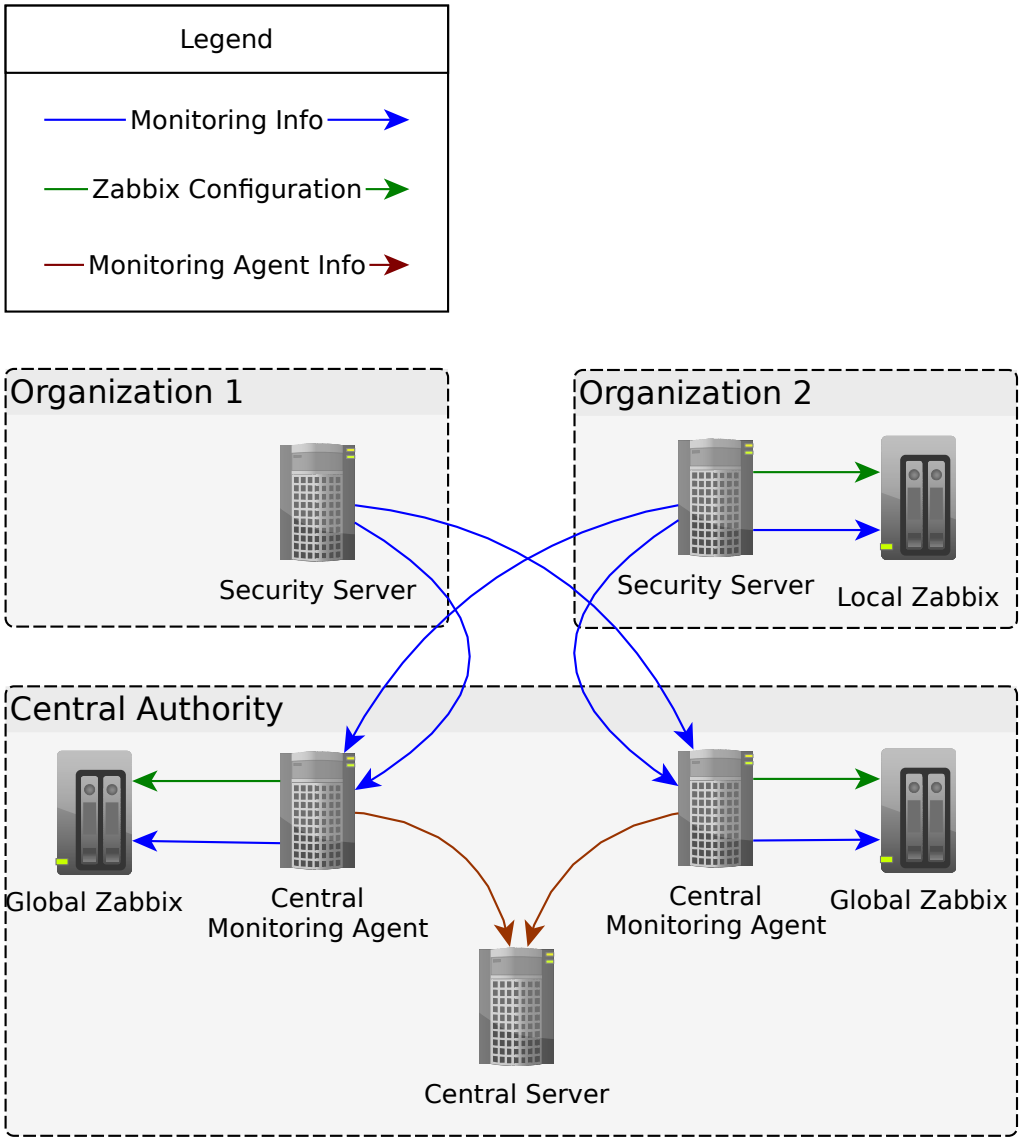

Figure 1: X-Road monitoring solution

Monitoring can happen on two levels. On the local level, the security server's administrator uses a monitoring plug-in that sends monitoring info to one or more locally configured Zabbix servers. On the global level, the central server administrator can install one or more central monitoring agents that collect information from security servers and sends it to one or more Zabbix servers (blue arrows in the diagram). The list of monitored servers are automatically sent to both global and local Zabbix servers (green arrows in the diagram) so that there is no need for manual configuration. Information about central monitoring agents is entered into the central server (red arrows in the diagram) and is distributed with the global configuration to all security servers.

Communication between security servers and central monitoring agents is protected with TLS protocol that uses certificates to authenticate both the client and the server. Security servers use authentication certificate for this purpose. Central monitoring agents use self-signed certificates that are distributed to security servers as part of the global configuration.

Both security servers and the central monitoring agents forward monitoring information to a number of Zabbix servers (see Section 3.2 on specifics of adding servers). The monitoring information comes from monitoring plug-ins in the security servers. These plug-ins send the monitoring information they gather to all central monitoring agents that they can find from the

global configuration (those that are configured at the central server as described in Section 3.1). By default the central monitoring agent will configure target Zabbix servers such that they are able to correctly interpret the information they receive (refer to Section 3.2).

This manual provides guidelines for configuring local monitoring for the security server, for information on the central monitoring agent see the corresponding manual [X-ROAD v6 Central Monitoring Agent Manual].

1.3 REFERENCES

1. [X-ROAD v6 Central Server User's Guide] Cybernetica AS. X-Road 6. Central Server User's Guide. Document ID Y-745-6.

2. [X-ROAD v6 Central Monitoring Agent Manual] Cybernetica AS. X-Road 6. Central Monitoring Agent Manual. Document ID Y-745-12.

3. [X-ROAD v6 Security Server Installation Guide] Cybernetica AS. X-Road 6. Security Server Installation Guide. Document ID Y-745-8.

4. [Zabbix 2.4 Manual] https://www.zabbix.com/documentation/2.4/manual

2 INSTALLATION

2.1 SUPPORTED PLATFORMS

PMA is installed as addon to existing security server from the X-Road software repository.

The PMA has been tested and confirmed to work with Zabbix versions 2.2 through 2.4.

2.2 REFERENCE DATA FOR PROXY MONITORING AGENT

Caution: Data necessary for the functioning of the operating system is not included.

Ref			Explanation
1.0	TCP 10051	monitoring data forwarding	Port for outbound connections to central monitoring agents and Zabbix servers
	TCP 443	monitoring data collection	
	TCP 80	remote Zabbix server configuration	

2.3 REQUIREMENTS FOR THE PROXY MONITORING AGENT

Requirements to software and settings:

- An installed and configured Ubuntu 14.04 LTS x86-64 operating system as well as an installed and configured X-Road security server.
- If the PMA is separated from other networks by a firewall and/or NAT, the necessary connections to and from the security server must be allowed (reference data: 1.1). The enabling of auxiliary services which are necessary for the functioning and management of the operating system (such as DNS, NTP, and SSH) is outside the scope of this guide.
- By default the PMA will attempt to connect to Zabbix servers and central monitoring agents using the default port values (reference data: 1.1), if the remote configuration differs from the default it will need to be specified in configuration (refer to Section 3.2).

2.4 INSTALLATION

Installation of the PMA software should be performed on a machine that has the X-Road security server installed (refer to the relevant installation guide if necessary [X-ROAD v6 Security Server Installation Guide]). As such, the required repositories should be already set up on the machine and the PMA can be installed by issuing the following commands:

```
sudo apt-get update
sudo apt-get install uxp-addon-monitor
```

2.5 POST-INSTALLATION CHECKS

The installation is successful if the 'xroad-monitor' service is started.

- Check from the command line that all the xroad services, including 'xroad-monitor', are in the start/running state (example output follows):

```
sudo initctl list | grep -E "^xroad-|^uxp"
```

```
xroad-async start/running, process 29793
xroad-jetty start/running, process 9368
xroad-confclient start/running, process 4703
xroad-signer start/running, process 4701
uxp-monitor start/running, process 4702
xroad-proxy start/running, process 7920
```

- Make sure that the following command is available from the command line:

```
reload-monitor-agent
```

3 LOCAL MONITORING CONFIGURATION

Care was taken to make configuration of the monitoring system as minimal as possible. Much of the functionality of related systems can be configured automatically by providing just a couple general parameters.

3.1 MANAGING PROXY MONITORING AGENTS

No specific configuration is required for correct operation of the PMA.

3.2 MANAGING ZABBIX SERVERS

3.2.1 Configuring Zabbix Servers for monitoring X-Road

By default the PMA will automatically configure target Zabbix servers that are added to it's configuration file '/etc/xroad/monitor-agent.ini'. It will attempt to send configuration data to the Zabbix configuration service made available by installing the *zabbix-php-frontend* package. Connecting to the configuration service will require several additional configuration parameters (described in Section 3.2.3).

If, however, you wish to manually add the security server to the Zabbix database, an option is available to turn off automatic configuration of a target Zabbix server. Modifying the Zabbix database is not in scope of this manual. Refer to corresponding section of the Zabbix documentation [Zabbix 2.4 Manual].

3.2.2 Automatic Configuration

The PMA will add the security server that it's running on to the Zabbix server's database. The host group that the server will be added to is defined in the PMA configuration, if the host group does not exist it will be created. The PMA will attempt to configure Zabbix servers in it's configuration when it's launched, if configuration of any server is unsuccessful (if it was down for instance) then the PMA will periodically retry the configuration until it succeeds.

3.2.3 Adding Zabbix Servers to Proxy Monitoring Agent

To enable the forwarding of monitoring information to a Zabbix server one has to modify the configuration file '/etc/xroad/monitor-agent.ini', adding an entry similar to:

```
[zabbix-1]
address = 192.168.32.64
username = Admin
password = zabbix
host_group = pma
```

The section *[zabbix-<suffix>]* defines a Zabbix monitoring station, where the section name has a required prefix – '*zabbix*', and *<suffix>* must be some string that is unique among the other Zabbix sections. The description of the various configuration fields that can be defined within the Zabbix section follows (ones without a default value must be explicitly defined):

Field	Default Value	Explanation
`address`		Zabbix server host or IP address.
`port`	`10051`	Port where the Zabbix server listens for monitoring information.
`enable_configurator`	`true`	Enables/disables automatic configuration of the Zabbix monitoring station.

The following values are only required if automatic configuration of the Zabbix server has been enabled:

Field	Default Value	Explanation
username		Zabbix configuration user name. Configurable during the Zabbix PHP Frontend installation.
password		Zabbix configuration user password. Configurable during the Zabbix PHP Frontend installation.
conf_api_port	80	Zabbix configuration API port. Configurable during the Zabbix PHP Frontend installation.
conf_api_path	/zabbix/api_jsonrpc.php	Zabbix configuration API path. Depends on the configuration of the apache2 web server set up for the Zabbix PHP Frontend installation.
host_group		The host group that the PMA should configure the security server to be a part of.

After the configuration has been updated with the correct Zabbix server information, the PMA should reload the configuration. This process is described in Section 3.3.

3.3 MAINTENANCE

There are certain scenarios where the PMA might not function as desired by the system administrator. Most of these issues can be avoided by executing the administrative 'reload' command on the PMA's admin port (reference data: 2.1). A convenience command is available for this purpose:

```
reload-monitor-agent
```

When 'reload' is executed, the PMA reads it's configuration from the configuration file '/etc/xroad/monitor-agent.ini' and updates it's components according to any changes that are detected. Any Zabbix servers present in the configuration will then be reconfigured if they have the automatic reconfiguration capability enabled in the configuration file.

3.3.1 Proxy Monitor Agent Configuration is Modified

If the PMA configuration file '/etc/xroad/monitor-agent.ini' has been altered, then the configuration needs to be updated using the 'reload' command.

3.3.2 Zabbix Configuration Becomes Invalid

Should a Zabbix server configuration become lost or invalid, the reconfiguration process of Zabbix servers can be performed by force, using the 'reload' command.