SIEMENS

Firmware Download with SINEMA Server for SCALANCE via TFTP

SINEMA Server V13 SP 1

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1 Introduction

1.1 Overview

Requirement

The firmware of the SCALANCE devices X-200(IRT) / X-300 / X-400 / W-700abg (with the "VxWorks operating system) is to be updated to the latest version. This procedure should run as efficiently as possible for multiple SCALANCE devices.

Possible solution

One possible way of meeting this requirement is to use SINEMA Server and the communications protocol TFTP.
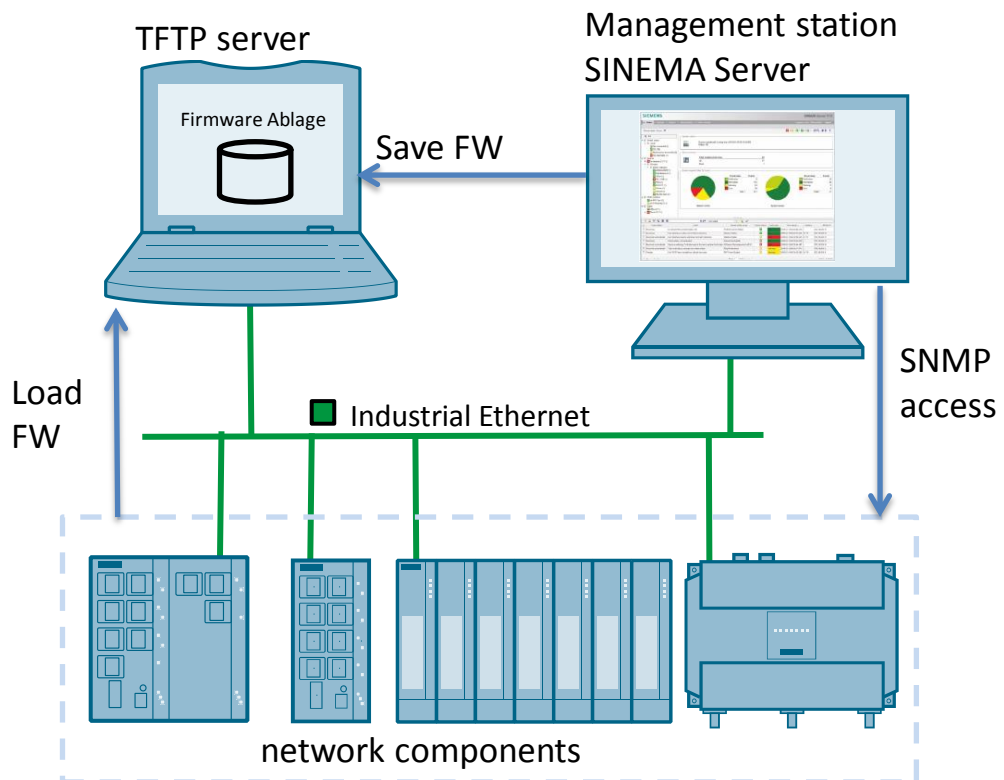
Implementation

This document shows how to use SINEMA Server to download the firmware to SCALANCE devices via TFTP. You do this manually or have it planned (in other words only in desired time windows).

1.2 Function

The figure below shows the principle function of the solution.

Figure 1-1

1 Introduction

1.3   Components Used

Software component

The following software is required for this solution:

Table 1-1

Software	Article number / Designation
SINEMA Server V13 SP1	**DVD:** 6GK1781-1BA13-0AA0 [50 nodes] 6GK1781-1DA13-0AA0 [100 nodes] 6GK1781-1JA13-0AA0 [250 nodes] 6GK1781-1TA13-0AA0 [500 nodes] **Download (Online Support):** 6GK1781-1BA13-0A**K**0 [50 nodes] 6GK1781-1DA13-0A**K**0 [100 nodes] 6GK1781-1JA13-0A**K**0 [250 nodes] 6GK1781-1TA13-0A**K**0 [500 nodes]
- Internet Explorer 10.0 - Firefox 42.0 - Google Chrome 30.0	These browser versions represent the minimum requirements. You can also use higher versions of the browsers.

Install this software on a PC/PG.

- Windows 7 SP1 64-bit (Prof, Ult., Ent)
- Windows 2008 Server R2 SP1 64-bit

Compatible devices

These instructions are valid for all X-200(IRT) / X-300 / X-400 / W-700abg with the "VxWorks operating system, which support the firmware update via TFTP server.

The assignment of the article numbers to the firmware versions and the current firmware file are given in the Siemens Industry Online Support (for the link see Chapter 4).

2 Engineering

2.1 General Overview

The figure below shows the principle for implementing the task in 5 steps.

Figure 2-1
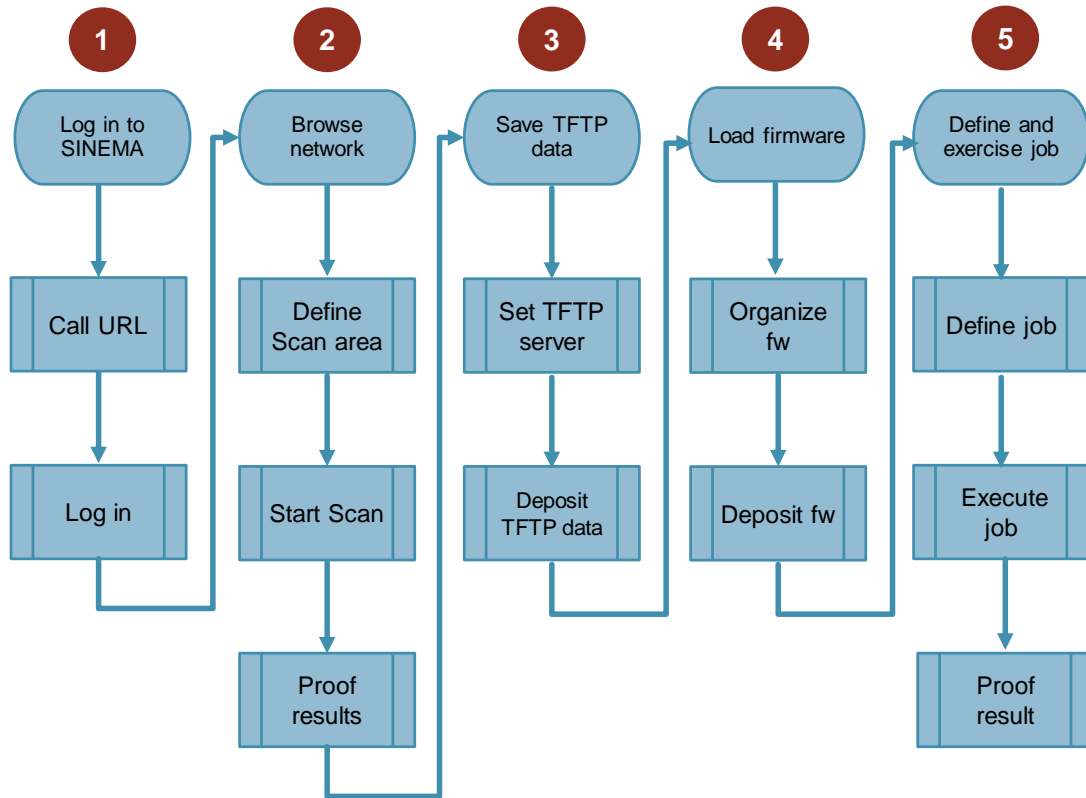
2.2 Configuration

2.2.1 Useful Notes

Network access

Access via the network to the SCALANCE devices to be upgraded is required to do a firmware update.

Firmware file

The latest firmware file for the SCALANCE devices can be downloaded in the Siemens Industry Online Support (for the link see Chapter 4).

Devices used

The configuration instructions below are for upgrading a SCALANCE X208 and a SCALANCE X308-2LD Switch to the latest version of the firmware.

Current firmware version *(21.07.2016)*:

- **X208:** V5.2.1 (https://support.industry.siemens.com/cs/de/de/view/109736251)
- **X308:** V4.0.4 (https://support.industry.siemens.com/cs/de/de/view/109736245)

The IP parameters below were assigned to the switches.

Table 2-1

Component	Article number	IP address	Subnet mask
SCALANCE X208	6GK5 208-0BA10-2AA3	172.16.9.45	255.255.255.0
SCALANCE X308-2LD	6GK5 308-2FM00-2AA3	172.16.9.46	255.255.255.0

2.2.2   Log in to SINEMA Server

1. Start your browser and enter the SINEMA Server URL in the address line.
    Use the default URL https://localhost if SINEMA has been re-installed or a
    system recovery has been made.
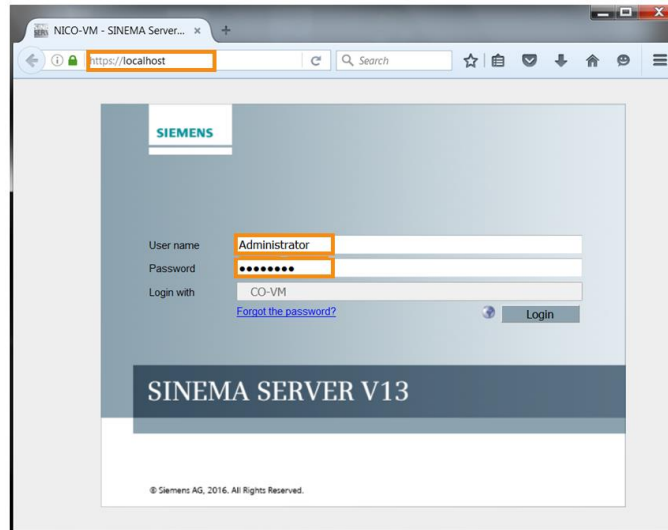
Use the user-specific URL, http://localhost:80, for example, if the HTTP Port 80
has been enabled in the SINEMA Server monitor.
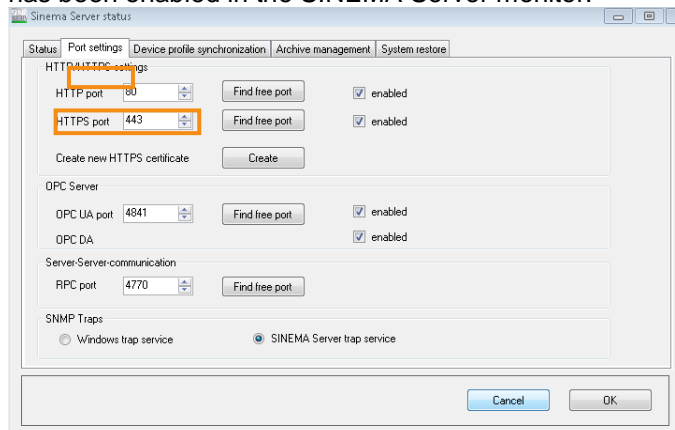
2. Log into SINEMA Server with the login data below.
    Default login data:

    *   User name: Administrator
    *   Password: SinemaA

    User-specific login data:

    *   *User name: <…>*
    *   *Password: <…>*

Result:
The home page of SINEMA Server is displayed.

① Kopfbereich   ④ Gerätebaum
② Navigationsleiste   ⑤ Hauptfenster
③ Statuszeile   ⑥ Ereignisliste

2.2.3 Browse Network

Set network scan range

1. In the menu bar you switch to the menu "Administration > Discovery > Scan".

2. Under "IP address areas for network scan" you select the item named "SN_Subgroup_0".

3. Click the "Edit IP address area" item of double-click the selected item.
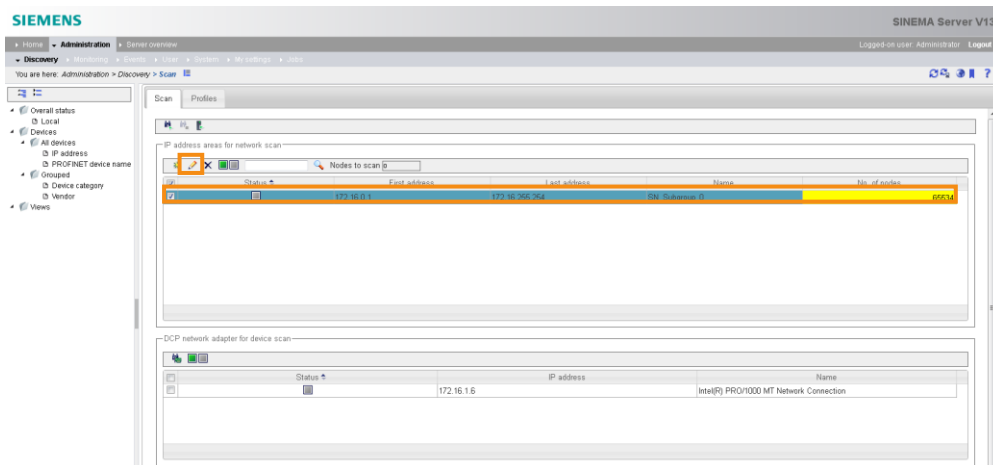
4. In the dialog that opens you specify the IP address range that includes the SCALANCE devices to be upgraded and click the "Active" check box to enable the specified IP address range.

5. Confirm your entries by clicking the "Save" button.

Start network scan

Then click the "Start scan" icon to start the scanning process.

Note	If the dialog below opens, confirm with the "OK" button.

Check scan result

Check whether SINEMA Server has found the SCALANCE devices to be upgraded. All the devices found are displayed in the device tree on the left: "Devices > All devices"
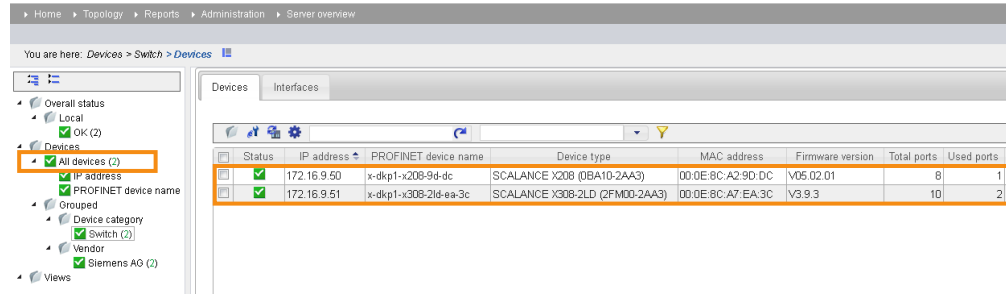
2.2.4 Store TFTP Data

SINEMA Server does not have its own TFTP server.

To be able to download the firmware to the SCALANCE devices you have to install a TFTP server or access an existing TFTP server.

As soon as firmware file is entered in SINEMA Server it is stored on the TFTP server.

Note	No concrete TFTP server is named below. The settings are valid for all TFTP servers.

Parameterize the TFTP server

Start the TFTP server and assign it the proper IP address, in other words make sure that the TFTP server IP can be reached by all the SCALANCE devices to be upgraded.

If necessary, you have to enable the TFTP server in the Windows firewall, by default for incoming traffic at Port 69 UDP.

Store the TFTP server in SINEMA Server

1. In SINEMA Server you switch to the menu "Administration > Jobs".
2. Click the "Cogwheel" icon to get to the menu for the basic job settings.
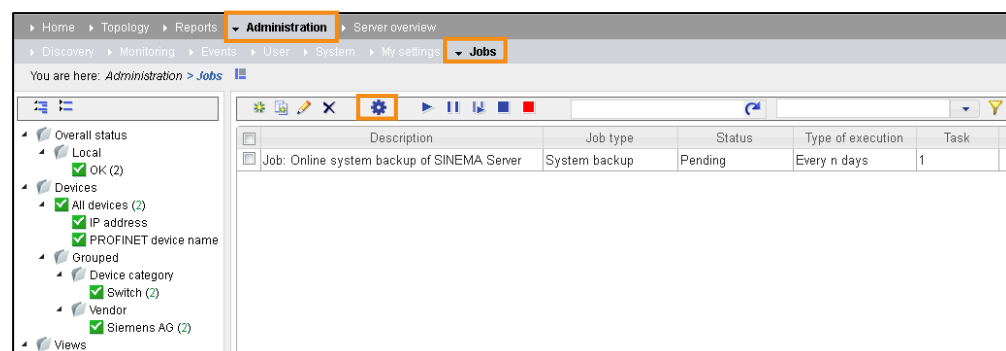
3. Switch to the "Firmware download" tab and under "Basic settings" you enter the IP address and the port of the TFTP server to be used.
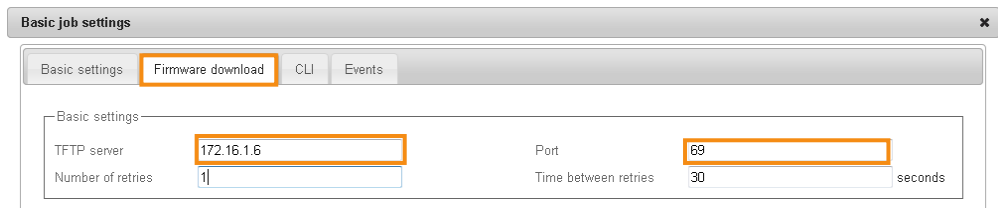
Note	The IP address and port of the TFTP server are written to the device. This is why you have to enter the "correct" IP of the TFTP server. A loopback IP address like 127.0.0.1, for example, is not permitted.

2.2.5 Download Firmware into SINEMA Server

Organize firmware file

Download the firmware file required for upgrading your SCALANCE device from the Siemens Service & Support website (for the link see Chapter 4).

Download firmware file into internal storage

1. In SINEMA Server you click the "Add new firmware file" icon.
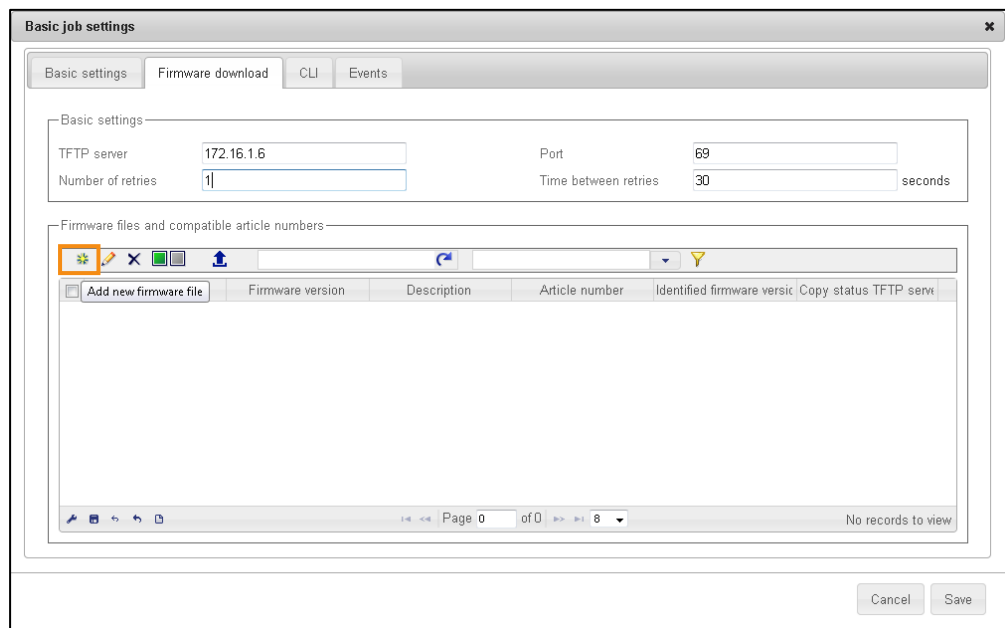
2. Navigate to where you want to store the firmware file for the SCALANCE device to be upgraded and select it. Then click the "Open" button.
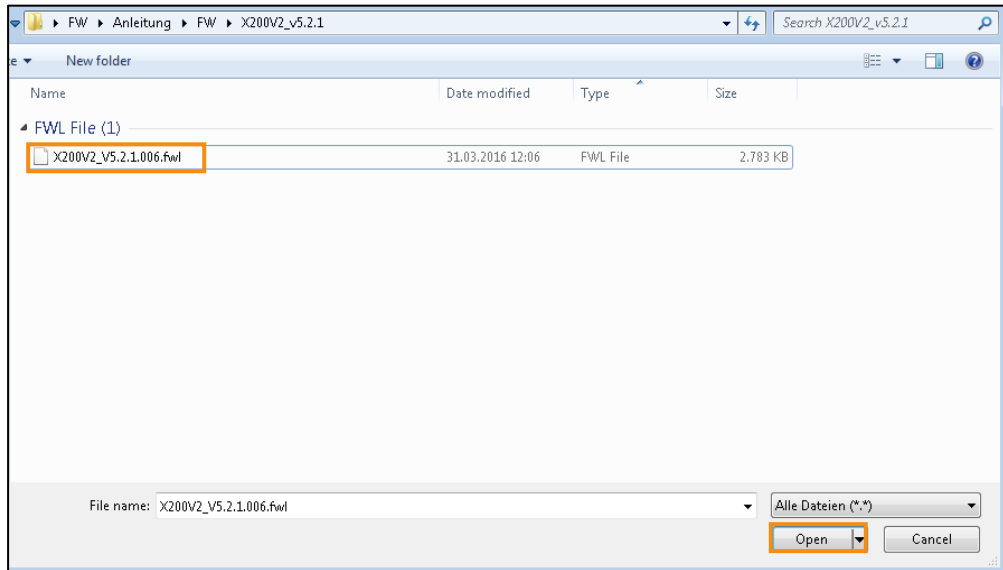
3. In the "Edit firmware file" window that opens, under "Basic settings" you specify the appropriate firmware version (V5.2.1 in the example). Click the "Add new article number" icon.
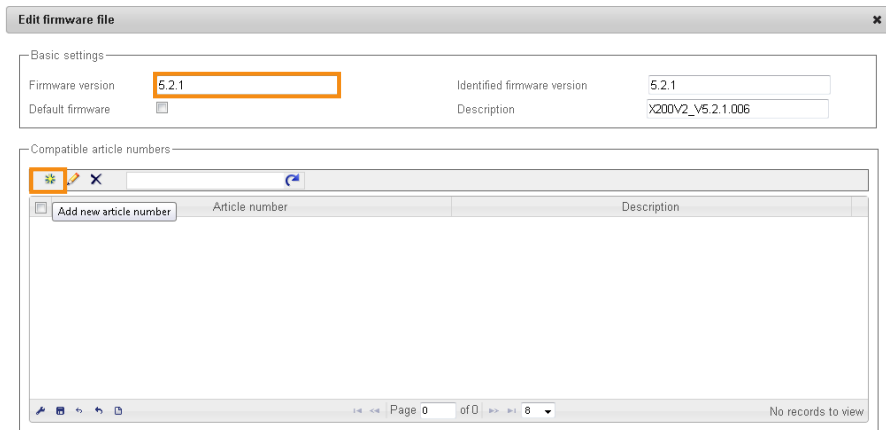
4. In the "Article number" and "Description" fields you specify the article number and description respectively for the selected firmware version and then click the "OK" button.

5. Finally you click the "Save" button to download this firmware file into the internal firmware storage of SINEMA Server.

6. Repeat the steps above for each other firmware file.
   In the example, firmware version V5.2.1 was uploaded from SINEMA server for the X208 and firmware version V4.0.4 for the X308-2LD.

7. To finish click the "Save" button and the firmware files are downloaded from the internal firmware storage of SINEMA Server to the TFTP server.

	Default firmware	Firmware version	Description	Article number	Identified firmware versio	Copy status TFTP serve
☐	▇	5.2.1	X200V2_V5.2.1.006	6GK5 208-0BA10-2AA3	5.2.1	Success
☐	▇	4.0.4	kV404008	6GK5 308-2FM00-2AA3	4.0.4	Success

Note The "Copy status TFTP server == Success" column shows you that the firmware files have been copied successfully to the TFTP server.

2.2.6   Firmware Download to the SCALANCE Device

Preparation

The writing of SNMP values must be enabled on the SCALANCE devices to be upgraded.

For this the parameter "SNMPv1/v2c - Read Only" must be disabled. You can set this parameter in any SCALANCE X via the menu: "Agent > SNMP Config". The factory setting is that the parameter "SNMPv1/v2c - Read Only" is already disabled.

It is preferable to use only the secure SNMP version V3 for write access.
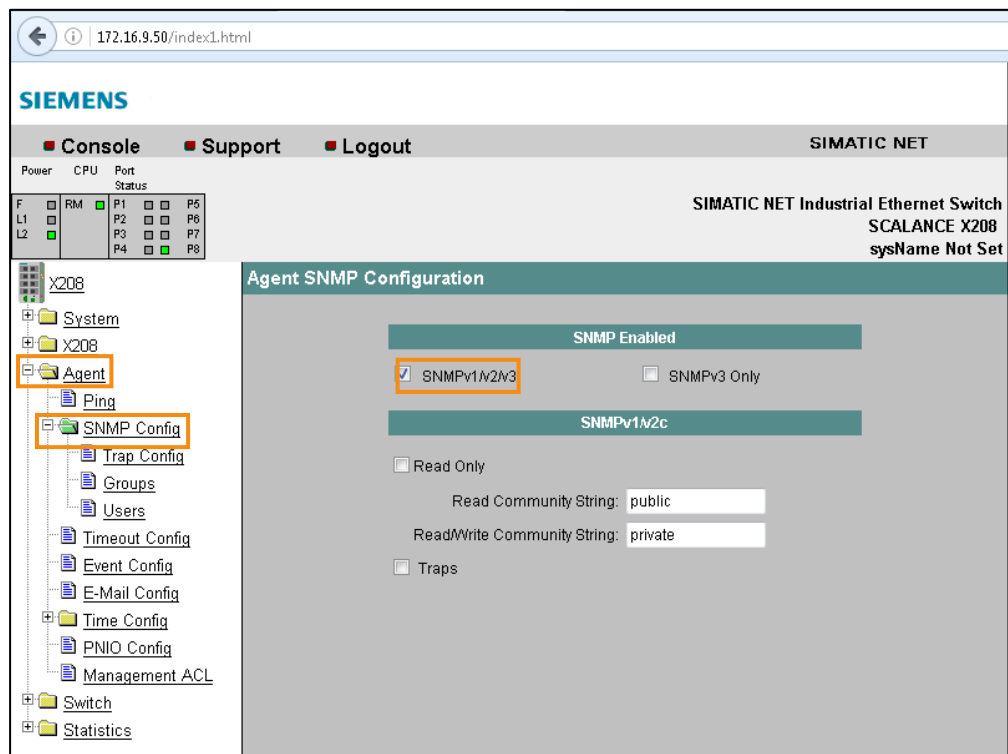
Configure firmware download job

1. In SINEMA Server you navigate to the menu item "Administration > Jobs". Click the "Add new job" icon.
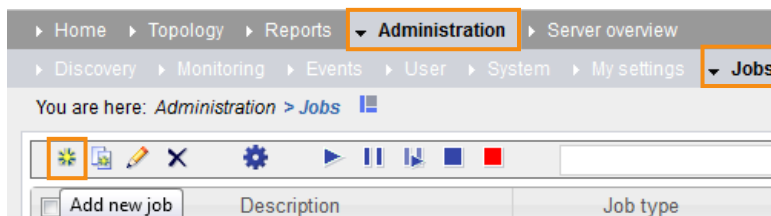
2. Navigate to the "Basic settings" tab.
   In the "Description" field you specify a name of your choice for the job.
   <u>In the example:</u> Description = "FW-Update X208_X308-2LD"

3. As Job type you select = "Firmware download (and optional activation)".

4. Navigate to the "Job type specific settings" tab. For "Run firmware activation" you select "Immediately after the firmware download to a device" and for "Use following firmware" you select "Newest firmware".

Note	It is recommended to save the configuration files of the SCALANCE devices to be upgraded on the TFPT server ("Configuration backup on TFTP server"). In particular before running firmware downgrades it is useful to save the configuration file, because device configurations might get lost under circumstances.

5. Switch to the "Devices" tab. From the list of available devices (left side) you select the SCALANCE devices to be upgraded and add them to the job by clicking the "Move selected devices to view" arrow.
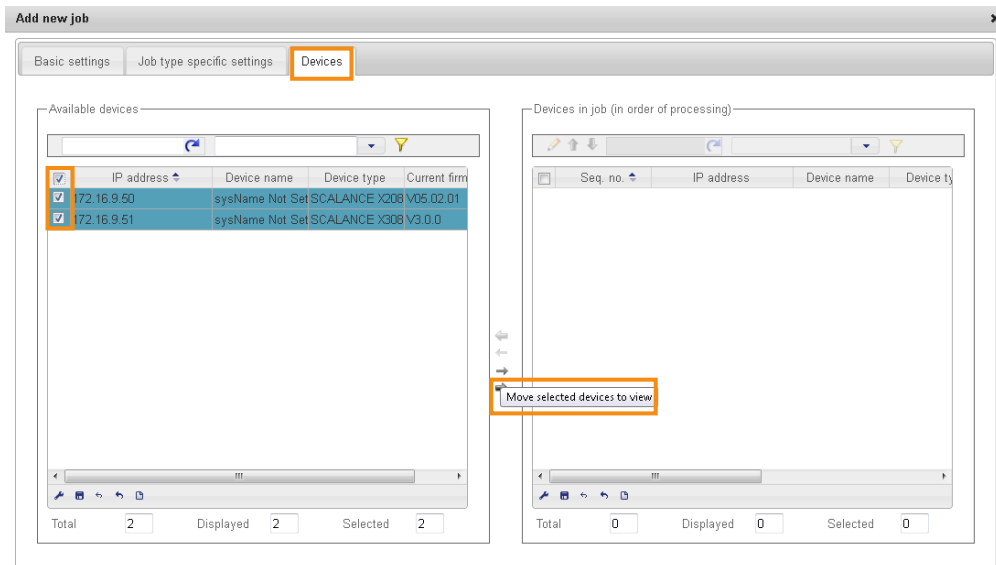
Note   To select multiple devices in SINEMA Server you must hold down the CTRL key and select the required devices by mouse-click.

Note   When using the 21-day Trial License the firmware update is limited to one device.
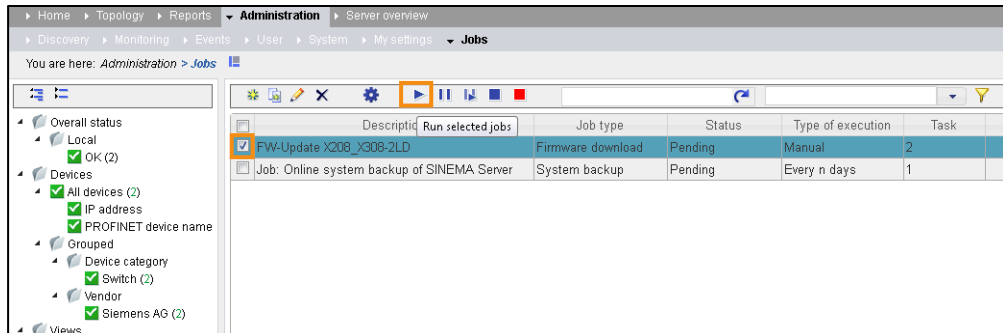
6. As soon as the SCALANCE devices to be upgraded have been added to the job (visible on the right side) you can define the processing order in the right window. You do this using both arrows.
7. Save the job by clicking the "Save" button.
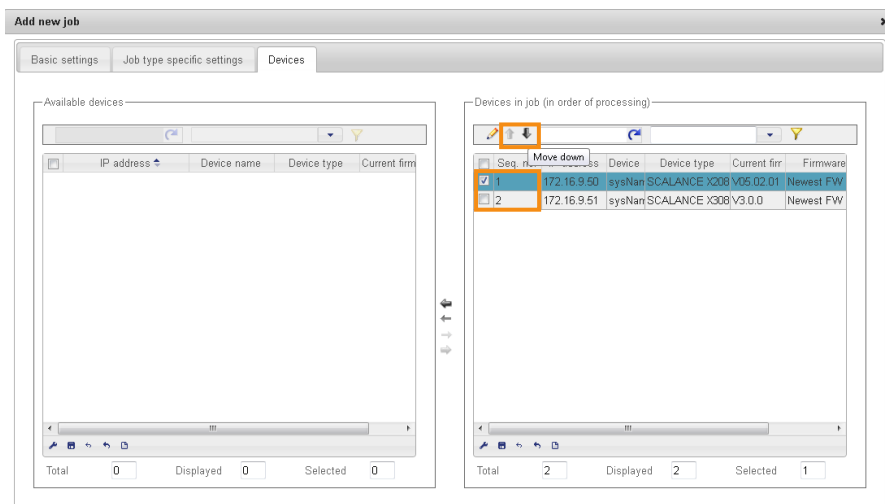
Execute job

Select the job you have just created: "FW-Update X208_X308-2LD". To start this job you click "Play" button ("Run selected jobs").

Monitor execution

After a job has been executed you get a status display of all the tasks:

- 1st number = Number of tasks in the job
- 2nd number (green) = Number of tasks successfully executed
- 3rd number (red) = Number of failed tasks (if detectable)
- 4th number (gray) = Number of tasks with unknown result (no feedback)

Note	SINEMA Server proceeds as below for consecutive downloading of the firmware:
	1. The device restarts after enabling of the firmware.
	2. After the restart the availability of the device is checked and the current firmware version queried.
	3. Based on this result the status "Success" or "Failure" is set for the current task.
	4. Then the next task is triggered.

In addition, for each job you can have the result displayed per device.

1. For this you select the job "FW-Update X208_X308-2LD" and click the "Edit selected job" icon (or double-click the job).
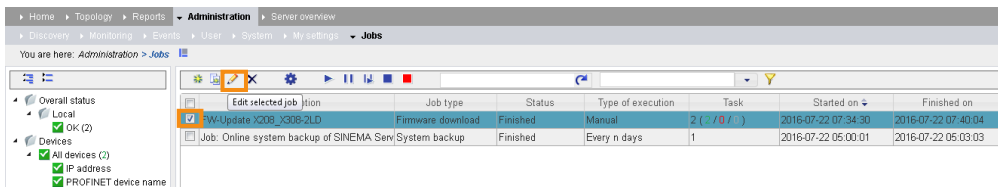
2. In the selected job "FW-Update X208_X308-2LD" you switch to the "Devices" tab. In the "Status" column you can see the result of the job with device granularity.

Detailed results of the job are also display in the [Event list]. This is in the lower area of the SINEMA Server screen.

| | Note | • Each job / task generates specific results. |
| | | • Each event might under circumstances be useful for troubleshooting. |

Result:
If the "correct" firmware versions (V05.02.01 and V4.0.4) are displayed in the device list of SINEMA Server, then the firmware update has been executed successfully.

| | Note | More information is available in the SINEMA Server Operating Instructions (page 228 onwards): https://support.industry.siemens.com/cs/ww/de/view/109482957 |

3 History

Table 3-1

Version	Date	Change
V1.0	09/2016	First edition

4 Literature

Table 4-1

	Topic
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Download page of the entry https://support.industry.siemens.com/cs/ww/en/view/10974013