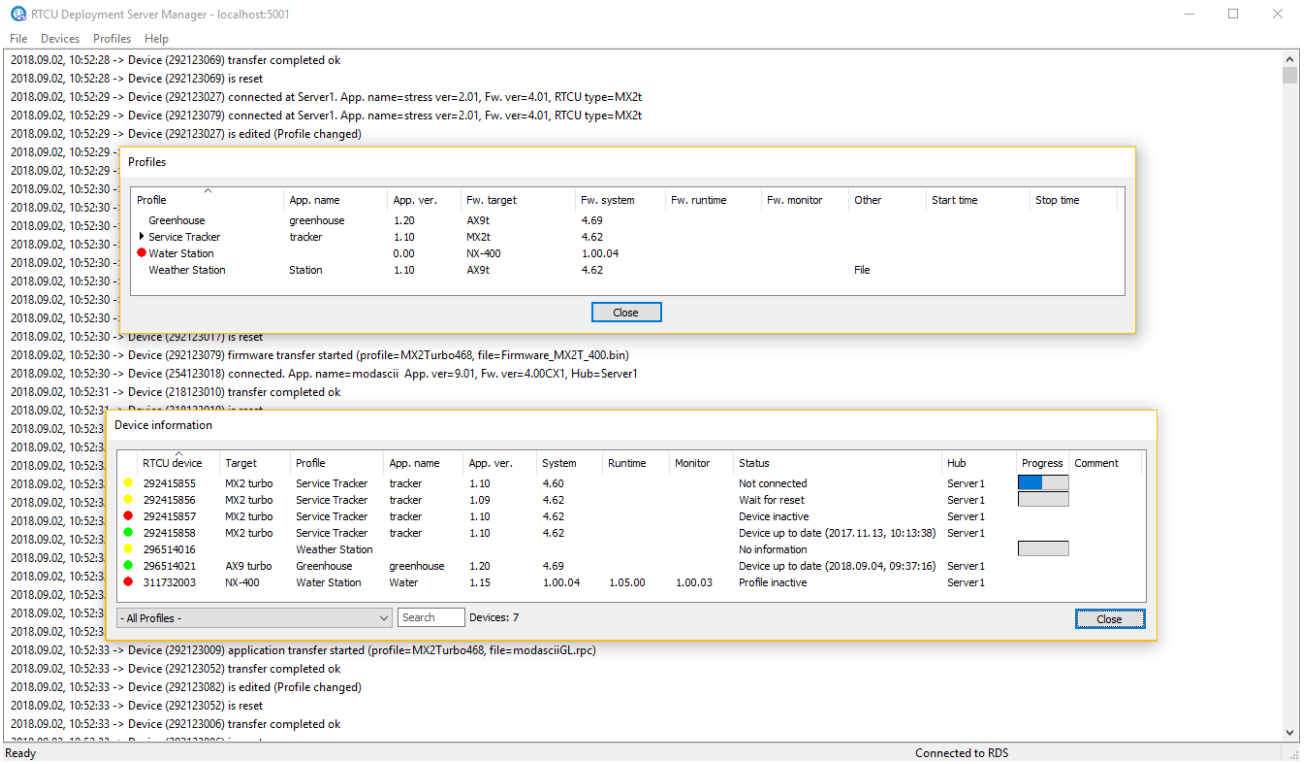
The Logic IO

RTCU Deployment Server (RDS)

Version 5.60



User's Manual

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Table of Contents

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Introduction

This document describes the RTCU Deployment Server (RDS). The RTCU Deployment Server is a lightweight and easy-to-install solution that runs under most Microsoft Windows variants.
The RDS is used to make the task of upgrading firmware and/or application in a large population of RTCU devices easier. The RDS also offers functionality to transfer user-defined files to the RTCU devices.
The RDS uses TCP/IP network to allow remote access to RTCU devices connected to the RTCU Communication Hub.
The RDS takes advantage of the background update available in the RTCU firmware for maximum flexibility.

Features:

- Uses the RTCU Communication Hub (RCH) to establish a connection to remote devices.
- Runs as a Windows service for automatic start-up in server installations.
- Includes remote maintenance, diagnostic, and logging facilities.
- Upgrades firmware and application automatically according to user configuration.
- Upgrades can occur during the full operation of the device.
  This unique feature minimizes downtime and the impact on the user.
- Failed upgrade attempts will automatically be resumed at the point of interruption.
  This unique feature will reduce the cost and time of upgrading.
- It can be either an automatic or application-driven decision when to switch over to the new application/firmware. All that is required to switch over to the new application/firmware is a reset of the device, which will only interrupt the operation for 10-20 seconds.
- Up to 200 simultaneous upgrade sessions.
- Supports applications that use VPL upgrade notifications.
- Support for automatic programming of new factory-delivered devices.
- Scheduled upgrade.
- Support for upload of user-defined files to a device.
- Support for synchronization of files from user-defined directories to devices.
- Comprehensive logging and status features.
- Import from and export to comma-delimited files.
- Support for RTCU X32, NX32, and NX32L Execution Architecture.
- Large Packet Support with increased performance and bandwidth.

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System Requirements

Operating system:	Minimum: Microsoft Windows 7. Minimum: Windows Server 2008.
Memory (RAM):	Minimum 500 MB / Recommended: 1 GB. (Available for RDS).
Hard disk space:	Approx. 50MB @2000 devices, 40MB @500 devices.
Other:	Network card, TCP/IP network protocol. RTCU Communication Hub is recommended.

License

There are no limitations on the RDS itself, but the number of allowed clients will be enforced by the license policy of the RTCU Communication Hub.
The RTCU Communication Hub can be used with up to 25 clients (RTCU devices, the RDS, or PC software) in a trial version. However, if more clients are required, a license can be purchased from Logic IO (See the RTCU Communication Hub manual for more information).
Note that the RTCU Communication Hub only allows a single RDS instance to be connected.

RTCU Deployment Server API

All the functionality available in the RTCU Deployment Server Manager is available as an API for use in applications that require programmatic control of the RTCU Deployment Server.
For more information, please download the **RTCU Deployment Server API** package.

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Installation and Setup

There are two installations for the RDS - “RTCU Deployment Server” and “RTCU Deployment Server Manager”.

RTCU Deployment Server

This installation package includes the server and the control panel.
To install, run:
RTCU Deployment Server (x86) V5.50.msi, or
RTCU Deployment Server (x64) V5.50.msi
This depends on whether the 32-bit or 64-bit version is preferred.

If a previous version of the RDS is already installed, it must be uninstalled before this new version of the RDS can be installed. The configuration and data of the previous version will be imported and used if present.

The installation process requires administrator privileges.

RTCU Deployment Server Manager

This installation package includes the manager application and this PDF manual.
The manager is used to locally or remotely manage the RDS.
To install, run:
RTCU Deployment Server Manager (x86) V5.50.msi, or
RTCU Deployment Server Manager (x64) V5.50.msi

The version to run depends on whether the 32-bit or 64-bit version is preferred.

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Using the RTCU Deployment Server.

First Time

The first time the RDS is started, a few steps must be performed before it is ready for use.

1. An operational and accessible RCH is required.
   Please obtain the following parameters from the RCH:
   IP address, port number, and key parameters. These are needed in step 2.

2. Configure the RDS. This is done with the Control Panel. See the Control Panel – Configuration chapter for more information.

   First, type the RCH parameters from step 1 in.

   Then select the application path and the firmware path.
   It is vital to get this correct because this is where the RDS receives the application and firmware files.

   It is recommended to change the password for the RTCU Deployment Server Manager.

3. Start the RDS. This is done with the Control Panel. See the Control Panel – Status chapter for more information.

   Press the “Start RDS” button. The RDS service is now started, and the RDS service information will change from “Stopped” to “Running”.

   After a while, the RCH information will change from “Not connected” to “Connected”.
   If the text does not change within a few minutes, the RDS cannot find the RCH. The connection parameters might be wrong, or the network infrastructure is not configured to allow traffic to the RCH.

The system is now ready to create profiles and devices.

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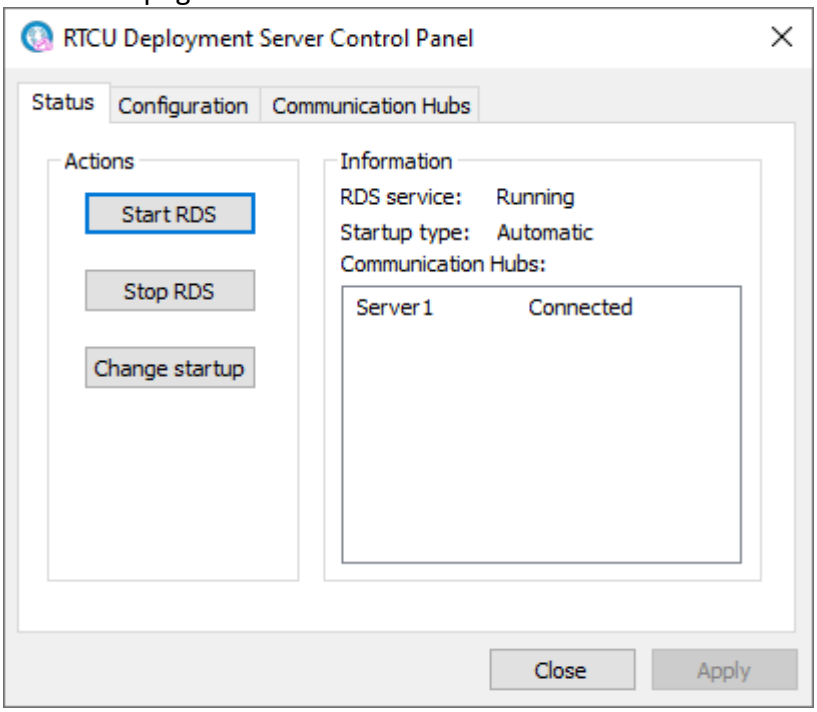
Control Panel

The Control Panel application is where the RDS service is managed.

Status

The status page is where the service status is monitored and changed.



The actions group contains an option for changing the status of the RDS service.
The actions supported are to start or stop the RDS service and to change the startup type.

The information group contains the status of the RDS service.
The items can have the following states:

RDS Service

Running	RDS service is started and running.
Stopping	RDS service is in the process of stopping.
Stopped	RDS service is not running.

Startup Type

Automatic	RDS service starts automatically with Windows.
Manual	RDS service must be started from the Control Panel.

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Communication Hubs

This is a list that shows the names and connection status of all the RCH servers the RDS will connect to. The status can be one of the following:

Not connected	RDS is not connected to the RCH.
Connected	RDS is connected to the RCH.
Unsupported	The RCH is not supported by the RDS.

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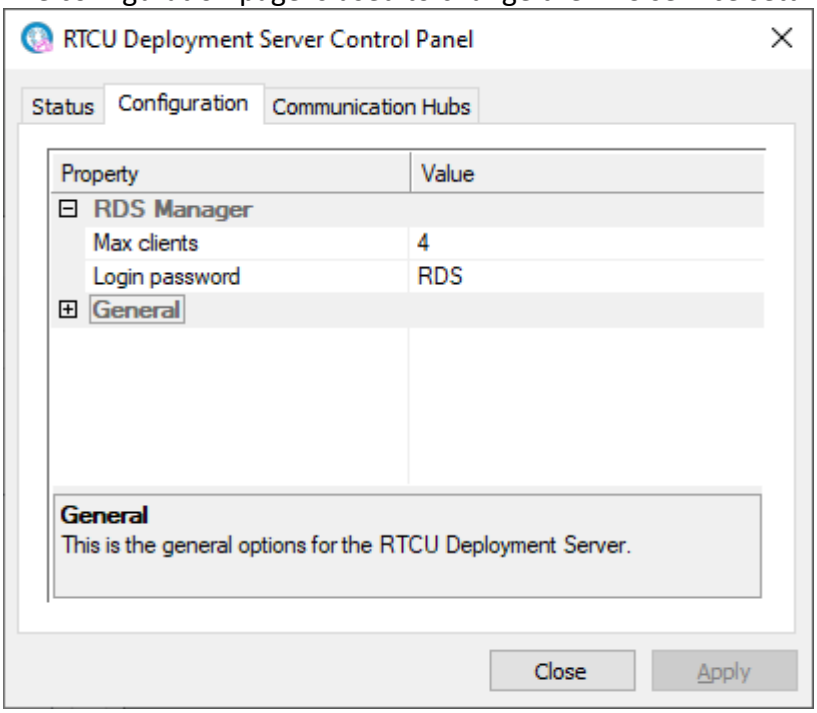
Configuration

The configuration page is used to change the RDS service settings.



The Parameters for RTCU Deployment Server Manager have the Following Meanings

Maximum clients	The maximum number of manager clients or RDS API clients that the RDS will accept simultaneously. RDS supports from 1 to 10 clients. The default is 4.
Login password	Access password for the RDS. Used by the manager client to connect to the RDS. Note: the access password is case-sensitive.

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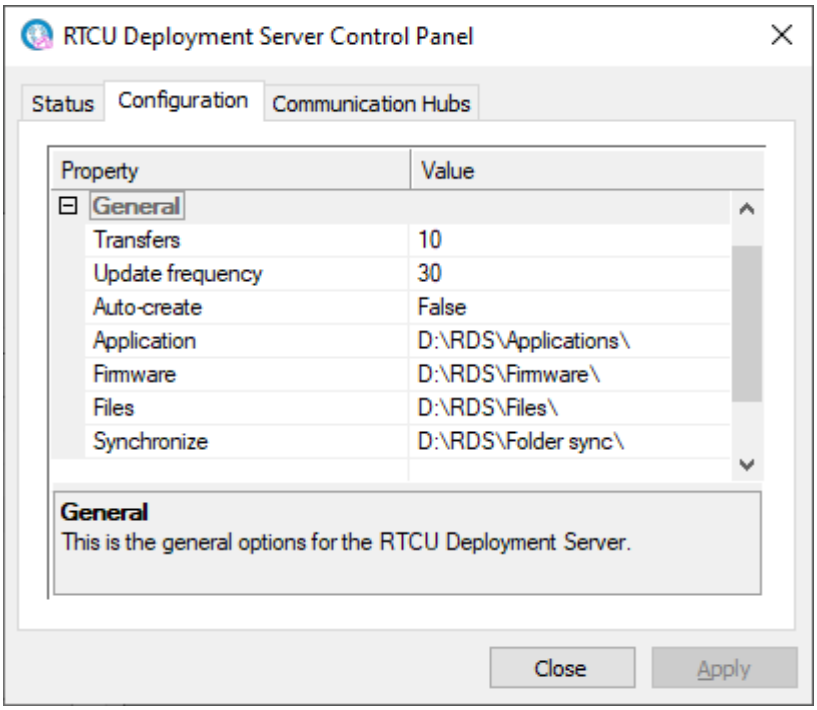

The Parameters for General have the Following Meanings

Transfers	Number of RTCU devices the RDS can update at the same time. The RDS supports from 1 to 200 transfers. Default is 10.
Update frequency	The update frequency in minutes when the RDS will automatically update all devices that is not up to date. An update will also automatically be initiated at boot-up time of a device. The RDS support from 5 to 1440 minutes. The default is 30 minutes.
Auto-create	Enables/disables auto-creation of devices when they connect for the first time.
Application	The directory where the RDS expects the application files to be located. Only the application files found here are presented to the manager client when working with profiles. Please note that all subdirectories will be included when searching for application files.
Firmware	The directory where the RDS expects the firmware files to be located. Only the firmware files found here are presented to the manager client when working with profiles. Please note that all subdirectories will be included when searching for firmware files.
Files	The directory where the RDS expects generic files to be located. Only the files found here are presented to the manager client when working with profiles. Only files that are in the 8.3 format will be accepted. Please note that all subdirectories will be included when searching for files.

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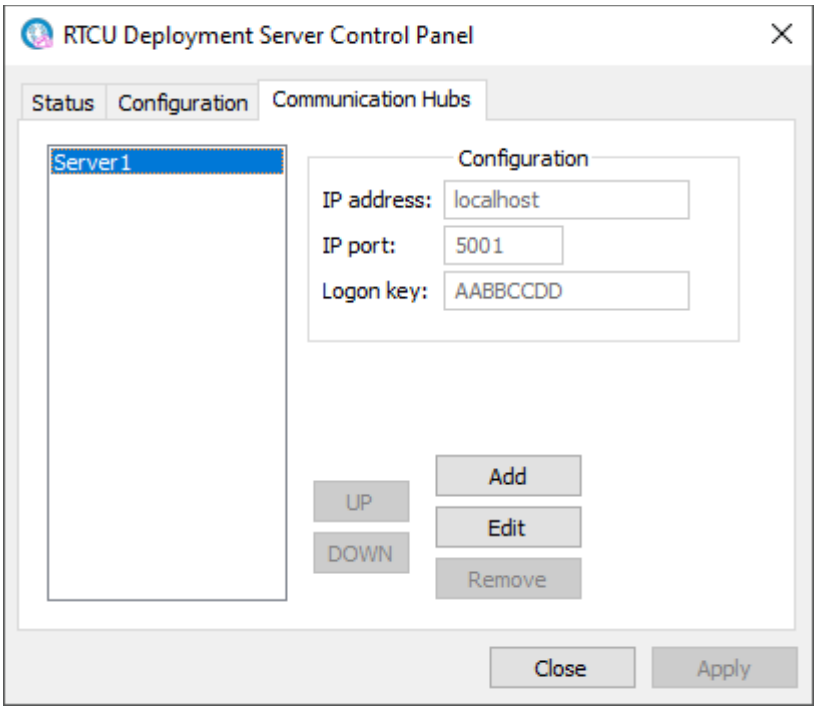
Synchronize The directory where the RDS expects the sub-directories for directory synchronization to be located.

Press the “Apply” button to use the new configuration.
Please note that the RDS must be restarted after the configuration has been changed.

Communication Hubs
The Communication Hub page manages the list of servers the RDS will connect to.



On the left side of the page is a list of the RCH servers the RDS will connect to.
The configuration group shows information about the selected RCH.
IP address IP address of the RCH.
IP port IP port of the RCH.
Logon key Access key for the RCH.

The RDS will only listen for manager clients connecting to the first RCH of the list.

Pressing the ‘Add’ button will make the “Add Communication Hub” dialog appear.

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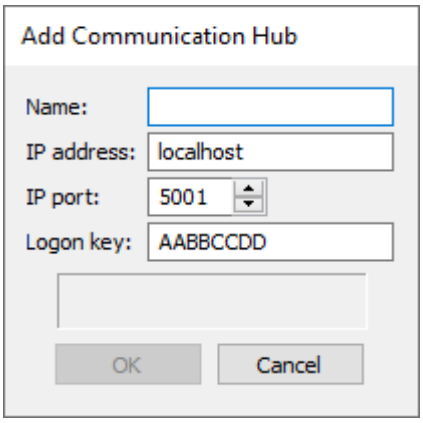
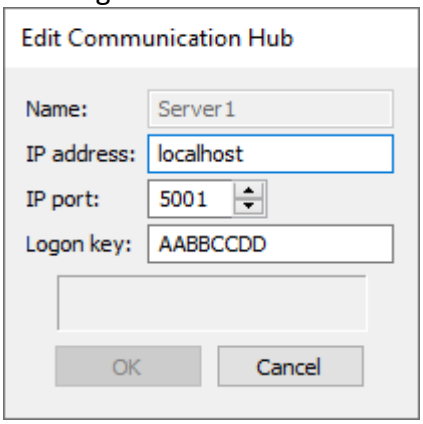


Name	The name of the RCH.
IP address	IP address of the RCH.
IP port	IP port of the RCH.
Logon key	Access key for the RCH.

The text area just above the buttons will show any errors in the configuration.

Pressing the 'Edit' button will make the "Edit Communication Hub" dialog appear.



Name	The name of the RCH.
IP address	IP address of the RCH.
IP port	IP port of the RCH.
Logon key	Access key for the RCH.

The text area just above the buttons will show any errors in the configuration.

Pressing the 'Remove' button will remove the selected server.

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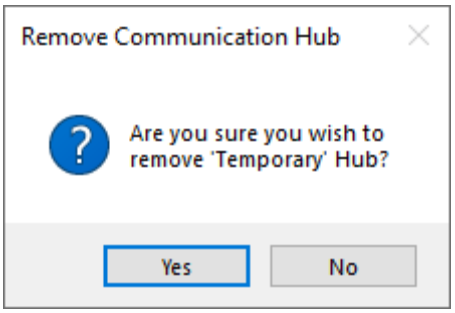
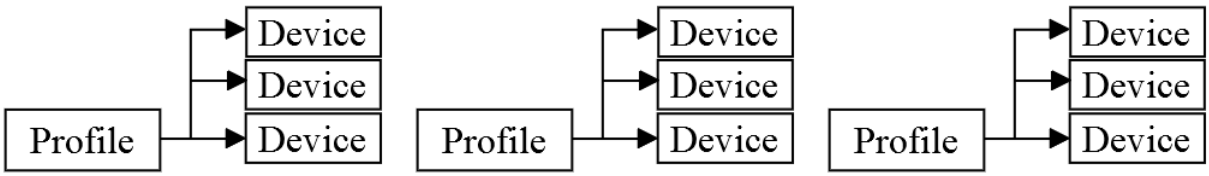


Pressing the “Up” and “Down” buttons will move the selected server one position up or down depending on the button pressed.

Devices and Profiles

A profile is a group of devices that share characteristics like RTCU type, firmware version, and application. When a device connects, the RDS compares its characteristics with the profile the device belongs to, and if they are not identical, a new firmware or application is transferred to the RTCU device.



An example of this could be if one takes a theoretical company that logs metrological information and has weather stations scattered around the country - each with an RTCU NX-900 device. In addition to this, they have two employees that service the weather stations - each of them has an RTCU MX2 turbo device installed in the service vehicle.
In this case, two profiles are required - one for the RTCU NX-900 and one for the RTCU MX2 turbo devices.

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Upgrade Strategy

The RDS prioritizes the transfers as follows: Firmware transfers, Application transfer, File transfer, and finally, Directory synchronization.

To determine if a firmware has to be transferred to the RTCU device, the RDS compares the firmware version in the profile with the version in the RTCU device. If the version numbers are different, the RDS starts to transfer the firmware.
If 'Allow downgrade' is not enabled in the profile, the RDS only starts the transfer of the firmware, if the version in the profile is higher than the version in the RTCU device.

The RDS first compares the application name and then the application version to determine if an application has to be transferred to the RTCU device. If either (name or version) are not identical, the RDS starts to transfer the application.
If 'Allow downgrade' is not enabled in the profile, the RDS only starts the transfer of the application if the version in the profile is higher than the version in the RTCU device. (The transfer will always start if the names are different)

As there is no version information embedded in the generic file, the RDS will try to transfer the file each time the profile is edited. When the RDS starts the transfer, it checks whether the file is already present on the RTCU device. If the file is present, the transfer is stopped - otherwise, the transfer will continue. The file will be placed on the selected media in the "\RDS" sub-directory.

To determine if a directory must be synchronized, the RDS monitors the directory for changes to the files present. When changes are detected, the affected files are collected and prepared for transmission to the RTCU device. Sub-directories are not included.
Note: Only files with valid file names (in the 8.3 format) will be included in the transfer. A maximum of 16MB can be transferred at once. If the total size of the files to transfer exceeds this, they will be split into several transfers. Files that are larger than 16MB will not be transferred.
This feature is only available for RTCU devices with the NX32L architecture.

The RDS will check if an upgrade needs to be performed when:
1. The RTCU device connects to the RCH.
2. The update timer* is triggered.
3. The profile the RTCU device belongs to is edited.
4. A refresh of RTCU device information is requested.

Please note that profiles can be configured to only allow upgrades at a specific time interval.
If this is the case, the RDS will determine that a transfer is needed but not start until inside the profile's time interval.
*) The update timer will be triggered at the frequency selected in the Update frequency parameter in configuration.

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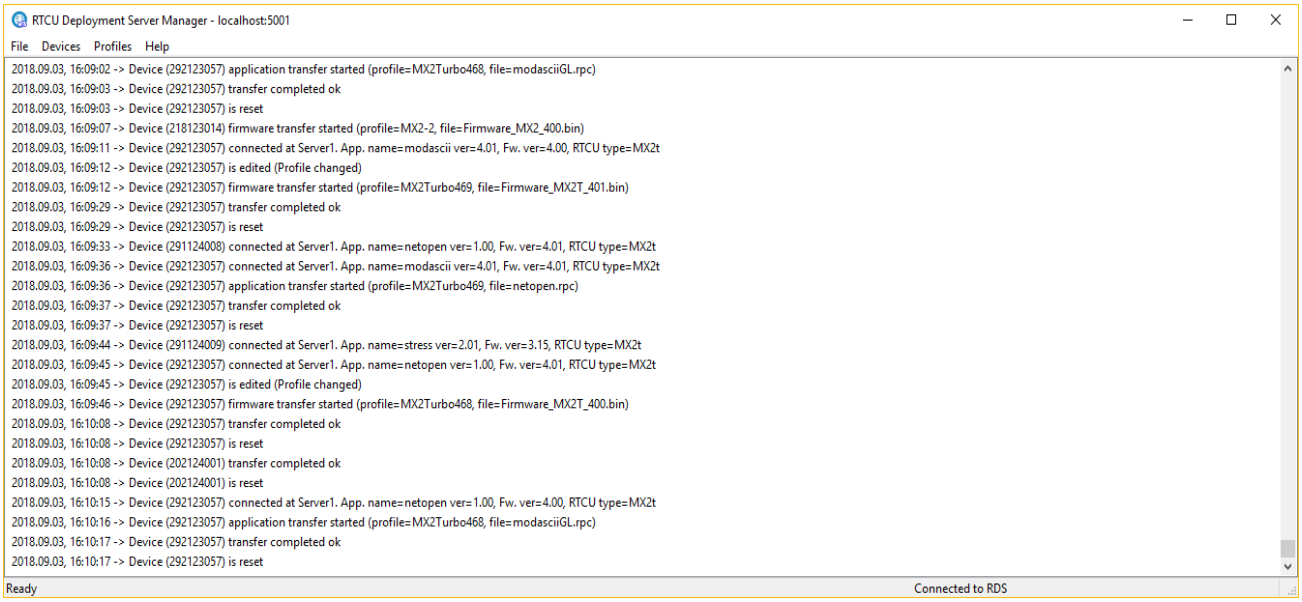
RTCU Deployment Server Manager

The RTCU Deployment Server Manager is used for monitoring and maintenance of the RTCU Deployment Server.

When the manager is opened, the main window can be seen:



The connection status pane (the bottom line to the right) has the following meanings:

Not connected	Not connected to RCH or RDS.
Connecting to Communication Hub...	Contacting and logging on to Communication Hub.
Connected to Communication Hub	Connected to Communication Hub but not to the RDS.
Connecting to RDS...	Logging on to RDS.
Connected to RDS	Connected to RDS and ready.
RDS not found!	RDS is not connected to the Communication Hub.
Wait… Another client is already connected to RDS.	RDS is busy with another manager client. You may consider increasing the number of allowed clients.
Incorrect RDS login password!	RDS rejected the login password.
RDS server # is not supported!	The version of the RDS is not supported by the manager client.

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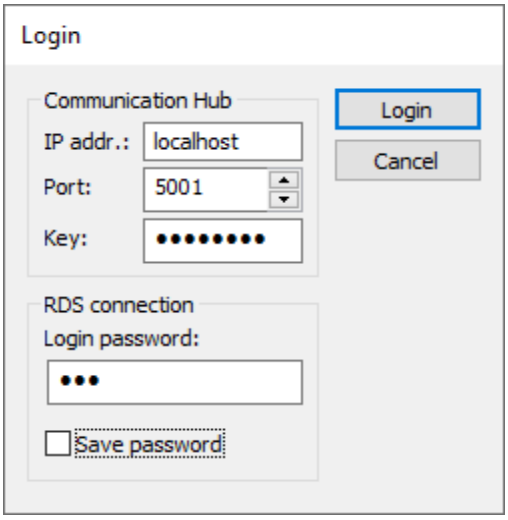
Connect to the RTCU Deployment Server

To connect the manager client to the RDS, open the file menu, and select “Connect”.



Type in the RCH Server parameters and the RDS login password.
Press the “Login” button.
The manager client will now try to connect to the RDS.

Communication Hub

IP address	IP address of the RCH.
Port	Port of the RCH.
Key	Access key for the RCH.

RDS Connection

Login Password	The password used to log in to the RDS. Note: the password is case-sensitive.
Save Password	When this option is selected, the password is saved between sessions, and the manager client will try to connect automatically.

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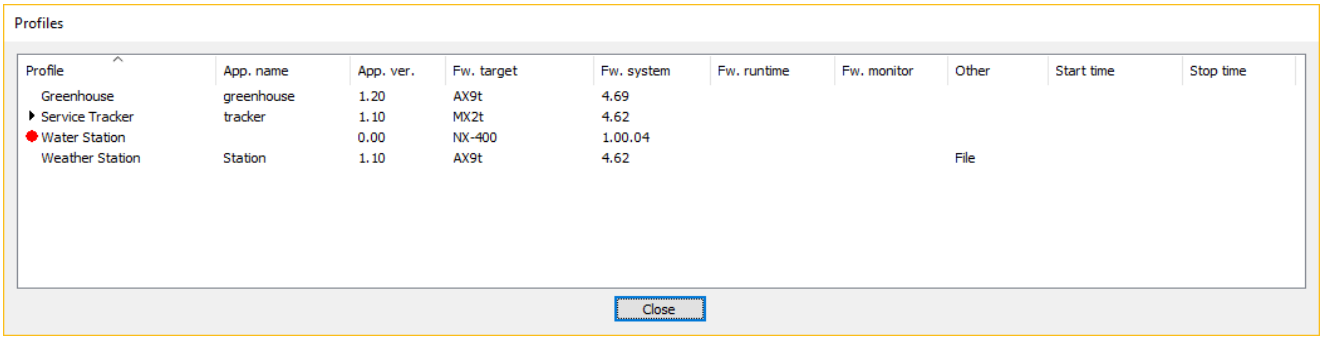
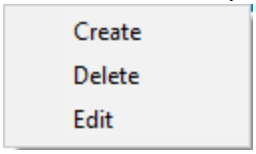
Working with Profiles

This window shows the current list of profiles.



When a new version of the firmware or application is available, edit the profile, and those devices that are affected by the change start the transfer.

To work with the profiles, right-click in the profile window, and this pop-up menu shows up:



A profile can only be deleted if no devices are using it.

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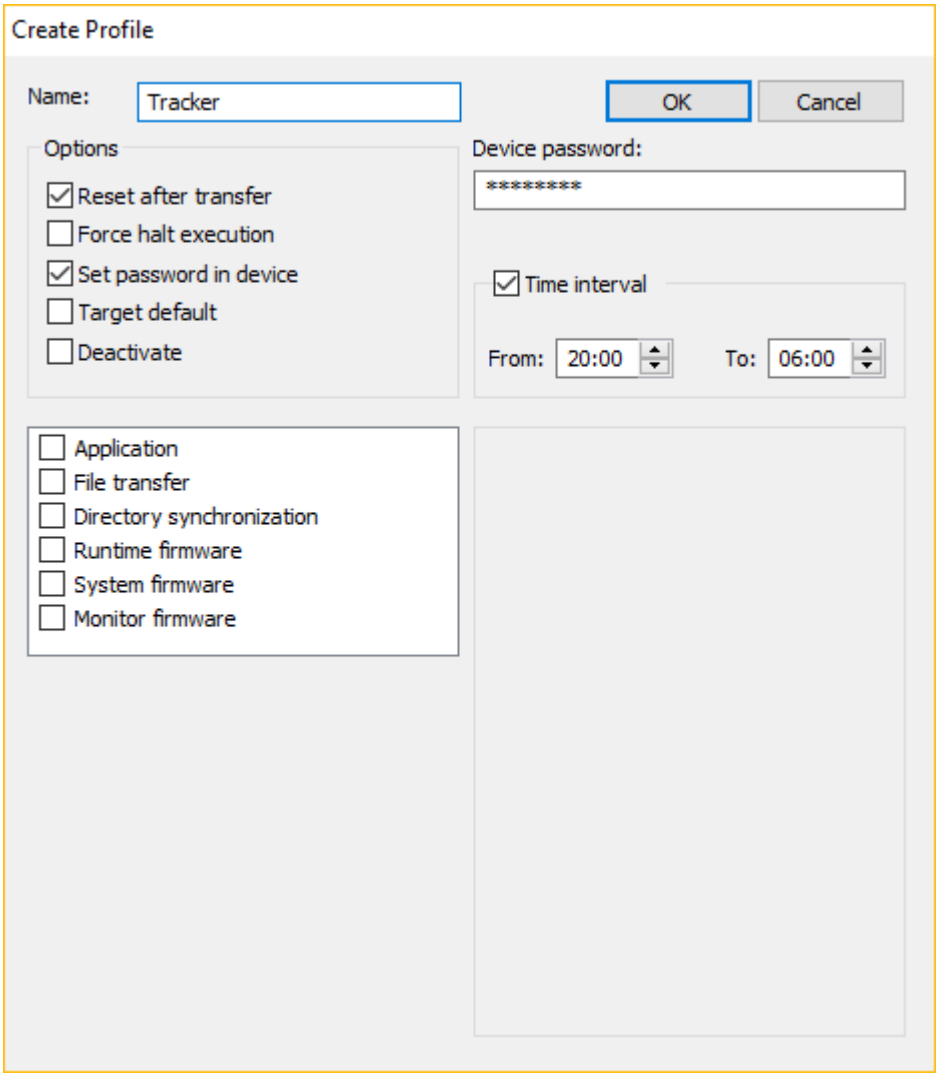
The profile dialog is used to create and edit profiles.



Name

This is the name of the profile.

Options

Reset after transfer	If this option is set, the RDS resets the RTCU device when an application or firmware transfer has been completed. Do not use this option if your application resets the device when a transfer is completed. Reset after a file transfer will never occur.
Force halt execution	If this option is set, the RDS will halt the execution of the application in the device before starting a transfer.

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	It is recommended only to use this option if “Reset after Transfer” option is also selected. Halt execution before a file transfer will never occur.
Set password in device	If this option is set, the RDS sets the password in the RTCU device to the password entered in “Device Password”.
Target default	If this option is set, the RDS will use this profile when auto-creating RTCU devices with the firmware target.
Deactivate	If this option is set, the RDS does not upgrade the devices that use this profile. A red dot is displayed in the profile window to indicate this.

Device Password

If a password is entered here, it is used to connect to the RTCU devices that use this profile.
If the password in the RTCU device is not the same as the one entered here, the password must either be changed in the RTCU device or set in the device information (see Working with Devices) before the device can be updated.

Time interval

When ‘Time interval’ is activated, the RDS will update the devices in the interval from time ‘From’ till time ‘To’, while it will not do so outside this time interval. If ‘From’ is after ‘To’, the interval will include midnight. The ‘From’ and ‘To’ have to be at least 5 minutes apart.

Profile actions

Actions that can be performed to the RTCU devices that use this profile.

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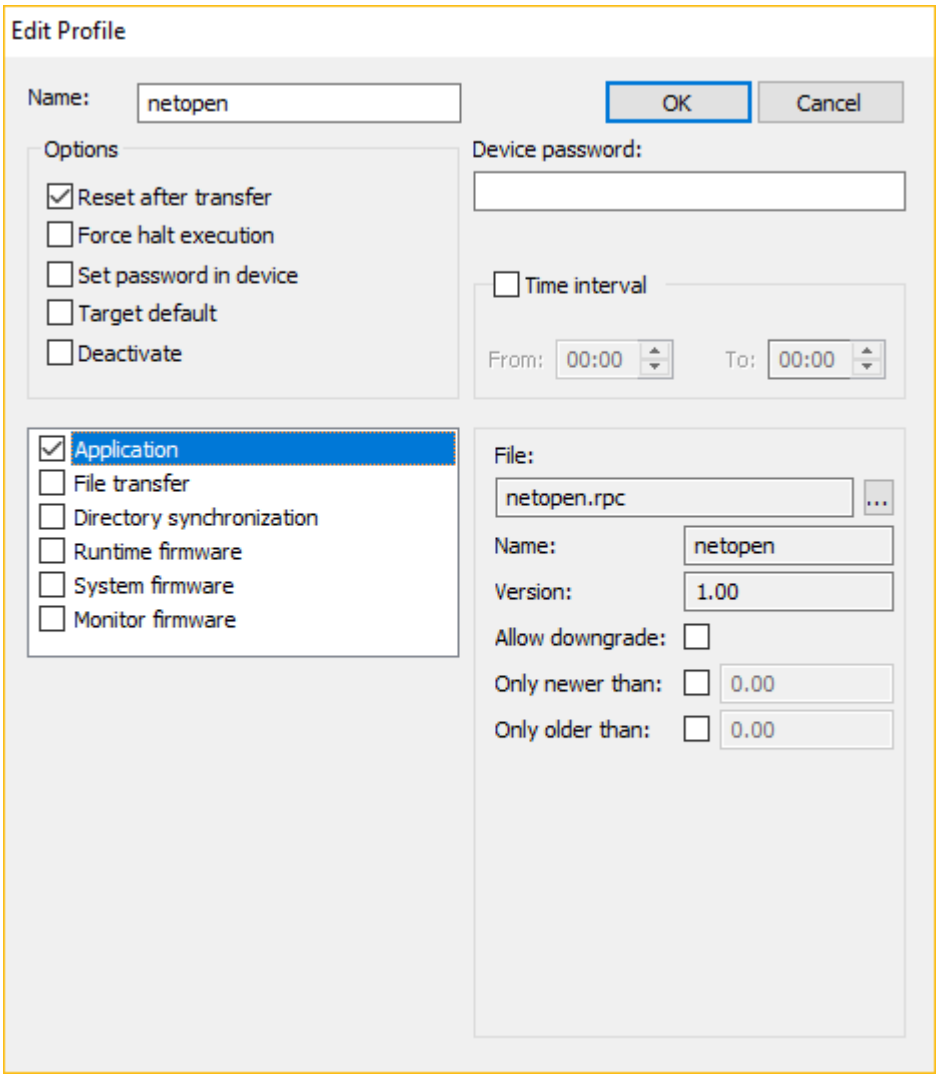
Application

Update the application in RTCU devices.



File	File name of the application. To select a new application file, press the "Browse" button. Please note: when browsing for application files, the entire directory tree is parsed - including sub-directories. Application files without name and version are not listed in the file browser.
Name	Name of the application. This is updated from the application file if possible. If the application name is not included in the file, it must be entered manually.
Version	Version of the application. This is updated from the application file if possible. If the application version is not included in the file, it must be entered manually.
Allow downgrade	If this option is set, downgrading the application is allowed.

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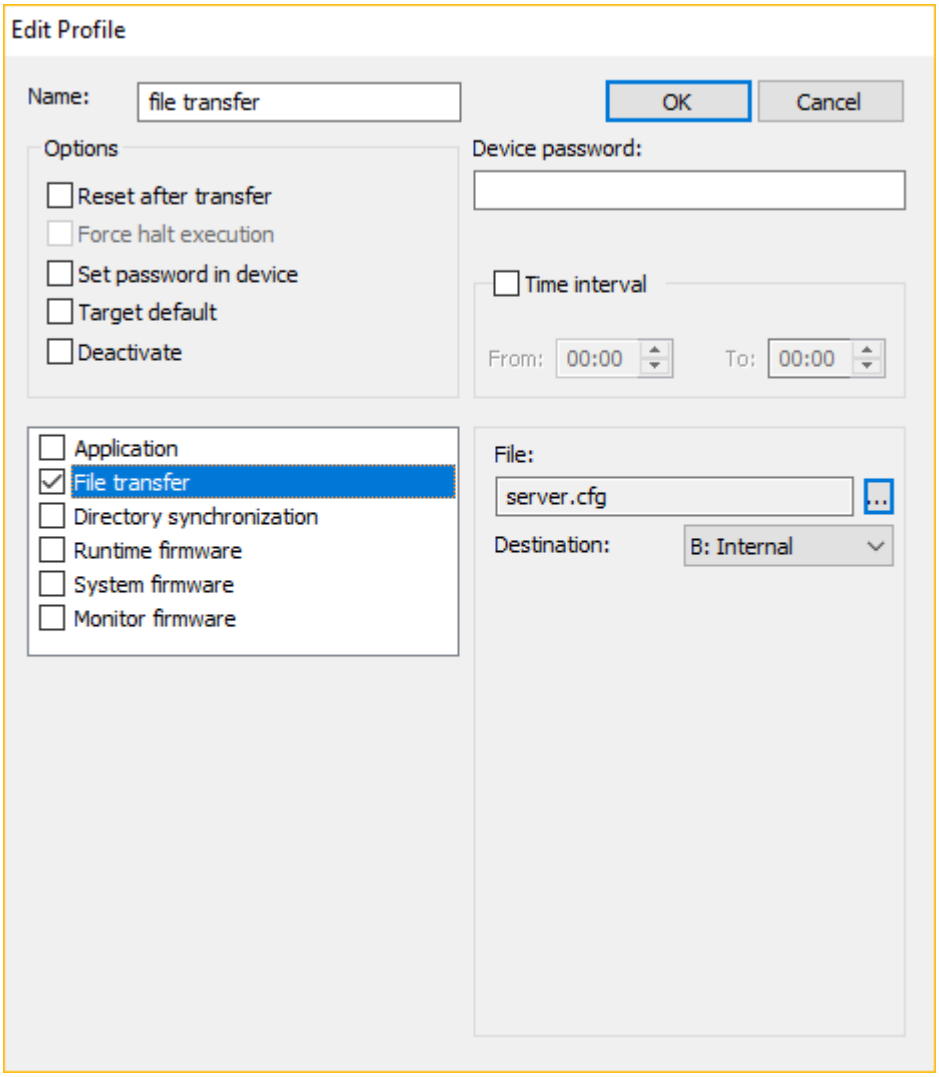
Only newer than	If this option is enabled; the application will only be transferred if the version in the device is newer than the version set here.*
Only older than	If this option is enabled; the application will only be transferred if the version in the device is older than the version set here.*

File transfer

Transfer a specified file to RTCU devices.



File	File name of the generic file. To select a new file, press the “Browse” button. Please note: when browsing for files, the entire directory tree is parsed - including sub-directories
Destination	The media in the RTCU device where the file is transferred to. The file will be placed on the selected media in the \RDS sub-directory.

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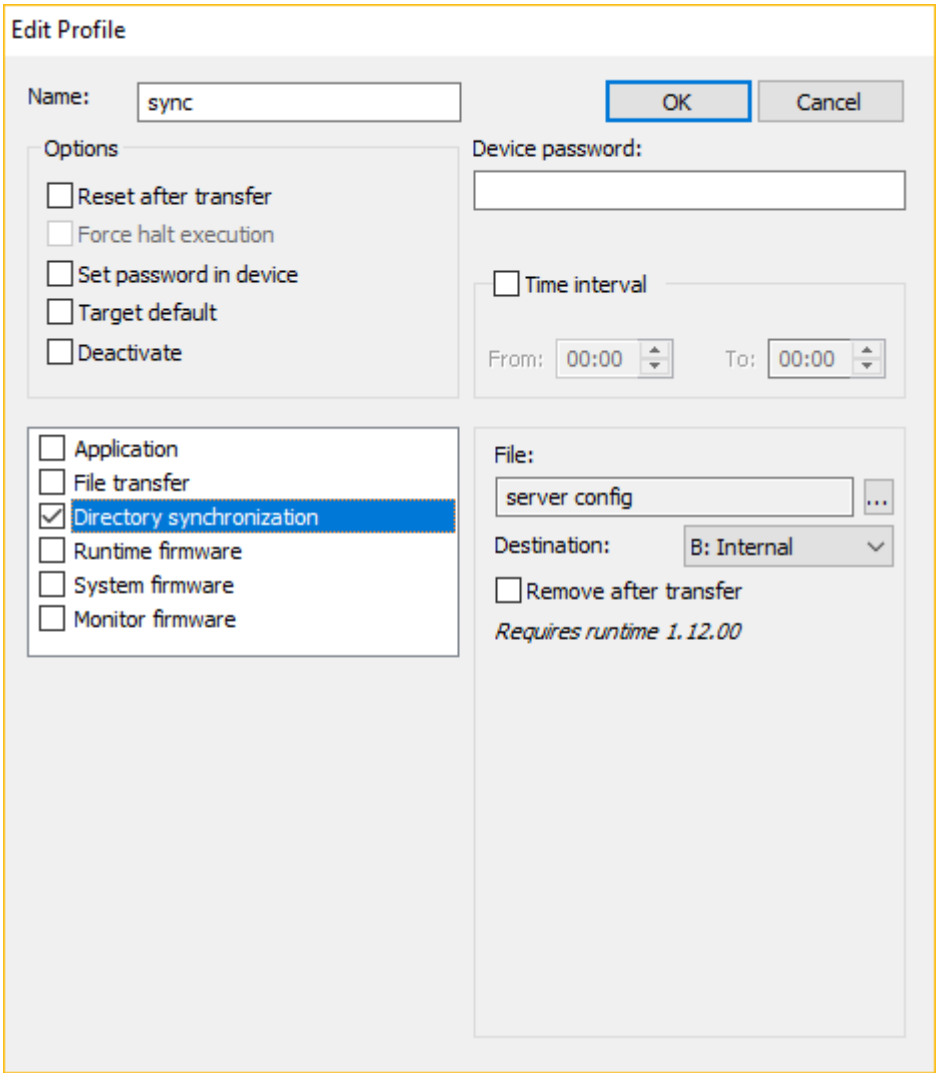
Directory synchronization

Synchronize files from the selected directory to RTCU devices. Only available for NX32L architecture. Please be aware of the limitations mentioned under Upgrade Strategy.



File	The name of the selected directory. To select a new directory, press the "Browse" button.
Destination	The media in the RTCU device where the files in the directory is transferred to. The files will be located under RDS\SYNC\.
Remove after transfer	If this option is enabled; the files in the source directory will be removed after they are transferred to the devices.

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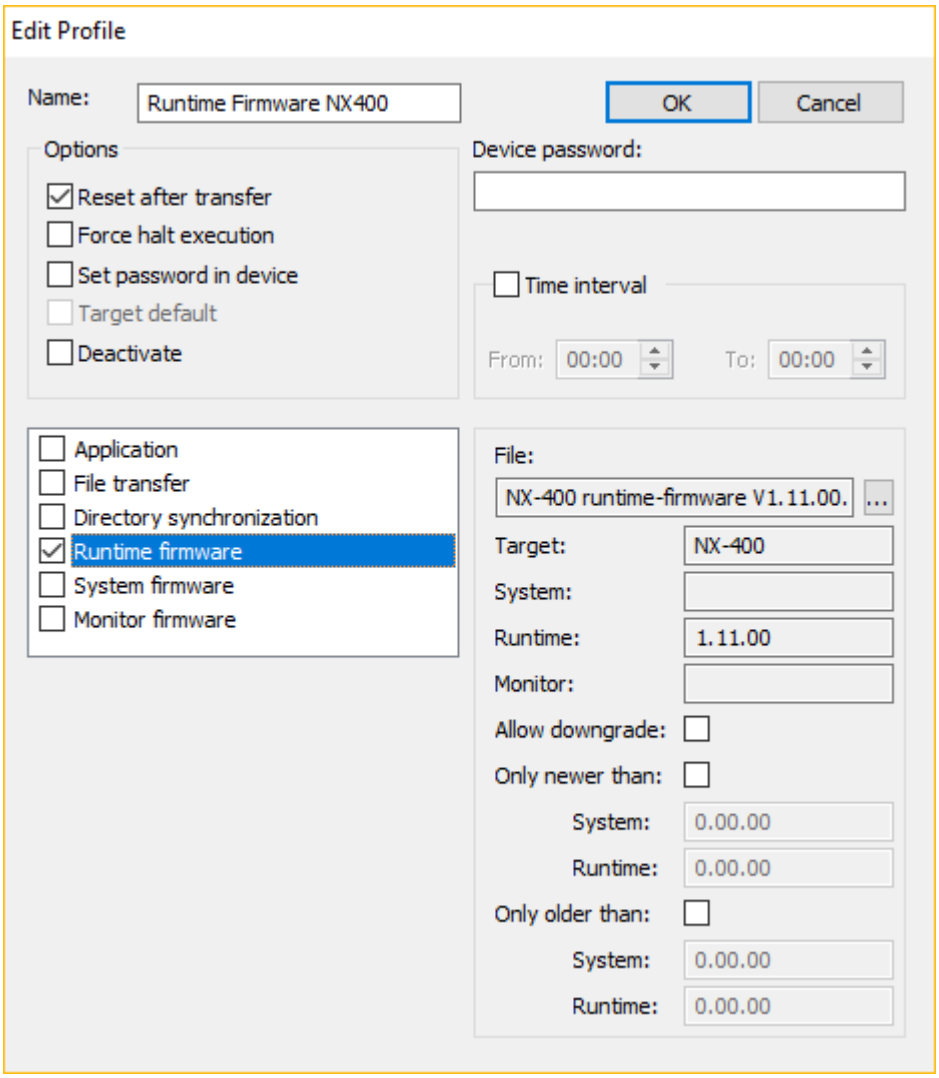
Runtime firmware

Update runtime firmware in RTCU devices. Only available for NX32L architecture.



File	File name of the firmware. To select a new firmware, press the “Browse” button. Please note: when browsing for firmware files, the entire directory tree is parsed - including sub-directories
Target	The type of RTCU device the firmware is made for. This is updated from the firmware file.
Runtime	The runtime version of the firmware. (only used by NX32L architecture) This is updated from the firmware file.
Allow downgrade	If this option is set, downgrading the firmware is allowed.

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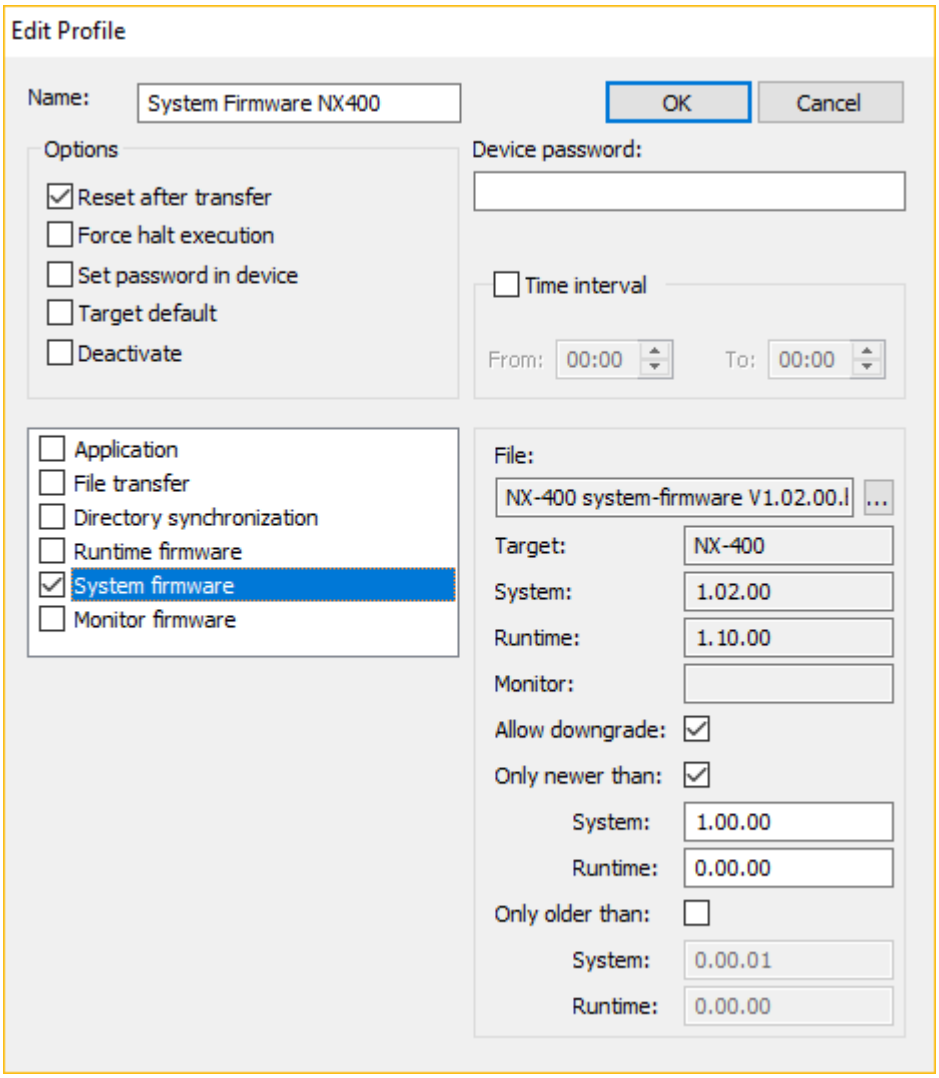
Only newer than	If this option is enabled; the firmware will only be transferred if the version in the device is newer than the version set here.*
Only older than	If this option is enabled; the firmware will only be transferred if the version in the device is older than the version set here.*

System firmware

Update system firmware in RTCU devices.



File	File name of the firmware. To select a new firmware, press the “Browse” button. Please note: when browsing for firmware files, the entire directory tree is parsed - including sub-directories
Target	The type of RTCU device the firmware is made for.

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	This is updated from the firmware file.
System	The system version of the firmware. This is updated from the firmware file.
Runtime	The runtime version of the firmware. (only used by NX32L architecture) This is updated from the firmware file.
Monitor	The monitor version of the firmware. (only used by NX32L architecture) This is updated from the firmware file.
Allow downgrade	If this option is set, downgrading the firmware is allowed.
Only newer than	If this option is enabled; the firmware will only be transferred if the version in the device is newer than the version set here.*
Only older than	If this option is enabled; the firmware will only be transferred if the version in the device is older than the version set here.*

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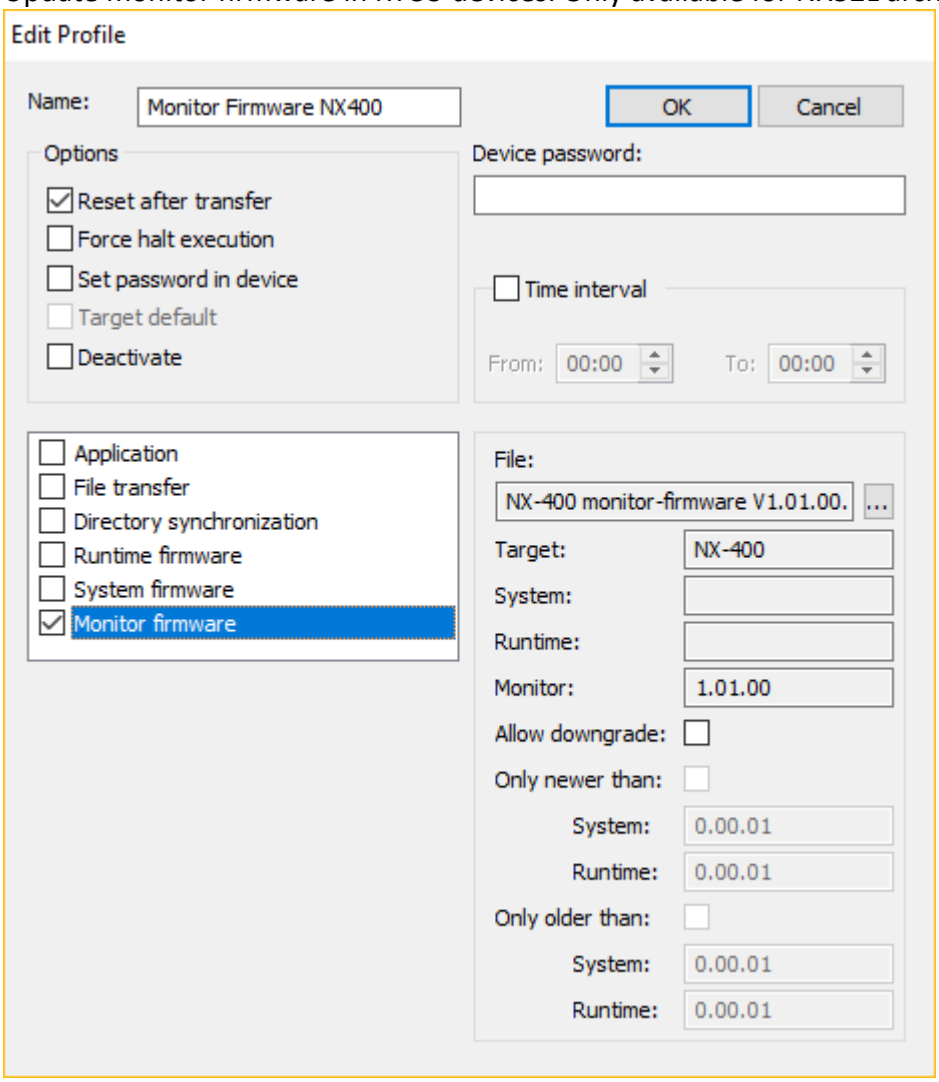
Monitor firmware

Update monitor firmware in RTCU devices. Only available for NX32L architecture.



File	File name of the firmware. To select a new firmware, press the “Browse” button. Please note: when browsing for firmware files, the entire directory tree is parsed - including sub-directories
Target	The type of RTCU device the firmware is made for. This is updated from the firmware file.
Monitor	The monitor version of the firmware. (only used by NX32L architecture) This is updated from the firmware file.
Allow downgrade	If this option is set, downgrading the firmware is allowed.
Only newer than	If this option is enabled; the firmware will only be transferred if the version in the device is newer than the version set here.*

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Only older than	If this option is enabled; the firmware will only be transferred if the version in the device is older than the version set here.*

*) If both 'Only older than' and 'Only newer than' is selected and,
1. The ranges overlap, then the update will only be transferred if the version in the device is inside both ranges.
2, The ranges do not overlap, then the update will be transferred if the version in the device is inside one of the ranges.

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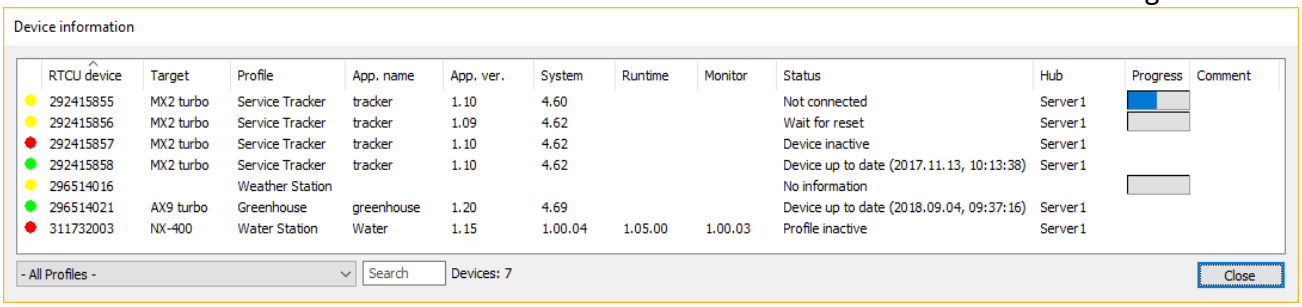
Working with Devices

The device information window shows the information on the devices that have been registered.



The “Status” column can have the following states:

No information	No information has been received from the RTCU device yet.
Not connected	RTCU device is currently not connected to the RDS.
Up-to-date	RTCU device is up-to-date. The timestamp is the time for the last reset.
Transfer pending	RTCU device may not be up-to-date so a transfer has been queued.
Transfer waiting	Transfer in progress but suspended as it is outside the allowed time window defined in the profile.
Transferring application	RDS is transferring the application to the RTCU device.
Transferring firmware	RDS is transferring the firmware to the RTCU device.
Wrong Password	The password in the profile or device is not identical to the password in the RTCU device.
Incompatible Firmware	Firmware is not targeted for the RTCU device type.
Incompatible application	The RTCU is not programmable or does not support EIS.
Application file not found	RDS could not find the application file.
Application file not valid	File is not a valid application file.
Firmware file not found	RDS could not find the firmware file.
Firmware file not valid	The file is not a valid firmware file.
Wait for reset	The upload has been completed and the RDS is waiting for the RTCU device to reset.
Version mismatch	The same application or firmware has been transferred to the RTCU device repeatedly.
Profile inactive	The profile in use has been deactivated.
Device inactive	The device has been deactivated.

The colored status indicators to the far left indicate whether the device is disabled (red), fully updated according to profile (green), or the device is in the process of being upgraded (yellow).

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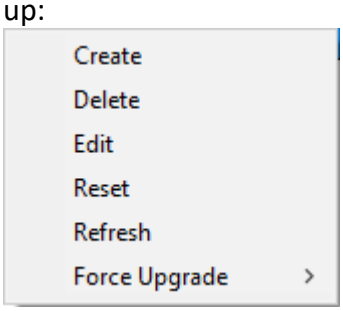
The progress column shows how much of the current upload has been completed.

The drop-down box in the lower left corner allows filtering profiles, so that only devices belonging to a specific profile are shown.

The search box allows searching for a device with the serial number typed in.

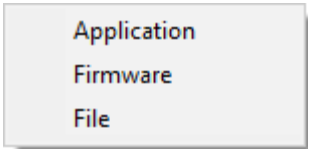
By clicking one of the headers, the devices will be sorted either in ascending or descending order by the selected header. Each time the same header is clicked, the sorting toggles between ascending and descending

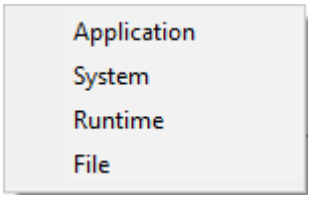
To work with the devices, right-click in the device information window and this pop-up menu shows up:



“Refresh” is a way to read the device information from the selected device(s).

“Force Upgrade” is a way to force the RDS to transfer the application or firmware to a device or devices. Depending on if the device is of X32 or NX32L type, the pop-up menu will appear as:





The transfer will not be initiated if the device or profile is inactive or no firmware, application, or file has yet to be selected.
Once a transfer has been forced, the RDS will finish the transfer even if the RDS is restarted.

When a device is created or edited, the device information dialog is used.

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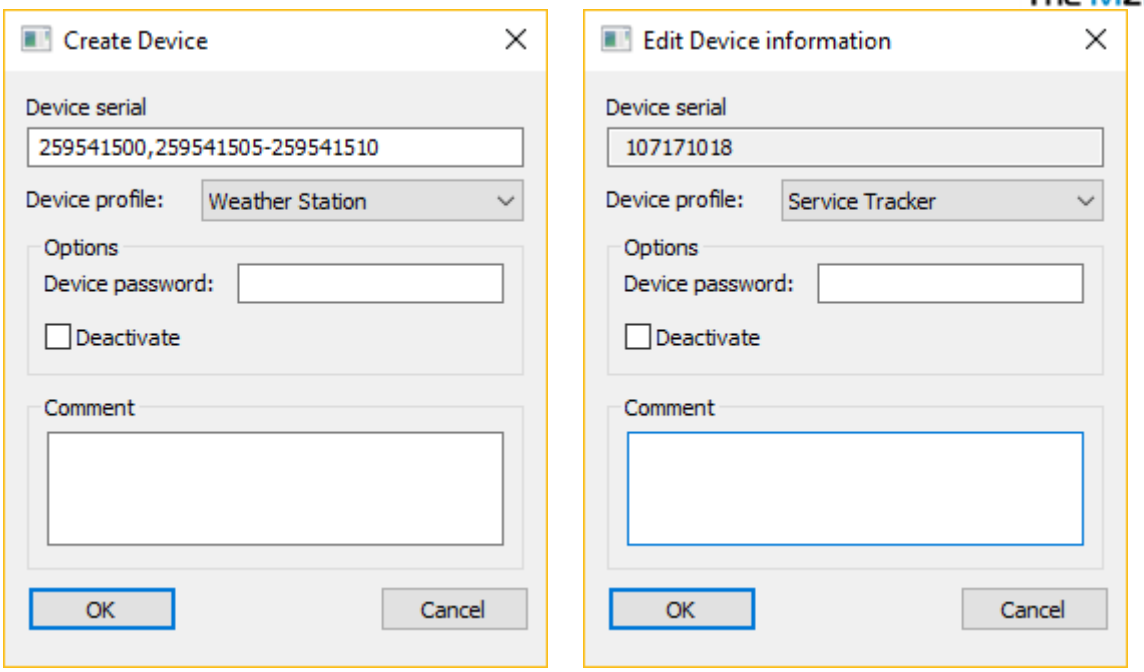

Device Serial Number(s)

When editing a device, the serial number shown cannot be changed.
When editing more than one device, "[Various]" will be listed instead of the serial numbers.
When creating devices, it is possible to create:

1. Single serial number.
2. Multiple serial numbers. e.g. 750711023,750711025.
3. A range of serial numbers. e.g. 750711025-750711035.
4. Any combination of point 2 and 3. e.g. 750711023,750711025-750711035,750711040-750711049.

Device Profile

The RDS uses this profile to determine when to update the RTCU device and what firmware and application to transfer.
When editing more than one device, an option not to change the profile is also included.

Options

Device password	The password used to access the RTCU device. If this is empty, the password of the profile is used instead. If more than one device is edited which contain different passwords, [Various] will be listed. If this is not removed, then the password will not be changed in any of the devices.
Deactivate	If this option is set, the RDS does not upgrade the device. A red dot is displayed in the device information window to indicate this.

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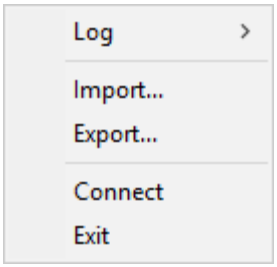
	When editing more than one device, this option can also be set to “No Change”.
Comment	This is an, optional, comment about the device.

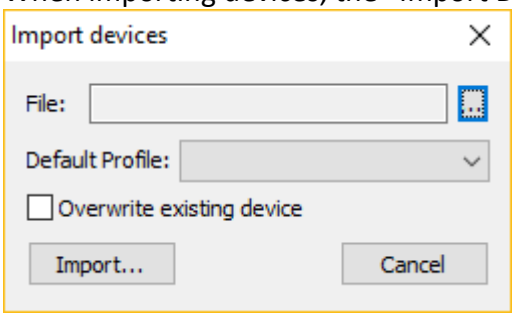
Import/Export of Devices

It is possible to import devices from and export devices to a comma-delimited file.

The functions are found in the “File” menu.



When importing devices, the “Import Devices” dialog is used.



File	The name and path to the comma-delimited file to import.
Default Profile	The devices in the file that do not have a profile associated with them will use this profile.
Overwrite existing device	If this option is selected and a device from the file is already in the RDS, the profile it uses will be changed to the one given either in the file or as default.

When exporting devices, the export devices' dialog is used.

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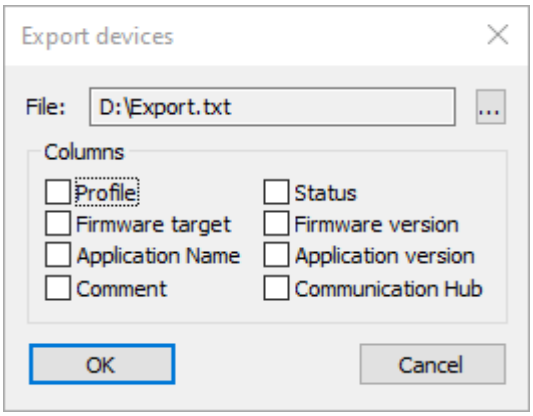

File	The name and path of the comma-delimited file to export to.
Profile	Includes the name of the profile the device uses in the file.
Status	Includes the status of the device in the file.
Firmware Target	Includes the device target (type) information in the file.
Firmware Version	Includes the firmware version information of the device in the file.
Application Name	Includes the application name information of the device in the file.
Application Version	Includes the application version information of the device in the file.
Comment	Includes the comment for the device in the file.
Communication Hub	Includes the name of the RCH the device was most recently connected to in the file.

The comma-delimited file must have the following format:

< Device serial number >[,["<Profile name>"][,[<Enable flag>][,"<Comment>"]]]<NL><CR>
…
< Device serial number >[,["<Profile name>"][,[<Enable flag>][,"<Comment>"]]]<NL><CR>

Example:
750711023,”Profile 1”
750711024,”Profile 1”,,”Imported”
750711025
750711026,,disable
750711027,”Profile 2”
750711028,”Profile 2”,disable
750711029,”Profile 3”
750711032,”Profile 4”

Hub Status
In the help menu, the ‘Hub Status’ dialog is found.

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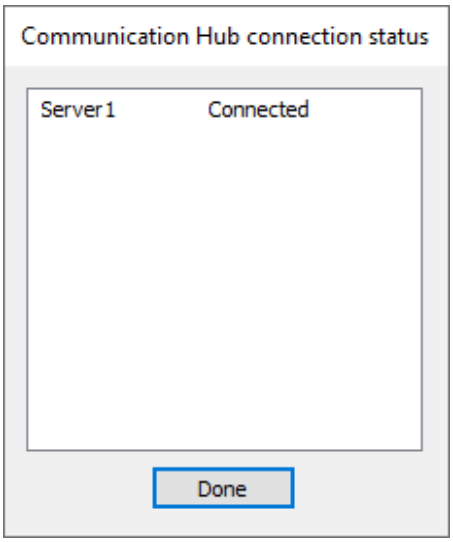

The Communication Hub Connection Status shows the connection status for each configured RCH server.

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Automatic Upgrading/Programming of Factory-Delivered Device

The pre-programmed application in an RTCU device delivered by Logic IO will automatically connect to the GSM network and wait for a configuration SMS that will allow the device to connect to the RCH. When the device connects to the RCH, the RDS will upgrade it to the firmware and application specified in the profile. Please note that the PIN code of the SIM card must be disabled.

The configuration SMS message must be according to the following format:

#KEY=52544355
This command is required because it identifies the SMS message as a genuine configuration SMS. It must be the first command in the SMS.

#GPRS=<apn>,<aut>
This command sets the TCP/IP parameters.
<apn> The APN the device, will use this to connect to the cellular network.
<aut> The PPP authentication types:
0 - None
1 - PAP
2 - CHAP
3 - PAP/CHAP

#GW=<ip>,<port>,<key>
This command sets the RCH parameters.
<ip> The IP address of the RCH.
<port> The port the device will use to connect to the RCH.
<key> The key (password) the device should use to connect to the RCH.

#GWP=<mca>,<msr>,<rto>,<afrq>
This command sets the advanced Communication Hub parameters. This command is optional.
<mca> Maximum number of connection attempts before cellular link reconnects.
<msr> Maximum number of send-request attempts before send fails.
<rto> Time waiting for response in seconds.
<afrq> Frequency for sending self-transactions in seconds.

#CFM=1
If this command is included, the RTCU will send a confirmation SMS back to confirm that the configuration was received.

For example, an SMS message could look like this:
#KEY=52544355#GPRS=internet,3#GW=rtcu.dk,5001,AABBCCDD#GWP=3,3,30,360.

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