The Logic IO
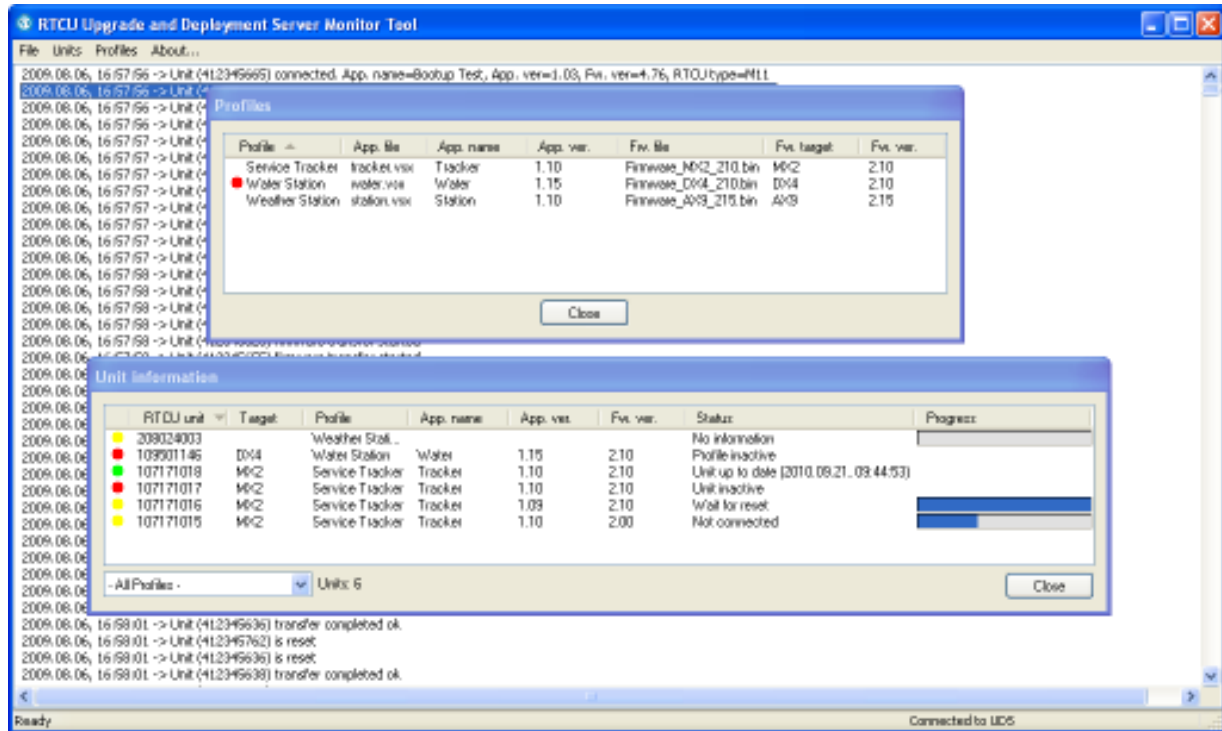
RTCU Upgrade and Deployment Server

Version 2.30

User and Installation Guide

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Introduction

This document describes the RTCU Upgrade and Deployment Server (UDS). The UDS is a lightweight and easy to install solution running on Microsoft Windows XP/Vista/2003 Server/ 2008 Server/7.
The UDS is used to make the task of upgrading the firmware and/or application in a number of RTCU units easier.
The UDS uses TCP/IP network to allow remote access to the RTCU units over the RTCU Gateway Professional. The UDS takes advantage of Background update available in the RTCU firmware for maximum flexibility.

The UDS supports all TCP/IP network capable RTCU units (via GPRS, LAN, etc.), including the A9i, M11i Series, MX2 Series, DX4 Series, AX9 Series and the CX1 Series.

Features:
- Uses the RTCU Gateway Professional to establish a connection to remote units.
- Runs as a Windows Service for automatic start-up in server installations.
- Remote maintenance, diagnostic and logging facilities.
- Upgrades firmware and application automatically according to user-configuration.
- Firmware and application can be upgraded during full operation of the unit.
  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.
- Automatically or application driven decision when to switch over to the new application/firmware. All that is required to switch over to the new firmware/application is a reset of the unit, which will only interrupt the operation for 10-20 seconds.
- Up to 100 simultaneous upgrade sessions.
- Supports applications that use VPL upgrade notifications.
- Support for automatic programming of un-programmed factory delivered unit.
- Comprehensive logging and status features.
- Import from and export to comma delimited files.
- Comes with full user documentation.

System requirements

Operating system: Microsoft Windows XP/Vista/2003 Server/2008 Server/7.
Memory: Minimum: 500MB, Recommended: 1GB
Hard disk space: 50MB @2000 units, 40MB @500 units, 38MB @10 units
Other: Network card.
                       TCP/IP network protocol.
                       RTCU Gateway Professional version 1.11 or newer

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License

There are no limitations on the UDS, except those enforced on the RTCU Gateway Professional (Gateway) it is connected to.
The Gateway can be used with up to 25 clients (RTCU units, the UDS, or PC software) in a trial version, however if more clients are needed a license can be purchased from Logic IO (See the Gateway manual for more information).
Note that the Gateway only supports one UDS at a time. If more that one UDS tries to use the Gateway at the same time, they will not work as intended.

Installation

To install the UDS run **RTCU Upgrade-Deployment Server V2.20.msi**. There are 2 types of installations possible: "Monitor Tool" and "Monitor Tool and Service".
Note: Installation requires administrator privileges.
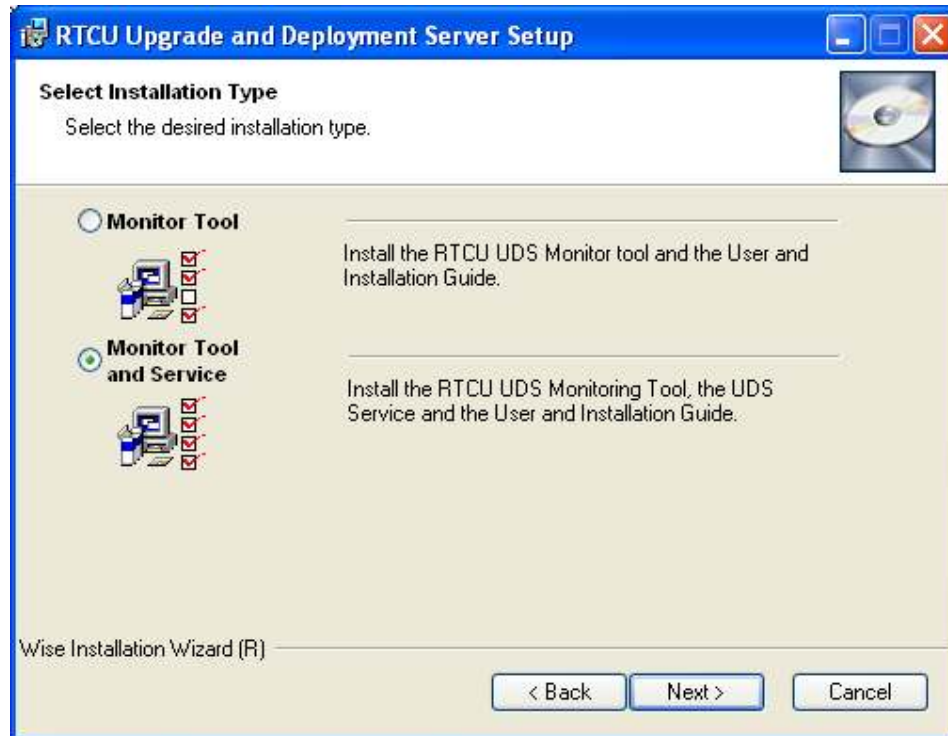
If a previous version of the UDS is already installed on the PC, it must be uninstalled before this new version of the UDS can be installed.

Monitor Tool and Service

This option installs all the elements of the UDS (UDS Service, Monitor Tool, Control Panel and PDF manual).
This will install the full UDS-server suite.

Monitor Tool

This option installs the Remote Monitor Tool application and the PDF manual.
This option is used on PC's that will be used to remotely monitor the UDS.

Using the UDS

First time

The first time the UDS is started there are a few steps that must be performed before it is ready for use.

1. You need a RTCU Gateway Professional. If you do not have it installed yet, you must install one (but not necessarily on the same PC). If you have a Gateway installed obtain the: IP address, port number and key parameters. These are needed in step 2.

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

   First type in the Gateway parameters from step 1.

   Second, select the application path and the firmware path.
   It is very important to get this right, because this is where the UDS get the application and firmware files.

   It is recommended to change the password for the Monitor Tool.

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

   Press the "Start UDS" button. The UDS service is now started and the UDS service information will change from "Stopped" to "Running"

   After a while the Gateway information will change from "Not connected" to "Connected".
   If the text does not change within a few minutes, the UDS cannot find the Gateway. The Gateway connection parameters might be wrong, or maybe your network (firewall etc.) is not configured to allow traffic to the Gateway.

   If the text in the status bar changes to "Unsupported", the UDS is connected to the Gateway, but the Gateway is an older version.
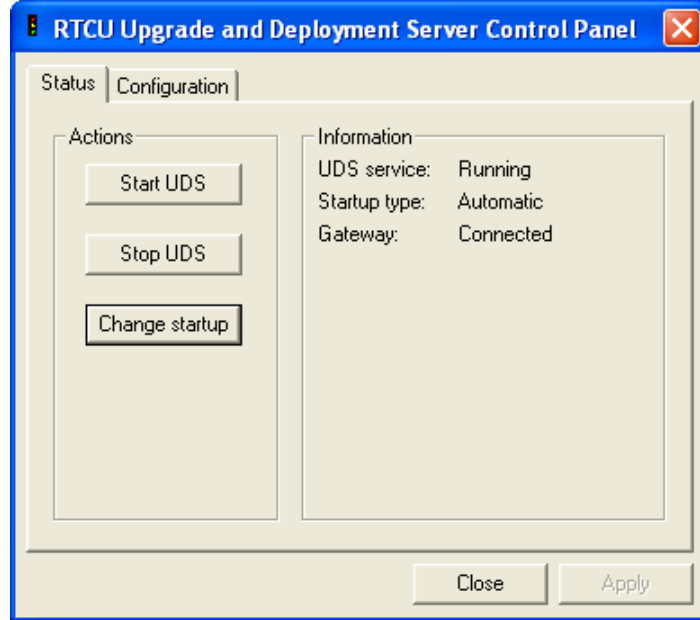   You need to upgrade the Gateway to version 1.11 or newer.

You are now ready to create profiles and units.

Control Panel

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

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

The actions group contains the options for changing the status for the UDS service.
The actions supported are to start or stop the UDS service and to change the Startup type.

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

UDS service

|	
Running	UDS service is started and is running.
Stopped	UDS service is not running.

Startup type

Automatic	UDS service starts automatically with Windows.
Manually	UDS service must be started from the Control Panel.

Gateway

|	
Not connected	UDS is not connected to the Gateway.
Connected	UDS is connected to the Gateway.
Unsupported	Gateway is not supported by the UDS.

Configuration

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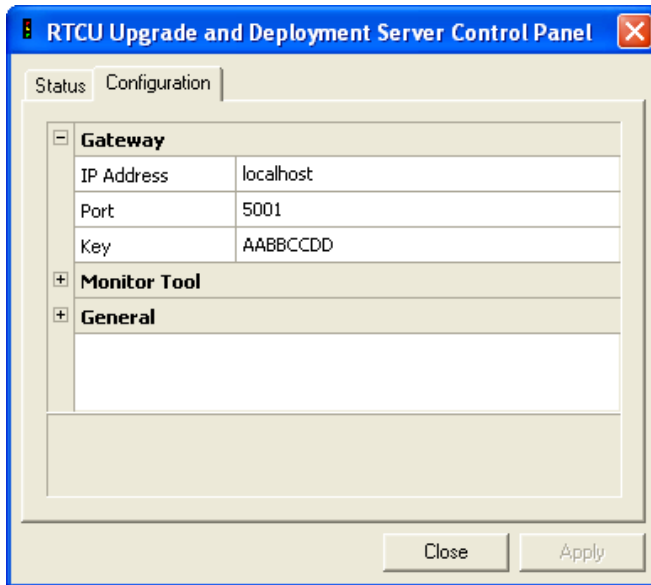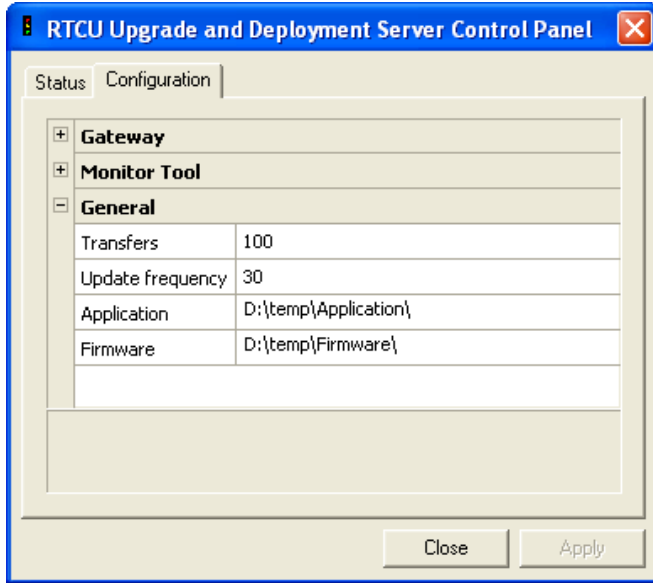

The parameters for Gateway have the following meaning:

IP Address   IP address of the Gateway.

Port   IP port of the Gateway.

Key   Access key for the Gateway.
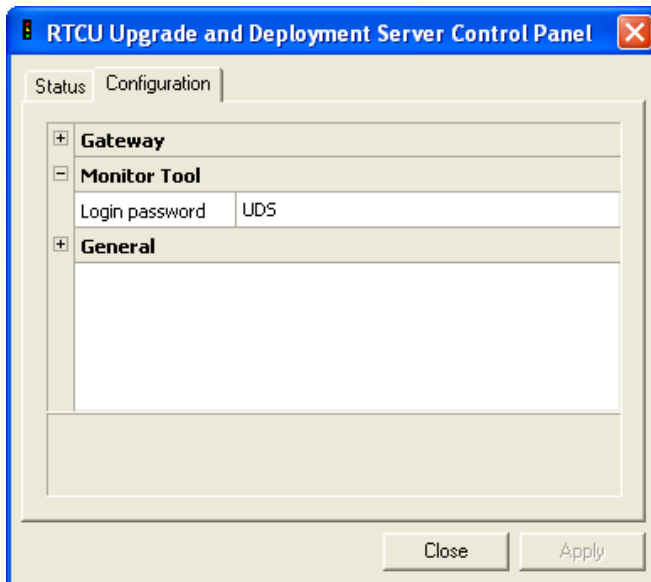
The parameters for Monitor Tool have the following meaning:

Login   Access password for the UDS. Used by the Monitor Tool to connect to the UDS.
password   Note: The access password is case-sensitive.

The parameters for General have the following meaning:

Transfers   This is the number of RTCU units the UDS can update at the same time.
             The UDS support from 1 to 100 transfers. Default is 10.
Update   The update frequency in minutes when the UDS will automatically update all non-
frequency   "up to date" units. An update will also be automatically initiated at boot-up time of
             a unit. The UDS support from 5 to 1440. Default is 30.
Application This is the directory where the UDS expects the application files to be located.
             Only the application files found here are presented to the Monitor Tool when
             working with profiles.
             Please note: All sub-directories will be included when searching for application
   files.
Firmware   This is the directory where the UDS expects the firmware files to be located.
             Only the firmware files found here are presented to the Monitor Tool when working
             with profiles.
             Please note: All sub-directories will be included when searching for firmware files.

Press the "Apply" button to use the new configuration.
Please note that the UDS must be restarted after the configuration has been changed.

Units and Profiles

A profile is a group of units that share characteristics. That is RTCU type, firmware version and application. When a unit connects, the UDS compares its characteristics with the profile the unit belongs to, and if they are not identical a new firmware or application is transferred to the RTCU unit.
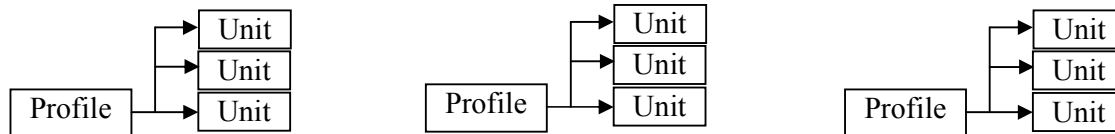
For example, take a theoretical company that logs metrological information and have weather stations scattered around the country, each with an A9i RTCU unit. In addition they have two employees that service the weather stations, each having a M11i RTCU unit installed in the service vehicle.
In this case two profiles are required, one for the A9i units and one for the M11i units.

UDS Upgrade Strategy

To determine if a firmware has to be transferred to the RTCU unit, the UDS compares the firmware version in the profile with the version in the RTCU unit. If the version numbers are different the UDS starts to transfer the firmware.

To determine if an application has to be transferred to the RTCU unit, the UDS compares first the application name and then the application version. If either of these (name or version) is not identical the UDS starts to transfer the application.

It is important to note, that the application name and version is set with the VPL instruction verSetAppProfile(). Using the UDS will require that the VPL-application sets the application profile using this function. Please consult the RTCU IDE online help for more information.

Monitor Tool

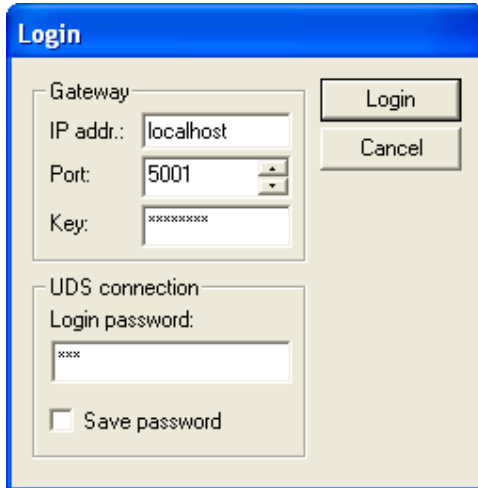When the Monitor Tool is opened, you see the main window (as shown here).
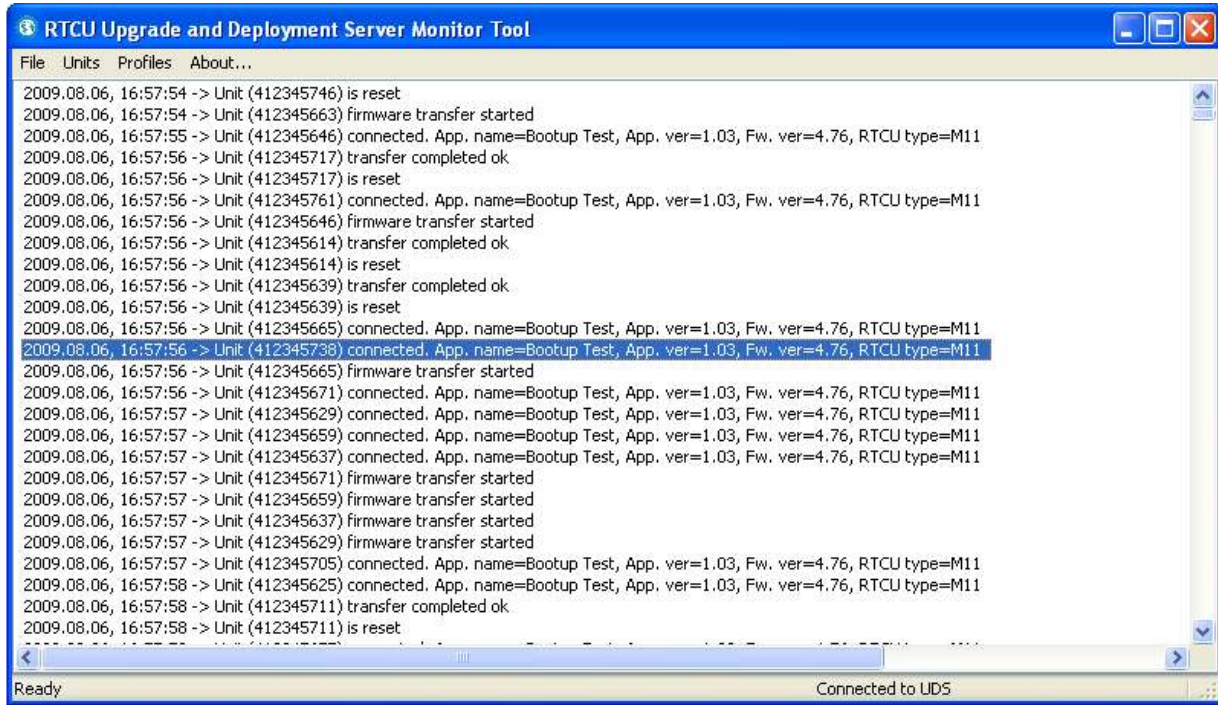
The connection status pane (The bottom line to the right) has the following meaning:

Not connected	Not connected to Gateway or UDS.
Connecting to gateway...	Contacting and logging on to Gateway.
Connected to gateway	Connected to Gateway, but not to UDS.
Connecting to UDS...	Logging on to UDS.
Connected to UDS	Connected to UDS and ready.
Gateway not found!	Either the Gateway IP address or port is wrong.
Incorrect gateway Key!	Gateway rejected the logon key!
UDS not found!	UDS is not connected to the Gateway.
Wait.. Another client is already connected to UDS.	UDS is busy with another Monitor Tool.
Incorrect UDS login password!	UDS rejected the login password!

Connect to UDS

To connect the Monitor Tool to the UDS service, open the file menu and select "Connect".

Type in the Gateway parameters and the UDS access key and press the Login button.
The Monitor Tool will now try to connect to the UDS.

Gateway
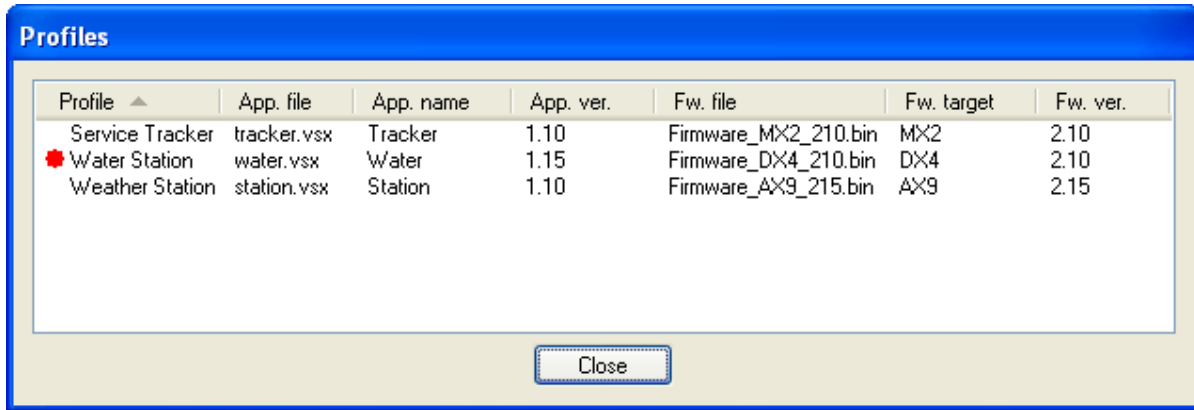IP addr.   IP address of the Gateway.
Port   Port of the Gateway.
Key   Access key for the Gateway.

UDS connection
Login Password   The password used to login to the UDS.
                  Note: The password is case-sensitive.
Save Password   When this option is selected the password is saved between sessions, and the
                  Monitor Tool will try to connect automatically.

Working with profiles
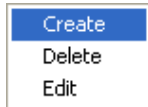
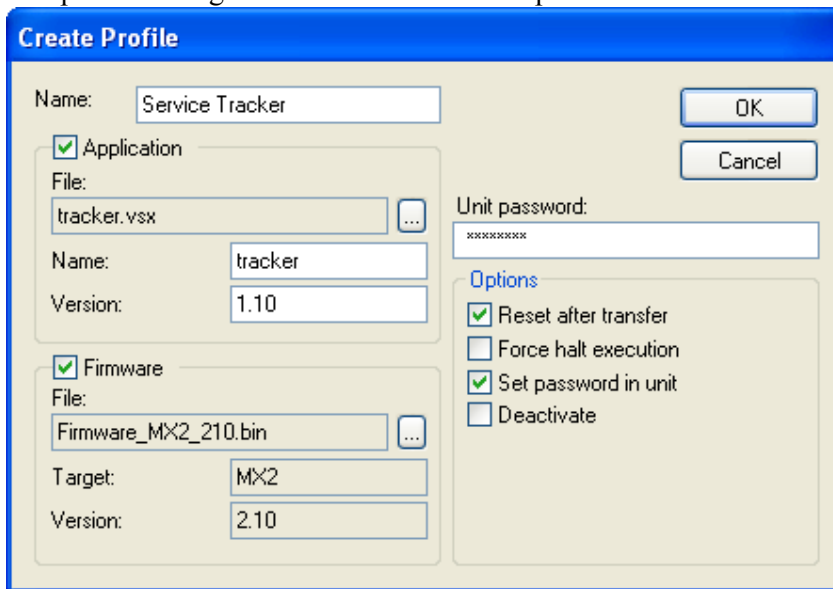This window shows the current list of profiles.

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

To work with the profiles Right-Click in the profile window and this popup menu shows up:

A profile can only be deleted if no units are using it.
The profile dialog is used to create and edit profiles

Name
The name of the profile.

Application

File	Filename 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.
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.

Firmware

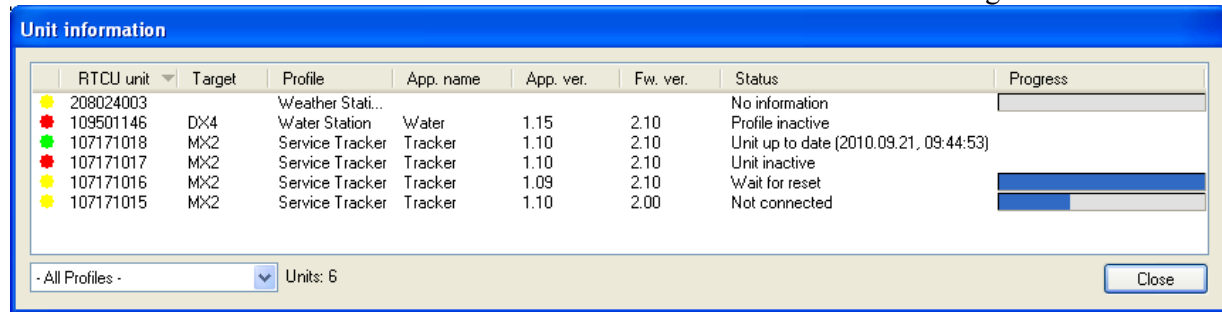|	
File	Filename of the firmware. To select a new firmware press the browse button.
	Please note: When browsing for firmware files the entire directory tree is parsed, including sub-directories
Target	The type of RTCU unit the firmware is made for. This is updated from the firmware file.
Version	Version of the firmware. This is updated from the firmware file.

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

Options

Reset after transfer	If this option is set the UDS resets the RTCU unit when a transfer is completed.
	Don't use this option if your application resets the unit when a transfer is completed.
Force halt execution	If this option is set the UDS will halt the execution of the application in the unit before starting a transfer.
	Only use this option if Reset after transfer option is also selected.
Set password in unit	If this option is set the UDS sets the password in the RTCU unit to the password entered in "Unit password".
Deactivate	If this option is set the UDS does not upgrade the units that use this profile. A red dot is displayed in the profile window to indicate this.

Working with units

The unit information window shows the information on the units that has been registered.

	RTCU unit ▼	Target	Profile	App. name	App. ver.	Fw. ver.	Status	Progress
●	208024003		Weather Stati...				No information	
●	109501146	DX4	Water Station	Water	1.15	2.10	Profile inactive	
●	107171018	MX2	Service Tracker	Tracker	1.10	2.10	Unit up to date (2010.09.21, 09:44:53)	
●	107171017	MX2	Service Tracker	Tracker	1.10	2.10	Unit inactive	
●	107171016	MX2	Service Tracker	Tracker	1.09	2.10	Wait for reset	
●	107171015	MX2	Service Tracker	Tracker	1.10	2.00	Not connected	

- All Profiles - Units: 6 Close

The Status column can have the following states:

No information	No information has been received from the RTCU unit yet.
Not connected	RTCU unit is currently not connected to the UDS.
Up to date	RTCU unit is up to date. The timestamp is the time for the last reset.
Transfer pending	RTCU unit is not up to date, and a transfer has been queued.
Transferring application	UDS is transferring the application to the RTCU unit.
Transferring firmware	UDS is transferring the firmware to the RTCU unit.
Wrong Password	The password in the profile or unit is not identical to the password in the RTCU unit.
Incompatible Firmware	Firmware is not targeted for the RTCU unit type.
Incompatible application	The RTCU is not programmable or does not support EIS.
Application file not found	UDS could not find the application file.
Application file not valid	File is not a valid application file.
Firmware file not found	UDS could not find the firmware file.
Firmware file not valid	File is not a valid firmware file.
Wait for reset	Upload has been completed, and the UDS is waiting for the RTCU unit to reset.
Version mismatch	The same application or firmware has been transferred to the RTCU unit repeatedly. Check the profile for typing errors and make sure the application sets the application name and version correctly.
Profile inactive	The profile in use has been deactivated.
Unit inactive	The unit has been deactivated.

The colored status indicators to the far left indicate whether the unit is disables (RED), unit fully updated according to profile (GREEN) or unit is in the process of being upgraded (YELLOW).

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

The dropdown box in the lower left corner allows filtering on profiles, so that only units belonging to a specific profile are shown.

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

To work with the units Right-Click in the unit information window, and this popup menu shows up:

Refresh is a way to read the unit information from the selected unit(s).

Force upgrade is a way to force the UDS to transfer the application or firmware to a unit or units.
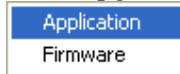
Only when the unit is deactivated, the profile is deactivated or the application and/or firmware is not selected in the profile will the UDS not try to make the transfer.
Once you have forced a transfer, the UDS will not stop to try until the transfer is completed even if the UDS is restarted.

When a unit is created or edited the unit info Dialog is used.
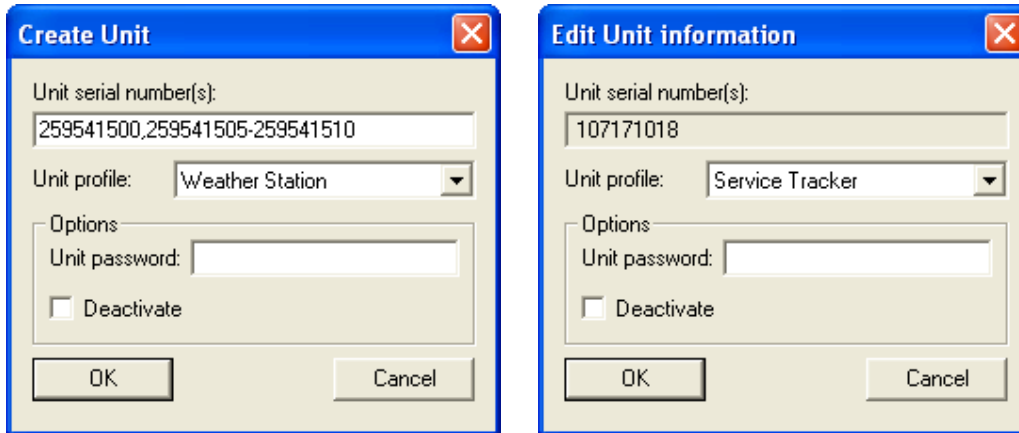
Unit serial number(s)
When editing a unit, the serial number shown cannot be changed.
When editing more than one unit, [Various] will be listed instead of the serial numbers.
When creating units, it is possible to create:
1. Single serial number.
2. Multiple serial numbers.   e.g. 750711023,750711025
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

Unit profile
The UDS uses this profile to determine when to update the RTCU unit, and what Firmware and Application to transfer.
When editing more than one unit, an option not to change the profile is also included.

Options

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Unit password	The password used to access the RTCU unit. If this is empty the password of the profile is used instead. If more than one unit is edited which contains different password, [Various] will be listed. If this is not removed, then the password will not be changed in any of the units.
Deactivate	If this option is set the UDS does not upgrade the unit. A red dot is displayed in the unit information window to indicate this. When editing more than one unit, this option can also be set to No change.

Import / Export of units

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

The functions are found in the File menu.

When importing units, the import units dialog is used
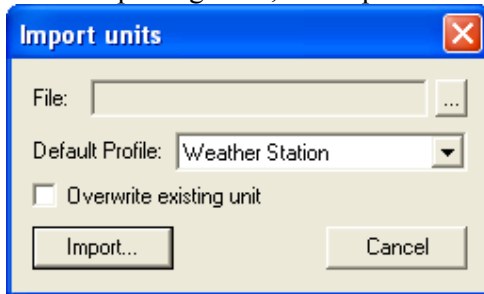
File	The name and path to the comma delimited file to import.
Default Profile	The units in the file that does not have a profile associated will use this profile.
Overwrite existing unit	If this option is selected, and a unit from the file is already in the UDS, the profile it uses will be changed to the one given either in the file or as default.

When exporting units, the export units dialog is used
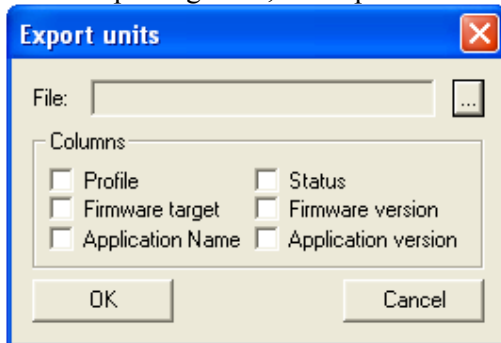
File	The name and path of the comma delimited file to export to.
Profile	Include the name of the profile the unit uses in the file.
Status	Include the status of the unit in the file.

Firmware Target	Include the unit target (type) information in the file.
Firmware Version	Include the firmware version information of the unit in the file.
Application Name	Include the application name information of the unit in the file.
Application Version	Include the application version information of the unit in the file.

The comma-delimited file must have the following format:

<Unit serial number>[,"<Profile name>"]<CR><LF>
<Unit serial number>[,"<Profile name>"]<CR><LF>
…
<Unit serial number>[,"<Profile name>"]<CR><LF>

Example:

750711023,"Profile 1"
750711024,"Profile 1"
750711025
750711026
750711027,"Profile 2"
750711028,"Profile 2"
750711029,"Profile 3"
750711030,"Profile 3"
750711031,"Profile 4"
750711032,"Profile 4"

Automatic upgrade/programming of factory delivered unit

The pre-programmed application in an RTCU unit delivered by Logic IO will automatically connect to the GSM network and wait for a configuration SMS that will allow the unit to connect to the Gateway. When the unit connects to the Gateway the UDS 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 unit will use to connect to the GPRS network.
<aut>   The PPP authentication type:
             0 - None
             1 - PAP
             2 - CHAP
             3 - PAP/CHAP

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

#GWP=<mca>,<msr>,<rto>,<afrq>
This command sets the advanced Gateway parameters. This command is optional.
<mca>   Max number of connection attempts before GPRS re-connects.
<msr>   Max number of send-request attempt 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 a SMS message could look like this:
#KEY=52544355#GPRS=web.orange.dk,3#GW=rtcu.dk,5001,AABBCCDD#GWP=3,3,30,360