

Implementation guide - simple



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1 Introduction

1.1 Merbon SCADA

Merbon SCADA is a server application used for process visualisation. The package is designed for creating monitor networks of various technologies through telemetric networks and different types of local communication. The system takes advantage of the most modern software tools and communication standards but incorporates a great deal of verified "technically standard" solutions as well. The modularity of the system enables gradual construction of the dispatching sites from the simplest visualisation of metering data to distributed integrated systems. Particular emphasis is placed on high reliability, fast application engineering and easy settings even for less experienced users.

1.2 Project engineering

This manual is intended to describe the process of implementation and configuration of RcWare Vision project in a Merbon SCADA Server environment. In the first part it shows how to set up automatic project launching and periodic trend data saving in a Merbon DB from a PLC or from Merbon SCADA Server. The second part deals with Merbon Alarm Server setup, alarm export, and setup of alarm e-mails and SMS. The last part describes user policies. The final chapter, "Basic problem diagnostics", helps the user in case of troubles with implementation.





Merbon SCADA Server toplogy

Merbon SCADA Server manages communication with the PLCs. It establishes and checks the communication with PLCs and displays the current values on its web pages. The trend values may be optionally saved in a database: the data may be written directly by the PLCs, or by the Merbon SCADA Server.

The Domain Server is used for definition of users and user groups. The Alarm Server then controls alarm processing, alarm history saving, and sending of alarm messages.



2 RcWare Vision – The Editor

As a compatibility with RcWare Vision projects is required, projects may be exported to Merbon SCADA directly from RcWare Vision. What must be preserved are all principles of datapoint engineering, mapping to the PLC project data, plant graphics engineering, and communication channel definition (see the engineering notes at https://domat-int.com/en/downloads/technical-documentation, *RcWare Vision Function Overview*). This document supposes that the project is fully functional and communicative in the RcWare Vision environment.

There are also parameters which are specific for the RcWare Vision installation rather than for the project. Those parameters which are transferred to the Merbon SCADA Server XML definition files are described below.

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2.1 Automatic start of exported projects

Project start on SCADA server start

Automatic lauching of selected projects at start of Merbon SCADA can be configured in the SCADA export dialogue *Settings -> Export to Scada2*. In the *Advanced settings* tab there is an option *Set run for exported projects on Scada server startup*. If this function is enabled, all exported projects in the *behaviors.config* configuration file will be set to start automatically with the Merbon SCADA Server service start. This option is better than the Automatic project start at startup (see <u>2.1.1</u>).



2.1.1 Automatic project start on startup

Another way how to make a project to start automatically is the RcWare Vision automatic project start. When the project definition is exported, the *Settings – PC Resources – On* Startup configuration is included, namely *Stations for online communication on program start*. There is a list of all projects which are launched after the Merbon SCADA server service starts. Click the *Use parameters* button to save settings and apply changes after the RcWare Vision restarts. The disadvantage of this method is that after RcWare Vision is started even as an editor only, all projects which are selected start to attempt to communicate with PLCs, write data into the database, etc. This may be an unwanted behaviour in some situations. It is recommended to use the option which is described in 2.1. It works for Merbon SCADA only, the projects are not started in RcWare Vision.

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II It is necessary to exit RcWare and run i	t again to confirm changes and m	ake them active !!	
	💙 Use paramet	ers	🗸 OK 🛛 🗙 Cancel

PC Resources settings

Check the exported configuration in the *scada\cfg\behaviours.config* file.



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🗊 3D Objects 🔛	behaviors.config	04/10/2018 13:26	CONFIG File	1	KB
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Exported behaviours.config file

A sample from the XML file, according to the configuration above, where the project with its GUID appears at the highlighted line:

```
<?xml version="1.0" encoding="utf-8"?>
<projectBehaviors xmlns:r="http://dev.rcware.eu/serialization
/references" kernelId="30303030-3030-3030-3030-303030303030"
xmlns="http://dev.rcware.eu/scada/project-behaviors">
<behaviors>
<behaviors>
<behaviors>
<behavior projId="e2ae9515-d28d-4114-8cd7-78ccdeabbafb">
<startupRun runcommand="Localstart" />
<behaviors>
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</behavior>
</projectBehaviors>
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DP definition Inputs/Outputs	Alams Dependencies and b	locking RcWare OPC Se	rver History Run	ing mode Impo	rt/Export Export/Interval										
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The project GUID can be found in the data point editor when unlocked:





3 Export of SCADA project and upload to Merbon SCADA

If a previous version of a project had been uploaded to the SCADA server, it is recommended to back it up. Default is "C:\vision_data\scada\projects".

In the "vision_data" folder there are already uploaded projects.

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The vision_data folder

Next, open Settings -> Export to Scada2 in RcWare Vision.

Export to Scada2



3.1 Export dialogue and settings

SCADA2 Export Export to Mervis SCADA Report Basic settings Advanced settings	×
Path to create SCADA project C:\vision_data_expont Root alam path in AlamServer	▼ Export access policy rights RcLink communication with: [localhost ▼ V2 drivers ▼ SoftPLC Alarm scripts to SoftPLCAlarmCore ▼ set alarm masks ▼ set alarm masks ○ force alarm memory enabled ○ Schema - local station in not found □ Don't set SQL history when only hysteresis selected □ File history read-only Transfer force refers hesting □ Set comm error indication delay (v2 drivers only) □ 300 □ Preserve tab characters in text interfaces' values ▼ Trensfer force refers hesting □ Set comm error indication delay (v2 drivers only) □ 300 □ Preserve tab characters in text interfaces' values ▼ Create TimeSpan data point for input variables of "TIME" type (SSCP v2 only) □ Upload projects to Scada server □ User name: □ Project stat after upload □ Project stat after upload □ Project stat after upload □ Delete current values files (datax)
Profile: cmbProfile Save profile Load profile	Export all Export selected stations
	V Close

The Export to Merbon SCADA dialogue is displayed:

Dialogue for Merbon SCADA export

If a project is exported after all necessary parameters have been set up, the dialogue setting is saved for all following exports. The setting also ccan be saved in profiles – use the "Save profile" button in the lower part of the dialogue. A profile can be read and activated using the "Load profile" button.

Dialogue – Basic settings:

- **Path to create SCADA project** folder where files with Merbon SCADA projects will be exported (folders *cfg* and *projects*)
- **Root alarm path in AlarmServer** root folder for tree structure of alarm server in a particular project
- Path for saving text history files in case database is not used for history storage. This path is saved in the config file at every project -> projects\(project GUID)\(project GUID).FILEHISTORYCONFIG
- Leave out check before export check of incompatible settings. If you are sure that it is not necessary, it can be left out. Checking of large project takes more time. If there is incompatibility and the project is not checked, the conversion process returns errors and terminates.



Note: Leaving out check before export can also be useful for more exact specification of an error in the Merbon SCADA server log when attempting to start the service.

- **Create new Station GUID on duplicity (saves file)** on duplicity, the GUID in the RcWare Vision project is changed as well.
- Create new schema GUID on duplicity (saves file) on duplicity, the schema GUID in the RcWare Vision project is changed as well.
- Create rights:
 - Full control [project_name_RIZENI]
 - Alarm operation [project_name_UDRZBA]
 - Read only [project_name_DOZOR]

User groups are created (see 8.2) and exported as far as to the project (*cfg**projects.config*) and schema

(projects\project GUID\schemas\schemas.config) level and data points.

- Set projects access user rights this options allows creation of user groups Full control, Alarm operation and Read only in exported projects.
- **Project domain name** Domain name at the Domain server. Must be kept as is "DEFAULT_DOMAIN".
- **Use DB profiles** use more databases from a single project. Now not definable in RcWare Vision.
- Force DB saving setting check to overwrite the Save data to selected server in the SQL Server setting dialogue. At the selected points, data will be saved to database.
- Use datapoint timestamp for saving normally, the SCADA server timestamp is used when saving data to database. If this setting is enabled, the datapoint timestamp is used instead.
- Use Mervis DB driver for all communication if the data source for the complete project is a database (the communication with PLCs will not be established at all). SCADA only communicates with the database rather than with PLCs.
- Export access policy rights Export of rights to schemas and graph templates (predefined view in RcWare Vision).projects\project GUID \schemas\schemas.config
- **RcLink communication with**: SCADA connects to RcWare Vision rather than to PLCs. The field should then consist the RcWare server IP adress.
- **V2 drivers** SCADA used different versions of communication drivers (SSCP, SoftPLC link ...) in the past. Now, V2 drivers are used as a standard. Mostly, this option should be checked.
- SoftPLC alarm scripts to SoftPLC AlarmCore check to use alarm scripts with SoftPLC RT or Merbon RT alarms.



- Allow "inactive acknowledge" state check this option so this state (responding Merbon IDE alarm behaviour) will be included in SCADA export.
- Set alarm masks select a file which contains alarms' state text values. RcWare Vision includes two files with CZ/EN text values responding Merbon IDE alarm settings in folder on path RcWare\Utilities\ScadaConverter\Resources by default.
- Force alarm memory enabled: "Active alarms" bookmark will include all alarms. This is important setting for correct alarm's state icons behaviour as well.
- Schema local station if not found: this setting needs not to be enabled at this moment. If a schema contains references to other projects which are not available, the export process tries to find the datapoint in the currently exported project.
- **Do not set SQL history when only hysteresis selected** if there is hysteresis history set in the data file, these data points are saved in database automatically (even if the SQL history tag is not set). To prevent this, check this feature, and only the SQL history tagged data points will be saved to database.
- File history read-only History files can be read, yet not written. Old RcWare Vision history files can be used and copied to the respective Merbon SCADA folder to display trends recorded in RcWare Vision.
- **Transfer force refresh setting** For SoftPLC Link: If the driver should take the PC time rather than PLC time for datapoint refresh, this is defined in the communication definition data point in RcWare Vision (Force refresh). Check this to take over this setting from the RcWare Vision data file.
- Set comm error indication delay (V2 drivers only) time delay to indicate communication failure at a data point (caused e.g. by a bad communication line)
- **Preserve tab character in text interfaces values** Fix for a particular case where Tab characters were replaced by space characters unitentionally.
- Create TimeSpan data point for input variables of Time type (SSCP v2 only) If a TIME value is on a data point input, it will create a TimeSpan data point type rather than take over the RcWare Vision data type
- Upload project to SCADA server Fill in URL and credentials to Scada server, and upload projects to this server after conversion. The projects must exist on the SCADA server already (= be defined in projects.config), otherwise the upload fails (see chapter 4).
 - Force project start after upload after project upload the project is launched (LocalRun) regardless of its previous state. If unchecked, the project is set to its previous state.
 - Delete current values files (.datax) on project start the .datax file is deleted when restarting. Not necessary to use at version 1.6.6 and later. May be useful at older SCADA versions, where the .datax file may contain out-of-date values, and the changes initiated by user will not be



reflected in the datapoint table or schemas after the project is overwritten.

!!!Note!!! If there are user-edited texts in the schemas, the .datax file must NOT be deleted. Otherwise all changes in values made by users during the SCADA project operation would be lost.

• Export stations separately – at sites with large number of projects (100+) the projects can not be exported all at once. (RcWare Vision would consume too much resources and Windows would shut it down.) Check this to export projects one after another and save Windows resources.

Note that if there are projects exported which contain schemas with references to other projects, this option must be NOT checked for successfull export. (= All projects must be exported together.)

- **Export all...** all projects contained in the DATA folder in the RcWare Vision installation will be exported
- Export selected stations only projects selected by user will be exported.

Dialogue description – Extended settings (only those settings which now affect the exported project properties are described here)

- Automatically convert stations referenced in schemas this setting is to be let active. If there are references to data points outside of the exported projects in the schemas, connections will be created by exporting .data files from the referenced projects.
- Set run for exported projects on SCADA server startup always let active. After SCADA server (re)start, projects will start communication to PLCs, which is required in 99 % of installations.
- Schemas button style style of the default look of buttons in the schemas. There are two options:
 - RcWare Vision standard look with a 3D effect
 - Mervis button is displayed as a square which takes over the colours set up in the schema, which indicates if the button is pressed or not.
- **Do not export schemas and graph templates** only the datapoint table will be exported. This is useful if only the datapoint table shall be updated and there are big schemas (plant graphics, floor plans) in the project, which would slow down the export.
- Set visibility of empty groups:
 - Invisible the groups are not displayed in the datapoint table



- **Load groups to set list from saved header list** the saved header list to display is loaded.
- Use OpcUa and driver for data points communicating over OPC this setting is used if the SCADA shall communicate to a OPC server. Merbon SCADA supports OPC UA (unlike RcWare, which supports OPC DA). To set up the communication of Merbon SCADA with OPC server, the project must be created by import from a .csv file. In the "parameters" field, channel definition and OPC server has to be entered. The format is as follows:

[DEMO|hw_channel_number|opc_server_id|opc_items_prefix];[TEST| hw_channel_number| opc_server_id |opc_items_prefix]

 Enable user text editing in schema – must be enabled if schemas contain texts to be edited by users when the SCADA service is running (note that the .datax files must NOT be deleted when copying the exported SCADA projects to SCADA server).

3.2 Export

Export may be executed for selected stations only ("Export selected stations...") or for all available projects in the DATA folder ("Export all..."). The export process reports the progress in a text window.



Exported SCADA projekt

If the export has been executed successfully, the dialogue returns message *"Data exported"*. Press Enter to complete the export process.



In the exported folder, the project is in two folders: *"projects"* and *"cfg"*. If there have been other projects exported into the same folder before, they can be identified by their unique GUIDs (see 2.1.1) or folder creation date.



Exported config files

The exported SCADA projet folder has to be copied to *"C:\vision_data\scada\projects"*, and the exported config files to *"C:\vision_data\scada\cfg"*, as on the screenshot below.

📙 🛃 📙 🖛 scada					- 0	×
File Home Sh	nare V	iew				~ ?
← → * ↑	This PC	> Windows (C:) > vision_data > scada >		✓ Ö Search scada		Q
E. Desktop	* ^	Name	Date modified	Туре	Size	
🖊 Downloads	*	cfg	26/07/2018 11:58	File folder		<u> </u>
🔮 Documents	*	projects	03/10/2018 14:34	File folder		
Pictures	*	🚳 events.db	11/10/2018 15:22	Data Base File	661	1 KB
Alarm server SCA	ADA	🚳 generic.db	11/10/2018 13:53	Data Base File	22	2 KB
Apowersoft Scre	en Recc	😐 scada.rar	01/08/2018 15:37	WinRAR archiv	433	3 KB

cfg and projects folders in vision_data

Then restart the Merbon SCADA service "Merbon SCADA # MerbonSCADAServer".

The service can be restarted from the Merbon SCADA installer in the Services

panel by clicking the Stop button		and then the Start button	at the
Merbon SCADA # MerbonSCADASe	erve	er service.	

01/2021 This document is current for version Merbon SCADA installer 1.7.6.



<						_ ×	(
Services							_
Service name	Status	PID	Version	Package Version	Actions	Log	
DS2Database	Running	3844	10.2.15	1.0.0.20180723			
Merbon SCADA # MerbonSCADAServer	Running	17368	0.9.0	2.0.0.20180723		E	
Merbon.NetCoreServiceShell Server # MerbonDomainServer2	Running	7868	1.0.0	2.0.0.20180723		1	

Merbon SCADA # MerbonSCADAServer service in the installer

Another way to restart the service is to open the PC application *Services* and locate the *Merbon SCADA # MerbonSCADAServer* service. Right click the service and select *Restart*.



Merbon SCADA # MerbonSCADAServer service in the Services application



4 Project update at Merbon SCADA server

4.1 Local update

When updating projects locally, the process is similar to the first export and project upload to Merbon SCADA Server. Several issues must be considered which may affect the successful upload.

First, consider the changes which should be performed at the SCADA server. For standard updates in the data point table or schemas in already running projects, direct upload can be used (Upload projects to SCADA server). The URL will be <u>http://localhost:8520</u> with User name and Password of a user who has privileges to edit the uploaded projects (such as the ScadaAdmins group).

In this case, only the datapoint table and schemas are exported into already running projects. No configuration is exported. This means that all configuration files related to the project must be in the respective folders, having been exported before. **Note**: The server is also restarted automatically, and the .datax files may be deleted. Check this option only if projects running on Merbon SCADA older than V1.6.6 are uploaded. In V1.6.6 and more recent this option leads to loss of user defined texts!

If the direct upload function has not to be used, the project can be exported in a standard way and then the newly exported folders copied manually to *C:\vision_data\scada/projects*. The folder names carry the project GUIDs. However, it has to be considered that these folders also contain the RcWare-related configuration of projects. Thus, if a project is exported on another PC, the configuration files must be removed from the export folder before copying (.alrsvrconfig, .filehistoryconfig, .hwconfig, .rcwaredbconfig).

If there are changes in configuration required, or new projects are to be added to SCADA Server, please use standard export with the "Upload projects to SCADA Server" option **not checked**. After export, select which files have to be copied to the vision_data\scada folder where the SCADA server reads projects from (the path is C: \vision_data\scada by default).

If the number of projects to run on the SCADA server is to be changed (project(s) added or removed), all projects which have to be run after startup have to be included in the export. This information is written into files in the *cfg* folder during



the export. If only new projects would be exported, the information for already running projects would be missing in these files. If a project shall be added or removed from the SCADA server, the whole set of projects has to be exported together, and it must replace the original contents of the *cfg* folder.

If there are no projects to be removed or added, but there are changes in project configuration which have to be included in the export, please execute the standard export, and then copy the *projects* folder into the existing project folder in the C:\vision_data\scada path. A typical example of this change is employing of the alarm server, Merbon Database, or changes in saving of file history.

4.2 Remote upload

To update a project at a remote Merbon SCADA server, the project must already be present in the *C*:*vision_data**scada* folder.

Open the SCADA2 Export dialogue in RcWare Vision in *Settings -> Export to Scada2.* Check the *Upload projects to SCADA server* box. In the Url field, enter the URL where the project should be exported to. If the port number at the Merbon SCADA server was not reconfigured, keep the TCP port 8520 as on the image below. The SCADA Server URL may look e.g. like this *http://192.168.2.211:8520.* Enter *User name* and *Password* as defined at the Domain Server. This user must be member of a group which has *Edit* rights allowed in the projects.config file (e.g. default group *ScadaAdmins*).

If the project shall be run automatically after upload to SCADA Server, check the *"Force project start after upload"* option.



SCADA2 Export		×
Export to Mervis SCADA Report		
Basic settings Advanced settings		
Path to create SCADA project C Root alam path in AlamServer Path for saving text history files C Path for overflow buffers C Path for overflow buffers C Leave out check before export C Create new Station GIUD on duplicitly (sc Create inghts V Full control [project_name] V Alam operation [project_name] V Set projects access user rights Use MervisDb driver for all communication parameters: Set empty groups visibility Invisible Don't create ReWareDb v1 definition Create profiles for each datapoints group Force DB saving setting Save to DB	:\vision_data_export	Image: Second access policy rights ReLink communication with: Image: SoftPLC Alam scripts to SoftPLCAlamCore Image: SoftPLC Alam scripts to SoftPLCAlam scripts to SoftPLCAlamCore Image: SoftPLC Alam scripts to SoftPLCAlam scriptscritem scriptscripts to SoftPLCAlam scripts to SoftPLCA
Profile: cmbProfile	Save profile Load profile	Export all Export selected stations
		✓ Close

Project export to SCADA Server

After the export to SCADA Server has been finished successfully, information about uploaded project "Projects uploaded." and started project "Starting projects..." will be displayed.



Project upload to SCADA Server



5 History

History data may be saved either as text files in the project folder (file history), or in an external database (Merbon DB). Depending on the preferred way, follow one of the configuration below.

5.1 Merbon DB

If there is a Merbon DB installed in the Merbon SCADA site, please check if the database service is available at port 11112 by opening the http://localhost:11112/admin URL. The default user / password for database is admin / rw. After logging in, create a new user for saving data from the PLC or SCADA (of course the existing admin user can be used, too; depending on your security requirements). The credentials are then to be entered in the SQL Server setting dialogue in RcWare, or in the Merbon DB Parameters configuration item in the PLC configuration in Merbon IDE.

Then, the RcWare Vision has to be configured. Set the Merbon database URL in the *Settings – SQL Server Settings* dialogue, see also the Merbon DB installation notes.

SQL server settings		>
☐ Read data from SI ▼ S	QL server 🔽 Read data from R ave data to selected server	cWare DB server Frefer reading from file
Computer name or IP address http://localhost:9876/RcWa admin Password ** Client ID Use http proxy HTTP Proxy HTTP Proxy Http proxy user Http proxy password Don't use http proxy for loc	s areDbAccess Server response timeout [ms] 120000 Values count in one save 1000 Values count in one reading cycle 5000 Data dump limit 50000 Max. log file size (kB) 500000 Test Set default Set default	Saved stations ✓ Save only selected stations 2018_07_30_TEST Interval:1 min, RT:No, r/w;Y ALARM_EMAIL_NET4 0 bodů pro ukládání BARTH Interval:1 min, RT:No, r/w;Yes CZT_D_085 Interval:1 min, RT:No, r/w;Yes MAIL_TEST_Interval:1 min, RT:No, r/w;Yes MAIL_TEST_NET4 0 bodů pro ukládání NERBON_SAMPLE_PROJECT Interval:1 min, RT:No, r/w; RUZOVY_DVUR_BROUMOV Interval:1 min, RT:No, r/w; RUZOVY_DVUR_BROUMOV Interval:1 min, RT:No, r/w; Set Set
V Use parameters		V OK X Cancel

SQL Server settings



Writing to database from Merbon SCADA

The essential settings are marked red in the image above. This configuration allows Merbon SCADA Server to write to the database. Check the *Read data from RcWare DB server* option. Check also the *Save data to selected server* (which is the Merbon DB server) option if the Merbon SCADA server shall read data from PLCs and save them to the database. The projects concerned must be selected (only those projects are enabled which have at least one data point set as *History-> Long term – SQL database* or *Save on value change*) as well as the required data saving interval. **Every particular project must be selected and saved by the Set button separately.** Saving intervals on the individual datapoints are not taken into account. All history data points have a common saving interval set in the dialogue mentioned above.

Writing to database from PLC

Setting *Data from RT* and *Read-only* is used when the PLC itself writes data to the database directly, i.e. not using RcWare Vision. If PLCs write directly to the database at all projects, the *Save data to selected server* option may be unchecked. **Every particular project must be selected and saved by the Set button separately. The setting applies for this particular project.**

Computer name or IP address refers to the Merbon DB endpoint (= where the Merbon DB is installed). The username and password must be entered as well (default is admin/rw). If there are no special requirements regarding data saving and optimisation, click the *Set default* button and all parameters are automatically set to default values.

Click Use parameters to save the whole setting.

After the definition is exported, the configuration can be checked in the file *projects*\[*project GUID*]\[*project GUID*].*rcwaredbconfig*:





Exported rcwaredbconfig definition in a file explorer

5.2 File history

If the Merbon DB is not available at the Merbon SCADA installation, history is saved in files (similarly to RcWare Vision). All history data points shall have the *History -> Long term – monthly files* attribute and required sampling period set.

File history is the main, default way of history data storage. It is powerful enough for projects sized about 5000...10000 data points and sampling period of 5 minutes and longer. For larger projects and / or more frequent sampling, where reading from files would lag the system, a powerful database is used. All data are saved to history files too by default. (Data may be copied from files to database at any time using a special utility called Data Pump.) If there is a requirement (e.g. to save disk space) not to save history to the history files anymore (so it would only be saved to the database), select *File history for reading only* in the export dialogue.

File history for reading only -> this option is set in the *Export for Merbon* SCADA dialogue. Consider if it is required to save data both to files and to the database.



SCADA2 Export	×
Export to Mervis SCADA Report	
Basic settings Advanced settings	
Path to create SCADA project C:\vision_data_export Root alarm path in AlarmServer	Export access policy rights ReLink communication with: localhost V2 drivers V2 drivers
Path for saving text history files C:\vision_data\file_history Path for overflow buffers	
Leave out check before export Create new Station GUID on duplicity (saves file) Create rights Full control [project_name]_ [RIZENI Alarm operation [project_name]_ [UDRZBA Read only [project_name]_ [D0Z0R Set projects access user rights	Schema - local station if not found Const set SQL history when only hysteresis selected File history read-only Set commerces heating is history anymore. Set commerce indication delay (v2 drivers only) 300 [sec] File history anymore. Set commerce indicates in text interfaces' values File characters in text interfaces' values File characters in text interfaces of "TIME" type (SSCP v2 only)
Use MervisDb driver for all communication parameters:	SCADA server Urt: http://localhost.8520
Set empty groups visibility □ Invisible □ Load groups to set list from saved headers list □ Use DB profiles □ Don't create RcWarDb v1 definitions □ Create profile for each datapoints group	User name: admin Password: ** Project start/stop timeout: 60 ÷ [sec] Force project start after upload Delete current values files (.datax) on project start
☐ Force DB saving setting ☐ Save to DB	Export stations separately
Profile: cmbProfile Save profile Load profile	Export all Export selected stations
	✓ Close

Setup of file history as read-only

After export, the settings can be checked in the file named *projects* [*project GUID*] [*project GUID.filehistoryconfig*], which contains the path where history shall be saved. (It is defined at the Merbon SCADA export dialogue.)

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File Home	Share View	w											
Pin to Quick Copy access	Paste	path shortcut	Move Co to • to	ppy Delete	■] Rename	New folder	『 New if 『 Easy a	tem • iccess •	Properties	Open ▼ Edit Mistory	Select all	one lection	
CI	ipboard			Organise			New		0	pen	Select		
← → * ↑	→ This PC →	Windows	(C:) → visio	n_data > _exp	oort ≻ s	cada >	projects :	> 40b8e9	9d6-e008-40	15-b2c7-c230	5a4a3b92		~ Ū
💻 This PC	^	Name		^				Date m	odified	Туре		Siz	e
🗊 3D Objects 🛛 🔤 charts					04/10/2	018 13:26	File folder	r					
Desktop	Desktop					04/10/2	018 13:26	File folder	r				
Documents	40b8e9d6-e008-4015-b2c7-c2305a4a3b92.alrsvrconfig				nfig	04/10/2	018 13:26	ALRSVRO	ONFIG File		1 KB		
	40b8e9d6-e008-4015-b2c7-c2305a4a3b92.data					04/10/2	018 13:26	DATA File			146 KB		
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Music		40b8e9d6-e008-4015-b2c7-c2305a4a3b92.hwconfig 04/10/2018 13:26				HWCONF	IG File		1 KB				
Pictures		🗋 40b8	e9d6-e008-4	015-b2c7-c230	5a4a3b92	2.rcwared	bconfig	04/10/2	018 13:26	RCWARE	DBCONFIG File	e	1 KB
🐺 Videos													
🏥 Windows (C	i:)												

Exported filehistoryconfig file in File explorer

Check *File History* at the installation time to enable reading history data from files for Merbon SCADA.



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kequirements	Installation	Progress			
	Installation folder	C:\Apps\Merbon\			
		Merbon SCADA Server			
Available	-	License file Merbon SCADA Web		O Please select license file.	
Merbon SCADA Server	- 0	File History Stop Web Sites	V		
Merbon Database Adapter	- 1				
Merbon Database	- 1				
Merbon Alarm Server	• 0				
Merbon Domain Server	- 1				
			>		

Reading history data from files

If this has not been done and the history files should be used, change this parameter in the config.js file, which is located in "C:\Apps\Merbon\Web Client\Merbon Scada Web". If Merbon SCADA reads data from a database, the line "ESGVisionConfig.DefaultHistoryProviderId = "7fa3f8d7-d73d-4d6f-9e30e424690a22b4"; " is commented. It looks then like this: "// ESGVisionConfig.DefaultHistoryProviderId = "7fa3f8d7-d73d-4d6f-9e30e424690a22b4"; ". To enable history reading from files this line must be uncommented, i.e. the characters // at the beginning of the line must be deleted and the file must be saved.



6 User policy – schemas, editing

6.1 Extension of read / write rights

Merbon User policy allows setup of user rights at several levels. There are user rights to:

- Projects
- Schemas (plant graphics)
- Data point groups (as configured and seen in RcWare Vision)
- Read / write -> data points in a particular project
- Data point table / schemas / graphs view

To access projects and schemas, the user rights need not to be specified, as all users are allowed to access all schems and projects. The users only need to have granted rights to read, or to read and write.

All projects are exported and uploaded to the server using the standard way of engineering, see below. Users and groups are defined at the domain server which can be accessed from a web browser at <u>http://localhost:9696</u>. This port number can be changed if necessary.

Enter the credentials which have been entered at the Merbon SCADA installation procedure, and connect to the Domain server.

Merbon editor						
Username						
Password						
Remember me:						
Log in						

Domain server login





Domain server main page

The exported projects have two groups predefined: ScadaAdmins and AllUsers.

ScadaAdmins:

- Projects all
- Schemas all
- Data point groups all
- Read / write -> data points in a particular project read and write
- Data point table / schemas / graphs view all options

AllUsers:

- Projects all
- Schemas all
- Data point groups all
- Read / write -> data points in a particular project read only
- Data point table / schemas / graphs view all options

New users can be defined by clicking the Create User button and attaching them to *ScadaAdmins* and *AllUsers* groups.

A new user must have his user name defined (*Login*), and password (*Password*). The password must have at least 5 characters, containing at least one small character and one numeral. Items *Name*, *Surname* and *Description* are optional and are used to specify the user in more detail if required.



Create user	
Domain: DFFAULT DOMAIN	_
Login (*):	
Password (*):	
Retype Password (*):	
Password and Retype password must be the same Password must contain at least 5 characters Password must contain minimum one lower case letter Password must contain minimum one digit Password can not contain login name	
Name:	
Surname:	_
Description:	
	Create Close

Definition of a new user in the Domain Server

After a new user is defined, it must be assigned to a group to acquire his access rights. This can be done by two ways:

- Add a user to group using the tool panel which is in the *Show users* tab. Go to *Groups* and click *Name* to selct a group. The group will be added by clicking *Add*. All changes must be confirmed by the *Save* button.



Adding a user in a group in User editor

26



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go to Show groups , and click the group the user shall be added to. In the tool panel in Users click the Name field to select a user. Click Add to add the user to group. Confirm all changes by clicking Save.

	Timerboni scada				G
Image Operation A State A Components of A Image First Image I	Show Domain Details Show Users Show Groups Create User Create Group Mass Group Add Clear Select	an			domain.admin 🍳
Image Image <td< td=""><td>Name A</td><td>Description A</td><td>Status 🔨</td><td>Group members role 🔨</td><td>Group Information</td></td<>	Name A	Description A	Status 🔨	Group members role 🔨	Group Information
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In State Starter administration Uner Mat can administrative tascida server. OK Standard User In State Stat	Domain viewers	Users that can see all users and groups in the domain.	OK	Domain Admin	
OK Standard User StandardystemCvert/Viewers OK Standard User Standard User	Scada server administrators	Users that can administer the scada server.	OK	Standard User	
C ScadsSystemEventViewers OK Standard User	ScadaAdmins		OK	Standard User	
	ScadaSystemEventViewers	ScadaSystemEventVlewers	ок	Standard User	
Savo (pado Hensa)					
					Save Delete Reload

Adding a user in a group in Group editor

Then log in to the Merbon SCADA server to check that the rights were applied correctly.



Login to the Merbon SCADA server



7 Extended SCADA functions

7.1 Project map

A map with projects is part of every installation. In the default setting, it is turned off. To activate the map, edit the *config.js* file in the *Merbon SCADA Web* folder.

The existing setting is

ESGVisionConfig.AppMainIconsVisibility.MapProjectsView = false; which has to be changed to

ESGVisionConfig.AppMainIconsVisibility.MapProjectsView = true;

Save the file. The SCADA server needs not to be restarted. Just refresh the web page in the browser by Ctrl-F5. In the right part of the page header there should be the map icon

 \square

In the basic setting, projects do not have coordinates to specify the position in the map. If the projects should appear at particular positions, the coordinates must be entered.

The coordinates are to be set in the *projects.config* file (located at vision_data\scada\cfg). Every project has a separate declaration in this file. Part of this declaration is also the <loc> parameter. This is where the longitude and lattitude has to be specified:

Setting of lat/lon for a project in the "projects.config" file

To apply all changes, the SCADA server must be restarted.

Note: When uploading projects, please make sure that the *projects.config* file is not overwritten. RcWare does not include the location settings, and this information would be lost.

7.2 User text editing

This function allows creating user-editable objects in the Merbon SCADA schemas. The objects can be edited in the web browser where SCADA is viewed. Some minor changes have to be made:



First, specify which *Text* type objects have to be user-editable. Allow editing in the object editing dialogue.

Text - edit: Text72.74	×
Text - properties General p	roperties
Text Alarm	^
	~
Horizontal alignment C Left C Right © Center	Vertical alignment O Up O Down • Center
Enable text user edit	
Rotate text [degrees]	0 •
Rotate letters [degrees]	0 •
	✓ OK X Cancel

Enable editing at a Text type object in RcWare Vision

Then, allow editing for the project in the export dialogue in the Extended settings tab:

SCADA2 Export		×
Export to Mervis SCADA Report		
Basic settings Advanced settings		
Create MervisAnalytics configuration		
Save periodical export flag as Energis export tag For datapoints with Energis_Node_Id set only		
Use port mapping file		
✓ Automatically convert stations referenced in schemas		
Set run for exported projects on Scada server startup		
Schema links mapping file		
Schemas button style RcWareVision		
Don't export schemas and graph templates		
Set empty groups visibility Invisible Load groups to set list from saved headers list		
Use OpcUa driver for datapoints with OPC communication		
parameters: [DEMO]cislo_hw_kanalulid_opc_serverulopc_items_prefix);[TEST]cislo_hw_kanalulid_opc_serverulopc_items_p	prefix]	
I Allow user text edit in schemas		
	4	
Profile: Save profile Load profile	Export all	Export selected stations
		Close

Enable user text editing in the RcWare Vision export dialogue



Export projects and restart the SCAD server to make changes active. Important: User text changes are stored in the .datax file, which is located in the project folder. This file must not be deleted when a new version of the project is copied to the server.

7.3 Events – overview of all user interventions

Every Merbon SCADA user can display the *Projects log* tab. This is where the history of interventions in Merbon SCADA is recorded, like login, change of value, display of schema, etc. These events can be filtered according to time span, project, user name, event type, or note, which contains a closer description of the event (e.g. the new setpoint).

Merbon SCADA also allows an administrator view on the Events tab. This view shows all interventions of all users concerning the Merbon SCADA installation. Users can get this authorisation if they are members of the *ScadaSystemEventViewers* user group.

SCARA Domain Server						C
Show Domain Details Show Users Show G	Show Domain Details Show Users Show Groups Create User Create Group Mass Group Add					
Name 🔨	Description 🔨 🛛	Users	Groups	Status 🔨	Group members role	Group Information -
Filter	X Filter X			Filter	X Filter X	User Membe Standard User 🗸
Administrators	Administrators 1		0	ОК	Standard User	Name (*) ScadaSystemEventViewers Description ScadaSystemEventViewers
Alarm server administrators	Users that can ad 2		0	OK	Standard User	Status Ok
Alarm server impersonators	Users that can call 1		0	OK	Standard User	Liers
AllUsers	0)	0	OK	Standard User	domain.admin Add
Domain administrators	Users that can edit 1		0	OK	Standard User	
Domain viewers	Users that can see 1		0	OK	Domain Admin	Groups
Scada server administrators	Users that can ad 1		0	OK	Standard User	Add
ScadaAdmins	0)	0	OK	Standard User	Permissions +
ScadaSystemEventViewers	ScadaSystemEvent 0)	0	OK	Standard User	

Assignment to the ScadaSystemEventViewers group

As soon as the user is assigned to the group, the *Projects log* tab shows events by all users in the system.

	g 🛛		
< > 1-100 / 12	24 Change date range Fro	m: 11.08.2020 00:00 To: 11.08.2020 13:38	
Time 🗸	Project User	Action	Noto
	Filter X Filter	X Filter X	Hiter X
11.08.2020 13:38:15			Downloading data part "ModuleIntros". Offset: "0"
11.08.2020 13:38:15			Downloading data part "DataTrees". Offset: "0"
11.08.2020 13:38:15			Downloading data part "DataPoints". Offset: "0"
11.08.2020 13:38:14			
11.08.2020 13:38:13			Logout successfull
11.08.2020 13:37:12			Downloading schema data occurrences. Project Id: "40b8e9d6-e008-4015-b2c7-c2305a4a3b92", Datapoint Ids: ""
11.08.2020 13:37:09			Downloading data part "ModuleIntros". Offset: "0"
11.08.2020 13:37:09			Downloading data part "DataTrees". Offset: "0"
11.08.2020 13:37:09			Downloading data part "DataPoints". Offset: "0"
11.08.2020 13:37:06			Downloading data part "DataTrees". Offset: "0"
11.08.2020 13:37:06			Downloading data part "DataPoints". Offset: "0"
11.08.2020 13:37:04			Downloading data part "DataTrees". Offset: "0"
11.08.2020 13:37:04			Downloading schema. ld: "ae5bb8b0-1c5d-4a69-b259-a82905bcce82", Name: "demo"
11.08.2020 13:37:04			Downloading data part "ModuleIntros". Offset: "0"
11.08.2020 13:37:04			
11.08.2020 13:36:59			Logout successfull
11.08.2020 13:36:42			Setting value of "/MERBON_SCADA_DEMO/Skupina/ekviterma_kotel.fy3" ("Double") from "11" to "11"
11.08.2020 13:36:42	MERBON_SCADA_DEMO Ashe	ACTION_EXEC	Setting value of "/MERBON_SCADA_DEMO/Skupina/ekviterma_kotel.fy4" ("Double") from "10" to "10"

Administrator view on the Events tab

merbon SCADA



8 Basic problem diagnostics

- Service running/stopped (list of all Domain Server/SCADA Server services)
- Reasons why the SCADA Server service does not start:
 - Licence problem listed in the SCADA server log together with the particular problem description (bad HW imprint, licence timeout, maximum datapoint number exceeded)
 - XML error (list in a log where the service is installed or in the command line if launched from a command line)
 - o Check the service settings so that it starts automatically after crashing
 - Duplicate project GUID (in case not all projects have been exported or checked)
- Service is running, login not possible the login attribute is displayed, but login is not possible
 - SCADA server is not responding: big size or number of projects; large projects take more time to start (very big projects take minutes)
 - Wrong username or password: definitely check if the name and password are correct. If you are 100 % sure, try Ctrl-F5 at the login page. If the page contents disappears, maybe the SCADA web server is not running (check in the IIS).
- Domain Server not started user can not log in
- A project is not communicating:
 - Always check if all projects are running in Merbon SCADA after upload:
 Project statistics (find the projects which need further examination)
 - Check the cfg->behaviors file, if the project with the particular GUID is in the list of projects to start automatically
 - Check of connection channel +
 - Check in the project statistics the total number of data points, and compare them with licenced datapoints (in RcWare Ctrl-T / Ctrl-U or in the Stations statistics) and learn for how many datapoints the Merbon SCADA licence is installed. The last project which exceeds the datapoint limit is not started. The "number of licensed data points exceeded" message is displayed in log / command line.
- Some schemas are not visible:
 - Possible duplicate schems GUIDs schemas not exported (the project was not checked or warning was ignored). To be checked in the project export folder - have all schemas been exported?
 - User policy set incorrectly (if "Export user policy" checked at export)
 Check in RcWare Vision for every project concerned.
- A group of data points is not communicating in Merbon SCADA, while everything is OK in RcWare Vision:
 - The reason may be that Merbon SCADA communicates using groups. If any data point has a configuration error, the whole group containing



this data point has a communication error. Please check if all data points are really communicating in RcWare Vision even if the group reading is off (setup in the communication data point – the key icon). Only data points which are set up incorrectly should display as in comm failure.

 Mostly, special data point types show problems, such as TPG, scripts, PLC time setup, etc. A data point may contain a script which is not supported in Merbon SCADA, a TPG may contain invalid exceptions, or the data type may overflow if its value is too high.



9 Unsupported scripts in RcWare Vision

Full compatibility of scripts can not be maintained due to different architecture against RcWare Vision. Scripts must be considered individually for each project.

RcWare Vision evaluates scripts in the application GUI. The Merbon SCADA components are running on a server. This means that any interactivity, 3rd parties code integration, etc. are not supported.

RcWare Vision is tolerant to script errors. Components do have more strict supervision, and if a script error appears, the result is undefinable.

Script functions which are not supported in Merbon SCADA:

GetValueFromDialog() GetParticularData() and other database read functions GetLoggedUserName() TimeProgFunc() SetParameter() SendSMS() RunRCInternalFunction() GetConnectionStatus() SetUserButtonPressed() InterfaceAlarmEnabled()

Time functions in scripts now work in the UTC time zone (rather than following the local time). This is because they are processed on the server, and the time zone of the client platform is thus unknown.