

PM-LOGON

Operator login via RFID Card

System Description

PM-LOGON Version 1

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1 Overview

1.1 General information

In view of the increasing need for security, the reliable and traceable login of authorized operating personnel for access to production facilities is becoming increasingly important.

The PM-LOGON software product offers the operator a convenient and fast login to the operating system with the company ID card via a card reader. PM-LOGON assigns an RFID card to an operator and logs him on to the target system as soon as he brings his RFID card into the reader field of the connected RFID reader. PM-LOGON thus automates the manual entry of user name and password at the target system.

1.2 Performance Characteristics

- Support of various readers, e.g.:
 - SIMATIC RF1040R, RF1060R, RF1070R
 - Card Reader of Admitto-A in USB-Version by phg
 - Standard PC/SC_Reader (e.g. HID OmniKey Reader 5021 CL)
 - Elatec TWN3, TWN4
 - Euchner EKS USB-Reader (EKS-A-IUX-G01-ST01)
 - Teratron PC-LOC-Reader
 - EX-Card Reader UB03 by Co. R. Stahl HMI Systems GmbH
 - The connection of further card readers is possible on request
- Assignment of a Unique ID (UID) of an RFID Card to a Windows-User
- No write access to the RFID card required, only the unique card ID of the manufacturer is used. This means that e.g. factory ID cards can also be used.
- Assignment of UID to Users can optionally be stored in:
 - Active Directory
 - Windows User Administration
- System is decentralized, PM-LOGON has no server component
- PM-LOGON consists of two components:
 - Configurator: Assignment of RFID Card to User, Manage credentials
 - Runtime: Read the Card, Determination of the assigned user, Login to the target system
- Depending on the operator panel used, the user logs on to different logon services / target systems:
 - SIMATIC Logon
 - WinCCViewerRT
 - OPC (DA/UA)
 - SOAP
 - BRAUMAT/SISTAR
- Configurable registration processes depending on the selected registration service, e.g. SIMATIC Logon
 - Login in the background
 - Automatic filling of registration dialog with user name/password
- Support of login in redundant systems
- Application *PM-LOGON Runtime for Panels* for Login on a Comfort Panel via a card reader of the type SIMATIC RF1040R, RF1060R or RF1070R (Siemens) or Admitto-A reader

2 System Configuration

2 System Configuration

2.1 Easy connection to different target systems

The software product PM-LOGON consists of the software components:

- PM-LOGON Configurator
- PM-LOGON Runtime (for WinCC V7, PCS7, WinCC (TIA) RT Advanced / Professional V13/14/15/16)
- PM-LOGON Runtime for Panels (for Comfort Panels V13/14/15/16)

The UIDs of the cards are assigned to the Windows users in the user administration of PM-LOGON Configurator. In a network of several operator stations in a TCP / IP network, installation and configuration of the PM-LOGON Configurator are only required once, but several instances can also be operated.

The PM-LOGON Runtime is responsible for the logon functionality and is installed on every operator station (except Comfort Panels) with a connected reader. An additional computer in the network is required for Comfort Panels. The login data is provided here via a web service interface.

2.2 Licensing

A system package type S is required to operate PM-LOGON. This includes the PM-LOGON Configurator, the PM-LOGON Runtime / Runtime for Panels. Furthermore, the number of users to whom an RFID card is to be assigned for registration must be licensed. This license is available in the form of packages with a staggered number of users. The individual packages are cumulative, so they can also be easily upgraded.

2.3 Standalone System

The PM-LOGON system package type S is fully installed on a single-user system with PM-LOGON configurator and PM-LOGON runtime and runs in conjunction with SIMATIC Logon 1.5 / 1.6 operating systems

- Windows 7/8.1/10
- Windows Server 2008/2012/2016/2019

The exact installation requirements can be found in the current product information.

The corresponding number of user licenses (client packages) is required for the number of operators who are to log on to the operating system using an RFID card.

The PM-LOGON configuration is only carried out once. The PM-LOGON Runtime is already licensed through the S system package and can therefore be installed as often as required on other operating systems in the network for logging on via RFID card readers.

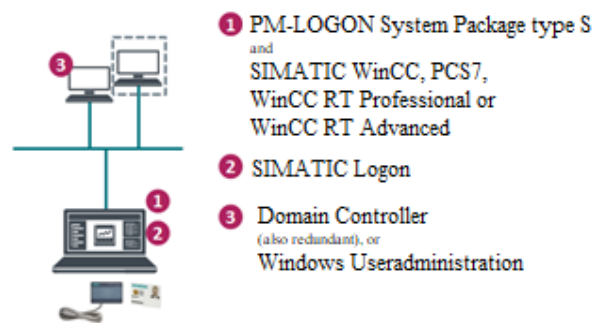


Figure 1: PM-LOGON as Standalone System

A single-user system of the type SIMATIC WinCC, PCS 7 and WinCC (TIA) RT Professional can be expanded to a multi-user system at any time.

2 System Configuration

2.4 Standalone System with HMI Comfort Panels

In conjunction with an HMI Comfort Panel, the Type S system package is installed completely on a separate computer in the network and runs in conjunction with SIMATIC Logon 1.5/1.6 operating systems

- Windows 7 / 8.1 / 10
- Windows Server 2008 / 2012 / 2016 / 2019

The software application *PM-LOGON Runtime for Panels* is installed and configured on the Comfort Panel.

The UID recorded by the card reader is transferred from the HMI Comfort Panel to the PM-LOGON Runtime on a computer. PM-LOGON Runtime determines the login information and returns it to PM-LOGON Runtime for Panels via Web Service.

For the operation of PM-LOGON in combination with Comfort Panels a corresponding SIMATIC Logon Remote Access license is required.

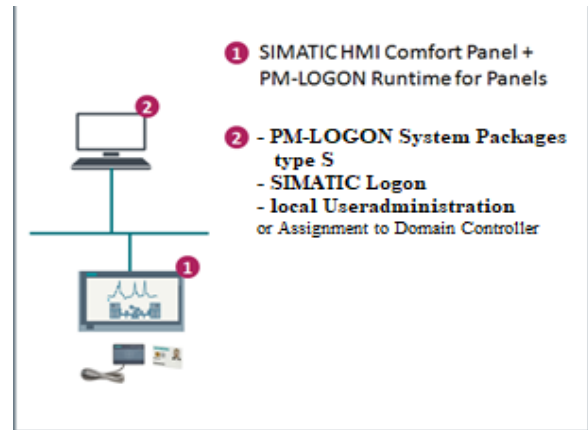


Figure 2: PM-LOGON with HMI Comfort Panel

2.5 PM-LOGON in a distributed System

In a distributed system, the system package Type S is installed on a computer in the network and the assignment between card UID and user is defined.

Each operating system is equipped with the *PM-LOGON Runtime*, which organizes the login via a card reader, a Comfort Panel with the *PM-LOGON Runtime for Panels*.

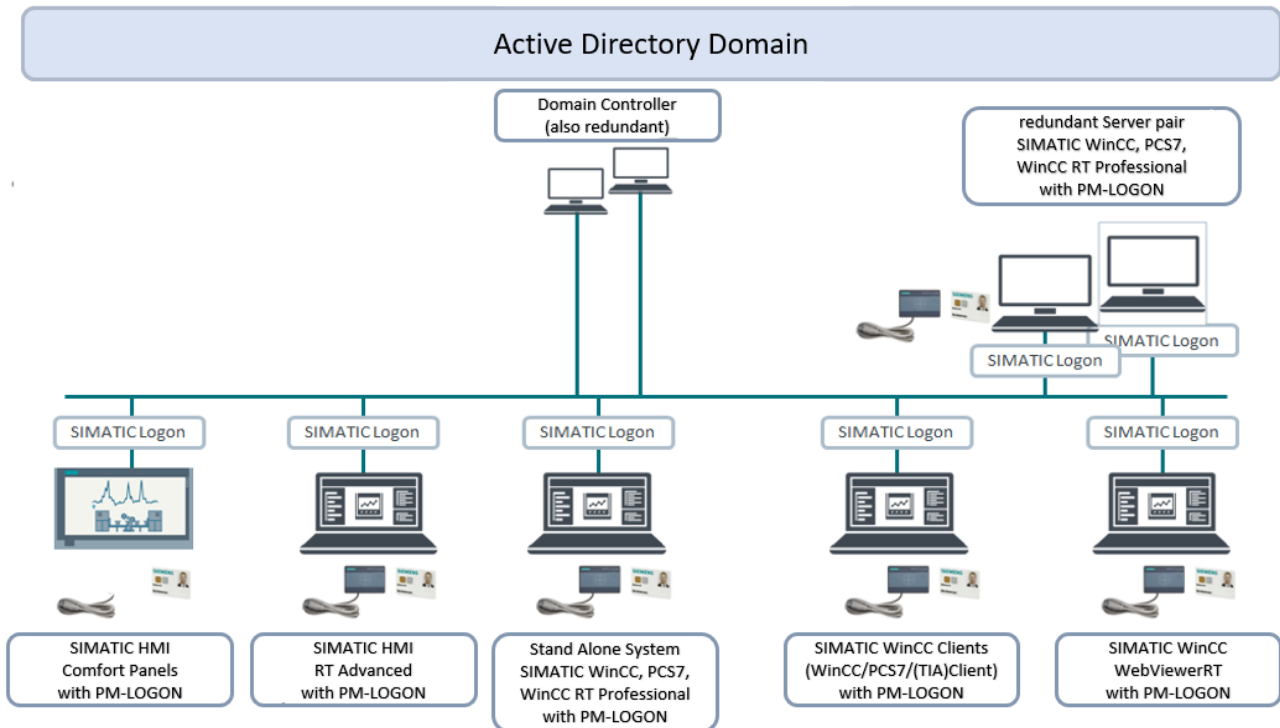


Figure 3: PM-LOGON in a distributed System

3 Operation Principle

3 Operation Principle

3.1 General Information

The operator brings his ID card into the antenna field of the card reader or places the card on the reader. PM-LOGON Runtime captures the unique ID (UID) of the card and determines the associated user and his password.

PM-LOGON supports the following logon services for logging on to the different operating systems:

- SIMATIC Logon
- WinCCViewerRT
- OPC and SOAP Access
- BRAUMAT/SISTAR

3.1.1 Login service SIMATIC Logon

PM-LOGON Runtime can be used to configure how the user should be logged on to SIMATIC Logon.

The following options are available:

- Login in the background, direct login to the HMI system without login dialog
- Show the login dialog for entering the password; the user name determined on the basis of the card is already pre-assigned
- Show login dialog with empty fields for entering user name and password

After a successful check of the login data by SIMATIC Logon, the user is logged on to the operator panel.

3.1.2 Login service WinCCViewerRT

Logging on to a WinCC WebClient that is started using the WinCCViewerRT.exe application is carried out using the WinCCViewerRT login service.

The following options are available:

- Automatic Login:
The login dialog is filled in with the credentials automatically acknowledged by PM-LOGON.
- Login dialog for entering the password:
the user name determined by the card is already pre-assigned, the user has to enter only the password.
- Login dialog with empty fields for entering the user name and password

The currently logged in user is automatically logged out.

3.1.3 Login service OPC and SOAP Access

User logon to a WinCC RT Advanced operator panel is performed using the OPC and SOAP Access logon service.

As soon as the operator brings his ID to the reader field, PM-LOGON Runtime determines the user credentials (user name and password) on the basis of the card UID read and writes this to two configured HMI Runtime variables via OPC UA / OPC DA or SOAP. The variables are monitored for changes using a script and the registration process is initiated.

In the WinCC (TIA) configuration, the login provider SIMATIC Logon must be activated to process the login data.

3.1.4 BRAUMAT/SISTAR

PM-LOGON supports the logon to a BRAUMAT/SISTAR system (from version 8.0).

In this scenario PM-LOGON transfers the user's login data to the recognized card via internal interfaces. Depending on your needs, you can choose between different options (e.g. user name and password or only the user name is transferred).

3.1.5 Login on a Comfort Panel

The login process is carried out indirectly here. Based on the card UID read, *PM-LOGON Runtime for Panels* obtains the user data from a PM-LOGON Runtime that is active on a computer in the network. The user data received (user name and password) are written in two HMI-variables by PM-LOGON for Panels. A script monitors these variables for changes and starts the registration process.

If a login dialog of the HMI Runtime is already open when you insert the card, you can choose between the following options:

- Automatic registration when the login dialog is open:
User name and password are filled in by PM-LOGON and the login dialog is automatically confirmed with OK.
- Login dialog for entering the password;
the user name determined by the card is already pre-assigned

In the WinCC (TIA) configuration, the login provider SIMATIC Logon must be activated to process the login data.

3 Operation Principle

3.1.6 Log off a User

If the card reader signals that the card has been removed from the reader field, PM-LOGON Runtime can also log off the user at this moment. Whether or not the user should be logged off by removing the card can be configured in the PM-LOGON Runtime settings.

4 PM-LOGON Configurator

4 PM-LOGON Configurator

4.1 General Information

In the PM-LOGON configurator, users are assigned either from the local Windows user administration or from the Active Directory to the RFID cards. The users must be created in the selected user management. A license is required for each user. For testing purposes, PM-LOGON Configurator can be operated with a trial license for 90 days without functional limitations but limited to one user.

4.2 Configuration

Basic settings for operating PM-LOGON are made in the PM-LOGON configurator. These are

- Installation of Client Packages (User licenses)
- The selection of the card reader
- The selection of user administration

4.2.1 Installation of Client Packages

The client packages are offered as signed xml files (for protection against manipulation) in different scales from 10 users on. The license files are imported into the PM-LOGON Configurator.

The license files are cumulative, i.e. the total size of the imported license files gives the total number of licensed users.

4.2.2 Selection of card reader

The card reader is selected in the configuration interface and the specific settings are made. The reader can be set as the default reader via the context menu of the respective plug-in.

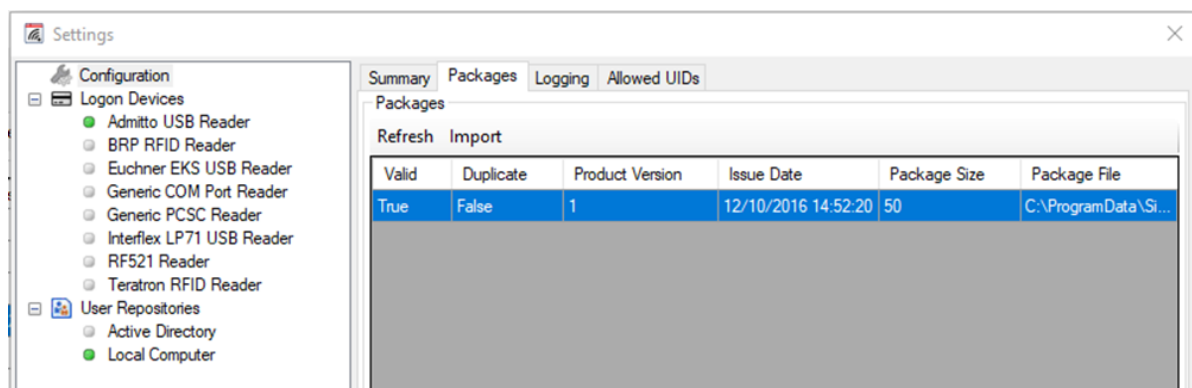


Figure 4: PM-LOGON Configurator, License packages

4 PM-LOGON Configurator

4.3 Selection of user administration

User administration takes place either via a domain (Active Directory) or a local computer. User administration is based on the existing Windows users. The login data are stored directly to the Windows user, no separate user database is required.

In PM-LOGON, user administration is referred to as the "User Repository".

4.3.1 Local user administration

The selection of the local Windows user administration (Local Computer) requires no further settings.

4.3.2 Active Directory

When selecting Active Directory, the connection and access to the domain must be configured. The domain name and the username and password of a domain user that PM-LOGON Configurator uses as a service user to assign the RFID card to the user are specified. This service user must be authorized to read and write user attributes.

The UID of the assigned card and the user password (are saved encrypted in the Active Directory in user attributes. You can either create your own attributes in the Active Directory or use existing attributes.

In large domains, the users of individual locations can be separated organizationally and also concerning the licensing by using organizational units (Limit Repository to Organizational Unit). Only those users are listed in the PM-LOGON Configurator that are assigned to the selected OU and also those users are taken into account for license checks.

In addition, the displayed users can be filtered via a group.

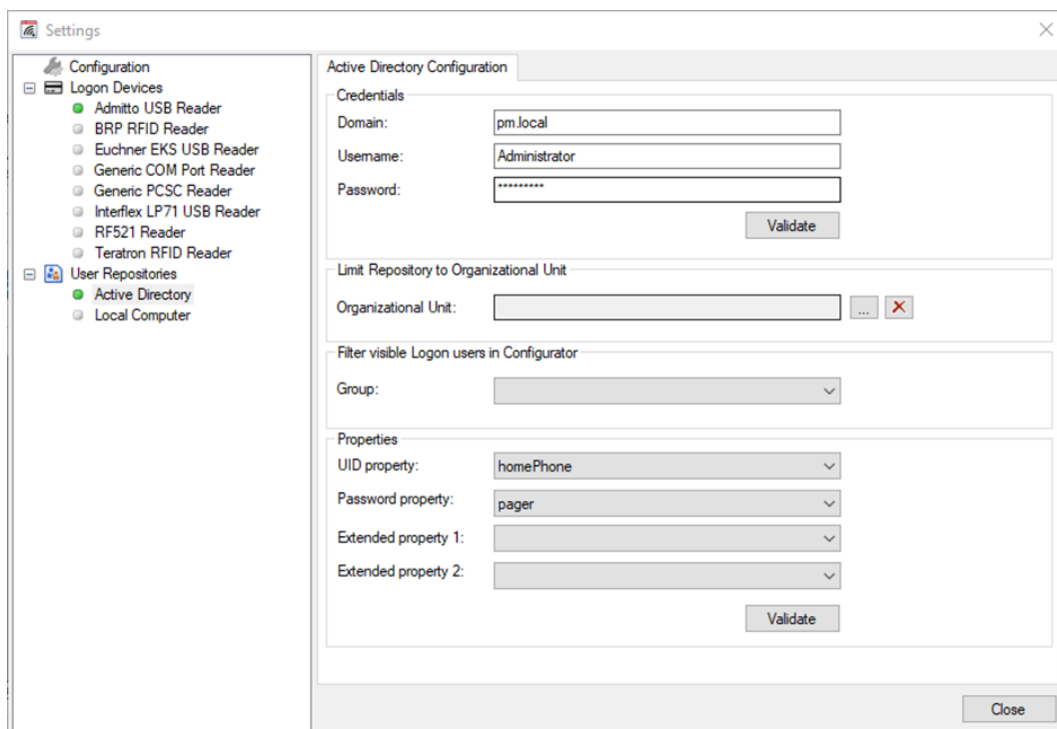


Figure 5: PM-LOGON Configurator, Selection of Active Directory

4 PM-LOGON Configurator

4.4 Administration of user data in the PM-LOGON Configurator

After configuring the user management, PM-LOGON Configurator lists the Windows/Domain users available in its user interface.

The available actions relate to the user selected in the list. A filter dialog facilitates the selection of the desired user.

The user interface offers the following actions.

- **Assignment of the RFID card to a user**

After the user has been selected, his card is placed in the antenna field of the card reader. The user's password is then stored. The read UID and the password are saved in encrypted form on the user in the respective user administration.

When assigning, PM-LOGON checks whether the UID is already assigned to another user or whether the stored password matches the password of the Windows/Domain user. Warning messages indicate inconsistencies.

Other actions include:

- **Validate credentials**

This button compares the stored login data with the login data in the user administration.

- **Change Password**

With the Change password action, the stored password can be changed in PM-LOGON and at the same time in the user administration of Windows/Active Directory.

- **Remove password assignment**

The password for the selected user stored in PM-LOGON is reset in PM-LOGON and the user administration.

- **Remove assignment of an RFID card**

The assignment of the card ID to the selected user is removed.

Other functions ensure convenient operation:

- **Determine the user of the RFID card**

This action selects the user to whom the card is assigned.

- **List only PM-LOGON users**

All users to whom a card has been assigned in PM-LOGON are listed.

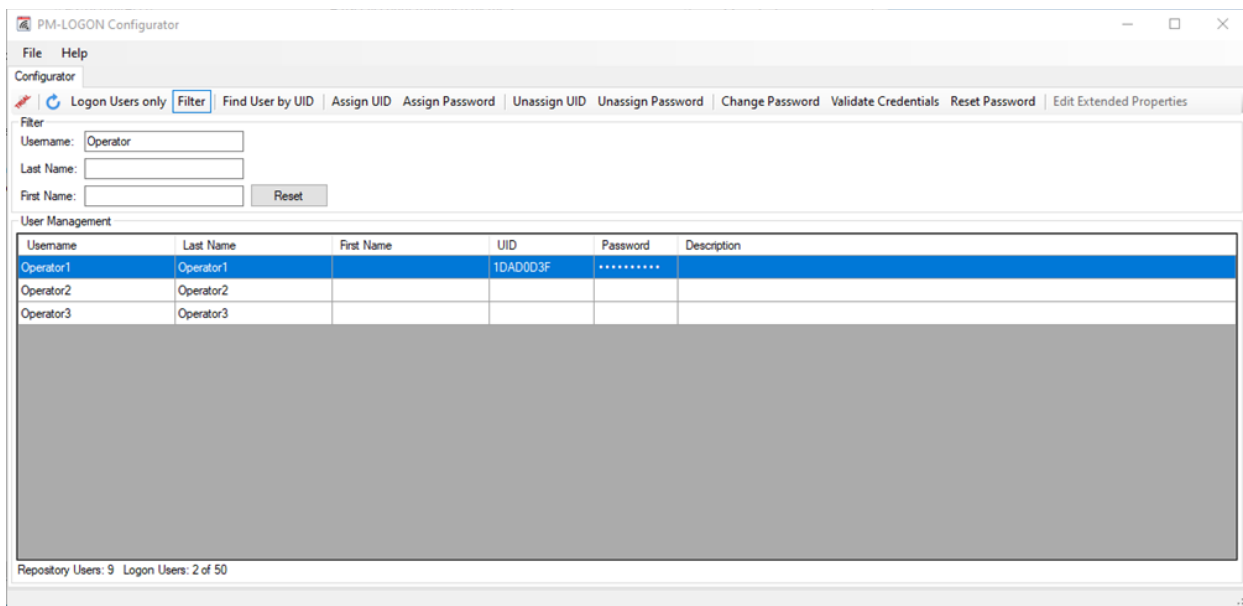


Figure 6: PM-LOGON Configurator, User interface

5 PM-LOGON Runtime

5 PM-LOGON Runtime

5.1 General Information

To log on using a card reader, the PM LOGON Runtime is installed and configured on an operator panel of the type SIMATIC WinCC, PCS 7, WinCC RT Professional or WinCC RT Advanced.

5.2 Application window

The application window shows the program flow information about PM-LOGON Runtime. Runtime can be started or stopped manually using buttons in the toolbar

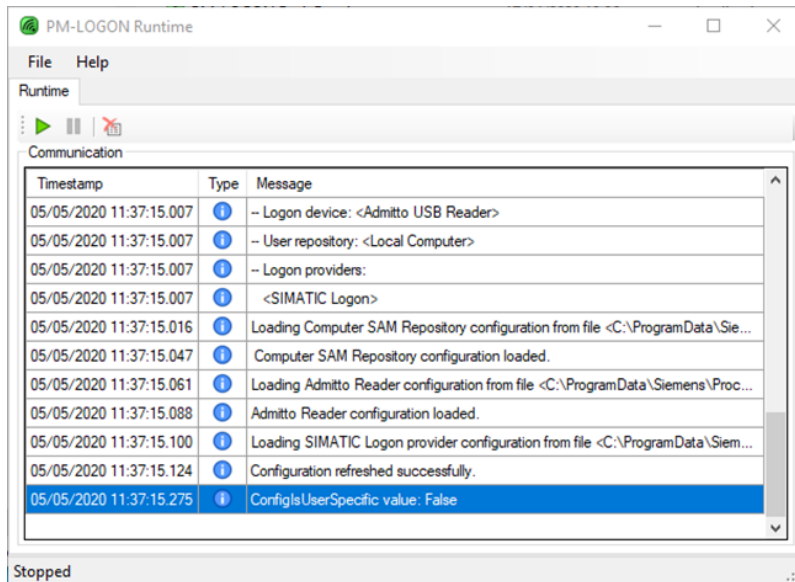


Figure 7: PM-LOGON Runtime, Application window

5.3 Configuration

In the PM-LOGON runtime, in addition to the general settings, e.g. on the start behavior of the application

- The card reader (Logon Device) is configured

- the user administration (User Repository) is selected to determine the login information.
- the logon service (Logon Provider) is set, which carries out the registration process.

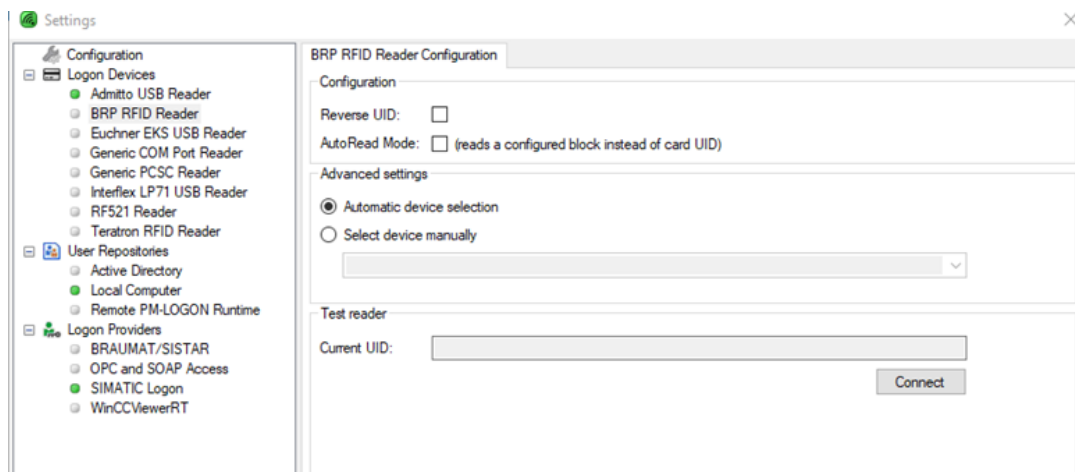


Figure 8: PM-LOGON Runtime, Configuration interface

5 PM-LOGON Runtime

5.3.1 General Settings

PM-LOGON Runtime starts automatically when logging on to the operating system and can automatically connect to the card reader, user management and the logon service when it starts.

All configured data are saved in XML files. A link leads to the storage path of the configuration, which can be copied and used on other HMI devices with the same configuration

5.3.2 Configuration of the card reader

In the PM-LOGON Runtime, the card reader that is used for logging on at the local operator station is configured and set as standard.

PM-LOGON has the following interfaces for connecting card readers.

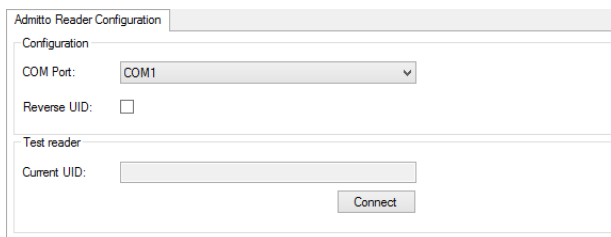


Figure 9: Admitto USB Reader

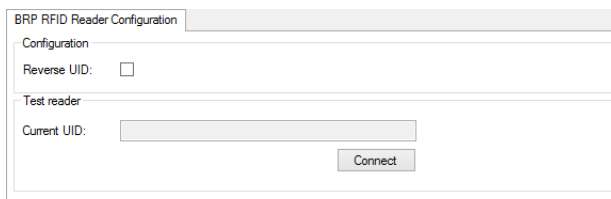


Figure 10: BRP RFID Reader

This interface is used for the card readers of the SIMATIC RF10x0R series.

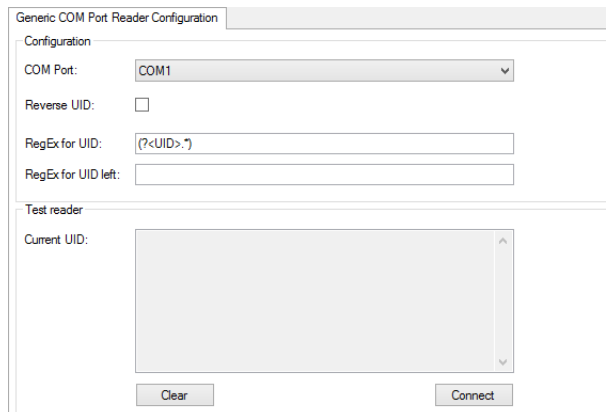


Figure 11: Generic COM Port Reader

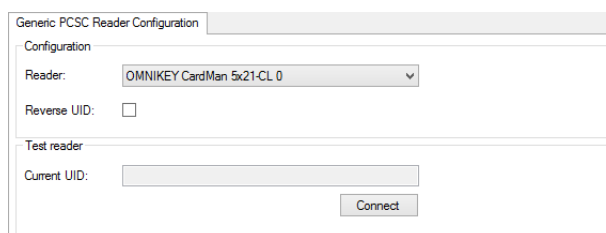


Figure 12: Generic PCSC Reader

5.3.3 Configuration of user administration (User Repository)

The user administration is configured in the PM-LOGON Runtime with the same data as in the PM-LOGON Configurator.

See also chapter 4.3 Selection of user administration

There is also the setting

- **Remote PM-LOGON Runtime**

This selection is made when the PM-LOGON system package type S with configurator and runtime is on another computer in the network and the local user management has been selected there. The login data is checked between the PM-LOGON runtime instances using a web service.

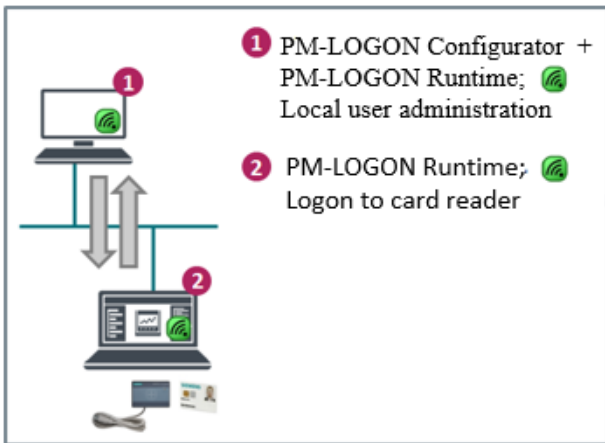


Figure 13: PM-LOGON Runtime, Remote query

The remote query of user data can be sent redundantly to two different computers. To do this, the local user administration must be created identically on both computers. The first result of the double request is evaluated.

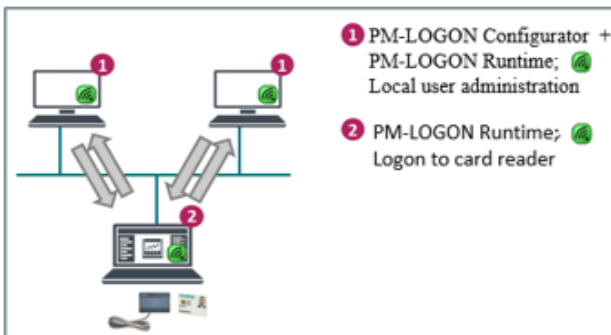


Figure 14: PM-LOGON Runtime, redundant Remote query

5.3.4 Configuration of Logon Service (Logon Provider)

In the configuration of the PM-LOGON runtime, the login service that logs on to the operating system is specified.

The following selection is available, tailored to the different operating systems:

- OPC and SOAP Access
- SIMATIC Logon
- WinCCWebViewerRT
- BRAUMAT/SISTAR

5.3.4.1. OPC and SOAP Access

This registration service is selected for operating systems of the type WINCC RT Advanced. The registration information is either transferred via OPC DA / UA or web service SOAP and written in specifically created variables. A script monitors the content of these variables for changes and activates the login process.

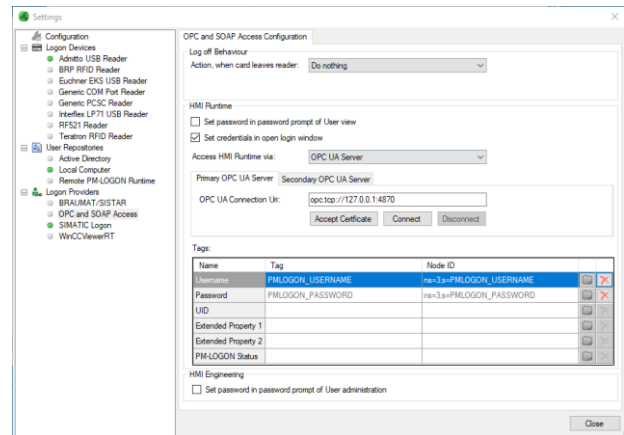


Figure 15: Logon Provider OPC and SOAP Access

In the TIA project for the HMI device, communication via OPC or web service SOAP must be enabled and registration via SIMATIC Logon must be activated.

5 PM-LOGON Runtime

5.3.4.2. SIMATIC Logon

Logging on to the operator panels WinCC, PCS7, WinCC RT Professional is carried out via the logon service SIMATIC Logon. The login behavior can be configured in the PM LOGON Runtime.

See also chapter 3.1.1 Login service SIMATIC Logon

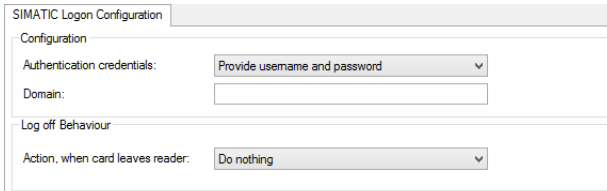


Figure 16: Logon Provider SIMATIC Logon

5.3.4.3. WinCCViewerRT

This login service is selected for automatic login to a WinCC WebClient that is started via the WinCCViewerRT.exe application. When the card reader recognizes an ID card and user information is requested, PM-LOGON Runtime starts the WinCCViewerRT.exe application or ensures that the logon media log is displayed. The login behavior can be configured.

See also chapter 3.1.2 Login service WinCCViewerRT

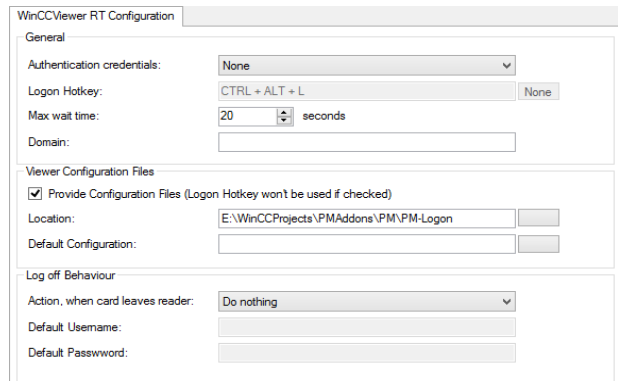


Figure 17: Logon Provider WinCCViewerRT

6 PM-LOGON Runtime for Panels

6.1 General Information

The card reader is connected directly to the HMI Comfort Panel. The PM-LOGON Runtime for Panels software application, which is included in the scope of delivery of the PM-LOGON system package type S, is installed and configured on the HMI Comfort Panel using the SIMATIC Pro-Save software application.

When a card UID is recognized, the PM-LOGON for Panels application starts a user request for a PM-LOGON runtime that is active on a computer in the network. This determines the user for the UID in the user administration, e.g. an Active Directory. If required, this query can also be carried out redundantly.

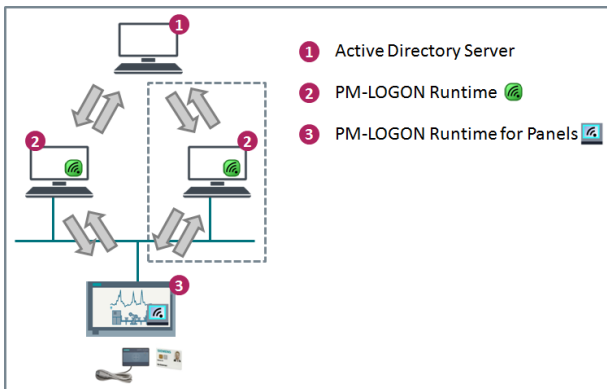


Figure 18: PM-LOGON Runtime for Panels

If the check is successful, the user data of PM-LOGON Runtime for Panels is entered into the configured variables of HMI Runtime via OPC or SOAP. A script monitors the content of these variables for changes and activates the logon procedure.

6.2 Application window

The Application window shows information about the program flow of the PM-LOGON Runtime for Panels.

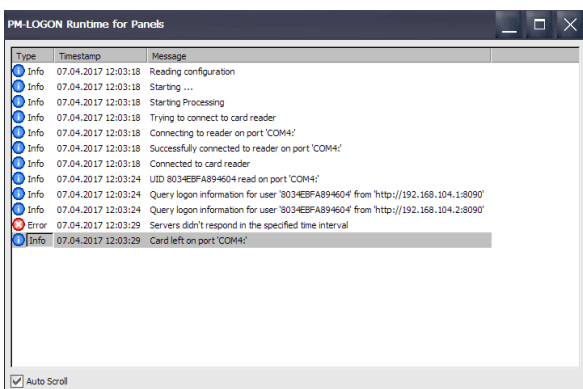


Figure 19: PM-LOGON Runtime for Panels, Application window

6.3 Configuration

In the Configuration of the PM-LOGON for Panels application, settings are made for

- Starting behavior
- PM-Logon Runtime
- HMI Runtime
- Card Reader

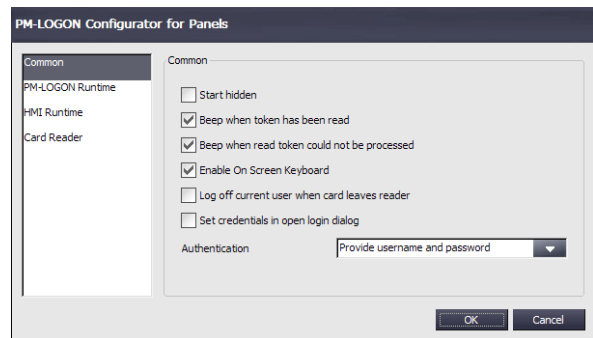


Figure 20: PM-LOGON Runtime for Panels, Configuration

6.3.1 Starting behavior

The application is automatically started when the panel is restarted. The active application is displayed as an icon in the System Tray if a hidden start was selected.

The recognition of a card at the reader can be signaled with an info tone.

Similarly, an error tone can be used to indicate that the card could not be processed successfully.

The processing of the login process can be configured.

See also chapter 3.1.5 Login on a Comfort Panel.

6.3.2 PM-LOGON Runtime

The Logon credentials are determined via a PM-LOGON Runtime on the PC where the SIMATIC Logon Remote Access Server is run on. The URL of the PM-LOGON Runtime web service has to be configured in the PM-LOGON Runtime on the panel.

6.3.3 HMI Runtime

PM-LOGON Runtime for Panels writes the received user data into the configured variables, which are monitored by script for changes. Access is made via Web Service SOAP. Access is controlled by a MiniWeb user, which is set up on the panel.

For connection to the **PM-LOGON Runtime** on the external computer, the WebService is activated there.

In the **TIA project** for the HMI Comfort Panel, communication via Web Service SOAP must be activated and the variables for recording user and password must be created in the required length.

In the user administration, the user login must be activated via SIMATIC Logon.

6.3.4 Card Reader

PM-LOGON Runtime for Panels supports the following card readers:

- SIMATIC RF1040R, RF1060R, RF1070R
- Admitto A(USB-CDC)

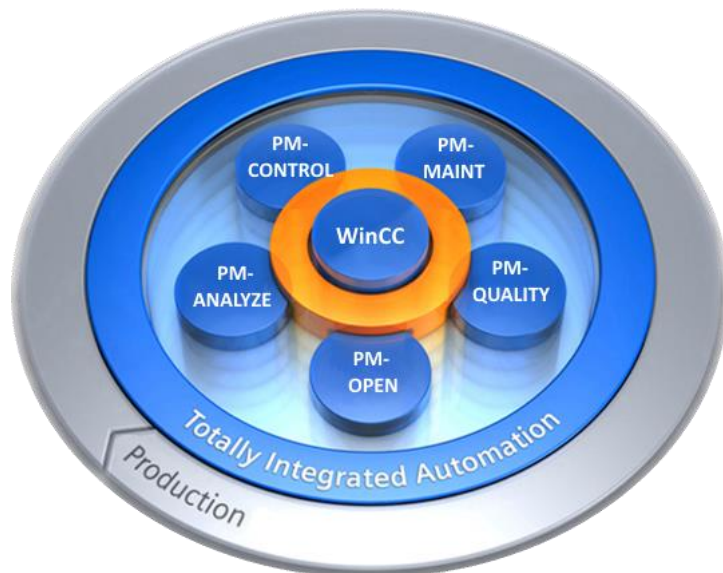
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Process Management System

Economical Automation with Standard Software



PM-CONTROL

Recipe/Product Data Management,
Job Control

PM-QUALITY

Job/Batch-oriented Archiving and Re-
cording

PM-MAINT

Intelligent Maintenance Management
System

PM-ANALYZE

Analysis of Alarms and Process Data

PM-OPEN

Solutions for Communication and Inte-
gration

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