APS Server

Communication server for APS 400 and APS mini Plus identification systems

Installation and user’s guide

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1 Content

2 Product Description

The *APS Server* program product is a part of the *APS Administrator* software package. It provides following functions:

- On-line communication (events archive reading and system status monitoring) with APS 400 controllers and APS mini Plus readers via RS 232 communication line or TCP/IP.
- Routing the communication among software clients and connected hardware components.
- Storing system events of the modules in an SQL database on a PC.

The *APS Server* program currently supports *DB version 85*.

3 Installation

3.1 Minimal Requirements

The product is designed for operation systems *Windows 10 / 11* and *.NET Framework 4.6.1* is required to use the program. Before starting the installation process you need to have the *SQL server* running with the *APS400nAdministrator* database created.

The product is available in two versions:

- Windows application – *APS400nServer.NET.Application.exe* is run as a standard application and used as a configuration and function revision tool.
- NT service – *APS400nServer.NET.Service.exe* is run automatically after starting the operation system and serves in daily application.

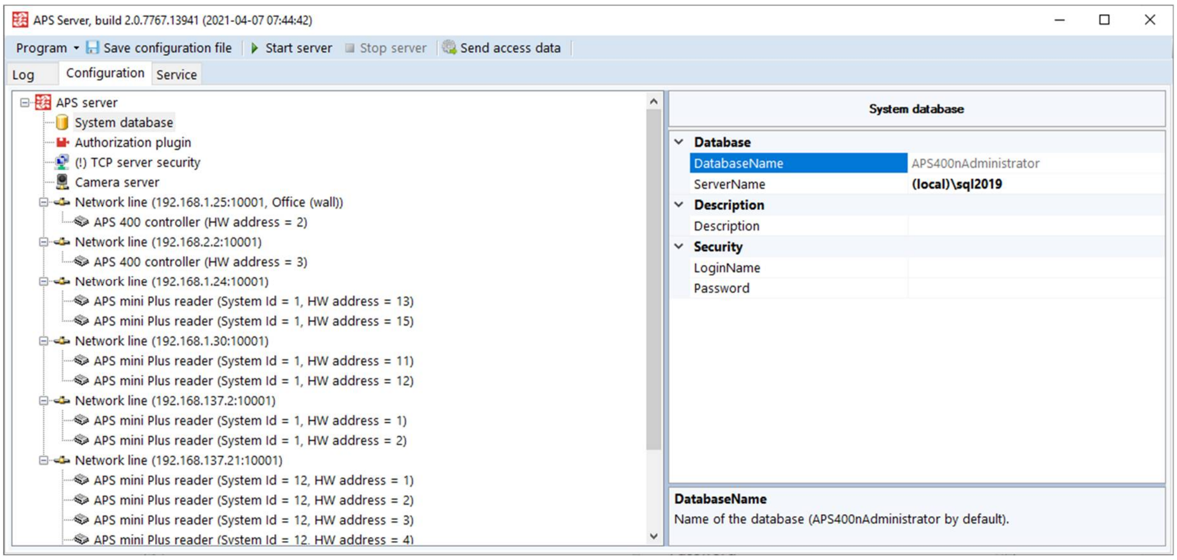
Both versions have identical functions and settings. After setting all parameters and verifying functionality it is appropriate to install the program as an NT service – installation procedure is described in *chapter 4.5*.

3.2 Important note to the configuration and problems solving

Server stores all relevant status changes in text files named after actual date with *.log* extension, the configuration is stored in *aps400Server.config* file. The folders containing these files are accessible after choosing *Program* > *Open Folder with…* Service install logs are stored in files with *.InstallLog* extension in *APS Server* installation folder. If you need any help with solving the problems related with running of the server, you will have to send these files to the technical support.

4 APS Server configuration

The program can be configured after executing *APS400nServer.Net.Application.exe* in the *Configuration* tab (*pic.1*).



```
APS server
  System database
  Authorization plugin
  (!) TCP server security
  Camera server
  Network line (192.168.1.25:10001, Office (wall))
    APS 400 controller (HW address = 2)
  Network line (192.168.2.2:10001)
    APS 400 controller (HW address = 3)
  Network line (192.168.1.24:10001)
    APS mini Plus reader (System Id = 1, HW address = 13)
    APS mini Plus reader (System Id = 1, HW address = 15)
  Network line (192.168.1.30:10001)
    APS mini Plus reader (System Id = 1, HW address = 11)
    APS mini Plus reader (System Id = 1, HW address = 12)
  Network line (192.168.137.2:10001)
    APS mini Plus reader (System Id = 1, HW address = 1)
    APS mini Plus reader (System Id = 1, HW address = 2)
  Network line (192.168.137.21:10001)
    APS mini Plus reader (System Id = 12, HW address = 1)
    APS mini Plus reader (System Id = 12, HW address = 2)
    APS mini Plus reader (System Id = 12, HW address = 3)
    APS mini Plus reader (System Id = 12, HW address = 4)
```

System database

Database	
DatabaseName	APS400nAdministrator
ServerName	**(local)\sql2019**
Description	
Description	
Security	
LoginName	
Password	

DatabaseName
Name of the database (APS400nAdministrator by default).

Picture 1: Configuring APS Server application

After setting your *Port number* and *System database* correctly you can continue with further settings of your communication lines.

4.1 Setting the APS Server, System database, Authorization plugin and TCP server security

The root element *APS Server* contains general setting of the server. *The IP port* of the *TCP server* is set to *10700* by default; do not change it if not necessary (it is changed only in applications with a port collision). Other setting concern the communication log files. The *AutoDelete* parameter sets the time period in days, after which the log files are deleted automatically. The *LogLevel* parameter is reserved for internal use.

4.1.1 System database

The *DatabaseName* property holds the APS400nAdministrator value. The *ServerName* parameter contains 2 parts – *Computer_Name\Instance_Name*. If both the *SQL Server* and the *APS Server* program are installed on the same computer, you can use *(local)* as a *Computer_Name*, otherwise use the name of the computer with a *SQL Server* and the database *APS400nAdministrator* running. If the *SQL Server* is installed as an unnamed instance, do not fill the second part of the *ServerName* (use *Computer_Name* only) otherwise fill the *Instance_Name* behind a *backslash*. For example in *SQL Server 2005 Express* the name of the instance is typically *SQLEXPRESS*. Other attributes are usually not required.

4.1.2 Authorization plugin

The *Authorization plugin* property defines the usage of Online authorization mechanism with APS systems. The *ClassLibraryFileName* element links the program with a class library containing the online authorization mechanism; its initial value is *BaseAuthPlugin.dll*. The *ClassName* contains the name of class, which is used:

- *BaseAuthClass*: Basic evaluation method of the access rights in online mode.
- *APBAuthClass*: Required class for *antipassback* function.
- *CreditAuthClass*: Required class for credit system.

The *ServiceMode* options are available for testing of the online mechanism, e. g. when initial tests of the performance are done. If the *ServiceModeEnabled* parameter is set to *True*, the *ServiceModeResponse* parameter value is used as a result of the online authorization process (1 = valid ID, 2 = invalid ID, 3 = Unknown ID). In normal operation, the *ServiceMode* parameter has to be set to *False*.

4.1.3 (!) TCP server security

The *(!) TCP server security* element offers possibilities to allow or deny client connections from selected IP addresses. If the *Enabled* option of the *Remote connections* parameter is set to *true*, the clients can connect to the server from any IP address. In the other case only the local connection (*127.0.0.1*) is enabled as well as other specific IP addresses added manually. To add an IP address select the *New Permission* command from the element's context menu, enter required *IP address* and set the *Enabled* option to *true*.

4.2 Creating a communication line

To create a communication line, you need to right-click the object *APS Server* object and select the type of communication line required in a context menu, either a connection via TCP/IP or a connection via a serial port of the computer.

In both cases you will need to set these parameters:

- Set the *ProtocolType* to *Advanced8bits*.
- *LineRestartDelay* parameter sets the time in seconds, after which the communication line is restarted.
- *MaxTimeouts* parameter sets the maximal number of successive unsuccessful communication attempts, where the response timeout is exceeded. We recommend retaining the default value *10*.
- *Bypass* parameter determines whether the communication on the communication line should be "bypassed".
- *ResponseTimeOut* parameter sets the maximal response time in milliseconds. Usually you can keep the default value *750* ms.

4.2.1 Serial communication line

- *BaudRate* parameter is set to *57600 Bd* when a *MCA 168* controller is used, for *APS mini Plus* system set *19200 Bd*.
- *Portname* parameter sets the *COM port* used (typically *COM1* or *COM2* at a PC, if you use a USB > COM converter you can find the COM port number in Windows *Device Manager* (*This computer* > *Properties* > *Hardware* > *Device Manager*).

4.2.2 TCP/IP communication line

- *IPAddress* parameter is set to an *IP address* of a converter supporting the communication between HW components and a PC. The converter setting is described in *chapter 3.5*.
- *IPPort* parameter sets a port, on which the converter communicates. It is set to *10001* by default; change the value only in a case of a port collision.

4.2.3 Binding an APS 400 Controller

To bind a controller to a communication line you need to select *Bind APS 400 Controller* in a context menu displayed after right-clicking a communication line.

- Set up the *AuthorizationType* parameter – to set the authorization process to use the inner database of the system controller, select the *Standalone* option; to set the authorization process to use the data stored in the system database of the server, select the *Online* option. This method requires the presence of *ACS.Online* license stored in the system controller.
- Set the *HW Address* of the Controller connected to the communication line. *Table 1* shows a dependence of the *HW address* on the *PIN* configuration at a Controller.

PIN Configuration	PIN 1	PIN 2	PIN 3	PIN 4	HW add.
	ON	OFF	OFF	OFF	1
	OFF	ON	OFF	OFF	2
	ON	ON	OFF	OFF	3
	OFF	OFF	ON	OFF	4
	ON	OFF	ON	OFF	5
	OFF	ON	ON	OFF	6
	ON	ON	ON	OFF	7
	OFF	OFF	OFF	ON	8
	ON	OFF	OFF	ON	9
	OFF	ON	OFF	ON	10
	ON	ON	OFF	ON	11
	OFF	OFF	ON	ON	12
	ON	OFF	ON	ON	13
	OFF	ON	ON	ON	14
	ON	ON	ON	ON	15
	OFF	OFF	OFF	OFF	16

Table 1: HW address of MCA 168 Controller

- *BallanceCommLoad* – if the parameter is set to True, balanced communication is used for communicating with the system controller. This option is usually used when communicating with the system controller via internet.
- *Bypass* – if the parameter is set to True, the communication with the system controller is bypassed (used for temporarily disconnect communication with a system).

4.2.4 Binding an APS mini Plus reader module

To bind an ASP mini Plus module, select *Bind APS mini Plus Reader…* in a context menu displayed after right clicking a communication line. Following parameters must be set to bound modules:

- Set up the *AuthorizationType* parameter – to set the authorization process to use the inner database of the reader module, select the *Standalone* option; to set the authorization process to use the data stored in the system database of the server, select the *Online* option. This method requires the presence of *MLO* (event. *MLCO*) license stored in the reader module.
- *HWAddress* is a HW address of the module. The address is set by a configuration of PINs at a reader module, or via a configuration program APS mini Plus.Reader.
- *SystemID* is an identification number of the system containing APS mini Plus readers. Within a single communication line every module must have the same *SystemID* set.
- *BalanceCommLoad* parameter set to *true* enables you to slow down the communication when the module is idle; when there are data present in the archive, the communication is speeded up again.
- *Bypass* – if the parameter is set to True, the communication with the reader module is bypassed (used for temporarily disconnect communication with a reader module).

> In a combined system with MCA 168 controllers and APS mini Plus systems, the HW addresses of the controllers and the system IDs of APS mini Plus systems must not match!

4.3 Running APS Server

Save the setting by clicking the *Save Configuration File* button. The Server is started by clicking the *Start Server* button. If you set all the parameters correctly, the server should start to communicate with all bound modules. If there is any error present in the communication, it is displayed in the Message section as a red colored line. The error is also stored in the communication log.

4.4 Configuring a TCP/IP converter via Telnet Terminal

For configuring a *Converter* connect the device to the computer network and use following procedure. The procedure can be used both for configuring *GNOME 485* converter for *APS mini Plus* communication line and for configuring an *integrated converter* at a *MCA 168 controller*.

- Run a *Command Line* in Windows with *cmd* command. In Windows Vista system use run as Administrator option.
- Delete the *ARP Table* with command *arp –d*.
- Insert a record to the *ARP Table* with the command *arp –s IP_Address MAC_Address*, where *IP_Address* is the required *IP address*, *MAC_Address* is the *MAC address* of the *Converter*. Make sure the *IP address* is not already occupied first.
- Run the command *telnet IP_Address 1*.
- Run the command *telnet IP_Address 9999*, now you can access the *Converter* settings in a *telnet terminal*.
- First choose the option *0 Server* and fill in the required *IP address* once again. You can leave the other parameters intact.
- Choose the option *1 Channel 1* and set the parameters described in *table 1*.

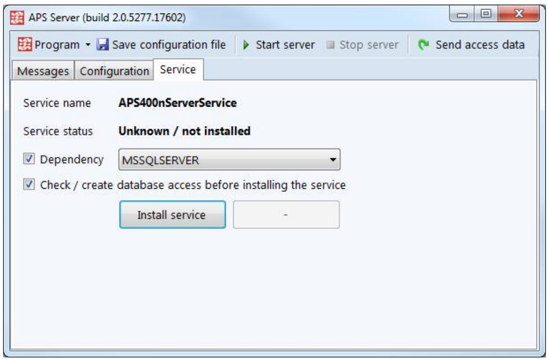
Settings	Parameter	MCA 168	APS mini Plus
	Baudrate	57600 Bd	19200 Bd
	I/F Mode	7C	7F
	Port No	10001	

Table 1: Converter parameters setting

- You can leave other parameters intact.
- Save the setting by choosing *9 Save and exit*.

The communication converter is ready to communicate now.

4.5 APS Server as an NT service



Service name APS400nServerService

Service status Unknown / not installed

☑ Dependency MSSQLSERVER

☑ Check / create database access before installing the service

Pic. 2: Service

Setting *APS Server* as a service is only meaningful when the server works correctly as an application. For the service installation select the *Service* tab. You have to set the dependence on the service *SQL server* correctly first (this service must be running for *APS Server* to work correctly). The service name is typically “*MSSQLSERVER*”; it can be selected in the *Dependency* list. If the SQL server service is running at another computer than *APS Server* program, disable the dependency by unchecking the checkbox. The *APS400nServerService* is run under „*NT AUTHORITY/SYSTEM*“ account by default. If the Windows authentication method is used for SQL server connection, it is strongly recommended to allow the service installer to check / create the database access privilege for this account by checking the *Check / create database access before installing the service* option. If the account does not have the proper privilege, you will be asked to confirm its creation during the service installation process. After pressing the *Install* button the service will be installed. The installation process result is displayed in the *Output* section and it is also stored in the installation logs. The service is installed to be run at the computer start; the service running can be controlled by *Start* and *Stop* buttons. The service can be uninstalled by pressing the *Uninstall* button.

The service and the application cannot be run at the same moment!

For later checking of „*NT AUTHORITY/SYSTEM*“ privilege, use the *Create / check database access for APS400nServerService* link, which is located below the service control buttons after the service is installed.