



IT Manager's Guide

PAC Access Central Ver. 5.3

and EasiNet Residential

Jan 2024



Version and Copyright

Changes are periodically made to the product; these changes will be incorporated into new editions of this document. PAC GDX shall not be liable for errors contained herein or for any consequential damages connected with the use of this material.

Copyright and Protective Notices

The copyright of this document and the associated drawings is the property of PAC GDX, and is issued on condition that it is not copied, reprinted or reproduced, nor its contents disclosed, either wholly or in part, without the consent in writing of, or in accordance with the conditions of a contract with PAC GDX.

- The publication of information in this document does not imply freedom from patent or other protective rights of PAC GDX, or others.
- Performance figures and data quoted in this document are typical, and must be specifically confirmed by PAC GDX before they become applicable to any tender, order or contract.

Issue Record

Issue	Date	Author	Details
5	May 2020	DP/GA	Major Revision for PAC Software 5.3. Reformatted; Added AD section from JC doc "AD Integration V3 - Feb2020"; Updated Windows Operating Systems; Updated Database versions; Removed deprecated software references.
5.1	Feb 2021	DP/GA/PK	Reviewed h/w specs, reordered sections.
5.2	Oct 2021	DP	Created date variable for consistency & added to cover and footers
5.3	Mar 2022	DP	Rebrand
5.4	Jul 2022	DP	Added Windows 11 to Operating Sytems
5.5	Jan 2024	DP/PC/SP	Removed unsupported DB and OS

Training and Technical Support

Training and technical support services are currently available Monday to Friday, from 08:30 to 17:30 GMT, excluding UK public holidays.

Training

Training courses covering the installation and use of all PAC GDX products are regularly held at PAC GDX offices. For further information on course availability, or to discuss your specific requirements, contact the Training Administrator at the address below.

It is strongly recommended that any persons installing or commissioning PAC products attend a suitable training course beforehand.

Technical Support

This service is provided primarily for the use of trained engineers. End users of PAC GDX items should first contact their installation or maintenance company before contacting PAC GDX.

Further information is given in 17409 Technical Support and Training Information.

PAC Knowledge database <https://comelit.na3.teamsupport.com/knowledgeBase>

Address	Contact
Comelit-PAC Ltd. Waterside Park, 1 Crewe Road Manchester, ME23 9BE United Kingdom	T: +44 1707 377203 E: pacgdxsupport@comelit-pac.co.uk

Table of Contents

1 Pre-installation Considerations	5
1.1 Who is this guide intended for?	5
1.2 Virtualisation	5
2 Installation	6
2.1 System Requirements	6
2.2 Web Admin Reader Configuration	8
2.3 When to Upgrade the Database Server	8
2.4 PAC Software Installation Types	8
2.5 PAC Software Server	9
2.6 PAC Software Clients	11
2.7 Regional Options and Time Zone	11
2.8 Web Application Server	11
2.9 PAC Client Software Network\Firewall settings	12
2.10 Database Backup \ Restore	13
2.11 Setting the Application Server Role	16
2.12 PC Transfer	18
2.13 Best practices	19
3 Configure E-mail in Access Central	20
4 Uninstallation	20
5 Controller Hardware	21
5.1 PAC Software Alarm Viewer Clients	21
5.2 The PAC 512 IP Door Controller	21
6 Networking and Performance	23
6.1 Network Security	23
6.2 Application Interface TCP Ports	24
6.3 PAC 500 and PAC 512IP Bandwidth Data	24
7 Troubleshooting	26
7.1 Server Name Changes	26
7.2 Identify Previous PC Name	26
7.3 PAC Software COM+ Applications on a Domain PC	27
7.4 Image Capture Utility in Windows Server	28
7.5 Microsoft Security Updates and Patches	28
7.6 Web Application	28
7.7 Reports	29
8 Managing Active Directory Integration	30
8.1 Active Directory License	30
8.2 Importing AD Users into PAC Software	30
8.3 Keyholder Administration	34
8.4 Operator Administration	35
9 Frequently Asked Questions	37

1 Pre-installation Considerations

This section describes some of the area to plan for before installation.

1.1 Who is this guide intended for?

Any personnel with responsibility for the management and maintenance of IT infrastructure, hardware and software including installation and configuration of these systems. This will typically be IT managers and support staff.

For business administration, operator instructions and user guides please refer to the context sensitive help file in Access Central:

- Press **F1** for specific help related to the system window being accessed
- Select **Help > Contents** to view open and browse or search the help file

1.2 Virtualisation

PAC Software can be run on a virtualisation environment such as Microsoft Virtual Server, Microsoft Hyper-V or VMware. The system resources allocated to the virtual machine must be equal to or better than the minimum system requirements. See ["System Requirements" on page 6](#).

2 Installation

This section provides an overview of the minimum system requirements and considerations required for installing this software.

Please note, "PAC Software" refers to both PAC Access Central and EasiNet Residential where appropriate throughout this guide.

2.1 System Requirements

Important

You must have administrator privilege to install PAC Software.

You can use the local Administrator account or any account with administrator privilege that will not subsequently be deleted from the PC. Always use the same account to install, upgrade and uninstall the product. This avoids complications with SQL administrator roles.

We advise that the PAC Software machine requirements, listed below, for memory and processor speed, are exceeded whenever possible.

Server

Important: A dedicated server for PAC software is required.

Minimum Server specification for SE licence software installs are:

- IBM Compatible PC with a minimum Intel i5 (7th Generation) quad-core processor with 2GHz clock speed
- 8 GB RAM
- 256 GB Hard Drive (300Mbps read / write speed)

Minimum Server specification for Pro licence software installs are:

- IBM Compatible PC with a minimum Intel i7 (7th Generation) quad-core processor with 2GHz clock speed
- 16 GB RAM
- 512 GB Hard Drive (300Mbps read / write speed)

Please note that these are the minimum specifications and for larger systems, higher specification servers will be needed.

Client

Minimum Server specification for a Client running SE/Pro licences software installs are:

- IBM Compatible PC with a minimum Intel i5 (7th Generation) quad-core processor with 2GHz clock speed
- 8 GB RAM
- 256 GB Hard Drive (300Mbps read / write speed)

Power Management Settings

The power settings on the PAC server PC listed below must be performed or communication issues to the door controllers will occur.

In Power Options / Change when the computer sleeps, make all settings = Never.

In Change advanced power settings make the following configurations:

- Hard disk / Turn off after = Never
- Sleep: Make all sleep and hibernate settings = Never
- USB settings / USB selective suspend setting = Disabled

Once an Office admin kit is added in the PAC Software software then In Device Manager / Ports (COM & LPT), locate the Office Admin Kit (COM#) and in Properties / Power Management, untick Allow the computer to turn off this device to save power.

Operating Systems

The following operating systems are supported:

- Windows 11 Professional 64-bit
- Windows 10 Professional 64-bit
- Windows Server 2019 Standard edition or above
- Windows Server 2016 Standard edition or above

Important

If using a server operating system for the PAC Software server make sure the server has the role of an Application Server if connecting PAC Software clients. See ["Setting the Application Server Role" on page 16](#).

This is not applicable for Windows Server 2016 as it has been deprecated by Microsoft.

[https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2012-R2-and-2012/dn303411\(v=ws.11\)?redirectedfrom=MSDN](https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2012-R2-and-2012/dn303411(v=ws.11)?redirectedfrom=MSDN)

Databases

The following database environments are supported:

- Microsoft SQL Server 2019
- Microsoft SQL Server 2017
- Microsoft SQL Server 2016

Note: Please follow Microsoft recommendations for keeping up to date with relevant service packs.

Web Application

Server

The hardware, operating system and database requirements for the Web Application server are the same as for a server installation of PAC Software.

Device

- iOS on Apple iPad or iPhone
- Optimised for web browsers on Windows Phone
- Android on Samsung tablet

Browser

- Microsoft Edge
- Safari
- Google
- Mozilla Firefox

2.2 Web Admin Reader Configuration

The PAC desktop administration reader can be configured to operate on any PC or mobile device using a PAC supported Windows Operating System with a USB port, enabling access control tokens / cards to be added using a browser. To enable this function, it is necessary to install:

- Admin Reader drivers
- Web Admin Reader application

These may be downloaded from the PAC web site at <https://pacgdx.com/products/management/pac-access-central> or from the PAC GDX Knowledgebase.

1. Install the Administration Reader Drivers first.
2. Connect the USB desktop reader to complete the installation.
3. Install the Web Admin Reader application.

Prerequisites

The web admin reader application will require the following applications to be installed onto the PC or mobile device.

- Dot Net Framework V4.7.2
- Windows Installer

These are included in the software bundle.

Application configuration

On completion of installation, the Web Admin Reader (key icon) will appear in the system tray.

Right click on this and configure:

- The Serial (USB) port that has been assigned to the Admin Reader.
- Copy key code to clip board selected.
- Card format: Typically, OneProx Smart for high frequency (MIFARE) technology devices, or PAC Proximity card for low frequency technology devices.

2.3 When to Upgrade the Database Server

Our recommendation is that you must upgrade from your currently installed version of SQL Server or if any of the following are true:

- Your system has more than 15,000 keyholders.
- Your system has multiple Organisational Units.
- The database size is greater than 4 GB.
- Refer to Microsoft.com for details on end of life support details for your SQL Server installation.

2.4 PAC Software Installation Types

There are four types of PAC software installations that can be performed:

Stand Alone Server with SQL Server Express

This is the most common installation where a full copy of PAC Software is installed with SQL Server Express, which is included on the installation media.

Stand Alone Server with Full SQL Server

For this type of installation, a full version SQL Server is pre-installed on the same PC as PAC Software. When this type of installation is performed, the PAC Software software performs a check to see if SQL Server is already installed, and will confirm with the user if they wish to install the PAC databases on the existing (installed) SQL server.

Full PAC Software with Remote SQL Server

This type of installation will install PAC Software on a PC / Server, and connect to a remote SQL Server where the PAC databases are already installed. This is useful for companies that run SQL server farms and do not

allow SQL server to be installed on an application server. This installation uses a switch in the setup.exe in windows command prompt, which is fully covered in the document 'Configuring Remote SQL Server with PAC Software', available from PAC technical support.

Important

When installing PAC Software with a remote SQL server you must be fully conversant with SQL administration and Microsoft Server technologies and have domain and local administrator rights, this cannot be completed without referring to the technical document 'Configuring Remote SQL Server with PAC Software' and as such there is limited technical support for this type of installation.

PAC Client Software Installation

The client software installation is intended for client machines that will connect to a PAC Server already on the network having the full PAC software and SQL installation. A machine with client software installed cannot operate without a connection to a machine having the full software installation.

Important

It is not possible to connect PAC door controllers directly to a client machine.

2.5 PAC Software Server

We recommend the use of a dedicated PC / Server for the PAC Access Software Server which should be running 24/7 for reliable door controller communication, so therefore a server class or virtual machine is the preferred option, and will benefit from the following server class features:

- Designed for 24/7 365 use
- UPS power fail backup
- Multiple power supplies
- RAID configuration of the hard drives

Important

The PAC Software backups MUST always be stored in a separate location off the host PAC machine to protect the system in case of disk failure. See ["Installing Microsoft Message Queuing \(MSMQ\)" on page 16](#).

If running PAC Software on a desktop operating system, make sure the power settings are modified as explained here, See ["Power Management Settings" on page 6](#). or communication issues to door controllers can occur

Prerequisites

Windows Message Queuing

This is a component of Microsoft Windows, and is installed as part of the PAC Software installation process on Microsoft desktop operating systems. However, it must be installed manually on Microsoft Server operating systems through the Server Manager application.

See ["Setting the Application Server Role" on page 16](#).

Microsoft .NET Framework

Microsoft .NET Framework Version 4.7.2 is installed as part of the PAC Software installation process.

Installation Directories

The software is by default installed into the **%ProgramFiles%\PAC Software** folder on a 32-bit PC or the **%ProgramFiles(x86)%\PAC Software** folder on a 64-bit PC. The installation procedure also creates folders for storing database backups and event archives. The defaults can be changed during or after the installation process.

Important

If you have modified server properties within SQL Management Studio to specify directories to hold the data and log files, the installation process maintains this setting and uses the specified directories, if they exist.

This does not affect upgrades where the current database is preserved.

This enables you to choose which disk to install the database on, or to keep data and log files on separate disks in order to maximize performance.

Databases

If you are installing a PAC Software Server and no existing Microsoft SQL Server database instance is found, the setup program requires you to install SQL Server Express which is provided on the installation media and will be installed automatically.

If you have an existing SQL Server database, See ["Databases" on page 7](#).

User Accounts and Start-up Tasks

The following account is added to your system. You should not modify or delete it, or PAC Software will fail to work:

- Example **PAC_EKA_COMPUTER NAME**. Computer Name is the name of the computer on which PAC Software is installed. (This may become truncated depending on the length of PAC_[COMPUTER_NAME].)
- This is a user account that is used to access the database and run some of the PAC Services.
- The password for this account is randomly generated and must not be changed.

The following local group is added to your system:

- **PAC_DBA**. This group allows you to make a user a database administrator for the database without giving him/her any other privilege.
- A user does not need to be an operator to be a member of this group.

The following scheduled tasks are added to your system:

- PACClockSync. By default, this task runs at boot time and every day thereafter at 23:00 to synchronise all access controllers with the system clock.
- PACEventArchive. By default, this task runs at 18:00 every day to archive events in the event log, providing there are enough old events to archive.
- PACStartup. This task runs at boot time to start the PAC services (e.g. Engine) if they are set to be auto started — via the Service Manager.
- PACWeeklyBackup. By default, this task runs at 15:30 every Tuesday to back up the PAC Software database according to the path set in PAC Software.
To change the backup directory location, modify the system settings from within PAC Software\ Set Organisation Options\ Default backup directory.

Notes on SQL Server Express Databases

- Integrated Security (windows authentication) is used to access the database.
- Access is granted to the **PAC_EKA_computer** account, which is created during installation. **PAC_EKA_computer** has rights to read and write the data in the PAC Software tables and perform backups of these tables.
- DBA access to the SQL Server Express instance is granted to any Windows user allocated the **PAC_DBA** user group created during installation. Placing a non-administrative user into the **PAC_DBA** group will allow them to restore database backups.
- By default, any user allocated a standard Administrator account in Microsoft Windows will also have full DBA access to the SQL Server Express instance.

No Manual Editing of MSSQL

Manual editing or modification of the PAC Software MSSQL tables or data contained within, must not be attempted, as this bypasses the PAC User Interface and does not update the door controllers. This can also cause the PAC Software system software to become unstable and may involve a re-install of the PAC software with a full PAC database restore.

2.6 PAC Software Clients

The PAC Software client can be easily operated alongside other applications, there is no need for a PAC client to run on a dedicated PC.

Prerequisites

The following Microsoft .NET Framework versions are required:

- Microsoft .NET Framework Version 3.5 is a prerequisite of Crystal Reports and is required on client machines.
- Microsoft .NET Framework Version 4.7.2 is installed as part of the PAC Software installation process.

Installation Directories

The software is by default installed into the **%ProgramFiles(x86)%\PAC Software** folder. You may change the folders from the defaults during the installation process.

Connectivity

The client PC must be in the same workgroup or domain as the PAC Software Server to which it is connected. The name of the PAC Software Server to which the client is connecting must be specified in the installation process. This can be modified later in the client login screen.

Network Address Translation

PAC Software Client machines cannot exist behind a NAT Router, otherwise connection issues to the PAC server will be seen.

2.7 Regional Options and Time Zone

Ensure that the correct regional options and time zone for the country or region is specified on the server and client operating system. Once the Server / Client has been set, check that the correct time zone is set in PAC Software.

2.8 Web Application Server

This section details the installation and configuration of the Web Application Server for PAC Software.

Prerequisites

The following prerequisites must be met:

- The hardware and operating system must meet the minimum system requirements for the Web Application server. See ["Web Application" on page 7](#).
- The installer must have local administrator privileges.
- The PAC Web application must be hosted on the same PC as the full PAC Software server installation.
- The installed PAC Software application must be the same version as the web application you are installing.
- Internet Information Services (IIS) 7 or later must be installed on the PC. See ["Installing IIS" below](#).

Installing IIS

Please use this Microsoft link to identify your operating installation for further instructions on installing IIS:

<https://www.microsoft.com/en-gb/search?q=Internet+Information+Server+Install>

Installation Tasks

The installer performs the following tasks when the web application is installed:

- Registers .NET 4.0 with IIS.
- Installs Microsoft Web Deploy. 32-bit and 64-bit versions are included on the installation disk.
- Creates an application pool called `PacAccessCentralPool` and a web application called `PacAccessCentral`.

2.9 PAC Client Software Network\Firewall settings

This section details useful information for configuring firewalls for use with PAC Client Software.

Important Information - VPN

If using PAC Client software to connect remotely to a PAC Server and data is being transmitted over an insecure network i.e. the internet then a VPN must be used to encrypt the data.

Required Ports

DCOM is short for Distributed Component Object Model and allows the PAC Client machine and PAC Host Server to communicate. The table below lists the ports that are required to allow a PAC Client to communicate through external firewall .

DCOM	Start Port: 49152 End Port: 65535
RPC	Port: 135
Port	8089

Application	Location	Protocol / Direction	Source Port	Destination Port
PAC Client Manager	PAC Software Server	TCP / Out	Dynamically assigned	8085 (configurable)
PAC Event Manager	PAC Software Server	TCP / Out	Dynamically assigned	8086 (configurable)
PAC Database Manager	PAC Software Server	TCP / Out	Dynamically assigned	8087 (configurable)
COM+/DLLHost.exe	N/A – Into PAC server	UDP / Out	N/A	8086–8096
COM+/DLLHost.exe (DCOM)	PAC Software Server	TCP / In-Out	DCOM assigned	5020–5040

Important

DCOM ports are dynamic and can be modified if required. Clients cannot exist behind a NAT Router.

The range of DCOM ports used in Windows 2008 Server below is taken from:

<http://support.microsoft.com/kb/832017>.

VPN – Virtual Private Network

VPN or Virtual Private Network is a technology that creates an encrypted connection over insecure networks i.e. the internet. A VPN must be used between PAC Server and PAC Client if data is going over any insecure network.

NAT – Network Address Translation

Client machines cannot exist behind a NAT Router.

External Firewall Settings

By default when the PAC Client software is installed it will automatically modify the firewall settings on that machine, if there is an external firewall between the PAC Client machine and the PAC Host Server then issues can be seen if the external firewall is not modified to allow data from the PAC Client to reach the PAC Host Server.

RPC

RPC is short for Remote Procedure Call and is a simple request – response protocol that is used by the PAC software the following port should be opened:

Port 135	TCP and UDP
-----------------	-------------

Sample Port Connections

Please see the information below, this contains a working PAC client's connections to a PAC Host server and the ports that are open. This information can be obtained by using the command prompt and running a `netstat -a` command on the PAC client machine while performing a dialup to a remote 512 site.

This shows the three states of dialling from a PAC Software client to a PAC Host Server.

! Important

This does not show any internal (loopback) connections on the PAC Client.

The PAC Client machine is 192.168.1.2 and the PAC Server is P1CN1C02

Normal - Non Dialing State

Remote Computer	Remote IP Addr	Remote Port	Local IP Addr	Local Port	Status
P1CN1C02	192.168.1.1	49186	192.168.1.2	49683	established
P1CN1C02	192.168.1.1	49187	192.168.1.2	49690	established
P1CN1C02	192.168.1.1	8085	192.168.1.2	49707	established
P1CN1C02	192.168.1.1	8085	192.168.1.2	49708	established
P1CN1C02	192.168.1.1	49187	192.168.1.2	49709	established
P1CN1C02	192.168.1.1	49186	192.168.1.2	49718	established
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49839	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49840	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49841	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49842	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49843	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49844	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49845	established

Dialing Remote site

Remote Computer	Remote IP Addr	Remote Port	Local IP Addr	Local Port	Status
P1CN1C02	192.168.1.1	49238	192.168.1.2	Loc-Srv	established
P1CN1C02	192.168.1.1	49239	192.168.1.2	Loc-Srv	time wait
P1CN1C02	192.168.1.1	49240	192.168.1.2	Loc-Srv	established
P1CN1C02	192.168.1.1	49186	192.168.1.2	49683	established
P1CN1C02	192.168.1.1	49187	192.168.1.2	49690	established
P1CN1C02	192.168.1.1	49241	192.168.1.2	49691	established
P1CN1C02	192.168.1.1	8085	192.168.1.2	49707	established
P1CN1C02	192.168.1.1	8085	192.168.1.2	49708	established
P1CN1C02	192.168.1.1	49187	192.168.1.2	49709	established
P1CN1C02	192.168.1.1	49186	192.168.1.2	49718	established
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49841	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49842	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49843	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49844	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49845	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49846	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49847	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49848	established

Connected to Remote site (512 door controller)

Remote Computer	Remote IP Addr	Remote Port	Local IP Addr	Local Port	Status
P1CN1C02	192.168.1.1	49239	192.168.1.2	Loc-Srv	time wait
P1CN1C02	192.168.1.1	49186	192.168.1.2	49683	established
P1CN1C02	192.168.1.1	49187	192.168.1.2	49690	established
P1CN1C02	192.168.1.1	49241	192.168.1.2	49691	established
P1CN1C02	192.168.1.1	8085	192.168.1.2	49707	established
P1CN1C02	192.168.1.1	8085	192.168.1.2	49708	established
P1CN1C02	192.168.1.1	49187	192.168.1.2	49709	established
P1CN1C02	192.168.1.1	49186	192.168.1.2	49718	established
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49843	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49844	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49845	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49846	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49847	time wait
P1CN1C02	192.168.1.1	Loc-Srv	192.168.1.2	49848	established



2.10 Database Backup \ Restore

! Important

By default PAC Software will perform a backup of its main database at 15:30 hrs every Tuesday.

It is recommended that database backups are made on a regular basis using the backup tools provided with PAC Software. It is also advisable to store the database away from the PAC Software server, on a reliable backup source. i.e. a Network drive.

When a full backup is performed, two files are created; Backupname.ekb and Backupname ekl as shown:

 Full Backup 0900 21082017'.ekb	21/08/2017 10:41	PAC SecureNet backup	7,008 KB
 Full Backup 0900 21082017'_Log.ekl	21/08/2017 10:41	PAC SecureNet events backup	9,376 KB

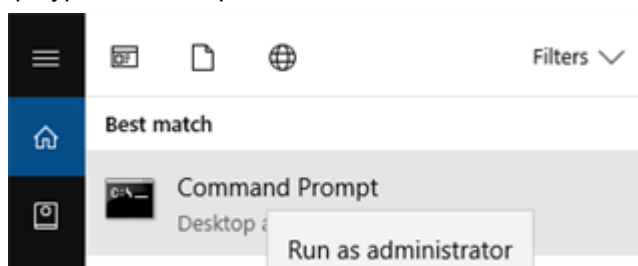
Only the Backupname.ekb is created if the main database is backed up without the 'Backup Events Table' selected. The various methods for performing backups are listed below.

The Backup and Restore tools are not available if using a remote SQL server, where backups must be performed through SQL management studio, with PAC Software installed on the application server (not covered in this guide).

Command Line Backups

If you cannot access the backup application within PAC Software, or you wish to setup a scheduled task, this may be performed using command line. (Note: The instructions below relate to 64 bit PC's)

1. Log into the PAC Server machine using the Local Administrator account
2. Click on the Windows icon and type 'cmd' to open the command prompt.
3. Right click on this and select 'Run as Administrator'.
4. In the command prompt type: 'cd\' and press enter.



5. Type: 'cd program files (x86)\[name of PAC Access Software e.g. PAC Access Central]\bin\bin.net' and press enter.
6. Type: 'pacui.exe /backup' – This will backup the main PAC database.
7. Type: 'pacui.exe /backupall' – This will backup the main PAC database and the events database.
8. This will perform a backup which is written to the default backup folder (usually **C:\PAC Software Backups**) and the file name is auto-generated to include date and time of backup.

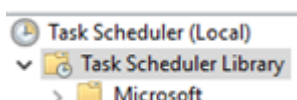
Full Automated Backups

By default PAC Software will automatically backup the main database at 15:30 hrs every Tuesday to the location selected within the PAC Software **\Options** section. This can be modified to also backup the events database at the same time:

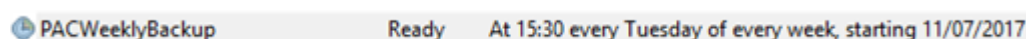
Important

When backing up the events database as well as the main database this can (depending on the size) take up considerable disk space, so the PAC Software Backups folder must be checked frequently to make sure you do not exceed the disk capacity.

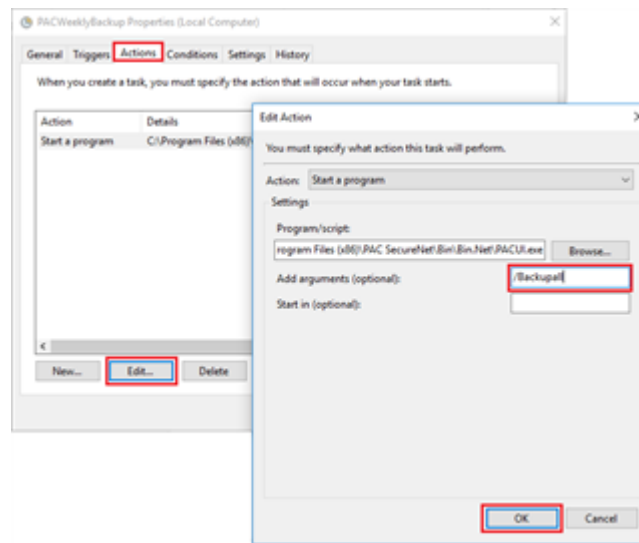
1. Using the windows search type: 'task scheduler' press enter.
2. Expand the selection by clicking on the 'Task Scheduler Library'.



3. Select the 'PACWeeklyBackup' by double left clicking it.



4. Select the 'Actions' tab and then select 'Edit...'. Modify the add arguments (optional) section by adding 'all' to the '/backup' as shown and click 'OK'.



5. Task Scheduler will now ask the question below. Click 'Yes' and 'OK'
6. You can confirm whether the changes have been implemented correctly by right clicking on the 'PACWeeklybackup' and selecting 'Run'. This will run the task and on success there will be both a .ekb and .ekl backup folder that was created when the task ran.
7. Close Task Scheduler

Backing up to a Network Drive

To enable backups to a network drive in PAC Software, both the SQL Server service and the PAC Software Database Manager Service must have a domain account with access to the network location and underlying partition. The process is as follows:

Create a domain user account and verify that the account specified has write access on the Windows Network share to which you are backing up to, as well as the underlying partition (if the partition is formatted as NTFS).

To do this, perform the following steps:

1. Right-click the share name in Windows Explorer.
2. Click Sharing on the shortcut menu.
3. On the Security tab, click Permissions.
4. Confirm the user account created earlier has read\ write access.

PAC Software Database Manager

1. Open services on the PAC Software PC by typing `services.msc` in the run command box.
2. Open the PAC Software Database Manager service and click on the Log on tab.
3. Change the Log on options for the service and verify that 'This Account' is selected and that a valid domain account is supplied in the form `Domain_Name\Domain_account` and associated password.

SQL Server Service

1. The SQL Server service must be started using a domain user account to access any resources on a remote computer. Verify that the MSSQLServer service is started under a domain account that has write access to both the Windows Server share and its underlying partition.
2. Select the MSSQLServer service and then click Log on.
3. Change the login options for the service verifying that 'This Account' is selected and that a valid domain account is supplied in the form `Domain_Name\Domain_account` and associated password.
4. Once the above is complete, set the backup path as a UNC structured path.
E.g. `\\MyServer\C$\Backups\Stockport`



Important

If you changed the services to run under a domain account, you must stop and restart the services.

Database Restore

PAC Software's database restore utility allows restoral of:

- Main Database alone
 - Main Database and Event Log Database
1. The restore is started by double clicking the .ekb backup file in the PAC Software Database Backup directory.
If the backups are stored in a remote location, they must be copied to this directory for a restoral to complete.
 2. The system will look to see if a matching event backup exists in the same folder. If so, the system will automatically tick the 'Restore Event Log' box.
 3. Once the relevant backups are restored the system will provide a confirmation message. Click 'OK'.

Important

After a restore has been performed, all the door controllers connected to the PAC Server will be marked unloaded in the hardware screen. This will not cause the doors controlled by PAC access to stop working or accepting existing (pre-downloaded) credentials, but no more keyholders can be administered until a full download is performed to all channels\ controllers on the system.

Installing Microsoft Message Queuing (MSMQ)

One of the pre-requisites required to allow PAC Software to run is Microsoft Message Queuing (MSMQ). This is normally installed automatically during the installation of PAC Software. On some Server, and Desktop operating systems that are controlled by a domain and have certain group policies in effect, the PAC installer program can be denied installation of MSMQ and give the message 'Not all Pre-requisites Installed'.

As MSMQ is part of the Microsoft Windows Operating system please refer to the Microsoft website for details regarding your operating system.

Important

To perform a manual backup refer to the built-in help within PAC Software.

2.11 Setting the Application Server Role

By default, Windows Server blocks PAC Software clients connections due to two reasons:

1. The Windows Server does not have the role of Application Server installed by default.
2. By default the Windows Server firewall blocks the ports required by PAC Software clients to communicate.

For further details refer to [https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2012-r2-and-2012/hh831530\(v=ws.11\)](https://docs.microsoft.com/en-us/previous-versions/windows/it-pro/windows-server-2012-r2-and-2012/hh831530(v=ws.11)).

Important

Microsoft have deprecated the Application Server role in Windows Server 2016.

To find which ports to allow through on the firewall, See ["PAC Software Alarm Viewer Clients" on page 21](#).

If you are using the Application Interface, See ["Application Interface TCP Ports" on page 24](#).

Installing PAC on Microsoft Server 2016

May 2018

The following describes how to install PAC on a Microsoft Server 2016 based computer.

These editions are supported:

- Microsoft Server 2016 Datacenter Edition
- Microsoft Server 2016 Standard Edition

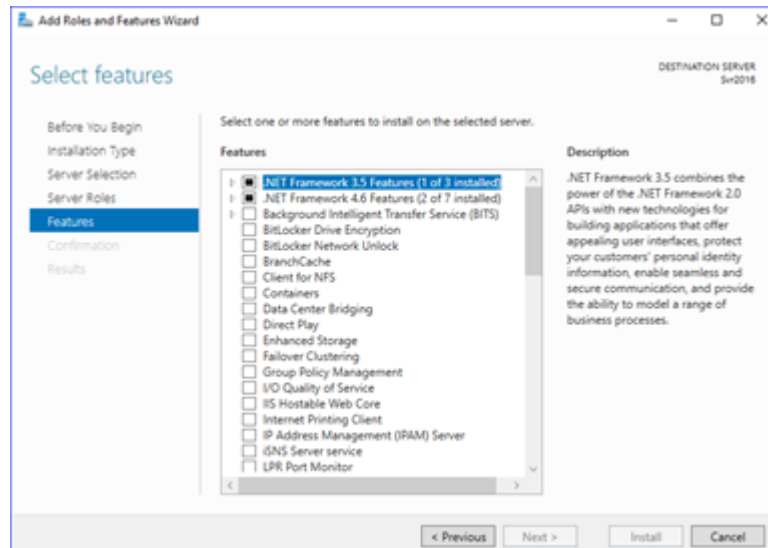
Important

Microsoft Server 2016 Essentials is not supported.

Before installing PAC

The .NET framework v3.5, required by PAC, must be installed through the Server Manager. Ensure this option is selected by checking the box in the Add Roles and Features Wizard:

1. Installation Type is Role-based or feature-based installation.
2. Server Selection will be the local server from the server pool.
3. No changes are required in Server Roles.



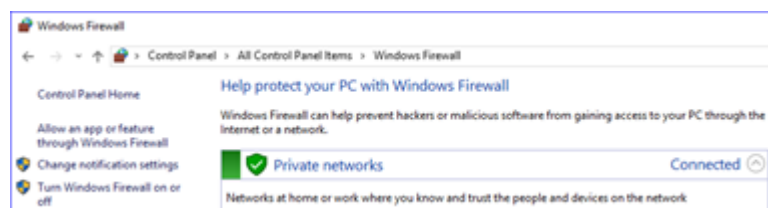
4. Check the .NET Framework 3.5 Features box.
5. At the Confirmation window, click Install.
6. Once this is complete PAC can be installed as usual.

Install PAC

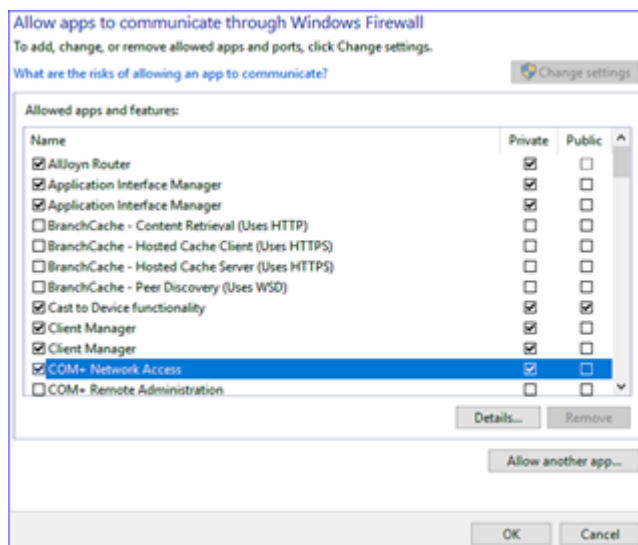
Install PAC as usual. At this point the application will operate on the server but no client connections to the server can be established until the following steps are completed:

Set Windows Firewall

1. Allow incoming client connections get a COM+ client connection to work.
2. Set the Windows Firewall in **Control Panel > Windows Firewall**.
3. Select 'Allow an app or feature through Windows Firewall' on the left.



4. Check COM+ Network Access and check the Private box.

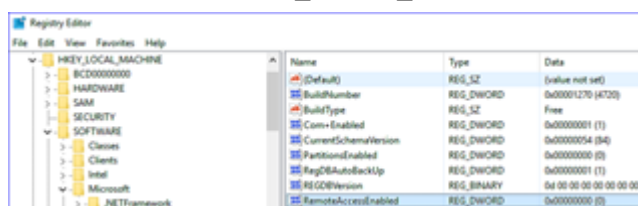


5. Click OK.

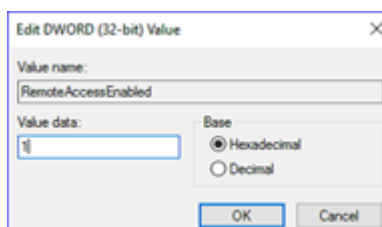
Allow incoming client connections

Registry change to enable remote access

6. The second setting is in the registry:
7. Find the Key RemoteAccessEnabled in HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\COM3.



8. Double-click the item and change the value from 0 to 1:



9. Click OK and close the registry editor.
10. Once these changes are made the client will connect and be able to perform all the expected functions.

2.12 PC Transfer

This section gives directions for transferring PAC Software to a new administration PC.

To backup settings on the old PAC SoftwareHost

1. In PAC Software, choose Tools › Database Backup. In the Backup window, enter a name for the backup, select Backup Events Table, and choose Backup.
The backup database and events log are stored in the database backup location — by default, e.g. for PAC Access Central: **C:\PAC Access Central Database Backups**.
2. Copy the backup database and events log from the database backup location to a USB stick or temporary network location. In addition copy the contents of the PAC Software Archives folder to the same location.
3. Choose Tools › Upgrade Licence and make a note of the current fingerprint and licence key. PAC will require this to issue a new licence.

To install PAC Software on the new PC

1. Be sure to observe the minimum operating system and hardware requirements for the new PC. See ["System Requirements" on page 6](#).
2. If controllers are connected on a network via Ethernet, it is recommended that you set the new PC up with the same static I/P address and subnet mask as your old PC. Take the old PC off the network prior to adding the new PC.
3. Before you begin the install, activate the administrator account on the PC.
4. Obtain the latest version of PAC Software. It is available from the customer services team on request. Alternatively, download an upgrade version from the website <http://pacgdx.com/support/knowledge-centre/>. You will need to register with the site if you have not done so before, before you can access the downloads section.
5. Install the PAC Software software and login for the first time with the user name `installer` and no password. You will then be prompted to create a new password.

To restore the backup on the new PC

1. Close PAC Software, if running.
2. Copy the `.ekb` file and the `.ekl` file from the last backup you made to the database backup folder on the new PC — by default, **C:\PAC Software Database Backups** and copy the archives data previously saved, to the current PAC Software folder.
3. Double click on the `.ekb` file. In the PAC Software Database Restore window, select Restore Main Database and Restore Event Log, then choose the Restore button. Once the backup is restored, you will need to download to all channels in the Hardware module to ensure that the database is synchronised.

To configure the administration reader on the new PC

1. If your administration reader connects to your old PC via a serial port and your new PC only has USB ports, we recommend you purchase the PAC GDX approved variant (Part # 480130000 USB-RS232 Converter Lead).
2. Connect the USB to serial converter cable to the PC, then install the drivers from the USB Drivers folder in the PAC Software installation media.
3. If your administration reader is connected directly by a USB lead, install the drivers for the reader from the same location.
4. Log in to PAC Software with your old login name and password.
5. Choose **Tools > Configure Peripherals** to configure your administration reader.
6. Check the correct COM port is selected, then choose Click to test, and present a credential to the administration reader. The keycode will be displayed. Once communication is established credentials can be enrolled in the Keyholders module.

2.13 Best practices

Recommendations for improving visual experience of using PAC Access Software.

Screen Resolution

A screen resolution of at least 1024 × 768 pixels is recommended when using PAC Software.

If you are using the PAC Software **Alarm Viewer** a resolution of 1280 × 1024 is recommended.

Multiple Monitors

If you are using PAC Software on one PC for multiple functions, the use of two monitors is recommended. E.g. Using the Event Viewer in its undocked form on one monitor and position the **Alarm Viewer** on the other monitor.

3 Configure E-mail in Access Central

PAC Software connects to an SMTP server using port 25. Depending on the configuration of your network, port 25 may be blocked by anti-virus software, a corporate firewall, or your ISP. If PAC Software is failing to send e-mail messages, reconfigure your anti-virus software or firewall to unblock port 25 or ask your ISP to resolve the issue.

If PAC Software is not able to resolve the name of the SMTP server to an IP address, it will not be able to send e-mail. If PAC Software is failing to send e-mail messages, try configuring PAC Software with the IP address of the SMTP server, rather than the SMTP server name.

4 Uninstallation

PAC Software can be removed from your system using the Add or Remove Programs item in the Control Panel, or running the Setup program from the installation media. The prerequisite software, i.e. the .NET framework, service packs, SQL Server 2012 SP2 Express, etc., are not uninstalled by this process, but can be uninstalled separately if required.

After uninstallation, the following files are retained on your system:

- The MSSQL database files.
- The PAC Software backups directory and the files contained within.
- The PAC Software archives directory and files contained within.

These files can be manually deleted if no longer required after removal of the PAC software.

5 Controller Hardware

This section provides details about the configuration of Controller hardware.

5.1 PAC Software Alarm Viewer Clients

Permit incoming traffic to the following TCP ports (and if necessary UDP ports):

DCOM Start Port: 49152

End Port: 65535

RPC Port: 135

Port 135, 3000-3020, 8085-8086 and 8089

Application	Location	Protocol / Direction	Source Port	Destination Port
PAC Client Manager	PAC Software Server	TCP / Out	Dynamically assigned	8085 (configurable)
PAC Event Manager	PAC Software Server	TCP / Out	Dynamically assigned	8086 (configurable)
PAC Database Manager	PAC Software Server	TCP / Out	Dynamically assigned	8087 (configurable)
COM+/DLLHost.exe	N/A – Into PAC server	UDP / Out	N/A	8086-8096
COM+/DLLHost.exe (DCOM)	PAC Software Server	TCP / In-Out	DCOM assigned	5020-5040

5.2 The PAC 512 IP Door Controller

The PAC 512 IP door controller employs an on-board Lantronix Xport Ethernet to serial converter to connect the controller to the network. By default, this device is configured for dynamic IP addressing and, in the absence of a DHCP server, will auto configure an IP address on subnet 169.254.0.0, subnet mask 255.255.0.0.

Static IP addressing is strongly advised. If this is not possible then set it as a reserved IP address on your DHCP server.

The Xport device is pre-configured to communicate on Port 8003.

For further information relating to the PAC 512 IP controller network connectivity, refer to the following Technical Bulletins: TB205: Setting up a PAC 512 IP over a LAN and TB200: Setting up a PAC 512 IP over a WAN.

PAC 512 IP Controllers and Network Security

To enable the PAC 512IP door controller to communicate with the PAC system over a corporate IP network, the controller is fitted with a third party (Lantronix) serial to Ethernet convertor known as the XPort. These devices are used worldwide by different manufacturers to enable their serial communication-based hardware to be IP capable.

Certain default functions are enabled, for example:

- SNMP
- Blank Configuration Password
- Web Server
- Telnet

When the customers perform network security tests (Penetration testing), possible vulnerabilities may be flagged with the PAC 512IP controllers such as SNMP, and no password on the telnet session.

Once the 512IP is communicating correctly with the PAC system, modifications can be made to the Lantronix devices which will strengthen their network security. Refer to the following PAC documents for more details:

- 'Disabling SNMP in 512IP Door Controllers'
- 'Enabling Password Lock on 512IP or Lantronix UDS'

This will provide greater network protection for the PAC 512IP controller but it is not recommended that any PAC controller (PAC 512 or PAC 500) is used externally to a customer's network without the protection of a VPN that has been configured by the customer.

6 Networking and Performance

This section provides details on configuring PAC Software for network access and performance.

6.1 Network Security

This section describes how to:

- Configure DCOM for support of multiple PAC Software clients across a firewall. This allows the PAC Software Server and Clients to communicate with each other.
- Configure firewalls on a WAN. This is required to allow the PAC Software Server to communicate with PAC IP controllers.

DCOM / Multiple Clients

To ensure maximum security on your network when using PAC Software clients over a firewall the range of TCP ports used by DCOM on the clients must be restricted.

DCOM and Firewall Address Translation

You cannot use DCOM through firewalls that perform address translation (NAT) — i.e., where a client connects to a virtual address, such as 198.252.145.1, and the firewall maps it transparently to the server's actual address, such as 192.100.81.101.

Restricting the Range of TCP Ports

There are several registry settings that control the DCOM port restriction functionality. All of the named values listed below are located under the **HKEY_LOCAL_MACHINE\Software\Microsoft\Rpc\Internet** registry key, which you must create. Remember that you only need to do this on the PAC Software server. Clients will automatically pick up the right port numbers when they connect to the Service Control Manager (SCM) on the server machine.

Important

You must use `regedt32.exe` to configure these settings; `regedit.exe` does not currently support the **REG_MULTI_SZ** type required by the Ports named value entry. Also, you must reboot your machine any time you make changes to any of the following registry settings in order for them to take effect.

Name	Type	Value	Description
Ports	REG_MULTI_SZ	Specify one port range per line. Example: 3000-3020 5141	One or more port ranges. The options below determine the meaning of this named value.
PortsInternetAvailable	REG_SZ	Y	Always set this to Y.
UseInternetPorts	REG_SZ	Y or N	If this value is set to Y, then the Ports named value indicates which ports should be used for DCOM applications. If this value is set to N, then the Ports named value indicates which ports should not be used for DCOM applications.

Configuring Your Firewall

The firewall between your server and the Internet should be configured as follows:

- Deny all incoming traffic from the Internet to your server.
- Permit incoming traffic from all clients to TCP port 135 (and UDP port 135, if necessary) on your server. (135 is the Microsoft Exchange port that Microsoft Outlook uses.)
- Permit incoming traffic from all clients to the TCP ports (and UDP ports, if necessary) on your server in the Ports range(s) specified above.

6.2 Application Interface TCP Ports

There is a potential conflict between the Application Interface, the client software, and any third-party software which communicates using TCP ports 5150 and 5151.

Issue

PAC Client software communicates with the Application Interface using TCP ports 5150 and 5151. If these ports are also used by other software on the system, a conflict can occur which prevents the Application Interface from communicating over the network.

Installers need to be aware of any other software installed on the system which communicates using these ports.

Workaround

It is possible to configure the Application Interface to listen on different TCP ports; however it may not be possible to configure the client software to use the new ports. Therefore, if a port conflict were to occur, it would be necessary to reconfigure the third-party software to use ports other than 5150 and 5151.

Check the third-party software provider's documentation and website for instructions on how to change the TCP ports that the third-party software uses.

6.3 PAC 500 and PAC 512IP Bandwidth Data

PAC Software and 500 series hardware will be installed on a VLAN with a quality of service of no less than 2Mb/s. This should be reviewed against the requirements of other security equipment installed on the same network. E.g. CCTV has a high bandwidth requirement that may affect the system.

Minimum Client Bandwidth

A PAC Software client requires a minimum of 512 kb/s (full duplex) connection to its associated PAC server.

Backup File Sizes

This section describes the size of files created using the backup utilities which accompany PAC Software.

Database Backup File Sizes

The following table lists the size of the PAC Software backup files with the following database settings:

- 100 Areas
- No Keyholder Photos
- 20 Access Groups
- 20 Time Profiles

Number of Keyholders	Approx. DB File Size (KB)
25,000	16,000
50,000	29,000
75,000	42,000

Events Backup File Sizes

The following table shows the approximate size of the PAC Software events backup file for varying numbers of events.

Number of Events	Approx. DB File Size (KB)
250,000	40,600
500,000	81,200
1,000,000	162,400

Archive File Sizes

The following table shows the approximate size of the PAC Software archive file for varying numbers of events. Event archiving is a feature of PAC Software v2.2 and higher.

Number of Events	Approx. DB File Size (KB)
250,000	24,900
500,000	50,000
1,000,000	99,700

7 Troubleshooting

This section includes some helpful steps for resolving potential issues that may occur.

7.1 Server Name Changes

Changing the PAC Software Host name will cause the installation of PAC Software on that PC to stop working. This section describes how to resolve this issue.

1. Ensure that all PAC Software clients are shut down.
2. Change the PAC Software Host name back to its original value — in Control Panel, open the System option and change the setting for the Computer Name section.
3. Backup the PAC Software database, making sure that it is retained in the folder C:\PAC Software Database Backups.
4. In Control Panel, use the relevant option to uninstall the following programs:
 - The PAC Software installation.
 - The SQL Server installation.
5. Change the PAC Software Host name to its new value — in Control Panel, open the System option and change the setting for the Computer Name section.
6. Reinstall PAC Software and relevant SQL Server installation selecting the option to install an empty database.
7. After reinstalling PAC Software, double click on the database backup file that you created in step 3 to restore the last database backup.
8. Download the database to the connected door controllers. This may cause disruption to door access so make sure all users are aware before performing a download.
9. Ensure that the Server name property of any clients that connect to the server is changed to the new name. This property can be found on the logon screen of the Client.

7.2 Identify Previous PC Name

To determine the name used by the PC prior to the name change:

1. Choose the Start > Run command and type `eventvwr`, this will display the Event Viewer
2. Expand 'Windows Logs' and click the System option in the left hand pane to display the system event log. In the event log, the computer name is displayed in the column Computer.
If you need to add this column, right-click on the header bar and choose 'Add/Remove Columns'.
3. To locate the previous computer name, scroll down the event log to a date prior to the name change.

7.3 PAC Software COM+ Applications on a Domain PC

PAC Software Server PCs use Microsoft COM+ to provide application services.

! Important: If you are running in a Microsoft domain, it is possible for the domain policies to stop the application running.

On domain PCs, the PAC Software Services (e.g. Engine) will fail to run and you will not be able to log into the application. The following error messages will be seen in the Windows event log:

EVENT ID: 10004 Source: DCOM

Login failure unknown user name or password

This problem should not occur on workgroup PCs.

Cause

This problem occurs because the "Log on as a batch job" privilege has not been set for the identity of the COM+ package. When you set a user as the COM+ identity, COM+ adds this privilege for you.

However, if the user is a domain account and does not have the "Log on as a batch job" privilege set in a Group Policy Object (GPO), when the Active Directory performs an update, the identity of the COM+ package is reset and the permission is removed.

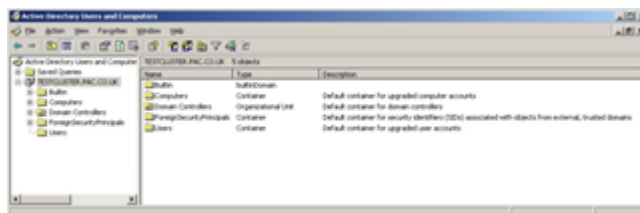
If you retype the password, COM+ will add the "Log on as a batch job" privilege again for the local computer.

Resolution

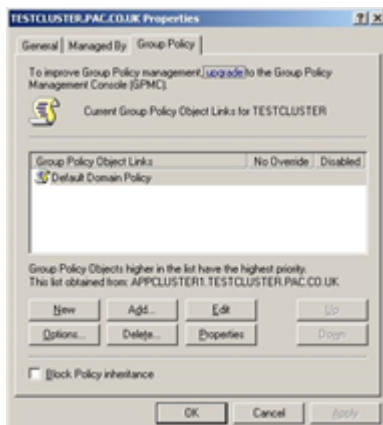
To resolve this problem, give the domain account the "Log on as a batch job" privilege in the Group Policy Object in the Domain Controller.

Procedure

1. Ensure that Administration Tools is installed on the local computer from the i386 folder on the Server disc.
2. Choose Start › Programs › Administrative Tools › Active Directory Users and Computers. In the Console tree, right-click on the domain for which you want to set Group Policy.

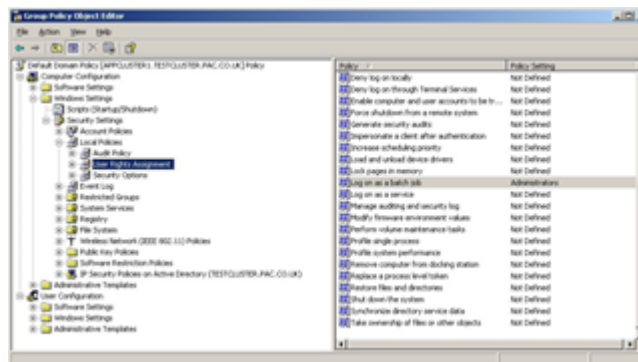


3. Choose Properties and select the Group Policy tab.

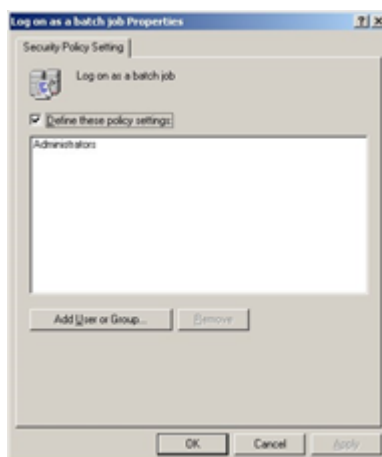


4. Select Edit to navigate to the Group Policy Object you want to edit.

5. Choose Computer Configuration › Window Settings › Local Policies › User Rights Assignment.



6. Double click on Log on as batch job in the right pane.



7. Select the Add User or Group button and specify the Administrator group.

7.4 Image Capture Utility in Windows Server

Using PAC Software under Windows Server, the Image Capture utility may fail to start. The error message 'An error occurred in image capture' is shown.

To resolve this issue

1. Go to the Server Manager.
2. Enable Desktop Experience in the Features section.
3. Once this feature is installed, restart the PC.

7.5 Microsoft Security Updates and Patches

We recommend that any computer hardware that runs PAC Software is kept up to date with all available updates..

7.6 Web Application

This section provides details on known operational issues.

Dynamic Compression

Running the web application can be problematic when IIS is configured to use dynamic compression.

To turn off dynamic compression:

1. At the command prompt, enter the following command:

```
%windir%\system32\inetsrv\appcmd.exe set config-  
section:system.webServer/httpCompression /-['name='xpress']
```
2. Restart the web server.

Android File Uploads

Uploading a photo or signature on an Android device will intermittently fail because the browser reopens in the background due to low memory. This is a limitation of Android and it is not possible to work around it. You should try to ensure memory usage is as low as possible by closing other apps.

7.7 Reports

When running reports, we recommend filtering parameters whenever possible to limit the size of returned data.

8 Managing Active Directory Integration

Integrating PAC Software with Active Directory (AD) provides a number of functions, including:

- Secure User login using domain login credentials.
- Automatic import of Active Directory users into PAC Software Keyholder database.
- Automatic disabling of keys / Operators when Users are deleted from Active Directory.

! Important

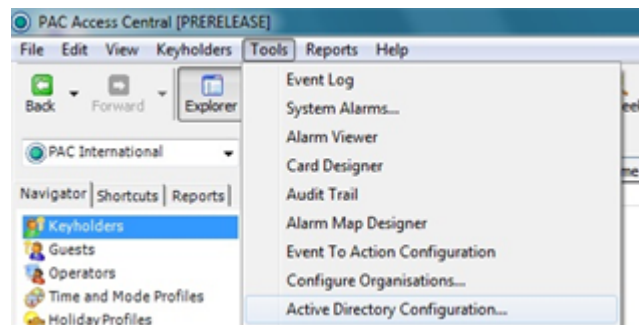
Both Active Directory and PAC Software use the term Organisation Unit. For the purposes of clarity in this document:

- The term OU is used to denote the AD Organisation Units.
- The term Org Unit is used to denote the PAC Software Organisation Units.

8.1 Active Directory License

AD integration is a licensable feature of PAC Software. The license is purchased by contacting the PAC GDx customer services team.

1. Once the license has been applied, the Active Directory Configuration option appears in the Tools menu list.



8.2 Importing AD Users into PAC Software

This section provides details about importing users into:

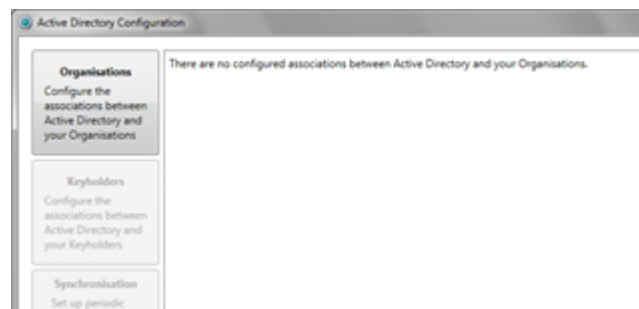
- Single PAC Organisational Unit
- Multiple PAC Organisational Units

Single PAC Organisation Unit

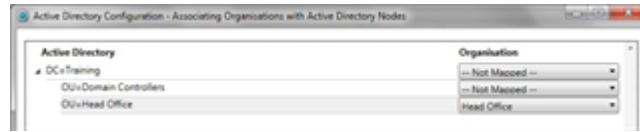
1. Select the Active Directory Configuration option in the Tools menu to open the configuration tool, then select the Organisations option.

! Important

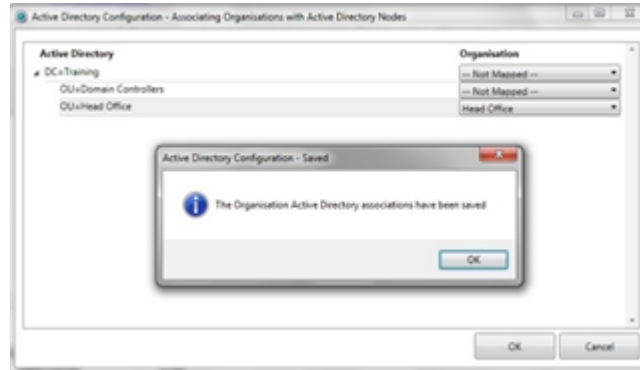
Only the valid options are available for actioning.



- Initially all items in the Organisation list will be set to Not Mapped. All AD OU's are displayed in the Active Directory list (below). The actual list will depend on the customer's specific AD structure. In most cases you will only need to map the OU that contains the AD Users. In this example, this is the Head Office OU.



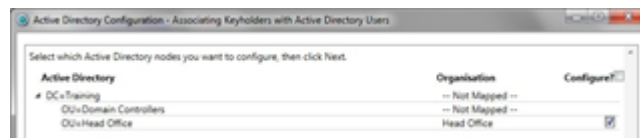
- Select the 'OK' to close the pop-up.



- Now select the Keyholders button to import the AD Users into PAC Software.



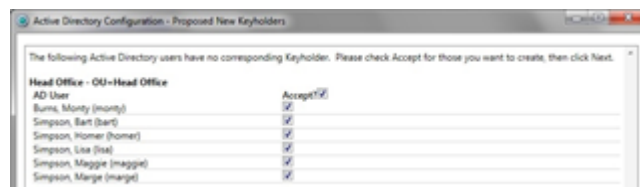
- They will appear in the Keyholders screen in PAC Software. This is a 'Select All' button. Select the OU from where you wish to import Users.



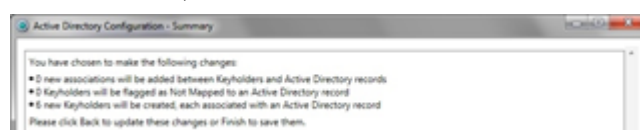
- Keyholders that were added to PAC Software prior to AD integration will appear in this list if they are also in AD. If the list is blank, select the Next button.



- Select the Users that you wish to import into PAC Software. Select the Next button.



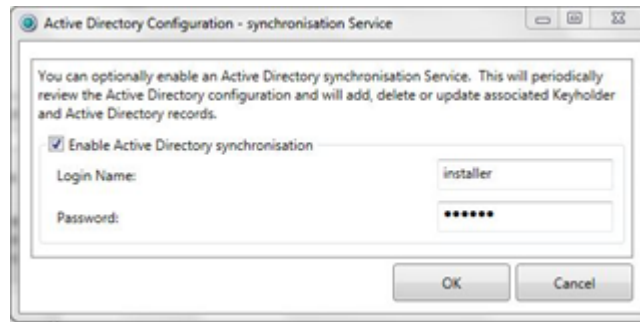
- If you are satisfied with the selection, select the Finish button.



- The number of imported Users for each OU is displayed.



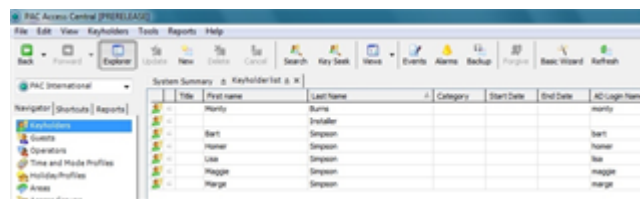
10. To enable a reliable workflow between AD and PAC Software, you should enable the automated periodic sync. Select the 'Enable Active Directory synchronisation' option. Use your PAC Software Login and Password (not your AD server login) then select OK.



11. Select the Synchronisation Now button to complete the configuration.
12. Following synchronisation you will see this confirmation message indicating the output from the synchronisation task.



13. Select the Keyholders screen in PAC Software to view the imported Users. AD Users are identified by their AD Login Name. This field is blank for Keyholders who have been manually entered into PAC Software.



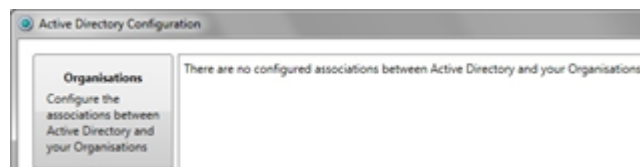
Multiple PAC Organisation Units

PAC Software includes an Organisation Units (Org Units) function. These are employed where the user requires one or more of the following functions.

- Varied Operator login privileges. With multiple Org units, Operator privileges may be configured such that an Operator can only administer the system for certain buildings, or certain parts of a building.
- >20,000 Keyholders in the system. The PAC 512 door controller can store up to 20,000 keys. Where a user has more than this number of keys, Org Units may be used to limit the number of keys downloaded to any individual controller to <20,000.

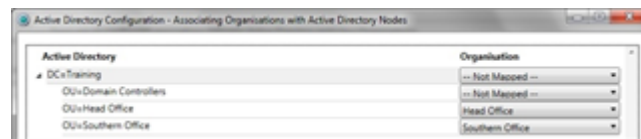
The following example depicts a user that has two buildings controlled by PAC Software; Head Office and Southern Office. Personnel working in these two locations have been configured in two separate OU's in AD.

1. Select the Active Directory Configuration option in the Tools menu to open the configuration tool. Select the Organisations option.

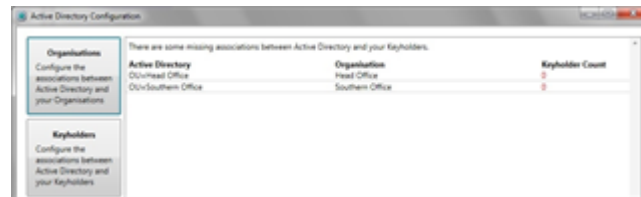


- Initially all items in the Organisation list will be set to Not Mapped.

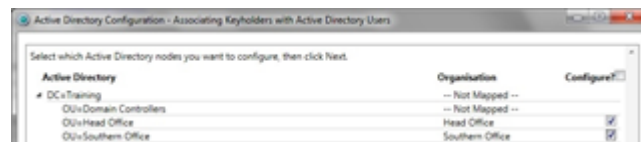
All AD OUs are displayed in the Active Directory list (below). The actual list will depend on the customer's specific AD structure. In most cases you will only need to map the OUs that contain the AD Users. In this example these are the Head Office OU and the Southern Office OU.



- Select 'OK' to close the pop-up.
- Select the Keyholders button to import the AD Users into PAC Software. They will appear in the Keyholders screen in PAC Software.



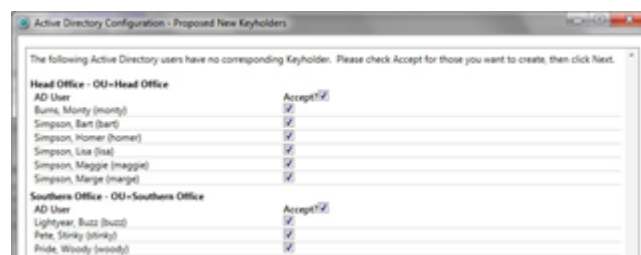
- This is a 'Select All' button. Select the OUs from where you wish to import Users.



- Keyholders that were added to PAC Software prior to AD integration will appear in this list if they are also in AD. If the list is blank, select the Next button.



- For each OU, select the Users that you wish to import into PAC Software. Select the Next button.



- If you are satisfied with the selection, select the Finish button.



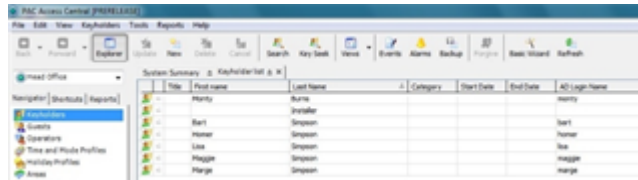
- The number of imported Users for each OU is displayed. To enable a reliable workflow between AD and PAC Software, you should enable the automated periodic sync.
- Select the Active Directory synchronisation option. Use your PAC Software Login and Password (not your AD server login). Select OK.
- Select the Synchronisation Now button to complete the configuration.

12. Following synchronisation you will see this confirmation message indicating the output from the synchronisation task.

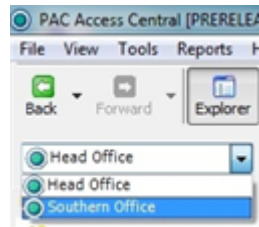


13. Select the Keyholders screen in PAC Software to view the imported Users.

AD Users are identified by their AD Login Name. This field is blank for Keyholders who have been manually entered into PAC Software.

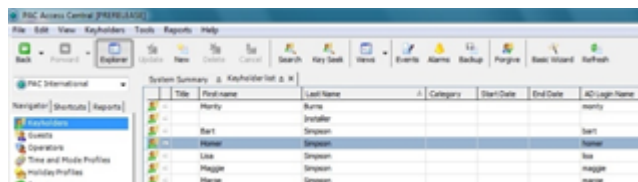


14. The Keyholders for each Org Unit may be viewed by selecting the Org in the drop-down list.



8.3 Keyholder Administration

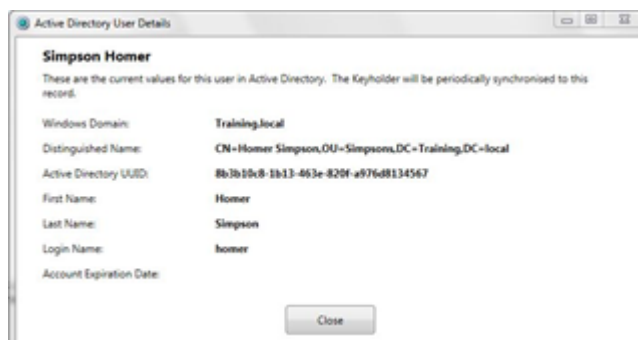
1. Keyholders that have been imported from AD are identified by their AD Login Name and the AD synchronisation message.



2. Selecting the AD synchronisation message...



... displays the AD User information.



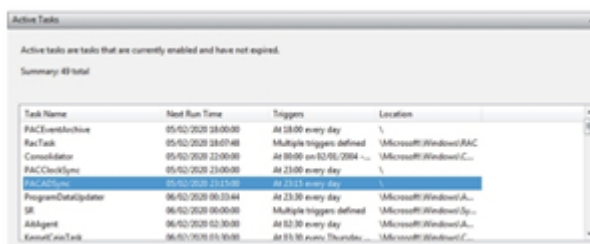
- ## 8.4 Operator Administration

Note: Once AD integration has been performed, it is not possible to create an Operator from any Keyholder other than those who are Users in AD. Any Operators that were added to PAC Software prior to AD integration will still be able to log in using their existing login credentials.

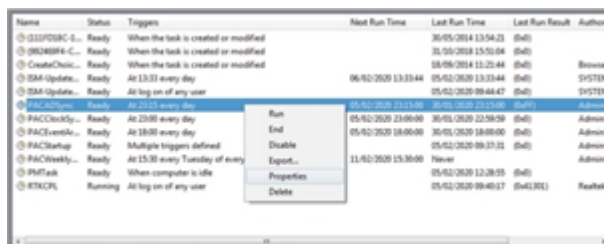
Changing the Scheduled Sync Time

It is possible to edit this Task to change either the daily sync time or increase the sync frequency to more than once per day.

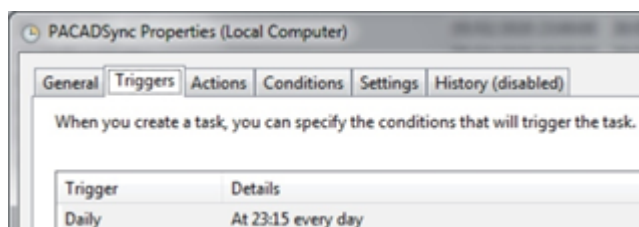
1. Go to Start / Control Panel / Administration Tools.
2. Open the Task Scheduler. Locate and open the PACADSYNC task.



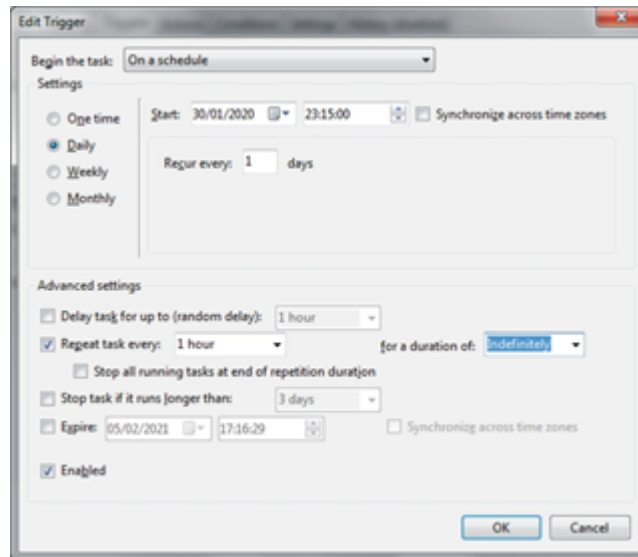
3. Highlight the task PACADSYNC in the top pane. Right click on the Task and select Properties.



4. In the Properties pane, select the 'Triggers' tab and click on the Edit button.



5. The sync time may be changed. It is also possible to increase the sync frequency by selecting Repeat Task every for a duration of indefinitely.



The screenshot shows the 'Edit Trigger' dialog box with the following settings:

- Begin the task:** On a schedule
- Settings:**
 - ☐ One time
 - ☒ Daily
 - ☐ Weekly
 - ☐ Monthly
- Start:** 30/01/2020 23:15:00
- ☐ Synchronize across time zones
- Repeat every:** 1 days
- Advanced settings:**
 - ☐ Delay task for up to (random delay): 1 hour
 - ☒ Repeat task every: 1 hour for a duration of: indefinitely
 - ☐ Stop all running tasks at end of repetition duration
 - ☐ Stop task if it runs longer than: 3 days
 - ☐ Expire: 05/02/2021 17:16:29
 - ☐ Synchronizg across time zones
 - ☒ Enabled

Buttons: OK, Cancel

9 Frequently Asked Questions

This section provides an overview of the system requirements for PAC Software and the SQL database, addressing some frequently asked questions. More detailed information can be found in the following chapters.

PAC Software Access Control Administration Software

Q: Are there any particular requirements for the PC / server?

A: Software installation requires full local administrator rights when logged onto the PC / Server.

There should be NO Group Policy Objects (GPOs) applied during software installation.

Q: How is the software deployed?

A: May be installed from the ISO or downloaded from <https://pacgdx.com/products/management/pac-access-central>

Q: What is the format of the installer?

A: A Setup.exe file is provided which launches a Microsoft Windows Installer.

Q: Will PAC Software run in a locked-down environment?

A: Yes, if first installed with local rights.

Q: Can the PAC Software software be hosted in a Virtual Machine (VM) environment?

A: Yes.

Q: Is PAC Software a 64-bit application?

A: No, but it can be installed onto a 64-bit operating system without issue. It will run as 32-bit process.

Q: Where are the installation files written to?

A: Installation copies files to the %ProgramFiles% folder on a 32-bit PC or the

- %ProgramFiles (x86)% folder on a 64-bit PC, and writes to the Windows Registry.

Q: What services or processes will run on the PC / Server?

A: Executables:

- PAC Software administration software (PACUI.exe)
- PAC Service Manager (PACServiceManager.exe)

Services:

- PAC Software Engine
- PAC Software Client Manager
- PAC Software Event Manager
- PAC Software Database Manager
- PAC Software Remote Client Configuration
- PAC Software Active Directory Integration

The PAC Software Application Interface Manager may also be required if PAC Software is to be integrated with a third-party application.

Q: What is the database format?

A: SQL Server. See [" " on the next page](#).

Q: Does PAC Software require e-mail configuration?

A: PAC Software can send e-mail messages in response to a system event. The SMTP server is configured within the application. It may be necessary to configure the SMTP server / firewall. See ["Configure E-mail in Access Central" on page 20](#).

Q: What network traffic does PAC Software generate?

A: The network requirements for PAC Software are shown in the table below.

Application	Location	Protocol /Direction	Source Port	Destination Port
PAC Client Manager.exe	PAC Software Server	TCP / Out	Dynamically assigned	8085 (configurable)
PAC Event Manager.exe	PAC Software Server	TCP / Out	Dynamically assigned	8086 (configurable)
PAC DBManager.exe	PAC Software Server	TCP / Out	Dynamically assigned	8087 (configurable)
Com+/DLLHost.exe	N/A	UDP / Out	N/A	8086 – 8096
Com+/DLLHost.exe (DCOM)	PAC Software Server	TCP / In-Out	DCOM assigned	5020 - 5040

Active Directory Port Requirements

SMB over IP (Microsoft-DS)	Port 445 TCP, UDP
Kerberos	Port 88 TCP, UDP
LDAP	Port 389 UDP

SQL Database for PAC Software

Q: What is the database format?

A: All data is stored in the SQL database on the server machine. This may be SQL Server Express 2017 SP2, which is included on the PAC Software installation media. See ["Databases" on page 7](#).

Q: Can PAC Software be installed on a separate machine from the SQL database server?

A: Yes. An install of Enterprise or Standard edition of SQL Server must be used. The setup is not covered in this document; request "Configuring Remote SQL Server with PAC Software" from PAC technical support.

Q: Does PAC Software require a specific SQL instance?

A: Yes. The PAC Software database can only be hosted on the EKA instance installed by default with SQL Express from the install media, or an install of a separate Express version or full version of SQL default instance is used.

Q: What Compatibility Mode is the database hosted in?

A: 100 (SQL Server 2008)

Q: What Default Language is the database hosted in?

A: English

Q: Can the database be hosted in a Virtual Machine environment?

A: Yes.

Q: Which collation does your SQL database use?

A: Latin1_General_CI_AS.

Q: Does the PAC Software / SQL connection employ Optimistic Locking and Connection Pooling to minimise connection times, and close connections between calls?

A: Yes. SQL / PAC Software is configured for Optimistic Locking and Connection Pooling, with minimum connection time.

Q: What is the size of the database at initial installation?

A: Approximately 9 MB.

Q: Does PAC Software have any effect on the tempdb database?

A: No.

Q: What additional SQL Server jobs does the PAC Software database create?

A: None. However, a scheduled task is created to perform a backup every Tuesday at 3:30 p.m. and a daily job runs at 6:00 p.m. to perform event archiving. See ["User Accounts and Start-up Tasks" on page 10](#).

Q: Does PAC Software database require any of the following: Analysis Services, Reporting Services, Full Text Catalogues, SSIS packages?

A: No.

Q: Does PAC Software database use Extended Stored Procedures?

A: Yes — xp_msver, xp_dirtree and xp_fixeddrives.

Q: Do PAC Software users require SQL sysadmin access or sa login?

A: No.

Q: Do PAC Software users require direct access to SQL Server?

A: No.

Q: Can the system operate with Windows Authentication only?

A: Yes, if the system is configured to use a standalone SQL Server in a domain environment.

Q: Does PAC Software require permissions to be granted / denied to the Public Database role?

A: No.



Frequently Asked Questions

Q: Does PAC Software need to be able to create temporary databases?

A: Yes.

Q: Do PAC Software users or external support persons require Fixed Server Roles?

A: No.

Q: Does PAC Software store any data outside of the SQL database?

A: Yes. Licence keys are stored in the file system, Custom Reports, Custom Report Query's, Database Backups and Database Archives.