



Symmetry Software Installation Manual

For Business, Professional and Enterprise Editions
9.12.0 v1

Symmetry™ Security Management

9600-0427

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Challenge House, International Drive,
Tewkesbury, Glos, GL20 8UQ, U.K.
Telephone: +44 (0) 1684 850977

Symmetry Software Installation Manual

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Preface

About this Manual

This manual explains how to install Symmetry Business, Professional and Enterprise editions. The manual is intended to be used by technical staff who need to install or support Symmetry.

Related Documents

The following documents provide additional information, which you may need when installing optional modules or utilities:

- *Symmetry Security Hardening Guide*
- *Cluster Installation Manual*
- *Data Connect Manual*
- *Directory Sync Manager Installation & User Guide*
- *Guard Patrol Manager Installation & User Guide*
- *Intercom Management Installation & User Guide*
- *Intrusion Management Installation & User Guide*
- *M2150/M4000 Intrusion Guide*
- *NIC Module Configuration Guide*
- *SymmetryWEB Installation Guide*
- *Threat Level Manager Installation & User Guide*
- *Video Integration SDK Installation & User Guide*
- *RDS/Citrix Client Access Installation & User Guide*
- *XML Open Integration Module Installation & User Guide*
- *Autonomous Locks Guide*
- *Suprema Biometric Reader Configuration & User Guide*
- *M4000 Commissioning Guide*

This manual should be read in conjunction with the product help, which is also available in printed form as the *Symmetry Reference Manual*.

Chapter 1: Introduction

Symmetry Editions

This manual covers the installation of the following editions of Symmetry:

- **Business Edition** - A true client/server system suitable for use on a customer network, but limited to a maximum configuration of three clients and 64 readers. Each panel can recognize up to 2000 cards. If required, all software can be installed on a single PC.

Business Edition uses databases managed by Microsoft SQL Server Express, which has been designed and optimized for use on smaller computer systems.

By default, the Symmetry client software is installed on the server.

Business Edition supports EN-1DBC, EN-1DBC+, EN-2DBC, M1100 and M1200 controllers.

- **Professional Edition** - Professional Edition builds on the capabilities of Business Edition to provide a maximum of nine clients and up to 512 readers, depending on the license purchased. Professional Edition uses SQL Server Express and supports the full range of controllers.
- **Enterprise Edition** - This provides all the features of the Professional Edition system, but utilizes the full Microsoft SQL Server relational database management system, which meets the needs of high performance and scalability. Enterprise Edition supports unrestricted expansion for large systems and the use of a separate SQL database server, which could be used by Symmetry and other third-party applications.

Enterprise Edition also supports "clustering" (see the *Cluster Installation Manual*), where two independent servers are seen as a single server by Symmetry. If one server in the cluster should fail, the other automatically steps in to continue normal operation.

Examples of System Architecture

The following sections provide typical examples of system architecture.

Example 1: Installation on a Single Computer

Typically, smaller companies use Symmetry Business or Professional Edition, with all Symmetry software installed on a single computer, as shown in Figure 1. An existing network can be used to communicate with Symmetry hardware, such as access-control or intrusion nodes.

Although Symmetry is installed using a single install kit and appears to users as a single application, there are actually several distinct components installed on the one computer:

- a) The Symmetry client software – this provides the user interface to Symmetry and is also responsible for managing communications to Symmetry hardware.
- b) The freely-available Microsoft SQL Server Express database engine – this manages the database. SQL Server 2017 Express can be installed during the installation of Symmetry. If required, other supported versions of SQL Server Express (see page 8) can be used if installed before Symmetry.

- c) The database – this contains the data you see in Symmetry, such as card holder records, configuration settings and alarm information.
- d) The Symmetry server software. This performs various management tasks, including management of the communications between the Symmetry clients and database.

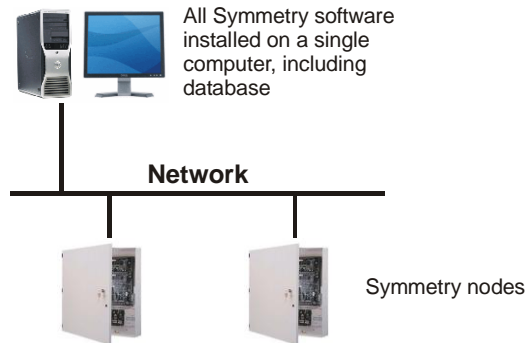


Figure 1: Installation on a Single Computer

- e) Optionally, the Symmetry Network Video Recorder (NVR) software and other software such as SymmetryWEB (as described in the *SymmetryWEB Installation Guide*).

The Symmetry services (which run in the background) use a pre-defined local or Active Directory account.

Example 2: Using a Separate Symmetry Server

The single-computer architecture described in the previous section can be easily expanded by, for example:

- Installing the Symmetry client software on additional computers. (The Symmetry client software is always available on the Symmetry server.)
- Installing the Symmetry NVR software on additional or separate computer(s).

An example is shown in Figure 2. An existing Symmetry server requires no modification if additional clients or NVRs are added at a later date.

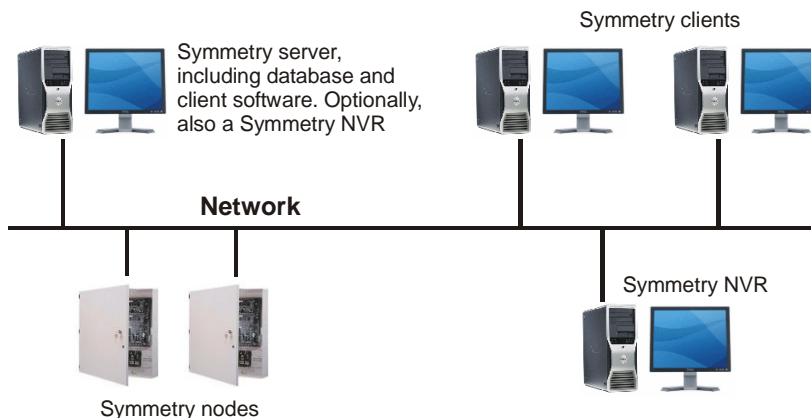


Figure 2: Client/Server Architecture

Such an architecture could be used with any edition of Symmetry, but is more often used with Professional or Enterprise Edition in medium-to-large-sized organizations. The architecture enables, for example:

- One client to be used by an administrator to set up card holders, manage access rights and produce reports.
- A second client to be used by a guard to monitor alarms.

- A third client to be used for visitor management.
- Other clients to be used for tasks such as video monitoring or managing communications with hardware devices.
- Separate machines to be used for Symmetry NVR(s) or other software such as SymmetryWEB, perhaps for performance benefits.

In larger organizations that use Symmetry Enterprise Edition, the server requires a Windows Server operating system and a full SQL Server database engine pre-installed. Otherwise, the installation of Symmetry on the server uses the same install kit as used when installing Symmetry on a single computer.

Symmetry is compatible with workgroup-based and domain-based networks. When operating in a domain, Symmetry fully supports the use of Active Directory to define the permissions necessary for Symmetry users and services.

Optionally, the Symmetry client service can be installed at selected client machines, which may provide performance benefits (see page 7).

Example 3: Using Separate Symmetry and Database Servers

Enterprise Edition provides the option of installing the Symmetry database on a separate database server, as shown in Figure 3 (in this example, rack-mounted PCs are used). The database server, which requires a full version of SQL Server, may also manage other third-party databases, depending on the requirements of the site. This architecture is commonly used in large organizations that prefer to use a dedicated computer to run databases, often for security reasons. Further details of possible benefits are described in the next section.

When a separate database server is used, a domain-based network must be used due to the security requirements needed for such architecture.

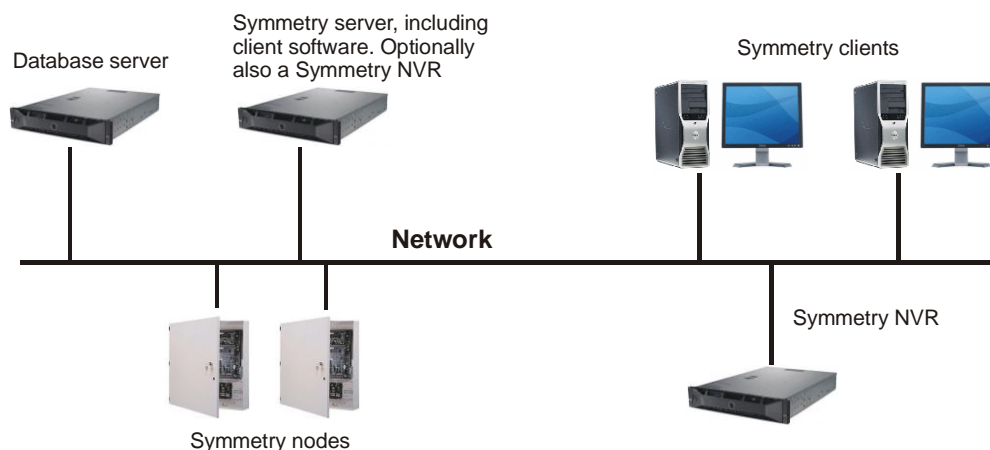


Figure 3: Enterprise Architecture Using a Separate Database Server

The permissions to run the Symmetry services and user accounts are defined in the Windows Active Directory. Since it is unlikely that the installer of Symmetry will have full domain administrator permissions or even local administrator privileges to the database server, some configuration will need to be carried out by appropriate system administrator(s) before Symmetry is installed. The *Symmetry Security Hardening Guide* describes all tasks that need to be carried out.

Advantages of using a Separate Database Server

In common with other database applications, using a separate database server for Symmetry (Figure 3) can provide many benefits and may be a necessity for certain organizations.

The key concept of a separate database server is that it enables an application (in this case Symmetry) and its database to use physically separate machines. For Symmetry, no additional executables or services need to be installed on the database server.

Using a separate database server may be desirable for a number of different reasons. For example:

- **Reduced cost and administration through a single SQL Server deployment**

The need to host multiple Microsoft SQL Server databases is commonplace within organizations due to the number of applications that use databases. Hosting multiple databases on a single machine running SQL Server rather than on multiple machines can reduce the purchase cost of the hardware and software, simplify deployment and ease maintenance.

The improved cost efficiency of using a single database server can enable hardware of significantly higher performance to be purchased for the benefit of all database applications.

The Symmetry database can be installed on a default or named SQL instance, which allows it to be used alongside other application databases. Symmetry can also share a single instance of SQL with other databases and use custom port numbers for added security configurations.

- **Simplified system administration**

Updates necessary to applications or their operating systems may require no software changes at the database server, which can simplify the process of administering the organization's IT systems.

- **Greater protection against harmful software**

IT departments consider it good practice to install applications and databases on different platforms to reduce the amount of software installed on the database machine. This strategy can reduce the possibility of information held in the databases being compromised by malware or other harmful software, or resources being consumed by misbehaving applications.

- **Improved security**

Using a separate database server provides better security, both from external (web-based) attacks and insider attacks/mistakes for several reasons:

- Personnel who are responsible for maintaining applications such as Symmetry are unlikely to need direct access to the database server. This allows the database server to be located in a separate room, with access provided only to authorized personnel.
- An internal or external attacker who manages to compromise part of the network may not be able to access the database server due to privileges, firewalls or other security measures.
- A separate database server can make it easier to install a database firewall between the applications and the databases. Such devices are capable of analyzing SQL traffic to the databases, blocking potential attacks, logging activity and providing intelligent tools to improve security.

- **Simplified backup procedures**

A database server may make it easier to back up multiple databases used by different applications. Instead of backing up each database separately at different machines, a database server may allow all databases on the server to be backed up using a single set of tools and procedures.

- **Simplified design of high-availability architectures**

Deploying multiple databases onto a single database server can make it easier to design high-availability solutions using, for example, Microsoft clustering. Should the database server stop

functioning, a failover process causes another server to assume control to provide continuous service for all relevant applications using the database server.

- **Improved tailoring of company resources**

A solution that gives the flexibility to deploy the Symmetry database, server and clients onto separate machines allows these components to be deployed onto machines and in environments tailored to their function.

Example 4: Virtualized Solutions

The Symmetry server, database, clients and network video recorders can be installed as virtual machines using VMware or Hyper-V virtualization technologies. Please refer to page 10 for minimum requirements and recommendations.

Symmetry Licensing

The same installation media is used for the installation of all editions of Symmetry, and the Symmetry client software. The license serial number you enter during installation determines which of the following is installed:

- Symmetry Business Edition server software, and Symmetry client software.
- Symmetry Professional Edition server software, and Symmetry client software.
- Symmetry Enterprise Edition server software, and Symmetry client software.
- Symmetry client software only.

The license number provided is customized to the requirements of the installation and therefore also determines system limits, such as the maximum number readers, cameras, companies and static clients.

Optional features, such as the Data Connect Module, Card Encoding Module and Intrusion Management can be enabled after installation by entering the appropriate license codes in the Symmetry "Maintenance/Licensing/System Licenses" screen. The same mechanism can also be used to extend system limits in the future, if required.

Certain software features such as the XML Open Integration Module and multiNODE API Server software (for M4000 nodes) require additional Symmetry software to be installed. Full information is provided in the relevant Symmetry documentation (in these cases, in the *XML Open Integration Module Installation and User Guide*, and in the *M4000 Commissioning Guide*).

Symmetry Client Licensing

There are two different methods available to license Symmetry for use at client machines: **static (traditional) client licensing** and **concurrent user licensing**. The licensing method used depends on the license serial number you enter when installing Symmetry at a client machine.

Symmetry static client (traditional) licensing

This method is available for clients connected over a network (e.g. LAN) to the Symmetry server. With this licensing method, you need a separate serial license number for each machine you want to use as a Symmetry client. For example, if you require five Symmetry clients (in addition to the client software on the server), you will need five client serial license numbers. You need to enter a different serial license number at each machine when installing the Symmetry client software.

The absolute maximum number of separate clients is three for Symmetry Business Edition, nine for Professional Edition, and Enterprise Edition is unlimited.

Each client license is allocated to a specific machine – this take place when you start Symmetry at the client and run the Symmetry Installation Wizard. The "Maintenance/Licensing/System Licenses"

screen shows which licenses have been used and the machine each license is allocated to. Any or all of these machines (and at the server) can be used to operate Symmetry.

With this licensing model, it is not possible to use the same serial license number at more than one machine and to operate Symmetry from any of those machines. However, a license can be changed to a different machine by using the **Release** button in the "Install/System/ Clients" screen, installing the Symmetry client software on a different machine and running the Symmetry Installation Wizard at that machine.

Note: The static licensing mechanism is not used when installing the Symmetry client software in a VMWare Horizon environment (as documented in the *Symmetry VMWare Horizon Integration Guide*) or on a web server in an RDS/Citrix environment (as documented in the *RDS/Citrix Client Access Installation and User Guide*).

Symmetry concurrent user licensing

The concurrent user licensing method is principally designed for occasional use of Symmetry, such as to run reports, add card holders and issue commands.

During the installation of the Symmetry client software, you can use the same "Symmetry Client Concurrent User License" serial number at each client machine. The license has a specified limit for the number of users who can operate Symmetry simultaneously. For example, if a 10-user concurrent license is used, up to 10 users can operate Symmetry simultaneously from any client where a Symmetry concurrent user license is being used¹.

A license is not fixed to a particular client machine, and therefore when a user closes Symmetry, it allows another user to open Symmetry at a machine where concurrent user licensing is in use.

The concurrent user licensing method allows the Symmetry client software to be installed on any number of machines, and any of those machines can be used to operate Symmetry, providing the maximum number of simultaneous users does not exceed a limit imposed by the license. If required, Symmetry could be installed on many more machines than the maximum number of users.

The maximum number of users allowed by the license applies irrespective of how or where the users access the Symmetry client software. For example, the same 10-user license number could be used to install Symmetry on multiple desktop PCs on the LAN and on a web server in an RDS/Citrix environment. If a 10-user license is used, Symmetry could be used simultaneously by five users on the desktop machines and five users connected through RDS/Citrix, or any other combination of up to ten users.

Each logged-in user consumes one concurrent license, even if they are logged in at the same machine as another user.

Symmetry adds the license number used during installation to the "Maintenance/Licensing/System Licenses" screen. If at a later time, you want to increase the maximum number of concurrent users, you can install an additional license in the Symmetry "Maintenance/Licensing/System Licenses" screen.

You can use the "Maintenance/Licensing/Concurrent Licenses" screen to see which users are currently using Symmetry (and therefore one of the available concurrent licenses), and to release a license.

The Symmetry concurrent user licensing method works in parallel with the static client licensing model described in the previous section. Therefore, it is, for example, possible to have five static client licenses and 10 concurrent user licenses, which would allow up to 15 users to operate Symmetry simultaneously.

One advantage of the Symmetry concurrent user licensing method is that if Windows is being installed on multiple client computers (or on multiple web servers in an RDS/Citrix environment) using the same image file, the Symmetry client software can be pre-installed on the image, as the Symmetry license is not tied to specific client machines or even to specific environments.

¹ A client where Symmetry concurrent user licensing is used is known as a "concurrent client".

Features unavailable when using concurrent user licensing

The following features are not available at concurrent clients:

- Fingerprint or signature capture (e.g. in the "Home/Identity/Card Holders" screen).
- Reading of smart cards (e.g. in the "Home/Identity/Card Holders" or "Maintenance/User & Preferences/Accounts" screen).
- Secure logon enrolment (in the "Maintenance/User & Preferences/Accounts" screen).
- Card encoding using a USB encoder.
- Alarm routing at the client level.

The Symmetry client service is not installed on the client machine, which means that the unavailable features described under "*Installing the Client Service*" below are also not available at concurrent clients.

Installing the Client Service

During installation of the Symmetry software on separate client machines, you can choose whether or not to install the Symmetry client service on those machines. By default, the service is not installed.

The client service is required if the client is used to:

- Host communications to nodes, intrusion systems or intercom systems.
- Display scheduled reports (predefined reports set up to run automatically at the client).
- Display muster reports.
- Monitor client communications (using the "Maintenance/Communication/Client" screen).

If the above features are not required, not installing the client service may provide performance benefits, and can improve security by reducing the possible attack surface.

The client service is always installed on the Symmetry server.

You can change this setting by re-running the client installation and selecting **Change** (see page 43).

The client service is not installed at Symmetry concurrent clients.

You are not able to prevent the client service from being installed if there are already features configured in Symmetry that depend on the client service (such as node communications hosted on the client).

Installation Sequence

Typically, the steps you need to take to install the software are as follows:

1. Check hardware and software requirements. Refer to the following sections.
2. Perform the pre-installation tasks. See: *Chapter 2: Pre-Installation Tasks*
3. Install and start Symmetry. See:
Chapter 3: Quick Install Instructions (Single-Machine Installation), or
Chapter 4: Installing Symmetry
4. Perform various post-installation tasks, such as to set power options. See: *Chapter 5: Post-Installation Tasks*.

Hardware and Software Recommended Requirements

This section specifies recommended hardware and software requirements for a new installation of Symmetry. **Note:**

- These recommendations are based on experience with many different installations. However, it is essential to fully plan and test the performance of the system before going "live". Please refer to Appendix F for important information to consider before installing Symmetry or deciding the hardware/architecture to use.
- If you are **upgrading Symmetry**, there is no need to upgrade your hardware if you are satisfied with the current performance and there are no changes to the number of card holders, clients or readers, or to the version of Windows or SQL Server used.
- Machine specifications may need to be enhanced, depending on site requirements.
- The Symmetry client software is also installed on the symmetry server (except on a cluster). However, to ensure resource availability for task-intensive operations, it is recommended that the Symmetry server is normally dedicated for Symmetry use, depending on the number of readers and transactions.
- Hardware specifications are for non-virtualized systems; see page 10 for virtualization.
- Disk compression must not be used.

Symmetry Business/Professional Server, Client (any Edition) or NVR

The following applies for any non-virtual machine that is being used as a Symmetry Business/Professional Edition server, Symmetry client (in any edition) or Symmetry NVR. **Note:** Also refer to *Maintaining Symmetry NVR or Video Performance* (page 12) if the computer is being used as a Symmetry NVR or to view video.

Item	Requirement
Operating System	64-bit Windows 10 or 11, Pro or Enterprise Edition. Note: Also supported are the Windows Server operating systems supported for Enterprise Edition (see the next section). If a Windows Server operating system is used, it is recommended to use the same machine hardware as for an Enterprise server.
Processor	Minimum Intel Core i5-12500 Processor @4.6GHz and 18M Cache (or equivalent).
Memory	Professional Edition server: 32GB RAM recommended. Business/Professional/Enterprise Edition client: minimum 8GB, or minimum 16GB for a client that is used to manage communication with more than one LAN chain. Symmetry NVR: minimum 8GB RAM.
Monitor Resolution	1280 x 1024 minimum. 1920 x 1080 maximum.
LAN Speed	1000Mbit/s.
Database software	Microsoft SQL Server 2016, 2017, 2019 or 2022 Express (with the latest released service pack). The database software needs to be installed on the Symmetry server only. Note: SQL Server 2022 Express can be installed during the installation of Symmetry. Alternatively, any supported version of SQL Server Express (see above) can be used if pre-installed.
Disk	At least 450GB of free disk space is recommended for the Symmetry server. This provides significant contingency for database growth and backup operation. When purchasing a new computer, specify a disk size of at least 500GB. The disk space consumed by a Symmetry client or NVR is typically less than 1GB. For mechanical hard-disk drives, a speed of 7200RPM or greater is recommended for optimal performance. Symmetry NVRs should have an additional disk drive or network storage for recorded video.
Optional Items	See page 13.

Symmetry Enterprise Server

Note: Also refer to *Maintaining Symmetry NVR or Video Performance* (page 12) if the computer is also being used as a Symmetry NVR or to view video.

Note: The specification listed here is for installations that have no more than 6000 readers. For larger installations, a customized hardware specification will be necessary to ensure optimal performance based on the individual installation requirements. In this case, contact the AMAG Application Engineering team to assist in configuring a suitable server specification.

Item	Recommended Requirement
Operating System	64-bit Windows Server 2016, 2019 or 2022 (Standard or Datacenter Edition).
Processor	Minimum Intel Xeon Silver 4214 (or equivalent).
Memory	Minimum 64GB RAM.
Monitor Resolution	1280 x 1024 minimum. 1920 x 1080 maximum.
LAN Speed	100Mbit/s.
Database software	<p>A "full" version of Microsoft SQL Server must be installed on the Symmetry server or on a separate database server before the Symmetry software is installed.</p> <p>SQL Server 2016, 2017, 2019 or 2022 (64-bit), Standard or Enterprise Edition (with the latest released service pack).</p> <p>Note: SQL Server must be purchased separately. Please check the Microsoft web site for compatibility with the chosen operating system.</p>
Disk	<p>At least 950GB of free disk space is recommended for the Symmetry server. This provides significant contingency for database growth and backup operation. When purchasing a new computer, specify a disk size of at least 1TB.</p> <p>For mechanical hard-disk drives, a speed of 10000RPM or greater is recommended for optimal performance.</p> <p>The size of the SQL database will vary depending on the number of transactions and the length of data retention. As an example, a dedicated 1TB drive is typically adequate to support a system with an average of 1000 transactions per minute and two years of data retention.</p> <p>Symmetry NVR should have additional disk drive or network storage for recorded video.</p>
Optional Items	See page 13.

Separate Database Server (Enterprise Edition only)

If a separate database server is used, Symmetry supports the same Microsoft SQL Server editions as supported for an Enterprise server.

The operating system used can be any Windows operating system supported by the edition of Microsoft SQL Server selected.

The machine hardware requirements are dependent on the number and type of database applications being served by the database server, but should not be less than specified for a Symmetry Enterprise server.

Virtualization Minimum Hardware Requirements

This section specifies minimum hardware specifications for virtualized systems. The operating systems, SQL versions, and optional hardware/software supported are the same as for a non-virtualized system.

Note: SQL Server Standard Edition has a 4-CPU / 24-core limit. Certain virtual machine configurations default to a greater number of CPU sockets than 4. Therefore, in the configuration of the virtual machine, it may be necessary to reduce the number of CPU sockets to 4 and to increase the number of cores.

Virtualization Technologies

Symmetry supports the following virtualization technologies:

- VMware ESXi 6.7 (type 1 hypervisor).
- Microsoft Hyper-V (type 1 or type 2 hypervisor).

A hypervisor is an application that creates and runs Virtual Machines (VMs) on a host machine. A Type 1 hypervisor runs directly on the host "bare metal" hardware. A Type 2 hypervisor is installed on an existing operating system.

Host Machine Minimum Requirements

A host machine is a server dedicated to storing and running VMs. The following are the minimum requirements of a host server that runs a maximum of one Symmetry server VM and one Symmetry client VM:

- CPU and RAM: The specification of CPU and RAM will vary depending on the number of virtual machines being used and the virtual hardware reservations they have. Seek guidance from the virtualization provider, and ensure they certify that the host hardware is fit for purpose.*
- At least two Gigabit network adapters (10 Gigabit recommended).
- Drive for operating system – can be local HD / RAID or in some cases an SD card (check with the hypervisor manufacturer).
- Datastore storage* – please check the virtualization provider's recommendations. A datastore is a dedicated storage area to host VM files and folders and can be configured on a local disk, or on a server/network-attached storage array. It is recommended that the datastore(s) are on a completely separate drive from the operating system.
- Ensure the following are supported by the CPU, and enabled in the BIOS:
 - Virtualization extensions (VT)
 - Hyperthreading
 - Data Execution Prevention (DEP)
 - Second Level Address Translation (SLAT)
 - Never Execute or Execute Disable (NX/XD)

***Note:** Running VMs incurs CPU and memory overheads on the host machine, which can significantly vary depending on the number of VMs, their usage and configuration. When deploying Symmetry in a virtualized environment, it is essential that the performance of the Symmetry system is fully proven before the system goes "live".

Host Configuration Recommendations

Both VMWare and Microsoft Virtualization solutions can (depending on licenses and configuration) include options for configuring one or more pools of resources at the host, and this can be used to reserve a dedicated amount of CPU and RAM for one or more VMs. It is recommended to use this

facility (if available) to configure a resource pool for Symmetry, since Symmetry can be a resource-intensive program (particularly if SQL is present on the same host and for larger systems). Configuring the system in this way will help to protect the Symmetry server and leave resources available for the host to run adequately.

The VMWare application used to install and manage VMs is the "vSphere Client". Microsoft uses the Hyper-V Manager Windows application. Networking in both vSphere client and Hyper-V uses a "virtual switch". Make sure that this is configured with sufficient ports to support the number of VMs and physical network interface cards being used on the host machine.

The state of a Virtual Machine can be temporarily saved. In the VMWare vSphere Client, this is called a "snapshot". In the Microsoft Hyper-V Manager, it is called a "checkpoint". The use of snapshots or checkpoints can have a negative performance impact on VMs, so it is strongly recommended to remove them when they are not required.

Symmetry Server (Professional or Enterprise) VM Minimum Configuration

- One virtual CPU with 4 cores.
- The minimum RAM and disk requirements are the same as for a hardware (non-virtualized) Symmetry server. Please refer to page 8 or 9 as applicable.
- Minimum of 100GB data storage for Symmetry and Microsoft SQL Server (if SQL is local to Symmetry), or 50GB if the Symmetry server is using a remote SQL instance. Additional storage requirements must be assessed on an individual basis, taking into account the frequency of transactions and number card holders in the Symmetry system.

Note: It is recommended that the number of configured virtual CPU cores for a Symmetry server VM is consistent with projected usage. Having a large number of unutilized cores can adversely affect the performance of a VM.

Symmetry Client VM Minimum Configuration

- One virtual CPU with 2 cores.
- The minimum RAM and disk requirements are the same as for a hardware (non-virtualized) Symmetry client. Please refer to page 8.

For Symmetry clients that will be used for video monitoring and playback, enable "3D Video Acceleration" (where available) and allocate a minimum of 32MB of video memory.

Symmetry Network Video Recorder (NVR) VM Minimum Configuration

- One virtual CPU with 2 cores.
- The minimum RAM and disk requirements are the same as for a hardware (non-virtualized) Symmetry NVR. Please refer to page 8.

If multiple virtualized NVRs are required, it is recommended that a separate host machine is dedicated for their use due to the potential high bandwidth requirement of multiple cameras streaming to the NVRs. Including NVRs on the same host machine as the Symmetry database, server or clients may have a significant impact on system performance.

Note: Also refer to the next section (*Maintaining Symmetry NVR or Video Performance*).

Maintaining Symmetry NVR or Video Performance

The specified NVR machine specifications are the minimum requirements for a Symmetry NVR. However, the Symmetry Enterprise Server specification is highly recommended, since this allows for easy future expansion and provides greater performance and hardware resilience for installations that have extensive video requirements.

Symmetry NVR Operation

To maintain performance at a computer that uses the minimum specifications:

- a) The combined simultaneous recording bit rate of an NVR should not exceed 85Mbits/s, and the combined simultaneous playback bit rate should not exceed 97Mbits/s (182Mbits/s total).

For example, 10 cameras, each being recorded simultaneously at 8.5Mbits/s, and at the same time, 10 recordings, each being played back simultaneously at 9.7Mbits/s.

- b) A more powerful hardware platform may be required if the NVR is installed on the Symmetry server or on a client, depending on system usage.

Each NVR supports a maximum of 80 cameras (with a maximum combined simultaneous recording bit rate of 85Mbits/s as described above).

Each NVR supports a maximum of 28 concurrent playback streams. Since each Symmetry client can display up to 4 video recordings in the Video Playback screen, each NVR can serve up to 7 Symmetry clients concurrently.

Live Video Display or Playback

To maintain performance at a computer that uses the minimum specifications:

- a) The total maximum bit rate for combined live and playback streams at each Symmetry client should not exceed 40Mbits/s.
- b) A more powerful hardware platform may be required if live or recorded video is to be displayed at a Symmetry server or NVR, depending on system usage.

Network Requirements for NVR Operation

Networks that suffer from high levels of latency, packet loss or other conditions can result in video loss or corruption. It is therefore important to use only high-quality network components and to test performance thoroughly before the system goes "live".

The NVR and all cameras should be time-synchronized to the same network time server to ensure accurate recording times and clip search results. All cameras assigned to an NVR should be in the same time zone as the NVR. In cases where the installation requires more than one time zone, a separate NVR should be used for each time zone.

Ports need to be opened in firewalls to enable the NVR to record video. Ports may also need to be opened for cameras to stream video or send events. For further information, please refer to Appendix D or the camera manufacturer's documentation.

Local disk drives or UNC paths can be used for video repositories. It is recommended that UNC rather than mapped drives are used. The data transfer rate of each disk drive must be able to manage the potential amount of data being simultaneously written and read. (Typically, a 7200 RPM HDD has an average data transfer rate of 100 Mbytes per second, which should comfortably manage all but extreme situations).

Disk Type

Solid-state drives are recommended, particularly when continuous recording of video is required. Select drive models that have proven performance and reliability.

For a Symmetry clustered solution, hard drive storage in RAID 5 (or 6) configuration is recommended.

Optional Hardware/Software

This section specifies optional hardware and software supported by Symmetry.

Note: Before installing Symmetry, please ensure that any required third-party drivers (or applications) are compatible with the version of Windows you intend to use. This is particularly important for 64-bit operating systems, which require drivers written specifically for those operating systems.

Further guidance for third-party integrations supported by Symmetry can be obtained from your local technical support representative.

Email Integration

If emails are to be used for alarm reporting, workflow events, visitor arrivals or reports, a connection to an SMTP mail server is required. Fully test operation before completing system deployment.

COM Ports

A card providing two additional ports (COM3 and COM4) may be required, depending on the number and type of chains and other peripherals connected to the client. If such a card is used, COM3 and COM4 must use unique interrupts and must be high-speed asynchronous ports that use the 16550AN UART.

Printer

Any Windows-compatible printer can be used, including network printers.

Card Encoders

Symmetry supports:

- The legacy HID OMNIKEY 5321/5421 encoders¹, and the HID OMNIKEY 5121¹ version that is fitted to Fargo Printers until recently.
These encoders provide support for both MIFARE Plus and all Classic MIFARE cards, using 7-bit UID or MIFARE DESFire EV1/2/3, including with 3KDES or AES 128 encryption.
- The HID OMNIKEY 5422 encoder¹, including the HID OMNIKEY 5122¹ version that is now fitted to Fargo Printers.
These encoders provide support for Classic MIFARE cards using 7-bit UID or MIFARE DESFire EV1/2/3, including with 3KDES or AES 128 encryption.
- The HID OMNIKEY 5127¹ CK CL fitted to a HDP6600 printer. This encoder is capable of providing support for Classic MIFARE cards using 7-bit UID or MIFARE DESFire EV1/2/3, including with 3KDES or AES 128 encryption.
- The Suprema™ BioLite N2 and FaceStation F2 biometric encoders/readers, as documented in the *Suprema Biometric Reader Configuration and User Guide*. These biometric readers support a range of formats, including Symmetry 32-bit, 63-bit and 64-bit formats using MIFARE or MIFARE DESFire.

¹Ethernet-connected OMNIKEY devices are not currently supported.

Signature Pad

Topaz Signature GEM pad model T-S261-HSB-R (USB connection signature pad).

Note: You need to set up an ini file for a Topaz USB signature pad. Please refer to the online help for the "Install/System/Client Ports" screen.

Badge Printers

Appendix C provides advice on how to configure badge printers for use with Symmetry.

Acuant Driver License Scanner

Driver license scanning has been verified using the Acuant i-Dentify™ ID-150 card scanner, and version 5.2.71.0 of the AssureID software. An AssureID sentinel license is required from Acuant.

See page 38 for installation and other information.

Automatic Updates

Please be aware that in general, automatic updates to the Windows operating system or other software result in no loss in performance or operation of Symmetry. However, to ensure complete compatibility, please ensure that either only those versions of the software documented in this chapter are used, or contact your local technical support representative to confirm whether newer versions have already been approved for use.

Make sure that Windows updates are complete before installing Symmetry, and that the machine has been restarted after the last update. Windows updates must not be installing in the background while Symmetry is installing.

Chapter 2: Pre-Installation Tasks (for Business or Professional Edition)

This chapter describes the tasks that must be carried out before installing Symmetry Business or Professional Edition. If you are installing Symmetry Enterprise Edition, please refer to the *Symmetry Security Hardening Guide* for details of the pre-installation tasks.

Step 1 – Obtain Static IP Addresses

You need to obtain static IP addresses for:

- The Symmetry server, if IP (network) cameras or Symmetry NVRs are used. If the static IP address of the Symmetry server is changed after installation, the address must be updated in the **HTTP** option of the "Maintenance/User & Preferences/System Preferences" screen (Digital Video tab).
- Any Symmetry machine that communicates with a LAN chain, where the connection type for any node on the chain node is configured as "Periodic" or "Continuous - connection established by Controller".

Note: Computer names should not use the underscore character, as some applications may not operate correctly if any part of the name contains an underscore character.

Step 2 – Obtain Permissions to Install Symmetry

To install Symmetry, you will require local administrator permissions to the Symmetry server and to any separate Symmetry client PCs.

Ensure that database administrator permissions are available to your account. This can be achieved by using SQL Server Management Studio and granting your account sysadmin privileges.

If a domain is used and the Active Directory account you are given does not have domain administrator permissions, you will need to ask the domain administrator to carry out steps 3, 4 and 5 for you.

Step 3 – Create ACS Groups (domain only)

If Symmetry is being installed on a domain, "ACSUsers", "ACSServices" and "ACSReporting" groups need to be created in the Active Directory prior to installing Symmetry. Different group names may be used, if preferred.

If you are installing in a workgroup, the groups can be created automatically.

Please refer to page 73 for details of the required group privileges.

Step 4 – Choose the Symmetry Services Account

During the installation of Symmetry on the server and on each client, you are prompted for the name of an account in which to run the Symmetry services on that machine.

If you are installing in a workgroup, you can create the account now or when you are installing Symmetry. If you are installing in a domain, a domain administrator should create an account in the Active Directory before you start to install Symmetry.

The account used at Symmetry clients must be the same as used at the Symmetry server. The password and account must be set not to expire. It is recommended that the Deny Log On Locally privilege is set to prevent this user from being able to log on locally to machines.

Permissions for a Named Services Account

If you are installing in a workgroup, the services account is automatically assigned to the ACSServices group.

If you are installing in a domain, a domain administrator must assign the services account to ACSServices before installation.

Step 5 – Assign Users to ACSUsers

Important – Add the user who is going to install the Symmetry software at any separate client machines to the ACSUsers group. This enables the installation software to communicate with the support service at the server during installation.

Also add to the ACSUsers group any Windows user who intends to use the Symmetry software. The ACSUsers group provides the security privileges needed for users to operate the Symmetry software at client machines.

If you are using a domain, a domain administrator will need to do carry out this work.

Step 6 – Install SQL Server

Symmetry Business and Professional Editions must use only the Express version of SQL Server. SQL Server Express is installed by default during the installation of Symmetry (see page 8 for version details). If you want to use an earlier supported version of SQL Server Express, make sure that it is installed on the Symmetry server before installing Symmetry.

If you are installing SQL Server Express as part of the Symmetry installation, a default instance of SQL Server Express is installed. If you want to pre-install SQL Server Express, a default or named instance can be used. If the machine has one or more named instances, you are prompted to choose the instance to use during Symmetry installation.

Note: Make sure any unsupported version of SQL Server Express is removed or upgraded before you start to install Symmetry.

Note: If SQL Server Express is pre-installed, it is recommended that SQL Server Express is configured to use **windows authentication** (before Symmetry is installed).

Note: SQL Server Management Tools are not automatically installed during the installation of Symmetry. You can install the tools by starting **SSMS-Setup-ENU.exe** located in the Setup\Packages\SSMS folder on the Symmetry installation media.

Step 7 – Configure SQL Server

Note: You do not need to follow this step if you are installing SQL Server Express as part of the Symmetry installation.

Step 7a – Enable the TCP/IP Protocol

Enable the TCP/IP protocol for the SQL Server instance using SQL Server Configuration Manager (unless the site has other requirements).

Step 7b – Configure the Firewall for SQL Server

Symmetry uses standard SQL Server firewall configuration settings. There are several ways to configure the firewall, depending on site security requirements and whether a named or default instance of SQL Server is being used. If a default instance is being used, it is normal to open TCP port 1433 in the firewall. If a named instance is used, one approach is to add both of the following to the firewall exceptions:

- sqlservr.exe (e.g. in Program Files\Microsoft SQL Server\MSSQL11.<InstanceName>\MSSQL\Binn)
Note: Each instance of SQL server has a separate sqlservr.exe.
- UDP port 1434 (for SQL Browser)

For detailed information about firewall configuration, please refer to the Microsoft web site. At the time of writing this manual, appropriate information was available in the web page titled "Configure the Windows Firewall to Allow SQL Server Access", available at:

<http://technet.microsoft.com/en-us/library/cc646023.aspx>

Step 7c – Configure the SQL Server Browser Service

If you are using a named instance of SQL Server with dynamic port assignment (the default), you need to make sure that the SQL Server Browser service is configured to start automatically. You can do this using the SQL Server Configuration Manager. In all other cases, leave the service disabled.

Step 8 – Check Windows Time Service Configuration

The Windows Time Service is installed by Windows. Its purpose is to allow synchronization of date and time of computers running on a Windows network. It is a fully-compliant implementation of the Simple Network Time Protocol (SNTP).

It is recommended that an SNTP server is used to synchronize the time at all Symmetry servers and clients. Care should be taken to ensure that the frequency of the time changes will not disrupt system performance.

The Windows Time Service (W32time) starts automatically on computers that are joined as part of a domain. For computers belonging to a peer-to-peer workgroup, the Windows Time Service synchronization settings must be manually set up in the computer's registry.

If you do not have sufficient privileges to check Time Service configuration, please refer to an appropriate system administrator.

Step 9 – Check Printer Configuration

If Symmetry scheduled, onsite beyond limit, or muster reports are to be used at the site, any printer used for these reports must be available to the account you have created for the Symmetry services, and for any user who needs to set up such reports.

If more than one printer is used, each must be installed in the same order in both accounts.

Step 10 – Obtain Symmetry Licenses

Make sure that you have a license serial number for each product you are going to install. You need a serial number for the Symmetry server, the clients and each optional feature (such as additional readers or the intrusion management module).

Note that you cannot use a cluster-aware license to install a non-clustered Symmetry server.

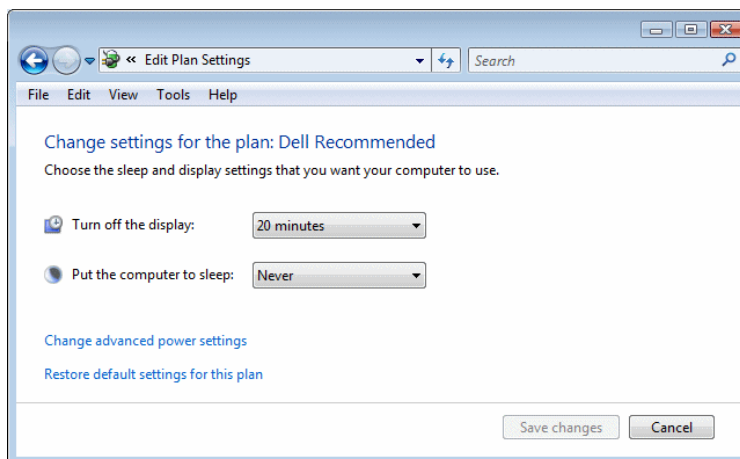
Step 11 – Disable Database Optimization Software (if used)

It is recommended that database optimization applications either exclude the Symmetry database or be completely disabled.

Database optimization software may change the structure of the Symmetry database. If carried out on a live system, this can cause Symmetry to fail and require a restart of the server and all clients. In addition, when the database optimization is taking place, it acquires write access to the database and the associated tables, which may prevent Symmetry from writing to the database.

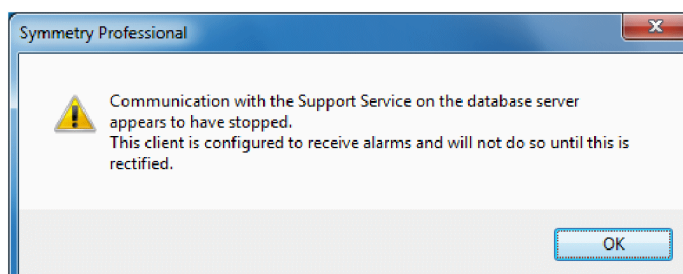
Step 12 – Set Power Options

On the Symmetry server, switch off sleep or hibernate mode in the **Power Options** of the Windows Control Panel. For example:



*Select **Never** for **Put the computer to sleep**. Also click **Change the advanced power settings** and choose for the hard disk never to switch off.*

Note: Failure to set the power options may result in the following error message:



(Note: "database server" means the Symmetry server.)

Step 13 – Configure Firewalls

Ports will need to be opened in firewalls to enable Symmetry to communicate, depending on the software used and system configuration. Appendix D provides further information.

Step 14 – Decide which Clients require the Client Service

Decide which Symmetry client computers will need the client service to be installed (see page 7), or choose to leave the service not installed on every client and install the service at a later date when this information is known (which will require the installation software to be re-run).

Step 15 – Create a Folder for Alarm Messaging

During the installation of the Symmetry server software, you must specify the folder in which to store alarm-messaging information. The default folder is "ProgramData\Security Management System". The folder must not be located in the Symmetry installation folder (e.g. "Program Files (x86)\Security Management System").

When the prompt is displayed (page 25), a **Change** button allows you to choose the folder or create a new one. If you create the folder through the **Change** button, the required permissions are set up automatically. If the folder is created before installing Symmetry, the ACSServices security group must have full privileges to it.

The drive where the folder is located must have good read/write performance and requires sufficient capacity (depending on the number of expected alarms and events generated within the Symmetry system). For further guidance, please contact your local AMAG support representative.

For clustered systems, please refer to the *Cluster Installation Manual* for the folder requirements.

Chapter 3: Quick Install Instructions (Single-Machine Installation)

Introduction

If you are going to install Symmetry on a single machine using SQL Server Express, installation is extremely straightforward and normally requires selection of the default settings. This chapter explains the normal installation process, which covers most cases.

Chapter 4 provides full details of the installation prompts.

Installation

To install the Symmetry software on a single machine

1. Log in with Administrator privileges at the Symmetry server.
2. Insert the Symmetry installation media and wait for the installation wizard to start. If it does not start, double-click Setup.exe, which is located in the top-level folder of the media.
3. Select the **SQL Express** and **Symmetry** checkboxes.
4. The installation software may need to install certain Windows components and may prompt you to restart the computer. If you are prompted to restart the machine, do so, and re-run the installation process by double-clicking Setup.exe again.
5. Follow the prompts, selecting the defaults in all cases where provided.

Starting Symmetry

1. Start Symmetry from the Start/Programs/Symmetry menu or from the desktop icon:



2. When prompted, log into Symmetry. The default username and password for the installer are "installer" and "install" respectively.

Chapter 4: Installing Symmetry

Introduction

This chapter gives full details of how to install the Symmetry server and client software. Quick Install Instructions are given in Chapter 3.

Note: Before you start, follow the pre-install instructions given in Chapter 2 (for Business or Professional Edition), or in the Symmetry Security Hardening Guide (for Enterprise Edition).

Overview of Installing Symmetry

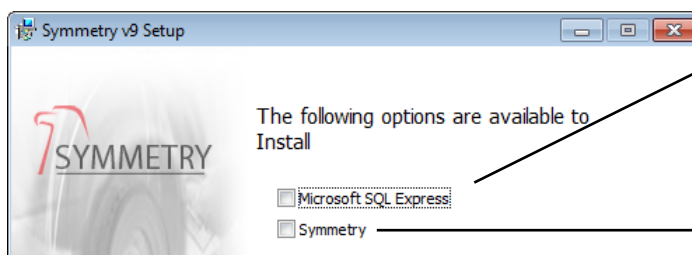
1. Install the main Symmetry server and client software on the server (see the next section).
2. If required, install the relevant Language Pack on the Symmetry server (page 27).
3. If required, install the Symmetry client software on any additional client PCs (page 28). The client software is installed by default on the Symmetry server (except on a cluster).

Note: Make sure that Windows updates are complete before installing Symmetry, and that the machine has been restarted after the last update. Windows updates must not be installing in the background while Symmetry is installing.

Installing the Symmetry Server Software

To install Symmetry on the server:

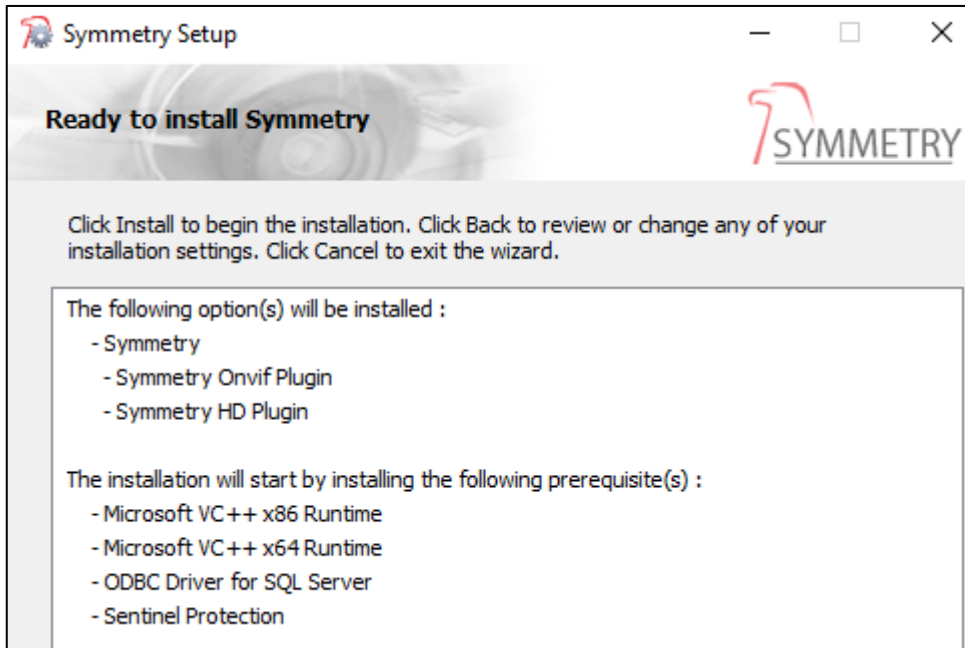
1. Log in with administrator privileges at the Symmetry server.
2. Insert the Symmetry installation media and wait for the installation wizard to start. If it does not start, double-click Setup.exe, which is located in the top-level folder of the media.
3. Click **Next** at the Welcome screen.
4. Choose the items to install:



Select **Microsoft SQL Express** only if you are installing **Business or Professional Edition** and **SQL Server Express** is not already installed.

Select **Symmetry**.

5. **Ready to install** – Check whether the screen lists prerequisites to install, then click **Install** to begin installation:



6. If there are prerequisites to install, you may be prompted to restart the machine. If so, restart the machine and double-click Setup.exe again.
7. If applicable, wait for the installation of Microsoft SQL Server Express to complete.
8. Click **Next** at the Welcome screen.
9. **End-User License Agreement** – Read the Terms of Service. Select **I accept...** and click **Next** if you agree.
10. **Licensing Information** – Enter the serial number of the new version of Symmetry given to you:

(The serial number may be entered automatically if a Symmetry database is already on this computer.)

11. **Client Access Point** (Microsoft Cluster only): The following is displayed if you are installing on the active node of a Microsoft cluster:

Enter the network name configured in the Message Queuing resource. Please refer to the *Cluster Installation Manual* for further details.

12. Specify a SQL Server – Select the SQL server:

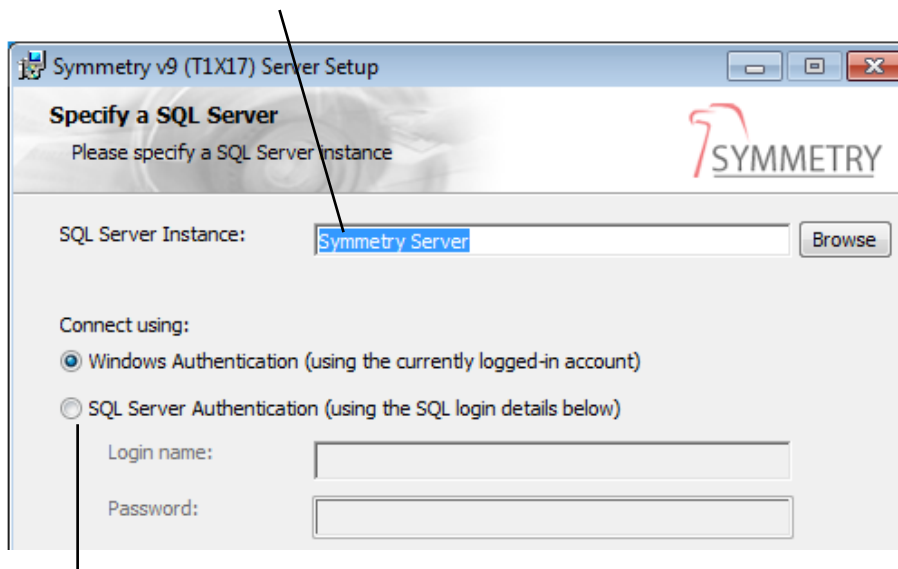
Enter the name of the SQL Server instance you want to use, or click **Browse** to select it.

Note:

- For Enterprise Edition, you can choose the Symmetry server, or an instance on a separate database server.
- If login fails, make sure that TCP/IP is enabled (see page 17).
- If you are using a fixed port for a named database instance, it is necessary to include the port number in the format:

<SQLServerName>\<InstanceName>,<PortNumber>

For example, MySQLServer\SymmInstance,6532



Connect using specifies the authentication method used to connect to the database server while Symmetry is being installed. It is recommended to use **Windows Authentication**. Note:

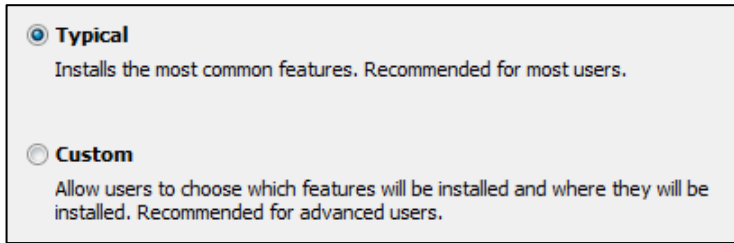
- The authentication method is used only during the installation of Symmetry to set up the database; Symmetry always uses Windows authentication after installation.
- To use **SQL Server Authentication**, the SQL server instance must have "mixed mode" authentication enabled (not recommended), and you will need the login ID and password for the administrator account defined within the SQL Server instance.

13. **Symmetry Backup Path** (Enterprise only) – The following is displayed if you are using a separate database server. Select the share to the SQL backup folder (set up as described in the *Symmetry Security Hardening Guide*). The folder is used as a temporary store of backups before they are sent to the network location specified in the "Operation/Data/Backup" screen.

Specify an optional path for the Symmetry server backups, generated from SQL Server 'BT-SEVERANCESQL\BT_SEVERANCESQL'. The Symmetry Server Support Service Account will require Read permission to this folder. If a path is not specified the default SQL backup folder will be used.

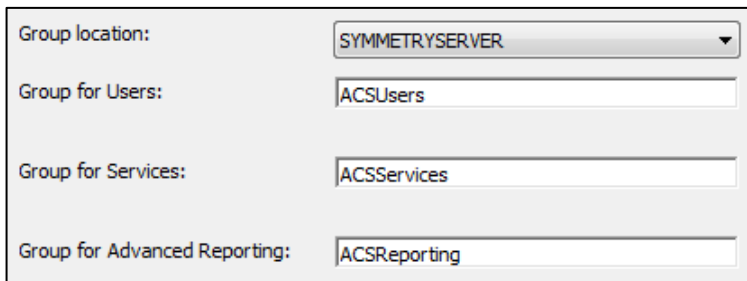
Optional Backup Folder Location:

14. **Installation Type** – Choose **Typical** or **Custom**:



If you choose **Custom**, you will have complete control over system configuration. Choosing **Typical** will cause defaults to be used for some settings. You should choose **Custom** if you intend to use data import/export using a text file.

15. **Symmetry Account Groups** – Choose the Windows groups to use for Symmetry:

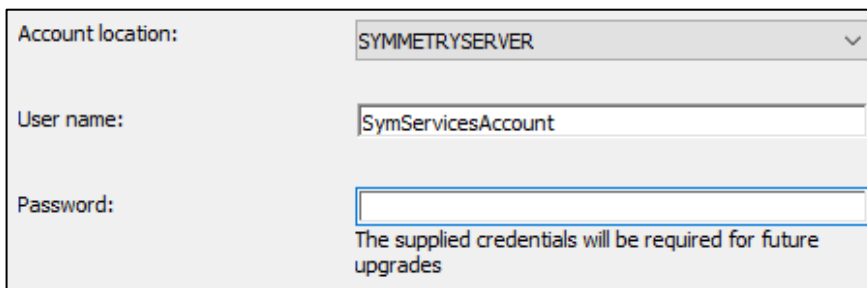


Configuration of the above is dependent on whether you are using a workgroup or Active Directory domain:

- **Workgroup** – Make sure that **Group location** is set to the name of the Symmetry server. You can use the default group names displayed, or type new group names into the fields. The groups will be created locally for you.
- **Active Directory domain** – Select the domain from the **Group location** menu, and then enter the group names (as previously created during the pre-installation tasks). Make sure that the spelling is exactly correct.

An alternative if you do not want to use domain-level groups is to set **Group location** to the name of the Symmetry server. In this case, the specified group names will be created for you. You will need to run the Symmetry services in a named account (as described next).

16. **Symmetry Services Account** – Specify the account in which to run the Symmetry services:



Specify the Windows account in which to run the Symmetry services.

If the Symmetry groups have been created at the domain level, specify the domain account previously created during the pre-installation tasks (page 16). You should have already assigned it to the ACSServices group during the pre-installation tasks.

If the Symmetry groups have been created on the Symmetry server, specify a local account. If the account does not already exist, you are prompted to confirm creation of the account (providing the

username and password meet Windows policy; "Invalid account details have been specified" is displayed if, for example, the password does not meet policy). The account will be automatically assigned to the ACSServices group.

17. **Installation Folder** (Custom only) – Select the folder in which to install Symmetry on the server:

18. **Symmetry Messaging Storage Folder** – Select a folder in which to store alarm-messaging information (see page 19):

19. **Customer Code** (Custom only) – If you have been supplied with a facility/customer code to be encoded on your company's cards, enter it now. If you have not been supplied with a customer code, use the default of 999999.

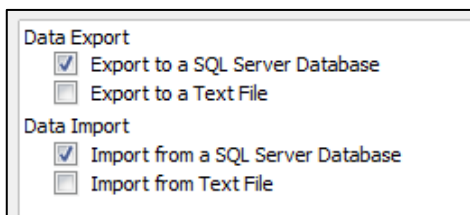
20. **Optional Features** (Custom only) – Select optional features:

Remove access to Windows Desktop – This option is relevant only to Symmetry client installations (page 30).

Add Default Card Block – This option is relevant only if the access cards to be used do not have an encoded customer code. In these cases, the "Setup/Identity/Card Blocks" screen must be used to define the ranges of cards being used. Selecting this option causes the "Setup/Identity/Card Blocks" screen to include default card block definitions (although you may want to review these during system configuration).

Create Common Hour Definitions – If this is selected, the "Operation/Times/Hours" screen will include default Hours definitions. These can help access rights to be set up more quickly during system configuration.

21. **Data Connect** (Custom only) – You can choose to use an SQL Server database or text files for exports or imports of card data from/to Symmetry:

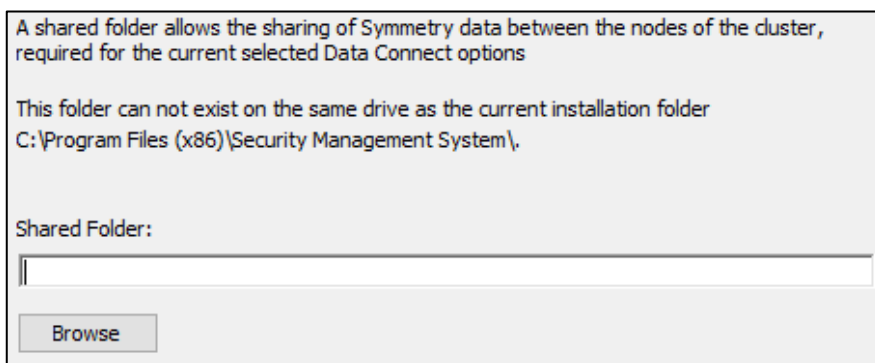


Note: If you are using Business or Professional Edition, you will need to install a Data Connect license to use Data Export/Import.

Card data can be imported into Symmetry using the "Operation/Data/Data Import" screen.

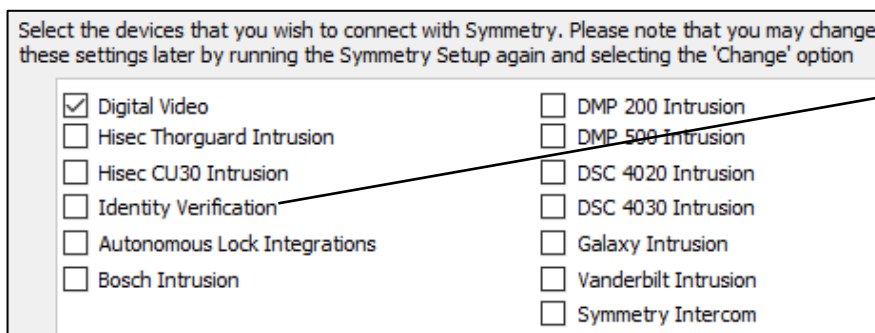
Card data can be exported using the "Operation/Data/Data Export" screen. You may want to do this to transfer of card details from one system to another (Symmetry must be the same version on both systems).

22. **Shared Folder** (Custom and Microsoft Cluster only) – The following is displayed only if you are installing on the active node of a cluster (see the *Cluster Installation Manual*) and have selected **Export to a Text File** or **Import from Text File**:



The specified folder is used as the root to store import and export files. For Microsoft clustering, the folder must be on the shared storage device, not on the quorum.

23. **Symmetry Device Integrations** – Specify the devices that you wish to use with Symmetry:



*Note: Make sure you select **Identity Verification** if the "Home/Identity/Verification" screen is going to be used.*

If a device is not selected, you can enable it later by re-running the Symmetry installer and selecting the **Change** option.

24. **Registration Information** – Enter your details:

Reseller Name:	<input type="text"/>
First Name:	<input type="text"/>
Last Name:	<input type="text"/>
Email:	<input type="text"/>
Site/Project:	<input type="text"/>
Address:	<input type="text"/>
City:	<input type="text"/>
Country:	United Kingdom ▼

25. **Ready to Install** – Click **Install** and follow the prompts.

26. Symmetry may need to install certain Windows components and may prompt you to restart the computer. If so, restart the computer, then re-run the installation process.

27. When prompted, register the software:

Serial Number:	H463-ZQ3N-76314-6BZW-15H4
Registration Key:	H4-1497-21B9-97B3-EBZ8-21
You must register Symmetry.	
<input type="radio"/> Online Registration If this machine has access to the internet: <input type="button" value="Register Online"/>	
<input type="radio"/> Offline Registration Obtain an activation code at: https://register.g4stechnology.com The user name and password are shown on your Software License Certificate. For telephone assistance with the licensing process or for cases where no internet access is available call one of the following numbers: <ul style="list-style-type: none"> ▪ Continental America call 1-800-889-9138 between 6am and 5pm Pacific Standard Time [Mon-Fri]. ▪ Rest of World call +44-1684-277257 between 9am and 4pm Greenwich Mean Time [Mon-Fri]. Enter your Activation Code here: <input type="text"/> - <input type="text"/> - <input type="text"/> - <input type="text"/>	
<input type="button" value="Register Now"/>	
<input type="radio"/> Register Later You must enter an Activation Code to register <input type="button" value="Register Later"/>	

You need to obtain an activation code to activate Symmetry. You can obtain the activation code in one of the following ways:

- Automatically over the internet by clicking **Register Online**. Note: A license can be activated online up to three times before needing to be reset by Customer Support.
- By clicking the link. You will be prompted to log in and register your details. The login username and password are provided on the Software License Certificate. You will need the Serial Number and Registration Key displayed near the top of the dialog.
- By phone using one of the numbers displayed.

If you click **Register Later**, you have up to 21 days to enter the activation code in the "Maintenance/Licensing/System Licenses" screen.

When you have the activation code, write it down in the space provided on the Software License Certificate.

Installing a Language Pack

If you require Symmetry to use a language other than English (e.g. for the option names displayed in menus, text in screens, help, etc.), you must install the appropriate Language Pack on the server following installation of the server. It is allowable to install the Language Pack after the system has been in use.

Please contact your AMAG support representative for a list of available language packs. Installation instructions are provided with each language pack.

You can install more than one Language Pack, and choose which one to use as the default in the "Maintenance/User & Preferences/System Preferences" screen of the Symmetry software.

Although there is a default language, the "Maintenance/User & Preferences/Accounts" screen allows each user to use any one of the installed languages.

Install Language Packs only on the server - clients are updated automatically.

Installing Symmetry Client Software

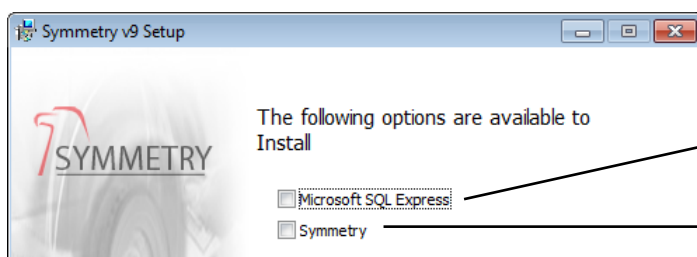
Follow this section if you want to install only the Symmetry client software. Note the following:

- Your Windows account needs to be a member of the ACSUsers group.
- The Symmetry server must have been installed already.
- The client software is installed by default on the server, except on cluster installations.

Note: Before you start, follow the pre-install instructions given in Chapter 2 (for Business or Professional Edition), or in the Symmetry Security Hardening Guide (for Enterprise Edition).

To install the Symmetry client software:

1. Log in with administrator privileges at the Symmetry client.
2. Insert the Symmetry installation media and wait for the installation wizard to start. If it does not start, double-click Setup.exe, which is located in the top-level folder of the media.
3. Click **Next** at the Welcome screen.
4. The install options are displayed:



Do not choose to install SQL Server Express for a client installation.

*Select **Symmetry**.*

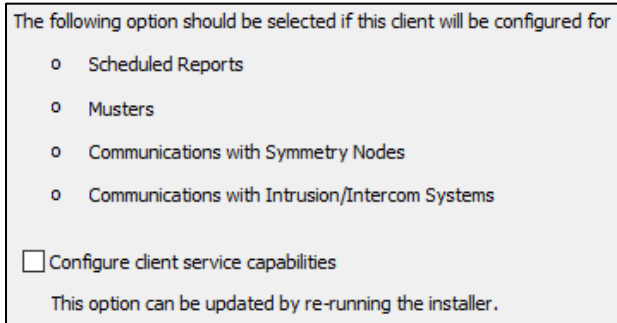
5. **Ready to install** – Click **Install**.
6. The installation software may need to install certain Windows components and may prompt you to restart the computer. If you are prompted to restart the machine, do so, and re-run the installation process by double-clicking Setup.exe again
7. Click **Next** at the Welcome screen.
8. **End-User License Agreement** – Read the Terms of Service. Select **I accept...** and click **Next** if you agree.
9. **Licensing Information** – Enter the serial number of the new version of Symmetry given to you:

*Enter the name of the SQL Server instance (the SQL server machine name if the default instance is used). Alternatively, if the SQL Server Browser service is started on the SQL server machine, you can click **Browse** and choose the instance.*

10. **Specify a SQL Server** – Enter the SQL Server details:

This specifies the authentication method used by the client to connect to the database server. Use the same method as selected at the Symmetry server.

11. **Client Configuration** (not displayed when installing in a VMWare Horizon environment) – If you want to install the Symmetry client service at this computer, select **Configure client service capabilities**:



The following option should be selected if this client will be configured for

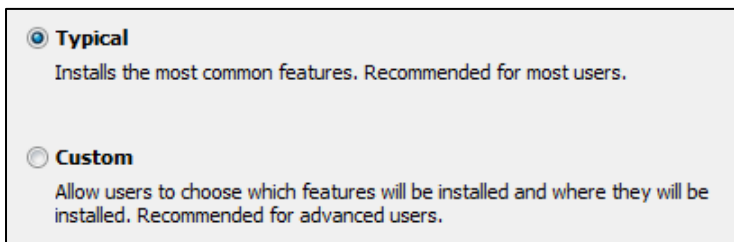
- Scheduled Reports
- Musters
- Communications with Symmetry Nodes
- Communications with Intrusion/Intercom Systems

Configure client service capabilities

This option can be updated by re-running the installer.

If you require further information, please refer to page 7.

12. **Installation Type** – Choose **Typical** or **Custom**:

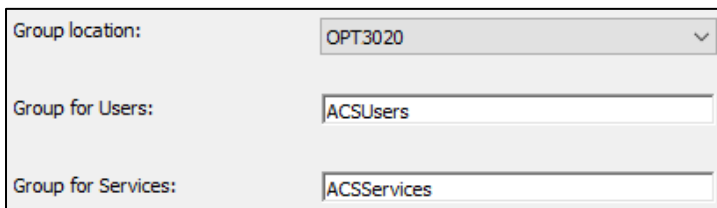


Typical
Installs the most common features. Recommended for most users.

Custom
Allow users to choose which features will be installed and where they will be installed. Recommended for advanced users.

If you choose **Custom**, you will have complete control over system configuration. Choosing **Typical** will cause defaults to be used for some settings.

13. **Symmetry Account Groups** – Choose the Windows groups to use for Symmetry:



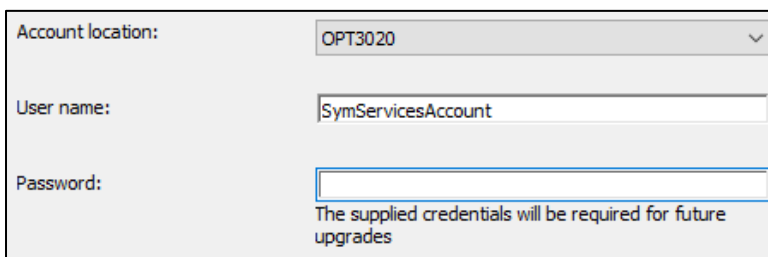
Group location: OPT3020

Group for Users: ACSUsers

Group for Services: ACSServices

If you are using a workgroup, **Group location** must be the name of the client you are currently using. **It is essential that you use the same group names that you used at the Symmetry server.**

14. **Symmetry Service Account** – Specify the account in which to run the Symmetry services:



Account location: OPT3020

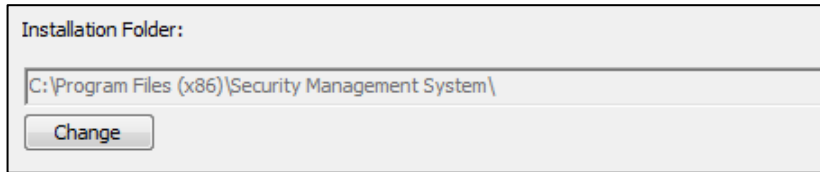
User name: SymServicesAccount

Password:

The supplied credentials will be required for future upgrades

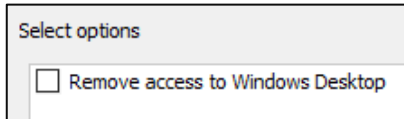
Use the same settings as used at the Symmetry server (page 24), except that if you are using a workgroup, **Account location** must be the name of the client you are currently using. **It is essential that you use the same account that you used at the Symmetry server.**

15. **Installation Folder** (Custom only) – Select the folder in which to install Symmetry on the client:



Installation Folder:
C:\Program Files (x86)\Security Management System\
Change

16. **Optional Features** (Custom only) – If required, select the following option:



Select options
 Remove access to Windows Desktop

Remove access to Windows Desktop – If this is selected, no Windows desktop will appear and the Symmetry software will start automatically when any user logs in to Windows.

Note: To prevent a user from accessing the Windows desktop, also deselect **Enable Logon Cancel Button** in the "Maintenance/User & Preferences/Client Preferences" screen.

Note: If this setting is selected, administrators can access the Windows desktop for maintenance purposes by starting Windows in safe mode. If required, the setting can then be changed by re-running the Symmetry installer (see page 43).

17. **Ready to Install** – Click **Install** and follow the prompts.

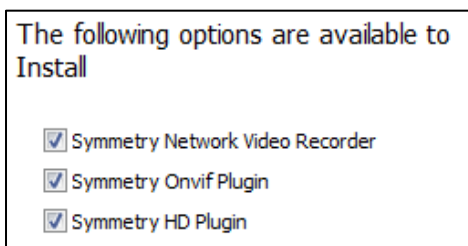
Installing a Symmetry NVR

This section explains how to install the Symmetry NVR software.

Note: Each Symmetry installation allows a single Symmetry NVR to be defined without a separate license number having to be added to the "Maintenance/Licensing/System Licenses" screen. You will need to add a license if you want to use more than one Symmetry NVR.

To install the NVR software:

1. Ensure that you are logged into the machine with administrator privileges.
2. Open the "Symmetry NVR" folder on the installation media, and double-click "Setup.exe".
3. The installation software may need to install certain Windows components and may prompt you to restart the computer. If you are prompted to restart the machine, do so, and re-run the installation process by double-clicking Setup.exe again.
4. Click **Next** in the Welcome screen. The installation options are displayed:



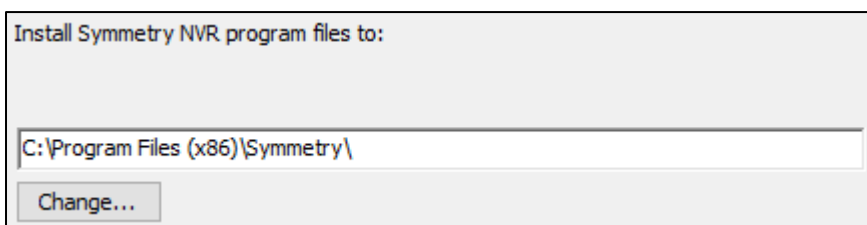
5. Choose **Symmetry Network Video Recorder**. You may also want to select:

Symmetry Onvif Plugin – Select this if you are using cameras that use the Open Network Interface Forum (ONVIF) interface.

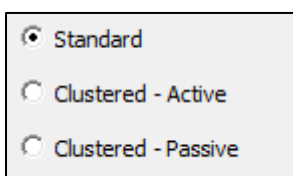
Symmetry HD Plugin – Select this if you are using Symmetry HD cameras.

The above plugins are installed by default on the Symmetry server and on Symmetry clients.

6. **Welcome** – Click **Next** at the Welcome screen.
7. **End-User License Agreement** – Read the Terms of Service. Select **I accept...** and click **Next** if you agree.
8. **Destination Folder** – Choose the folder in which to install the Symmetry NVR program files:



9. **Installation Type** – Keep the default selection of **Standard** if you are not installing in a cluster. Otherwise, choose one of the **Clustered** options, as appropriate.



Please refer to the Cluster Installation Manual for further details of installing Symmetry in a cluster.

10. **Configuration Folder Location** – When installing on a non-clustered machine, or on the active node of a cluster, choose the folder in which to store video index files:

Install Symmetry NVR configuration folders and files to:

C:\ProgramData\Symmetry\NVR

Browse...

Note: This folder will need to be backed up regularly (see page 37).

When installing on the passive node of a cluster, specify the IP address or DNS name of the active node, enter the credentials of a user configured in the NVR web interface, then click **Query active node**:

Use the Symmetry NVR configuration folders and files in:

C:\ProgramData\Symmetry\NVR

Retrieve the installation path from the current Active server

Active node address: Port:

Credentials

User Name:

Password:

Please provide the credentials of a user with permission to log onto the NVR web page

Query active node...

*Port must be the same as the **Web Interface Port**, as specified when the NVR software was installed at the active node (see below).*

*Clicking **Query active node** tests the connection to the active node. If successful, a valid file location is displayed at the top of the dialog, and **Next** is ungrayed.*

11. **Repository Options** – Choose a "repository" (a location in which to store video recordings), and the amount of disk space to allocate for that repository:

Install Symmetry NVR Repository to:

C:\ProgramData\Symmetry\NVR\video

Browse... Maximum quota for C:\ is 553GB

Set initial Quota (GB)

***Maximum quota** shows the amount of free disk space.*

You can set up additional repositories using the NVR web interface after installation.

Note: This folder will also need to be backed up regularly. Please refer to page 37 for further details.

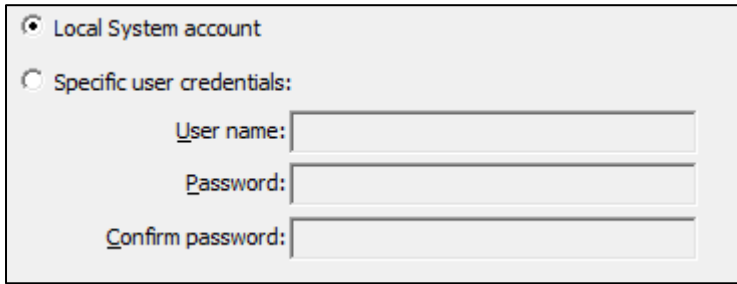
It is recommended that UNC paths rather than mapped drives are used.

12. **Web Interface Port** – Specify the http port on the NVR that you want the Symmetry server to use to communicate with the NVR:

Port:

If you change the default, you will need to make sure you enter the same number in the "Install/Video & Audio/Digital Video-NVR" screen in the Symmetry software.

13. **Service Credentials** – Specify an account in which to run the Symmetry services on the NVR:



Local System account

Specific user credentials:

 User name:

 Password:

 Confirm password:

Specify a named account if a repository is to be on a device elsewhere on the network. In this case, the repository will need to set up a share. The share will require permissions that allow the account specified here to create files and folders in that share.

A domain account can be used, if appropriate.

14. Click **Install** and follow the prompts.

Starting Symmetry

To start Symmetry:

1. Log into Windows. Use the account that you specified during the client software installation.
2. Start Symmetry using the Start/Programs/Symmetry menu or the desktop icon:



4. Log in using one of the user names described next.
5. If prompted, enter the activation code or choose to activate your license via the internet. If you click **Register Later**, you have up to 21 days to enter the activation code in the "Maintenance/Licensing/System Licenses" screen. Please refer to page 27 for details of how to obtain the activation code.

Default Login User Names and Passwords

The following default login names and passwords are provided. You should ensure that they are changed as soon as possible. Passwords are case-sensitive.

Name	Password	Permissions Group (Role)
Guard	guard	Security Guard
Administrator	administrator	Card Admin
Manager	manager	System Manager
Installer	install	Installer

Command-Line Logons

It is possible to start and automatically log on to Symmetry by specifying the username and password in the Windows command line. This feature can be useful to allow casual users of Symmetry to log on easily (e.g. for visitor enrollment).

To start and log in from a Windows shortcut, select **Command Line Logon** in the "Maintenance/User & Preferences/System Preferences" screen and use the following command format in the **Target** field of the shortcut properties:

```
"<Path to Symmetry.exe>" /u"<UserName>" /p"<Password>"
```

For example:

```
"C:\Program Files (x86)\Security Management System\Symmetry.exe" /u"alanc" /p"myspword"
```

Network-Locking Command-Line Switch

You can use the following command-line switch when running Symmetry.exe:

/N Clears the network locking table whenever the software is started. This may be necessary if users are prevented from using a screen because the system incorrectly believes that the screen is in use by another user. This may happen if, for example, the system has been shut down prematurely (e.g. by a power cut).

For example: "C:\Program Files (x86)\Security Management System\Symmetry.exe" /N

You can run Symmetry with this switch by entering the full string as shown above in the Run dialog. Note the space before /N and the use of double-quotes.

Chapter 5: Post-Installation Tasks

This chapter describes tasks that you may need to carry out after installing Symmetry, depending on the hardware installed and the customer's requirements.

Installing Optional Features

Many optional features are available for Symmetry, such as additional readers and cameras, and modules including intrusion management, guard patrols and card data import/export.

In general, no additional software needs to be installed to enable these features. Instead, obtain a serial number for the feature and enter it into the "Maintenance/Licensing/System Licenses" screen. You will need to enter an activation code, which you can obtain by phone or online from the address in the "Maintenance/Licensing/System Licenses" screen.

Updates and Security

For Windows Update configuration, follow your IT department's policy, but it is recommended that any critical security hot fixes are applied promptly.

You are recommended to subscribe to the AMAG Special Service Agreement (SSA) to ensure that the system is kept up to date with the latest Symmetry security updates and other features.

Avoid using Symmetry on any PC that allows insecure (user) web browsing.

Please refer to the *Symmetry Security Hardening Guide* for further information.

Configuring Antivirus Software

The use of antivirus software can significantly affect the performance of Symmetry. Follow the requirements and guidance below.

Note: Full anti-virus scanning of disks should take place only during quiet periods of the day. Real-time scanning should remain permanently enabled.

Note: Before Symmetry goes live, the administrator must confirm that the performance of the Symmetry system is not compromised by the selected antivirus solution.

Program Data\Security Management System

It is required that Program Data\Security Management System and its sub-folders are excluded from antivirus scanning.

Program Files (x86)\Security Management System

The Program Files (x86)\Security Management System folder and its sub-folders must be excluded from antivirus scanning if a version of Symmetry prior to v9.0 is used

It is also recommended to exclude Program Files (x86)\Security Management System and its subfolders from antivirus scanning on any client used to view live video. Certain antivirus types can prevent live video from being viewed if this folder is not excluded.

Symmetry Messaging Storage Folder

The folder used to store alarm-messaging information (see page 25) must be excluded from antivirus scanning.

SQL database Files

Real-time scanning of SQL database files as they are opened should be excluded from antivirus scanning.

For detailed guidance about anti-virus scanning on SQL Server database servers, please refer to:

<https://support.microsoft.com/en-gb/help/309422/how-to-choose-antivirus-software-to-run-on-computers-that-are-running>

Message Queues

Real-time scanning of message queues (Windows\System32\MSMQ) on the Symmetry server and clients should be excluded from antivirus scanning.

Displaying the Symmetry Service Monitor

The Symmetry Service Monitor is available on the Symmetry server and on all Symmetry client PCs. The Service Monitor allows you to view the current status of the Symmetry services, and start or stop services if there is a requirement to do so.

You can make the Service Monitor available by setting up a desktop shortcut to **ServiceMonitor.exe** located in the Symmetry installation folder (by default, Program Files (x86)\Security Management System).

After double-clicking the shortcut, you will see one of the following icons in the System Tray:

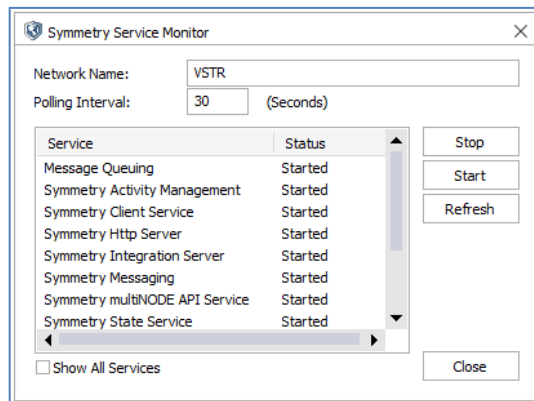


A grey icon indicates that all services are running.



A red icon indicates that at least one service is not running.

Right-click the icon and select **Open SMS Service Monitor** to display the Service Monitor:



Installing Encoder Files

When encoding certain card types from within Symmetry, a supplied .ENX and/or .SMX file must be installed in the Symmetry data folder (default is "Program Data\Security Management System") on the Symmetry server. The files limit encoding to specified customer codes (for standard Symmetry systems) or specified system codes (for HSE systems).

When encoding certain smart cards, an SMX file is required on standard (non-HSE) systems. An ENX file is needed on HSE systems. An ENX file is also needed when encoding legacy magstripe cards using all SmartMax and HSE 6/7/8 formats.

Once you have installed the files, restart the Symmetry server (or the Symmetry services). This process copies the files into the database. When a Symmetry client connects, the files are downloaded to the client's data folder (default is "Program Data\Security Management System").

Note: .ENC files used in previous versions of Symmetry are not compatible with the current version of the software.

Configuring and Testing Backups

During system commissioning, you need to specify the backup interval, test the backup process and check the ability of third-party applications to save and restore backup files.

End users can use the "Operation/Data/Backup" screen to produce a backup of the Symmetry database (Multimax and MultimaxTxn), either on demand or at scheduled intervals. The backup takes the form of a series of SQL "bak" files that include all configuration settings, card details, card transactions, alarms, events, tasks and user activity stored in the Symmetry database. The backup also takes a copy of multimax.ini in the ProgramData\Security Management System folder on the Symmetry server.

In the unlikely event of a disk failure or other major problem, a Symmetry backup enables the Symmetry databases to be restored, as described in Appendix E. Backups are also used when upgrading Symmetry.

Symmetry backups can be automatically transferred to an external device using any appropriate third-party backup software.

The *Symmetry Security Hardening Guide* also provides details of how to configure backups when a separate database server is used.

Note: If you are using a Symmetry NVR (page 47), you must back up the NVR configuration folder separately and, if required, the video repositories. There is a separate configuration folder for each NVR, the location of which was specified during the installation of the NVR software. By default, the folder is located in "ProgramData\Symmetry\NVR", but you can find out the path by opening the properties of one of the "Symmetry NVR" services – the path to the configuration folder is shown as a parameter in the command line.

Configuring and Testing Archives

During system commissioning, you need to specify the archive interval and purge period, and test the archive process.

An archive is a copy of the historical transaction data from the Symmetry database; that is, card transactions, alarms, events, tasks and user activity. An archive is stored in an SQL "bak" file stored in a specified location. End users can produce an archive using the "Operation/Data/Archive" screen.

Producing archives may be necessary for historical reporting purposes, since log data that is older than a specified number of days is deleted automatically, as specified by the **Purge Daily Logs After** option in the "Maintenance/User & Preferences/System Preferences" screen. When producing a report, such as in the "Reports/History/Activity" screen, the user can choose an archive as the reporting source.

Normally, the interval between archives should be slightly less than the **Purge Daily Logs After** value. For example, if **Purge Daily Logs After** is set to 90 days, archives should be taken every 89 days.

Depending on the customer's requirements, archiving may not be required at all; data older than a specified amount may not be of any interest. It is also important to know that if an archive is used to produce a report, the whole archive is re-inserted into the transaction database.

Archives can be saved to an external device using any appropriate third-party software.

Note: On systems managed by Microsoft SQL Server Express, databases are restricted to a maximum size of 10GB. If the transaction database grows to within 80% of this maximum (i.e. 8GB), the "Transaction Log Running at Capacity" alarm/event message is generated and the oldest data is deleted automatically to keep the database size less than 8GB. If this alarm/event message is generated, **Purge Daily Logs After** should be set to a lower value and archives generated more frequently.

Setting up Node Card Auditing

The Node Card Auditing feature allows Symmetry to check that the number of cards in nodes matches the number expected from the information in the Symmetry database. If there is a mismatch, a "Node Requires Card Synchronization" alarm is generated.

To enable this feature, edit the Windows Registry, as follows:

1. Go to Computer\HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Group4\Multimax\Multimax.
2. Right-click each of the registry entries shown in the following table, and:
 - a) Select **Modify**.
 - b) Choose **Decimal**.
 - c) Set to the required value.

Registry Entry	Meaning
MinNodeCardAuditReportInterval	Specifies how often it is run (in minutes).
NodeCardAuditActive	Set to 1 to enable auditing, or 0 to disable.
NodeCardAuditStartHour	Specify the hour to start auditing (24-hour clock).
NodeCardAuditEndHour	Specify the hour to end auditing (24-hour clock).
NodeCardAuditInterval	Specify the frequency of the retries if a node is disconnected (in minutes).

Driver License Scanner Integration

Symmetry integrates with the Acuant i-Dentify card scanner, which enables information on driver licenses to be scanned and automatically imported into the Symmetry "Home/Identity/Card Holders" and "Home/Identity/Visitors" screens.

Information imported can include the person's first, middle and last names, the active and inactive dates, and personal data. The mapping between the scanned data and Symmetry fields must be specified using the Symmetry "Setup/Identity/Personal Data/Scanner Mapping" screen.

The Acuant i-Dentify scanner must be connected to a USB port on the Symmetry machine where the import is to take place. See page 14 for scanner version requirements.

Step 1 – Install the Acuant i-Dentify Driver

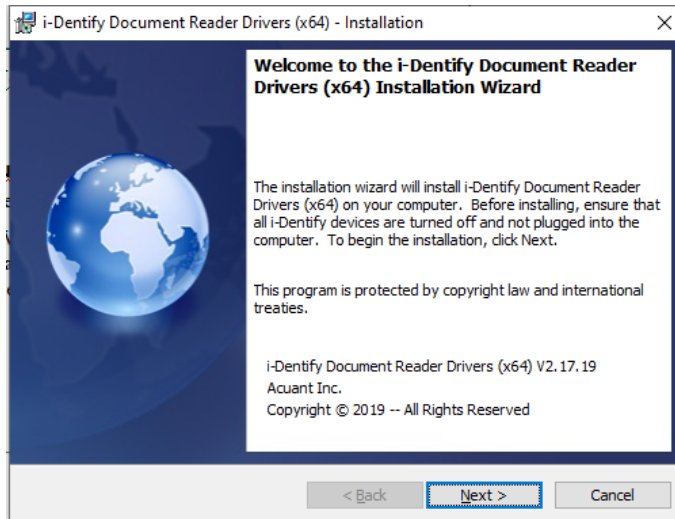
Note: Acuant recommends that you install the i-Dentify driver before installing the AssureID software.

Installation of the Acuant i-Dentify driver and AssureID sentinel can take place before or after the installation of Symmetry.

On the Symmetry client machine where driver license scanning and imports are to take place:

1. In the Windows Search box (normally located near the bottom-left corner of the screen), search for **Command Prompt**, then right-click on the icon and select **Run as administrator**. Elevated privileges are needed to run the msi installation software.
2. In the Command Prompt window, navigate to "Setup\Packages\AssureID" on the Symmetry installation media.
3. Enter: **i-Dentify_Drivers_x64.msi**

The Welcome window is displayed:



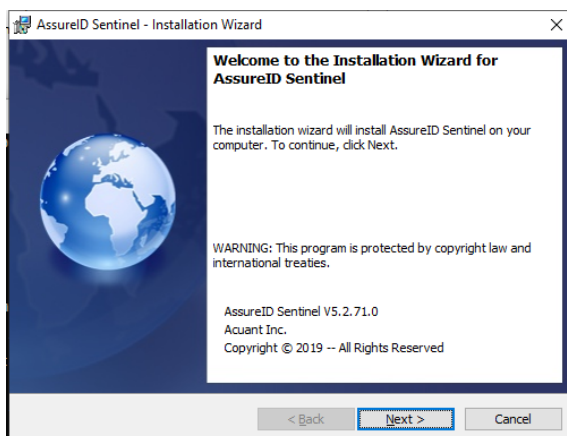
4. Click **Next** and follow the prompts. When prompted, select the **Complete** setup type.
5. Wait for installation to complete. Leave the Command Prompt window open.

Step 2 – Install the AssureID Sentinel

On the same Symmetry client machine where you installed the i-Dentify driver:

1. In the Command Prompt window (still running with elevated permissions and navigated to "Setup\Packages\AssureID" on the Symmetry installation media), enter: **AssureID_Sentinel_V5.2.71_Install.msi**.

The Welcome window is displayed:



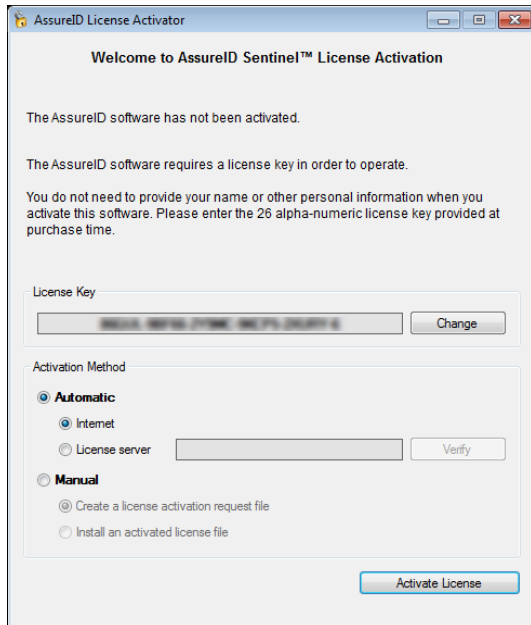
2. Click **Next** and follow the prompts. When prompted, enter the license key and select the **Complete** setup type.

Step 3 – Activate the AssureID License

You need to activate the license as follows before you can use the software:

1. Open **AssureID License Activation** from the Windows Start menu or from the Windows System Tray.

The following window is displayed:



2. Click **Activate License**.

Near the bottom-left corner of the window, you should see a message to indicate that the license has activated, and near the top of the window, you should see the expiry date of the license:

Step 4 – Enable Scanner Imports in Symmetry

In Symmetry:

1. In the "Maintenance/User & Preferences/Client Preferences" screen, select **Scanner Import Enable** in the Settings tab.
2. In the "Maintenance/User & Preferences/Roles" screen, open the role that is used by the Symmetry users who will be performing the driver license scanning. Navigate to "Setup/Identity/Personal Data", and give delete access to the **Scanner Mapping** screen.
3. Log out and back in again to Symmetry for the changes to take effect.

Step 5 – Map Driver License Fields to Symmetry Personal Data Titles

Use the "Setup/Identity/Personal Data/Scanner Mapping" screen to map driver license fields to the required Symmetry card holder and visitor fields. Please refer to "Driver License Scanning" in the Symmetry Online Help for details of this screen and recommendations on how to set up personal data titles for use with driver license scanning.

Step 6 – Scan Driver Licenses

To scan a driver license in Symmetry:

1. Open the "Home/Identity/Card Holders" or "Home/Identity/Visitors" screen.
2. Insert the driver license into the scanner. The relevant personal data fields are populated automatically. Please refer to the *Online Help* for further details.

Chapter 6: Configuring Symmetry

Configuration Steps

This section outlines typical steps you need to take to configure Symmetry. If necessary, refer to the *Online Help* or other publications for further information.

Installer Tasks

The following screens should be used by the installer in the order shown.

Screen Name	Purpose
"Maintenance/User & Preferences/Set Password"	To change the installer's password, if the customer requires this.
"Maintenance/Licensing/System Licenses"	To add licenses for readers, cameras and additional features.
"Install/System/Clients"	To specify the type of clients used.
"Install/System/Default Settings/Reader/Card Formats"	To customize card formats (if required).
"Install/Access Control/Node"	To define details of each node, including the chain that it is connected to.
"Install/Access Control/Reader"	To define details of each reader, including the node that it is connected to.
"Install/Access Control/Monitor Point"	To define details of each monitor point, including the node that it is connected to.
"Install/Access Control/Auxiliary Output"	To define details of each auxiliary output, including the node that it is connected to.
"Setup/Configuration/Facility/Customer Codes"	To define the card customer codes.
"Operation/Alarms/Routing Profiles"	To set up routing profiles for alarm routing. Choose which users receive alarms handled by a routing profile by selecting the routing profile in the "Maintenance/User & Preferences/Roles", "Maintenance/User & Preferences/Accounts" and/or "Install/System/Clients" screens.
"Setup/Graphics/Add"	To create any graphics that are to be used and locate devices on graphics.
"Setup/Graphics/Setup"	

"Maintenance/User & Preferences"	To define system, client and user preferences.
"Operation/Data/Backup"	To set up the daily backup time.

Note: To initialize communications, restart all clients that have Symmetry equipment connected to their ports.

End-User Configuration Tasks

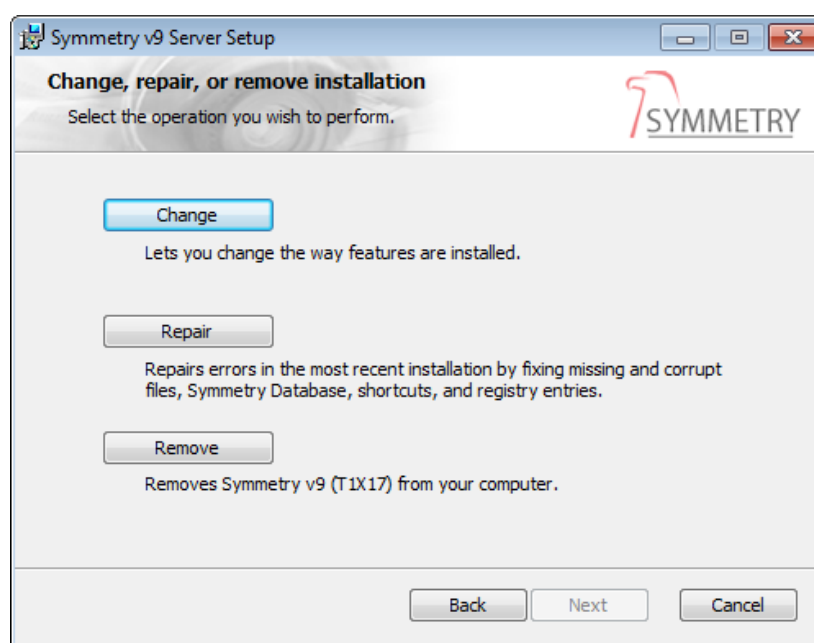
The following screens should be set up in the order shown. This may be the responsibility of the installer or end user.

Screen Name	Purpose
"Maintenance/User & Preferences/Roles"	To set up permissions.
"Maintenance/User & Preferences/Accounts"	
"Setup/Identity/Personal Data"	To set up personal data.
"Operation/Times/Holiday"	To set up access rights. Note: Floor groups are supported by elevator nodes only. For a multi-company system, you may also need to use the Shared Floors and Shared Readers screens in the "Setup/Device Groups/Shared" menu.
"Operation/Times/Hours"	
"Operation/Times/Time Codes"	
"Setup/Device Groups/Readers"	
"Setup/Device Groups/Floors"	
"Setup/Identity/Badge Designer"	To set up badge designs.
"Home/Identity/Card Holders"	To set up card details.
"Home/Identity/Visitors"	
"Home/Identity/Print Badges"	To print badges. Badges can also be printed individually from the "Home/Identity/Card Holders" screen.
"Operation/Commands/Scheduled"	To set up commands.
"Operation/Commands/Trigger"	
"Setup/Identity/Area Occupancy"	
"Operation/Alarms/Instructions"	To set up alarm handling
"Operation/Alarms/Comments"	
"Operation/Alarms/Definitions"	
"Operation/Alarms/Commands"	
"Setup/Configuration/Patrol Tours"	To set up patrol tours.
"Reports/Configuration"	To set up predefined reports
"Home/Identity/Muster"	

Chapter 7: Removing, Changing and Repairing Symmetry

Changing, Repairing or Removing Symmetry

The following screen is displayed if you run the Symmetry installation software and choose to install Symmetry on a computer that already has the same version of Symmetry installed:



You can use the options as follows:

- **Change** – Choose this option if you want to change the following Symmetry installation settings:
 - Remove or enable access to Windows Desktop (relevant only to client installations).
 - Install/uninstall the Symmetry client service to enable/disable features such as the ability of the client to host node communications, run scheduled reports, etc. (relevant only to client installations). See page 29 for further information.
 - Data Export and Data Import options (for example, export or import using a text file).
 - Symmetry device integrations (such as the digital video and intrusion system integrations).
 - The logo used by the Symmetry Advanced Reporting Tool to include on reports. By default, the Symmetry logo is used.
 - Registration details.
- **Repair** – Choose this to repair an installation which may have been damaged (for example, if files have been mistakenly deleted or moved), or to upgrade an older copy of the database that has been restored from a backup. All Symmetry files are replaced as part of a repair process.

- **Remove** – Choose this to remove the main Symmetry application from the computer. If you require a complete removal of all installed software, please follow the instructions in the following section.

Removing Symmetry

This section describes how to remove Symmetry and its database, if it ever becomes necessary to do so (e.g. when a computer is replaced). You must have local administrator privileges to do this.

Removing the Symmetry Client or NVR Software

To remove Symmetry from a separate Symmetry client machine or NVR machine:

1. Close down the client software and the Service Monitor (if launched).
2. Use the Windows Control Panel to remove any software that has a name containing "**Symmetry**". Also remove **Bosch Video Redistributable**.
3. Restart the computer, then remove the "Program Files (x86)\Security Management System" folder.
4. If required, also delete face and signature images, log files and other data by removing the "Program Data\Security Management System" folder. It may be preferable not to do this if you intend to re-install Symmetry.
5. If required, Symmetry license, registration and other installation settings can be removed by running InstallationCleaner.exe, which is located in the Symmetry Assistance folder on the installation media.

Removing the Symmetry Server Software

Use the following procedure if you want to remove Symmetry (not including the database) from the server. Optionally, Symmetry licenses can remain, which means that you can re-install Symmetry without re-installing the licenses.

1. If the Symmetry client software is still installed on remote clients, go to each of these clients, close down Symmetry and stop all Symmetry services. Services can be stopped from **Administrative Tools** in the Control Panel, or from the Symmetry Service Monitor (see page 36).
2. Close the Symmetry Service Monitor on the server, if open.
3. Use the Windows Control Panel to remove any software that has a name containing "**Symmetry**". Also remove **Bosch Video Redistributable**.
4. Restart the computer, then remove the "Program Files (x86)\Security Management System" folder.
5. If you do not intend to use Symmetry again at this machine, you may also want to delete multimax.ini, face and signature images, log files and other data by removing the "Program Data\Security Management System" folder.
6. If required, Symmetry license, registration and other installation settings can be removed by running InstallationCleaner.exe, which is located in the Symmetry Assistance folder on the installation media.

Removing SQL Server

SQL Server can be removed as follows:

1. Using the Windows Control Panel, remove all **Microsoft SQL Server** programs, and follow the prompts.
If prompted, choose to remove all components/features.
2. On completion, restart the computer, and check that all Microsoft SQL Server programs have been removed.
3. Remove the SQL Server installation folder (e.g. Program Files\Microsoft SQL Server).

Chapter 8: Upgrading Symmetry

Introduction

This chapter describes how to upgrade Symmetry to the latest version.

Note: The existing Symmetry installation must be at least version 8.1. If you have an earlier version, it must be upgraded first to version 8.1 using the procedures given in the *SMS Software Upgrade Guide*.

Note: Please contact your AMAG Support Representative if you wish to upgrade a clustered system or other Symmetry applications such as Control Desk and Advanced Reporting.

There are two methods to perform an upgrade:

- **Typical (same-machine) upgrade** – Use this method if you are keeping your existing Symmetry server and (if used) database server, and are not upgrading from Symmetry Professional Edition to Symmetry Enterprise Edition.

If you choose this method, you will need to make sure that any reused machines meet the minimum hardware and software requirements, as given from page 8.

You can also choose to upgrade existing Symmetry clients, or upgrade onto new PCs.

- **Advanced (new-machine) upgrade** – Use this method for any other scenario not covered by the typical (same-machine) method. For example, use this method if you are replacing the Symmetry server, a separate database server, both the Symmetry server and database server, or if you need to move the Symmetry database to a different SQL Server instance. You also need to use this procedure if you want to upgrade a Symmetry Professional Edition system to Symmetry Enterprise Edition.

You can also choose to upgrade existing Symmetry clients, or upgrade onto new PCs.

Prerequisites

Before you carry out an upgrade, make sure you follow all the prerequisites described below.

Removal of Unsupported Features

Certain features have been removed from Symmetry. Before you carry out the upgrade, you must remove the following features and any dependencies from the existing version of Symmetry:

- ENV5 devices
- Pelco recorders

Note: Before you remove these items, make sure that you take a backup, which should be stored on a different machine on the network or on removable media. Take another backup after the removal.

The upgrade will not proceed if any unsupported feature is detected.

Disk Space

Make sure you have plenty of available disk space on the machine that holds the Symmetry databases. Typically, the available space must be at least twice the disk space occupied by the current Symmetry databases.

Minimum System Requirements

Any new machines must meet the minimum hardware and software requirements as given on page 8.

New Symmetry Licenses

New licenses are needed for the new version of Symmetry, including for any optional features.

Symmetry SMS Player

Check Programs and Features in the Control Panel to determine whether "SMSVideoPlayer" is currently installed. If it is installed:

1. Uninstall SMSVideoPlayer before upgrading Symmetry.
2. Delete the folder named "Bosch" in the SMS Video Player installation folder. For example, C:\Program Files (x86)\SMS Video Player\SMS Video Player\Bosch".
3. After the upgrade, re-install the player by double-clicking **SMSVideoPlayerAutoRun.exe** located in the Symmetry installation folder. For example, C:\Program Files (x86)\Security Management System.

Symmetry 75xx Cameras

If you are using Symmetry 75xx cameras (such as the EN-7510), carry out the following (failure to do so may prevent live video from being displayed):

1. Display the camera's web interface.
2. Select **System Options – RTSP/RTP**.
3. Select **H.264 NAL Stream**, and remove the checkmark from **Enable RTSP Authentication**.
4. Apply the changes.

Passwords

Symmetry v 9.0 and later requires a minimum password length of five characters for all Symmetry login accounts, and passwords are case-sensitive. Before upgrading, check **Minimum Password Length** in the "Maintenance/User & Preferences/System Preferences" screen. If it is set to less than 5, change it to be at least 5 and ask all Symmetry users to update their passwords accordingly.

Symmetry XML Open Integration Module

If the XML Open Integration Module is installed and is prior to version 9.0, it must be removed from the Symmetry server before the upgrade, and then reinstalled after the upgrade. Due to the variety of possible configuration scenarios, it is recommended that you contact your product support representative for assistance with upgrading the Symmetry XML Open Integration Module.

Schlage Direct Integration

If the Schlage model LE or NDE locks are being used, back up **SchlageDirectIntegration.dll.config** before the upgrade and write down the settings in the Symmetry Schlage Direct Config Editor. The settings will need to be re-applied after installation. For further information, please refer to the *Symmetry Autonomous Locks Guide*.

Alarm-Routing Changes (when upgrading a version of Symmetry earlier than 9.12)

Symmetry version 9.12 brought significant improvements to alarm routing.

In versions earlier than version 9.12, alarms were routed to specified clients, as configured in the "Operation/Alarms/Routing" screen. From version 9.12, the "Operation/Alarms/Routing" screen has been replaced by the "Operation/Alarms/Routing Profiles" screen and a new mechanism that allows alarms to be routed not only to specified clients, but also to specified user roles and user account names. The new method provides much greater flexibility, as it allows, for example, users with different user roles to see different alarms and at different times, irrespective of the Symmetry client machine they are using.

For a comprehensive overview of the new alarm-routing mechanism, please refer to *Overview of Alarm Routing* in the Symmetry *Online Help*.

When upgrading, Symmetry configures alarm routing to behave, as much as possible, the same as in the pre-9.12 version of Symmetry. However, there are several factors to be aware of regarding the upgrade, as described next.

Reconfiguring Alarm Routing to User Roles

Symmetry maintains the previous system of routing alarms to specified clients. However, the default alarm-routing method in Symmetry v9.12 and later is to route alarms to specified user roles. To take advantage of the new functionality, you will need to re-configure alarm routing to user roles, if required.

Maximum Active Alarms

A new system preference named **Maximum Active Alarms** limits the number of uncleared alarms (default 10,000). If the number of uncleared alarms reaches the specified value, any new alarm will cause the oldest* alarm to be automatically cleared.

*Oldest meaning the later of either the created date (if the alarm has not been acknowledged or had a comment applied), or the date/time the alarm was last updated (acknowledged or had a comment applied).

Duplicate Alarm Routings

During the upgrade, Symmetry prevents multiple routing profiles from being created that are the same in all but name. Where this occurs, Symmetry uses the company name specified in the alarm-routing definition (as created in the "Operation/Alarms/Routing" screen) as the name of the routing profile, or the word "System" if the alarm-routing definition was for node and system alarms only.

Example 1

The following example contains three alarm-routing definitions in the pre-9.12 version of Symmetry. All three definitions specify a company (and therefore were not only for system and node alarms).

Alarm-Routing Name	Company	Times	To Client
"AlarmRouting1"	"CompanyA"	All Times, M-F	"Client1"
"AlarmRouting2"	"CompanyA"	All Times, M-F	"Client2"
"AlarmRouting3"	"CompanyA"	All Times, M-F	"Client3"

In this example, instead of replacing the three alarm-routing definitions with three routing profiles, Symmetry would create just one, since, in all but name, all three would result in the same routing profile definition. The name of the routing profile would be "CompanyA".

Example 2

In the following example, there are six alarm-routing definitions. All six definitions specify the same company name. The first three definitions specify different times from the next three.

Alarm-Routing Name	Company	Times	To Client
"AlarmRouting1"	"CompanyA"	All Times, M-F	"Client1"
"AlarmRouting2"	"CompanyA"	All Times, M-F	"Client2"
"AlarmRouting3"	"CompanyA"	All Times, M-F	"Client3"
"AlarmRouting4"	"CompanyA"	All Times, S-S	"Client4"
"AlarmRouting5"	"CompanyA"	All Times, S-S	"Client5"
"AlarmRouting6"	"CompanyA"	All Times, S-S	"Client6"

In this example, Symmetry would replace the six alarm-routing definitions with two routing profiles: one for the first three alarm-routing definitions, and another for the next three. However, since the company name is the same in both cases, Symmetry adds a number to the name of the second routing profile to make the names different. In the first instance of this scenario "2" is added, then "3", etc. Therefore, in this example, the two routing profiles would be named: "CompanyA" and "CompanyA2".

Example 3

In the following example, there are three alarm-routing definitions. All three definitions are to route system and node alarms only, and all three specify the same times.

Alarm-Routing Name	Company	Times	To Client
"AlarmRouting1"	None ¹	All Times, M-F	"Client1"
"AlarmRouting2"	None ¹	All Times, M-F	"Client2"
"AlarmRouting3"	None ¹	All Times, M-F	"Client3"

¹Node and system alarms only; the **Include System and Node Alarms** checkbox is also selected.

In this example, Symmetry would create one routing profile named "System".

Example 4

In the following example, there are six alarm-routing definitions. All six definitions are to route system and node alarms only. The first three definitions specify different times from the next three.

Alarm-Routing Name	Company	Times	To Client
"AlarmRouting1"	None ¹	All Times, M-F	"Client1"
"AlarmRouting2"	None ¹	All Times, M-F	"Client2"
"AlarmRouting3"	None ¹	All Times, M-F	"Client3"
"AlarmRouting4"	None ¹	All Times, S-S	"Client4"
"AlarmRouting5"	None ¹	All Times, S-S	"Client5"
"AlarmRouting6"	None ¹	All Times, S-S	"Client6"

¹Node and system alarms only; the **Include System and Node Alarms** checkbox is also selected.

In this example, Symmetry would create two routing profiles: one for the first three alarm-routing definitions named "System", and another for the next three named "System2".

Unacknowledged After (Alarm Escalation)

Pre-9.12 versions of Symmetry used the **Unacknowledged After** option in the "Operation/Alarms/Routing" screen to escalate alarms by directing them to an additional Symmetry client if they were not acknowledged within a specified period of time.

In Symmetry v9.12 (or later), alarm escalation is performed differently using escalation tags, as described in *Overview of Alarm Routing* in the *Symmetry Online Help*. The following example describes how escalation tags are created and used during an upgrade.

Example

In the following example, an alarm-routing definition in the pre-9.12 version of Symmetry ("Operation/Alarms/Routing" screen) is named "9-5Alarms", which has **Unacknowledged After** set to escalate alarms to "EscalationPC".

During the upgrade:

1. The alarm-routing definition named "9-5Alarms" is converted to a routing profile named "9-5Alarms".
2. In the "9-5Alarms" routing profile, Symmetry creates an escalation tag and names it "Tag" followed by the name of the **Unacknowledged After** client (i.e. "TagEscalationPC"). This is inserted in the **Escalation Tag** field.
3. If the old version of Symmetry includes another alarm-routing definition (e.g. named "ManagersAlarms") that has **To Client** set to "EscalationPC", "TagEscalationPC" is selected in the Escalation Tags tab of the "ManagersAlarms" routing profile.

If the old version of Symmetry does not include an alarm-routing definition that has **To Client** set to "EscalationPC":

- a) Symmetry creates a new routing profile named with "Prof" followed by the name of the client (i.e. "ProfEscalationPC").
- b) The details of this routing profile are copied from the original "9-5Alarms" alarm-routing definition.
- c) "TagEscalationPC" is selected in the Escalation Tags tab of the "ProfEscalationPC" routing profile.
- d) "ProfEscalationPC" is assigned to the client in the "Install/System/Clients" screen.

The above logic applies when processing the first escalation to a specified machine. If another alarm routing also escalates to "EscalationPC", Symmetry recognizes that "TagEscalationPC" has already been created and will route escalation to "TagEscalationPC".

Messaging System

In the background, new software manages the alarm-messaging traffic. To support this software, the following have been introduced:

- A new "Symmetry Messaging Storage Folder" prompt is displayed during the installation of Symmetry to specify the folder in which to store alarm-messaging information (see page 25).
- Two new Symmetry services are installed:

Symmetry Messaging (server only): Responsible for processing alarm communication between the Symmetry Activity Management service and Symmetry clients, and for renewing the Transport Layer Security (TLS) certificate used for secure messaging.

Symmetry Activity Management (server only): Responsible for processing, escalating and unmasking alarms (including acknowledge/clear/mask actions by users), and for monitoring

the expiry of the TLS (Transport Layer Security) certificate, which is used by the Symmetry Messaging System for the communication of Symmetry alarms.

VDI-Server (Concurrent User Licensing)

Versions of Symmetry earlier than 9.12 include a **VDI-Server** option in the **To Client** menu of the "Operation/Alarms/Routing" screen. This was used for the following:

- The optional VMWare Horizon software (which uses concurrent user licensing).
- The optional RDS/Citrix Client Access software when concurrent user licensing is being used.
- Clients where Symmetry has been installed using a "Symmetry Client Concurrent User License" serial number.

VDI-Server routed alarms to all concurrent clients. Symmetry v9.12 (or later) does not include a **VDI-Server** option. When you upgrade, any alarm routing to **VDI-Server** is converted as follows:

- If the alarm-routing definition for **VDI-Server** specified a company, Symmetry determines the company groups that the company belongs to and sets up equivalent alarm routing for every user role that is associated (through the "Maintenance/User & Preferences/Roles" screen) with any of these company groups and has at least view permissions to the "Home/Monitoring/Alarms" or "Home/Monitoring/Graphics" screen.
- If the alarm-routing definition for **VDI-Server** did not specify a company but had the **Include System and Node Alarms** checkbox selected (and therefore routed only system and node alarms), Symmetry sets up equivalent alarm routing for every user role that has at least view permissions to the "Home/Monitoring/Alarms" or "Home/Monitoring/Graphics" screen.
- Any alarm escalation to **VDI-Server** in the pre-9.12 version of Symmetry (set up using **Unacknowledged After** in the "Operation/Alarms/Routing" screen) is ignored during the upgrade. If required, the alarm escalation will need to be configured manually after the upgrade.

After the upgrade, you can change alarm routing to enable different users to see different alarms at different times, if required.

Legacy RDS/Citrix Client Access Licensing

For the RDS/Citrix Client Access software, if the legacy "RDS/Citrix Client Access Licensing" method is being used, there is a Symmetry client definition for the RDS/Citrix web server, and therefore alarm routing configured for the web server is retained. After the upgrade, you may want to change alarm routing to use alarm routing at the user-role or user levels instead.

SymmetryWEB

Previously, the "Operation/Alarms/Routing" screen included a **SymmetryWEB** option in the **To Client** menu. This option is no longer present in the "Operation/Alarms/Routing Profile" screen. Instead, SymmetryWEB clients receive all alarms at all times; no routing profile is needed.

During an upgrade, a routing profile is created automatically from the previous alarm-routing definition, and is assigned to the SymmetryWEB server in the "Install/System/Clients" screen. However, this has no effect on behavior, as no routing profile needs to be assigned.

Auto-Rollback

It is strongly recommended that you choose to create a backup when prompted during the upgrade procedure. Doing so not only saves a backup of the current database, but also enables Symmetry to roll-back your system to the existing version in the unlikely event of an error occurring during the upgrade.

Note: If a rollback occurs, check that all "Symmetry NVR" services are started after the rollback.

Typical (Same-Machine) Upgrade Procedure

Follow this section to upgrade an existing Symmetry server.

If you are using separate Symmetry clients, you can choose to upgrade the same PCs, or upgrade onto new PCs.

Step 1 – Check the Prerequisites

Check the prerequisites given on page 46. You must remove unsupported items before you continue.

Step 2 – Shut Down the Symmetry Clients and Services

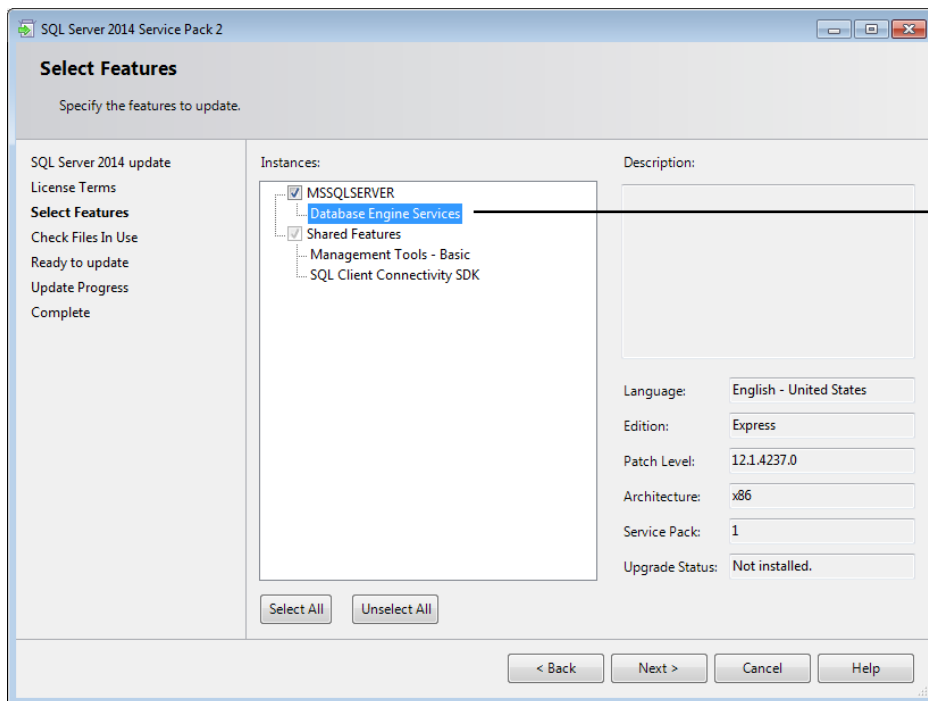
If any separate Symmetry client PCs are being used, shut down Symmetry at those clients, and stop the service named **Symmetry** (or **SMS**) **Client Services** at each client.

If the Symmetry API is being used for SymmetryWEB, go to each Symmetry API server, and shut down the service named "Symmetry API Service".

Step 3 – Upgrade Microsoft SQL Server

Download the latest service pack for SQL Server from the Microsoft web site and install it on the Symmetry server (or database server, if a separate database server is being used).

Note: Make sure you download the 32-bit (x86) or 64-bit (x64) version of the service pack, depending on the version currently being used. SQL Server 2016 and 2017 are always 64-bit. Use the Select Features page displayed when you run the service pack to check that you have downloaded the correct version of the service pack, as shown next.



*Make sure that **Database Engine Services** is listed. If it is not listed, you are not running the correct upgrade exe.*

This area shows the current edition and service pack installed.

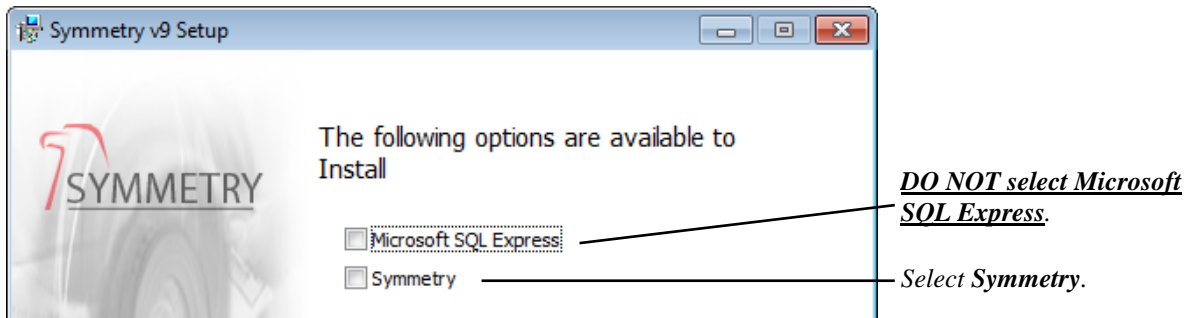
Step 4 – Upgrade the Symmetry Server

Note: The upgrade does not change multimax.ini, so any changes previously made to multimax.ini are kept.

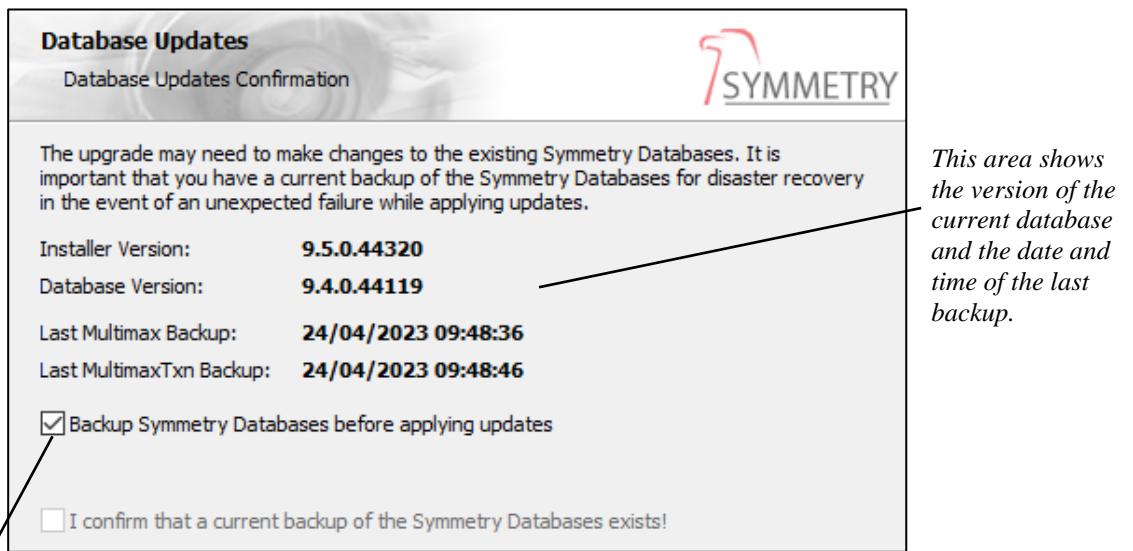
Upgrade the Symmetry server as follows:

1. Log in with administrator privileges at the Symmetry server.
2. Insert the new Symmetry installation media and wait for the installation wizard to start. If it does not start, double-click Setup.exe, which is located in the top-level folder of the media.

3. Click **Next** at the Welcome screen.
4. The following is displayed:



5. Follow the remaining prompts – These are the same as for a standard new installation (if necessary, refer to *Installing the Symmetry Server Software* on page 21 for assistance), with the exception of the following:
 - Before the update takes place, Symmetry checks the current database and informs you of any patches or other items that will prevent an upgrade from taking place. In this event, an option is displayed for you to save a log file to share with your AMAG Support Representative.
 - You cannot change the SQL Server instance name used by Symmetry. This is grayed out.
 - You are not prompted for the customer code.
 - About half way through the procedure, you are prompted to create a backup:



Note: Make sure the Backup checkbox is selected to enable auto-rollback (page 51).

Note: If applicable, also install any updated language packs (page 27).

Step 5 – Log in to Symmetry and Install the Symmetry Licenses

Log in to Symmetry. If you have any Symmetry licenses for optional features, add them using the "Maintenance/Licensing/System Licenses" screen in Symmetry. The license serial numbers must be for the new version of Symmetry, not for the previous version.

Step 6 – Upgrade the Symmetry Clients

Follow this step if you are using any separate Symmetry client PCs.

To upgrade an existing Symmetry client PC (keeping the existing machine):

1. Log in with administrator privileges at the Symmetry client.
2. Insert the new Symmetry installation media and wait for the installation wizard to start. If it does not start, double-click Setup.exe, which is located in the top-level folder of the media.
3. Install a standard Symmetry client in the normal way. If you do not know how to do this, please refer to *Installing Symmetry Client Software* on page 28.

Note: You can upgrade a Symmetry version 9.0 or later client using a batch file, rather than the Symmetry installation software. This is known as a "silent upgrade" and is described on page 60.

To install an additional Symmetry client, or replace an existing Symmetry client:

- Install a standard Symmetry client in the normal way. If you do not know how to do this, please refer to *Installing Symmetry Client Software* on page 28.

If you are replacing an existing Symmetry client, make sure that you choose **Existing Client** and the **Client Name** in the "Defining your Client Name" page of the Symmetry Installation Wizard.

Step 7 – Upgrade Symmetry API Servers

If you are using Symmetry API Servers (for SymmetryWEB), overinstall the existing version with the version that is compatible with the new version of Symmetry being used. Please refer to the Technical Bulletin that accompanies the API release.

Step 8 – Upgrade Symmetry NVRs

This step applies only if separate Symmetry NVRs are being used.

Note: When upgrading from Symmetry v8.1 to Symmetry to v9.0 or later, it is essential to upgrade all Symmetry NVRs.

1. Remove the NVR software:
 - a) Using **Program and Features** in the Windows Control Panel, remove "Symmetry Network Video Recorder" from each NVR. The Symmetry NVR database and any index files are retained.
 - b) If installed, also remove **Symmetry ONVIF** and **Symmetry 7500(HD)**. These will be replaced with updated versions as part of the new NVR installation.
2. Follow the standard procedure for installing a new Symmetry NVR (refer to *Installing a Symmetry NVR* on page 31 if you need assistance), but note the following:
 - Choose to install the Symmetry ONVIF and 7500(HD) plugins, if applicable.
 - When you see the "Configuration Folder Location" screen, make sure you select the same location as used previously (default is "ProgramData\Symmetry\NVR").
 - Do not make changes to the Repository Options.

The new NVR software is now installed and ready to use. Any cameras with a recording mode of **Always** or with a recording schedule set at the NVR will begin recording again. You can validate this via the NVR's web interface.

Advanced (New-Machine) Upgrade Procedure

Follow this section if you want to upgrade Symmetry and use a new machine for either the Symmetry server, a separate database server (if used), or both.

If you are using separate Symmetry clients, you can choose to upgrade the same client machines, or upgrade onto new machines.

Step 1 – Check the Prerequisites

Check the prerequisites given on page 46. You must remove unsupported items before you continue.

Step 2 – Understand the Upgrade Procedure

Before you begin, take time to understand the overall upgrade procedure, which is dependent on the machine(s) you want to upgrade. The following gives an overview of the various upgrade scenarios.

Scenario 1 - Use a NEW Symmetry server, which will also host the Symmetry databases

If you are using a single machine for both the Symmetry server and Symmetry databases, you can use a new machine for that purpose. You will need to:

1. Install SQL Server on the new machine.
2. Restore the old multiMax and multiMaxTxn Symmetry databases.
3. Install the new Symmetry server software. During installation, select the Symmetry database instance on the Symmetry server. The Symmetry databases are upgraded automatically.
4. Upgrade any separate Symmetry clients, NVRs and Symmetry API servers (for SymmetryWEB).

Scenario 2 - Use a NEW Symmetry server, and KEEP an existing database server

If you are using a separate database server, you may want to use a new machine for the Symmetry server, but keep the existing database server. You will need to:

1. Shut down the existing Symmetry server and clients.
2. At the new Symmetry server, install the new Symmetry server software. During installation, select the existing Symmetry database instance. The Symmetry databases are upgraded automatically.
3. Upgrade any separate Symmetry clients, NVRs and Symmetry API servers (for SymmetryWEB).

Scenario 3 - Use a NEW Symmetry server, and a NEW database server

If you want to replace both the Symmetry server and a separate database server, you will need to:

1. Install SQL Server on the new database server.
2. Restore the old multiMax and multiMaxTxn Symmetry databases onto the new database server.
3. At the new Symmetry server, install the new Symmetry server software. During installation, select the Symmetry database instance on the new database server. The Symmetry databases are upgraded automatically.
4. Upgrade any separate Symmetry clients, NVRs and Symmetry API servers (for SymmetryWEB).

Scenario 4 - KEEP the existing Symmetry server, but use a NEW database server

If you want to keep the existing Symmetry server, but want to replace the separate database server (or use a new database instance), you will need to:

1. Install SQL Server on the new database server.
2. Restore the old multiMax and multiMaxTxn Symmetry databases onto the new database server.

3. Shut down the existing Symmetry server and clients.
4. Uninstall Symmetry at the Symmetry server.
5. Install the new Symmetry server software. During installation, select the Symmetry database instance on the new database server. The Symmetry databases are upgraded automatically.
6. Upgrade any separate Symmetry clients, NVRs and Symmetry API servers (for SymmetryWEB).

Step 3 – Install SQL Server and Restore the Databases (Scenarios 1, 3 and 4)

If you are using a new Symmetry server that will also host the databases (scenario 1), or a new database server (scenarios 3 and 4):

1. Install the required version of SQL Server on that machine (Express or full version, as applicable).

You can install SQL Server Express by running Setup.exe on the new Symmetry installation media and selecting only **Microsoft SQL Express**. Do not also select **Symmetry**, otherwise you will need to follow a different upgrade procedure (not documented here).

See *Hardware and Software Recommended Requirements* on page 8 for details of the versions of SQL Server supported by Symmetry.

If you need guidance about full SQL Server installation and configuration, please refer to the *Symmetry Security Hardening Guide*.

Note: During the installation of the new version of SQL Server, make sure you use the same **Collation** setting that the previous version used (e.g. "Latin1_General_100_CL_AS"). For full SQL Server, this is specified in the Collation tab of the Server Configuration page. Different language types (e.g. European and Asian) normally use different collations.

2. Make sure that the latest backup of the Symmetry database is available to the machine that runs SQL Server. To avoid issues with disk space, it is recommended that the backup is available through a mapped drive or removable media – if you copy it to the hard disk, you will need sufficient disk space for this backup, the backup created at the start of the upgrade procedure, and the upgraded database.
3. Restore only the multiMax and multiMaxTxn databases, as follows:
 - a) Log in as an Administrator to the machine that is running SQL server.
 - b) Make sure that the SQL Server service is running, start SQL Server Management Studio (if not already installed, available from the Microsoft web site), then open the server.
 - c) Right-click on **Databases**, select **Restore, Database**. Select **Device**, then click the browse (...) button. In the dialog displayed, click **Add**, then select the backup file. Click **OK** twice to return to the Restore Database dialog. Select the backup.
 - d) In the Files page, check the paths displayed. These must match the path to the Data folder used by SQL Server (by default, Program Files\Microsoft SQL Server\<...InstanceName>\Data). If these paths are not correct, click and edit the paths. Make sure that the drive letter is correct.
 - e) Click **OK** in the Restore Database dialog to begin the restore process. If the restore fails, make sure that the Symmetry services are stopped and try again.
 - f) Repeat the above steps for the **multiMAXTxn** database.
 - g) Close SQL Server Management Studio.

Step 4 – Shut Down the Symmetry Server and Clients (Scenarios 2 and 4)

If you are keeping the existing Symmetry server machine or an existing database server:

1. At the Symmetry server and at all clients (including machines used to run the Symmetry API Service for SymmetryWEB):
 - a) Log in as an Administrator.
 - b) Close down Symmetry and stop all services prefixed by "Symmetry" (or "SMS"). Services can be stopped from **Administrative Tools** in the Control Panel, or from the Symmetry Service Monitor (page 36).

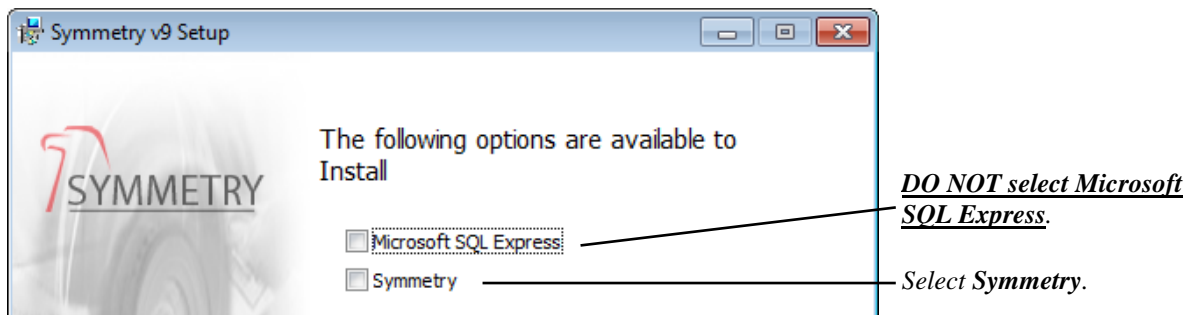
There is no need to stop services at separate Symmetry NVRs. Separate Symmetry NVRs can continue to operate during an upgrade.

2. If you are keeping only the existing Symmetry server (scenario 4 only), remove Symmetry at the Symmetry server. Please refer to *Removing the Symmetry Server Software* on page 44 if you do not know how to do this.

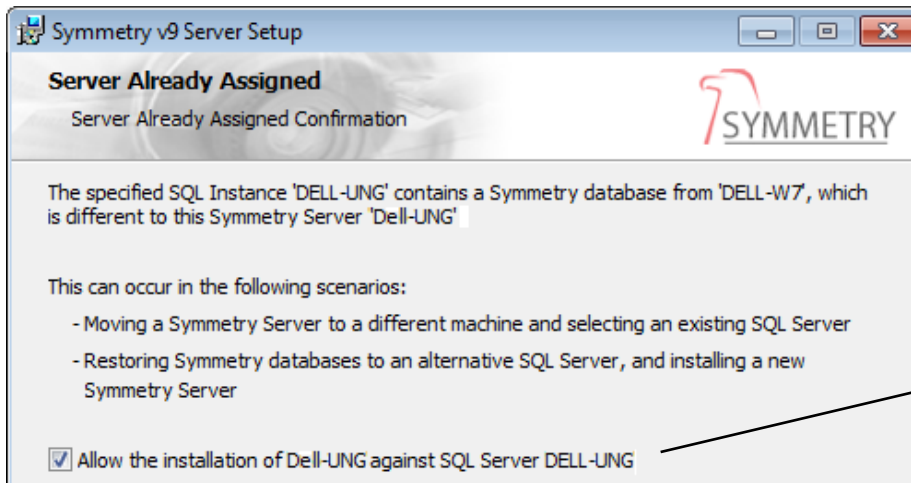
Step 5 – Run the Symmetry Installer (all Scenarios)

At the Symmetry server (for the new version of Symmetry):

1. Insert the new Symmetry installation media and wait for the installation wizard to start. If it does not start, double-click Setup.exe, which is located in the top-level folder of the media.
2. Click **Next** at the Welcome screen.
3. The following is displayed.

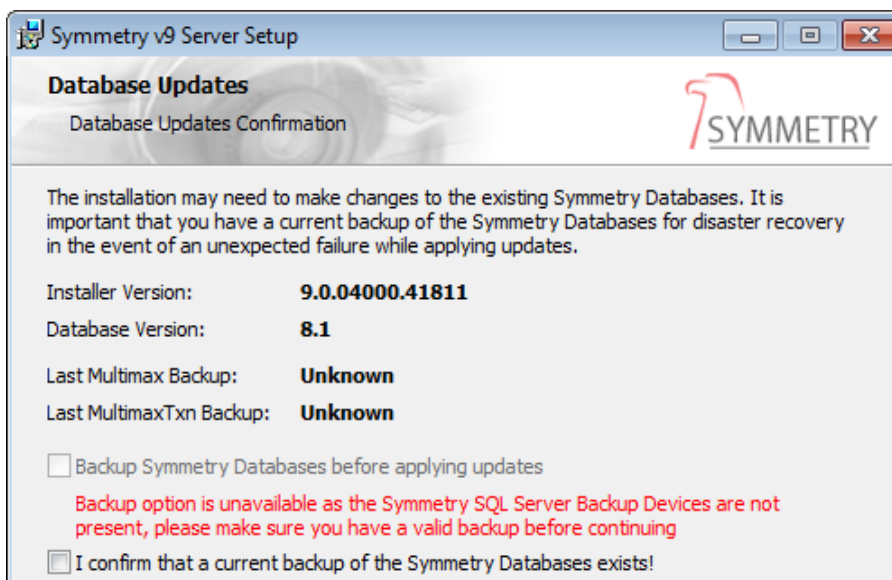


5. Follow the remaining prompts – These are the same as for a standard new installation (if necessary, refer to *Installing the Symmetry Server Software* on page 21 for assistance), with the exception of the following:
 - Before the update takes place, Symmetry checks the current database and informs you of any patches or other items that will prevent an upgrade from taking place. In this event, an option is displayed for you to save a log file to share with your AMAG Support Representative.
 - Make sure you select the Symmetry database instance to upgrade.
 - You are not prompted for the customer code.
 - If you are using a new machine for the Symmetry server, you will see the following prompt.



Select the checkbox, then click Next.

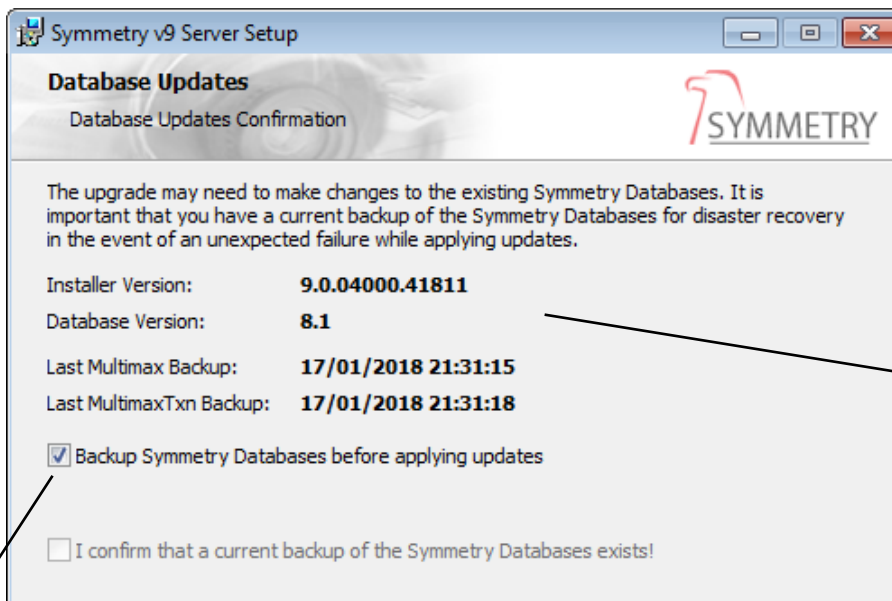
About half way through the procedure, you will see one of the following two screens:



This is displayed if you are using a different machine for the database (scenarios 1, 3 and 4).

Select **I confirm that...**, then click Next.

In this case, no auto-rollback to the saved backup will be available if, in the unlikely event, there is a problem during the upgrade.



This is displayed if you have not changed the machine used to host the Symmetry databases (scenario 2).

This area shows the version of the current database and the date and time of the last backup.

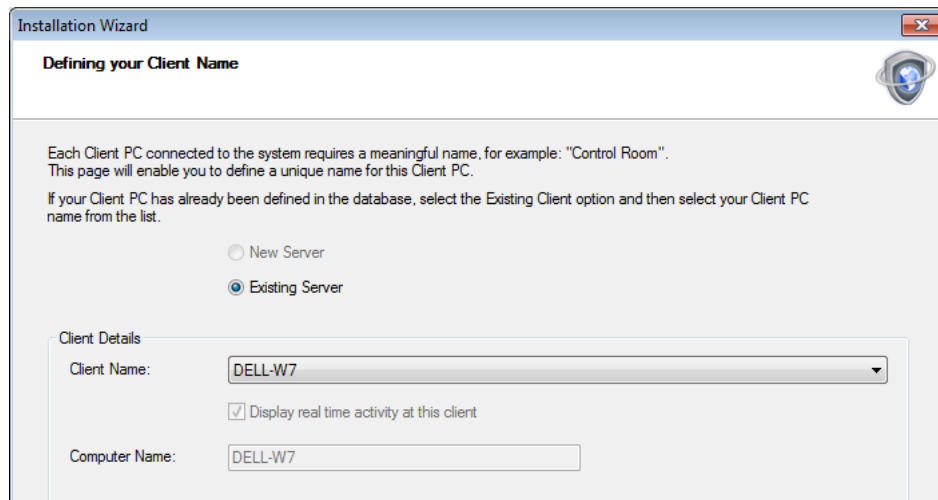
Note: Make sure the Backup checkbox is selected to enable auto-rollback (page 51).

Note: If applicable, also install any updated language packs (page 27).

Step 6 – Log in to Symmetry, Choose the Server and add the Licenses (all scenarios)

Log in to Symmetry at the updated Symmetry server, and carry out the following:

1. In the Installation Wizard (which is displayed automatically after you log in), make sure that you choose the correct server name:



*Select **Existing Server**, choose the name of the previous server from **Client Name**, then click **Next**. Click **Yes** at the confirmation prompt.*

2. Finish the remaining steps in the Installation Wizard.
3. If you have any Symmetry licenses for optional features, add them using the "Maintenance/Licensing/System Licenses" screen. The license serial numbers must be for the new version of Symmetry, not for the previous version.

Step 7 – Update MultiMAX.ini

If you have kept the previous Symmetry server (scenarios 4), multiMAX.ini will remain and you need to make no changes.

If you are using a new Symmetry server (scenarios 1, 2 and 3) and changes were made manually to the previous version of multiMAX.ini, the same changes need to be made to the new version. If you are unsure, perform a comparison between the old and new versions, and make the necessary changes. Please refer to Appendix A for details of multiMAX.ini.

Step 8 – Install or Upgrade the Symmetry Clients

Follow this step if you are using any separate Symmetry client PCs.

To upgrade an existing Symmetry client PC (keeping the existing machine):

1. Remove the Symmetry client software from each Symmetry client. If you do not know how to do this, please refer to *Removing the Symmetry Client or NVR Software* on page 44.
2. Install the new Symmetry client software in the normal way. If you do not know how to do this, please refer to *Installing Symmetry Client Software* on page 28.

To install an additional Symmetry client, or replace an existing Symmetry client:

- Install a standard Symmetry client in the normal way. If you do not know how to do this, please refer to *Installing Symmetry Client Software* on page 28.

If you are replacing an existing Symmetry client, make sure that you choose **Existing Server** and the **Client Name** in the "Defining your Client Name" page of the Symmetry Installation Wizard.

Step 9 – Upgrade Symmetry NVRs

This step applies only if separate Symmetry NVRs are being used.

Note: When upgrading from Symmetry v8.1 to Symmetry to v9.0 or later, it is essential to upgrade all Symmetry NVRs.

1. Remove the NVR software:
 - a) Using **Program and Features** in the Windows Control Panel, remove "Symmetry Network Video Recorder" from each NVR. The Symmetry NVR database and any index files are retained.
 - b) If installed, also remove **Symmetry ONVIF** and **Symmetry 7500(HD)**. These will be replaced with updated versions as part of the new NVR installation.
2. Follow the standard procedure for installing a new Symmetry NVR (page 31), but note the following:
 - Choose to install the Symmetry ONVIF and 7500(HD) plugins, if applicable.
 - When you see the "Configuration Folder Location" screen, make sure you select the same location as used previously (default is "ProgramData\Symmetry\NVR").
 - Do not make changes to the Repository Options.

The new NVR software is now installed and ready to use. Any cameras with a recording mode of **Always** or with a recording schedule set at the NVR will begin recording again. You can validate this via the NVR's web interface.

Step 10 – Upgrade Symmetry API Servers

If you are using Symmetry API Servers (for SymmetryWEB), overinstall the existing version with the version that is compatible with the new version of Symmetry being used. Please refer to the Technical Bulletin that accompanies the API release.

Step 11 – Remove Symmetry from Previous Machines

You can now remove Symmetry from any unused machines. If you do not know how to do this, please refer to page 43.

Silent Upgrades (Symmetry Clients only)

You can use a batch file to upgrade a Symmetry version 9 or later client, which can simplify the process of upgrading a Symmetry client, since there is no need to launch the Symmetry installation software, or respond to any prompts. All settings remain unchanged from the previous version.

When you want to run the batch file, right-click and choose **Run as Administrator**.

Note: You cannot use a batch file to upgrade a Symmetry server, Symmetry NVR or a Symmetry client that is earlier than version 9.0.

Batch File Format

The format of the batch file is as follows:

```
@echo off

msiexec /q /i "<Path to Symmetry Installer>\SymmetryInstaller.msi" /l*v "<Path to Log Folder>\SymmetryInstallerLog.txt" SERVICESACCOUNT="<Machine or Domain Name>\<Symmetry Services Account Name>" SERVICESPASSWORD="<Symmetry Services Password>"
SQLSERVERACCOUNT="<SQL Server Connection>" SQLSERVERPASSWORD="<SQL Server Login Password>"
```

Where:

<*Path to Symmetry Installer*> is the path to SymmetryInstaller.msi (by default, SymmetryInstaller.msi is located in the "Setup" folder on the Symmetry installation media).

<*Path to Log Folder*> is the path to a folder that will store the log created by the upgrade procedure.

<*Machine or Domain Name*> is the name of the machine or domain where the Windows account used to run the Symmetry services is registered.

<*Symmetry Services Account Name*> is the name of the Windows account used to run the Symmetry services.

<*Symmetry Services Password*> is the password of the Windows account used to run the Symmetry services.

<*SQL Server Connection*> is one of the following:

- **WindowsAuthentication** – If Windows authentication is used to connect to the database.
- The login name of an SQL Server account that gives administrator access to the database – if SQL Server Authentication is used to connect to the database (not recommended).

<*SQL Server Login Password*> is the password of the SQL Server login name. If Windows authentication is used, remove SQLSERVERPASSWORD="<*SQL Server Login Password*>".

Appendix A: About the .ini File Settings

MultiMAX.ini Settings

This appendix describes the meaning of each entry in the multiMAX.ini configuration file found in the ProgramData\Security Management System folder on each computer. To avoid harming system operation, please change settings with caution and only if you fully understand the effects.

Note: After modifying multimax.ini, restart all Symmetry services and the Symmetry software on the PC where multimax.ini is located.

[multiMAX]

EnrollAppActive=1	<i>Set to 1 if you want the "Home/Identity/Card Holders" and "Home/Identity/Visitors" screens to include a Capture button that starts a third-party application to enrol fingerprint, iris, facial or other biometric data. Additional settings are required in the [EnrollApp] section of multimax.ini. A value of 0 prevents the Capture button from being included.</i> <i>Note: Using the [BioEnrolment] section instead of this setting gives alternative functionality for the Capture button and also provides the ability to import card data automatically into a new card holder record. Please refer to the description of the [BioEnrolment] section.</i>
ActivityAndSystemReverseOrder=0	<i>This optional (client) parameter determines the order of items displayed in the "Reports/History/Activity" and "Reports/History/System" screens. Set to 1 to reverse normal order (0 is default).</i>
ActivityByCompanyGroup=1	<i>Set to 1 and set the View Menu By Company system preference to enable the Activity screen to display only information from companies in the user's company group. Setting to 0 (the default) and unsetting View Menu By Company enables the Activity screen to display information from any company belonging to any company group, irrespective of the user's own company group.</i>
ActivityHistoryScreenMaxTransactions=xxxxxx	<i>This optional parameter specifies the maximum number of transactions to display in the "Reports/History/Activity" screen (default is 200,000).</i>
ActivityReportTxnFontSize=4	<i>This optional parameter determines the font size of text in reports printed from the "Reports/History/Activity" screen. The value must be in the range 1 to 8 (8 gives the largest font size).</i>
AIQ=1	<i>Alarms Input Queue. This server-only parameter must be set to 1.</i>
AllowForceInitialisation=1	<i>This optional parameter enables a Factory Reset button in the "Install/Access Control/Node" screen, which allows a user with System Admin privileges to re-initialize all the databases in the controller to factory default state.</i>
BadgePrinter1=	<i>Specifies the default badge printer for a badge design.</i>
BlockRandomSearch=1	<i>Specifies to block a card belonging to a card holder who is undergoing a random search. Blocking can be removed by using a Re-enable Stopped Cards command from Symmetry. Omit this setting to disable automatic blocking.</i>
CheckGrantedAccessCondCommand=1	<i>When this is set to 1 (the default), Symmetry checks whether each grant access transaction received is used in the "when" part of a trigger</i>

Appendix A: About the .ini File Settings

	<i>command. If grant access is not required to activate trigger commands, performance benefits are achieved by disabling this feature (i.e. setting to 0).</i>
CTQ=1	<i>Comms Transmission Queue. Set to 1 to enable communications from this PC.</i>
CustomAlarmEmailsEnabled=1	<i>Set this option parameter to 1 to make the "Operation/Alarms/Custom Alarm Emails" screen available in Symmetry. The screen allows imported alarms to be automatically emailed to different email addresses based on the alarm details. Set to 0, or exclude the parameter, to prevent the screen from being available.</i>
DatabaseInstance=	<i>Specifies the instance name of SQL Server used for the Symmetry database.</i>
datacardprinter=	<i>The default is "datacard". If a Datacard badge printer is used, the name specified here must appear in the Windows name of the printer to ensure that Symmetry uses the correct encoder files.</i>
DataExportAfterImport=1	<i>This optional parameter enables the exporting of card holder data following an import. Set to 1 to enable, or 0 (default) to disable.</i>
DataExportEnabled=0	<i>This server-only parameter specifies how to export data: 0 = Data Export disabled; 1 = Data Export uses SQL Server database; 3 = Data Export uses text (2 is not used).</i>
DataImportEnabled=0	<i>This server-only parameter specifies how to import data: 0 = Data Import disabled; 1 = Data Import uses SQL Server database; 2 = Data Import uses text.</i>
DCOMRouter=0	<i>For engineering use only; do not change.</i>
DefaultAgencyCode=9999	<i>Specifies the default Agency Code displayed in the Card Holders or Visitors screen for Homeland systems.</i>
DefaultCardSearchIndex=	<i>Records the option selected in the Filter By pull-down list in the "Home/Identity/Card Holders" screen. This enables Symmetry to automatically select the option the next time the screen is opened.</i>
DefaultCardStatusIndex=	<i>Records the option selected in the Select by Status pull-down list in the "Home/Identity/Card Holders" screen. This enables Symmetry to automatically select the option the next time the screen is opened. 0 = All.</i>
DefaultConditionalCommandSearchIndex=0	<i>Used to store the Select By Status setting in the Trigger Commands Selection screen.</i>
DefaultShowAllAccessRights=	<i>Records the last selected state of the Show All button in the Card Holder screen (1=Show All).</i>
DefaultSystemCode=9999	<i>Specifies the default System Code displayed in the Card Holders or Visitors screen for Homeland systems.</i>
DefaultTimedCommandSearchIndex=0	<i>Used to store the Select By Status setting in the Scheduled Commands Selection screen.</i>
DefaultUnitIDCode=9999	<i>Specifies the default Unit Code displayed in the Card Holders or Visitors screen for Homeland systems.</i>
DefaultVisitorSearchIndex=	<i>Records the option selected in the Filter By pull-down list in the "Home/Identity/Visitors" screen. This enables Symmetry to automatically select the option the next time the screen is opened.</i>
DefaultVisitorStatusIndex=	<i>Records the option selected in the Select by Status pull-down list in the "Home/Identity/Visitors" screen. This enables Symmetry to automatically select the option the next time the screen is opened. 0 = All.</i>
DelayedNodeTimeout=	<i>This is an optional parameter for the Symmetry server. It applies only when using M2150 nodes and applies system-wide.</i> <i>Note: DelayedNodeTimeout and DelayedNodeTimeoutsTime are mutually exclusive, so make sure only one of these parameters is set to a value other than 0.</i>

	<p><i>By default, a Node Timeout alarm/event is generated if a node fails to respond when Symmetry attempts 3 times to send a message to that node. When DelayedNodeTimeout is set to 1 (default is 0), the node timeout mechanism is changed so that the alarm is generated after 3 attempts to connect to the node (a connection attempt is signified by a 'Lan Dial' message in the Comms dialog). Each connection attempt is 1 minute apart; consequently, if communications is lost to a node, it will take 3 minutes to generate a 'Node Timeout' Alarm.</i></p> <p><i>You may want to use this parameter if there are issues with a slow network connection.</i></p>
DelayedNodeTimeoutsTime=	<p><i>This is an optional parameter for the Symmetry server. It applies only when using M2150 nodes and applies system-wide.</i></p> <p>Note: <i>DelayedNodeTimeout and DelayedNodeTimeoutsTime are mutually exclusive, so make sure only one of these parameters is set to a value other than 0.</i></p> <p><i>If a system has an unreliable network then all 'Node Timeout' alarms can be delayed by setting DelayAllNodeTimeoutsTime.</i></p> <p><i>By default, a Node Timeout alarm/event is generated if a node fails to respond when Symmetry attempts 3 times to send a message to that node. When DelayedNodeTimeoutsTime is set to a value (in minutes) other than 0, the node timeout mechanism is changed so that Symmetry will wait for communications to be reestablished with a node before generating a Node Timeout alarm/event.</i></p> <p><i>For example, if a value of 15 is specified and communications is lost, Symmetry will wait for 15 minutes before generating an alarm/event, and if a connection to the node is re-established within this period, no alarm/event is generated.</i></p> <p><i>You may want to use this parameter if the network is very unreliable.</i></p>
DeleteMSMQs=0	<p><i>This is an engineering tool that deletes and recreates the Symmetry message queue (you may want to use this if alarms or other messages are not reaching their destination). With all of the Symmetry services running:</i></p> <ol style="list-style-type: none"><i>1. Set to 1 at a client to delete the message queue at the client, or set to 1 at the server to delete the message queue at the server.</i><i>2. Stop then restart the Symmetry services. The message queue is recreated and DeleteMSMQs is set to 0.</i>
DisableScreenSaver=0	<p><i>Set to 0 to allow the operating system screen saver to function. Set to 1 to disable the screen saver.</i></p>
DisableChainName=1	<p><i>Set to 0 to allow the chain name and node address of an existing node to be changed in the "Install/Access Control/Node" screen. Set to 1 to use the default behavior of not being able to change these settings.</i></p>
DuplicateCardWhenCopied=1	<p><i>If set to 1, this optional parameter causes Symmetry to retain the card holder's image, signature, facility/customer code and PIN when a card is copied, such as using the Copy option in the Card Holder's screen..</i></p>
DuplicateImportedTransactions=1	<p><i>If set to 1, this optional parameter causes Symmetry to log imported transactions when importing alarms/events that are associated with specific readers, monitor points or card holders. Please refer to the Data Connect Manual for further information.</i></p>
DVMTimeout=30	<p><i>Specifies the maximum period of time (in seconds) that Symmetry will wait for a video recording to be retrieved from a digital video recorder. A recording that takes longer than this period to retrieve is seen as a timeout error.</i></p>
EmployeeReferenceMaskSize=	<p><i>This optional parameter is used by Data Connect to specify the maximum number of characters that can be imported into Symmetry for the Card Holder Employee Reference (default 20). Set the parameter to a value between 1 and 100. For further information, please refer to the Symmetry Data Connect Manual.</i></p>

Appendix A: About the .ini File Settings

<code>fargoprinter=</code>	<i>The default is "fargo". Do not change this setting.</i>
<code>ForceCaFor21002150DBU=</code>	<i>Set to 1 to enable card holders with PIN codes of more than 4 digits to be downloaded to Multinode2100/2150 nodes. Add the setting to the ini file at the Symmetry server, restart the Symmetry Support Service, and the Symmetry Client Service at all clients hosting communications to the nodes.</i>
<code>FRcustCode=</code>	<i>This is the customer code to be programmed into a Bioscrypt fingerprint reader from the "Install/System/Client Ports" screen.</i>
<code>HorizontalFaceRatio=100</code>	<i>Specifies the horizontal aspect ratio setting used when selecting the area of a face image to use in the Card Holders or Visitors screen. For example, if HorizontalFaceRatio is 300 and VerticalFaceRatio is 400, the aspect ratio used is 3:4.</i>
<code>ImportExportAllPersonalData=1</code>	<i>This server-only parameter determines whether 50 or 20 personal data titles are imported by "Operation/Data/Data Import". The default of 1 allows 50 titles to be imported. Setting the parameter to 0 allows 20 titles to be imported, which can reduce import time.</i>
<code>LegacyFargoPrinter=0</code>	<i>Specifies the type of magstripe encoding for Fargo badge printers. Set to 1 for ISO encoding, or 0 for RAW binary encoding. The DTC4xxx and HDP5000 can use either encoding method. Ensure printer properties are configured (page 75).</i>
<code>LocalPath=C:\Program Files (x86)\ Security Management System\</code>	<i>Specifies the destination folder of reports that are sent to a file. The reports are stored in the reports folder below this path. Do not change the drive letter.</i>
<code>magicardprinter=</code>	<i>The setting determines the encoding format when printing and encoding cards.</i>
<code>MainPath=\\SERVER\RootOnServer\ Program Files (x86)\Access Control System\</code>	<i>Path to the Symmetry files on the server.</i>
<code>MaxMultipleCards=10</code>	<i>Specifies the maximum number of cards per card holder (default 10).</i>
<code>MicronodeSupport=0</code>	<i>This server-only parameter must remain at the default value of 0, as micronodes are no longer supported.</i>
<code>NCCT=600</code>	<i>This setting causes an automatic restart of the Symmetry client PC if the Symmetry client service has not been able to communicate with the Symmetry server within the specified time period (in seconds). The restart of the client PC is aimed at re-establishing communications. The setting is optional; if it is not specified, the default of 600 seconds is used.</i>
<code>NoLeadingZerosOnBadge=0</code>	<i>When set to 0 (the default), this optional server-only parameter causes the card number printed on badges to be prefixed with zeros to extend the number of digits used to the maximum. For example, card 24 may be printed as 00000024. A value of 1 specifies that no leading zeros are to be printed.</i>
<code>OpenDesfireFileEncoding=x</code>	<p><i>This parameter allows various DESFire information to be encoded in the open section of the card. The information can be read without key authentication. The parameter can be set on the Symmetry server to provide the default setting, and on any Symmetry client to override the setting locally. "x" can be any of the following, or a sum of two or more of the following (for example, a value of 3 will produce 040406 and 040407, and a value of 15 will produce all four application areas):</i></p> <ol style="list-style-type: none"><i>1 - If set, an application area at address 040406 will be created that contains an unpacked BCD (Binary-Coded Decimal) representation of the card holder's card number.</i><i>2 - If set, an application area at address 040407 will be created that contains a packed BCD representation of the card holder's card number.</i>

	<p>4 - If set, an application area at address 040408 will be created that contains the card holder's employee reference.</p> <p>8 - If set, an application area at address 040409 will be created that contains a packed BCD representation of the card holder's card number, followed by a packed representation of the card issue level.</p>
OnSiteBeyondLimitMaxDays=10	<p>This affects the behavior of the "Reports/Configuration/Predefined Reports/Onsite Beyond Limit" screen. By default, the report excludes card holders who have made no granted-access transaction for more than 30 days. You can use this setting to change the period.</p>
ReportIntegralMotionAlarms=0	<p>Set to 0 to disable reporting of Pelco Integral motion alarms (default 1). (Pelco devices no longer supported.)</p>
RDSLocalBrowsing=0	<p>This is available only for <i>multimax.ini</i> on an RDS web server machine. Set to 1 to allow browsing on user's local browser machine. Set to 0 (the default) to prevent browsing on local machine and instead to constrain browsing to the RDS web server machine. For further information, please refer to the RDS-Citrix Client Access Installation and User Guide.</p>
ScreenSaverPeriod=0	<p>This parameter instructs the Symmetry screen saver to operate after the defined period. The default is 0 seconds, indicating the screen saver is disabled.</p>
ServerName=SymmetryServer	<p>This is the name of the computer on which the Symmetry databases are installed.</p>
ShowTimeZoneCode=0	<p>Setting this parameter to 1 will cause:</p> <p>a) Alarms and events displayed at the local machine to be displayed, by default, with the 3-letter time zone code of the local machine (e.g. "10:13 BST").</p> <p>b) The Time Zone field to appear in the LAN Chain Definition screens. If you enter a time zone code in this field, it overrides the default (the time zone code of the local machine) and is displayed against any alarms and events associated with the LAN chain.</p> <p>The default of 0 prevents the time zone code from being displayed.</p>
StateChangeAllowed=1	<p>If set to 1 (default), the Alarms screen is maximized when an alarm is received. Set to 0 to disable.</p>
StorageServerName=	<p>Specifies the name of the default Symmetry NVR, as shown in the "Install/Video & Audio/NVR Settings" screen.</p>
TimeZoneCardActivation=	<p>Set to 1 to allow the time offset of nodes to be taken into account when Symmetry determines whether cards are active/inactive.</p> <p>Example 1: Server is at 11am 31st March 2021 Node 1 has +14hr offset and Node 2 has +2hr offset. The card is set to become active on 1st April 2021 The card will show as active because Node 1 is in the active date.</p> <p>Example 2: Server is at 11am 31st March 2021 Node 1 has -14hr offset and Node 2 has -2hr offset. The card is set to become active on 30th March 2021 The card will show as active because Node 1 is in the active date.</p>
TimeZoneCode=	<p>This parameter specifies the 3-letter time zone code for the computer. You can set <i>TimeZoneCode</i> to any 3-letter code. If <i>TimeZoneCode</i> is blank (the default), the PC's own setting is used (e.g. "GMT"). Any alarms and other transactions generated from hardwired chains connected to this computer are appended with the specified time zone code. LAN chains use this setting as the default value for the Time Zone field, which can be changed as required.</p>
TransactionsAlwaysShowCommaInName=1	<p>Set to 1 to add an additional ',' (comma) character after the 'Last Name' description displayed for card holder transactions.</p>

Appendix A: About the .ini File Settings

TransActionUsesCardholderCompany=1	<i>Set to 1 to filter card transactions by the card holder's company (instead of the company that owns the reader).</i>
UniqueOfficial=0	<i>When set to 1, this parameter enables an approving official with the same last name, middle initial and first name as an existing entry to be added in the "Setup/Identity/Approving Official" screen (default = 0).</i>
UnlimitedFacilityCodes=1	<i>When set to 1, this optional parameter removes any restriction on the number of customer/facility codes (the default). A value of 0 imposes a limit of eight customer/facility codes. Apply/change this setting only under guidance from Product Support.</i>
UseDirectBadgePrinting=0	<i>This optional parameter can be used at a Symmetry client to override the Legacy Direct Badge Printing System Preference. When set to 1, the printer driver will be used at the client to print transparent images on badges ("direct" printing). When set to 0, the indirect method is used, which is independent of the printer driver.</i>
UseOldStatusScreen=0	<i>If set to 1, the "Home/Monitoring/Command Center" screen is non-graphical (no longer supported). When set to 0 (default), the "Home/Monitoring/Command Center" screen is the graphical version.</i>
UseValCam=1	<i>Set to 1 to enable the ValCam flash camera to save live images in the Card Holder and Visitor screens.</i>
VerticalFaceRatio=100	<i>Specifies the vertical aspect ratio setting used when selecting the area of a face image to use in the Card Holders or Visitors screen.</i>
Video=DX	<i>No longer used. Leave at the default setting of "DX".</i>
WebLicenseMonitorTime=180	<i>The Symmetry support service periodically checks each concurrent client to determine whether the client has disconnected without logging off and therefore not released the license. If the support service detects this condition, the license is released back to the pool. This setting determines the interval (in seconds) between each check (default 180 seconds).</i>

[AppSize]

This section saves the window settings of Symmetry.

[BadgeDesign]

CustomColours=
Records any custom colors defined when applying colors in the "Setup/Identity/Badge Designer" screen.

[BioEnrolment]

Include the [BioEnrolment] parameters if you want either or both of the following:

*a) A **Capture** button in the "Home/Identity/Card Holders" and "Home/Identity/Visitors" screens that starts a third-party application to enrol fingerprint, iris, facial or other biometric data. Symmetry passes the current card number to the application.*

b) The ability to import card data automatically from a text file or a Symmetry CardTransfer database table into a card holder or visitor record.

***Note:** If you want to use the CardTransfer table to import card details, please refer to your product support representative for guidance.*

***Note:** Using EnrollAppActive in the [multiMAX] section instead of these settings gives alternative functionality for the **Capture** button. Please refer to the description of the EnrollAppActive. Do not include both EnrollAppActive=1 and the [BioEnrolment] section - use only one or the other.*

BioEnrolmentActive=1

Set to 1 to enable the above features.

Application=

*If you want to use the **Capture** button, specify the exe file name for the biometric enrolment application.*

Directory=	<i>Specifies the full path to the folder where the biometric enrolment application exe file and/or import text file are located.</i>
FileName=	<i>If you want Symmetry to automatically import card details from a text file into a card holder or visitor record, use this parameter to specify the name of the file. The Directory parameter specifies its location.</i> <i>To use the feature:</i> <ol style="list-style-type: none"><i>1. Create a new card holder or visitor in Symmetry, or open an existing card holder or visitor, and keep the record open.</i><i>2. Make sure that the text file contains the required data (see below).</i><i>3. When the file is saved, Symmetry imports the card details into the Card Holders or Visitors screen. Symmetry uses only the top line in the file.</i><i>4. Symmetry deletes the file.</i> <i>The text file must use one of the following two formats, depending on the card type.</i> <ol style="list-style-type: none"><i>a) For non-HSE or HSE legacy cards:</i> <i>1,CardNumber,CustomerCodeorCredentialNumber,FirstName, MiddleName,LastName,ExpiryDate,</i> <i>For example:</i> <i>1,200,999999,James,Peter,Smith,03-03-2019,</i><i>a) For HSE PIV cards:</i> <i>0,AgencyCode,SystemCode,CardNumber,CredentialSeriesCode, CredentialIssueLevel,PersonalIdentifier,OrganizationCategory, OrganizationIdentifier,Person/OrgAssociation,FirstName, MiddleName,LastName,ExpiryDate,</i> <i>For example:</i> <i>0,555,666,777,8,1,9,3,444,6,James,Peter,Smith,03-03-2019,</i>
CommandLine=cardnumber	<i>Specifies the type of data that Symmetry passes to the biometric enrolment application when the Capture button is clicked. Do not change from "cardnumber" without consulting your product support representative.</i>
[Comms]	
DoNotLogClocks=1	<i>If this is set to 1, it filters out the logging of PC-to-node clock messages in the Comms Status window. These messages are sent out every half an hour. This parameter filters only those messages sent from the PC on which this parameter is set.</i>
DoNotLogEmptyAlarms=1	<i>If this is set to 1, it filters out the logging of "no alarm" messages from nodes attached to the PC, i.e. alarm messages will be logged to the Comms Status window only if an alarm has been generated. This parameter filters only those messages at the PC on which this parameter is set.</i>
DoNotLogEmptyEvents=1	<i>If this is set to 1, it filters out the logging of "no event" messages from nodes attached to the PC, i.e. event messages will be logged to the Comms Status window only if an event has been generated. This parameter filters only those messages at the PC on which this parameter is set.</i>
DoNotLogMicronodeZZs=1	<i>This parameter is no longer supported.</i>
DTRControlMode=1	<i>This parameter is no longer supported.</i>
FactoryInitialiseModem=&F0	<i>This parameter is no longer supported.</i>
FilterToFile=1	<i>Setting this optional parameter causes any messages shown in the Status Comms window to be logged to a text file.</i>

HostModemDTRControl=&D1 *This parameter is no longer supported.*

IssueInstrHostinit=1 *This parameter is no longer supported.*

ModemSoftwareResetString=ATZ0 *This parameter is no longer supported.*

StoreModemSettings=&W0&Y0 *This parameter is no longer supported.*

ViewAllLANAlarms=1 *This optional parameter is read if the ini file is on a PC that has a LAN chain port (i.e. the PC is used for communications with LAN chains). It can be used to filter "LAN..." alarm/event messages that are generated when connecting to the LAN chains (e.g. LAN Retry). 0 = Discard all LAN messages; 1 (default) = Discard all LAN messages except "LAN Error" and "LAN Failed Connection"; 2 = Discard all LAN messages except "LAN Error", "LAN Failed Connection" and "LAN Retry"; 3 = Discard no LAN messages.*

[Control]

The [Control] section is required by the Controls options. ControlID must be set to 1 if a Commend 416 system is used, or 3 if a Commend 200/700 system is used.

[Transaction Service]

TimeZoneCode= *Specifies the time zone code of the transaction service. This parameter should be set to the same value as the parameter with the same name in the [SupportService] section.*

[Cropping]

FaceCropping=0 *If set to 1 a cropping rectangle is displayed after freezing a live face image in the Card Holders screen. The coordinates of the rectangle are given next.*

FaceLeft=67 *These specify the coordinates of the face cropping rectangle.*
FaceRight=228
FaceTop=104
FaceBottom=318

SigCropping=0 *If set to 1 a cropping rectangle is displayed after freezing a live signature image in the Card Holders screen. The coordinates of the rectangle are given next.*

SigLeft=61 *These specify the coordinates of the signature cropping rectangle.*
SigRight=379
SigTop=121
SigBottom=280

[Custom]

PhoneNumberFormat=99999999999999999999 *Do not change; engineering use only.*

RemoteIPAddressFormat=999-999-999-999 *Do not change; engineering use only.*

[EnrollApp]

The [EnrollApp] parameters are relevant only if EnrollAppActive is set to 1 in the [multiMAX] section.

Application= *This specifies the exe file name for the biometric enrolment application. When the **Capture** button is clicked, the application starts with the following parameters:*

-enrollf FirstName LastName CardNumber

Where FirstName LastName CardNumber are the details from the card holder currently being displayed.

Directory= *Specifies the full path to the folder where the biometric enrolment application exe file is located.*

[G4TDigitalVideo]

This section saves the Video Management settings.

Bosch.IPCameraMotionAlarmInterval=15	<i>This controls the time between motion events from a Bosch IP camera. If, for example, it is set to 15 (the default), continual motion in front of the camera creates a "Motion Alarm" every 15 seconds, and 15 seconds after the final motion is detected, a "Motion Normal" alarm is generated.</i>
Matrix.DisableLoadLastView=0	<i>When set to 1, this optional parameter prevents the Virtual Matrix screen from loading the last-used view when the screen is opened.</i>
matrix.DisableMatrixBalloonWarnings=1	<i>Set to 1 to enable pop-up balloons in the Virtual Matrix screen.</i>
NVRCameraLimit=128	<i>Specifies the maximum number of cameras that can be assigned to an NVR in the "Install/Video & Audio/NVR Cameras Assignment" screen (default 128).</i>
Panasonic.NTEventLogging=0	<i>When set to 1, this enables Windows application event logging for offline Panasonic IP cameras.</i>
Panasonic.Alarm.Notification.Port=1818	<i>Specifies the default alarm port used by Panasonic IP cameras (Symmetry server).</i>
Panasonic.IPCameraMotionAlarmInterval=30	<i>This controls the time between motion events from a Panasonic IP camera (see the equivalent Bosch setting above).</i>
PopupWindowCount=72	<i>Specifies the maximum number of separate windows that can be displayed when Live Video is selected from camera icons in the "Home/Monitoring/Graphics" screen. Live video is displayed in separate windows (rather than the Virtual Matrix) only if enabled using Show live video from graphics in the "Maintenance/User & Preferences/User Preferences" screen.</i>
StreamingRecordingMaxRetryCount=1	<i>Specifies the number of times that Symmetry attempts to reconnect to a camera after it has been disconnected.</i>

[Graphics]

GraphicNameEqualsFileName=0	<i>When set to 1, this optional parameter causes the Filename field in the "Setup/Graphics/Add" screen to be automatically set to the graphic filename.</i>
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[GraphicsAlarmView]

Treewidth=180	<i>For engineering use only; do not change.</i>
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[Intrusion]

PanelLanguage=0	<i>Set to 0 if a Norwegian DSC4030 intrusion panel is used, or to 1 if a Swedish panel is used. This ensures the correct characters in area and zone names.</i>
PollClearAlarmListTimer=0	<i>Include this parameter and set to 0 only if HISEC ThorGuard panels are being used and operators need to perform bulk clearing of alarms.</i>
RoundTripMessageEnabled=1	<i>Set to 1 if you are using ThorGuard GPIs with a firmware level of v0102.006 or above. Otherwise, set the parameter to 0 or do not include it. If set, the parameter improves upload performance when the ThorGuard CU has a large number of devices, and corrects the operation of the zone icon in graphics.</i>
StatusPollTimeout=xx	<i>Specifies the poll time (in seconds) for ThorGuard devices when Full Status Updates is selected in the "Install/Intrusion/Intrusion/System Configuration" screen. This setting helps performance on sites with many panels.</i>

TGMSV354+=1 *Set to 1 if ThorGuard Management System (TGMS) Version 3.5.4 or above is used.*

V6ThorguardCU=1 *Set to 1 to enable upload from a ThorGuard V6 (Firmware) system. Set on the client that has the connection to the ThorGuard panel.*

[Recent File List]

Added by Windows; ignore.

File1=COM2

File2=COM1

[Salto]

ShowSaltoMessages=1

By default (set to 1), a "Salto system is offline" message is displayed when opening a card holder or visitor if the SALTO system is not reachable (e.g. the SALTO system has been removed or has not been started before Symmetry). Set to 0 to disable the message.

[Scheduler]

DHMP=1

Days/Hours/Minutes Processor. This is the scheduler for activity that occurs on a timed basis, e.g. scheduled commands at the server and timed reports at each client. Setting it to 0 disables such processing. Setting to 1 enables processing.

DLP=1

Download Processor. This server-only parameter should normally be set to 1. If set to zero, nothing is downloaded to nodes. This could be useful to prevent downloading until the system is configured.

DTA=1

Server-only setting for engineering use only; do not change.

NSP=1

Node Status Processor. If set to 1, the PC will automatically download data to a node if the node reports that its database is broken. This is normally set to 1 on all PCs having comms.

RSSPUP=0

*This is a server-only parameter. It is set to 1 if **Run System Timed Commands on Power Up** was selected during installation.*

[Shell]

ClearNetworkTable=0

Must be set to 0 for a standalone system. Set to 1 if you wish to clear the network locking table (actioned when Symmetry is started). This must be set at the server only when the application has been shut down at all clients. Set back to zero when the operation is complete.

[SmartCard]

EncoderType=5

This specifies the smart card encoder type and must not be changed from the default value of 5 (HID encoder).

DESFireEncoding=0

*Reflects the last state of the **DES Fire Encoding** option in the Encode a Smart Card screen; 1=set; 0=unset*

DESFireOTAEncodingMode=0

*Specifies the default OTA encoding mode selected in the Encode screen (displayed using the **Encode** button in the Card Holders or Visitors screen); 0=Standard DESFire Encoding (no OTA encryption), 1=AES-128 encryption, 2=3KTDES encryption).*

EnableOTAEncryption=0

*When set to 1, this enables the OTA Encryption menu in the Encode screen (displayed using the **Encode** button in the Card Holders or Visitors screen).*

UserPINEncoding=0

*Reflects the last state of the **User PIN Active** option in the Encode a Smart Card screen; 1=set; 0=unset.*

CustomCards=Hisec

This parameter makes available the Hisec format in the Encode a Smart Card screen. The parameter must be set on each Symmetry

client that is going to be used to encode cards using the Hisec format (on a DTC4xxx printer).

DefaultSector=1 *This should be set to 1 at the Symmetry server when encoding Hisec format cards on a DTC4xxx printer. For further information, please refer to your product support representative.*

DefaultFormat=6 *This should be set to 6 at the Symmetry server when encoding Hisec format cards on a DTC4xxx printer. For further information, please refer to your product support representative.*

[SupportService]

TimeZoneCode= *Specifies the time zone code of the support service. This parameter should be set to the same value as the parameter with the same name in the [TransactionService] section.*

Appendix B: Windows Security Groups

Groups Used by Symmetry

Symmetry uses "ACSUsers", "ACSServices" and "ACSReporting" groups, as described in the following sections. For a domain, the groups must be in the Active Directory.

Note: If you are using a domain, you can create equivalent groups named as you wish, and during the installation of Symmetry, choose the groups to use for ACSUsers, ACSServices and ACSReporting.

Note: The groups are automatically added as logins to the SQL database. This enables Symmetry users or services to access the database with the correct permissions.

ACSUsers

This is used to provide the privileges necessary for a user to use the Symmetry client software, and for an installer to install the Symmetry client software at separate client machines. The group requires the following privileges:

- Access this computer from the network
- Bypass traverse checking
- Allow log on locally
- Shut down the system

Workgroup Installations

If you install Symmetry in a workgroup, the installation process automatically creates ACSUsers on the Symmetry server. Any user who needs to use the Symmetry client software must be assigned to the ACSUsers group.

Domain Installations

If you install Symmetry in a domain, a domain administrator will need to create ACSUsers before you install Symmetry.

Any user who needs to use the Symmetry client software must be assigned to the ACSUsers group; this can only be carried out by a domain administrator.

ACSServices

This is used by the Symmetry services on the Symmetry server and uses the following privileges:

- Log on as a service
- Access this computer from the network

During the installation of Symmetry, ACSServices is given db_owner privileges to the Symmetry databases. If users need administrative rights to the databases (e.g. to restore the database), adding them to this group will grant them the required permissions.

Workgroup Installations

If you install Symmetry in a workgroup, the installation process can automatically create an ACSServices group on the Symmetry server. The account you select for the Symmetry services (page 24) is automatically assigned to the ACSServices group.

Domain Installations

If you install Symmetry in a domain, a domain administrator will need to create ACSServices and assign the Symmetry services account (page 24) to ACSServices before you install Symmetry.

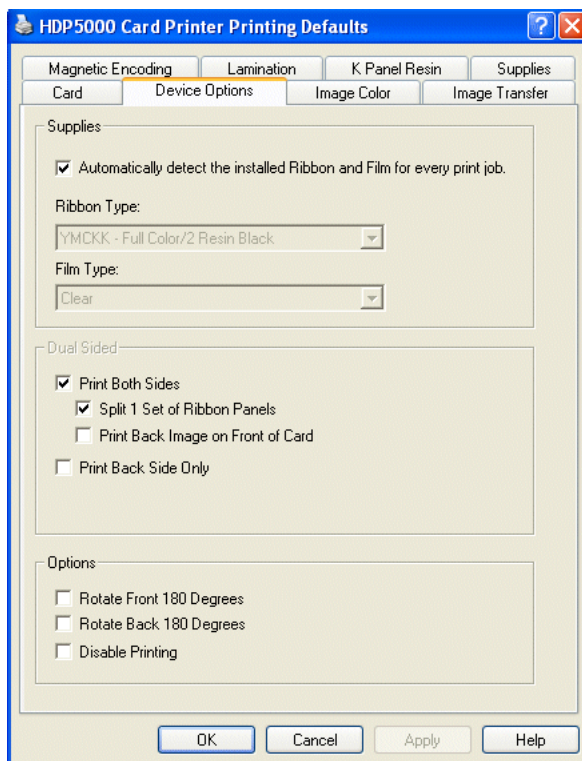
ACSReporting

This gives read-only access to SQL Symmetry reporting views, which may be of use to reporting applications such as the Symmetry Advanced Reporting Tool. It provides no direct access to data through the database tables and requires no specific privileges to be set up. Configure with minimal privileges.

Appendix C Badge Printer Setup

This appendix describes how to set up the printer drivers for badge printers.

Fargo HDP5000 Driver Setup



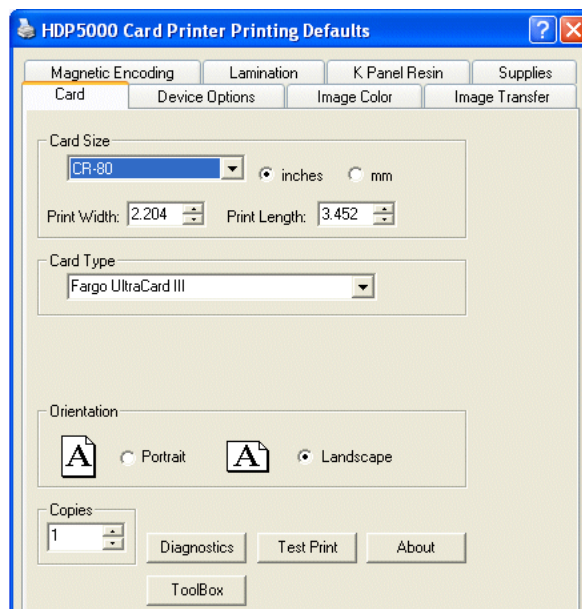
To install the printer:

1. If the printer has a MIFARE USB Encoder, unpack the 5x2x encoder driver by double-clicking the appropriate exe file located in the Symmetry\Extras\Cardman 5x21 Drivers folder on the Symmetry installation media.
2. Install the printer driver using the media supplied with the printer. Follow the on-screen instructions. If you are given the opportunity, select the driver unpacked in step 1. Otherwise, update the driver as documented in the readme file in the driver folder.

Once installed, right-click on the printer in the Windows Control Panel and select **Printing Preferences**. The settings shown opposite are recommended.

Check the other tabs to make sure the settings are as required.

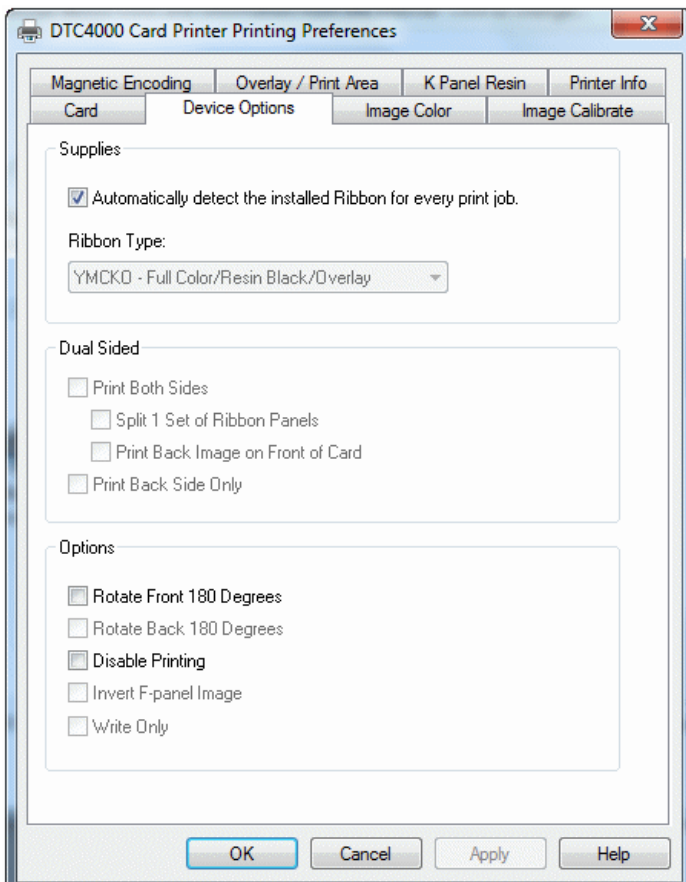
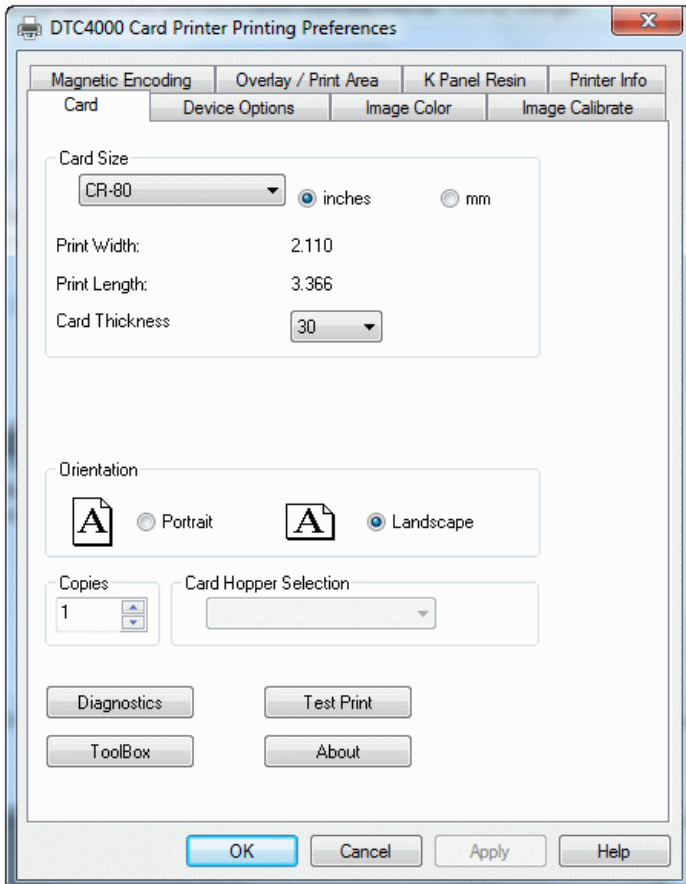
For smart-card encoding, set up a **Smart Card Encoder** port using the "Install/System/Client Ports" screen in the Symmetry software. Choose the USB port type.



The **Encoding Mode** in the Magnetic Encoding tab can be left at the default of **ISO Encoding** or set to **RAW Binary Encoding**. If the **ISO Encoding** is used, LegacyFargoPrinter must be set to 1 in multimax.ini. If **RAW Binary Encoding** is used, uncheck **Reverse Bit Order** for Track 1 and 2 in the Encoding tab and set LegacyFargoPrinter to 0 (the default).

Note: Make sure that the windows name of the printer includes the name "Fargo" (the same default name specified in the fargoprinter= multimax.ini setting). Also set EncoderType=5 for this printer type.

Fargo DTC4250e/4500e Driver Setup



To install a printer fitted with a MIFARE USB encoder:

1. If the model is a 5122 fitted with a MIFARE USB encoder, install the printer driver using the media supplied with the printer. Follow the on-screen instructions.

The 5122 uses a generic Windows driver and should not require any additional files to be installed. The driver is displayed in the Device Manager as "Microsoft Usbccid Smart Reader (WUDF)", and the driver details are shown as "Driver version 10.0.19041.1 (21/06/2006)".

Optionally, an HID updated driver could be installed, obtained from the HID web site. This driver is displayed in the Device Manager as "HID OMNIKEY 5122HID OMNIKEY 5122CL", and the driver details are shown as "HID Global Driver, Version 2.3.4.121 (8/04/2021)".

2. If the model is a 5x21 (5121), unpack the 5x21 encoder driver by double-clicking the appropriate exe file located in the Symmetry\Extras\Cardman 5x21 Drivers folder on the Symmetry installation media.

Install the printer driver using the media supplied with the printer. Follow the on-screen instructions. If you are given the opportunity, select the unpacked driver. Otherwise, update the driver as documented in the readme file in the driver folder.

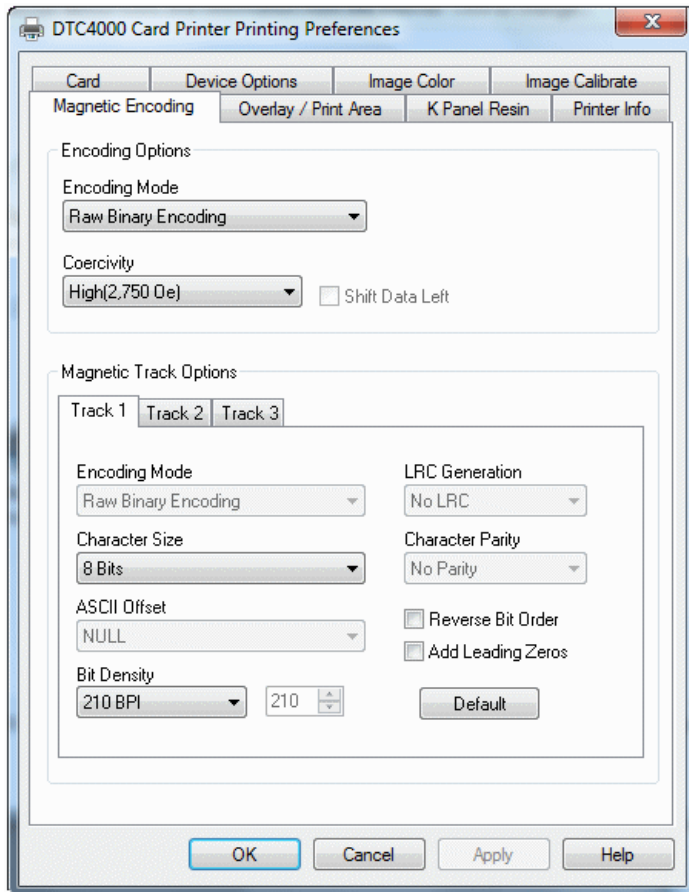
3. Once installed, right-click on the printer in the Windows Control Panel and select **Printing Preferences**. The settings shown opposite are recommended.

Check the other tabs to make sure the settings are as required.

4. For smart-card encoding, set up a **Smart Card Encoder** port using the "Install/System/Client Ports" screen in the Symmetry software. Choose the USB port type.

5. See the next page for magnetic encoding options.

Note: Make sure that the windows name of the printer includes the name "Fargo" (the same default name specified in the fargoprinter=multimax.ini setting). Also set EncoderType=5 for this printer type.



*In the Magnetic Encoding tab, select **RAW Binary Encoding** and uncheck **Reverse Bit Order** for Track 1 and 2. LegacyFargoPrinter must be set to 0 (the default) in multimax.ini.*

Fargo HDP6600 Driver Setup

Install the printer driver using the media supplied with the printer. Follow the on screen instructions.

The Printer options for this printer, use a version of the 'FARGO Workbench', which is installed as part of the driver setup enables you to update the FARGO printer firmware and driver. You can access the FARGO Workbench through the Windows Printer Preferences.

If a MIFARE USB Encoder is fitted, it will be the 5127 CK CL 0 variant, which is displayed in the Device Manager as "5127 CK", and uses Windows drivers.

Note: Make sure that the windows name of the printer includes the name "Fargo" (the same default name specified in the fargoprinter= multimax.ini setting). Also set EncoderType=5 for this printer type.

No magnetic encoding is available for this printer.

Appendix D: Port Usage

This appendix lists the standard ports used by Symmetry. This information may be needed to configure routers, firewalls or port forwarding.

Standard Ports for General Microsoft Software

The following general Windows ports are used by all Symmetry computers.

Purpose	Port	Type	Communications Direction
Microsoft file/printer sharing (if used)	139	TCP	IN and OUT
	445	TCP	IN and OUT
	137	UDP	IN and OUT
	138	UDP	IN and OUT
DNS, Domain Name System (required if a domain is used)	53	TCP & UDP	OUT
NETBIOS (Name Resolution)	137	UDP	IN and OUT
Windows Time Service (for time synchronization)	123	UDP	OUT
MSMQ (MS Messages Queue service). These ports are needed for Symmetry machines to host MSMQs	1801	TCP & UDP	IN and OUT
MSMQ (MS Messages Queue service). This port is used for the internal "ping" mechanism for Message Queuing. Note: For Message Queuing 4.0 and later, UDP port 3527 is no longer used by default. For more information, visit: http://technet.microsoft.com/en-us/library/cc731882(WS.10).aspx	3527	UDP	IN and OUT
RPC (needed by DCOM, DTC, MSMQ, Cluster). Dynamic RPC port typically assigned by RPC for handshaking with an independent client or with an RPC server for the Message Queuing server to determine the fixed ports.	135	TCP	IN and OUT

Microsoft SQL Server

Note: The following specifies the default ports; SQL Server may be set up to use different ports than those specified below.

Purpose	Port	Type	Communications Direction
Microsoft SQL Server - Port on computer that runs Microsoft SQL Server	1433	TCP	IN
Microsoft SQL Server Browser - Port on computer that runs Microsoft SQL Server, for SQL Server Browser	1434	UDP	IN
Microsoft SQL Server - Port on Symmetry client or NVR, or on the Symmetry server if a separate database server is used	1433	TCP	OUT
Microsoft SQL Server Browser - Port on Symmetry client or NVR, or on the Symmetry server if a separate database server is used	1434	UDP	OUT

Symmetry Node/Device/Client Communications

Purpose	Port	Type	Communications Direction
Port on Symmetry server for Symmetry client messaging	12090	TCP	IN and OUT
Port on any Symmetry computer that uses network communications to nodes	3001	TCP	OUT; also IN if node instigates communications
Port on the Symmetry server (required for the Symmetry Messaging Service)	4222	TCP	IN and OUT
Port on any Symmetry computer that receives network communication initiated by a node (commonly referred to as "Node Punch-Out")	3002	TCP	IN (used only when nodes are configured to instigate communications)
Port on any Symmetry computer from which the G4S Flashnet utility or device discovery (Discover button) is used	49107	TCP & UDP	IN and OUT

Emails

The following default ports are used by Symmetry for any option that send information via email (such as email alarms and workflow emails).

Purpose	Port	Type	Communications Direction
Port on Symmetry server or client for SMTP emails (configurable in the "Setup/Configuration/Email Profiles" screen)	25/587 /465	TCP & UDP	OUT

RDS/Citrix Access

(See the *RDS/Citrix Client Access Installation and User Guide*.)

Purpose	Port	Type	Communications Direction
Port on web server used for Remote Desktop Services	3389	TCP	IN
Port on web server used for non-encrypted (HTTP) communications from clients	80	TCP	IN
Port on web server used for encrypted (HTTPS) communications from clients	443	TCP	IN

Symmetry NVR

Purpose	Port	Type	Communications Direction
NetBIOS	137	UDP	IN and OUT
RTP video traffic	6456-7456	UDP	IN
Real-Time Streaming Protocol traffic	554	TCP	IN
HTTP traffic	8080	TCP	IN

Video

Purpose	Port	Type	Communications Direction
Port on Symmetry server used for communications from Integral DSXpress and DSRealvue Xpress DVRs	1433/ 1434	TCP	IN
Port on any Symmetry client used to play back video (RTP traffic)	6456-8457	UDP	IN
Microsoft Universal Plug and Play; primarily used for the discovery of ONVIF video cameras	2869	TCP	IN and OUT
	1900	UDP	IN and OUT

Bosch Cameras

The following ports are used at a Bosch camera. The integration uses the RCPP.DLL third-party SDK runtime file.

Purpose	Port	Type	Communications Direction
Firmware upload and TCP tunneling via HTTP	80	TCP	IN
Encrypted communication via SSL	443	TCP	IN
RCP+ communication	1756	TCP	IN and OUT
Network scan target	1758	UDP	IN
Network scan response	1759	UDP	OUT
Multicast network scan target	1900	UDP	IN

Panasonic Cameras

The following ports are used at a Panasonic camera. No third-party SDK runtime files are used. Panasonic cameras use HTTP calls only.

Purpose	Port	Type	Communications Direction
HTTP	80	TCP	IN
Alarm notifications	1818	TCP	IN and OUT
Device discovery response	10669	UDP	OUT

Sony Cameras

The following ports are used at a Sony camera. The integration uses the SNCSTRM.DLL and SONYNETWORKCAMERA4.DLL third-party SDK runtime file.

Purpose	Port	Type	Communications Direction
HTTP	80	TCP	IN
Device discovery response	4000	UDP	OUT

Symmetry Cameras

The following ports are used at a Symmetry camera. The integration uses the IPADMINTOOL.DLL third-party SDK runtime file.

Purpose	Port	Type	Communications Direction
HTTP	80	TCP	IN
RTSP	554	TCP	IN
Alarm notifications (two consecutive ports, one for RTP and one for RTCP are required per camera)	3000-32001	UDP	IN and OUT
Device discovery response (via IPADMINTOOL.DLL)	5353	UDP	OUT
Broadcast of events generated by the camera (75xx HD camera and 79xx HD encoder)	2555	TCP	OUT

Microsoft Clustering

(See the *Cluster Installation Manual*.)

Purpose	Port	Type	Communications Direction
Symmetry Messaging Service	4222	TCP	IN and OUT

NEC Clustering

(See the *Cluster Installation Manual*.)

Purpose	Port	Type	Communications Direction
For Symmetry remote registry access during install, and Symmetry registry key synchronization. (Other ports need to be opened for NEC clustering - please refer to the NEC documentation.)	445	TCP	IN and OUT
Symmetry Messaging Service	4222	TCP	IN and OUT

SALTO Interface

(See the *Autonomous Locks Guide*).

Purpose	Port	Type	Communications Direction
Port on Symmetry client/server used by the SALTO server to send messages.	20001	TCP	IN
Port on SALTO server used by Symmetry client/server to send messages.	20000	TCP	OUT

XML Open Integration

(See the *XML Open Integration Module Installation and User Guide*.)

Purpose	Port	Type	Communications Direction
Port on the Symmetry server used for XML Open Integration	65101	TCP	IN

Note: The XML Open Integration Module uses IIS, which uses port 80.

Appendix E: Restoring Symmetry

This appendix describes how to restore the Symmetry server and/or database in the unlikely event of, for example, a disk or other fault. See page 37 for general detail of backup configuration.

Restoring Symmetry and SQL Server

The following describes how to replace the Symmetry and, if required, SQL Server software in the extremely unlikely event that it is necessary to do so.

1. Shut down Symmetry at the Symmetry server and at all clients.
2. Log in as an Administrator at the Symmetry server.
3. Note the drive and installation folder of Symmetry. The default folder is "Security Management System" in Program Files (x86).
4. Remove Symmetry (see page 43). If you are using SQL Server Express, choose to remove the database and, if required, SQL Server Express during the uninstall process.
5. If you are using a full version of SQL Server and want to remove and reinstall it, do so now.
6. Re-install Symmetry using the same location as noted in step 3 (paths specified in the ini file at clients will need to be changed if a different installation folder is used). Check that Symmetry is functioning correctly before restoring the previous database (as described next).

Restoring the Symmetry Database

The following describes how to restore the Symmetry database from a backup. **Note:** It is not necessary to replace Symmetry or SQL Server first.

1. Shut down Symmetry and all services prefixed by "Symmetry" at the Symmetry server and at all clients.
2. Log in as an Administrator at the server that contains the database.
3. Copy the databases from the backup media to the computer that contains the Symmetry database.
4. Make sure that the SQL Server service is running, start SQL Server Management Studio (if not already installed, available from the Microsoft web site), then open the server followed by the **Databases** tree.
5. Right-click on the **multiMAX** database, select **Tasks, Restore, Database**. Select **Device**, then click the browse (...) button. In the dialog displayed, click **Add**, then select the backup file. Click **OK** twice to return to the Restore Database dialog. Select the backup.
6. Select the Options page on the left side of the dialog, then select **Overwrite the existing database**.
7. In the Files page, check the paths displayed. These must match the path to the Data folder used by SQL Server (by default, Program Files\Microsoft SQL Server\<...InstanceName>\Data). If these paths are not correct, click and edit the paths. Make sure that the drive letter is correct.

8. Click **OK** in the Restore Database dialog to begin the restore process. If the restore fails, make sure that the Symmetry services are stopped and try again.
9. Repeat steps 5 to 8 for the **multiMAXTxn** database.
10. Close SQL Server Management Studio.
11. Insert the Symmetry installation media and wait for the installation wizard to start. If it does not start, double-click Setup.exe, which is located in the top-level folder of the media.
12. Follow the prompts. Choose the **Repair** option when prompted.
13. Start the Symmetry services. Symmetry is ready for use.

Appendix F: Symmetry Performance Tuning and Maintenance

This appendix describes how to improve the performance of Symmetry. It explains key factors to consider before installing Symmetry, and gives advice on the routine tasks to implement on an installed system to maintain system performance.

Pre-Installation Tuning

Note: It is essential to plan and test the performance of the system before going "live". Network performance, SQL/network monitoring tools, antivirus software, operational usage, use of VMware® and other site-specific factors can affect performance and therefore may require changes to system requirements or infrastructure to achieve performance expectations. **Large deployments must be planned with the local AMAG support representative.**

The following sections give advice about other factors to consider before installing Symmetry.

Network Speed

A minimum 1Gbit network is recommended, with good quality network hardware.

Minimum Required Available Network Bandwidth, Latency and Packet Loss

Symmetry client used for general administrative tasks without video monitoring:

For a Symmetry client that is used for tasks such as clearing alarms, adding and removing cards, editing access rights, and other general administrative tasks, the minimum required available network bandwidth is 5Mbps for the client to operate. The maximum latency is 20ms. The maximum packet loss is 2%.

Symmetry client used for general administrative tasks and video monitoring:

For a Symmetry client that is used general administrative tasks and video monitoring (including live viewing and playback), the minimum required available network bandwidth is 10Mbps for the client to operate. The maximum latency is 10ms. The maximum packet loss is 2%. These figures have been tested while monitoring up to 16 cameras and playing back video in a single cell at a time.

SQL Server

Sharing an SQL Server Database Machine

It is allowable for third-party SQL-Server applications to share the same database server as Symmetry. However, before implementing this architecture, it is important to assess whether excessive resources could be removed from Symmetry and therefore compromise Symmetry's performance.

Determine which third-party applications would use the same database server and their use of that machine. Symmetry uses the database extensively at times when there is a very large number of card transactions, and at times when the database is being backed up or when an operator is accessing large amounts of data. Consider whether other applications' use of the database at these times could adversely affect Symmetry, and if that is the case, consider alternative architectures.

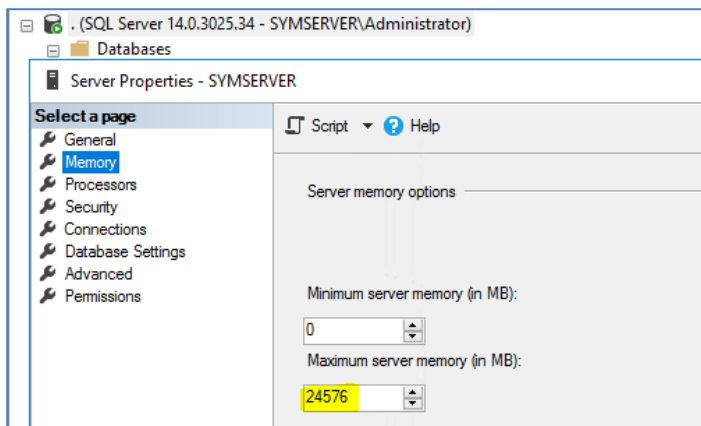
Network Performance when Using a Separate Database Server

Using a separate database server for Symmetry can significantly reduce transaction throughput if there are issues with the performance of the network. Examples such as using a Wide-Area Network (WAN), sharing network paths with other data-intensive applications or using sub-optimal network components can reduce the bandwidth available to Symmetry, and increase latency and packet loss.

Before installing Symmetry, assess the network components and architecture, and the times that the network is most heavily used. If necessary, upgrade components or change the architecture to reduce the possibility of compromising Symmetry's performance.

SQL Server Memory Limit

In order to avoid SQL Server from taking too much memory away from the operating system and services, the **Maximum server memory** setting should be configured in the SQL Server Properties:



The setting will depend on the amount of RAM available at the server and the requirements of the operating system. In addition, if the Symmetry server and SQL Server use the same machine, it is theoretically possible (but very unlikely) for each Symmetry service to consume a maximum of 2GB.

Database Growth Setting

If Symmetry is being upgraded from a version earlier than version 9.3.0, it is recommended that the database growth setting for the MultimaxTxn database is set to 200Mb to avoid the possibility of SQL Server needing to resize the database frequently. The default in earlier versions is much lower, but cannot be adjusted during a Symmetry upgrade.

SQL Server Hardware

It is recommended to use fast storage for SQL Server machines. Preferably, this should be RAID1+0, comprising of 10k SAS drives or server-grade solid-state drives. RAID1+0 is preferred, as it is a combination of mirroring and striping, which offers the best performance and resiliency.

RAID Array Write Caching

Write caching should be enabled on all RAID arrays. It is recommended to purchase a RAID card that contains a battery-backed cache, and install dual power supplies on the server, with suitable uninterruptible power supplies and surge protection to prevent loss of data should a power outage occur.

Replicated/Mirrored Installations

Before commissioning an SQL server used by Symmetry in a replicated/mirrored environment, consider:

- The network link between the replicated/mirrored devices. Make sure the network components are of high quality and that the network has sufficient bandwidth.
- The Symmetry transaction throughput. Installations that have a large number of transactions will require superior hardware.
- The speeds of the disks, particularly with respect to the Symmetry transaction throughput and the product used for replication/mirroring (please refer to the manufacturer's documentation).
- Whether to use asynchronous or synchronous replication/mirroring:

Asynchronous mirroring/replication – This gives faster transaction throughput, since the replication does not wait for the previous write operation to complete prior to starting the next one. As a consequence, however, this configuration is less resilient, since loss of transactions could occur on hardware failure.

Synchronous mirroring/replication – Depending on link speeds between the replicated servers, slower transaction throughput can be experienced, since each write operation needs to be completed before the next is replicated. However, this is considered a more resilient solution.

Post-Installation Symmetry Maintenance

This section gives advice on how to maintain Symmetry to achieve best performance.

Symmetry Machines

Daily:

- Check for any build-up of messages in the Symmetry MSMQ queues on the Symmetry server. The **Number of Messages** column should be zero when the queue is empty (typically at quiet periods of the day). If a queue has a large number of messages, check that nodes are online, the Symmetry services are running, network connections, and any other reasons why communications may be interrupted.

Weekly:

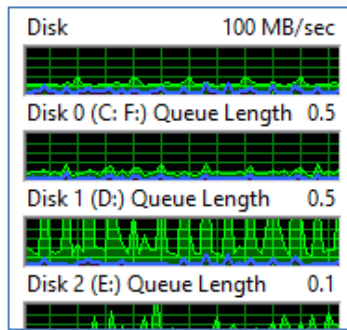
- Review and correct any hardware errors. These include errors reported by S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology), or CPU, memory and other errors reported by the server hardware.
- Check that all drives in use on the Symmetry server have at least 20% of free space.

Monthly:

- Visit the AMAG partner web site to determine whether any Windows patches are on the approved updates list, and if so, install them.
- Using the Windows Event Viewer, review the Application and System logs on the Symmetry server, and check for any Symmetry-related errors. If any errors are found, determine and correct the problem.

When experiencing a large influx of transactions, the error "**System Warning Message: Insufficient resources to perform this operation**" can occur if the available storage used by message queuing reaches the default limit (typically 1048576kb). If this happens, message processing may become slower. The limit can be increased by opening the Computer Management window, and in the properties of a queue, increasing **Limit message storage to** and **Limit journal storage to**).

- If there are performance issues, use the Windows Resource Monitor to view disk activity on the Symmetry server, and on any Symmetry clients that host communication to nodes. In the Windows Resource Monitor, click the Disk tab and view **Processes with Disk Activity**:



Ideally, the disks should maintain an average queue length value of 2 or below.

Periods where the queue length is greater than 2 may occur depending on disk activity, but an average of 2 or below is recommended for best performance.

If the value is consistently greater than 2, investigate the performance issues with your RAID/disks.

Microsoft SQL Server

Weekly:

- Ensure that backups are being taken as configured.
- Check that sufficient free disk space is available on the device used to back up the Symmetry databases.

Monthly:

- Review the SQL error logs for errors, and correct any found. By default, these are stored in Program Files\Microsoft SQL Server\MSSQL.1\MSSQL\LOG\ERRORLOG. If the error message does not contain a clear correction method, search online for the error message.
- Visit the AMAG partner web site to determine whether any SQL patches are on the approved updates list, and if so, install them.

Symmetry Operation

Daily:

- Generate a report from the "Reports/History/Activity" screen. Look for hardware alarms such as "Offline", "Node Timed Out" and "Client/Server Offline" and correct any hardware issues found. Also review the report for alarms such as "Door Forced", or other events considered outside the normal company processes. This will indicate any abnormal activity.
- If applicable, check that video is being recorded.

Weekly:

- Remove any unwanted card holder or visitor records, and any access rights that are no longer in use (e.g. time codes, access codes, reader groups, etc.). There may be other internal policies that determine when these tasks take place.
- Generate a report from the "Reports/History/System" screen and look for abnormal events. Other reports such as the User Audit, Activity and Predefined reports may be helpful to identify abnormal activity.

Monthly:

- Check the Symmetry error logs in the ProgramData\Security Management System\Log Files folder and check for any errors. If any errors are found, determine and correct the problem.
- Remove any unwanted trigger and scheduled commands.
- Review or modify any holidays defined in the "Operation/Times/Holiday" screen. Note that holiday periods can affect access rights, trigger commands and scheduled commands.

Yearly:

- Review the feature set of the latest version of Symmetry and determine whether an upgrade is required. The assessment should include a review of whether the operating system and SQL server need to be upgraded.

Cluster Operation

Weekly:

- Review the NEC or Microsoft cluster logs to confirm that system replication can occur and that there are no error messages.

Monthly:

- Fail over the system to ensure that the system is working properly.

Example Maintenance Schedule

Note: The items and intervals shown in the following table are recommendations. Specific maintenance schedules should be set up to meet system and site-specific needs.

Maintenance Item Description	Daily	Weekly	Monthly	Annually
Symmetry Machines				
Monitor MSMQ queues	X			
Review and correct hardware errors		X		
Check drives for free space		X		
Visit the AMAG partner web site and install approved updates			X	
Use the Event Viewer to check the Application and System logs			X	
Use the Resource Monitor to check disk queue length			X	
Microsoft SQL Server				
Ensure backups are being taken		X		
Check backup device has sufficient free disk space		X		
Review SQL error logs			X	
Visit the AMAG partner web site and install approved updates			X	
Symmetry Operation				
Review a Reports/History/Activity report	X			
If applicable, check that video is being recorded	X			
Remove unwanted card holder or visitor records		X		
Review a Reports/History/System report		X		

Appendix F: Symmetry Performance Tuning and Maintenance

Check the Symmetry error logs			X	
Remove any unwanted trigger and scheduled commands			X	
Review holidays			X	
Review Symmetry feature set				X
Cluster Operation				
Review the NEC or Microsoft cluster logs		X		
Fail over the system to check operation			X	