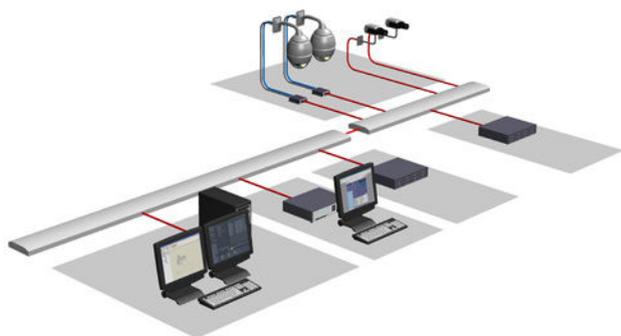


# VRM Video Recording Manager

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**BOSCH**  
Invented for life



- ▶ Distributed storage and configurable load balancing
- ▶ iSCSI disk array failover for extra reliability
- ▶ Used with all Bosch video-over-IP cameras and encoders
- ▶ Configuration support for all Bosch disk arrays (DSA E-Series and DIVAR IP systems)
- ▶ Integration of 3rd party cameras (ONVIF, RTSP, JPEG)

VRM Video Recording Manager by Bosch provides a distributed network video recorder solution, eliminating the need for dedicated network video recorders (NVRs) and signaling the second generation of IP network video recording. VRM supports iSCSI-based storage systems and Bosch video-over-IP devices (IP cameras and IP video encoders). VRM provides load balancing and failover for the iSCSI storage system and makes it easy to add additional iSCSI storage systems later on. VRM introduces the concept of a storage virtualization layer. This abstraction layer enables VRM to manage all of the individual disk arrays in the entire system as various “virtual” pools of storage, which are intelligently allocated as needed.

VRM eliminates the need for classic NVRs and their associated server hardware, operating systems, and anti-virus software, as well as the ongoing software patches and updates these systems require. This new NVR technology makes installation, operation, and maintenance much easier while reducing the total cost of ownership.

## System overview

VRM Video Recording Manager comprises:

- Recording management service (VRM Server)
- Configuration Manager

- Video Streaming Gateway (VSG)

The central recording management service runs as a service on Microsoft Windows platforms. Bosch recommends running VRM Server on a dedicated server/hardware platform.

VRM offers system-wide recording, monitoring, and management of Bosch iSCSI storage, video encoders, and cameras.

VRM software supports Bosch H.264 and MPEG-4 IP video devices including all Bosch encoders and cameras.

With the Video Streaming Gateway component it also supports 3rd party cameras supporting either ONVIF, RTSP or JPEG protocol.

Supported storage subsystems include the Bosch iSCSI-based disk array systems DSA E-Series and DIVAR IP. The iSCSI disk arrays can be attached anywhere on a standard IP network.

## Optimal performance

VRM offers a high-performance, flexible, scalable, and a highly reliable iSCSI storage management solution. Optimized performance is obtained by the use of intelligent addressing on a block level, which also allows for load balancing of the video recording to all available storage blocks located on any storage array in the system.



In this mode VRM automatically uses the storage properties bandwidth and iSCSI connectivity to equally distribute the load within the VRM system. This mode may be configured in a redundant or in a capacity oriented (no explicit redundancy) setup.

- Failover  
Manual assignment of a primary and an optional secondary iSCSI target. The primary and the optional secondary target must be located in one storage pool.

#### Notes:

- The recording preferences are a property of the storage pool and not of the camera/encoder.
- Other modes are not supported anymore. During upgrade from < VRM 3.0 the old modes are migrated. Mixed configurations are not supported and have to be manually reconfigured.
- The Automatic Network Replenishment (ANR) functionality has moved into the new cameras and the new camera firmware (v5.60 or higher).
- ANR support has been removed from VRM 3.0 or later.
- IP addresses of devices can be fixed or assigned by DHCP-server.

#### Licensing

Existing VRM 2.0 licenses can be used.

### Installation/configuration notes

#### VRM components

VRM Video Recording Manager consists of the following components which may be installed on separate systems:

- VRM Server (central recording management service) with web interface for VRM Monitor
- Configuration Manager
- Video Streaming Gateway

#### VRM Monitor

- Displays overall system status information, including uptime, bit rate, and retention times.
- Provides status information on recordings and storage.
- Displays live view and recording previews for a single camera.

#### Configuration Manager

- Allows configuration of the iSCSI storage subsystems
  - Bosch DSA E-Series (NetApp Storage Systems)
  - Bosch DIVAR IP and DLA systems (Bosch OEM disk arrays)
- Allows configuration of recording parameters, including schedules, data rates, frame rates, streams, and privileges.
- Allows management of users and groups with privileges and roles.
- Allows configuration of load balancing parameters (bandwidth and iSCSI connections) per disk array (IP address).

### Technical specifications

Bandwidth	1 Gbit network (recommended)
Supported languages	Arabic, Czech, English, German, Danish, Dutch, Finnish, French, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Portuguese, Polish, Russian, Spanish, Simplified Chinese, Swedish, Thai, Traditional Chinese and Turkish

#### VRM Server (running as a service)

Supported operating systems	Windows 7 Ultimate, Professional Edition, 32/64-bit versions Windows Server 2003 R2, Standard Edition, 32/64-bit versions Windows Server 2008 R2, Standard Edition with SP1, 64-bit versions Windows Storage Server 2008, Standard Edition with SP1, 64-bit versions Windows Storage Server 2012 and Windows Storage Server 2012 R2
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Hardware requirements	
CPU	Six-Core Intel Xeon Processor E5-2620 (2.0 GHz, 6-core, 15 MB, 95 W)
RAM	4 GB or more
Graphics card	VGA or SVGA-compatible
Network adapter	1 Gbps
Installation	Windows administrator rights
Recommended Bosch server hardware	DL380p Gen8 Management Server (MHW-S380R8-SC) DL380p Gen8 Management Server US (MHW-S380R8-SCUS)

#### VRM Monitor

Network adapter	1 Gbps
Software	DirectX 9.0c/MPEG Active X

#### Configuration Manager

Supported operating systems	Windows 7 Ultimate/Enterprise, 32/64-bit versions Windows Server 2008 R2, Standard Edition with SP1, 64-bit versions Windows Storage Server 2008, Standard Edition with SP1, 64-bit versions Windows 8
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Hardware requirements	
CPU	Intel Pentium (minimum 3.0 GHz) to Intel Core i3/i5/i7; Intel Xeon Dual Core, Quad Core and Six Core (X3 or E3 or E5 families)
RAM	2 GB or more
Graphics card	VGA or SVGA-compatible

Hardware requirements	
Network adapter	1 Gbps
Software	Microsoft .NET 4.5
Installation	Windows administrator rights

**Notice**

One VRM supports:  
 2048 channels  
 1 PB storage (net capacity)  
 40 disk arrays (recommended)  
 120 iSCSI targets max (120 iSCSI targets are a hard limit)  
 When planning for larger environments we strongly recommend using large sized disk arrays instead of a large number of small disk arrays (vertical scaling instead of horizontal scaling). For systems with more than 40 disk arrays, please contact a Bosch Design Engineer. iSCSI based storage systems not qualified by Bosch are not supported.

### Ordering information

**VRM Base Package 16 cameras**

Bosch VRM base package with a 16-camera license single-pack. VRM 2.0 licenses can be used.  
 Order number **MVM-BVRM-016**

**VRM Failover**

Bosch VRM Failover license. VRM 2.0 licenses can be used.  
 Order number **MVM-SVRM-BAK**

**VRM Expansion License 16 cameras**

16-camera upgrade license  
 Order number **MVM-XVRM-016**

**VRM Expansion License 32 cameras**

32-camera upgrade license  
 Order number **MVM-XVRM-032**

**VRM Expansion License 64 cameras**

64-camera upgrade license  
 Order number **MVM-XVRM-064**

**VRM Expansion License 128 cameras**

128-camera upgrade license  
 Order number **MVM-XVRM-128**

**VRM Expansion License 256 cameras**

256-camera upgrade license  
 Order number **MVM-XVRM-256**

**VRM Expansion License 512 cameras**

512-camera upgrade license  
 Order number **MVM-XVRM-512**

**VRM Expansion License 1024 cameras**

1024-camera upgrade license  
 Order number **MVM-XVRM-1024**

**VRM Expansion License 2048 cameras**

2048-camera upgrade license  
 Order number **MVM-XVRM-2048**

**Accessories****DL380p Gen8 Management Server**

High-performance standard application server. British English  
 Order number **MHW-S380R8-SC**

**DL380p Gen8 Management Server US**

High-performance standard application server, American English  
 Order number **MHW-S380R8-SCUS**

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