

## HAW-E Series

Network Video Recorder – Enterprise Edition



### Overview

**Ready-to-run, featured-packed, network video recorder for monitoring systems with up to 4096 cameras**

Scalable from 16 to 100 channels, this versatile, featured-packed network video recorder is used for monitoring systems with up to 4096 cameras, which is ideal for large-scale monitoring and recording applications such as school districts, cities, and transportation. The HAW-E Series is the first 4K-ready NVR appliance from Sony with 4K recording and playback capability. It's ideal for use with Sony 4K cameras, supporting unique image output functions like Intelligent Cropping. Recording 4K image data with four times the resolution of Full HD, the HAW-E Series supports more effective, efficient video monitoring by providing excellent situational awareness plus the ability to recognise fine details in a scene and quick, accurate searches. Multiple users can simultaneously and securely access live or recorded video via their smartphone or tablet from any location. In addition remote PC clients can securely access system functions via a web browser, with no need to install application software. Multi-vendor support allows easy expansion through the addition of a growing choice of third party cameras and other devices to create a powerful, versatile monitoring system. Regular software updates give monitoring professionals the reassurance of top-flight performance and the addition of new features to expand system capabilities even further. Monitoring workflow is enhanced with support for a wide range of smart analytical and automation functions. With all necessary server functions available, this hardware-based appliance gives integrators and installers the reassurance of guaranteed operational performance and stability, simplifying system design. A redundant disk array (RAID) further assures reliable operation and integrity of recorded data. Note The SOW-S and SOW-E Series network video management software and HAW-S and HAW-E Series network video recorders are not compatible with each other and cannot be used in the same system.

## Features

- **Compatible with Sony 4K cameras**

Sony 4K cameras provide powerful new ways to get the whole picture, allowing detailed analysis of specific areas in a scene, together with a wide-area situational overview. They offer a range of video output functions, including Intelligent Cropping and Multi Tracking, plus Evidence Shot, high resolution still image capture that's ideal for evidence. The HAW-E Series supports the video output functions unique to Sony 4K cameras, including a single real-time 4K/30 fps video stream and Intelligent Cropping that provides a Full HD overview video plus up to four VGA close-up video streams at the same time.

- **Multi-client access via smartphone or PC**

Multiple users can simultaneously and securely access live or recorded video via their smartphone or tablet from any location. In addition remote PC clients can securely access system functions via a web browser\*, with no need to install application software. Live images captured with a smartphone or tablet by on-site staff can be transferred to the system, shared among users in the operations room and recorded to the central server. This supports timely monitoring of events, even in extreme environments where installing cameras is difficult. \* Web browser supports limited functions, while client application software installed on a PC supports full system functions.

- **Get a more intelligent viewpoint**

Smart Wall integrates a large number of monitors installed on the video wall. This advanced optional add-on video wall product improves operator's response time by displaying all video data to provide a complete overview of large monitoring centres. Operators can focus on the most critical matters and coordinate response activities because multiple users can be shown the same view.

- **All-round awareness**

Interactive, multi-layered maps offer a situational overview plus control of cameras and other integrated systems. Icons are displayed in a map image showing the location of each camera: operators can instantly view live video by clicking on an icon. When an alarm event occurs, the associated camera icon is displayed prominently, helping the operator understand the situation and take appropriate action.

- **Fail-over data backup with Edge Storage**

Video and audio data can be recorded directly onto a SD/microSD card attached to the camera. This can be used for fail-over data backup if the network connection is temporarily disconnected. Recorded data can be transmitted to network video recorders (NVR)/video management software (VMS) and merged with data saved on the NVR/VMS storage.

- **Highly reliable, redundant RAID HDD system**

The HAW-E Series employs a highly resilient RAID disk array, providing excellent system reliability and redundancy.

## Technical Specifications

System components (software modules)	
● Recording Server	Yes
● Number of connected cameras per system	4096
● Maximum number of cameras per recording server	100
● Recording Server manager	Yes
● Management Server	Yes
● Management Failover Server (redundant cluster)	Yes
● Management Client(2) (dedicated client application for local or remote management)	Yes
● Event Server (for handling of events and alarms)	Yes
● Failover Event Server (redundant cluster)	Yes
● NVMS Mobile Client	Yes
● Network Video Management System Smart Client	Yes
● Network Video Management System Web Client	Yes
● Network Video Management System Smart Client - Player (local playback/export)	Yes

Device support	
● Support for ONVIF™ compliant devices	Yes
● Generic device support via universal driver	Yes
● Metadata from camera embedded analytics	Yes
● Number of IP device brands supported via dedicated device integration	131
● Number of supported IP camera models	4844
● Number of supported video encoder models	268
● Number of dedicated IP input/output models	14
● Number of supported DVRs	72
● Number of supported IP audio devices	8
● Number of supported perimeter detectors	18
● Secure HTTPS camera connectivity (on supported devices)	Yes

Video processing	
● MJPEG, MPEG-4, MPEG-4 ASP and MxPEG support	Yes
● H.264 support	Yes
● Metadata support	Yes
● Dual stream (live and recording) per camera	Yes
● Multi-live streaming	Yes

● Client video stream down sampling (resolution and FPS) option	Yes
● Adjustable GOP size (MPEG4/H.264)	Yes
● Edge Storage support with flexible retrieval	Yes
● Send camera pre-alarm images (pre-recording buffer) to recording server	Yes
● Video recording speed up on motion, event or time schedule	Yes
● Built-in Video Motion Detection (VMD)	Yes
● Auto adjustable VMD sensitivity	Yes
● VMD exclusion zones	Yes
● Video motion detections per server	All connected cameras

Audio	
● One-way audio support	Yes
● Two-way audio support	Yes
● One-way audio recording	Yes
● Two-way audio recording	Yes
● Maximum number of supported audio channels	Unlimited

Pan-tilt-zoom (PTZ)	
● Preset positions per camera	Unlimited
● Go-to preset on event	Yes
● Preset patrolling	Yes
● Combine patrolling and go-to preset on event	Yes
● Scanning/transition speed	Yes
● Number of PTZ priority levels for prioritized PTZ control	3

I/O and events	
● Hardware configurable events (such as I/O input,motion,tampering,temperature,communication failure)	Yes
● Motion detection events (VMD in Recording Server)	Yes
● System error events (for example disk full)	Yes
● Manual / User defined events	Yes
● Generic events from external systems	Yes
● Event-based device configuration	Yes
● Event-based notification	Yes
● Event-based output control	Yes
● Event-based device start/stop	Yes
● Event-based matrix control	Yes

<ul style="list-style-type: none"> <li>Flexible event rule engine for definition of actions on events</li> </ul>	Yes
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Alarm Manager	
<ul style="list-style-type: none"> <li>Alarm description and work instructions</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Ability to assign initial owner of an alarm</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Time profiles for alarms</li> </ul>	Yes
<ul style="list-style-type: none"> <li>View triggered alarms</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Manage alarms (reassign, change status, comment)</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Maximum number of related cameras in alarm preview window</li> </ul>	15
<ul style="list-style-type: none"> <li>Number of alarm priority levels</li> </ul>	32000
<ul style="list-style-type: none"> <li>Customizable alarm priority levels</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Customizable sound notification</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Customizable alarm categories</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Customizable alarm statuses</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Customizable alarm result codes</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Alarm handling reporting</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Alarm logging</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Redundancy option for high availability</li> </ul>	Yes

Storage and archiving	
<ul style="list-style-type: none"> <li>Video retention time</li> </ul>	Unlimited
<ul style="list-style-type: none"> <li>Recording capacity per device/day</li> </ul>	Unlimited
<ul style="list-style-type: none"> <li>Archiving of recordings</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Archiving to network drives</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Online access to archives</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Archiving schedules</li> </ul>	Hourly
<ul style="list-style-type: none"> <li>Storage definition and retention time per device</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Storage definition and retention time that can be applied to individual cameras</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Common for multiple devices</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Storage overview (used vs. available space) of available storage drives</li> </ul>	Yes

Integration	
<ul style="list-style-type: none"> <li>Plug-in, Protocol, Component integration via MIP SDK</li> </ul>	Yes
<ul style="list-style-type: none"> <li>System Configuration via MIP SDK</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Metadata integration</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Event integration</li> </ul>	Yes

<ul style="list-style-type: none"> <li>Event and action rule engine integration via MIP SDK</li> </ul>	Yes
<b>Support for Add-on products</b>	
<ul style="list-style-type: none"> <li>Supports Smart Wall</li> </ul>	Option
<ul style="list-style-type: none"> <li>Supports Screen Recorder</li> </ul>	Yes
<b>Management</b>	
<ul style="list-style-type: none"> <li>Configuration wizards for aided system setup</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Device scanning with device model detection</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Automatic camera time synchronization</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Device replacement wizard</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Move device wizard for moving hardware devices (e.g. cameras) between recording servers in runtime</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Centralized device management</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Device group support</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Centralized recording server management</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Centralized management of Smart Client application options (Number of supported Smart Client profile)</li> </ul>	3
<ul style="list-style-type: none"> <li>On-the-fly configuration changes</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Run servers as Windows Services</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Scheduled start/stop of devices</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Configuration reporting</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Built-in backup-restore support</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Offline license activation</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Dual authorization (Smart Client users)</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Dual authorization (Management Client users)</li> </ul>	Yes
<b>System Monitoring</b>	
<ul style="list-style-type: none"> <li>Customizable dashboard for task or component specific live monitoring</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Customizable event trigger thresholds for Normal, Warning and Critical levels</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Real-time and historical system status of Management Server</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Real-time and historical system status of Recording Servers</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Real-time and historical system status of other NVMS servers</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Real-time and historical system status of individual cameras</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Dedicated System Monitor tab that can be displayed as floating window</li> </ul>	Yes
<b>Viewing clients</b>	
<ul style="list-style-type: none"> <li>Maximum number of clients</li> </ul>	Unlimited
<ul style="list-style-type: none"> <li>Customizable access port with NAT support</li> </ul>	Yes

● Multicast support	Yes
● Basic User (Network Video Management System application accounts)	Yes
● Windows User (local Windows accounts)	Yes
● Microsoft Active Directory User (central Active Directory accounts)	Yes
● Single step installer (installs Smart Client together with server)	Yes

Smart Wall	
● Supports Smart Wall video wall add-on	Option
● Number of Smart Walls and Smart Wall displays	Unlimited
● Number of concurrent video streams	Unlimited
● Maximum number of content positions per display	100
● Presets for display layouts and camera content	Yes
● Live video stream content	Yes
● Smart Client controlled playback of video	Yes
● Support for rich video wall content, including:	Maps, still images, http pages, alarms, texts, bookmarks, system monitor, etc. - Yes
● Rule-based control of layout and content (including text messages)	Yes

System Alarms and notification	
● Email notification	Yes
● Multiple notification profiles	Yes
● SNMP trap	Yes

Logging	
● System logging	Yes
● Audit logging	Yes
● Rule logging	Yes

Languages (Management Interface)	
● English	Yes
● French	Yes
● German	Yes
● Japanese	Yes
● Spanish	Yes

General view handling (Client)	
● Number of view layouts	2 (Mobile/Web Client), 41 (Smart Client)
● Maximum view Items per view	100 (Smart/Web/Mobile Client)
● Optimized view layouts for 4:3 and 16:9 display ratios	Yes (Smart Client)

● Corridor optimized view layouts	Yes (Smart Client)
● Optimized view layouts for landscape and portrait displays	Yes (Smart/Mobile Client)
● Cameras from multiple servers	Yes (Smart/Web/Mobile Client)
● Support for Shared Views and Private Views	Yes (Smart/Web/Mobile Client)
● Smart Wall views	Yes (Smart Client)
● Images in views	Yes (Smart Client)
● Active HTML pages in views	Yes (Smart Client)
● Hotspot in views	Yes (Smart Client)
● Carousel in views (controllable)	Yes (Smart Client)
● Virtual Matrix in views	Yes (Smart Client)
● Display bounding boxes based on metadata	Yes (Smart Client)
● Full screen mode	Yes (Smart/Web/Mobile Client)
● Display views as floating window	Yes (Smart Client)
● Display views on multiple monitors	Yes (Smart Client)
● Advanced multi window support with synchronized or independent operation	Yes (Smart Client)
● Switch to view by number	Yes (Smart Client)
● Initial default view	Yes (Mobile/Web Client)
● Camera Navigator	Yes (Mobile Client)
● Camera search	Yes (Smart/Web/Mobile Client)
● Automatic restore views and windows at login	Yes (Smart/Web/Mobile Client)

Live view (Client)	
● Update on motion only	Yes (Smart Client)
● One-way audio support	Yes (Smart Client)
● Two-way audio support	Yes (Smart Client)
● Start/stop recording in view	-
● Independent playback in live mode	Yes (Smart Client)
● Replace cameras in view without changing view setup	Yes (Smart Client)
● Send camera to Virtual Matrix	Yes (Smart Client)
● Share video image	Yes (Smart/Mobile Client)
● Switch to camera by number	Yes (Smart Client)

PTZ support (Client)	
● Define presets in the client application	-
● View who have PTZ control and time to automatic release	Yes (Smart Client)

● Go to preset position	Yes (Smart/Web/Mobile Client)
● Pause patrolling at manual operation	Yes (Smart/Web/Mobile Client)
● Grandeye 360° Quad View	Yes (Smart Client)
● Immervision Enables® panoramorph lens support	Yes (Smart Client)
● Joystick support	Yes (Smart Client)
● Assign commands to keyboard shortcuts and joystick buttons	Yes (Smart Client)
● Auxiliary commands (wash and wipe)	Yes (Smart Client)

#### I/O and events control (Client)

● Camera overlay buttons	Yes (Smart Client)
● Manually activate events and trigger outputs	Yes (Smart/Web/Mobile Client)

#### Playback (Client)

● Maximum view items per view	1 (Mobile/Web Client), 100 (Smart Client)
● Playback mode	Multi Camera(Smart/Web Client), Single Camera(Mobile Client)
● Recording search	Yes (Smart/Web/Mobile Client)
● Recent history of recording sequences per camera	Yes (Mobile Client)
● Time/date search	Yes (Smart/Web/Mobile Client)
● Independent playback in playback mode	Yes (Smart Client)
● Event/alert list in recording	Yes (Smart Client)
● Graphical timeline	Yes (Smart Client)
● Adjust playback speed	Yes (Smart/Web/Mobile Client)
● Single frame step (forward/backward)	Yes (Smart/Web/Mobile Client)
● One-way audio support	Yes (Smart Client)
● Two-way audio support	Yes (Smart Client)
● Digital zoom	Yes (Smart/Web/Mobile Client)
● Share video image	Yes (Smart/Web/Mobile Client)
● Print report with comments	Yes (Smart Client)
● Privacy masking	Yes (Smart/Web/Mobile Client)

#### Smart Search (Client)

● Smart Search based on VMD metadata	Yes (Smart Client)
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#### Sequence Explorer (Client)

● Listing of sequences	Yes (Smart Client)
● Listing of time intervals	Yes (Smart Client)
● Smart Search integrated with Sequence Explorer	Yes (Smart Client)

<ul style="list-style-type: none"> <li>Dedicated Sequence Explorer tab that can be displayed as floating window</li> </ul>	Yes (Smart Client)
<b>Alarm Manager (Client)</b>	
<ul style="list-style-type: none"> <li>Alarm list and alarm preview view items in normal camera views</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Sort and filtering functions</li> </ul>	Yes (Smart/Mobile Client)
<ul style="list-style-type: none"> <li>Instant preview of primary and related cameras</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Manage alarms (reassign, change status, comment)</li> </ul>	Yes (Smart/Mobile Client)
<ul style="list-style-type: none"> <li>Integration with map function</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Alarm description/work instructions</li> </ul>	Yes (Smart/Mobile Client)
<ul style="list-style-type: none"> <li>Escalation and forwarding handling</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Print alarm report</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Alarm location maps in alarm list</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Combined access to live and playback video</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Audio notification at new alarm (configurable per priority level)</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Alarm handling reporting</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Dedicated Alarm Manager tab that can be displayed as floating window</li> </ul>	Yes (Smart Client)
<b>Map function (Client)</b>	
<ul style="list-style-type: none"> <li>Standard graphical file formats supported for maps</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Number of linked map layers supported</li> </ul>	Unlimited (Smart Client)
<ul style="list-style-type: none"> <li>Video preview</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Integrated control of speakers, microphones and I/O devices</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Drag-and-drop and point-and-click definition of map elements</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Integrated PTZ control</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Real-time system integrity overview and system performance</li> </ul>	Yes (Smart Client)
<b>Smart Wall support (Client)</b>	
<ul style="list-style-type: none"> <li>User control of layout and content</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>User control playback of video in Smart Wall</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Local subscription to Smart Wall views for local display</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Push rich content to Smart Wall, such as maps, still images, http pages, alarms, bookmarks</li> </ul>	Yes (Smart Client)
<b>Export (Client)</b>	
<ul style="list-style-type: none"> <li>Export in still image format (JPEG)</li> </ul>	Yes (Smart/Web/Mobile Client)
<ul style="list-style-type: none"> <li>Export in media player format (AVI)</li> </ul>	Yes (Smart/Web/Mobile Client)
<ul style="list-style-type: none"> <li>Export with audio in media player format (AVI)</li> </ul>	Yes (Smart Client)
<ul style="list-style-type: none"> <li>Export with audio in media player format (MKV)</li> </ul>	Yes (Smart Client)

● Export in Network Video Management System format	Yes (Smart Client)
● Export in Original format	Yes (Smart/Web Client)
● Server side export	Yes (Smart/Web Client)
● Encrypted export with password	Yes (Smart Client)
● Digital signing of exported video	Yes (Smart Client)
● Re-export prevention	Yes (Smart Client)
● Auto-export of Smart Client – Player	Yes (Smart Client)
● Preserve system defined privacy masks	Yes (Smart/Web/Mobile Client)
● Additional export specific privacy masks	Yes (Smart Client)
● Direct export to optical media	Yes (Smart Client)
● Flexible camera selection for export	Yes (Smart Client)
● Bulk export to multiple media formats	Yes (Smart Client)
● General and camera specific export comments	Yes (Smart Client)
● Pre/post comment slides (media player format only)	Yes (Smart Client)
● Verification of digital video signatures in Smart Client – Player	Yes (Smart Client)

#### Video Push (Client)

● Video Push	Yes (Mobile Client)
● Include location metadata with Video Push	Yes (Mobile Client)

#### System Monitoring (Client)

● Access real-time and historical system performance information (refer to System Monitor section for	Yes (Smart Client)
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#### Installation (Client)

● Run without installation	Yes (Web Client)
● Optional browser plug-ins for enhance viewing performance	Yes (Web Client)
● Single step installer (installs client together with server)	Yes (Smart Client)
● Initial and update installations from Management Server	Yes (Smart Client)

#### System access (Client)

● Auto-login	Yes (Smart/Mobile Client)
● Dual authorization	Yes (Smart Client)
● Secure (HTTPS) client-server connection	Yes (Smart/Web Client)
● Dynamic bandwidth adaptation	Yes (Smart/Web Client)
● Bandwidth threshold	Yes (Smart/Web Client)

#### Authorization (Client)

● Restrict user access by devices (cameras, microphones, I/O devices, etc.)	Yes (Smart/Web/Mobile Client)
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● Restrict access to live view	Yes (Smart/Web/Mobile Client)
● Restrict access to PTZ	Yes (Smart/Web/Mobile Client)
● Restrict access to playback	Yes (Smart/Web/Mobile Client)
● Restrict access to export	Yes (Smart/Web/Mobile Client)
● Restrict access to setup	Yes (Smart Client)

Personalization (Client)	
● Application options	Yes (Smart/Mobile Client)
● Centralized management of application options	Yes (Smart/Web/Mobile Client)
● Application theme support	Yes (Smart Client)
● Task oriented tabs	Yes (Smart Client)
● Toggle between Advanced mode and Simplified mode. Default mode: A – Advanced, S - Simplified	A

System (Client)	
● Hardware accelerated video decoding (Intel Quick Sync video)	Yes (Smart Client)

Languages (Installation, UI and help function) (Client)	
● Arabic	Yes (Smart/Web/Mobile Client)
● English	Yes (Smart/Web/Mobile Client)
● French	Yes (Smart/Web/Mobile Client)
● German	Yes (Smart/Web/Mobile Client)
● Japanese	Yes (Smart/Web/Mobile Client)
● Spanish	Yes (Smart/Web/Mobile Client)
● Turkish	Yes (Smart/Web/Mobile Client)

System (Hardware)	
● Form Factor	2U
● Dimension (HxWxD)	88.2 x 446 x 410 mm
● RAID	RAID0, RAID1, RAID3, RAID5, RAID10, RAID1E, RAID30, RAID50, RAID6, RAID60
● Number of HDD Drives	8 Drives (3.5")
● Drive Type	SATA (6G/s), Hot Swappable
● AC input	100-240V, 50-60Hz

Interface (Hardware)	
● Ethernets	2x Gigabit Ethernet (RJ45)
● Audio	Mic-in, Line-in, Line-out, S/PDIF-out
● USB2	2x USB2.0 (2x Rear)
● USB3	6x USB3.0 (2x Front, 4x Rear)

● HDMI	1x HDMI (max. resolution: 4096x2160)
● VGA	1x HD15 (max. resolution: 2048x1536)
● Display Port	1x DisplayPort

Software (System Requirements)	
● Support OS	Windows Embedded Standard 7 Runtime (WS7P)

Computer running Management Client (System Requirements)	
● CPU	Intel® Core™2 Duo
● RAM	Minimum 2 GB
● Network	Ethernet 100 Mbit
● Graphics Adapter	Onboard GFX, AGP or PCI-Express, minimum 1024 x 768 (1280 x 1024 recommended), 16-bit color
● Hard Disk Space	Minimum 1 GB free
● Operating System	Microsoft® Windows® 7 Professional SP1 (64-bit) Microsoft® Windows® 7 Enterprise SP1 (64-bit) Microsoft® Windows® 7 Ultimate SP1 (64-bit) Microsoft® Windows® 8 Pro (64-bit) Microsoft® Windows® 8 Enterprise (64-bit) Microsoft® Windows® 8.1 Pro (64 bit) Microsoft® Windows® 8.1 Enterprise (64 bit) Microsoft® Windows® 10 Pro (64 bit) Microsoft® Windows® 10 Enterprise (64 bit) Microsoft® Windows® Server 2008 R2 (64 bit): Standard, Web, High Performance Computing (HPC), Enterprise, and Datacenter Microsoft® Windows® Server 2012 (64 bit): Standard and Datacenter Microsoft® Windows® Server 2012 R2 (64 bit): Standard and Datacenter
● Software	Microsoft® .NET 4.5.1 Framework, DirectX 9 or newer

Computer running Mobile Server - Using software transcoding (System Requirements)	
● CPU	Intel® Core™2 Duo
● RAM	Minimum 2 GB
● Network	Ethernet 100 Mbit
● Graphics Adapter	Onboard GFX, AGP, or PCI-Express, minimum 1024 x 768, 16-bit color
● Hard Disk Space	Minimum 10 GB free (depends on number of cameras and recording settings)
● Operating System	Microsoft® Windows® 7 Professional SP1 (64-bit) Microsoft® Windows® 7 Enterprise SP1 (64-bit) Microsoft® Windows® 7 Ultimate SP1 (64-bit) Microsoft® Windows® 8 Pro (64-bit) Microsoft® Windows® 8 Enterprise (64-bit) Microsoft® Windows® 8.1 Pro (64 bit) Microsoft® Windows® 8.1 Enterprise (64 bit) Microsoft® Windows® 10 Pro (64 bit) Microsoft® Windows® 10 Enterprise (64 bit) Microsoft® Windows® Server 2008 R2 (64 bit): Standard, Web, High Performance Computing (HPC), Enterprise, and Datacenter Microsoft® Windows® Server 2012 (64 bit): Standard and Datacenter Microsoft® Windows® Server 2012 R2 (64 bit): Standard and Datacenter
● Software	Microsoft® .NET 4.5.1 Framework

Computer running Mobile Server - Using hardware transcoding (System Requirements)	
● CPU	Intel CPU supporting Intel QuickSync, Intel GPU enabled in BIOS
● RAM	Minimum 2 GB
● Network	Ethernet 100 Mbit

● Graphics Adapter	Onboard GFX, AGP, or PCI-Express, minimum 1024 x 768, 16-bit color
● Hard Disk Space	Minimum 10 GB free (depends on number of cameras and recording settings)
● Operating System	Microsoft® Windows® 8.1 Pro (64 bit) Microsoft® Windows® 8.1 Enterprise (64 bit) Microsoft® Windows® 10 Pro (64 bit) Microsoft® Windows® 10 Enterprise (64 bit) Microsoft® Windows® Server 2012 (64 bit): Standard and Datacenter Microsoft® Windows® Server 2012 R2 (64 bit): Standard and Datacenter
● Software	Microsoft® .Net 4.5.1 Framework DirectX 11 or newer

Computer running Smart Client, Smart Client - Player and Smart Wall - Using Software Decoding (System Requirements)	
● CPU	Intel® Core™2 Duo
● RAM	Minimum 1 GB
● Network	Ethernet 100 Mbit
● Graphics Adapter	Onboard GFX, AGP or PCI-Express, minimum 1280 x 1024, 16-bit colors, DirectX 9.0 or newer
● Hard Disk Space	1 GB free
● Operating system	Microsoft® Windows® 7 Professional SP1 (32-bit or 64-bit) * Microsoft® Windows® 7 Enterprise SP1 (32-bit or 64-bit) * Microsoft® Windows® 7 Ultimate SP1 (32-bit or 64-bit) * Microsoft® Windows® 8 Pro (32-bit or 64-bit) Microsoft® Windows® 8 Enterprise (32-bit or 64-bit) Microsoft® Windows® 8.1 Pro (32-bit or 64-bit) Microsoft® Windows® 8.1 Enterprise (32-bit or 64-bit) Microsoft® Windows® 10 Pro (32-bit or 64-bit) Microsoft® Windows® 10 Enterprise (32-bit or 64-bit)
● Operating system (contd)	Microsoft® Windows® Server 2008 R2 (32-bit or 64-bit): Standard, Web, High Performance Computing (HPC), Enterprise, and Datacenter Microsoft® Windows® Server 2012 (32-bit or 64-bit): Standard and Datacenter Microsoft® Windows® Server 2012 R2 (32-bit or 64-bit): Standard and Datacenter Microsoft® Windows® 7 and Server 2008 R2 are only supported on physical PC's not on virtual machines
● Software	Microsoft® .Net 4.5.1 Framework Requires Operating System and Graphic Adaptor support for DirectX 9.0 or newer

Computer running Smart Client, Smart Client - Player and Smart Wall - Using Hardware Decoding (System Requirements)	
● CPU	Intel CPU supporting Intel QuickSync, Intel GPU enabled in BIOS
● RAM	Minimum 1 GB
● Network	Ethernet 100 Mbit
● Graphics Adapter	AGP or PCI-Express, minimum 1280 x 1024, 32-bit colors, DirectX 11.0 or newer
● Hard Disk Space	1 GB free
● Operating system	Microsoft® Windows® 8.1 Pro (32-bit or 64-bit) Microsoft® Windows® 8.1 Enterprise (32-bit or 64-bit) Microsoft® Windows® 10 Pro (32-bit or 64-bit) Microsoft® Windows® 10 Enterprise (32-bit or 64-bit) Microsoft® Windows® Server 2012 (32-bit or 64-bit): Standard and Datacenter Microsoft® Windows® Server 2012 R2 (32-bit or 64-bit): Standard and Datacenter
● Software	Microsoft® .Net 4.5.1 Framework Requires Operating System and Graphic Adaptor support for DirectX 11.0 or newer

Computer running Web Client (System Requirements)	
● CPU	Intel Core2 Duo, 2.0 GHz Intel Core i3-5010U 2.1 Ghz*
● RAM	1 GB 4 GB*
● Network	Ethernet 100Mbit / WiFi 2Mbit
● Graphics Adapter	AGP or PCI-Express, minimum 1280 x 1024, 16 bit colors

● Hard Disk Space	500 MB free
● Operating System	Any capable of running the below browsers
● Browser	Microsoft Internet Explorer® 9 or later** Safari® 5 or later** Google Chrome™ 16 or later Google Chrome™ 48 or later (recommended)* Mozilla® Firefox® 11 or later Mozilla® Firefox® 43 or later (recommended)*

Device running Mobile Client (System Requirements)	
● RAM	2GB*
● Operating System	Android 4.0 or higher iOS 9.2 or higher
● Network	2G/3G (4G or WiFi)*

Notes	
● *	Required for using Direct Streaming
● **	Not supported when using Direct Streaming