**NVR2100 Series, Hardware RAID Megapixel NVR**

**Architectural and Engineering Specification**

**Part 1: General**

* 1. **General Information**

Such as summary, general product requirements, quality assurance, general system description, glossary of terms, references, submittals, delivery storage and handling, drawings, specifications, project background, site conditions, services, applicable codes and standards should be stated in here according to the tender requirements.

**Part 2: Products**

* 1. **General Description**

The NVR2100 Hardware RAID NVR is part of Surveon Corporate NVR7000 Series. Featuring enterprise-grade EonStor storage subsystem with RAID 1, 5, 6, 10, 30, 50, 60 data protection, the NVR2100 supports Full HD (1080P) recording of up to 64 channels and meets any requirements from 48 to 448 TB. Based on the client-server architecture, the NVR2100 provides high I/O, large capacities, and overall system stability necessary for scalable projects. The NVR2100 is equipped with the Intel Core i3 or Intel quad-core Xeon platform and supports the SAS and iSCSI storage. The hot-swappable, redundant components such as cable design, cooling fan modules and power supplies also ensure excellent system reliability and easy maintenance for middle to large applications.

The Surveon Video Management Software (VMS) is an enterprise-grade security management solution. Scalable and effective, the Surveon VMS is based on the client-server architecture and featured with intuitive monitoring, real-time detection, intelligent searches, video analytics, investigative tools, multi-access, easy scalability, and optimized megapixel recording to deliver highly integrated and reliable solutions.

Surveon Control Center (SCC) is based on the enterprise level client-server architecture and the domain based framework with the advanced features including TV-wall, central alarm management, I/O control, and advanced event report system. With the SCC, project managers can easily handle a distributed system with unlimited cameras, multiple servers and clients, and effectively take charge of the entire system using the centralized management.

* 1. **Network Video Recorder (NVR) Hardware Features**

1. The server hardware shall be capable of running the Windows embedded systems.
2. Standard resolution and high resolution mega-pixel IP cameras shall be selectable. MPEG-4 H.264 or MJPEG video compression format shall be user selectable on any camera. Video recording shall be available at up to 30 frames per second per input channel depending on IP camera type and server model selected.
3. Each server shall have a 2 Gbit Base-T RJ-45 Ethernet connection for networking to remote PC clients. Multiple servers shall be accessible by multiple clients located anywhere on the network. Each server shall record video, audio, and text while displaying live video or playback video. In the event that there is no client actively attached to the server, the server shall continue to record video and audio, monitor events and all other server functions.
4. Recorded video shall be triggered by built in motion detection, an external input device, or in continuous record mode. A 24/7 scheduler shall allow individual cameras to be configured. Video shall be recorded to SAS or iSCSI storage.
5. The RAID 0, 1 (0+1), 3, 5, 6, 10, 30, 50, 60, hot-spare, online expansion, RAID migration, intelligent drive handling options shall be internal to the server and shall provide notification of a drive failure to the administrator.
6. Each server shall have a watchdog system that monitors the system and automatically reboots the system should it lock-up or fail to operate.
   1. **External Storage**
7. The Network Video Recorder software shall support NAS and iSCSI connected external storage units.
8. The latest list of supported external storage devices shall be available on the manufacturer's web site.

* 1. **Supported IP Cameras & Peripheral Devices**

1. The Network Video Recorder shall interoperate with cameras of a range of types from a variety of manufacturers.
2. The Network Video Recorder shall support dual-streaming from IP cameras or encoders that support this functionality.
3. The Network Video Recorder shall include driver support for IP fixed cameras.
4. The Network Video Recorder shall include driver support for IP pan-tilt-zoom cameras.
5. The Network Video Recorder shall include driver support for IP Megapixel cameras.
6. Supported cameras shall be easily interchangeable between different models without the need to register each individual MAC address.
7. The latest list of supported devices must be available on the manufacturer’s web site.
   1. **Maintenance / Software Upgrades**
8. Firmware updates (REFLASH) to the Network Video Recorder firmware shall be supported from any fast and reliable connection, whether it is executed over the LAN, WAN or internet.

* 1. **IT Requirements / Networking**

1. The Network Video Recorder shall operate as a read-only platform that prevents the installation of any third party software and restricts any file-level access to provide for a stronger level of virus protection and ensure a higher up-time operation in a commercial/industrial environment.
2. The Network Video Recorder system shall integrate into standard TCP/IP network environments.
3. The Network Video Recorder software shall support a static IP address setting from the local IT administrator for both of the client and camera network interface cards (NICs).
4. The Network Video Recorder software shall support receiving its IP address information from an existing dynamic host configuration protocol (DHCP) server for the user’s network (LAN1). In addition, it shall include the option of being the DHCP server for smaller environments where a DHCP server may not available.
   1. **Security**
5. The Network Video Recorder shall be designed to provide multiple levels of access and management.
6. The Network Video Recorder software shall support 3 different levels of permissions for each individual camera. Each group of users shall have their own unique combination of permission settings:
7. Viewer – (Basic Access)
8. Power User – (Users have same rights as Viewer, plus modify camera settings)
9. Administrator – (Users have full rights to camera and system settings)
   1. **Application Programmer Interface (API)**
10. The system must have the ability to host multiple remote users, archive data, and search for data, all while recording multiple video streams.
    1. **The Storage Overview**
11. ESDS 1012G and ESDS1016G are highly affordable yet fully featured entry-level storage for SMBs with a 12-bay 2U and 16-bay 3U form factors. Featuring a single controller with four iSCSI ports and support for hybrid interconnects with Fibre Channel or SAS. Performance and features redefine return on investment, including support for automated storage tiering and remote replication, while snapshot, thin provisioning, and volume copy/mirror are included.
12. ESDS 1012G and ESDS1016G shall have up to 550K IOPS and 2,800 MBps throughput.
13. ESDS 1012G and ESDS1016G shall have super capacitors to deliver power and securely save cached data to flash modules during electric grid outages.
14. ESDS 1012G shall have the scalability to expand storage to 1,872TB using a total 312 drives via JBOD enclosures.
15. ESDS1016G shall have the scalability to expand storage to 1,896TB using a total 316 drives via JBOD enclosures.
16. ESDS 1012G and ESDS1016G shall have hybrid host interface with four 1Gb/s onboard iSCSI ports.
17. 1Gb/s iSCSI enables highly networked storage as required in growing IP SAN deployments.
18. Combine diverse connectivity environments on one system for greater utility
19. ESDS 1012G and ESDS1016G shall have multiple host interface options to choose from 8Gb/s or 16Gb/s Fibre Channel, 1Gb/s or 10Gb/s iSCSI, or 6Gb/s SAS.
20. ESDS 1012G and ESDS1016G shall have automated storage tiering, using SSD, accelerate performance up to three times compared to all-spin storage.
21. ESDS 1012G and ESDS1016G shall have secure remote replication; 128-bit encrypted backup to offsite locations provides very reliable and safe disaster recovery.
22. ESDS 1012G and ESDS1016G shall have tiered event messages for clear and easily actionable system notifications.
23. ESDS 1012G and ESDS1016G shall have smart media scan to work in the background to enhance data integrity and prevent corruption.
24. ESDS 1012G and ESDS1016G shall have thin provisioning to improve storage utilization up to 80%.
25. ESDS 1012G and ESDS1016G shall have multi-target snapshot with up to 4096 targets, always have backups to recover vital data at different points in time.
26. ESDS 1012G and ESDS1016G shall have multi-pair volume copy/mirror, up to 64 pairs ensure entire volumes can be backed up with minimal effort as data grows.
27. ESDS 1012G and ESDS1016G shall have SANWatch 3.0 interface for user friendly browser-based deployment and management.
28. ESDS 1012G and ESDS1016G shall have intelligent drive spin-down and 80 PLUS power supplies to lower costs through reduced power draw and longer drive lifespan.
29. ESDS S12S-G2240 and ESDS S16S-G2240 shall have thin provisioning to ensure the most efficient allocation of pooled capacity.
30. ESDS S12S-G2240 and ESDS S16S-G2240 shall have data protections including snapshot and volume copy/volume mirror to support the highest data availability and quick service restart after storage accidents.
31. ESDS S12S-G2240 and ESDS S16S-G2240 shall have two 6Gb/s SAS host ports to support best-in-class throughput power, ideal fit for bandwidth-demanding applications.
32. ESDS S12S-G2240 and ESDS S16S-G2240 are green designed with high-efficiency power supplies and intelligent multi-level drive spin-down technology. 80 PLUS-certified power supplies delivering more than 80% energy efficiency and in spin-down state, drives can save up to 60% of energy consumption.
33. ESDS S12S-G2240 and ESDS S16S-G2240 shall have CacheSafe technology to support the backup battery automatically supplies power to write cached data into flash module for permanent protection during power outage.
34. ESDS S12S-G2240 and ESDS S16S-G2240 are fault-tolerant hardware modules with redundant PSUs, fans; high-availability hardware design, preventing "single-point-of-failure".
35. ESDS S12S-G2240 and ESDS S16S-G2240 shall support expansion up to 112 HDDs and "pay-as-you-grow" scalability.
36. ESDS S12S-G2240 and ESDS S16S-G2240 shall support powerful management suite (SANWatch), including multi-pathing functions to recognize and manage redundant paths, support path failover and load-balancing for easy management and monitoring of your subsystems anywhere, locally or remotely.
37. ESDS S12S-G2240 and ESDS S16S-G2240 shall have multiple monitoring methods for real-time problem detection and notification to achieve continuous operation.  
    1. **Equipment**
38. **NVR2100 Series Head Hardware Specification**
39. System: Client-server architecture, Chassis: 1U 19" Rack
40. Server Processor: Intel Core i3 @ 3.3 GHz or Intel XEON @ 3.2 GHz
41. System Memory: 4GB, DDRIII-1333
42. Operating System: 2.5” HDD with Windows 7 Embedded System
43. I/O Interface:
    1. PS2 Mouse port x1
    2. PS2 Keyboard port x1
    3. USB port x2
    4. Serial Port x1
    5. VGA Port x1
    6. RJ-45: 2x Gigabit Ethernet
    7. SAS Expansion port (Optional)
44. Electrical:
    1. Input voltage: 100-240 V, 50-60 Hz, 4.2-1.8 Amp
    2. Power Supply: Single 350 watt AC power
45. Power Consumption: Rated output power: 350 W
46. Weight: 16.5kg (38 lb.)
47. Dimensions: 50.3(W)x 43.7(D)x 4.3(H) cm (19.85 " x 17.2 " x 1.7 ")
    1. Operating: 10° C to 35° C (50° F to 95° F)
    2. Temperature:• Non-operating: -40° C to 70° C (-40° F to 158° F)
48. Operating Environment: Humidity:
    1. Operating: 8% to 90%, non-condensing
    2. Non-operating: 5% to 95% non-condensing
49. Certification: CB, FCC / CE Class A, UL60959/ IEC 60950, CCC
50. **ESDS 1012G Specification**
51. Form Factor: 2U 12bay LFF
52. Storage Controller: Single or Dual-redundant
53. Host Connectivity (per controller):
    1. 2 x 16Gb FC ports
    2. 4 x 8Gb FC ports
    3. 2 x 10Gb iSCSI ports (SFP+ or RJ-45)
    4. 4 x 1Gb iSCSI ports
    5. 2 x 6Gb SAS ports
54. Onboard iSCSI Ports (per controller): 4
55. Cache Memory (per controller):
    1. 2GB
    2. 4GB
    3. 8GB
    4. 16GB
56. Max. Drives (per system): 12
57. Max. Drives (via expansion enclosures): 312
58. Expansion Enclosure (JBOD)
    1. JB 2012-1
    2. JB 2012
    3. JB 2048
    4. JB 2060
59. SAS Expansion Ports (per controller): 1 x 6Gb/ SAS port
60. Cache Backup Techniques:
    1. Super capacitor + Flash module
    2. BBU (hot-swappable) + Flash module
61. Supported Drives:
    1. 2.5" SATA/SAS SSD - Up to 600GB/2TB
    2. 2.5" 10K RPM SAS HDD - Up to 1.2TB
    3. 3.5" 7200 RPM NL SAS HDD - Up to 6TB (ESDS 1012/1016 only)
    4. 3.5" 7200 RPM SATA HDD - Up to 5TB (ESDS 1012/1016 only)
62. Power & Cooling:
    1. Power supply: Two redundant 460W
    2. Voltage and Frequency: 100-240 Vac, 50-60Hz
63. Green Design:
    1. 80 PLUS power supplies delivering more than 80% energy efficiency
    2. Intelligent multi-level drive spin-down
64. RAID Configurations:
    1. RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60
    2. Up to 32 logical drives and 64 par titions per logical volume
    3. Up to 2048 LUNs
65. Data Services
    1. Local Replication

* Snapshot images per source volume, Standard License: 64 / Advanced License: 256
* Snapshot images per system, Standard License: 128 / Advanced License: 4096
  1. Volume Copy/Mirror
* Source volumes per system, Standard License: 16 / Advanced License: 32
* Replication pairs per source volume, Standard License: 4 / Advanced License: 8
* Replication pairs per system, Standard License: 64 / Advanced License: 256
  1. Thin Provisioning (default included)
* "Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space.
  1. Self-encrypting drives
* Unique factory encryption secures data plus makes deletion simple and complete
  1. Remote Replication (optional license)
* Replication per source volume: 16
* Replication pairs per source volume: 4
* Replication pairs per system: 64
  1. Automated Storage Tiering (optional license)
* Two(2) or four(4)storage tiers based on drive types
* SSD supports

1. Availability and Reliability
   1. Redundant, hot-swappable hardware modules
   2. Multi-pathing support (EonPath); Device mapper support
   3. Cache backup technology: protects cached data during power outage by flushing data into flash memory
   4. Port trunking / link aggregation (IEEE 802.3ad), fail-over, jumbo frame
2. Management
   1. SANWatch management suite
   2. Embedded RAIDWatch
   3. Terminal via RS-232C
   4. Telnet/SSH
3. Notification:
   1. Email
   2. Fax
   3. LAN Broadcast
   4. SNMP Traps
   5. SMS
   6. Skype
4. OS Support
   1. Microsoft Windows Server 2008 / 2008 R2 / 2012 / 2012 R2
   2. Microsoft Windows Hyper-V
   3. Red Hat Enterprise Linux
   4. SUSE Linux Enterprise
   5. Sun Solaris
   6. Mac OS X
   7. HP-UX
   8. IBM AIX
   9. VMware
   10. Citrix XenServer
5. Service and Support
   1. Standard service3-year limited hardware warranty and 8x5 phone, web, and email support (Batteries are covered under warranty for 2 years).
   2. Upgrade/extension options

* Replacement part dispatch on the next business day (up to 5 years)
* Advanced service: 24x7 phone, web, and email support + onsite diagnostics on the next business day (up to 5 years)
* Premium service: 24x7 phone, web, and email support + onsite diagnostics in 4 hours (up to 5 years)
* Extended standard service up to 5 years

1. **ESDS 1016G Specification**
2. Form Factor: 3U 16bay LFF
3. Storage Controller: Single or Dual-redundant
4. Host Connectivity (per controller):
   1. 2 x 16Gb FC ports
   2. 4 x 8Gb FC ports
   3. 2 x 10Gb iSCSI ports (SFP+ or RJ-45)
   4. 4 x 1Gb iSCSI ports
   5. 2 x 6Gb SAS ports
5. Onboard iSCSI Ports (per controller): 4
6. Cache Memory (per controller):
   1. 2GB
   2. 4GB
   3. 8GB
   4. 16GB
7. Max. Drives (per system): 16
8. Max. Drives (via expansion enclosures): 316
9. Expansion Enclosure (JBOD)
   1. JB 2012-1
   2. JB 2012
   3. JB 2048
   4. JB 2060
10. SAS Expansion Ports (per controller): 1 x 6Gb/ SAS port
11. Cache Backup Techniques:
    1. Super capacitor + Flash module
    2. BBU (hot-swappable) + Flash module
12. Supported Drives:
    1. 2.5" SATA/SAS SSD - Up to 600GB/2TB
    2. 2.5" 10K RPM SAS HDD - Up to 1.2TB
    3. 3.5" 7200 RPM NL SAS HDD - Up to 6TB (ESDS 1012/1016 only)
    4. 3.5" 7200 RPM SATA HDD - Up to 5TB (ESDS 1012/1016 only)
13. Power & Cooling:
    1. Power supply: Two redundant 460W
    2. Voltage and Frequency: 100-240 Vac, 50-60Hz
14. Green Design:
    1. 80 PLUS power supplies delivering more than 80% energy efficiency
    2. Intelligent multi-level drive spin-down
15. RAID Configurations:
    1. RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60
    2. Up to 32 logical drives and 64 par titions per logical volume
    3. Up to 2048 LUNs
16. Data Services
    1. Local Replication

* Snapshot images per source volume, Standard License: 64 / Advanced License: 256
* Snapshot images per system, Standard License: 128 / Advanced License: 4096
  1. Volume Copy/Mirror
* Source volumes per system, Standard License: 16 / Advanced License: 32
* Replication pairs per source volume, Standard License: 4 / Advanced License: 8
* Replication pairs per system, Standard License: 64 / Advanced License: 256
  1. Thin Provisioning (default included)
* "Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space.
  1. Self-encrypting drives
* Unique factory encryption secures data plus makes deletion simple and complete
  1. Remote Replication (optional license)
* Replication per source volume: 16
* Replication pairs per source volume: 4
* Replication pairs per system: 64
  1. Automated Storage Tiering (optional license)
* Two(2) or four(4)storage tiers based on drive types
* SSD supports

1. Availability and Reliability
   1. Redundant, hot-swappable hardware modules
   2. Multi-pathing support (EonPath); Device mapper support
   3. Cache backup technology: protects cached data during power outage by flushing data into flash memory
   4. Port trunking / link aggregation (IEEE 802.3ad), fail-over, jumbo frame
2. Management
   1. SANWatch management suite
   2. Embedded RAIDWatch
   3. Terminal via RS-232C
   4. Telnet/SSH
3. Notification:
   1. Email
   2. Fax
   3. LAN Broadcast
   4. SNMP Traps
   5. SMS
   6. Skype
4. OS Support
   1. Microsoft Windows Server 2008 / 2008 R2 / 2012 / 2012 R2
   2. Microsoft Windows Hyper-V
   3. Red Hat Enterprise Linux
   4. SUSE Linux Enterprise
   5. Sun Solaris
   6. Mac OS X
   7. HP-UX
   8. IBM AIX
   9. VMware
   10. Citrix XenServer
5. Service and Support
   1. Standard service3-year limited hardware warranty and 8x5 phone, web, and email support (Batteries are covered under warranty for 2 years).
   2. Upgrade/extension options

* Replacement part dispatch on the next business day (up to 5 years)
* Advanced service: 24x7 phone, web, and email support + onsite diagnostics on the next business day (up to 5 years)
* Premium service: 24x7 phone, web, and email support + onsite diagnostics in 4 hours (up to 5 years)
* Extended standard service up to 5 years

1. **ESDS S12S-G2240 Specification**
2. Storage Controller: Single or Dual-redundant
3. Host Connectivity (per controller): Two (2) 6Gb/s SAS 4x wide ports
4. Cache Memory (per controller): Default 1GB, up to 4GB
5. Drive Connectivity: 6Gb/s SAS
6. Max. Drives (per system): 12
7. Max. Drives (via JBOD): 84
8. Expansion Enclosure (JBOD):
   1. ESDS S12S-J2000-R
   2. ESDS S12S-J2000-G
9. SAS Expansion Port (per controller): 1 x 6Gb/s SAS 4x wide port
10. Supported Drives:
    1. 2.5” 10K RPM SAS drives – 300GB, 450GB, 600GB, 900GB, 1.2TB
    2. 3.5” 15K RPM SAS drives – 300GB, 450GB, 600GB
    3. 3.5” 7,200 RPM Nearline SAS drives – 1TB, 2TB, 3TB or 4TB
    4. 3.5” 7,200 RPM SATA drives – 2TB, 3TB, 4TB
11. Power Supplies: Two redundant 350W
12. Form Factor: 2U, 19-inch rackmount
13. Green
    1. 80 PLUS-certified power supplies delivering more than 80% energy efficiency
    2. Intelligent multi-level drive spin-down
14. RAID Configurations
    1. RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60
    2. Up to 32 logical drives and 64 partitions per logical volume
    3. Up to 1024 LUNs
15. Data Services
    1. Local Replication

* Snapshot images per source volume, Standard License: 64 / Advanced License: 256
* Snapshot images per system, Standard License: 1024 / Advanced License: 4096
  1. Volume Copy/Mirror
* Source volumes per system, Standard License: 16 / Advanced License: 32
* Replication pairs per source volume, Standard License: 4 / Advanced License: 8
* Replication pairs per system, Standard License: 64 / Advanced License: 256
  1. Thin Provisioning (default included)
* "Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space.

1. Availability and Reliability
   1. Redundant, hot-swappable hardware modules
   2. Multi-pathing support (EonPath); Device mapper support
   3. CacheSafe technology: protects cached data during power outage by flushing data into flash memory.
2. Management
   1. SANWatch management suite
   2. Embedded RAIDWatch
   3. Terminal via RS-232C
   4. Telnet/SSH
   5. LCD keypad panel
3. Notification:
   1. Email
   2. Fax
   3. LAN Broadcast
   4. SNMP Traps
   5. SMS
   6. Skype
4. OS Support
   1. Windows Server 2003, Windows Server 2008 / 2008 R2 / 2012 (including Hyper-V)
   2. Red Hat Enterprise Linux
   3. VMware
5. Service and Support
   1. Standard Service3-year limited hardware warranty and 8x5 phone, web, and email support
   2. Upgrade/Extension Options

* Replacement part dispatch on the next business day (up to 5 years)
* Advanced service: 24x7 phone, web, and email support + onsite diagnostics on the next business day (up to 5 years)
* Premium service: 24x7 phone, web, and email support + onsite diagnostics in 4 hours (up to 5 years)
* Extended standard service up to 5 years

1. **ESDS S16S-G2240 Specification**
2. Storage Controller: Single or Dual-redundant
3. Host Connectivity (per controller): Two (2) 6Gb/s SAS 4x wide ports
4. Cache Memory (per controller): Default 1GB, up to 4GB
5. Drive Connectivity: 6Gb/s SAS
6. Max. Drives (per system): 16
7. Max. Drives (via JBOD): 112
8. Expansion Enclosure (JBOD):
   1. ESDS S16S-J2000-R
   2. ESDS S16S-J2000-S
9. SAS Expansion Port (per controller): 1 x 6Gb/s SAS 4x wide port
10. Supported Drives:
    1. 2.5” 10K RPM SAS drives – 300GB, 450GB, 600GB, 900GB, 1.2TB
    2. 3.5” 15K RPM SAS drives – 300GB, 450GB, 600GB
    3. 3.5” 7,200 RPM Nearline SAS drives – 1TB, 2TB, 3TB or 4TB
    4. 3.5” 7,200 RPM SATA drives – 2TB, 3TB, 4TB
11. Power Supplies: Two redundant 530W
12. Form Factor: 3U, 19-inch rackmount
13. Green
    1. 80 PLUS-certified power supplies delivering more than 80% energy efficiency
    2. Intelligent multi-level drive spin-down
14. RAID Configurations
    1. RAID level 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60
    2. Up to 32 logical drives and 64 partitions per logical volume
    3. Up to 1024 LUNs
15. Data Services
    1. Local Replication

* Snapshot images per source volume, Standard License: 64 / Advanced License: 256
* Snapshot images per system, Standard License: 1024 / Advanced License: 4096
  1. Volume Copy/Mirror
* Source volumes per system, Standard License: 16 / Advanced License: 32
* Replication pairs per source volume, Standard License: 4 / Advanced License: 8
* Replication pairs per system, Standard License: 64 / Advanced License: 256
  1. Thin Provisioning (default included)
* "Just-in-time" capacity allocation optimizes storage utilization and eliminates allocated but unused storage space.

1. Availability and Reliability
   1. Redundant, hot-swappable hardware modules
   2. Multi-pathing support (EonPath); Device mapper support
   3. CacheSafe technology: protects cached data during power outage by flushing data into flash memory.
2. Management
   1. SANWatch management suite
   2. Embedded RAIDWatch
   3. Terminal via RS-232C
   4. Telnet/SSH
   5. LCD keypad panel
3. Notification:
   1. Email
   2. Fax
   3. LAN Broadcast
   4. SNMP Traps
   5. SMS
   6. Skype
4. OS Support
   1. Windows Server 2003, Windows Server 2008 / 2008 R2 / 2012 (including Hyper-V)
   2. Red Hat Enterprise Linux
   3. VMware
5. Service and Support
   1. Standard Service3-year limited hardware warranty and 8x5 phone, web, and email support
   2. Upgrade/Extension Options

* Replacement part dispatch on the next business day (up to 5 years)
* Advanced service: 24x7 phone, web, and email support + onsite diagnostics on the next business day (up to 5 years)
* Premium service: 24x7 phone, web, and email support + onsite diagnostics in 4 hours (up to 5 years)
* Extended standard service up to 5 years
  1. **The Software Overview**

1. The software shall be used to view live and recorded video from capture cards and IP devices connected to local and wide area networks. The software shall have a client/server-based architecture that can be configured as a standalone software system with the client software running on the server hardware and/or the client running on any network-connected TCP/IP workstation. Multiple client workstations shall be capable of simultaneously viewing live and/or recorded video from one or more servers. Multiple servers shall also be able to simultaneously provide live and/or recorded video to one or more workstations. The server software shall also have the ability to be installed on an IP edge device—such as an IP camera or encoder that allows for 3rd party applications—allowing the device to serve as both a server and IP video recording device.
2. The software shall utilize manufacturer built servers, commercial-off-the-shelf (COTS) computer workstations, servers, IP edge devices that allow for third-party application installation, networking devices and storage equipment.
3. Recording of all video transmitted to the software shall be continuous, uninterrupted and unattended.
4. The software shall offer the capability of video motion detection recording, such that video is recorded when the software detects motion within a region of interest of the camera’s view. Video prior to the detection of the motion shall also be stored with recording using the pre-recorded feature.
5. The software shall manage the video it has been configured to monitor. Loss of video signal shall be configured to annunciate on software client by an on-screen visual indication alerting operators of video loss.
6. The software shall have an open architecture supporting IP cameras and encoders from multiple manufacturers providing best-of-breed solutions ranging from low-cost, entry-level features to high-resolution, megapixel features.
7. The software client shall be able to view live video and audio, recorded video and audio and be able to configure the complete system all from a single application.
8. The software shall continue to record video and audio at all times during the administration and configuration of any feature.
9. The software client shall have the same functionality when connected remotely as it does when it is run locally on the same computer as the server software.
10. The software client shall add and remove features based on the permissions of the user and the licensed functionality.
11. The software client shall operate on all of the following operating systems:  
    Windows7 Professional, Enterprise, Ultimate
12. The software shall also allow an authorized user to view video through a web client interface. The web client interface shall allow authorized users to view live video, view recorded video, and control pan-tilt zoom (PTZ) cameras. The web client interface shall allow connections to multiple software servers simultaneously.\*
13. The web client interface shall operate without requiring installation of any software.
14. The web client interface shall support the following browsers: Internet Explorer 6 and later.
15. The software server software shall record and retrieve video, audio and alarm data and provide it to the software clients upon request.
16. The software shall provide at no additional charge a purpose built mobile application capable of viewing multiple simultaneous live video streams and playing a recorded video stream. Application shall be provided for both iOS and Android operating systems
17. The software shall license the total number of cameras on the system. This license shall be based on the MAC address of a single network card that is present on the system. The software shall only require that this network card be enabled and does not require that data is actually sent through it.
18. The software server software shall run as a service. The software shall not require any application to be running in order to operate.
19. The software shall allow for a user’s permissions to be configured across multiple servers from a single screen.
20. The software shall allow the use of maps. The maps will be accessible to users with the appropriate permission levels and display video sources and their status.
21. The software shall allow maps to be embedded inside of maps (i.e. hierarchical or nested maps).
22. The software shall have a single page that displays the status of all servers and cameras currently connected. This page shall display any alarms, events, MAC addresses, camera configuration, format and frame rate from each individual camera.
23. The software shall support the use of a panoramic lens on an analog or IP camera. The software shall de-warp the image on both live and recorded video.
24. The software shall consist of a single client application.
25. The client software shall not be dependent on, nor require any connection to, a central management or configuration server.
26. The client software shall be installable without any need for software or hardware license.
27. The software shall have three methods of allowing third-party integration: command line, API and web SDK. The command line shall allow for the most basic of interfaces, calling up the appropriate video when requested using command line functionality. The API shall allow for a deeper interface, allowing video to be transmitted from the VMS into the party software interface. The web SDK shall use the web server to transcode the video and send it to the third-party software interface. The web SDK method shall use standard HTML, XML, and CGI commands.
    1. **The Software Features**
28. **Live View**
29. The software shall show live video from IP Cameras and Video Transmitters in MJPEG, MPEG4 and H.264 formats.
30. The software shall support cameras with resolutions ranging from Standard Definition, High Definition (HD) and up to 5 Megapixel.
31. The software shall allow configuration of the video and audio stream settings for each user, depending on the support hardware.
32. Users shall be able to move any camera image from one display screen to another via drag-and-drop.
33. Users shall be able to display any camera view.
34. The software shall allow the display of popup windows when objects detected via analytics on the video (up to 4 at once).
35. Users shall be able to take a snapshot of one image or all images currently displayed and save as a bitmap or JPEG image to a configurable location.
36. Users shall be able to adjust the camera volume.
37. Users shall be able to talk via a microphone to the chosen camera(s).
38. Users shall be able to broadcast via a microphone to all the cameras.
39. Users shall be able to replay currently viewed live video by a single mouse click for replays from 20 seconds, 1, 5, 15, 30, to 45 minutes before current time or from alarm time.
40. Users shall be able to set manual record time from 10, 20, to 30 minutes.
41. Users shall be able to set presets.
42. Users shall be able to select stream 1, 2 or stream 2 apply to all cameras for live viewing.
43. Users shall be able to have a quick access to image settings.
44. Users shall be able to adjust the window size, resize to fit window or keep video length-width ratio.
45. Users shall be able to insert images in JPEG, JPG, BMP, TIF, and PNG file formats or html as overlays.
46. Users shall be able to send views in smaller divisions to larger divisions for better viewing.
47. Users shall be able to remove or reconnect a camera from live view via a quick access.
48. When in live display mode, the user shall be able to receive live video, live audio and alarm information.
    1. 1-camera (full-screen) layout
    2. 1-camera (1x1) layout
    3. 4-camera (2x2) layout
    4. 4-camera (1+3, 1 large view and 3 small views) layout
    5. 6-camera (1+5, 1 large view and 5 small views ) layout
    6. 8-camera (1+7, 1 large view and 7 small views) layout
    7. 9-camera (3x3) layout
    8. 10-camera (2+8, 2 large views and 8 small views) widescreen layout
    9. 12-camera (4x3) widescreen layout
    10. 16-camera (4x4) widescreen layout
    11. 25-camera (5x5) widescreen layout
    12. 36-camera (6x6) widescreen layout
49. The software shall have the View Explorer for users to add different views.
50. The View Explorer shall include Add PAP (Picture and Picture) View for users to select multiple regions from one image to zoom.
51. The View Explorer shall include Add Fisheye View for users to have a best viewing result according to the fisheye installation, such as Ceiling Mount, Table/Floor Mount and Wall Mount.
52. The software shall have the SPOT functionality to have pages auto flip between pages.
53. The software shall have the HOME functionality to reset the viewing settings to the default setting, including page auto-flipping and different screen divisions.
54. The software shall have Event Log Window showing alarm and event information for a quick view.
55. The software shall display alarm notifications and have the instant playback functionality in the VI panel on the live view page.
56. The software shall allow the customization of the user interface to allow software triggers to be shown. This shall allow them to activate events through the push of a button, which could trigger recording, PTZ presets, output triggers or email.
57. The software shall allow users to pick their own icon and select the software triggers to display in the client. The software shall also display the status of any soft triggers on connected the software servers.
58. The software shall allow control of PTZ cameras to authorized users and be used to maneuver a PTZ camera. When used on a non-PTZ camera, it shall allow you to digitally pan, tilt and zoom on any video whether in live or recorded mode.
    1. PTZ graphics control windows
    2. Live graphic overlay PTZ control icons
    3. Digital PTZ
    4. USB joystick to control PTZ cameras
59. Users shall be able to zoom a PTZ camera in or out using the PC mouse.
60. Users shall be able to simultaneously pan, tilt and zoom a PTZ camera displayed in a video pane or monitor using a joy stick.
61. Users shall be able to adjust the focus of a PTZ camera using the on screen PTZ controls or a joystick:
    1. Focus near
    2. Focus far
    3. Auto-focus
62. Users shall be able to move a PTZ camera to a preset position using the on screen PTZ controls or a joystick.
63. Users shall be able to perform a custom command on a PTZ camera using the on screen PTZ controls.
64. Users shall be able to enter the menu on a PTZ camera using the on screen PTZ controls or a joystick (menu options navigated using pan and tilt).
65. Camera Gateway. Pan, tilt and zoom control with mouse and joystick Go to preset Set preset
66. The software shall have a feature for viewing logical groups of cameras. This shall allow efficient viewing of cameras in a logical order.
67. The software shall have a feature to organize your cameras into preset views. Views are preconfigured arrangements of the video panels so that they may be easily recalled later. A view can save the location of the video streams, audio streams, maps and event views. These views shall be accessible in both live and recorded video modes.
68. The software shall have the capability to automatically cycle through two or more saved views to create a video tour. The software shall allow the configuration of the dwell time and the different views it shall use.
69. Users shall be able to listen to audio from multiple cameras through PC speakers.
70. Users shall be able to speak to one or more cameras through a PC microphone.
71. Users shall be able to mute a client speaker.
72. The software shall have an option to allow or prevent simultaneous listen and speak (full duplex audio). If full duplex audio is off, the direction of audio will be switched automatically when the user listens or speaks.
73. **Playback**
74. The software client shall be used to search for and play back recorded video, and events from the software servers.
75. The software shall have the capability to search for and play back video from multiple cameras simultaneously. All recorded video shall be played back and displayed in a synchronized multi-camera layout.
76. The software shall support searching through recorded video based on time, date, video source and image region and have the results displayed as both a clickable timeline and a series of thumbnail images.
77. The software shall allow you to search on a specific area of recorded video and display only the frames where motion happened in that area.
78. The software shall have the capability to export video files.
79. The software shall provide the option of exporting the file in the following formats:
    1. AVI File (\*.avi) – a multimedia container format
80. The software shall play back video recorded in MJPEG, MPEG4 and H.264 formats.
81. The software shall replay footage in same video pane, or navigate to recorded video panes.
82. The software shall play back video from up to 4 cameras at once in a single video window.
83. The software shall play back each camera separately or synchronize to playback from the same time.
84. The software shall play back synchronized recorded audio in each video pane.
85. The software shall display time and date information on recorded video panes, either on all video panes, or on the selected pane only. This should be able to be set independently of the settings for live video panes.
86. The software shall play back video using the following standard operations:
    1. Play-pause-fast forward at different speeds (x1/8, x1/4, x1/2, x2, x4, x8)
    2. Rewind at different speeds (x1/8, x1/4, x1/2, x2, x4, x8)
    3. Single frame forward-single frame back
    4. Users shall be able to move playback to a different time either using the timeline or entering a specific date and time.
    5. Users shall be able to move playback to the time of the next alarm, label or motion over threshold.
    6. Users shall be able to move playback to the time of the previous alarm, label or motion over threshold.
    7. Users shall be able to reveal the hidden zone in recorded video if user has the appropriate permission.
    8. Users shall be able to take a snapshot of one image or all images currently displayed and save as a JPEG image to a configurable location.
87. **Time Search**
    1. Users shall be able to view the recorded video footage for a camera along a timeline. They shall be able to expand and contract the timeline to show a larger or smaller time range and to scroll the timeline backwards and forwards to show different time periods.
    2. Users shall be able to use the mouse wheel to both scroll and expand/contract the timeline.
    3. The software shall provide one-button click controls to go to the beginning or the end of available recording footage.
    4. The software shall provide a calendar control to allow navigation to any year / month /day in the recording library.
    5. The software shall provide a go to “Recent” control for getting current recording footage.
    6. The software shall provide a go to “hour / minute / second” control.
88. **VI Search**
    1. Users shall be able to find motion in recorded footage from a selected time and display a motion profile on the timeline.
    2. Users shall be able to adjust the motion threshold used for thumbnails and for moving playback to next/previous motion.
    3. Users shall be able to configure a region of interest for motion search.
    4. The software shall support the following options for motion search:

* General Motion Detection
* Foreign Object Detection
* Forbidden Area Detection
* Intrusion Detection
* Going Out Detection
* Missing Object Detection
* Tampering Detection
* Camera Motion Detection
* Virtual Fence Detection
* Tailgating Detection
  1. It shall be possible to combine motion search modes to further refine the search.
  2. Users shall be able to adjust the sensitivity of the detection search.
  3. The software shall be able to display thumbnail images taken from the video footage in the current time line period. Thumbnails can be displayed by:
     + Time: At equal intervals across the timeline period depending on the number of thumbnails set for the user.
     + Alarms: One image for each alarm in the period.
     + Label: One image for each label in the period
     + Motion: One image for each time motion goes above a configurable threshold
     + Users shall be able to play back a recording from a selected thumbnail.

1. **Event Search**
   1. Users shall be able to find motion in recorded footage from a selected time and display a motion profile on the timeline.
   2. Users shall be able to view thumbnails and for moving playback to next/previous motion..
   3. The software shall allow the user to perform a visual thumbnail search. The user can select one camera to see one image per set time period. The user shall be able to play video from that image or zoom in to a time range.
   4. The software shall support the following options for motion search:

* General Motion Detection
* Foreign Object Detection
* Forbidden Area Detection
* Intrusion Detection
* Going Out Detection
* Missing Object Detection
* Tampering Detection
* Camera Motion Detection
* Virtual Fence Detection
* Tailgating Detection
  1. It shall be possible to combine motion search modes to further refine the search.
  2. The software shall be able to display thumbnail images taken from the video footage in the current time line period. Thumbnails can be displayed by:
     + Time: At equal intervals across the timeline period depending on the number of thumbnails set for the user.
     + Alarms: One image for each alarm in the period.
     + Label: One image for each label in the period
     + Motion: One image for each time motion goes above a configurable threshold
  3. Users shall be able to play back a recording from a selected thumbnail.
  4. Users shall be able to review all video watched by a selected user in a selected time period in an event player.

1. **Labels**
   1. Users shall be able to add a label to a recording for a camera at a specified time.
   2. Users shall be able to find labels by a text string within the label
   3. Users shall be able to delete one or more labels (if created by the same user)
   4. The software shall ensure that labels are held alongside recordings on the NVR, not on a user’s PC.
   5. Users shall be able to view recorded video associated with a label.
   6. Detailed search options shall allow for filtering of labels.
   7. Within the label comments window the highlighted label shall correspond to the current playback position.
2. **Export**
   1. Users shall be able to export video clips from a selected camera or cameras within a site to a named incident.
   2. Users shall be able to select the start and end times of the export by clicking and dragging on the timeline.
   3. The software shall show progress and estimated time to completion in an export status window.
   4. Users shall be able to add additional clips to existing incidents.
   5. Users shall be able to protect the original recordings to preserve the evidence.
   6. Users shall be able to play back incidents with all the playback operations provided by the full software application.
   7. Export of video recorded in MJPEG, MPEG4 and H.264
   8. Playback of exported video in player
3. **Audio in Playback**
   1. Users shall be able to listen to audio recorded with video from all cameras being played back or selected cameras only.
4. **Setup**
5. The software client software shall be able to connect to multiple systems simultaneously. Each of the systems could have individual permissions, thereby limiting the client’s configuration or viewing abilities for that system, but not affecting the abilities on the other systems.
6. The software shall be able to display system information about users that are currently logged into the system, plug-in file version information number and status, and a system log that contains a detailed history of the processes that occur on the system.
7. The software shall allow the configuration of the video devices to be performed in the client and then pushed out to the devices. The configuration itself shall be stored both on the camera and on the software.

1. The software shall allow monitoring of the inputs on both network devices and on manufacturer provided hardware. The software shall also allow triggering of outputs on the network devices and manufacturer provided hardware.
2. The software shall allow for the configuration of which drives to use for recording video. Those drives can be local drives, direct attached storage drives or iSCSI drives.
3. The software shall be able to demonstrate storage usage status.
4. The software shall allow RAID configuration.
5. The software shall allow adding Ethernet I/O box to the server.
6. The software shall allow the configuration of rules of how to record the video. These rules shall allow the configuration of a maximum number of days or minimum number of days of storage on a per video stream basis.
7. The software shall be able to set the time to be synchronized with the server.
8. The software shall be able to automatically synchronize with the server.
9. Users with authorities shall be able to reboot the system.
10. Users with authorities shall be able to reboot the system and the client by schedule.
11. Users with authorities shall be able to set which channel as the primary audio channel. Once set, the system will automatically use the audio feed from the selected/highlighted camera during Live View.
12. Users with authorities shall be able to acquire playback camera list from Live View.
13. Users with authorities shall be able to acquire playback camera list from Recording.
14. Users with authorities shall be able to download video recordings before the playback.
15. Users with authorities shall be able to select the downloading path for the video recordings.
16. Users with authorities shall be able to auto login.
17. Users with authorities shall be able to see video analytics in the set panel.
18. Users with authorities shall be able to close the set panel for the video analytics.
19. Users with authorities shall be able to lock / unlock the video panel.
20. Users with authorities shall be able to open / close the View Explorer to manage views on the Live View page.
21. Users with authorities shall be able to import / export the Server Configuration to the different server.
22. Users with authorities shall be able to set router port mapping.
23. Users with authorities shall be able to adjust the images settings for every connected camera, including brightness, saturation, contrast, hue, and sharpness.
24. Users with authorities shall be able to adjust the videos settings for every connected camera, including encoding method, resolution, maximum frame rate, quality, and watermark protection.
25. Users with authorities shall be able to edit cameras, including their vendors, models, and connection permissions.
26. Users with authorities shall be able to edit camera connections, such as auto-assign IP address, or use specific IP address.
27. Users with authorities shall be able to adjust the PTZ settings, including auto pan speed, pan speed, tilt speed, zoom speed, and focus speed.
28. Users with authorities shall be able to arrange presets for PTZ cameras.
29. Users with authorities shall be able to arrange patrol settings for PTZ cameras.
30. Users with authorities shall be able to show time, date, and time on the videos.
31. Users with authorities shall be able to add masks on the videos to protect the privacy.
32. Users with authorities shall be able to check the compatibility of other connecting device.
33. Users with authorities shall be able to initialize the camera so that the camera will correspond to the settings on the server.
34. Users with authorities shall be able to set the cameras time automatically synchronized with the server.
35. Users with authorities shall be able to set all cameras time automatically synchronized with the server in one time.
36. Users with authorities shall be able to add devices via the Ethernet I/O Box.
37. Users with authorities shall be able to edit devices on the Ethernet I/O Box.
38. Users with authorities shall be able to delete devices on the Ethernet I/O Box.
39. Users with authorities shall be able to change the maximum video connections.
40. Users with authorities shall be able to disconnect one client connected on the server.
41. Users with authorities shall be able to disconnect all clients connected on the server.
42. Users with authorities shall be able to setup a blacklist and a whitelist of the IP ranges for the permission of accessing the server.
43. Users with authorities shall be able to change both the setting of the stream port and the IP address by editing the server.
44. Users with authorities shall be able to use the web client.
45. The software shall be able to support multiple network cards.
46. The software shall be able to use DHCP server when there is no DHCP service available.
47. **Configuring Recording**
48. Users shall be able to start an instant recording from live video viewed in a video pane. They shall have the option to start recording video only or both video and audio.
49. Users shall be able to configure the recording schedule for cameras on NVRs. Recording can be configured to be:

* 24/7
* Timed (from minute to weekly schedules)
* On alarm or event

1. Users shall be able to enable or disable recordings temporarily.
2. Users shall be able to delete recording schedules.
3. Users shall be able to copy recording schedules from one camera to other cameras on the same NVR.
4. Users shall be able to copy all recording schedules from all cameras from one NVR to another NVR.
5. Users shall be able to find recordings within a specified time period.
6. The software shall be able to set the retention days and minimum free space for the recording.
7. The software shall be able to set the order of the storage priorities.
8. **Alarm Configuration**
   1. The software shall be able to send a predefined email based on an event trigger.
   2. The software shall have a feature to export a video segment from specific cameras to a storage device upon an input trigger or other event being activated.
   3. The software client can be configured to automatically switch views on any trigger within the event monitoring function.\*
   4. The software shall have the ability to configure each video input’s recording time on an hourly basis. This shall allow the user to schedule when to record on motion, when to record on event and when not to record.
   5. The members of these custom user groups shall all have the same permissions.
   6. The software shall support video loss alarm inputs.
   7. The software shall support network loss alarm inputs.
   8. The software shall support analytics alarm inputs, with separate events for each analytics filter.
   9. The software shall support inputs (detectors) that do not cause an alarm to be generated.
   10. The software shall support Pre/Post Alarm Recording and be able to trace back and preserve video/images from several minutes before and after the occurrence of an alarm.
   11. Users shall be able to sort the alarm information in various ways by clicking on column headings.
   12. The software shall support set and unset of alarm zones such that alarms are only generated when the alarm zone is set.
   13. Users shall be able to define specific dates and times within time schedules so that exceptions for holidays etc. can be specified.
   14. The software shall enable the same time schedule to be applied to multiple zones.
   15. Users shall be able to manually set and unset zones.
   16. The software shall enable zones to be set and unset on an event.
   17. Users shall be able to configure the alarm sound for all alarm zones in a site or for each alarm zone individually. Sound can be from any .wav file and can be sounded once or repeated while the alarm is active.
   18. Users shall be able to configure a second authorizing user for alarm clearing and relay actions – second user has to enter a password to authorize these functions.
   19. The software shall be used to connect different types of events, such as input triggers, to a desired action, such as recording video or triggering an alarm. The software shall recognize the following event types:
       * General Motion Detection
       * Foreign Object Detection
       * Forbidden Area Detection
       * Intrusion Detection
       * Going Out Detection
       * Missing Object Detection
       * Tampering Detection
       * Camera Motion Detection
       * Virtual Fence Detection
       * Tailgating Detection
       * Sensor Input
       * Clock Alarm
       * Disk Error
       * Video Loss
       * RAID Failure
9. **Alarm response**
10. The software shall generate an alarm if any of the detectors within an alarm zone are activated.
11. The software shall alert new alarms with popup images and optionally a sound.
12. Users shall be able to configure the actions that should be performed when an alarm occurs:

* Show video from camera, camera view or video wall in specified video panes or monitors
* Move camera to preset position
* Show E-Map
* Send email to multiple recipients
* Send SMS to multiple recipients
* Perform a relay action
* Start recording one or more cameras
* Show event log
* Control recording
* Show video popup
* Control PTZ
* Make alarm sound

1. From a looped replay, users shall be able to quickly jump to continuous replay from the alarm time.
2. The users shall be able to display a map showing the location of the alarm.
3. Users shall be able to view live or recorded video associated with the alarm.
4. **Monitoring and Diagnostics**
5. The software shall automatically check for devices not on the network and notify users when not available.
6. The software shall provide a support information tool, which gathers together log files and site database.
7. The software shall be able to export logs including system log, event log and operation log for further usage.
8. The software shall be able to demonstrate the camera overview, showing camera’s name, IP address, MAC address, resolution, FPS, Bit Rate and status.
9. The software shall be able to demonstrate the disk storage overview, showing Disk Volumes, total size, video recordings size, other data size, free space, and status.
10. The software shall provide the system overall performance status, including CPU, physical memory, commit charge, and virtual memory.
11. The software shall provide the system overall network status, including IP, submask, gateway, DNS, Mac address, as well as the network traffic of uploading and downloading.
12. The software shall provide the file path of every stored recording. By inputting the channel number and search period, the file paths of the specific recordings are being stored will be shown.
13. The software shall be able to detect the connection of the cameras. By inputting the following information such as IP address, port, channel, username and password, its connectivity will be displayed.
14. The software shall be able to provide the hardware overall information.
15. The software shall be able to provide the software information, such as NVR server, local client, VI server, Domain server, and AVL versions.
16. It shall be possible to define the users who get notified if devices become unavailable.
17. The software shall scan for devices using any combination of IP broadcast addresses, individual IP addresses or ranges of IP addresses.
18. Users shall be able to turn off scanning of devices.
19. Users shall be able to manually refresh any diagnostics view.
20. The software shall notify users of problems with NVRs. The notifications will be those supported by each NVR.
21. Users shall be able to view the current status of an NVR with visual indicators showing whether each item is OK or indicates problems:

* CPU
* Online Users
* Recording Days
* Cameras
* Free Space
* Disk Highest Active Time
* CPU Fan
* Sys Fan
* System Temperature
* Network Throughout

1. Users shall be able to find historical alarms matching specified criteria:

* Alarm type
* Alarm state (new, acknowledged, cleared)
* From site(s)
* From alarm zones(s)
* User(s) who acknowledged or cleared
* Time range

1. **General**
2. The software shall be able to install the user’s application on an unlimited number of PC workstations.
3. The software Installation Application shall create a new site database.
4. The software shall be available in the multiple languages, including:

* English
* French
* Italian
* German
* Spanish
* Chinese (Traditional)
* Chinese (Simplified)
* Japanese
* Cezch
* Korean
* Arabic
* Polish
* Dutch
* Portuguese
* Russian
* Slovenian
* Turkish

1. The software shall support 3rd party branding:

* Display 3rd party supplied text in title bar
* Display 3rd party supplied bitmap/logo in login window

1. The software shall provide online context sensitive help.
2. The software shall provide an electronic user’s guide in PDF format.

1. **Users**
2. User Configuration

* Users shall be able to configure named user groups. A group can be granted administrator rights:
* Admin (can configure everything)
* Power User (can configure almost everything except SCC Server configurations)
* User (can configure everything except users and groups)
* Viewer (limited user functions only)

1. Users shall be able to configure named user accounts and allocate them to user groups.
2. Users shall be able to enable and disable user accounts.
3. Users shall be able to set up a user to use a password when he logs into the software.
4. The software shall use a combination of a username and a password to authenticate the user’s permission level.
5. The software shall allow granularity of permissions by creating custom user groups.
6. Users shall be able to allocate each user group or user a priority that is used when controlling PTZ cameras.
7. Users shall be able to grant global permissions to user groups or users (global permissions do not apply to specific objects such as cameras):

* PTZ hold (allows a user to keep control of a PTZ camera when not moving it)
* Video lockout (allows a user to perform a video lockout on any site of camera)

1. Users shall be able to grant permission for user groups and/or users to access any object in the system (sites, cameras, monitors, video walls, alarm zones, detectors and relays.) For each object access can be limited by function:

* Delete Camera
* E-Map Setting
* Digital I/O setting
* Camera Advance Video
* PTZ Control
* Add NVR
* Shut Down
* Playback VI search
* Add Camera
* Schedule Setting
* Import/Export
* Camera Privacy Mask
* VI Setting
* View Explorer Setting
* Reboot
* Playback Event Search
* Alarm Rule Setting
* Storage Manager
* Camera Image Setting
* PTZ Setting
* Delete NVR
* Instant Playback
* Playback Time Search

1. Users shall be able to reset access permissions on individual objects to use the access permissions of their parent site.
2. Users shall be able to configure application settings specific to each PC, including:

* Enable or disable scheduled tasks
* Enable or disable the application as the topmost window
* Location for snapshot images
* Folder for snapshot image
* Replay event in live or Playback view
* Use software or hardware assisted video renderer
* Use de-interlace filtering on live view by default
* Use de-interlace filtering on playback by default
* Set video de-interlacing
* Enable or disable use of a joystick
* Serial port for joystick
* Joystick type
* Video pane text scale factor (% of the default text size)
* Resize text on video panes in proportion to video pane size
* Video pane icon size (normal, medium, large)
* Select icon size on video panes in proportion to video pane size
* Date / time display on video panes (none, all, selected)
* Write date and time on exported recordings

1. Users shall be able to prevent simultaneous listen and speak (full duplex audio.)
2. Users shall be able to configure the use of buffered playback when reviewing recordings.
3. Users shall be able to enable or disable alert messages.
4. **User Logon**
5. Users shall be able to log into the software manually.
6. The software shall allow users to log out and log in without closing the application.
7. The software shall have an option to require all users to re-enter their password when logging out.
8. The software shall remember display settings on a PC for each user at log off and restore settings at log in:

* Which cameras are displayed in which video panes
* PTZ controls displayed
* Map window position
* Alarm window position
* Video window positions (default hidden)
* Main window size and position and site explorer width
* Recording calendar displayed

1. Users shall be able to change their own password (if given write permission to the site database).
2. Users shall be able to lockout all other users preventing them from viewing or recording video from a selected camera or all cameras in a selected site.
3. **Site Setup Requirements**
4. The software shall discover IP Video devices on a network either by broadcast address or unicast addresses for each device.
5. Users with authorities shall be able to add cameras in by simply scanning/searching.
6. Users with authorities shall be able to add cameras manually by inputting cameras’ IP addresses.
7. Users authorities shall be able to delete cameras from the server.
8. The software shall allow configuration of IP Video System devices via their web configuration interface.
9. The software shall enable mass configuration of devices, in particular encoder settings on IP cameras and encoders.
10. Administrators shall be able to view video from each stream at the same time as making changes to the media parameters on an encoder to aid configuration.
11. Administrators shall be able to set the time-zone on a site - different sites can each have their own time zone.
12. The software shall be able to automatically create a site hierarchy within a site database containing IP Video System devices visible on the network.
13. Users shall be able to create sequences and video walls within the sites, set up 24/7 recording for each camera and enable video loss and network loss alarms.
14. Users shall be able to add cameras, monitors, alarm panels, alarm servers and NVRs to sites by dragging and dropping, selecting from a list or manually entering the IP Address and name.
15. Users shall be able to remove devices from sites.
16. Users shall be able to move devices, and other items such as sequences, video walls, and sub sites from one site to another by dragging and dropping.
17. Users shall be able to enter a localized display name for cameras, monitors, alarm panels, alarm servers and NVRs which overrides the name stored on the device.
18. The software shall enable a copy of the configuration database from each server. For SCC, it shall be able to generate logs from every connected server.\*
19. The software shall support user access permissions so that only authorized users can access specific segments.
20. When the configuration database is divided into segments, the software shall allow all sites to be monitored e.g. from a central monitoring facility.
21. **Maps**
22. Users shall be able to create one or more maps for each site by importing an image for the background. The following image formats shall be supported:

* Bitmap (BMP)
* JPEG (JPG)

1. Users shall be able to reposition items by drag and drop or entering specific coordinates.
2. Users shall be able to add cameras to map via drag and drop.
3. Users shall be able to specify the field of view for each camera.
4. The map shall be fully scalable with zoom and pan supported.
5. Users shall be able to displays the previous maps viewed (back, forward).
6. Users shall be able to link to any map from any map.
7. Users shall have the option of scaling icons to a fixed zoom level.
8. The map should be viewable on a separate monitor from the main video(s).
9. Users shall be able to display live and recorded video from any camera on a map.
10. Users shall be able to view video from some or all of the cameras on a map via drag-select.
11. Users should be able to click on any camera to view the video.
12. Activated alarms shall be visually represented on the map.
13. Where detector/zones areas have been configured, every motion alert should be visually represented as being in an alarmed state.
14. Where detector/zones areas have been configured and in an alarmed state, the user should be able to start video from all cameras associated with that zone by clicking on it.
15. Users shall be able to:

* Manage alarms from a map
* Clear alarms
* Acknowledge alarms
* View Video associated with an alarm
* Set/unset detectors

1. **DI/DO (Relays)**
2. Users shall be able to configure relay actions using binary outputs on IP Cameras, and I/O Boxes.
3. Users shall be able to configure relay actions using external outputs to 3rd party systems.
4. The relay activation shall be pulsed with a configurable pulse time period.
5. The software shall support latched relay outputs.
6. Users shall be able to associate relay actions with specific cameras so that the actions are readily available when video is displayed from that camera.
7. The software shall perform relay actions on alarm and event.
8. The software shall be able to perform relay actions on a time-schedule.
9. **Matrix\***
10. The software shall support centralized alarm management; all the alarms concerning connected NVRs can be managed via a single login. Users can log in remotely; once logged in, the administrator shall have controls over unlimited connected NVR and cameras.
11. The software shall allow virtual matrix functionality by designating a cell to do so. This video cell shall automatically show video as it is triggered.
12. An IP video wall shall be constructed using secondary workstations, each of which manages unlimited monitors depending on the PC/VGA connected. The video wall shall be controlled over an IP network and have an unlimited number of primary workstations.
13. The video wall shall have the ability to be managed from primary workstations through a standard joystick.
14. Monitors within the video wall shall be able to display:
    1. live video
    2. video walls
    3. site maps
    4. alarm status
15. It shall be possible to constrict the video wall using any PC monitors e.g. CRT, Plasma, LCD, HD TV.
16. The IP Video Wall shall be fully scalable to meet any control room requirement. It shall be possible to add more slaves with monitors as needed up to unlimited.
17. The IP Video Wall shall support unlimited master workstations.
18. The IP Video Wall shall support standard and High Definition widescreen video.
19. The IP Video Wall shall be able to display site maps and alarm status.
20. The IP Video Wall shall be able to dynamically change the video layout of a monitor.
21. The software shall allow users to easily drag icons representing cameras, sequences, video walls and guard tours onto PC viewing panes and onto monitors.
22. **Sequences**
    1. Users shall be able to configure sequences of cameras, camera views and or presets (PTZ cameras); each camera can have a separate dwell time.
    2. Users shall be able to reorder the cameras within a sequence.
    3. Users shall be able to run multiple sequences in video panes.
    4. Users shall be able to run sequences on monitors.
    5. Users shall be able to pause (hold) a sequence.
    6. Users shall be able to display the next or previous camera in the sequence.
23. **Video Wall**
    1. Users shall be able to configure video wall containing cameras, camera views and PTZ cameras. Each video wall can optionally have an associated video pane layout.
    2. Users shall be able to reorder the cameras within a video wall.
    3. Users shall be able to display a video wall across a set of video panes within in any of the video windows (changes layout automatically if configured to do so).
    4. Users shall be able to display a video wall across a set of monitors.
    5. Users shall be able to view all cameras in a site as a video wall.

1. **Matrix Numbering**
   1. The software shall automatically allocate logical numbers to cameras, video walls, sequences, so that they can be started by number using a joystick.
   2. The software shall allow the following options for configuring matrix numbers:
      * Display matrix numbers on user interface
      * Number of digits in numbering scheme
      * Whether to put PC panes in the virtual matrix or otherwise
   3. Users shall be able to manually renumber cameras, video walls, sequences, guard tours.
   4. It shall be possible to allocate a matrix number to cameras, monitors, sequences, video walls, guard tours in the range 1 to unlimited.
   5. Users shall be able to array the multiple monitors as one big video wall.

*Surveon reserves the right to change products or specifications without notice.*

Items with \* indicates functions of Surveon Control Center.