

Security Management System - Hardware Recommendations (25.04.01.01)

(A.1) VMS Server – Type 1

Valid for following project requirements -

Capacity	Up to 20 processing modules Processing modules - (a) VMS for 1 channel = 1 processing module (b) VA add-on for 1 channel = 1 processing module One standard camera without VA add-on would utilize 1 processing module One standard camera with VA add-on would utilize 2 processing modules
Camera type	Should support dual streams - one major and one minor
Camera major stream max resolution	1080P (1920 X 1080 pixels)
Recording stream max resolution	Same as major stream
Camera minor stream max resolution	CIF (352X288 pixels)
Maximum number of simultaneous client connections	3

Hardware recommendations –

Processor	Intel, 2 GHz or more
Number of total processor cores	2
Memory	4 GB or more
Motherboard	Any
Network ports	1 X gigabit
NIC teaming	(a) If project specifications for server hardware does not mention about NIC teaming, this point can be ignored. (b) If as per project specifications for server hardware, NIC teaming is required on server computer, please ensure that server computer with more physical NICs is selected; such that at least one non-teamed NIC is available on the server computer, after all NIC teaming operations are performed.
Operating system	Windows 10 / Windows 11 / Windows Server 2016 / Windows Server 2019 / Windows Server 2022 (Note - 64 bit OS recommended)

Local disk space - OS drive	50 GB or more free space
Local disk space - drive where VMS server software is installed	100 GB or more free space
OS installation hard disk	It is recommended to allocate a separate hard disk for Operating System installation; which will ensure that hard disks for data recording are separate / independent from OS installation
Storage device configuration	(a) VMS server uses block level access to the storage space. Hence the storage device should be configured to support block level access from VMS software. This is specifically important if external storage device (eg network storage device) is used. If network storage device is used, recommended configuration is through iSCSI interface. (Note - iSCSI is one of the configuration which provide block level access and which is widely used. However, any other configuration can be used, which supports block level access.)
Data storage drives throughput	(a) For recording streams with 3 mbps bit-rate; minimum consistent write throughput = 60 mbps (megabits per second), minimum consistent read throughput = 15 mbps (megabits per second) (b) The values are for actual data transfer (throughput) and not the capacity (bandwidth) (c) The values are for minimum consistent throughput and not for average throughput (d) The above mentioned values are minimum values for reference only. Storage device should provide the required throughput (bits per second) as per calculations for target project, based on the parameters defined in project specifications
Notes 1	There should be no video monitoring (video viewing) happening on server. Server should run in optimized mode, after the settings are done. All video monitoring is expected to be from client computers
Notes 2	If video monitoring is expected on server computer, it is recommended to add one more client computer, physically placed near the server computer. Client computer should be used for the video monitoring

(A.2) VMS Server – Type 2

Valid for following project requirements -

Capacity	Up to 40 processing modules Processing modules - (a) VMS for 1 channel = 1 processing module (b) VA add-on for 1 channel = 1 processing module One standard camera without VA add-on would utilize 1 processing module One standard camera with VA add-on would utilize 2 processing modules
Camera type	Should support dual streams - one major and one minor
Camera major stream max resolution	1080P (1920 X 1080 pixels)
Recording stream max resolution	Same as major stream
Camera minor stream max resolution	CIF (352 X 288 pixels)
Maximum number of simultaneous client connections	3

Hardware recommendations –

Processor	Intel, 2 GHz or more
Number of total processor cores	4
Memory	4 GB or more
Motherboard	Any
Network ports	1 X gigabit
NIC teaming	(a) If project specifications for server hardware does not mention about NIC teaming, this point can be ignored. (b) If as per project specifications for server hardware, NIC teaming is required on server computer, please ensure that server computer with more physical NICs is selected; such that at least one non-teamed NIC is available on the server computer, after all NIC teaming operations are performed.
Operating system	Windows 10 / Windows 11 / Windows Server 2016 / Windows Server 2019 / Windows Server 2022 (Note - 64 bit OS recommended)
Local disk space - OS drive	50 GB or more free space
Local disk space - drive where VMS server software is installed	100 GB or more free space
OS installation hard disk	It is recommended to allocate a separate hard disk for Operating System installation; which will ensure that hard disks for data recording are separate / independent from OS installation

Storage device configuration	(a) VMS server uses block level access to the storage space. Hence the storage device should be configured to support block level access from VMS software. This is specifically important if external storage device (eg network storage device) is used. If network storage device is used, recommended configuration is through iSCSI interface. (Note - iSCSI is one of the configuration which provide block level access and which is widely used. However, any other configuration can be used, which supports block level access.)
Data storage drives throughput	(a) For recording streams with 3 mbps bit-rate; minimum consistent write throughput = 120 mbps (megabits per second), minimum consistent read throughput = 30 mbps (megabits per second) (b) The values are for actual data transfer (throughput) and not the capacity (bandwidth) (c) The values are for minimum consistent throughput and not for average throughput (d) The above mentioned values are minimum values for reference only. Storage device should provide the required throughput (bits per second) as per calculations for target project, based on the parameters defined in project specifications
Notes 1	There should be no video monitoring (video viewing) happening on server. Server should run in optimized mode, after the settings are done. All video monitoring is expected to be from client computers
Notes 2	If video monitoring is expected on server computer, it is recommended to add one more client computer, physically placed near the server computer. Client computer should be used for the video monitoring

(A.3) VMS Server – Type 3

Valid for following project requirements -

Capacity	Up to 80 processing modules Processing modules - (a) VMS for 1 channel = 1 processing module (b) VA add-on for 1 channel = 1 processing module One standard camera without VA add-on would utilize 1 processing module One standard camera with VA add-on would utilize 2 processing modules
Camera type	Should support dual streams - one major and one minor
Camera major stream max resolution	1080P (1920 X 1080 pixels)
Recording stream max resolution	Same as major stream
Camera minor stream max resolution	CIF (352 X 288 pixels)
Maximum number of simultaneous client connections	5 (Note – for more number of simultaneous client connections, multicast configuration should be used in solution design and the cameras and the network should support multicast streams)

Hardware recommendations –

Processor	Intel Xeon, 2 GHz or more
Number of total processor cores	8
Memory	8 GB or more
Motherboard	Server class
Network ports	2 X gigabit
Network interface	If on-board network is not available, PCI Express Interface network cards should be used
NIC teaming	(a) If project specifications for server hardware does not mention about NIC teaming, this point can be ignored. (b) If as per project specifications for server hardware, NIC teaming is required on server computer, please ensure that server computer with more physical NICs is selected; such that at least one non-teamed NIC is available on the server computer, after all NIC teaming operations are performed. (c) If separate sub-networks for input network and/or output network and/or storage network are included in solution design, required number of 'available NICs (teamed or non-teamed) should be available after all NIC configurations

Operating system	Windows Server 2016 / Windows Server 2019 / Windows Server 2022 (Note - 64 bit OS recommended)
Local disk space - OS drive	50 GB or more free space
Local disk space - drive where VMS server software is installed	100 GB or more free space
OS installation hard disk	It is recommended to allocate a separate hard disk for Operating System installation; which will ensure that hard disks for data recording are separate / independent from OS installation
Storage device configuration	(a) VMS server uses block level access to the storage space. Hence the storage device should be configured to support block level access from VMS software. This is specifically important if external storage device (eg network storage device) is used. If network storage device is used, recommended configuration is through iSCSI interface. (Note - iSCSI is one of the configuration which provide block level access and which is widely used. However, any other configuration can be used, which supports block level access.)
Data storage drives throughput	(a) For recording streams with 3 mbps bit-rate; minimum consistent write throughput = 240 mbps (megabits per second), minimum consistent read throughput = 60 mbps (megabits per second) (b) The values are for actual data transfer (throughput) and not the capacity (bandwidth) (c) The values are for minimum consistent throughput and not for average throughput (d) The above mentioned values are minimum values for reference only. Storage device should provide the required throughput (bits per second) as per calculations for target project, based on the parameters defined in project specifications
Notes 1	There should be no video monitoring (video viewing) happening on server. Server should run in optimized mode, after the settings are done. All video monitoring is expected to be from client computers
Notes 2	If video monitoring is expected on server computer, it is recommended to add one more client computer, physically placed near the server computer. Client computer should be used for the video monitoring

(A.4) VMS Server – Type 4

Notes –

- (a) Add-on software licenses are required, if this server type is used in solution design
- (b) When this server type is planned to be used in any project, solution design should be verified and confirmed by OEM
- (c) If this server type is used in any solution design for main servers, same server type needs to be used for failover server(s) and/or redundant server(s), if either is part of project requirements

Valid for following project requirements -

Capacity	Up to 160 processing modules Processing modules - (a) VMS for 1 channel = 1 processing module (b) VA add-on for 1 channel = 1 processing module One standard camera without VA add-on would utilize 1 processing module One standard camera with VA add-on would utilize 2 processing modules
Camera type	Should support dual streams - one major and one minor
Camera major stream max resolution	1080P (1920 X 1080 pixels)
Recording stream max resolution	Same as major stream
Camera minor stream max resolution	CIF (352 X 288 pixels)
Maximum number of simultaneous client connections	5 (Note – for more number of simultaneous client connections, multicast configuration should be used in solution design and the cameras and the network should support multicast streams)

Hardware recommendations –

Note – hardware resources of each physical server will be utilized by 2 logical computers, hence it should be possible to separate out available hardware resources in 2 sets (each set with same / similar configuration). This is specifically important for 'network interfaces' and 'storage', as described in the table below.

Processor	Intel Xeon, 2 GHz or more
Number of total processor cores	16
Memory	16 GB or more
Motherboard	Server class
Network ports	(a) 2 X gigabit (for camera, server and clients sub-network) (b) 1 X gigabit (for servers and network storage sub-network)

Network interface	If on-board network is not available, PCI Express Interface network cards should be used
NIC teaming	(a) If project specifications for server hardware does not mention about NIC teaming, this point can be ignored. (b) If as per project specifications for server hardware, NIC teaming is required on server computer, please ensure that server computer with more physical NICs is selected; such that at least one non-teamed NIC is available on the server computer, after all NIC teaming operations are performed. (c) If single sub-network for input network and output network and storage network is used in solution design; after NIC teaming, minimum 2 teamed NICs should be available and one non teamed NIC should be available (d) If separate sub-networks for input network and/or output network and/or storage network are used in solution design, required number of 'available NICs (teamed or non-teamed) should be available after all NIC configurations E. g. If separate sub-networks are used in solution design for input network and output network and storage network, and NIC teaming for all network interfaces is also included in solution design; there should be minimum 6 teamed NICs and 1 non-teamed NIC available
Operating system	Windows Server 2016 / Windows Server 2019 / Windows Server 2022 (Note - 64 bit OS recommended)
Local disk space - OS drive	100 GB or more free space
Local disk space - drive where VMS server software is installed	200 GB or more free space
OS installation hard disk	It is recommended to allocate a separate hard disk for Operating System installation; which will ensure that hard disks for data recording are separate / independent from OS installation
Storage device configuration	(a) VMS server uses block level access to the storage space. Hence the storage device should be configured to support block level access from VMS software. This is specifically important if external storage device (eg network storage device) is used. If network storage device is used, recommended configuration is through iSCSI interface. (Note - iSCSI is one of the configuration which provide block level access and which is widely used. However, any other configuration can be used, which supports block level access.) (b) Two separate 'set of drives' should be configured. Each 'set of drives' should have same number of drives, same drive sizes and same storage configuration (e.g iSCSI) E. g. 'Set of drives 1' may have 3 drives – 'E:', 40 TB, iSCSI', 'F:', 20 TB, iSCSI' and 'G:', 30 TB, iSCSI' In such case 'Set of drives 2' would be - 'H:', 40 TB, iSCSI', 'I:', 20 TB, iSCSI' and 'J:', 30 TB, iSCSI'

	(c) If local hard disk drives are used for data storage, it is recommended to use two separate 'set of HDDs'. Each 'set of HDDs' should have same number of HDDs and same HDD sizes E. g. 'Set of HDDs 1' may have 2 HDDs – '60 TB' and '30 TB' In such case 'Set of HDDs 2' would be – '60 TB' and '30 TB'
Data storage drives throughput	(a) For recording streams with 3 mbps bit-rate; minimum consistent write throughput = 480 mbps (megabits per second), minimum consistent read throughput = 120 mbps (megabits per second) (b) The values are for actual data transfer (throughput) and not the capacity (bandwidth) (c) The values are for minimum consistent throughput and not for average throughput (d) The above mentioned values are minimum values for reference only. Storage device should provide the required throughput (bits per second) as per calculations for target project, based on the parameters defined in project specifications
Notes 1	There should be no video monitoring (video viewing) happening on server. Server should run in optimized mode, after the settings are done. All video monitoring is expected to be from client computers
Notes 2	If video monitoring is expected on server computer, it is recommended to add one more client computer, physically placed near the server computer. Client computer should be used for the video monitoring

(A.5) VMS Server – Type 5

Notes –

- (a) Add-on software licenses are required, if this server type is used in solution design
- (b) When this server type is planned to be used in any project, solution design should be verified and confirmed by OEM
- (c) If this server type is used in any solution design for main servers, same server type needs to be used for failover server(s) and/or redundant server(s), if either is part of project requirements

Valid for following project requirements -

Capacity	Up to 240 processing modules Processing modules - (a) VMS for 1 channel = 1 processing module (b) VA add-on for 1 channel = 1 processing module One standard camera without VA add-on would utilize 1 processing module One standard camera with VA add-on would utilize 2 processing modules
Camera type	Should support dual streams - one major and one minor
Camera major stream max resolution	1080P (1920 X 1080 pixels)
Recording stream max resolution	Same as major stream
Camera minor stream max resolution	CIF (352 X 288 pixels)
Maximum number of simultaneous client connections	5 (Note – for more number of simultaneous client connections, multicast configuration should be used in solution design and the cameras and the network should support multicast streams)

Hardware recommendations –

Note – hardware resources of each physical server will be utilized by 3 logical computers, hence it should be possible to separate out available hardware resources in 3 sets (each set with same / similar configuration). This is specifically important for 'network interfaces' and 'storage', as described in the table below.

Processor	Intel Xeon, 2 GHz or more
Number of total processor cores	24
Memory	24 GB or more
Motherboard	Server class
Network ports	(a) 3 X gigabit (for camera, server and clients sub-network) (b) 1 X 10 gigabit (for servers and network storage sub-network)

Network interface	If on-board network is not available, PCI Express Interface network cards should be used
NIC teaming	(a) If project specifications for server hardware does not mention about NIC teaming, this point can be ignored. (b) If as per project specifications for server hardware, NIC teaming is required on server computer, please ensure that server computer with more physical NICs is selected; such that at least one non-teamed NIC is available on the server computer, after all NIC teaming operations are performed. (c) If single sub-network for input network and output network and storage network is used in solution design; after NIC teaming, minimum 3 teamed NICs should be available and one non teamed NIC should be available (d) If separate sub-networks for input network and/or output network and/or storage network are used in solution design, required number of 'available NICs (teamed or non-teamed) should be available after all NIC configurations E. g. If separate sub-networks are used in solution design for input network and output network and storage network, and NIC teaming for all network interfaces is also included in solution design; there should be minimum 9 teamed NICs and 1 non-teamed NIC available
Operating system	Windows Server 2016 / Windows Server 2019 / Windows Server 2022 (Note - 64 bit OS recommended)
Local disk space - OS drive	150 GB or more free space
Local disk space - drive where VMS server software is installed	300 GB or more free space
OS installation hard disk	It is recommended to allocate a separate hard disk for Operating System installation; which will ensure that hard disks for data recording are separate / independent from OS installation
Storage device configuration	(a) VMS server uses block level access to the storage space. Hence the storage device should be configured to support block level access from VMS software. This is specifically important if external storage device (eg network storage device) is used. If network storage device is used, recommended configuration is through iSCSI interface. (Note - iSCSI is one of the configuration which provide block level access and which is widely used. However, any other configuration can be used, which supports block level access.) (b) Three separate 'set of drives' should be configured. Each 'set of drives' should have same number of drives, same drive sizes and same storage configuration (e.g iSCSI) E. g. 'Set of drives 1' may have 3 drives – 'E:', 40 TB, iSCSI', 'F:', 20 TB, iSCSI' and 'G:', 30 TB, iSCSI' In such case 'Set of drives 2' would be - 'H:', 40 TB, iSCSI', 'I:', 20 TB, iSCSI' and 'J:', 30 TB, iSCSI'; and 'Set of drives 3'

	would be - 'K:', 40 TB, iSCSI', 'L:', 20 TB, iSCSI' and 'M:', 30 TB, iSCSI' (c) If local hard disk drives are used for data storage, it is recommended to use three separate 'set of HDDs'. Each 'set of HDDs' should have same number of HDDs and same HDD sizes E. g. 'Set of HDDs 1' may have 2 HDDs – '60 TB' and '30 TB' In such case 'Set of HDDs 2' would be – '60 TB' and '30 TB' ; and 'Set of HDDs 3' would be – '60 TB' and '30 TB'
Data storage drives throughput	(a) For recording streams with 3 mbps bit-rate; minimum consistent write throughput = 720 mbps (megabits per second), minimum consistent read throughput = 180 mbps (megabits per second) (b) The values are for actual data transfer (throughput) and not the capacity (bandwidth) (c) The values are for minimum consistent throughput and not for average throughput (d) The above mentioned values are minimum values for reference only. Storage device should provide the required throughput (bits per second) as per calculations for target project, based on the parameters defined in project specifications
Notes 1	There should be no video monitoring (video viewing) happening on server. Server should run in optimized mode, after the settings are done. All video monitoring is expected to be from client computers
Notes 2	If video monitoring is expected on server computer, it is recommended to add one more client computer, physically placed near the server computer. Client computer should be used for the video monitoring

(A.6) VMS Server – Type 6

Notes –

- (a) Add-on software licenses are required, if this server type is used in solution design
- (b) When this server type is planned to be used in any project, solution design should be verified and confirmed by OEM
- (c) If this server type is used in any solution design for main servers, same server type needs to be used for failover server(s) and/or redundant server(s), if either is part of project requirements

Valid for following project requirements -

Capacity	Up to 320 processing modules Processing modules - (a) VMS for 1 channel = 1 processing module (b) VA add-on for 1 channel = 1 processing module One standard camera without VA add-on would utilize 1 processing module One standard camera with VA add-on would utilize 2 processing modules
Camera type	Should support dual streams - one major and one minor
Camera major stream max resolution	1080P (1920 X 1080 pixels)
Recording stream max resolution	Same as major stream
Camera minor stream max resolution	CIF (352 X 288 pixels)
Maximum number of simultaneous client connections	5 (Note – for more number of simultaneous client connections, multicast configuration should be used in solution design and the cameras and the network should support multicast streams)

Hardware recommendations –

Note – hardware resources of each physical server will be utilized by 4 logical computers, hence it should be possible to separate out available hardware resources in 4 sets (each set with same / similar configuration). This is specifically important for 'network interfaces' and 'storage', as described in the table below.

Processor	Intel Xeon, 2 GHz or more
Number of total processor cores	32
Memory	32 GB or more
Motherboard	Server class
Network ports	(a) 4 X gigabit (for camera, server and clients sub-network) (b) 1 X 10 gigabit (for servers and network storage sub-network)

Network interface	If on-board network is not available, PCI Express Interface network cards should be used
NIC teaming	(a) If project specifications for server hardware does not mention about NIC teaming, this point can be ignored. (b) If as per project specifications for server hardware, NIC teaming is required on server computer, please ensure that server computer with more physical NICs is selected; such that at least one non-teamed NIC is available on the server computer, after all NIC teaming operations are performed. (c) If single sub-network for input network and output network and storage network is used in solution design; after NIC teaming, minimum 4 teamed NICs should be available and one non teamed NIC should be available (d) If separate sub-networks for input network and/or output network and/or storage network are used in solution design, required number of 'available NICs (teamed or non-teamed) should be available after all NIC configurations E. g. If separate sub-networks are used in solution design for input network and output network and storage network, and NIC teaming for all network interfaces is also included in solution design; there should be minimum 12 teamed NICs and 1 non-teamed NIC available
Operating system	Windows Server 2016 / Windows Server 2019 / Windows Server 2022 (Note - 64 bit OS recommended)
Local disk space - OS drive	200 GB or more free space
Local disk space - drive where VMS server software is installed	400 GB or more free space
OS installation hard disk	It is recommended to allocate a separate hard disk for Operating System installation; which will ensure that hard disks for data recording are separate / independent from OS installation
Storage device configuration	(a) VMS server uses block level access to the storage space. Hence the storage device should be configured to support block level access from VMS software. This is specifically important if external storage device (eg network storage device) is used. If network storage device is used, recommended configuration is through iSCSI interface. (Note - iSCSI is one of the configuration which provide block level access and which is widely used. However, any other configuration can be used, which supports block level access.) (b) Four separate 'set of drives' should be configured. Each 'set of drives' should have same number of drives, same drive sizes and same storage configuration (e.g iSCSI) E. g. 'Set of drives 1' may have 3 drives – 'E:', 40 TB, iSCSI', 'F:', 20 TB, iSCSI' and 'G:', 30 TB, iSCSI' In such case 'Set of drives 2' would be - 'H:', 40 TB, iSCSI', 'I:', 20 TB, iSCSI' and 'J:', 30 TB, iSCSI'; 'Set of drives 3' would

	be - 'K'; 40 TB, iSCSI', 'L'; 20 TB, iSCSI' and 'M'; 30 TB, iSCSI'; and 'Set of drives 4' would be - 'M'; 40 TB, iSCSI', 'N'; 20 TB, iSCSI' and 'O'; 30 TB, iSCSI' (c) If local hard disk drives are used for data storage, it is recommended to use four separate 'set of HDDs'. Each 'set of HDDs' should have same number of HDDs and same HDD sizes E. g. 'Set of HDDs 1' may have 2 HDDs – '60 TB' and '30 TB' In such case 'Set of HDDs 2' would be – '60 TB' and '30 TB' ; 'Set of HDDs 3' would be – '60 TB' and '30 TB'; and 'Set of HDDs 4' would be – '60 TB' and '30 TB'
Data storage drives throughput	(a) For recording streams with 3 mbps bit-rate; minimum consistent write throughput = 960 mbps (megabits per second), minimum consistent read throughput = 240 mbps (megabits per second) (b) The values are for actual data transfer (throughput) and not the capacity (bandwidth) (c) The values are for minimum consistent throughput and not for average throughput (d) The above mentioned values are minimum values for reference only. Storage device should provide the required throughput (bits per second) as per calculations for target project, based on the parameters defined in project specifications
Notes 1	There should be no video monitoring (video viewing) happening on server. Server should run in optimized mode, after the settings are done. All video monitoring is expected to be from client computers
Notes 2	If video monitoring is expected on server computer, it is recommended to add one more client computer, physically placed near the server computer. Client computer should be used for the video monitoring

(B.1) VMS Client – Type 1

For viewing up to 8 cameras supporting dual streaming (for camera resolutions up to 2 MP), at a time, on single monitor

1. Processor – 4 core 2 GHz processor
2. RAM – 4GB or more
3. Gigabit network card
4. Graphics card 1 GB or more
5. Operating System - Windows 10 / Windows 11
6. Local hard disk - minimum 100 GB free drive space where Security Management System client software is installed; minimum 50 GB drive free space on system drive, if its different than the one where Security Management System client software is installed

Notes –

(a) The VMS client workstation hardware recommendations are NOT valid for cameras which require special processing at display time (eg 360 fisheye cameras with de-warping enabled at display). Client workstation hardware requirements will depend on the type of the cameras used and will be available from the camera manufacturer.

(B.2) VMS Client – Type 2

For viewing more cameras supporting dual streaming (for camera resolutions up to 2 MP), at a time; up to 64 cameras

1. Processor – 8 core 2 GHZ processor
2. RAM – 8GB or more
3. Gigabit network card
4. Graphics card 4 GB or more.
Note - The selected graphics card should also be validated for expected number of output display ports, type of output display ports, and compatibility with the selected monitors / display devices.
5. Operating System - Windows 10 / Windows 11
(64 bit OS version is recommended)
6. Local hard disk - minimum 100 GB free drive space where Security Management System client software is installed; minimum 50 GB drive free space on system drive, if its different than the one where Security Management System client software is installed

Notes –

(a) The VMS client workstation hardware recommendations are NOT valid for cameras which require special processing at display time (eg 360 fisheye cameras with de-warping enabled at display). Client workstation hardware requirements will depend on the type of the cameras used and will be available from the camera manufacturer.

(C.1) CMS Server – Type 1

Notes –

(a) CMS server is optional component

(b) It may be included in the solution design, as per project requirements

Valid for following project requirements -

Capacity	Up to 1024 CMS processing modules CMS processing module includes management of channels; it does NOT include recording and video streaming. Recording and video streaming is expected to be managed by separate VMS servers or by separate NVRs / DVRs
Camera type	Should support dual streams - one major and one minor
Camera major stream max resolution	1080P (1920 X 1080 pixels)
Recording stream max resolution	Same as major stream
Camera minor stream max resolution	CIF (352 X 288 pixels)
Maximum number of simultaneous client connections	64 (Note – for more number of simultaneous client connections, multicast configuration should be used in solution design the network should support multicast streams)

Hardware recommendations –

Processor	Intel Xeon, 2 GHz or more
Number of total processor cores	8
Memory	8 GB or more
Motherboard	Server class
Network ports	2 X gigabit
Network interface	If on-board network is not available, PCI Express Interface network cards should be used
NIC teaming	(a) If project specifications for server hardware does not mention about NIC teaming, this point can be ignored. (b) If as per project specifications for server hardware, NIC teaming is required on server computer, please ensure that server computer with more physical NICs is selected; such that at least one non-teamed NIC is available on the server computer, after all NIC teaming operations are performed. (c) If separate sub-networks for input network and/or output network are included in solution design, required number of 'available NICs (teamed or non-teamed)' should

	be available after all NIC configurations
Operating system	Windows Server 2016 / Windows Server 2019 / Windows Server 2022 (Note - 64 bit OS recommended)
Local disk space - OS drive	50 GB or more free space
Local disk space - drive where VMS server software is installed	100 GB or more free space
OS installation hard disk	It is recommended to allocate a separate hard disk for Operating System installation; which will ensure that hard disks for data recording are separate / independent from OS installation
Notes 1	There should be no video monitoring (video viewing) happening on server. Server should run in optimized mode, after the settings are done. All video monitoring is expected to be from client computers
Notes 2	If video monitoring is expected on server computer, it is recommended to add one more client computer, physically placed near the server computer. Client computer should be used for the video monitoring