

BVMS 8.0 - Workstations Matrix



Model	Base Unit	HDD	DVD Drive	Processor	Memory	Service	OS
Z240 SFF	HP Z240 240W 92% Efficient Chassis	500GB 7200 RPM SATA	SuperMulti DVD RW SATA	Intel Core i7-6700 CPU @ 3.40 GHz	8GB DDR4-2133 (2x4GB) RAM	HP 3-year Next Business Day on-site hardware support	Microsoft Windows 10 Pro Edition, 64-bit OS
Z440 NG	HP Z440 700W 90% Efficient Chassis	500GB 7200 RPM SATA	SuperMulti DVD RW SATA	Intel Xeon E5-1620 v4 3.5 10M 2133 4C CPU	8GB DDR4-2400 ECC (2x4GB) RAM	HP 3-year Next Business Day on-site hardware support	Microsoft Windows 10 Pro Edition, 64-bit OS
Z440 EE	HP Z440 700W 90% Efficient Chassis	500GB 7200 RPM SATA	Blu-ray Writer SATA	Intel Xeon E5-1650 v4 3.6 15M 2400 6C CPU	8GB DDR4-2400 ECC (2x4GB) RAM	HP 3-year Next Business Day on-site hardware support	Microsoft Windows 10 Pro Edition, 64-bit OS

BVMS 8.0 - Graphics Card Matrix

Model	Graphics cards	Application	Description	No of cards supported	Maximum monitors per card	Max monitors per WS ⁽¹⁾	GPU decoding supported
Z240 SFF	MHW-AWGC-K620	Entry 3D Graphics Card	NVIDIA Quadro K620 (2 GB)	No 2 nd card supported	2	2	yes
Z440 NG	MHW-AWGC-K620	Entry 3D Graphics Card	NVIDIA Quadro K620 (2 GB)	1 or 2 of these cards are supported. The cards must be identical.	2	4 ⁽²⁾	yes
	MHW-AWGC-M2000	Mid-Range 3D Graphics Card	NVIDIA Quadro M2000 (4 GB)	1 or 2 of these cards are supported. The cards must be identical.	2	4 ⁽²⁾	yes
	MHW-AWGC-M4000	High-End 3D Graphics Card	NVIDIA Quadro M4000 (8 GB)	No 2 nd card supported	4	4	yes
	AMD FirePro W5100	Mid-Range 3D Graphics Card	AMD FirePro W5100 (4 GB)	1 or 2 of these cards are supported. The cards must be identical.	4	4 ⁽¹⁾	no
Z440 EE	AMD FirePro W7100	High-End 3D Graphics Card	AMD FirePro W7100 (8 GB)	No 2 nd card supported	4	4	no
	MHW-AWGC-M4000	High-End 3D Graphics Card	NVIDIA Quadro M4000 (8GB)	No 2 nd card supported	4	4	yes

(1) BVMS uses a maximum of 4 monitors

(2) multiple cards of the same type

BVMS 8.0 - Operator Client Workstation Performance - Single Graphics Cards



Note: The following performance values were measured in Bosch labs under ideal test conditions in live mode using a standard scene. Real life results may differ depending on the camera and stream settings, the scenes and their conditions, as well as additional workstation load.

Model	Graphics cards	Description	H.264 , Default Profile "Balanced"							H.265, Default Profile "Balanced"			
			480p/2CIF	720p		1080p		5MP	4K (3840x2160)	720p	1080p	5MP	
			25 fps	30 fps	60 fps	30 fps	60 fps	12 fps		30 fps	30 fps	30 fps	
Z240 SFF	MHW-AWGC-K620	NVIDIA Quadro K620 (2 GB)	60	24 +G	11 +G	18 +G	7 +G	18 +G	7 +G	26	13	4	(1)
Z440 NG	AMD FirePro W5100	AMD FirePro W5100 (4 GB)	120	28	15	12	6	12	4	28	12	4	
	MHW-AWGC-K620	NVIDIA Quadro K620 (2 GB)	60	24 +G	11 +G	18 +G	8 +G	16 +G	7 +G	26	12	4	(1)
	MHW-AWGC-M2000	NVIDIA Quadro M2000 (4 GB)	120	38 +G	14 +G	24 +G	13 +G	16 +G	7 +G	38 +G	20 +G	7 +G	
	MHW-AWGC-M4000	NVIDIA Quadro M4000 (8 GB)	120	40 +G	19 +G	22 +G	11 +G	15 +G	5 +G	26	12	4	(1)
	n/a	NVIDIA P600	120	40 +G	11 +G	22 +G	8 +G	10 +G	5 +G	38 +G	20 +G	8 +G	
	n/a	NVIDIA P2000	120	42 +G	12 +G	24 +G	9 +G	10 +G	5 +G	40 +G	21 +G	8 +G	
	n/a	NVIDIA P4000	120	40 +G	14 +G	24 +G	9 +G	10 +G	5 +G	38 +G	22 +G	8 +G	
Z440 EE	AMD FirePro W7100	AMD FirePro W7100 (8 GB)	120	34	18	15	8	14	5	30	14	5	
	MHW-AWGC-M4000	NVIDIA Quadro M4000 (8 GB)	120	44 +G	22 +G	25 +G	13 +G	18 +G	6 +G	30	14	5	(1)

Test limit is exceeded whenever CPU Load >90% or frame drop >5% or the live stream judders

Attention: The measurement settings have changed for BVMS 8.0 compared with previous versions.

+G Utilizes GPU and CPU decoding; if GPU decoding is disabled lower values will be achieved; GPU decoding is only available on certain NVIDIA graphics cards.

(1) Not all NVIDIA graphics cards are capable of hardware accelerated decoding of H.265 streams.

Note 2: Maximum values must be under 90% CPU-load and under 5% frame drops in more than 5 out of 10 measurements, and live streams must not judder.

Note 3: 480p/2CIF (25fps) is limited by the maximum number of available cameos on the workstation (60 on a 2 monitor system, 120 on a 4 monitor system, 50 on 2 monitors attached to a DIP 7000 R2)

Note 4: Each cell value in a column is to be viewed in isolation as the maximum number of simultaneously viewable cameras per workstation. Sums of values across columns are meaningless.

Note 5: Values have been determined by using the default stream settings profile "Balanced"

BVMS 8.0 - Operator Client Workstation Performance Live - Divar IPs



Model	Graphics cards	Description	H.264 , Default Profile "Balanced"					H.265, Default Profile "Balanced"					
			480p/2CIF 25 fps	720p 30 fps 60 fps		1080p 30 fps 60 fps		5MP 12 fps	4K (3040x 2160)	720p 30 fps	1080p 30 fps	5MP 30 fps	
DIP 3000 ⁽¹⁾	Intel HD Graphics	onboard graphics	25	10	5	5	3	4	1	7	4	1	(1)
DIP 7000 R2 ⁽¹⁾	AMD FirePro W4100	AMD FirePro W4100 (2 GB)	40	15	8	8	4	4	0	8	6	1	(1)

Test limit is exceeded whenever CPU Load >90% or frame drop >5% or the live stream judders

(1) For this measurement the DIPs are used exclusively as workstations. This shows the maximum achievable performance on these platforms. Use of DIP-components such as VSG, MVS, VRM will cause additional load on the system, which may decrease these values significantly.

BVMS 8.0 - Operator Client Workstation Performance - Dual Graphics Cards



Model	Graphics cards	Description	H.264 , Default Profile "Balanced"					H.265, Default Profile "Balanced"					
			480p/2CIF 25 fps	720p 30 fps 60 fps		1080p 30 fps 60 fps		5MP 12 fps	4K (3040x 2160)	720p 30 fps	1080p 30 fps	5MP 30 fps	
Z440 NG	2 x MHW-AWGC-K620	NVIDIA Quadro K620 (2 GB)	120	38 ^{+G}	22 ^{+G}	30 ^{+G}	11 ^{+G}	25 ^{+G}	10 ^{+G}	26	12	5	
	2 x MHW-AWGC-M2000	NVIDIA Quadro M2000 (4 GB)	120	54 ^{+G}	24 ^{+G}	30 ^{+G}	18 ^{+G}	22 ^{+G}	10 ^{+G}	50 ^{+G}	32 ^{+G}	11 ^{+G}	

Test limit is exceeded whenever CPU Load >90% or frame drop >5% or the live stream judders

Note: Graphics card usage: All cameras are opened on monitors connected to the first graphics card. When the limit is exceeded for first GPU and CPU, two CPU cameos are closed, then possibly three or four until below the limit again. Cameras are then opened on monitors attached to the second graphics card, until the limit is reached again.