DIGITAL SENTRY NETWORK VIDEO RECORDER (DSSRV)
BASIC BANDWIDTH GUIDELINES [F1]

INSTRUCTIONS

1) For analogue cameras only, refer to analogue Cameras only Section. Note, by default cameras are set to server-side motion detection
2) For IP cameras only, select either in-camera motion or server-side motion
3) For Hybrid systems, select either in-camera motion or server-side motion
4) Select number of cameras. If the number of cameras to be used is greater than any of the references (16 or 32), use either the next higher number of cameras or assume bandwidth performance in between two camera numbers. For systems over 64 cameras, use vendor specifications for cameras to determine total bandwidth. Do not exceed 280 Mpbs.
   EXAMPLES: A) If 17 cameras, add a slight buffer to the bandwith, CPU, and memory performance.
   B) If 25 cameras, assume a bandwidth, CPU, and memory performance between 16 and 64 cameras
5) Selelct Framerate. If specific framerate fps is not indicated in the chart use either the higherIPS or assume IPS in between 15 and 30 IPS.
   If Recording Only, view the CPU and Memory utilitization in "Results Recording Only". If viewing video at server view Results from the next set of columns.
6) This values in this chart are accumulative from left to right, i.e., Total Bandwidth is a reference for both analog and IP cameras.
   If Recording Only, view the CPU and Memory utilitization in "Results Recording Only". If viewing video at server view Results from the next set of columns.

30 IPS | 15 IPS

Analog Configuration				IP Configuration						Total Bandwidth	Results Recording Only		Results Recording/Viewing Live at Server			
Cameras	Resolution	Framerate	Bandwidth Mpbs [F2]	Cameras	Encoding	Resolution	Framerate	Bandwidth	Server-side Motion Detection [F3]		CPU	Memory	CPU	Memory	Average Framerate	Max Cameras at full framerate [F5]
Analog Cameras Only - cameras by default are set to server-side motion detection F4																
16	D1	30 IPS	45.6						Yes	45.6	18%	22%	50%	28%	30 IPS	16
32	D1	30 IPS	91.2						Yes	91.2	30%	23%	68%	30%	30 IPS	24
64	D1	30 IPS	182.4						Yes	182.4	45%	25%	76%	29%	30 IPS	12
16	D1	15 IPS	22.8						Yes	22.8	18%	22%	48%	25%	15 IPS	16
32	D1	15 IPS	45.6						Yes	45.6	21%	22%	65%	26%	15 IPS	24
64	D1	15 IPS	91.2						Yes	91.2	50%	25%	74%	28%	15 IPS	12
IP Cameras Only with in-camera motion detection																
				16	H.264	4CIF	30 IPS	48	No	48	18%	20%	74%	30%	30 IPS	16
				32	H.264	4CIF	30 IPS	96	No	96	22%	23%	74%	29%	30 IPS	18
				64	H.264	4CIF	30 IPS	192	No	192	28%	25%	76%	45%	30 IPS	12
				16	H.264	4CIF	15 IPS	24	No	24	18%	20%	74%	28%	15 IPS	16
				32	H.264	4CIF	15 IPS	48	No	48	22%	23%	74%	26%	15 IPS	16
				64	H.264	4CIF	15 IPS	96	No	96	28%	25%	76%	28%	15 IPS	12
IP Camera Only with server-side motion detection																
				16	H.264	4CIF	30 IPS	48	Yes	48	20%	23%	74%	29%	30 IPS	16
				32	H.264	4CIF	30 IPS	96	Yes	96	25%	24%	74%	29%	30 IPS	10
				64	H.264	4CIF	30 IPS	192	Yes	192	28%	26%	79%	45%	30 IPS	16
				16	H.264	4CIF	15 IPS	24	Yes	24	16%	22%	68%	28%	15 IPS	16
				32	H.264	4CIF	15 IPS	48	Yes	48	21%	22%	74%	29%	15 IPS	18
				64	H.264	4CIF	15 IPS	96	Yes	96	25%	24%	79%	30%	15 IPS	12
Hybrid - Analog and IP Cameras with server-side motion detection																
16	4CIF	30 IPS	45.6	16	H.264	4CIF	30 IPS	48	Yes	93.6	49%	27%	78%	28%	30 IPS	4
32	4CIF	30 IPS	91.2	32	H.264	4CIF	30 IPS	96	Yes	187.2	56%	29%	78%	30%	30 IPS	3
64	4CIF	30 IPS	182.4	64	H.264	4CIF	30 IPS	192	Yes	374.4	73%	29%	82%	35%	30 IPS	2
16	4CIF	15 IPS	22.8	16	H.264	4CIF	15 IPS	24	Yes	46.8	40%	25%	75%	27%	15 IPS	6
32	4CIF	15 IPS	45.6	32	H.264	4CIF	15 IPS	48	Yes	93.6	45%	27%	75%	29%	15 IPS	5
64	4CIF	15 IPS	91.2	64	H.264	4CIF	15 IPS	96	Yes	187.2	57%	32%	76%	30%	15 IPS	4
Hybrid - Analog and IP Cameras with in-camera motion detection																
16	4CIF	30 IPS	45.6	16	H.264	4CIF	30 IPS	48	No	93.6	38%	25%	75%	30%	30 IPS	4
32	4CIF	30 IPS	91.2	32	H.264	4CIF	30 IPS	96	No	187.2	43%	28%	78%	31%	30 IPS	3
64	4CIF	30 IPS	182.4	64	H.264	4CIF	30 IPS	192	No	374.4	55%	33%	80%	34%	30 IPS	2

FOOTNOTES

1 This chart is intended only to provide guidelines for system design and to indicate likely bandwidth and system performance. The number of variables that iimpact system performance vary widely and should be considered in system design.
These guidelines were derived from a 500 GB system with HDD write speed of 37 Mbps.

[2] Client connection impacts performance based on PC specification and network performance.

[3] Server-side motion detection has previously been referrred to as Integral motion detection. Both terms mean the same thing.

4 analog cameras by defualt are set to server-side motion detection. IP cameras can be set either to in-camera motion or server-side motion detection.

[5] If 80% system utilization is exceeded, DSSRV performance will be impacted and frames will be dropped for live viewing and recorded video. Use the DSSI (Digital Sentry Sytem Information) Utility to observe CPU performance