

# SeeTec Cayuga R13 - System Requirements



Modules	Supported Operating Systems	Notes
Core Service Device Management Multimedia Database Versatile Applications (i.e. Analytics, LPR)	Microsoft Windows® 7 SP1 (Home Premium, Professional, Ultimate, Enterprise) 32 and 64 Bit Microsoft Windows® 8.1 (Standard, Professional, Enterprise) 32 and 64 Bit Microsoft Windows® 10 (Pro, Enterprise) 32 and 64 Bit Microsoft Windows Server® 2008 R2 SP1 (Standard, Enterprise) 64 Bit Microsoft Windows Server® 2012 (Standard, Datacenter) 64 Bit Microsoft Windows Server® 2012 R2 (Standard, Datacenter) 64 Bit Microsoft Windows Server® 2016 (Standard) 64 Bit	<ul style="list-style-type: none"> <li>▪ Only listed OS are supported</li> <li>▪ Latest OS updates required</li> <li>▪ Windows® Embedded is not supported</li> <li>▪ SeeTec Analytics in general and Counting Suite work only as 32 Bit process within a 64 Bit OS</li> <li>▪ Windows 2016 (64 Bit) is recommended</li> <li>▪ Please contact SeeTec Project Engineering or Support if you want to use Virtual Machines</li> <li>▪ LPR on virtual machines could cause issues and is only supported in case of planned by SeeTec. Please contact SeeTec</li> <li>▪ We do not support the so called „nano server“</li> </ul>
SDK Native Client	Microsoft Windows® 7 SP1 (Home Premium, Professional, Ultimate, Enterprise) 32 and 64 Bit Microsoft Windows® 8.1 (Standard, Professional, Enterprise) 32 and 64 Bit Microsoft Windows® 10 (Pro, Enterprise) 32 and 64 Bit Microsoft Windows Server® 2008 R2 SP1 (Standard, Enterprise) 64 Bit Microsoft Windows Server® 2012 (Standard, Datacenter) 64 Bit W Microsoft Windows Server® 2012 R2 (Standard, Datacenter) 64 Bit Microsoft Windows Server® 2016 (Standard) 64 Bit	<ul style="list-style-type: none"> <li>▪ Only listed OS are supported</li> <li>▪ Latest OS updates required</li> <li>▪ Windows® Embedded is not supported</li> <li>▪ Windows® 10 (64 Bit) is recommended</li> <li>▪ .NET 4.6.2 or later is required and is part of the installer</li> <li>▪ Desktop Experience must be activated for Windows Server</li> </ul>
Mobile Client for iPhone/iPad	Apple iOS devices with iOS 11 or higher	<ul style="list-style-type: none"> <li>▪ Optimized for iPad</li> </ul>
Mobile Client for Android	Android devices with Android 6.0,Marshmallow' or higher	<ul style="list-style-type: none"> <li>▪ Optimized for tablets Future releases will require Android 7 ,Nougat' or higher</li> </ul>

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Webclient	Google Chrome >= 65 Mozilla Firefox >= 59 Microsoft Internet Explorer >= 11 Microsoft Edge, Apple Safari, Opera	<ul style="list-style-type: none"><li>▪ Google Chrome recommended</li></ul>
BVI Server	Microsoft Windows® 7 SP1 (Home Premium, Professional, Ultimate, Enterprise) 64 Bit Microsoft Windows Server® 2008 R2 SP1 (Standard, Enterprise) 64 Bit Microsoft Windows® 10 (Enterprise) 64 Bit Microsoft Windows Server® 2012 R2 (Standard) 64 Bit Microsoft Windows Server® 2016 (Standard) 64 Bit	<ul style="list-style-type: none"><li>▪ Only listed OS are supported</li><li>▪ Windows® Embedded is not supported</li><li>▪ Windows 2016 (64 Bit) is recommended</li><li>▪ We do not support the so called „nano server“</li></ul>
BVI Client	Microsoft Windows® 7 SP1 (Home Premium, Professional, Ultimate, Enterprise) 64 Bit Microsoft Windows Server® 2008 R2 SP1 (Standard, Enterprise) 64 Bit Microsoft Windows® 10 (Enterprise) 64 Bit Microsoft Windows Server® 2012 R2 (Standard) 64 Bit Microsoft Windows Server® 2016 (Standard) 64 Bit	<ul style="list-style-type: none"><li>▪ Only listed OS are supported</li><li>▪ Windows® Embedded is not supported</li><li>▪ Windows® 10 Version (64 Bit) is recommended</li><li>▪ .NET 4.6.2 or later is required and is part of the installer</li></ul>
BVI Web Service	Google Chrome >= 65 Mozilla Firefox >= 59 Microsoft Internet Explorer >= 11 Microsoft Edge, Apple Safari, Opera	<ul style="list-style-type: none"><li>▪ Google Chrome recommended</li></ul>

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Type of installation	Hardware requirement	Notes
Core Service running as Master connected to Core Service Slaves (CSS)	<p><b>Recommended for &lt;50 Core Service Slaves:</b> CPU: Intel Core i3-8350K @ 4.00GHz or Intel Xeon E3-1230 v6 @ 3.50GHz RAM: 16 GB</p> <p><b>Recommended for &lt;200 Core Service Slaves:</b> CPU: Intel Core i5-8600K @ 3.60GHz or Intel Xeon E3-1275 v6 @ 3.80GHz RAM: 24 GB</p> <p><b>Recommended for &gt;200 Core Service Slaves:</b> CPU: Intel Core i7-8700K @ 3.70GHz or Intel Xeon E-2175 @ 2.90GHz RAM: 32 GB HDD: 500 GB free disk space @ 7200 RPM Network: Ethernet with 1000 MBit/s</p> <p><b>Minimum:</b> CPU: Intel Core i5-7400 @ 3.00GHz RAM: 8 GB HDD: 100 GB free disk space Network: Ethernet with 1000 MBit/s</p>	
Core Service running as Master without Core Service Slaves (CSS)  or running as CSS	<p><b>Recommended for &gt;200 Core Service Slaves:</b> CPU: Intel Core i5-8600K @ 3.60GHz or Intel Xeon E3-1275 @ 3.80GHz RAM: 16 GB HDD: 500 GB free disk space @ 7200 RPM Network: Ethernet with 1000 MBit/s</p> <p><b>Minimum:</b> CPU: Intel Pentium G4560 @ 3.50GHz RAM: 4 GB HDD: 100 GB free disk space Network: Ethernet with 1000 MBit/s</p>	

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Type of installation	Hardware requirement	Notes
Core Service Device Management (DM)	<p><b>Recommended:</b> CPU: Intel Core i5-8600K @ 3.60GHz or Intel Xeon E3-1275 v6 @ 3.80GHz RAM: 16 GB (video throughput &lt; 20 MByte/s) , 24 GB (video throughput &gt; 20 MByte/s) HDD: 500 GB free disk space @ 7200 RPM Network: Ethernet with 1000 MBit/s</p> <p><b>Minimum:</b> CPU: Intel Pentium G4560 @ 3.50GHz RAM: 4 GB (+ 2 GB if server-side Motion Detection is used) HDD: 100 GB free disk space Network: Ethernet with 1000 MBit/s</p>	
Device Management (DM)	<p><b>Recommended:</b> CPU: Intel Core i5-8600K @ 3.60GHz or Intel Xeon E3-1275 v6 @ 3.80GHz RAM: 16 GB (video throughput &lt; 40 MByte/s) , 24 GB (video throughput &gt; 40 MByte/s) HDD: 500 GB free disk space @ 7200 RPM Network: Ethernet with 1000 MBit/s</p> <p><b>Minimum:</b> CPU: Intel Pentium G4560 @ 3.50GHz RAM: 4 GB (+ 2 GB if server-side Motion Detection is used) HDD: 100 GB free disk space Network: Ethernet with 1000 MBit/s</p>	
Versatile Applications (i.e. Analytics, LPR)	See Device Management Server-side Motion Detection: Max. 10 channels per CPU core	Please contact SeeTec Project Engineering or Support to get a precise recommendation

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Type of installation	Hardware requirement	Notes
Native Client / SDK	<p><b>Recommended:</b>            CPU: Intel Core i5-8600K @ 3.60GHz or Intel Xeon E3-1275 v6 @ 3.80GHz            RAM: 16 GB            HDD: 50 GB free disk space @ 7200 RPM            Network: Ethernet with 1000 MBit/s            Graphics Adapter: At least 4GB GDDR5 RAM, memory bandwidth at least 100 GB/sec.</p> <p><b>Minimum:</b>            CPU: Intel Pentium G4560 @ 3.50GHz            RAM: 4 GB            HDD: 10 GB free disk space            Network: Ethernet with 100 MBit/s or faster            Dedicated Graphics Adapter without Shared Memory, 16 Mio. colors, supporting DirectX 9.0 or higher, Memory Bandwidth <math>\geq</math> 100 GB/s, Memory Size <math>\geq</math> 2 GB</p> <p><b>Recommended display resolution:</b>            1920 x 1080 or higher</p> <p><b>Minimum display resolution:</b>            1280 x 768 (with text size 100%)            1600 x 960 (with text size 125%)            1920 x 1152 (with text size 150%)</p>	<ul style="list-style-type: none"> <li>▪ Deviation from the recommendation can cause stumbling rendering and other negative side effects</li> <li>▪ onboard graphic is not supported</li> <li>▪ We recommend not to use more than one Graphics Adapter</li> <li>▪ Please use always the latest graphics adapter-drivers</li> <li>▪ SeeTec recommends not to use Nvidia NVS, Mobile or Matrox graphic cards (Performance too low)</li> </ul>
BVI Server	<p><b>Minimum:</b>            CPU: Intel Core i5-8600K @ 3.60GHz or Intel Xeon E3-1275 v6 @ 3.80GHz            RAM: 16 GB            HDD: 500 GB free disk space @ 7200 RPM            Network: Ethernet with 1000 MBit/s</p>	We recommend a dedicated SSD for BVI Server with 100 GB free disk space
BVI Client	See „Native Client“, but at least 16 GB RAM mandatory	See all notes for „Native Client“

# SeeTec Cayuga R13 - System Requirements



## General hints

Please watch out for the latest updated System Requirements and Parameters on [https://www.seetec-video.com/fileadmin/user\\_upload/software/R13/System\\_Requirements\\_and\\_Parameter.pdf](https://www.seetec-video.com/fileadmin/user_upload/software/R13/System_Requirements_and_Parameter.pdf)

Windows® Operating System	64-Bit versions are recommended. Please install always the latest os updates.
Windows Clustering	<ul style="list-style-type: none"><li>▪ Windows® Server 2008 (R2 SP1) supported</li><li>▪ Windows® Server 2012 (R2) not supported</li></ul>
Virtual environments	<ul style="list-style-type: none"><li>▪ We recommend not to use clients in virtual environments, because the rendering performance is not satisfactory.</li><li>▪ We recommend dedicated network interfaces.</li><li>▪ Virtualization could need more cpu power than its physical counterpart.</li><li>▪ We recommend direct attached storage or iSCSI.</li><li>▪ Because virtualization can in general decrease the performance, we recommend to test the planned server environment.</li><li>▪ Cayuga is compatible with Citrix XEN, VMware vSphere and Microsoft Hyper-V.</li></ul>
Thin Clients	Thin Client environments are not supported.
CPU recommendations	Video processing demands much cpu power. We recommend always to use the latest, most powerful cpu models. You can find a comparison at <a href="https://www.cpubenchmark.net/high_end_cpus.html">https://www.cpubenchmark.net/high_end_cpus.html</a> . In general, we recommend single socket server with up to 10 physical cores.

## General hints

Please note: Web guard and Internet Security features must not be installed on Cayuga systems!

To run Cayuga software properly, it is important that you exclude specific locations, processes and certain network traffic. Without configuring these exceptions, virus scanning could use a high amount of system resources. Additionally the scanning process could temporarily lock files, which could lead to a disruption in the recording process or even to database corruption.

Do not perform a real time and system scan of Cayuga directories containing recording databases (by default C:\Program Files\SeeTec, as well as all folders under that location). Avoid also to perform a real time and system scan on archive storage directories.

### Virus scanning

Create the following additional exclusions:

- C:\Program Files\SeeTec and all subdirectories.
- Path to Multimedia Database Zone(s)

Exclude real time network scanning on TCP ports: Please refer to "Used SeeTec Cayuga Ports" document:  
[https://downloads.seetec-video.com/fileadmin/01DL/6.13.1/documentation/Used\\_SeeTec\\_Cayuga\\_R13\\_Ports.pdf](https://downloads.seetec-video.com/fileadmin/01DL/6.13.1/documentation/Used_SeeTec_Cayuga_R13_Ports.pdf)

Exclude network scanning of the following processes:

All processes starting with VMS\_\* (e.g. VMS\_Client.exe)

### Firewalls

Multiple ports on the server computer must be available by default to allow the Cayuga software to function correctly in a network environment with a firewall.

Please refer to "Used SeeTec Cayuga Ports" document:  
[https://downloads.seetec-video.com/fileadmin/01DL/6.13.1/documentation/Used\\_SeeTec\\_Cayuga\\_R13\\_Ports.pdf](https://downloads.seetec-video.com/fileadmin/01DL/6.13.1/documentation/Used_SeeTec_Cayuga_R13_Ports.pdf)

## General hints

Network layout	According to the amount of cameras in your system and the resulting used network bandwidth you should consider to use multiple separate networks for the cameras, the clients and the storage to prevent an overload on your network. This depends on the bandwidth. Since the Cayuga/BVI Client does not need a direct connection to the cameras, the only module which needs access to both networks is the Cayuga Device Manager.
Teaming / Bounding of network interfaces	Please do not use these kind of functions!
Multimedia Database Filesystem	We recommend NTFS for Microsoft Windows® with a cluster size of 64 KB and not to use Microsoft Windows® ReFS.
Usage of cameras	Cameras should usually be referenced only once. Configuring a camera multiple times per installation or in different installations will cause problems with several manufacturers. Please contact SeeTec Project Engineering for further information.
Benchmark results for a Cayuga Client with recommended hardware setup and 4 displays	<b>H264</b> <ul style="list-style-type: none"><li>▪ 80 cameras, 320 x 240 @ 512 kbps CBR and 25 fps</li><li>▪ 72 cameras, 640 x 480 @ 1024 kbps CBR and 25 fps</li><li>▪ 52 cameras, 704 x 480/704 x 576 @ 2048 kbps CBR and 25 fps</li><li>▪ 35 cameras, 720p @ 4096 kbps CBR and 25 fps</li><li>▪ 18 cameras, 1080p @ 4096 kbps CBR and 25 fps</li><li>▪ 13 cameras, 3 Megapixel @ 4096 kbps CBR and 25 fps</li><li>▪ 6 cameras, 4 Megapixel @ 8192 kbps CBR and 25 fps</li></ul>



# SeeTec Cayuga R13 - System Parameter

System Parameter	Description and Comments	Value
MaxChanSys	Maximum number of video channels to be served by Cayuga within one installation.	5000
MaxChanDM	Maximum number of video channels per Device Manager server. A reduction of the amount of video channels might be advisable in dependence on the amount of video recordings to be stored.	250
MaxChanDMAalytics	Maximum number of video channels per Device Manager server, if also video analytics will run on the same server. The final amount of video channels will depend on the performance consumption of the applied analytics software.	20 - 80
MaxCoreSlave	Maximum number of servers with installed service „Core Slave“ being connected to the one server running the service „Core Master“.	250
MaxDM	Maximum number of Device Manager servers running in a Cayuga system.	250
MaxAutoUpdater	Maximum number of AutoUpdaterClients in a Cayuga system.	250
MaxTimeFailCore	Maximum time in minutes until all services are connected to the „Core Master“ when the „Core Slave“ has failed (same time for switching back). A failover will happen when services cannot reach the „Core Slave“ anymore (e.g. if the „Core Slave“ or parts of the network are unavailable).	2 minutes
MaxTimeFailDM	Maximum time in minutes until the secondary Device Manager has taken over control from the primary Device Manager (same time for switching back). A failover will happen (if activated) when the primary Device Manager is not accessible; the whole failover time span is determined to avoid flickering.	2 minutes

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System Parameter	Description and Comments	Value
MaxClientNat	Maximum number of concurrent native (Windows) clients in one Cayuga installation.	200
MaxClientWeb	Maximum number of concurrent web clients in one Cayuga installation.	20
MaxClientMob	Maximum number of concurrent mobile clients in one Cayuga installation.	50
MaxMultiLogin	Maximum number of attached Cayuga installation for Multi Installation Login	15 Cayuga installations, each with a max. of 100 devices. Contact Project Engineering for detailed project planning in case you want to use more.
BandWCS	Recommended minimum bandwidth between a native client and any server. The required bandwidth depends on the number of video channels to be simultaneously displayed and could exceed the mentioned value significantly.	2 MBits/s
BandWMaSI	Recommended minimum bandwidth between „Core Master“ and any „Core Slave“. The required bandwidth depends on the number of video channels and could exceed the mentioned value significantly.	2 MBits/s
BandWCoreFTP	Recommended bandwidth between „Core Master“ and the SeeTec server providing patches and new loads for a remote update or upgrade of the local installation. This bandwidth is only required if automated updates and upgrades were selected in the „Autoupdater“.	10 MBits/s
MaxItemsSEIDevice	Maximum number of SEI devices and states	1000 items with 10 states each