

# Server Virtualization

Maximizing resources, capability, and cost



## What is virtualization?

In IT terms, virtualization typically refers to abstracting the operating system (OS) software and applications from physical hardware, effectively allowing a single piece of hardware to be divided up and assigned separate tasks that would otherwise require multiple hardware components. The most common use of this technology is server virtualization – certainly in a surveillance solution context – but it can also apply to networks and storage, in particular storage area networks. For clarity, this paper primarily focuses on server virtualization.

The process of server virtualization involves inserting a software layer – sometimes known as a hypervisor – between the hardware and operating system. The hypervisor emulates the ‘true’ hardware and allocates resources dynamically. Because the OS is no longer interacting directly with the hardware, but instead with the hypervisor, a virtual machine (VM) is established that no longer requires what can be referred to as “exclusive use” of the complete hardware capabilities available.

This process enables multiple operating systems and applications such as multiple VMs – each with their own specific identity, IP address, etc. – to work on a single hardware device.

## What are the benefits of server virtualization?

### Maximizing resources

For large-scale organizations with complex network needs, the hardware deployed is extremely powerful and therefore likely to exceed capability and specification requirements. This can result in wasted capacity. It is not uncommon for around 40% of server capacity to be unused. By ‘slicing up’ hardware capabilities between different VMs, powerful (and costly) resources are maximized, negating the need to purchase additional hardware.

### Less power, less cooling, less maintenance

In simple terms, more efficient use of hardware means fewer physical devices that require direct power, resulting in less cooling and, where space is at a premium, less overall rack space. The potential cost savings are significant.

Further cost savings are also made through reduced maintenance requirements. A leaner physical infrastructure is more efficient to maintain and will require fewer replacement parts through wear and tear. Having to replace one hard drive rather than three every few years all adds up. The scale of the savings will directly correlate with the scale of virtualization adopted and the level of multi-tasking it enables.

### Reliable redundancy

The benefits of virtualization go beyond cost. They also deliver peace of mind by enabling additional redundancy solutions. With Synergy server virtualization, 'mirror VMs' constantly monitor the health of the primary server and automatically step in as required in the event of any issue. This negates the need to 'rebuild' servers, operating systems, and applications, as an exact copy already exists. Server virtualization is a useful tool for continuous operation and speedy data recovery.

### Scalability and futureproofing

Another important benefit of virtualization is scalability. Because it enables physical hardware to be partitioned and effectively programmed to multi-task, new or expanded tasks can be allocated – for instance, the addition of an evidence locker function to a system.

For organizations likely to expand surveillance requirements, for example, due to new operational sites, IP migration strategies, and the introduction of new integrated technologies, this capability can help futureproof the solutions deployed.

### Is there a risk of overloading hardware/network capability?

'Overload' is a consideration rather than a risk. While virtualization has become increasingly common in IT environments, the surveillance industry has been relatively slow to adopt the use of VMs to support video management. The main reason for this has been that video recording and management are regarded as 'high-demand' processes, placing a significant strain on a server's CPU, memory, and the associated network. The perception has therefore been that VMs would not be able to cope with the demands placed on them.

While this may once have been the case, the power and specification of servers now used for large-scale surveillance solutions go some way to easing this concern.

That said, it is essential that server capability is not too thinly sliced. The number and capability of the VMs created has to reflect specific surveillance requirements to ensure – certainly where security is integral to operations – that video can be captured, stored, and viewed in real time with no danger of data loss or image latency.

### Seek support from providers

By pre-configuring and Factory Acceptance Testing our Synergy solutions with virtualization, Synectics ensures all necessary calculations are taken into account to avoid any potential load issues. Our engineers and technical teams are trained on the specific requirements of virtualization.

For organizations adopting virtualization as part of their surveillance solution, it is also essential to use an integrator with specific knowledge and experience of the technology.

Virtualization adds a layer of technical complexity that some integrators might not be familiar with, as the engineering interface used for implementation is very different.

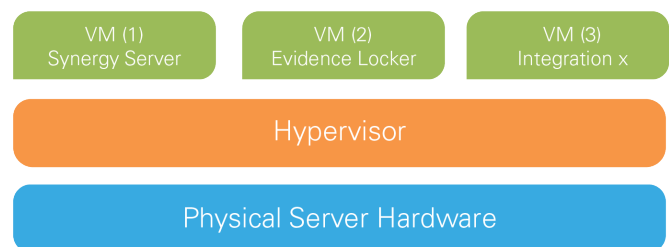
### How does virtualization work with Synergy?

Server virtualization is something Synectics offers as standard to customers using Synergy, with hardware and VMs configured before the solution is deployed.

Our default virtualization platform is Microsoft's Hyper-V, but we also deploy alternatives depending on customer needs and specifications. For example, we have delivered solutions using VMware vSphere from Dell EMC.

Our virtualization solution enables customers to have multiple Synergy VMs per physical server, while also freeing up space for additional task allocation per physical server, for example, dedicated evidence locker storage and network management systems.

Furthermore, the virtualized platform from Synectics allows for high redundancy and uptime, including hot backups and offline working systems for unparalleled working flexibility on live sites.



### Synectics

sales@synecticsglobal.com

[synecticsglobal.com](http://synecticsglobal.com)

Specifications subject to change. E & OE.

Literature Reference: VM-TN/0522/A4 Iss 1

Copyright © Synectic Systems Group Limited 2022. All Rights Reserved.