WHITE PAPER

Is reducing your TCO sustainable?

How TCO affects the sustainability of your hardware solution

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When looking at implementing a new electronic security system, there are many factors to think about. But once you have decided on your operational requirement, many decisions come down to finances, in particular two questions:

1. How much is the system going to cost me to install – i.e. Capital Expenditure or CAPEX?

2. How much is the system going to cost me to run – i.e. Operational Expenditure or OPEX?

At Secure Logiq, we specialise in optimising the hardware solution for the application, with the aim of minimising any hardware requirements, often taking into account any future expansion plans.

Due to our vast industry knowledge combined with having the industry's highest throughput and highest storage density servers, we can often supply solutions that use less physical hardware than our IT-centric competition, which will often have a lower CAPEX and OPEX by utilising less rack space, cooling, power and indeed non-renewable raw materials. The illustration below specifically looks at the OPEX savings (CAPEX savings were about 30%).

Project requirements for this 800-no. 1080P camera solution were entered into the VMS manufacturer's storage calculator, which recommended 13 of their 2U storage servers and a separate 1U access control server.

With the Secure Logiq solution, we consolidated the design into 4 high-powered processing servers, each running multiple instances of the VMS utilising our Logiqal Core software, and a super high-density SAN solution offering the same total storage amount but in a significantly smaller physical footprint — in total, 13U of rack space vs 28U for the IT-centric solution.

Solution using VMS Suggested Hardware

Due to their multipurpose design and generic, non-optimised nature, most IT-centric servers have limited processing capacity, which can often be more of a limiting factor than the onboard storage, which typically does not exceed 160TB in RAID5. The below shows the total amount of power, cooling and rack space required for the IT-centric solution.

Manufacturer	Product	Quantity	Power Consumption	BTU	Rack Space	Power Consumption	Heat Dissipation	Rack Space
VMS Manufacturer	Intel Xeon based Server with 144TB Storage	12	217W [1]	742BTU [1]	2U	2604W	8904BTU	24U
VMS Manufacturer	Intel Xeon based Server with 32TB Storage	1	157W [1]	537BTU [1]	2U	157W	537BTU	2U
Access Control Server	HPS-1U-HMS500	1	87W	299BTU	2U	87W	299BTU	2U
					Total	2,848W	9,740BTU	28U

Figure 1 - IT Centric Hardware

The below table shows the OPEX cost to operate this solution per day, year, and over the 5-year warranty period of the solution.

Manufacturer	Product	Quantity	Cost (Day)	Cost (Year)	Cost (5 Years)
VMS Manufacturer	Intel Xeon based Server with 144TB Storage	12	£62.16	£22,689.01	£113,445.03
VMS Manufacturer	Intel Xeon based Server with 32TB Storage	1	£3.75	£1,368.17	£6,840.84
Access Control Server	HPS-1U-HMS500	1	£2.08	£759.98	£3,799.88
		Total	£67.99	£24,817.15	£124,085.75

Figure 2 - IT Centric Power Costs

By utilising best-in-class components tested together and optimised for IP surveillance applications, Secure Logiq has created a range of servers which, at the top end, can handle 4000Mbps throughput and an array of high-density storage solutions to fit the application. Because they are often running well under peak processing power and feature advanced RAID arrays to spread the load, average power is significantly lower than the peak power requirements. Additionally, each unit will replace multiple units available from other suppliers, offering significant power savings. The units in the calculations below feature 2000 Mbps throughput and a 1.8 Petabyte SAN solution.

Manufacturer	Product	Quantity	Power Consumption	BTU	Rack Space	Power Consumption	Heat Dissipation	Rack Space
Secure Logiq	HPS-2U8B-USAN	4	141W	485BTU	2U	564W	1940BTU	8U
Secure Logiq	SAN-SOLUTION	1	944W	3228BTU	2U	944W	3228BTU	1U
					Total	1,508W	5,168BTU	9U

Figure 3 - Secure Logiq Hardware

Looking at the statistics in the chart above, Figure 4 – Secure Logiq Hardware, you will see that the total average power requirement for the Secure Logiq solution was about half of the power requirement for the IT-centric solution, which also translates into half of the cooling requirement — and don't forget, it's only half of the rack space.

Manufacturer	Product	Quantity	Cost (Day)	Cost (Year)	Cost (5 Years)
Secure Logiq	HPS-2U8B-USAN	4	£13.50	£4,928.86	£24,644.28
Secure Logiq	SAN-SOLUTION	1	£22.54	£8,225.36	£41,126.82
		Total	£36.04	£13,154.22	£65,771.10

Figure 4 - Secure Logiq Power Costs

When comparing the above chart, Figure 5 – Secure Logiq Power Costs, simply powering and cooling the server solution delivers over £58,000 of savings over the 5-year warranty period of the equipment.

Non-Renewable Raw Materials

Known economically workable aluminium deposits will be exhausted in 2139 and iron (steel) in just 2087. Both elements are extracted in power-hungry, environmentally dirty practices, so minimising the metal we use in an installation will have a significant impact on the future of the planet.

Below, we compare the metal usage of both solutions. We will simply compare the chassis and racking, as the other significant metal use - the hard drives - will be roughly the same in each solution. For the following calculations, and for simplicity, I have assumed that a 1U chassis contains about 10kg of metal, a 2U will contain 20kg, and a 5U about 49kg, and that a rack is roughly 1kg per 1U. The average power cost to make 1kg of aluminium or steel is 16kWh.

Solution	Chassis 1U	Chassis 2U	Chassis 5U	Total Rack Space (U)	Total Metal (kg)
VMS Manufacturer	1	12		25	275
Secure Logiq SAN		4	1	13	142

Transportation Cost and Environmental Impact

As the heaviest component of most IP CCTV systems, the size and weight of a storage solution has a significant environmental impact. Many IT-centric servers have been the whole way around the world simply to undergo a rebranding process.

As well as the additional cost for transporting heavy and bulky equipment, the CO_2 emissions from transportation vary considerably, as you can see in the table below (3). Remember that using less equipment to do the same job also reduces the overall amount of packaging required to protect the equipment in transit.

Solution	Total Weight (kg)	CO2 Emissions (kg)		
		Air Freight LGW to LAX	Sea Freight 1000km	Land Freight 1000km
VMS Manufacturer	410	2397	5.12	23.22
Secure Logiq SAN	226	1322	2.81	12.8

Other Factors to Consider

- **Reducing site visits:** Choose a supplier whose first response is to attempt remote troubleshooting using out-of-band management functionality. This enables fault diagnosis and resolution without the need for physical intervention. Secure Logiq's Healthcheck utility and multiple layers of resilience also reduce the need for fuel-intensive engineering visits or urgent return-to-base fixes. Logiqal Healthcheck provides real-time system monitoring to alert users if any component is experiencing issues. Redundant power supplies and multiple layers of disk resilience — all in hot-swap format — mean that replacement parts can be posted to end users for easy installation, saving time, money, and non-renewable energy.
- **Reducing hardware requirements** also reduces the overall network infrastructure and cabling needs — which, in turn, cuts both CAPEX and OPEX costs across the system.
- **Planning for future expansion** during the initial system design avoids the need to add unnecessary server hardware later on.
- **Enterprise-grade components** are designed to run 24/7 and last at least five years. Ensuring a suitable operating environment and implementing a regular maintenance routine can prevent costly, fuel-intensive site visits and extend the life of the equipment. Choose products with long warranties — this is a strong indicator of durability by design.
- **Modern components** are more powerful and energy-efficient. Upgrading the processing and storage hardware in older systems may yield immediate benefits in power consumption and rack space. These upgrades can also improve system performance — such as enabling higher frame rates or reducing compression.
- In 2021, approximately 63.3 million tons of electronic waste were discarded globally — more than the weight of the Great Wall of China. Choose suppliers who recycle end-of-life equipment and recover valuable materials. For example, Seagate offers a buyback scheme for used hard drives, which are then recertified and given a second life. Drives that are beyond repair are sent to certified scrap vendors for responsible recycling. Secure Logiq also operates a hardware upgrade buyback programme: clients receive a credit toward new equipment when returning old systems. Returned items are refurbished for reuse or recycled wherever possible.

Other Environmental Considerations When Selecting Your Security System

- Depending on your region, it's estimated that 60–80% of a CCTV system's power consumption comes from the camera estate.
- **Advanced compression algorithms**, such as Axis Zipstream, can significantly reduce bandwidth per camera, reducing the overall storage and power requirements of the server.
- **High-resolution cameras** can often cover large areas more efficiently than power-hungry pan-tilt-zoom (PTZ) models. Multi-sensor cameras can further reduce cabling, power, and the total number of cameras required.
- **Night-time visibility** considerations:
  - Cameras with integrated LEDs are power-hungry but cheaper than lighting an entire perimeter.
  - Low-light cameras (e.g. Axis Lightfinder) deliver clear images in minimal ambient light without LEDs.
  - If only detection is required, Axis thermal cameras can identify intruders even in pitch black.
- **Motion detection and on-camera analytics**: In areas with minimal movement, motion detection can reduce storage and power demands. The Axis Camera Application Platform (ACAP) allows intelligent video analytics to run directly on the camera, minimising unnecessary recordings and reducing the need for additional GPU-based analytics servers.
- **System integration**: Combining CCTV, intercoms, radar, and audio into a single platform like Axis Camera Station reduces backend hardware and energy costs.

Sustainability

Sustainability is core to Secure Logiq's mission. Energy savings directly lower the carbon footprint of each solution — in the example referenced, over 7 tonnes of CO_2 and 150kg less processed metal are saved annually.

We also offer recycling incentives for valuable, non-renewable materials. In our commitment to becoming carbon-neutral, we took several steps in 2022, including:

- Planting over 50 tennis courts' worth of trees.
- Replacing all conventional lighting at our HQ with low-power LEDs.
- Swapping gas space heaters for electric alternatives.
- Installing solar panels with battery storage to power our operations.
- Converting our vehicle fleet to all-electric.
- Implementing a heat recovery system to reuse waste heat from server testing.
- These efforts were recognised with an Intersec Award for Security Sustainability Service of the Year.

Summary

The evidence is clear: by selecting hardware that is purpose-built — in this case, servers optimised for high-throughput, high-density video applications — both cost and space savings are achievable. But perhaps more importantly, the environmental benefits are substantial. Lower carbon emissions during manufacture, transport, and daily use — along with smarter material usage — contribute to preserving our planet's finite resources.

References

- Average electricity pricing:
  https://www.businesselectricityprices.org.uk/cost-per-kwh (February 2023)
- Carbon data from UK energy mix:
  https://grid.iamkate.com (February 2023)
- Notes: The source and time of this data do not impact the percentage savings or overall conclusions — only the final figures.

1. http://www.terresacree.org/aluminiumanglais.htm
2. https://arcticecon.wordpress.com/2012/02/15/aluminium-smelting-in-iceland-alcoa-rio-tinto-alcan-century-aluminum-corp/
3. http://www.climatefriendly.com/Business/Calculators
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