



Total Cost of Ownership for Video Surveillance Systems

How the cloud helps businesses drastically lower their video security costs



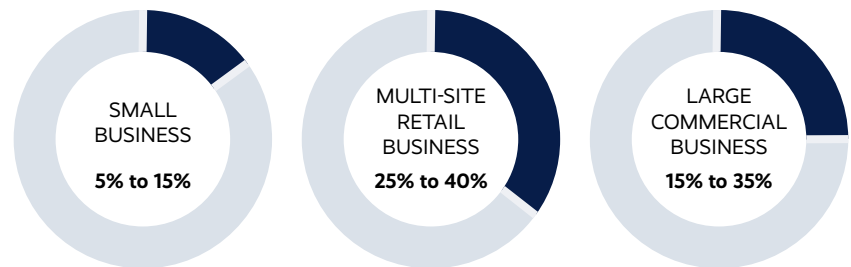
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Organizations of all sizes and types are increasingly aware of the value in cloud-based business applications, including data storage and infrastructure, software and platforms. The security industry is also rapidly adopting cloud-based video surveillance systems, and Total Cost of Ownership (TCO) is one of the major drivers.

A cloud video management system (VMS), compared to a traditional on-premise DVR or NVR system, provides significant savings when comparing all the costs to own and operate the technology. Savings, though they vary by system deployment type, can be substantial.

TYPICAL TCO SAVINGS — CLOUD VS. ON-PREM



A TCO analysis — a prudent evaluation of all the factors that contribute to a business system's overall expense, beyond initial purchase or subscription — is essential to understanding its overall value to the organization.

It can be surprising to see how security operational costs, many of which are not in plain sight, significantly raise the cost of system ownership. It is common for the TCO to be double and sometimes even quadruple (typical when IT servers are involved) the original purchase price. However, cloud computing has significantly changed the TCO landscape for video surveillance deployments. Moving the computing and video storage infrastructure into the cloud results in significant economies of scale. Additionally, cloud system reliability and flexibility, advanced artificial intelligence (AI) capabilities, and strong system cybersecurity far surpass what is feasible for on-prem deployments.

Beyond TCO: Key Benefits of Cloud Surveillance

- **Lower Up-front Costs** - Reduce or eliminate CapEx with a subscription model.
- **Reliability Safeguards** - Redundant data storage and video recording and processing.
- **Superior Cybersecurity** - Cybersecurity measures include camera isolation, data encryption in transit and at rest, and continuous testing and updates.
- **Remote Access** - Better wide-area mobile device access.
- **Automatic Updates** - Continuous delivery of security and feature updates with no action needed by the service provider.
- **Advanced AI** - Artificial intelligence in the cloud improves security and business operations. Easily search through all video.
- **Smart Alerts** - Filtered security alerts offer proactive security and liability protections.

Security System TCO

There are many cost factors that should be considered when comparing video surveillance systems and calculating their TCO.

The chart in **Figure 1** shows eight security system cost categories, whose relative sizes vary depending upon type and configuration of deployment.

Cloud vs. On-Prem TCO Analysis

It is worth examining some TCO comparisons, based on real project costs, to understand the cost differences between on-prem and cloud-based systems. TCO savings can vary based on type, size, and configuration of a system, so three different TCO comparisons have been created; a single-site small business system deployment, a multi-site retail deployment, and an enterprise-level multi-site commercial system deployment.

Generally speaking, as a business video surveillance system grows to a multi-site deployment, the difference in TCO between cloud and on-prem systems becomes increasingly clear. The economies of scale afforded by the cloud cannot be matched by the hardware and maintenance required at each separate site. Further, cloud systems provide intangible value in the convenience of a single dashboard for all locations, plus system flexibility and scalability that is not possible with a traditional on-prem system without buying more DVRs/NVRs.

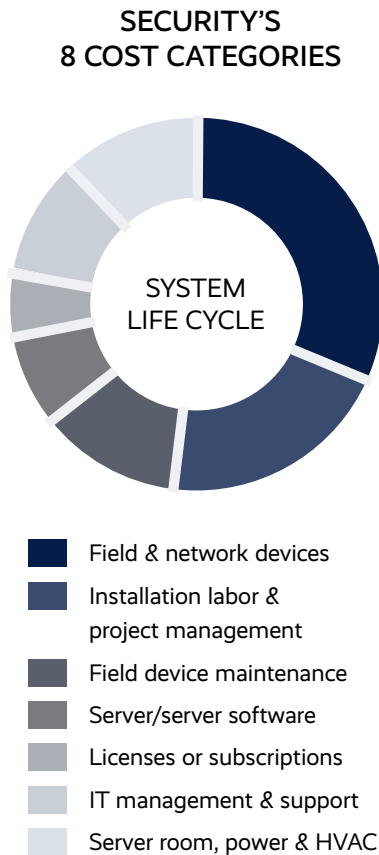


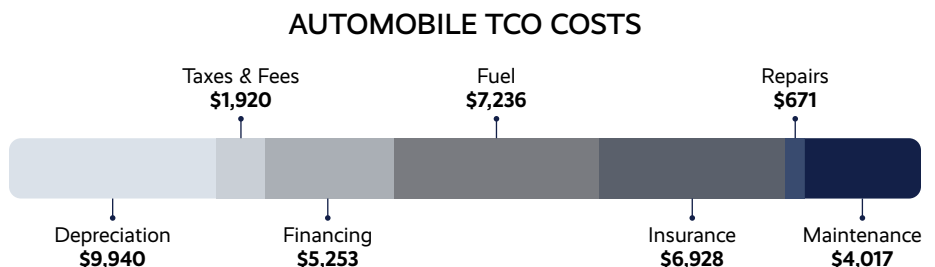
Figure 1. TCO cost categories for video surveillance systems

Understanding TCO: A Simple Example

A TCO analysis uncovers both the obvious costs and the hidden costs of ownership over time. To understand the concept of TCO, consider shopping for an automobile as an example.

Most of the costs involved in car ownership are easy to see. For example, depreciation, taxes and fees, and financing costs are likely to be comparable for similarly priced vehicles. However, fuel, insurance and maintenance costs will vary depending on the class, make and model of automobile. These cost variations make a TCO analysis worth doing when shopping for a car. Performing this type of analysis on various vehicles will reveal which is truly the best buy.

The Edmunds 5-year True Cost to Own TCO analysis reveals that a 2023 Toyota Corolla costs \$24,850, but the true cost to own the car over five years, based on the cost factors above, is estimated to be \$35,237. The breakdown of the additional costs are detailed below.



Source: Edmunds



Small Business System

The TCO example for a small business system compares a 12-camera, single-site deployment with 14 days of video storage over a five-year period. In this example the cybersecure cloud system's TCO is 11% (\$1,933) less than the cost of the much less secure on-prem system. It should be noted that a 16-port network switch is included in the cost comparison for the cloud-based system, but is built into the on-prem NVR in this example.

Key Differentiator

One of the main hidden costs in the lifespan of a DVR/NVR system—which is apparent in **Figure 2**—is the cost to update or refresh the server. Because of the nature of a cloud VMS, system updates and upgrades are automatically and continuously delivered. The on-site server refresh is typically required after two to four years for:

- Upgrading outdated servers for increased processor power and memory
- Meeting new software requirements
- Replacing failed or end-of-life hard drives

SMALL BUSINESS CLOUD SYSTEM

Capacity Assumption	Year 1	Year 2	Year 3	Year 4	Year 5	
Sites	1	1	1	1	1	
Cameras (1080p - Full HD) - 15 FPS	12	12	12	12	12	
Days of Video Storage	14	14	14	14	14	
Cost Summary	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Recurring system fees						
a. Eagle Eye Cloud VMS subscription	\$2,448	\$2,448	\$2,448	\$2,448	\$2,448	\$12,240
b. Internet access			(use existing)			
2. Field hardware purchase & labor						
a. Eagle Eye Bridge appliance set-up fee	\$539	\$0	\$0	\$0	\$0	\$539
b. Bridge & switch install labor	\$103	\$0	\$0	\$0	\$0	\$103
c. Eagle Eye network switch - 16 POE	\$499	\$0	\$0	\$0	\$0	\$499
d. LAN router cost & labor			(built into Bridge appliance)			
e. Internet router cost & labor			(use existing)			
3. Upgrades and updates						
a. Cloud data center equipment upgrades			(included in Cloud VMS subscription)			
b. VMS software update labor			(automatic - no labor)			
c. LAN router update labor			(automatic - no labor)			
4. On-premises electricity cost						
a. Bridge appliance	\$37	\$37	\$37	\$37	\$37	\$184
b. LAN router			(built into Bridge appliance)			
c. Network switch	\$303	\$303	\$303	\$303	\$303	\$1,517
5. Hot redundant compute & storage						
a. Hot redundancy software licenses			(included in Cloud VMS subscription)			
b. Hot redundant computing & storage			(included in Cloud VMS subscription)			
6. Cybersecurity protection						
a. Information security audits			(included in Cloud VMS subscription)			
b. Continuous penetration testing			(included in Cloud VMS subscription)			
Total cost of ownership	\$3,929	\$2,788	\$2,788	\$2,788	\$2,788	\$15,082

SMALL BUSINESS ON-PREM SYSTEM

Capacity Assumption	Year 1	Year 2	Year 3	Year 4	Year 5	
Sites	1	1	1	1	1	
Cameras (1080p - Full HD) - 15 FPS	12	12	12	12	12	
Days of Video Storage	14	14	14	14	14	
Cost Summary	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Recurring system fees						
a. NVR/VMS support plan	\$212	\$212	\$212	\$212	\$212	\$1,060
b. Internet access (rarely used)			(use existing)			
2. Field hardware purchase & labor						
a. NVR cost & licenses	\$5,477	\$0	\$0	\$0	\$0	\$5,477
b. NVR install labor & setup	\$317	\$0	\$0	\$317	\$0	\$634
c. NVR network switch - 16 POE			(built into NVR)			
d. LAN router cost & labor	\$928	\$0	\$0	\$0	\$0	\$928
e. Internet router cost & labor			(use existing)			
3. Upgrades and updates						
a. Cloud data center equipment upgrades	\$0	\$0	\$0	\$4,881	\$0	\$4,881
b. VMS software update labor	\$0	\$276	\$276	\$0	\$276	\$827
c. LAN router update labor	\$0	\$413	\$413	\$413	\$413	\$1,654
4. On-premises electricity cost						
a. Bridge appliance	\$303	\$303	\$303	\$303	\$303	\$1,517
b. LAN router	\$7	\$7	\$7	\$7	\$7	\$35
c. Network switch			(built into NVR)			
5. Hot redundant compute & storage						
a. Hot redundancy software licenses			(excluded from deployment)			
b. Hot redundant computing & storage			(excluded from deployment)			
6. Cybersecurity protection						
a. Information security audits						
b. Continuous penetration testing						
Total cost of ownership	\$7,245	\$1,212	\$1,212	\$6,134	\$1,212	\$17,015

Figure 2. Small business TCO comparison for VMS software, hardware, and support



Multi-site Retail Business System

The TCO example for a multi-site retail business compares the five-year costs for a video management system with eight locations, 80 cameras, and 14 days of video storage. The cloud system's TCO is 34% (\$46,349) less than the on-premise system. Network switches for the cameras are not included, as their costs are the same for each type of deployment.

Key Differentiator

The difference in electricity costs becomes clearer as a VMS expands to multiple sites. Cloud systems provide efficient storage and processing in the cloud, where electricity costs are shared. The on-site Bridge, responsible for buffering and transmitting secure video data, requires significantly less electricity than an NVR and LAN Router.

Additionally, camera and software licensing costs can quickly rise as more cameras are added to a system. In this example, 15% of the initial investment is licensing fees—a cost of over \$10,000. While some cloud video systems do require the purchase of camera and software licenses, the Eagle Eye Cloud VMS does not and additionally provides hot redundancy on software licenses ensuring that software is never out of date.

MULTI-SITE RETAIL BUSINESS CLOUD SYSTEM

Capacity Assumption	Year 1	Year 2	Year 3	Year 4	Year 5	
Sites	8	8	8	8	8	
Cameras (1080p - Full HD) - 30 FPS	80	80	80	80	80	
Days of Video Storage	14	14	14	14	14	
Cost Summary	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Recurring system fees						
a. Eagle Eye Cloud VMS subscription	\$16,320	\$16,320	\$16,320	\$16,320	\$16,320	\$81,600
b. Internet access			(use existing)			
2. Field hardware purchase & labor						
a. Eagle Eye Bridge appliance set-up fee	\$4,312	\$0	\$0	\$0	\$0	\$4,312
b. Bridge & switch install labor	\$780	\$0	\$0	\$0	\$0	\$780
c. LAN router cost & labor			(built into Bridge appliance)			
d. Internet router cost & labor			(use existing)			
3. Upgrades and updates						
a. Cloud data center equipment upgrades			(included in Cloud VMS subscription)			
b. VMS software update labor			(automatic - no labor)			
c. Routers update labor			(automatic - no labor)			
4. On-premises electricity cost						
a. Bridge appliances	\$336	\$336	\$336	\$336	\$336	\$1,682
b. LAN routers			(built into Bridge appliance)			
5. Hot redundant compute & storage						
a. Hot redundancy software licenses			(included in Cloud VMS subscription)			
b. Hot redundant computing & storage			(included in Cloud VMS subscription)			
6. Cybersecurity protection						
a. Information security audits			(included in Cloud VMS subscription)			
b. Continuous penetration testing			(included in Cloud VMS subscription)			
Total cost of ownership	\$21,748	\$16,656	\$16,656	\$16,656	\$16,656	\$88,374

MULTI-SITE RETAIL BUSINESS ON-PREM SYSTEM

Capacity Assumption	Year 1	Year 2	Year 3	Year 4	Year 5	
Sites	8	8	8	8	8	
Cameras (1080p - Full HD) - 30 FPS	80	80	80	80	80	
Days of Video Storage	14	14	14	14	14	
Cost Summary	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Recurring system fees						
a. NVR/VMS support plan	\$1,696	\$1,696	\$1,696	\$1,696	\$1,696	\$8,480
b. Internet access (rarely used)			(use existing)			
2. Field hardware purchase & labor						
a. NVRs cost & licenses	\$59,360	\$0	\$0	\$0	\$0	\$59,360
b. NVRs install & setup labor	\$1,654	\$0	\$0	\$1,654	\$0	\$3,307
c. LAN router cost & labor	\$1,272	\$0	\$0	\$0	\$0	\$1,272
d. Internet routers cost & labor			(use existing)			
3. Upgrades and updates						
a. NVR replacements cost & licenses	\$0	\$0	\$0	\$59,360	\$0	\$59,360
b. VMS software update labor	\$0	\$1,102	\$1,102	\$0	\$1,102	\$3,307
c. Routers update labor	\$0	\$551	\$551	\$551	\$551	\$2,205
4. On-premises electricity cost						
a. NVRs	\$933	\$933	\$933	\$933	\$933	\$4,664
b. LAN routers	\$589	\$589	\$589	\$589	\$589	\$2,943
5. Hot redundant compute & storage						
a. Hot redundancy software licenses			(excluded from deployment)			
b. Hot redundant NVRs			(excluded from deployment)			
6. Cybersecurity protection						
a. Information security audits			(excluded from deployment)			
b. Continuous penetration testing			(excluded from deployment)			
Total cost of ownership	\$65,503	\$4,871	\$4,871	\$54,606	\$4,871	\$134,723

Figure 3. Multi-site retail business TCO comparison for VMS software, hardware, and support



Large Commercial Business Systems

The TCO example for a multi-site large commercial business compares a video management system with 26 locations, 624 cameras, and 30 days of video storage over five years. The cloud system's TCO is 18% (\$159,439) less than that of the on-prem system.

Key Differentiator

Large commercial systems with a complex network of sites can greatly benefit from added cybersecurity protections such as regular audits, automatic security patches, and continuous penetration testing. These cybersecurity features are often included with a cloud subscription but not possible with a comparable on-prem system. Additionally, redundant cloud storage adds a layer of protection from video or data loss whereas an on-prem system is wholly dependent on an NVR.

Organizations of this size often evaluate the cost of using a corporate data center to store and provide access to their security video data. Even in this case, which is detailed in greater depth in our Enterprise TCO Report, a cloud VMS system provides significant savings over owning and operating a data center. Further, enterprise businesses are increasingly adopting cloud surveillance for the AI capabilities-enabled by the cloud—that are otherwise cost prohibitive to design and deploy even for enterprises utilizing their own data center.

LARGE COMMERCIAL BUSINESS CLOUD SYSTEM

Capacity Assumption	Year 1	Year 2	Year 3	Year 4	Year 5	
Sites	26	26	26	26	26	
Cameras (1080p - Full HD) - 15 FPS	624	624	624	624	624	
Days of Video Storage	30	30	30	30	30	
Cost Summary	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Recurring system fees						
a. Eagle Eye Cloud VMS subscription	\$141,648	\$141,648	\$141,648	\$141,648	\$141,648	\$708,240
2. Field hardware purchase & labor						
a. Eagle Eye Bridge appliance set-up fee	\$18,846	\$0	\$0	\$0	\$0	\$18,846
b. Bridge & switch install labor	\$2,925	\$0	\$0	\$0	\$0	\$2,925
c. LAN router cost & labor			(not applicable)			
d. Internet router cost & labor			(use existing)			
3. Upgrades and updates						
a. Cloud data center equipment upgrades			(included in Cloud VMS subscription)			
b. VMS software update labor			(automatic - no labor)			
c. LAN Routers update labor			(automatic - no labor)			
4. On-premises electricity cost						
a. Bridge appliances	\$2,292	\$2,292	\$2,292	\$2,292	\$2,292	\$11,459
b. LAN routers			(built into Bridge appliance)			
5. Hot redundant computing & storage						
a. Hot redundancy software licenses			(included in Cloud VMS subscription)			
b. Hot redundant computing & storage			(included in Cloud VMS subscription)			
c. Triple-redundant data & video backup			(included in Cloud VMS subscription)			
6. Cybersecurity protection						
a. Very strong cybersecurity measures			(included in Cloud VMS subscription)			
b. Information security audits			(included in Cloud VMS subscription)			
c. Continuous penetration testing			(included in Cloud VMS subscription)			
Total cost of ownership	\$165,711	\$143,940	\$143,940	\$143,940	\$143,940	\$741,470

LARGE COMMERCIAL BUSINESS ON-PREM SYSTEM

Capacity Assumption	Year 1	Year 2	Year 3	Year 4	Year 5	
Sites	26	26	26	26	26	
Cameras (1080p - Full HD) - 15 FPS	624	624	624	624	624	
Days of Video Storage	30	30	30	30	30	
Cost Summary	Year 1	Year 2	Year 3	Year 4	Year 5	Total
1. Recurring system fees						
a. NVR/VMS Basic Support Plan	\$9,575	\$9,575	\$9,575	\$9,575	\$9,575	\$47,875
2. Field hardware purchase & labor						
a. NVRs purchase cost & license	\$375,994	\$0	\$0	\$0	\$0	\$375,994
b. NVRs installation labor & setup	\$11,050	\$0	\$0	\$0	\$0	\$11,050
c. LAN routers cost & labor	\$850	\$0	\$0	\$0	\$0	\$850
d. Internet routers cost & labor			(use existing)			
3. Upgrades and updates						
a. NVR replacements cost	\$0	\$0	\$0	\$150,540	\$0	\$150,540
b. VMS software update labor	\$0	\$75	\$75	\$11,050	\$75	\$11,275
c. LAN routers cost & labor	\$150	\$150	\$150	\$150	\$150	\$750
4. On-premises electricity cost						
a. NVRs	\$18,800	\$18,800	\$18,800	\$18,800	\$18,800	\$94,000
b. LAN routers	\$11,607	\$11,607	\$11,607	\$11,607	\$11,607	\$58,035
5. Hot redundant computing & storage						
a. Standby server failover software			(included)			
b. Standby failover computing & storage	\$150,540	\$0	\$0	\$150,540	\$0	\$301,080
c. Triple-redundant data & video backup			(not available)			
6. Cybersecurity protection						
a. Very strong cybersecurity measures			(not included)			
b. Information security audits			(not included)			
c. Routine penetration testing			(not cost feasible)			
Total cost of ownership	\$428,026	\$40,207	\$40,207	\$352,262	\$40,207	\$900,909

Figure 4. Large commercial business TCO comparison for VMS software, hardware, and support

Conclusion: The TCO Cloud Advantage is Real

The above TCO comparisons underscore the typical advantages of a cloud-based VMS over traditional on-prem systems. The underlying value of a commercial video surveillance system is not necessarily the server and network infrastructure, which is often provided or specified by the organization's IT department. The main differences lie in the VMS software. The hard and soft benefits of cloud video surveillance are clearly evident in the side-by-side analysis in this document, especially when you consider the upgrades and updates, hot redundant computing and storage, and cybersecurity protections provided as part of a cloud-based system.

Further value comes through cloud-enabled AI that turns video surveillance and data into actionable information that can save businesses time and money. Additionally, for multi-site organizations, the convenience of a single dashboard for all locations and the cloud system's ability to adapt and scale to changing business needs should not be understated.

About Eagle Eye Networks

Eagle Eye Networks is the global leader in cloud video surveillance, delivering cybersecure, cloud-based video with artificial intelligence (AI) and analytics to make businesses more efficient and the world a safer place. Businesses of all sizes utilize the Eagle Eye Cloud VMS (video management system) to centralize their video surveillance and obtain better security and operations. Purpose built for the cloud and AI, the Eagle Eye Cloud VMS addresses customers' security and operational needs with unlimited scalability, simple usage-based subscription pricing, advanced analytics, integrated AI, and an open RESTful API platform delivering flexibility. Eagle Eye sells through a global network of resellers and integrators. Founded in 2012, Eagle Eye is headquartered in Austin, Texas, with offices in Amsterdam, Bangalore, and Tokyo. Learn more at www.een.com.

