



## Understanding video tech requirements for cannabis retail and production

Opportunities in a compliance-driven, fast-growth market for systems integrators

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SEC





# Introduction

There is mounting evidence to show that the cannabis industry is garnering increased public support across North America. By June 2022, 19 states had legalized adult recreational use of marijuana and 38 states had legalized its medicinal use. This equates to 44% of the American population now having access to legalized recreational cannabis with the industry currently providing more than 420,000 full-time jobs.

The onset of the COVID-19 pandemic proved to be a real step-change in the growth of the cannabis industry. Once lockdowns were in place, medicinal marijuana dispensaries were declared as essential businesses, resulting in a huge spike in sales. Revenue has now slowed to a more steady pace with a [recent study](#) projecting that the industry will be valued at \$32bn by the end of 2022, with that figure rising to \$57bn by 2030 at a CAGR of 11%.

[Research](#) has shown that 50% of users have increased their consumption of cannabis since the pandemic and a [recent survey](#) highlighted that 91% of adult Americans want the drug to be fully legalized. This swell of public support was cautiously matched by the U.S. Government with President Joe Biden pardoning thousands of people with federal offenses for possession of marijuana and initiating a review of how the drug is classified in October 2022.







According to the [latest poll by Gallup](#), 51% of Millennials and 50% of Boomers claim they have tried the drug, the highest percentages Gallup has measured to date. Sales to women have risen by 55%, a sharp increase since the beginning of 2020. Further, consumers are also becoming more aware of the benefits of the different compounds found in cannabis plants. In turn, this is leading to demand for a wider choice of products, particularly those that are not vaped such as ointments and creams, infused drinks, and an increasing variety of edibles.

There has also been a transformation of the cannabis retail experience since the pandemic, with many operators now employing new strategies based around online ordering, delivery, curbside pickups and drive-thrus. Changes in consumer behavior have meant that businesses have needed to be flexible in order to keep up.

Sector growth is also evidenced by the fact that mergers and acquisitions of Multi-State Operators (MSOs), the largest cannabis businesses, nearly doubled from 2020 to 2021.

And as scientific research progresses, more proven medicinal purposes are being discovered at pace with early indications suggesting benefits for the prevention of cancers and for use as alternatives for infections and diseases that are antibiotic-resistant. In turn, more doctors are likely to endorse and prescribe a wider variety of cannabis-based treatments, furthering increased demand and supporting the case for federal legalization.

# Regulatory Compliance



A pending bill in the U.S. House of Representatives could legalize adult-use nationally and likely lead to standardized regulation. Compliance is currently mandated at the state level with varying physical security requirements. The penalties for non-compliance also vary depending on the incident. A significant lack of regard to security measures can result in penalties ranging from business shutdowns, revoked marijuana licenses, and criminal charges that can even lead to jail time if there is sufficient proof of negligence or misconduct.







Most regulatory requirements dictate that dispensaries mitigate risk with a comprehensive security plan

which, in parts of California, need to be submitted to the local, city or county police departments for review and endorsement. Police departments often recommend additional measures or fixes before giving approval.

In California, one of the most critical requirements is the need for robust video surveillance with a minimum 720P resolution and 15 frames per second image capture that provides complete indoor and outdoor coverage and 24/7 continuous recording that is stored for a minimum of 90 days. As a result, most licensees will opt for at least full-HD cameras. And, since California bans the use of motion detection, dispensaries are required to maintain at least 13GB of storage capacity. In addition, surveillance systems need to be easy enough to access remotely by non-security staff such as store owners and licensees via desktop client software or mobile devices.

Neighboring states of Oregon and Washington have similar mandates, while regulations in

general stipulate unobstructed video capture for all areas where cannabis is handled. This includes capture at all stages of production and throughout the selling process. Of particular importance is capturing transactions as well as the appropriate disposal of plants to ensure that unwanted stock is not illegally sold on.

Other requirements for both dispensaries and cultivation sites include adequate intruder alarm systems and controlled access to all buildings and entry points, as well as locked containers for storage.

In Colorado, legislation goes further with dispensaries requiring that all perimeter windows be monitored and cameras be positioned within 15 or 20 feet of each door. With compliance centered around the detailed tracking of each plant, operators in Colorado are using RFID tags to provide complete monitoring and tracking at cultivation sites, which also includes surveillance hardware and video management software (VMS) that can connect to networks and third-party systems.







Human  
98%

Human  
98%





With medicinal cannabis falling under the jurisdiction of the United States Food and Drug Administration (FDA), operators will need to comply with the National Defense Authorization Act (NDAA). This makes it imperative they choose NDAA-compliant cameras and recorders and manufacturing origin and integrity of all related video and communications equipment.

As M&A activity continues and operators develop cannabis-derived compounds and look to manufacture and dispense more cannabidiol drug products, selecting NDAA-compliant kit will future-proof their surveillance solution ensuring they are fit-for-purpose as their businesses evolve and expand. In essence, choosing NDAA-compliant equipment is a sensible benchmark for cannabis operators seeking FDA marketing applications and drug approvals, particularly with federal legislation on the horizon.

**NDAA**  
Compliant



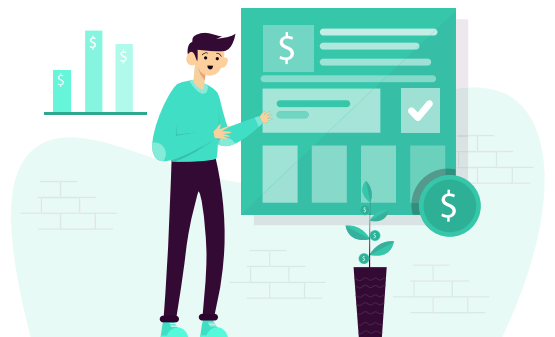
# Reducing the Upfront Costs



As a result, the immediate need for security compliance doesn't come cheap for this emerging sector. It also gives security consultants and integrators a consultative opportunity to recommend upfront savings.

End-to-end solutions are proving popular because they mean faster and lower installation costs as hardware and software seamlessly connects and, in turn, makes firmware updates and maintenance easier and more cost-effective. For large sites, PoE extenders eliminate network repeaters to simplify cabling infrastructure which in turn can reduce implementation costs. Not to mention, dealing with one sales and technical team for cameras, storage, software, analytics, and peripherals will also save time and money.

The lengthy retention requirements make NVR- and server-based storage more attractive compared to expensive cloud offerings. The need for uninterrupted video storage also makes fault tolerance and failover technologies that eliminate gaps or downtime imperative. Cameras with failover SD cards and NVRs





that come with built-in resilience such as RAID 1, 5 and 10 and low HDD failure rates, as well as options for redundant power and recording, come at a significantly lower cost than engineering in failover and redundancy into surveillance set ups.

Extended warranties will also be a deciding factor, especially since growers are often located in areas dealing with harsh and varied weather conditions.

Fisheye or panoramic cameras that can replace 3-4 fixed lens models are a popular choice to provide wide area coverage without blind spots in both greenhouse cultivation sites and dispensaries, while still delivering forensic level detail right to the periphery. Operators will also want the assurance that cameras can cope in all lighting conditions - from bright sunlight, dappled shade through to darkness - without putting a further burden on storage.



Growers that need a significant number of cameras to cover internal areas as well as large perimeters will also be looking for compression technologies such as H.265 combined with specialist codecs to reduce the burden of high-definition storage as well as bandwidth. Compression tech also means cultivation sites can leverage wireless networks, particularly for external areas where cabling could involve

expensive civil engineering work. Cameras for perimeter protection that use light enhancing technology for high quality image capture in darkness with virtually zero image noise will also mean better compression and reduced bit rates, which will lessen the burden on storage and make them more viable for wireless connectivity.

HDMI and VGA encoders also offer a cost-effective solution for Point of Sale (PoS) integration. These enable recording of activity from the screens of almost any application such as PoS or inventory systems to provide visual audit trails, which are useful to deter and investigate internal shrinkage.

# The Risk of Crime, Shrinkage and Reputational Damage



These stringent regulatory requirements are paramount not only because access to cannabis is regulated, but also because there is a thriving black market in states where it is both legal and illegal. In 2018, it was estimated there were 68,000 cannabis cultivators in California yet less than 200 were state-licensed.

As a result, legal sale and production sites make attractive targets for organized crime gangs as well as opportunists, which puts product and, more importantly, staff and customers at risk.

Alas armed robberies are becoming increasingly common. And thieves are not only targeting product but in-store ATMs and cash registers. The lack of federal regulation means retailers are unable to move money electronically through banking systems or take payment by debit or credit cards. So, to give customers easy access to cash, most dispensaries have installed ATMs. This



risk was highlighted during the wave of civil unrest in spring 2020 when opportunist looters targeted licensed cannabis stores. Targeted robberies are also made easier because criminals can simply search online databases that list the names and location of dispensaries.

In addition, the hiring of low paid and part-time staff, easy access to product, the handling of large amounts of cash, the relative ease to process discounts, and the temptation of 'sweethearting' has made internal shrinkage one of the biggest concerns for most firms. It is estimated that around 90% of financial and product loss is due to employee theft from both dispensaries and cultivation sites.

Reputational risk is also high. Businesses that experience a security incident or breach means there's a good chance customers will shop elsewhere, especially in cities where there is choice and competition.



# Mission Critical Cybersecurity

Medical marijuana dispensaries are subject to the Health Insurance Portability and Accountability Act (HIPAA) that requires the tracking of sales and retention of patient information. HIPAA compliance means cybersecurity measures are critical in protecting patient data and medical records or dispensaries can face stiff penalties for a breach or non-compliance.

Consequently, medical dispensaries will need to be reassured that their security tech doesn't provide cybercriminals with the opportunity to exploit vulnerable IoT devices or cyber loopholes often caused inadvertently during implementation, particularly during multi-site deployments. Another concern that will need to be addressed is that hardware does not feature "back doors" that conveniently allow manufacturers to reset passwords. If these techniques are leaked, they can cause catastrophic breaches. Dispensaries, therefore, will be looking for a multi-pronged cybersecurity approach to video access, transmission, and storage along with the guarantee of timely firmware updates.

It's also worth remembering that while recreational cannabis is legal in many states, in many parts of the world and indeed the U.S., its recreational use is not deemed socially acceptable by huge swathes of society and still remains illegal in many states.

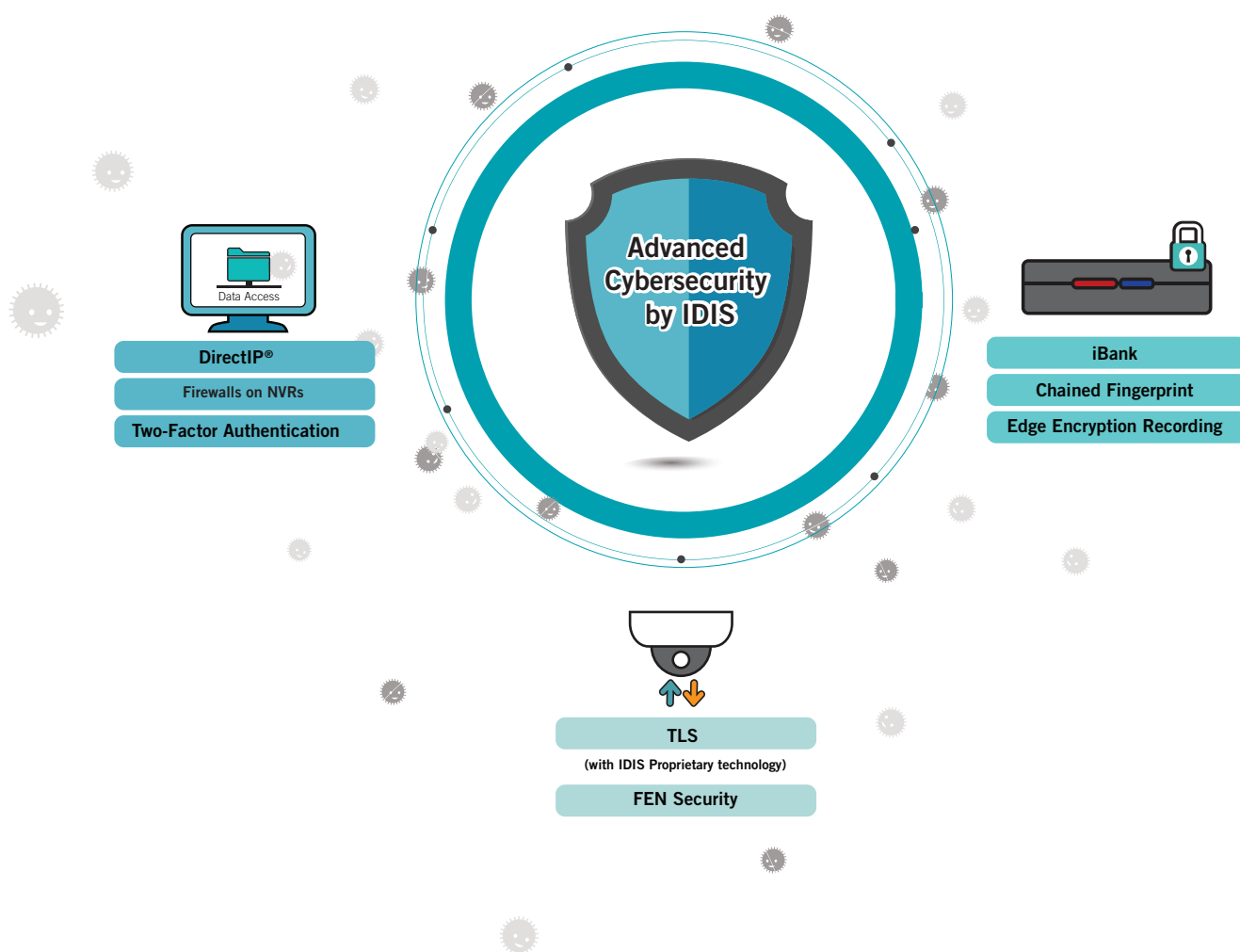






As a result, high ranking officials and other high profile people could find themselves facing public embarrassment and reputational damage if the footage of them buying reactional marijuana were leaked to the media or a criminal was able to gain access to footage for the purposes of extortion. And the damage would not be to be limited to VIPs, dispensaries could also face litigation and fines for breaches under state and federal privacy laws as well as reputational damage to their own organizations.

## IDIS Cybersecurity



# Building the Business Case with VMS and AI



Many cannabis production companies and dispensaries started out by building relatively straightforward business models based on operating costs, year-on-year yields and optimistic sales revenues and margins. Yet the mishmash of local and state regulations, sales taxes, and continued competition from illicit sales, combined with internal shrink, is making it harder for them to ensure profitability, particularly those selling recreational marijuana.

Unsurprisingly, operators expect a rapid return on security investments that are designed to meet regulatory compliance and reduce losses but also deliver a low total cost of ownership (TCO).





This means affordable, future proof solutions, with the scalability to add value through point of sale (POS) integration, functionality that will support inventory and stock control, as well as the addition of analytics without replacing the entire system or adding expensive equipment.

Growers and licensees with plans to expand and diversify will be looking for federated architecture VMS that gives them the flexibility to connect additional cultivation sites and dispensaries to centralized control rooms without exponentially increasing license fees.

They will also be attracted to VMS that gives them an intelligent video analytics (IVA) platform, particularly as the sector matures. Dispensaries, like most retail outlets, will want insight into customer behavior that will enable them to turn browsing into purchasing by optimizing promotions, store layouts, and better utilizing staff to reduce wait times and improve customer service.

Modules within VMS, add-on appliances, and edge cameras that generate AI and deep learning assisted notifications are already proving useful for cultivation sites with large perimeters. One of the most common challenges for busy control rooms are false alarms caused by IP cameras that use “blob type” analytics and activate due to adverse weather, moving foliage, or small animals. The result is security teams wasting time responding to harmless environmental factors or, even worse, shutting down alarms and missing critical events. Frequent false alarms for cannabis operators using virtual guarding on central stations translate into higher call out fees, or loss of service if monitoring companies deem sites too difficult to manage.

Deep learning algorithms prove useful in these cases as they classify and detect object types, such as people and vehicles, to generate accurate AI-assisted notifications for intrusion, loitering, and unusual events. This gives operators enhanced situational awareness with the ability to detect, visually verify, and respond to genuine threats and suspicious activity. The latest AI tech also eliminates the fatigue caused by continuously monitoring multiple streams, which makes it easy for tired operators to miss events.



As the sector continues to grow, dispensaries and marijuana retail businesses are now operating similarly to other brick-and-mortar stores. Many producers remain focused on dried flower varieties, but they are continuing to offer a wider range of product assortments as customer demand grows such as “vape-able” concentrates, oils, ointments and an ever-increasingly array of edibles.

The age range and personalities of consumers in the cannabis space are excitingly varied with older consumers wanting to discuss and experiment with cannabis products. For many shoppers there’s no replacement for a trip to a cannabis store where friendly, knowledgeable, and helpful assistants can help with recommendations and introduce new products. Some retailers have gone a step further and pair customers with a “budtender” for the duration of the client’s shop. And it’s this type of experience that provides customers with a feel-good factor that builds customer loyalty, and stores that don’t build on that will throw away a potential advantage.

And the cannabis industry is a competitive one, so retailers need to ensure that store managers and their teams provide an engaging experience. That means head offices need to give them in-store and customer data-driven intelligence that will offer crucial insights, guiding them on how to increase their profit margin, customer retention, and more.





AI-powered video analytics will do just that by allowing in-store teams to back up their intuition and knowledge of regular customers, by learning more about their buying habits and help them stay ahead of their competitors in an increasingly crowded market.

The security cameras that are ubiquitous across cannabis retail now have a dual purpose, thanks to the deep learning software that allows cameras to perform meaningful analytics. Integrators can offer video solutions with add-on AI appliances or edge cameras that provide essential AI functions such as people counting, heat mapping, and queue monitoring.

People counting allows store managers as well as head offices to examine patterns of activity by time, day, month, and year. Gaining a store-by-store understanding, they can better target merchandising and plan staffing levels more reliably.

Heatmapping tools reveal customer dwell time, and show how shoppers move around stores, allowing displays to be improved and 'dead zones' to be improved such as installing seating areas for older customers.

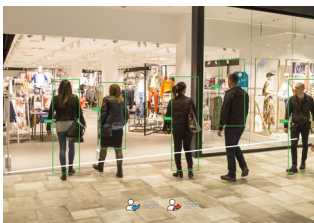
Analytics allow automated real-time queue monitoring, so that staff can be more quickly deployed to where they are most needed, such as check-outs and click-and-collect desks.

Video technology no longer needs to be seen as just a security compliance grudge purchase but one that creates a better experience for customers and empowers staff who are at the heart of every store. And even though AI video is now more powerful and effective than ever, it has become affordable for even smaller stores to give cannabis operators complete visibility of their business and that all important competitive edge to positively impact the bottom-line.



And taken together or in part these technologies will help systems integrators build a compelling business case that offers them long term opportunities in an exciting and evolving sector. Not only are there a stream of new project opportunities, but regulatory compliance also makes maintenance and monitoring critical. Integrators will also have the opportunity to propose upgrades to higher resolution cameras, with the addition of AI and deep learning functionality as well as integration with third party systems.

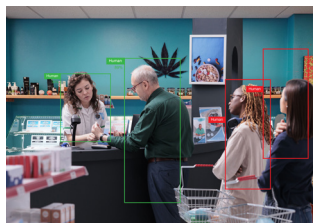
## IDIS AI Solutions



People Counting



Occupancy Control



Queue Management



Heat Mapping







# Understanding video tech requirements for cannabis retail and production

THE VIDEO TECH REQUIREMENTS



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