



Understanding video tech requirements for cannabis retail and production

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



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Introduction

At the time of writing, cannabis had been legalized for recreational use in 15 U.S. states, and for medical purposes in 34 states. This includes the those on the ballot in the 2020 election that saw Arizona, Mississippi, Montana, New Jersey, and South Dakota adopting legalization measures, that according to [Yahoo Finance](#) will potentially grow industry by a further \$9 billion. At the same time, many cannabis CEOs are lobbying for federal legalization to provide a much-needed economic stimulus through tax revenue and job creation. In April, [CNBC](#) reported that eight states deemed recreational cannabis as essential during coronavirus lockdowns, while many mainstream media outlets reported major spikes in sales.

And public support has remained steady over the last two years with the most recent [Gallup poll](#) showing around two thirds of U.S. citizens support federal legalization. This, coupled with increased lobbying, could mean legislation will move faster and may likely see cannabis become legal in Connecticut, Minnesota, New Hampshire, New Mexico, New York, and Rhode Island over the next couple of years.

Perhaps even more significant is that the age of supporters seems to be playing an important role for the growth of the sector. Millennials that have supported legalization for years are now older, while Boomers are swaying more toward legalization as they realize the potential health benefits.





Combined they have more purchasing power and are more likely to suffer from ailments that benefit from cannabis derived therapeutics. Further, consumers are also becoming more aware of the benefits and side effects of the different compounds found in cannabis plants. In turn, this will lead 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.

This will drive cannabis firms to grow a wider variety of strains and diversify and expand cultivation sites. It could also mean a transformation of the retail experience not only displaying more products but creating an ambience more conducive to the older and more discerning, higher spenders that will increase over time.

Sector growth is already evident with value of Cronos Group stock increasing by 45% in a year, while Marimed grew by 80% in a 12-month period showing that medical marijuana is profitable business.

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 support the case for federal legalization.

Regulatory Compliance



Delayed due to the coronavirus pandemic, 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.



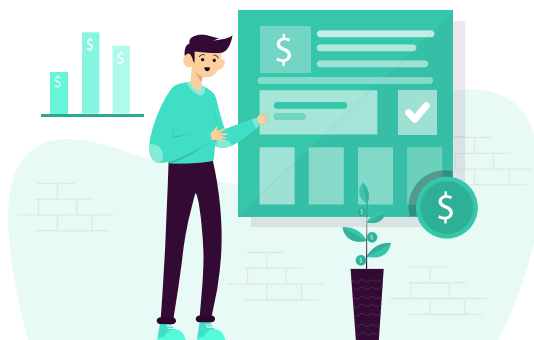
Reducing the Upfront Costs



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.

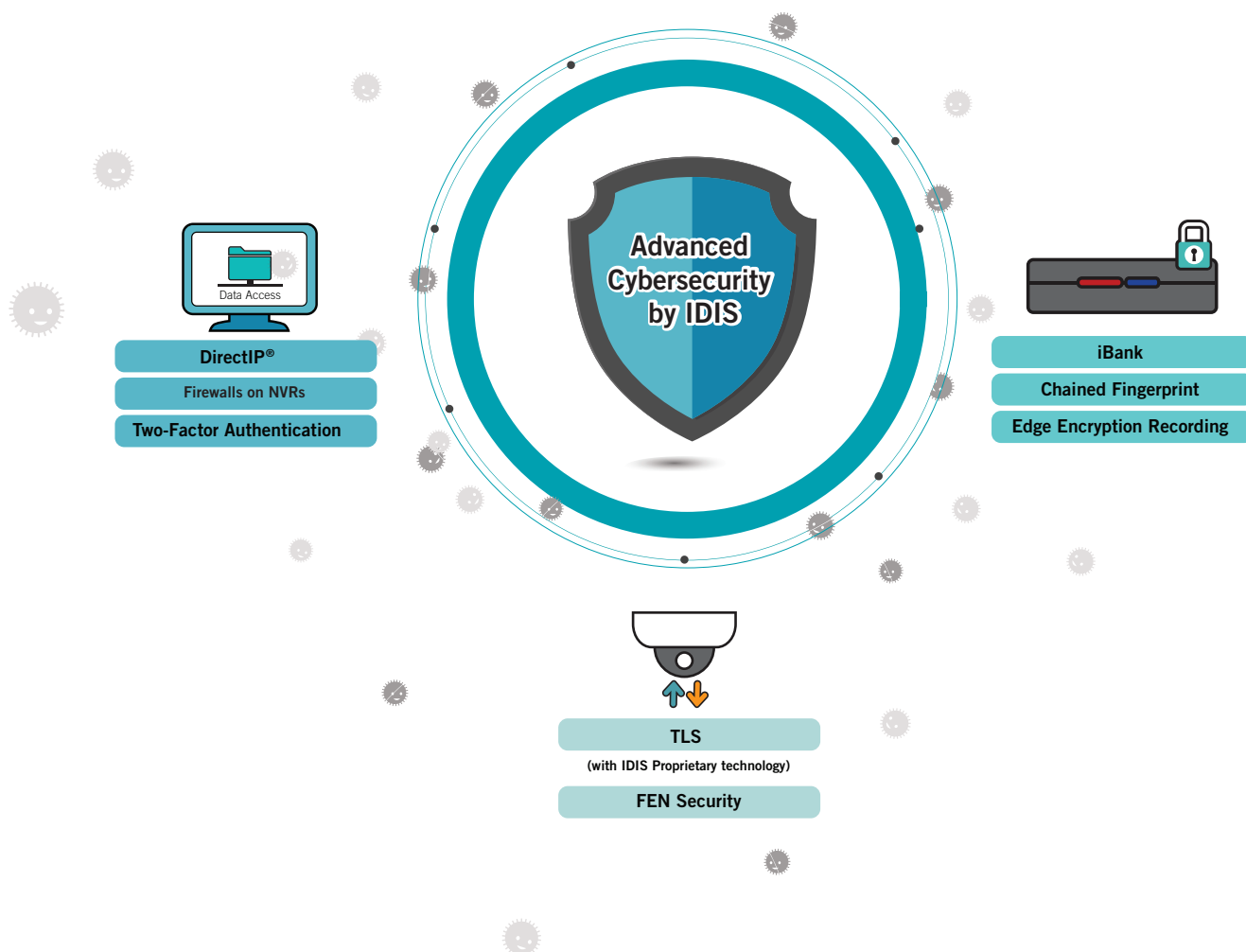
It's also worth remembering that while recreational cannabis is legal in many states, in many parts of the world and indeed the U.S., its recreational use is not deemed socially acceptable by huge swathes of society and still remains illegal in many states.





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 shrinkage, 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 shrinkage 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 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.

VMS and add-on appliances 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 and suspicious behavior.



Dispensaries today, much like other retailers, need to implement safe working practices to prevent the spread of COVID-19. But hiring additional manpower to ensure adherence with city and state regulations is expensive and can also lead to customer conflict. Integrators can now offer video solutions that come with AI functions for people counting, occupancy control, social distancing, and mask wearing, which will reduce operating costs by automating processes, issuing audio verbal warnings, and automatically keeping records for compliance purposes.

Simple traffic light systems that automate admission and flow in and out of dispensaries will also eliminate pressure on frontline staff at entry and exit points. They also provide customers with accurate wait times on displays that can be customized with company logos and promotional graphics. Enforcing mask wearing and social distancing will also be important measures to prevent a COVID-19 outbreak, which could severely impact business continuity at busy cultivation sites with distribution facilities.



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 services 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.

Essential Deep Learning Applications to Fight **IDIS AI Box for COVID-19**



People Counting
and Occupancy Monitoring



Social Distancing
Violation Detection



Crowd Detection



Face Mask Detection



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