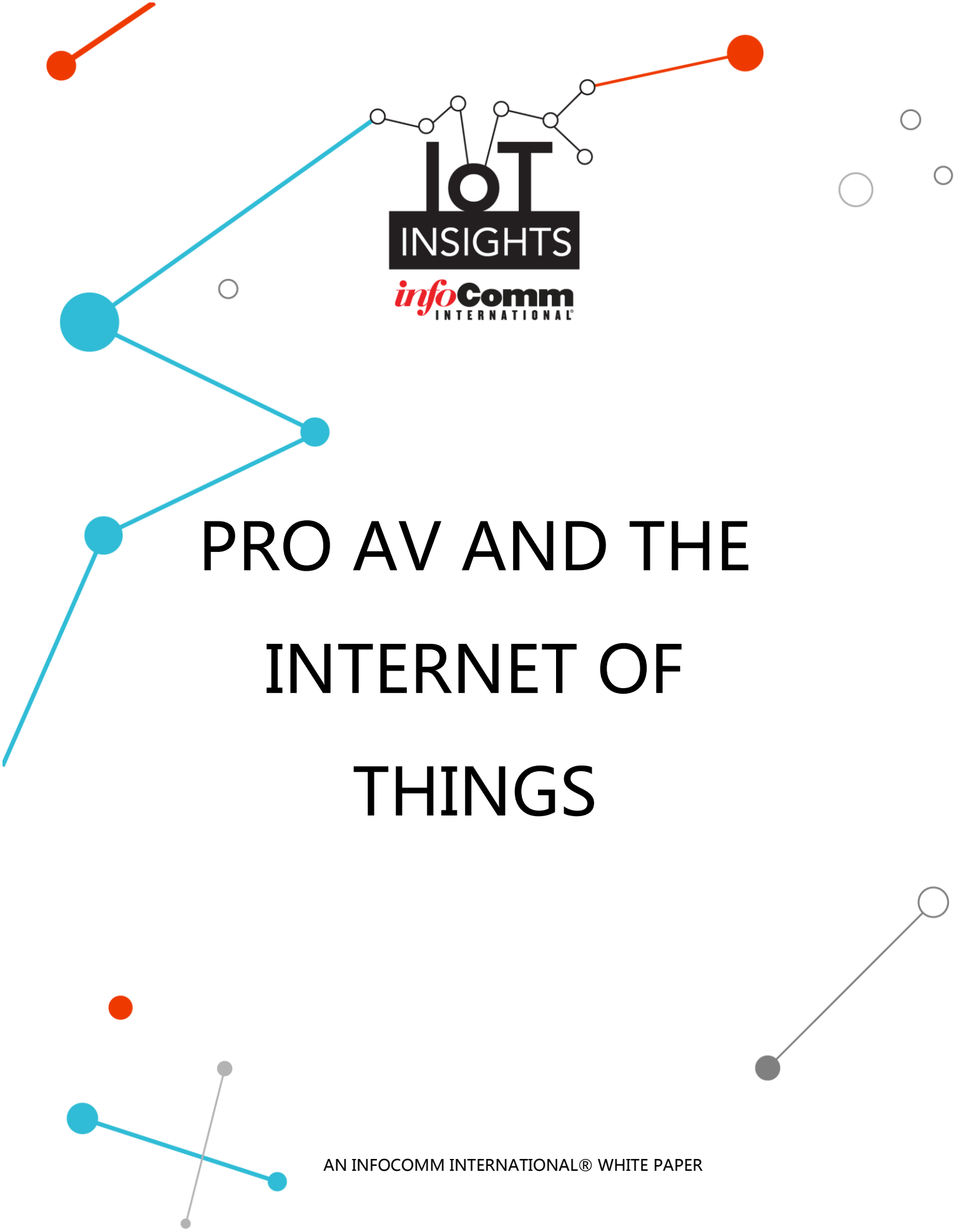

PRO AV AND THE INTERNET OF THINGS

AN INFOCOMM INTERNATIONAL® WHITE PAPER

Published by InfoComm International, 11242 Waples Mill Road, Suite 200, Fairfax, VA 22030-6079

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Executive Summary

The Internet of Things (IoT) has become ubiquitous. You hear about it on television commercials, on elevators, in Ted Talks. Industries across the spectrum are taking notice — from retail and manufacturing to IT and education. But the audiovisual industry has a special relationship with the IoT.

For one thing, the technology behind the IoT — a networked connection of sensors and devices that allow for monitoring, control automation and analysis — has been in use by AV professionals for roughly two decades. In that time, each of the various technologies that provide these capabilities has improved immensely. Sensors and processors have gotten smaller, delivering richer services with a minimal footprint. Networking and communication have become vastly more efficient and powerful, allowing machine-to-machine communication that reduces the need for human involvement in routine operations. And technologies for transmitting, storing and analyzing data have allowed organizations to derive insights from the myriad bits of information flowing around the IoT.

The capabilities provided by the IoT are essentially limited only by the imagination of those applying them. But in order for AV professionals to take advantage of these capabilities, they must understand several networking and data concepts, including IPv6, wireless networking, Power over Ethernet (PoE) and industry standards for capabilities such as video transport, data compression and connectivity, which are key to the flow of information that fuels the IoT. Mastery of these supporting technologies isn't essential, but AV pros need a basic knowledge of them.

Further, attention to security is imperative. As the number of networked devices increases, so do the security threats that AV deployments face. The encryption of all traffic on an AV network is essential, and AV systems also must be capable of authenticating the identity of authorized users. Many experts see security as the biggest impediment to widespread adoption of IoT technologies. For the AV industry, unlocking the value of the IoT depends on mitigating the risks that it presents.

With security and the underlying technologies taken care of, AV professionals can begin to find ways to deploy IoT-enabled systems. The monitoring and command-and-control capabilities that the IOT offers make it a good fit for managed AV service providers, who can use them to keep tabs on the state of equipment they provide to clients to maximize the efficiency of their maintenance and support efforts. IoT systems can take advantage of information shared by numerous networked devices, allowing AV to enable the smart scheduling of conference rooms, control equipment within those rooms, and even oversee power, cooling and lighting to create smart buildings. Smart digital signage is another promising IoT offering, and even more advanced capabilities are just over the horizon.

As they look to implement IoT systems, AV pros must take care to address several challenges that face many deployments, such as preserving the privacy of users on networked systems and properly handling all the data that is created and compiled by these systems. AV professionals who overcome these challenges are likely to find that the near-limitless possibilities of the IoT deliver a valuable reward for their efforts.

What is the IoT?

While the networked connection of devices is nothing new, numerous advances in technology have enabled the capabilities that are essential to what has become known as the Internet of Things, or the IoT.

For devices to be capable of the machine-to-machine (M2M) communication that characterizes the IoT, they must be equipped with sensors, processors and network connectivity, as well as software that controls these elements.

Advances in technology have led manufacturers to produce sensors and processors that are smaller and less expensive than earlier components while offering more features and greater power. This trend has fueled the proliferation of a wide variety of smart devices, such as automobiles, refrigerators, buildings' thermostats and surveillance cameras. Cisco Systems estimates that 50 billion objects will be connected via the IoT by 2020, and the IoT will generate $19 trillion over the next decade. As more and more of these devices connect to each other on the Internet, they can deliver more sophisticated capabilities. Further adding value is the data that can be produced and compiled by smart devices. When analyzed effectively, this data can yield insights that otherwise would have gone unnoticed and unutilized.

Figure courtesy of Cisco Systems

These characteristics offer a number of benefits for the AV industry. The monitoring capabilities of the IoT allow AV professionals to oversee far more devices than they could otherwise. For example, a

video display that lets an AV pro know when it needs maintenance or that it may be configured improperly is one that doesn't need to be checked on manually. Further, a centralized management console can allow one AV professional to manage an entire fleet of equipment without ever leaving a room.

M2M capabilities and smart software can allow devices themselves to take on more simple management responsibilities. A smart conference room can sense when it is empty and dim the lights to save energy. Or it can sense when sunlight may cause glare and require window shades to be engaged. Taking human interaction out of these equations makes audiovisual operation easier for both end users and AV pros.

The collection of data from smart devices presents further opportunity for organizations that use it strategically. Applying analytics to this data can transform it into actionable insight. These insights can include predictive maintenance, letting administrators know when equipment is likely to break down so they can address the situation before an outage, or they can forecast demand to figure out how best to meet users' needs before a crisis hits. The next step applies these insights to transform business processes so AV professionals can maximize efficiency and optimize performance.

While the Internet of Things involves sophisticated devices, widespread network connectivity, robust software and piles of data, it's important for AV professionals to remember that people are an even more important element. Ultimately, the AV industry's mission is to connect end users and foster an engaging exchange of information and ideas. Even as IoT technologies reduce the need for human input in management and control of AV systems, organizations should maintain a keen focus on optimizing the experience for end users.