Q&A Transcript

ENERGY EFFICIENCY AND TECHNOLOGY INTEGRATION:
MEETING ENERGY EFFICIENCY NEEDS AND IT SECURITY STANDARDS ON YOUR CAMPUS

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QUESTION 1

Do you reject projects if they do not meet IT security standards even if the energy efficiency technology saves a lot of money?

Monty Combs: The central IT group has final say on whether or not particular technology would pose a security threat.

However in one case, we were working with a provider that had their physical server in the building. The provider was willing to work with our central IT group *and* the manufacturer to come up with a solution to make it work on a virtual server. This required some work on both sides.

QUESTION 2

You talk about wireless in this webinar but how do you manage technology that's wired over the network? Is it similar protocol?

Monty Combs: Interestingly, I consider the wired network to be a little bit more mature, so we have some of those processes well-solidified. All of our controls and metering devices are on the hard-wired network and they all have solid processes around them and haven't presented challenges for us in years. These go through the wired network security zone, whereas with wireless, we still have to develop a wireless security zone, which is in the works.

QUESTION 3

When is a good time for IT to be a leader in deploying new systems, such as virtual laboratory notebooks, monitoring systems, or selecting enterprise software?

Monty Combs: If IT isn't receiving requests, *they* should be making the requests for technology that will improve energy efficiency or operational efficiency. This likely varies on everyone's individual location and how things work.

QUESTION 4

Are you continuously updating your security protocol so it's easier to install new technology as you keep Brown up to standard?

Monty Combs: Our central IT group handles much of the security protocol but I don't think it's changing that drastically or quickly. Certainly there are a lot of new demands being placed on the network.

We do have a meeting next week to kick off the design for the Wi-Fi network, to create secure utility zones which don't currently exist. This is part of the evolution of how we're reacting to the many demands coming down the pipeline.

QUESTION 5

Once projects are complete and operational, how have you seen Facilities Management (FM) or IT support the maintenance of this technology? Everywhere from backups to updates – is this something being done internally on campuses or are people relying on vendors to do this?

Monty Combs: The majority of it is done internally. This is where I see an advantage of having a dedicated IT shop within the FM group.

Our IT group, Systems Services, works very closely with the Operations folks and we help them coordinate whether a project goes through a vendor to do the work or we do the work ourselves. We're the conduit between the vendor, Operations and the central IT group. Systems Services works with the central IT group to ensure all backups are done and that security settings and all of the patching is completed.

As far as adding new equipment to or taking things off of the network goes, Operations request that to the FM IT group and we coordinate that with the central IT group.

Kailash Viswanathan: Some of the campuses don't have the luxury of having a Monty working directly next to the Project Managers, where they can ask questions at any time – but one thing everyone should consider is thinking about the maintenance ahead of time before buying equipment. For example, when considering how to receive updates or back data up; if you don't have the capability to do it yourself, that's an opportunity to outsource to the vendor.

QUESTION 6

All of these new technologies are pulling in data to help understand the campus better, yet are there challenges in managing and using all of that data to its best potential once it's collected, so that it's manageable for the IT and FM departments?

Monty Combs: It isn't easy. We're collecting an enormous amount of data that's growing exponentially and we are constantly trying to figure out how to extract that data and look at in a way that actually informs decisions.

Our Energy and Environment group has a good handle on using the right metrics and tools to show the return on investment and payoffs in terms of reduction of greenhouse gas emissions to meet their objectives.

From an Operations standpoint, there's a ton of data there and it's a constant challenge. I don't have a perfect answer to that one but we're working through it. We have some tools in place that are helpful and we're currently trying to integrate between three different systems and sync all of that data together for analysis.

Kailash Viswanathan: There are many existing analytics tools, one of which Brown deploys, in order to use that energy management system data, lighting data, or occupancy data to take actions with HVAC equipment to improve performance. It's very tough for a team of people to analyze millions of pieces of data by just looking at the computer – you need a machine to do that for you.

QUESTION 7

There's now Ethernet connected technology for lighting controls. Is the Ethernet connection more secure than the wireless?

Monty Combs: Ethernet is seemingly more secure than the wireless connection which can be picked up from anywhere, whereas with a hard-wired connection, you have to be plugged in or connected to nodes which can all be secured in locked rooms. I don't know scientifically or technically, but it seems as though the hard-wired is bit more secure. However if someone wants something bad enough, they're going to get in.

QUESTION 8

Are you planning for the future to upgrade infrastructure to accommodate for the demand for new technology and the shift to campus internet that is largely wireless?

Monty Combs: It already has happened – the ship has sailed. A year ago, we had to upgrade our Wi-Fi network across all of the dorms. What happened was students came in with anywhere from 3 to 6 devices that connect to the Wi-Fi network – watches, phones, iPads, laptops, etc. Our Wi-Fi was getting crunched and we needed to upgrade to address all of those challenges. Now, Wi-Fi is considered the primary network with wired being secondary.

As far as its growth goes, there's a lot of infrastructure work being done to accommodate. We analyze the traffic usage. Peak usage among students occurs very early in the morning and I do believe that our central networking and security groups are adequately addressing that as it carries forward.

QUESTION 9

Are there any security concerns about app based technology interacting with a ZigBee system such as in an IoT connected dorm room? (I.e. thermostat control, lights, plugs)

Monty Combs: We need to logically segment those things off and have some rules between how those they communicate with each other. The ZigBee network also has encryption with it, so we have to make sure that that gets implemented correctly.

The wireless network design is the next big piece on which I need to work with the central IT group to understand and implement. Anything that is building and design related is logically segmented off so that you can't see it on the wireless network, sitting alongside any of the student or administrative wireless equipment on the network.

QUESTION 10

I feel as if the success of a department rests on the shoulders of a strong IT department - what leadership qualities do you believe are most important?

Monty Combs: Within any department, not just IT, communication and understanding other people's objectives are both key. We're all a team trying to work together and march to the same mission. If we keep that in sight, communicate our objectives and listen to each other, things will get done.

Kailash Viswanathan: I think Brown has the luxury of having Monty out there – for most campuses though, it's important for IT to be a part of the daily facilities processes regarding anything that connects a building automation system or an electric meter that is IT-based. If you want a project to be successful, you want to get IT in there as early as possible and communicate as much as you can. That's going to help the project, Brown, you, everyone.

QUESTION 11

Are there any limits set to broadband Wi-Fi growth? How many nodes AP's can be installed?

Monty Combs: There are absolutely limitations to work against as far as the number of physical bandwidth connections which are all a part of the larger design and considering how many things you can get going on a network.

Our networking group has upgraded a lot of our ports, mainly driven by research data. They have some really large pipes leading out to the internet and a 10 GB Gigabit connection to allow this data to flow. All of the same Wi-Fi data rides across those pipes.

A ZigBee network allows us to connect hundreds of devices but each device is not uniquely addressable – they're all connected through the ZigBee and then the ZigBee gets you the connection to the internet or the network. We aren't addressing thousands of individual devices.

At the same time, data transmission for IoT may not be supported by tiny bandwidth and one virtual server. How can leaders make that investment decision?

Monty Combs: This decision is driven first by the demand and if we can't meet monetary, energy or greenhouse gas savings objectives, the demand to upgrade will increase and the need is going to have to be met. It might take a while but we can plan for that and know that it's in the pipeline. We just need to see that demand before building anything significant.