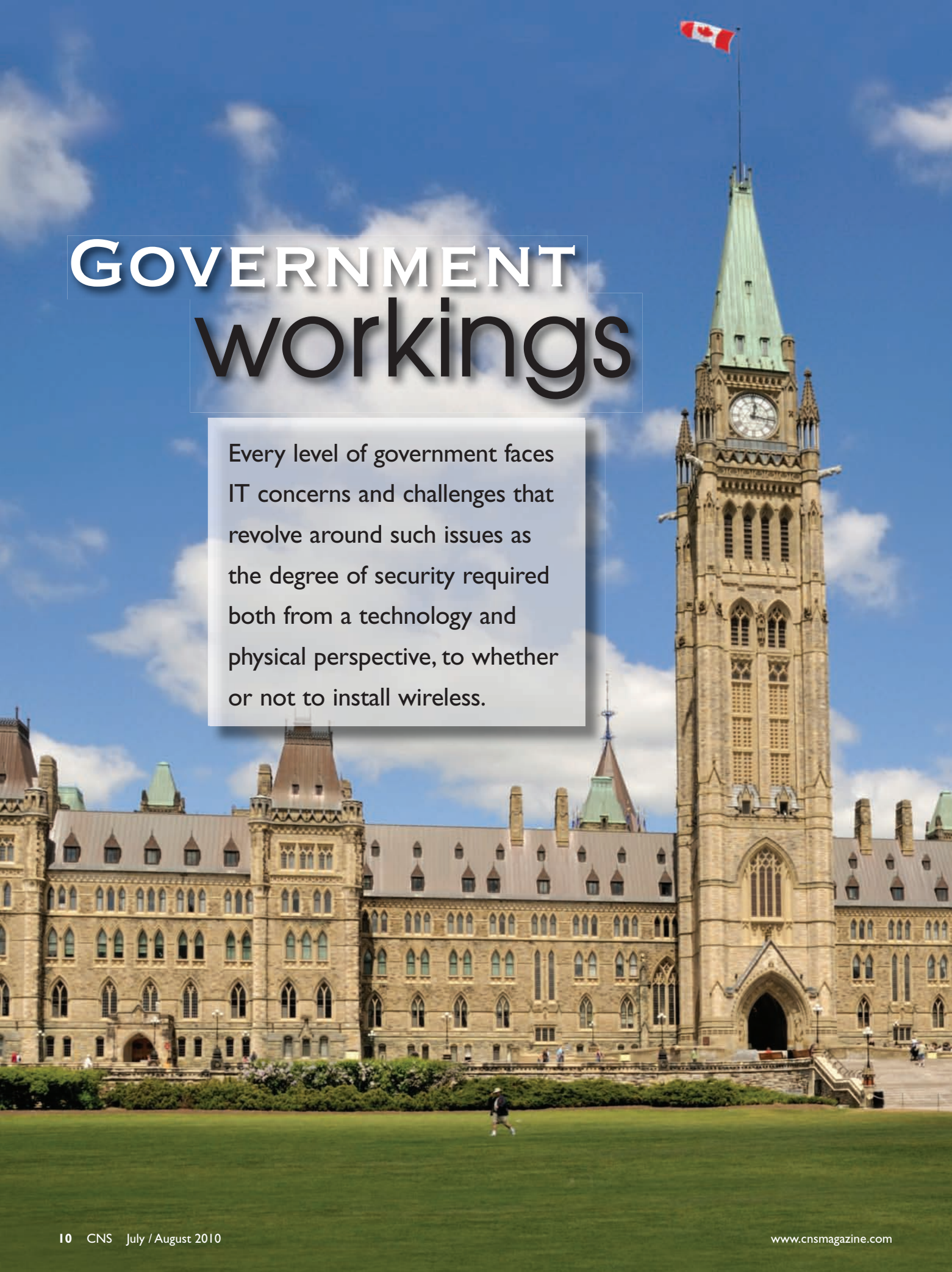




GOVERNMENT workings

Every level of government faces IT concerns and challenges that revolve around such issues as the degree of security required both from a technology and physical perspective, to whether or not to install wireless.

By Lawrence Cummer

Municipal, provincial and federal governments in Canada must provide service across wide swaths of land and that fact alone makes reliable, secure communication networks all the more essential.

Information and communication technology is critical to not only the delivery of government services, but also to the connection of federal departments, says Pierre-Alain Bujold, spokesperson for the Treasury Board of Canada Secretariat. At the same time, infrastructure investments in the government space must also zero in on security and privacy controls in order to combat the ever-increasing and sophisticated cyber criminal.

Bujold notes a number of pressures are driving the federal government to act as a coherent enterprise when it comes to ICT activity. These include the delivery of services to rural and remote communities across Canada and renewing aging IT infrastructure, while at the same time driving down costs; and implementing green whenever possible.

In fact, flexible, collaborative communications technology is essential as new demands and challenges constantly emerge, not just for governments in Canada, but around the globe. For instance, a 2009 report by Cisco Systems Inc., suggest collaborative technologies as a critical enabler to the financial reforms and regulation goals set forth by the G20 Summit, which met in Toronto in June.

According to the report, entitled *Using Technology to Accelerate G20 Plans for Strengthening Global Financial Supervision*, better application of technology can play a role in new financial regulatory approaches through advanced data-sharing networks, and in enhancing collaboration through improved voice and videoconferencing.

Need for maximum security and privacy: Security is a dominant focus of all levels of government and is a constant consideration when investigating communications technologies from cabling choices to the application deployed.

"Government is very risk adverse when it comes to anything security related," says Robert Horne, executive vice-president and co-founder of The Attain Group in Ottawa,

which provides telecommunications engineering and consulting services for federal government departments, as well as real estate owners and architecture and construction firms.

In the federal space, for example, it is not uncommon to see government personnel eschew technologies such as Voice-over-IP running over fiber and choose instead secure, plain old telephone systems over copper.

"Government is still pretty well entrenched in traditional voice services coming from Bell Canada," Horne says.

He recalls instances he has seen where multi-story buildings developed in downtown Ottawa wired up with fiber — and no or limited copper — with the assumption that tenants would be moving to a converged infrastructure and VoIP. Instead, they needed to be refitted to support the PBX-based services of the government department moving in.

Still, some departments have moved to VoIP-based service. Agriculture Canada moved to a full-VoIP service managed by Telus Canada a few years ago; however, Horne suggests that federal departments moving to VoIP remains the exception.

When it comes to data services the reverse can sometimes be true, with federal departments with the strictest security needs such as the Department of National Defence or CSIS using only fiber, or limited copper, to avoid any possible electromagnetic signals coming off copper wires that could be transmitted.

Security, and privacy related to it, is also of critical concern in municipal governments, says Maurice Gallant, CIO of Fredericton and president of the Municipal Information Systems Association of Canada (MISA/ASIM Canada).

What that means is that municipalities sometimes move in a slower purchasing cycle than structured cabling contractors and network vendors might be used to, but Gallant notes that all technology directions "must be balanced with the responsibility we have to maintain the right levels of security and privacy."

Sergio Podda, senior account manager for Belden Inc., says the degree of security required both from a technology and phys-

ical perspective in government is unique as compared with most other industries. He suggests it might surprise some structured cabling professionals.

“There will be a very secure building and inside that ‘bunker’ is a data centre that’s very secure, and inside that data centre is a cage where it is more secure, and inside that cage is another cage where they have another security level. The amount of security they have and the amount of biometrics, I have not seen outside of government.”

Enabling service levels: Tech-savvy citizens and residents have an increasing expectation. “Residents are becoming more and more technology savvy and using innovative technologies in other aspects of their lives,” Gallant says. “Most people now use some sort of computer banking, most people use the Internet to make a flight reservation for vacation, and so their expectation now is that they want to interact with their governments using those same tools.”

government, can create a particularly unique challenge for municipalities, says Jon Eddington, principal of Toronto-based telecommunications consultancy Eddington Consulting.

He says even in major metropolitan areas about 90% of municipal properties can be easily brought onto the organizations’ networks, but there are always a few facilities that are difficult to wire.

To overcome this challenge, Eddington adds that municipalities are turning to private microwave towers, point-to-point wireless and hybrids of wired and wireless products.

Still, just as higher bandwidth technologies such as 10 Gigabit Ethernet (10 GbE), find their way into government backbones and data centres to support increased service level demands, the bandwidth is perpetually, and quickly, eaten up by new applications.

Eddington notes provincial and municipal governments are increasing bandwidth in their networks to the desk-top and over the backbone, “but at the same time there is constantly demand for even more bandwidth.

In addition, as many governments replacing their aging technology, they are moving to complete forklift upgrades of all severs and switches. What they are finding is that these upgrades are further creating a demand to replace their cabling infrastructure, says Podda. He says to

meet these demands governments are recabling both on copper for 10 GBase-T and OM-3 type fiber that can handle the heightened bandwidth demands.

Moves to mobility, Wi-Fi and fiber: Although coming with its own security and infrastructure demands, governments are turning to wireless technologies to enable flexible workspaces, public access and, where needed, enable connectivity where

wiring is a challenge. Wireless is not a panacea for all things, but is the solution to some challenges more common to governments.

According to Bujold, “the need for both traditional and wireless networks is expected to continue for some time.”

Horne notes that in the federal space, security concerns around Wi-Fi often cause it to continue to be relegated to mostly meeting boardrooms and open public spaces, while the bulk of government IT operations take place over the wired infrastructure.

Even in places or in governments where wireless is the norm, it is not without heavy infrastructure demands. Podda refers to what he calls “the myth of wireless:” that it doesn’t require wires. In fact, every access point must be wired into the network.

He says that wireless is becoming more prevalent in municipal and provincial governments with which he deals both as an enabler of new applications as more services become run over IP, but that it can help overcome a challenge often distinct to governments — heritage buildings. A large number of government properties are historical buildings, which can pose challenges to discrete cabling.

Podda points to Queen’s Park in Toronto, the seat of the Government of Ontario, as an example.

“We do a lot of work in Queen’s Park, and it is a heritage building, and the challenge is it has got to maintain the aesthetic appearance of the place — of the walls and the moulding — and, of course, there’s a 90-metre limitation (on copper). So, we have to run up and down the walls and ceilings without affecting any of the façade,” he says.

As well as wireless as a solution to this dilemma, Podda says installers are turning to fiber to handle those long distance runs in the background and avoid the requirements of building multiple wiring closets throughout such buildings and campuses.

Eddington notes that the thick, heavily-secure structural walls of many government buildings, as well as their age — even those built as recently as the 1980s — can also pose a challenge around providing mobile service from cellular networks. Some require a major retrofit that includes

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Metro Toronto Convention Centre: The site of the G20 Summit held in June.

photo credit: Tourism Toronto, Toronto Convention & Visitors Association

He says the bar keeps rising, creating a demand for sophisticated well-controlled networks that incorporate multiple locations, are well managed with advanced Quality of Service (QoS) schemes, and incorporate segmentation so that all internal government staff have the tools needed in a timely way to keep up with service demands.

The connection and management of multiple locations, common in all levels of

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the installation of a network of cell repeaters throughout.

"In the 1970s and '80s it became very popular to put metal in window glass," he notes. "There are still a lot of buildings around that have that kind of glass and they are a real problem to transmit through."

Reducing power cost and the carbon footprint associated with them is another driver for government's motivation to investigate cloud and network consolidation.

At the same time, he adds that government employees and their constituents expect mobile phone service as a given.

Converging on IP: Governments are converging services on IP when and where it makes sense. This convergence is moving beyond simply voice, video and data; some departments are rolling security, lighting and building management onto the IP network.

This is creating a "perfect storm" of bandwidth (and power) needs, says Joe Oreskovic, central regional sales manager at Eaton Power Quality Company. "There's no need for different types of storage, and so all of the sudden there's no need for separate networks.

"Technology has kind of moved (the bar), but also the customer demand in the market place — they are demanding high-bandwidth services, like and video-on-demand — and then the over-riding requirement is reduced cost."

As more and more technologies such as phones, cameras, building controls and security equipment become IP-enabled, interconnectivity will become a more important part of Government of Canada ICT requirements, notes Bujold.

Broad use of IP has also led to an initiative within the federal government to transition to IPv6. "The main driving force for the redesign of Internet Protocol is the foreseeable IPv4 address exhaustion,"

Bujold says. "The Government is working to ensure a smooth transition to the new Internet Protocol for the Government's networks and applications."

Green clouds ahead: Just like in the private sector, cloud computing is being investigated in government networks across Canada, and leading to network design considerations that afford greater flexibility.

"The whole concept of cloud computing and virtualization is coming into play in the federal government as well," says Oreskovic. "It's not unlike the private sector."

Pockets of progress exist in both

markets, he adds, with some public and some private sector groups being ahead of the curve.

It comes down to long-term economics. Oreskovic says that public organizations are looking closely at the cloud in order to build networks that maximize utilization, drive down cost and have the flexibility and scalability to meet future needs.

According to Alain Perry, senior director and acting CTO for the IT division, CIO Branch of the Treasury Board of Canada Secretariat, cloud computing is an area of continued investigation for the feds, but like all tempered by security requirements.

"The government is exploring the utility of cloud computing as a tool to enable the delivery of programs and services to Canadians, while taking into account the need to protect critical assets and personal and privileged information," he says.

Government ICT runs in cycles of internalizing and outsourcing, and cloud services is the latest turn in that cycle, says Jury Konga, principal at Stouffville, Ont.-based consultancy eGovFutures Group. He likens cloud computing to the days of government mainframe computing through service bureaus.

Konga does say the cloud can operate as a platform for greater coordinated government services and data management collaboration. He says governments need to continue to shift to a model of service that

takes advantage of Web 2.0 technology and the network in order to better collaborate, rather than working in disparate silos. He says the pace is picking up for cross-government and cross-departmental collaborative efforts, although he adds that "there's no quick solution, this will take a long time.

"But, the point is open government is facilitating a lot more discussion."

Reducing power cost and the carbon footprint associated with them is another driver for government's motivation to investigate cloud and network consolidation. In the past, Oreskovic says IT departments built for flexibility through "over-sizing" — whether it was cooling, power or bandwidth, designers simply overbuilt data centres and wiring closets to allow for future applications. Today, with green-motivated considerations, as well as financial concerns, that is no longer acceptable.

"Two things are involved: the first is shrinking the footprint to match my current needs, but at the same time building a system that will allow me to exponentially address my future needs; because governments are becoming more efficient at what they need to do today, but also reducing the number of types of locations out there that I need to operate for the future," he says.

Belden's Podda suggests green considerations weigh heavy on the decisions being made by governments and their real estate providers. He notes that last year, the City of Cambridge, which installed Belden's 10 Gigabit Ethernet structured cabling system on its backbone, was awarded Gold certification for Leadership in Energy and Environmental Design (LEED). To create a sustainable network with a "green" life-cycle, the city implemented high-speed fiber and copper-based cabling for services throughout the facility, including data and voice communications, security system and cameras, building automation systems and wireless access points.

"There's probably more (copper) cable there than any city hall that's out there," he says. But, he adds that copper was cost-effective and the hybrid mix of high-speed technologies will support growth for decades to come, rather than requiring replacement or upgrade in five to 10 years.

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