City of Mississauga
Corporate Report

Date: March 31, 2021	Originator's files:
To: Chair and Members of General Committee	
From: Gary Kent, CPA, CGA, ICD.D, Commissioner of Corporate Services and Chief Financial Officer	Meeting date: May 12, 2021

Subject

Expansion and Continued Lifecycle of Cisco Network Hardware, Software, and Collaboration Infrastructure; File Ref: PRC001284/FA.49.607-12 (Cisco), PRC001292/FA.211-13 (OnX)

Recommendation

That the corporate report entitled, "Expansion and Continued Lifecycle of Cisco Network Hardware, Software, and Collaboration Infrastructure; File Ref: PRC001284/FA.49.607-12 (Cisco), PRC001292/FA.49.211-31 (OnX)", dated March 31, 2021 from the Commissioner of Corporate Services and Chief Financial Officer be received for information.

Executive Summary

- Cisco is the recommended and required technology to continue to maintain and expand the City's network architecture for Voice and Data communications.

- The City has standardized on Cisco equipment for both wired and wireless infrastructure and awarded Network Replacement initiatives through a competitive procurement process to OnX Enterprise Solutions Ltd. with Cisco being the foundation technology for the City's network.

- Cisco Systems Canada Co. and OnX Enterprise Solutions Ltd. contracts and authority are in place, with Cisco expiring on December 31st, 2023 and OnX expiring on September 26th, 2023 respectively. An increase in the value of the existing contracts is required to maintain a state of good repair through infrastructure life cycle replacement and to accommodate additional growth.

- The combined total value of the contracts with Cisco Systems Canada Co. and OnX Enterprise Solutions Ltd. will be increased from approximately $24.7M to approximately $35.3M. The contract increases will be funded from IT operating and capital budgets, with any increases subject to future budget approvals.

- Additional Network and Wi-Fi growth pressures include Office Space Strategy (OSS) project, Network Core Replacement, Voice Infrastructure Replacement, Public Wi-Fi expansion in new development areas and yearly growth of public Wi-Fi throughout the City.

- The City's network infrastructure continues to evolve and grow at a fast pace to accommodate new technology requirements, capacity, growth and cloud adoption.

- In preparation for the next contracts, the City will either go to the market again for Cisco products competitively through a tender process or adopt the Ontario VOR to obtain the best discounted pricing to maximize savings.

Background

The City of Mississauga provides services to citizens in many facilities including Libraries, Community Centres and Arenas as well as in open spaces such as Parks, Pathways and Celebration Square that are dependent on secure and reliable network infrastructure. The City provides key services to all internal business areas in the City including Transit, Fire Services, Works, Traffic and Parks and Forestry. Information Technology is responsible for the delivery of these services through the provisioning of wired and wireless networks to provide connectivity for voice and data communications as well as wireless connectivity for staff, public and machine to machine communications (i.e. Digital Signs). The City uses Cisco for Voice Communications, Phones, Jabber and WebEx Collaboration, WebEx Video Conferencing Systems, Call Centre support for 311 Operations, Mississauga Transit, and Works Dispatch.

Wireless technology is the "new normal" that provides secure connectivity to work areas and public spaces enhancing productivity, collaboration and promotes information sharing. The growth of wireless technology throughout all City buildings and public spaces has been exponential over the past few years, and continues to increase. Wireless technology is a vital technology connecting and supporting office workers, mobile field workers, Internet of Things (IoT) devices and sensors to internal networks, and for the public on Wireless Mississauga providing free internet access. As new devices are introduced onto wireless networks, the attack surface broadens and it is imperative to secure the network with modern security technologies from Cisco. With the growth of the City's Wireless network, security is always a top priority and associated supporting infrastructure is essential. Cisco network security technologies are instrumental for proactive security and these technologies are kept in a good state of repair providing the latest protection and security on the City's wireless and wired networks.

The City's network is supported by the Public Sector Network (PSN), which is a private fibre network that provides dedicated high-speed connectivity to the majority of all City Facilities with significant growth in the most recent years connecting things such as digital screens, pylon

signs, traffic signals, sensors and security cameras. The PSN has enabled the City to provide a very high level of service to a significant campus of facilities, staff, the public and machines in a very cost efficient way.

The City has standardized on Cisco equipment for both wired and wireless network infrastructure and awarded Network Replacement initiatives through a competitive procurement process to OnX Enterprise Solutions Ltd. with Cisco being the foundation technology for the City network.

Council, through a report dated May 1, 2012, approved $3.034 million over five (5) years with Cisco Systems Canada Co. to implement the Technological Upgrades and Expansion to Network Infrastructure (GC-0378-2012).

Council, through a subsequent report dated June 10, 2014, approved to extend the term with Cisco Systems Canada Co. through 2023 for the supply of hardware, licenses, consulting and maintenance and support services to support the City's Technology Upgrades and expansion of the Network Infrastructure. Also, to increase the value of the contract to accommodate growth and where funding is approved in the budget planning process, with Cisco Systems Canada Co. (Cisco Systems) to continue to be designated a City Standard for the term ending in 2023. The upset limit increased to $12.6 million. (GC-0345-2014).

Comments

Cisco Systems Canada Co. is the City's current single source vendor until 2023. The City has standardized on Cisco equipment for its Network and Voice Communications Infrastructure. Cisco is the foundational technology required to manage and expand the City's network for Voice and Data Communications that includes network switching & routing, firewalls, web security, wireless controllers and access points (Wi-Fi), unified communication voice platform, video conferencing and collaboration tools.

The Network Replacement through a competitive procurement was awarded to OnX Enterprise Solutions Ltd. with Cisco being the foundation technology for the City network. Switching & Routing, Network Monitoring, Firewall Network Technologies and Load Balancers are supplied by OnX Enterprise Solutions Ltd. (Cisco Authorized Partner). OnX Enterprise Solutions Ltd. is the City's current vendor until 2023 for providing Cisco Network technology upgrades and expansion to existing Switching, Routing, Security Firewalls, and F5 infrastructure.

Both Cisco Systems Canada Co. and OnX Enterprise Solutions Ltd. contracts and authority are in place, with Cisco expiring on December 31st, 2023 and OnX expiring on September 26th, 2023 respectively.

Over the last 10 years, the Information Technology Division's capital budget program has more than tripled in value. The capital budget for Networks Services continues to grow at similar rates as a result of growth, new technology requirements, capacity demands and cloud

adoption. Traditionally, the hardware lifecycle of network components was refreshed every 10 years. However, due to the rapid changes in technology, critical network components are required to be replaced every 5 years. This ensures network systems meet the capacity for growth, remain current and are kept secure.

The City continues to grow in providing Cloud solutions such Amazon Web Services (AWS), Microsoft Azure and Microsoft Office 365. Connecting to Cloud providers requires expansion of our on-premises network equipment to accommodate highly available and secure connections that are capable of meeting the new bandwidth demands for the usage of these services. Bandwidth growth in general has put pressures on the City's network infrastructure to support Video streaming, Outdoor Camera Video Traffic, Outdoor Wi-Fi and Cloud Expansion requiring upgrades to equipment to support greater capacity needs.

The City continues to grow the wired and wireless networks to meet service demand and growth. All Network Technologies and Voice Infrastructure is life cycled approximately every five (5) years to ensure growth capacity, performance and security are maintained.

The network is built out using the latest Cisco based network technology for Switching and Routing, Firewall Security, Web Security, Wireless Controllers and Access Points, Unified Communications Hardware and Licensing, Video Conferencing Hardware, and Collaboration Subscriptions (WebEx).

There is a need to increase the value of the existing contracts with both Cisco Systems Canada Co. and OnX Enterprise Solutions Ltd. in order to support continued Network Infrastructure growth and planned life cycle replacement of network/voice infrastructure (wireless & wired) coterminous with the Cisco Systems Canada Co. and OnX Enterprise Solutions Ltd. agreements through to 2023. The current upset limits of $12.61M for Cisco and $12.1M for OnX Enterprise Solutions Ltd. will not be sufficient to carry our Network/Voice Hardware Life Cycle & Maintenance planned for from 2021 to 2023 through the Capital Budget process.

Various initiatives such as continued Wi-Fi Expansion, Network Core Replacement, Smart City, Internet of Things devices (IoT), Cloud Data Centre Networking, Office Space Strategy, Collaboration and Video Conferencing solutions have had a direct impact on both of these current contract values. There are also a number of initiatives to support the demands driven by the Covid-19 Pandemic that were not forecasted and captured in previous funding requests such as Cisco WebEx and Jabber subscription license expansion and Cisco Umbrella.

Network & Wi-Fi Growth Pressures & Impacts:

- **Outdoor Wireless and Public Wi-Fi** will have a significant impact on how we deliver our services to our residents. Our outdoor Public Wireless has enabled better outreach to the Citizens of Mississauga by providing free public access not only in our Libraries and Community Centres, but also to over 300 outdoor locations and parks due to the pandemic. The City is progressively enhancing free public Wi-Fi services for our citizens

such as Wi-Fi in parks/marinas, Business Improvement Areas, Internet of Things (IoT) devices and other Smart City initiatives. The number of connected devices continues to grow substantially year-over-year and will continue to grow exponentially as we continue to build out the City's Wi-Fi network, increase our mobile workforce and continue to connect IoT devices and sensors onto our network. This growth directly impacts network hardware requirements and maintenance. Currently the City has nine (9) wireless controllers and over 1435 Access Points for both indoor and outdoor wireless. These wireless systems require licensing, maintenance and lifecycle replacement every five (5) years.

- **Mobile Workers** require a balance of Wi-Fi and cellular connections to support field staff in Forestry, Parks, Security, Enforcement, Facilities & Property Management and City Staff. The use of wireless to carry out both field-based job duties and day-to-day operations of the City continues to grow at a significant rate. The Office Space Strategy Project is underway with initial groups adopting "Mobility" relocating to new office spaces starting in the spring of 2021. This will require additional wireless access points and collaboration devices for these new spaces.

- **New Developments** such as new Fire Halls, Community Centres, Bright Water and Lakeview Developments will include public Wi-Fi and Smart Technologies. Wi-Fi and smart technologies will be provided throughout these new communities for public spaces and roadways for public internet consumption. Outdoor Hubs will be designed providing spaces where people can work, learn, meet in open and public spaces; connect to services with access to high-speed internet. Kiosks, free Wi-Fi supporting the digital divide, Wi-Fi in parks/streets, living labs will all require network infrastructure and hardware.

- **Network Data Centre Infrastructure** includes eight (8) high performance physical core switches, 10 security appliances, 14 Firewalls, supporting approximately 1000+ switches/routers and 160 UPS's connecting over 100+ facilities. The Data Centre network appliances require life cycling and maintenance. In 2021, the City's Core Network Infrastructure and Network Security Firewalls will be life cycled to accommodate rapid growth of the City's Data Centers, Cloud Data Centers, Applications and increased bandwidth requirements. A Data Center Network Assessment is currently in progress to review and map out Data Center Network Design and rollout for hardware replacement of the major components of the City's Network Infrastructure to ensure best practices for Network Security are followed in order to support the various City applications.

- **Voice Infrastructure.** The City's Cisco Voice Hardware and Software Infrastructure needs to be upgraded and requires a replacement in 2021. The Voice Infrastructure has expanded over the past four (4) years to include Jabber/WebEx Collaboration and WebEx Video Conference devices in Collaboration Zones, City boardrooms, aligning with both the Mobility and the Office Space Strategy.

- **Office Space Strategy Initiatives.** Technologies such as Cisco WebEx virtual meetings and Cisco Jabber have been scaled up to meet the City's demand during the pandemic, requiring the procurement of a WebEx Enterprise License model and additional Jabber Softphone Voice licenses. This has positioned the City well to work from home, be mobile and be ready as early adopters for the Office Space Strategy rollout. Collaboration Licenses and Video Conference devices in Boardrooms are new initiatives as a result of the Office Space Strategy with a significant financial impact for these technologies.

- **Advanced Traffic Management System (ATMS)** is connected to our wireless IP network and has been a key driver contributing to the expansion of the network with now over 800 intersections on our Fibre, Wireless infrastructure and Rogers APN Networks. Support of all these locations is critical and the existing network equipment is replaced as required with a planned full hardware life cycle replacement in 2024.

Information Technology's Infrastructure Services has existing contracts in place with Cisco Systems Canada Co. and OnX Enterprise Solutions Ltd., which are ending in 2023. In preparation for the next contracts, the City will either go to the market again for Cisco products competitively through a tender process or adopt the Ontario VOR to obtain the best-discounted pricing for the next contract. Leveraging the Ontario VOR has been advantageous to the City to take advantage of the same discounts provided to the Province from their previous competitive tenders.

Purchasing By-law Authorization

Purchasing By-law 374-06 provides for the ability to increase the value of the contracts through Section 18 (2) (e) pertaining to Amendments, which states that, "Notwithstanding subsection (d) and (d.1) no Council approval for amendments to a High Value Acquisition is required if":

(iii) "Council has provided direction otherwise on the procurement at issue"

For Cisco Systems Canada Co., the authority to increase the value of the contract was issued through GC-0345-2014, with the following recommendation adopted by Council on July 2, 2014:

1. That the Purchasing Agent be authorized to issue contract amendments to increase the value of the contract where necessary to accommodate growth and where funding is approved in the budget planning process.

Or:

In the case of OnX Enterprise Solutions Ltd.,

(iv) "the amendment is required to increase the value of a multi-year Acquisition where increases in quantity and/or price were contemplated in the Bid Request and Original Commitment but were not confirmed with the exact quantity and/or price. For greater clarity, this subsection (iv) shall apply only if:

   A. the Commitment creates a relationship with a Vendor to provide goods and services over a multi-year supply contract but shall not include Commitments where the goods and/or services are supplied towards a single project requiring more than one year to complete (e.g. a construction project that requires more than one year to complete); and
   B. additional quantity is required as a result of changes to staffing levels, number, and/or size of City facilities or lands, consumption or usage; and
   C. the method of determining the price has been established in accordance with the Commitment and the resulting price represents Best Value."

Information Technology, Legal Services and Materiel Management staff will collaborate to establish the detailed requirements, negotiate the final arrangements and prepare the contract agreements.

Financial Impact

The required contracts identified in Appendix 1 represent a total estimated dollar increase of $10.6M combined for both the existing contracts with Cisco Systems Canada Co. and OnX Enterprise Solutions Ltd. The combined total value of contracts will be increased from approximately $24.7M to approximately $35.3M. The existing contracts are funded in the 2021 approved IT operating and capital budgets. The contract increases will be funded from IT operating and capital budgets, with any increases subject to future budget approvals. The financial detail for each contract can be found in Appendix 1.

Information Technology establishes capital requests on an annual basis, based on business requests and good state of repair, along with the operating budget that reflects yearly maintenance and support. All purchases of products and services will be subject to budget approval and will leverage both existing Cisco Systems Canada Co. and OnX Enterprise Solutions Ltd. contracts in place until the end of 2023. Network Services has four categories of Network Technologies and spending. They are Network Switching & Routing (PN19500, 20500, 21500), Network Security (PN19508, 20542, 21542), Network Wireless (PN19504, 20504, 21504), and VoIP Systems/Phones (PN19505, 20505, 21505).
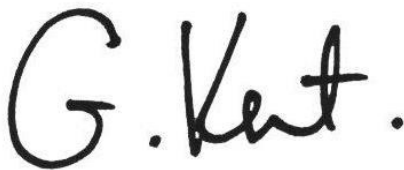
Conclusion

Over the past 8 years since 2013, it has been challenging to accurately forecast the actual growth and demands required for all the City's network systems. The City's network infrastructure continues to evolve and grow at a fast pace to accommodate new technology requirements, capacity, growth and cloud adoption. The City has standardized on Cisco Systems equipment for many years for both wired and wireless infrastructure including Network Replacement initiative with Cisco Systems being the foundation technology for the City Network.

Information Technology's Infrastructure Services Network and Voice Infrastructure continues to grow, requiring increased capacity, new technologies and life cycle replacement of hardware every five (5) years. Existing contracts in place with Cisco Systems Canada Co. and OnX Enterprise Solutions Ltd. are ending on December 31st, 2023 and September 26th, 2023 respectively. The estimated increase in contract value for 2021-2023 is $3.722 M with Cisco Systems Canada Co. and $6.952 M with OnX Enterprise Solutions Ltd. and will be subject to the annual operating and capital budget approvals.

For the next contracts, the City will either go to the market again for Cisco products competitively through a tender process or adopt the Ontario VOR to obtain the best-discounted pricing to maximize savings.

Attachments

Appendix 1: Cisco & OnX – Statement of Work

G. Kent.

Gary Kent, CPA, CGA, ICD.D, Commissioner of Corporate Services and Chief Financial Officer

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