



**CITY OF HAMILTON**

**CORPORATE SERVICES DEPARTMENT**  
*Information Services Division*

<b>TO:</b> Chair and Members Audit, Finance and Administration Committee	<b>WARD(S) AFFECTED:</b> CITY WIDE
<b>COMMITTEE DATE:</b> February 13, 2012	
<b>SUBJECT/REPORT NO:</b> Network Communications Standardization (FCS12019) (City Wide)	
<b>SUBMITTED BY:</b> Roberto Rossini General Manager Finance & Corporate Services Department	<b>PREPARED BY:</b> Filipe Janicas 905.546.2424 ext. 5705 <b>AUTHORED BY:</b> Cathy Poper 905.546.2424 ext. 5481
<b>SIGNATURE:</b>	

**RECOMMENDATION:**

- (a) That equipment manufactured by Cisco Systems be established as the Corporate Standard for networking, communications components and associated hardware including Unified Communications components providing the backbone network infrastructure of the City's Internet Protocol (IP) phone services, desktops, wireless, and application communications throughout the city's network;
- (b) That staff be authorized to deviate from this standard only when required by a specific software solution;
- (c) That this Corporate Standard be reviewed again in 2016.

**EXECUTIVE SUMMARY**

The Information Services (IS) Division is responsible for setting Corporate technology standards to ensure that the City has a computing environment that provides consistent, reliable services to staff and is efficiently and effectively supported by Information Services staff.

In order to maintain the level of network availability currently experienced across the City's networked locations (at an average network availability rate of 99.7% uptime), a

core requirement of IS is that the City standardizes on a single manufacturer for networking communications technology.

In 2003, a Request for Proposal (RFP) was issued for a network infrastructure solution. As a result of that RFP, Cisco Systems was selected as the best solution for the City. Currently, the entire City's network infrastructure uses equipment manufactured by Cisco Systems; this vendor's hardware and software solutions were selected for the City's converged voice and data network infrastructure platform facilitating the migration from Centrex Phone systems to the IP Telephony phones and queues. Since 2003, Information Services has been able to provide improved voice services that are consistent across all City locations while reducing costs for voice services and the ongoing equipment moves, adds and changes. IP Telephony allows us to transmit voice over the corporate data network thereby eliminating the need for expensive dedicated Centrex phone lines.

The City's converged voice and data network communications infrastructure provides reliable, secure network communications to support the many services the City provides to its citizens. Rogers (Atria) Networks, the City's fibre-connect service provider also relies on Cisco Systems components, routing our traffic end-to-end ensuring quality and reliability of service. In addition, other critical infrastructure services such as Heating Ventilation and Air Conditioning (HVAC) monitoring, environmental control systems, security access control systems, wireless access, paging and alerting systems, utilize the City's network infrastructure.

This reliance on the City's network has shown a steady increase over the past ten years. Maintaining a network communications standard will allow Information Services to continue to provide the high quality reliable network services required by the City.

Standardizing ensures that Information Services will be able to continue providing consistent services and improved features to the Corporation, thus improving the efficiency of the City's operations. The current network platform has enabled the City to implement enhancements such as voice recording, services for voice queues, internal teleconferencing services, wireless voice communications, a number of Interactive Voice Response systems, significantly increased network bandwidth, many new City networked locations, increased security for the City's data and services and the ability to meet the needs of City departments.

The request for a single manufacturer and standardizing on Cisco Systems for networking and associated infrastructure components will reduce risks to the City's infrastructure by ensuring high network availability, easier administration, limited complexity and lower operational costs.

This report is being presented to Council in accordance with Purchasing Policy #14 – Policy for Standardization:

1. Standardization is a management decision-making process that examines a specific common need or requirement and then selects a Good and/or Service that best fills that need to become the standard.
2. No standard shall be established unless approved by the Manager or Purchasing and Council or by the Standards and Approved Products Committee.
3. Standardizing on the manufacturer of the City's corporate network communications infrastructure will not result in a single source purchasing situation. Cisco sells through a network of resellers; therefore, the City will continue to use the competitive bid process to acquire Cisco equipment.

Without the approval of Council to standardize on Cisco Systems network communications hardware, Information Services will be required to prepare generic technical specifications which may result in a mixture of multiple manufacturers providing network communications technology. This will have a negative impact on the level of service experienced by those who rely on the City's network for voice and data services and as a result, a negative impact on services to citizens.

Standardizing on a sole network communications hardware manufacturer will minimize the total cost of ownership, minimize support issues, reduce administration costs, reduce acquisition costs, minimize spare parts inventory costs and provide a reliable operation over the life cycle of the Network Components while maintaining the existing levels of service for availability. For these reasons, Information Services is recommending that Cisco Systems, the provider of City Network Communications Infrastructure for well over 13 years, be approved as the standard manufacturer of City network communications hardware.

This standard will be revisited no later than 2016 to review current vendor architectures, management tools and supported portfolios. This review will result in a Council report recommending a standard based on the situation at that point in time.

<b>FINANCIAL / STAFFING / LEGAL IMPLICATIONS</b> (for Recommendation(s) only)
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**Financial:** None  
**Staffing:** None  
**Legal:** None

**HISTORICAL BACKGROUND** (Chronology of events)

Prior to amalgamation, both the City of Hamilton and the Region of Hamilton Wentworth networks utilized network equipment from Cisco Systems. The selection of a common platform greatly simplified the integration of communications across the different municipalities at the time of amalgamation.

In 2003, an RFP was issued for a network infrastructure solution. As of result of that RFP, Cisco Systems was again selected as the best solution to meet the City's needs. The entire City's network infrastructure uses equipment manufactured by Cisco Systems; this vendor's hardware and software solutions were selected for the City's converged voice and data network infrastructure platform facilitating the migration from Centrex Phone systems to the IP Telephony phones and queues currently in use. Since 2003, Information Services has been able to provide improved voice services that are consistent across all City locations while reducing costs for voice services and their ongoing moves, adds and changes. IP Telephony allows us to transmit voice over the corporate data network thereby eliminating the need for expensive dedicated Centrex phone lines.

The IP Telephony project which implemented the converged network had three goals:

1. Reduce costs
2. Improve services
3. Build for the future

The project used voice and data network technology from Cisco Systems to achieve all three goals. The City's selection of the Cisco Systems infrastructure years ago was a wise choice that has allowed Information Services to implement many new services that were unanticipated at the time of selection. A stable, consistent and reliable network infrastructure allows the City to "build for the future".

The Information Services Division, with the Cisco infrastructure, currently supports the day-to-day operation of approximately 170 networked locations, 700 network connectivity devices, 3900 IP phones, 26 Call Queues, voice recording systems for the Customer Contact Centre and Hamilton Street Railway, 911 Emergency call routing, wireless network services, 4000 desktop computers connecting staff to the necessary applications, 300 servers and all of the services required to sustain the operation and provide consistent service delivery to staff and citizens of the City of Hamilton.

Since the implementation of the City's IP Telephony project, many other municipalities, police forces, school boards, universities, colleges and other levels of government have implemented converged voice and data networks based on technology provided by Cisco Systems.

**POLICY IMPLICATIONS**

Corporate Purchasing By-law Policy # 14 requires Council approval for standardization on a brand manufacturer.

**RELEVANT CONSULTATION**

Corporate Services, Financial Services Division, Procurement Section

**ANALYSIS / RATIONALE FOR RECOMMENDATION**

(include Performance Measurement/Benchmarking Data, if applicable)

The Information Services Division currently supports the day-to-day operation of approximately 170 networked locations, 700 network connectivity devices, 3900 IP phones, 26 Call Queues, voice recording systems for the Customer Contact Centre and Hamilton Street Railway, 911 Emergency call routing, wireless network services, 4000 desktop computers connecting staff to the necessary applications, 300 servers and all of the services required to sustain the operation and provide consistent service delivery to staff and citizens of the City of Hamilton.

Industry analysts recommend that the total cost of ownership be considered in any technology acquisition. This is a concept that includes all costs associated with technology equipment over its life cycle. When using total cost of ownership as the deciding factor in justifying a single manufacturer environment, it is essential that all costs are captured. Costs to be considered are:

- Hardware acquisition costs
- Warranty, support and maintenance costs
- Hardware installation costs
- Staff training costs
- Software testing costs
- Network monitoring costs
- Spare part inventory costs
- Staff efficiency and downtime costs

With a multiple manufacturer environment, industry research indicates all of the above items would increase the total cost of ownership, administration and complexity when compared to a single manufacturer environment.

This research highlights the following benefits to a single manufacturer approach:

- Limited Complexity

- Lower support, and operational costs
- Minimal Mean Time to Repair
- Acceleration of Innovation Adoption: Ability to absorb Innovation; Highest level of service capabilities
- More reliable and efficient infrastructure supporting Voice, Video, Wired and Wireless
- Close vendor relationship for technology roadmap updates and training
- Network High-Availability-protocols that are common and consistent to the entire architecture utilizing industry standards, and best practices

Industry analysts make a strong case for standardizing on one network technology provider:

- Building a tactical network based on low-cost point products and services increases the total cost of ownership (TCO) for most organizations by at least 20 to 35 per cent over a three-year time frame
- Single-vendor innovations are lost in a multi-vendor environment
- Multi-vendor networks increase the focus of IS on operations, not on driving strategic business value. They inherently increase operating expenses and decrease ROI and business value

Gartner Inc., a technology research firm, indicates Cisco Systems has been positioned as a leader for Unified Communications to help organizations facilitate collaboration to quickly adapt to changing conditions, increase productivity, improve the speed of innovation and deliver services across any workspace, securely with optimal quality of service.

In 2003, the conversion of the City's phone system from Centrex to IP Telephony included a complete network refresh. This included setting an unofficial standard for Cisco Systems networking components throughout all networked City (currently 170 in total). Our backbone network infrastructure relies on Cisco Systems switching and routing components, which handles all of the City's network traffic, providing redundancy at the core. Our voice, data, server and applications all rely on consistent, reliable network communications with the appropriate prioritization of voice, data and video traffic to provide the appropriate Quality of Service from end-to-end for each application. Since 2003, Information Services has built upon the network infrastructure to provide new applications and services to support City staff. Implementing a formal standard for networking communications will ensure that Information Services will be able to continue to maximize the value of the City's network infrastructure.

The following Municipalities, School Boards and Health care facilities are some of the local public sector organizations that have implemented Cisco Systems network infrastructure:

<u>City of Mississauga</u>	<u>McMaster University and Medical Centre</u>
<u>City of Kitchener</u>	<u>McMaster Innovation Park</u>
<u>City of Toronto</u>	<u>Mohawk College</u>
<u>City of Brampton</u>	<u>Hamilton Health Sciences (all hospitals)</u>
<u>Region of York</u>	<u>Hamilton Wentworth District School Board</u>
<u>City of Waterloo</u>	<u>Halton Healthcare</u>
<u>City of Cambridge</u>	<u>Sheridan College</u>
<u>City of Guelph</u>	<u>Brock University</u>
<u>County of Wellington</u>	<u>Town of Orangeville</u>
<u>County of Dufferin</u>	<u>Town of Caledon</u>

In summary, the Information Services Division recommends that Cisco Systems be established as the standard for the provisioning of networking communications and hardware. This will:

- Protect the investment, to date in hardware, monitoring tools and staff training
- Simplify integration with other networks and service providers
- Provide simpler administration and operations
- Reduce support and testing costs
- Ensure a more reliable and efficient infrastructure
- Maintain the lowest possible total cost of ownership
- Minimize staff time required for network hardware acquisition
- Minimize financial investment in spare components
- Allow for continuity and consistency of training and interoperability

Selecting this standard will not eliminate competition; many local resellers are authorized to sell Cisco Systems hardware. Multiple responses are received for each request, which ensures the vendors remain competitive in their pricing. Historically, we have seen intense pricing competition from the resellers which have resulted in savings for the City.

**ALTERNATIVES FOR CONSIDERATION:**

(include Financial, Staffing, Legal and Policy Implications and pros and cons for each alternative)

An alternative would involve issuing a Request for Proposal (RFP) for networking components with no manufacturer specified. This may result in a mixed networking environment which may have a negative impact on the Total Cost of Ownership and the infrastructure reliability. It may require additional monitoring software be purchased and maintained. This would require additional training for the staff to become familiar with the new manufacturers equipment and new monitoring tools required. All applications would have to be tested on the new equipment for compatibility.

Networking components are required on an ongoing, on-demand basis for various accommodations projects, additions to the network due to additional networking of devices and replacements over the years and therefore it would be necessary to issue multiple RFQ, RFP's each year. In a mixed networking infrastructure environment, it would be necessary to maintain a spare parts inventory for all manufacturers as parts are not inter-changeable.

This alternative is not being recommended as it would definitely increase the total cost of ownership for our networking devices including switches (core and WAN), routers (core and WAN), Wireless services, IP phones and applications, as well as, any inter-connecting devices and components.

**CORPORATE STRATEGIC PLAN (Linkage to Desired End Results)**

Focus Areas: 1. Skilled, Innovative and Respectful Organization, 2. Financial Sustainability, 3. Intergovernmental Relationships, 4. Growing Our Economy, 5. Social Development, 6. Environmental Stewardship, 7. Healthy Community

N/A.

**APPENDICES / SCHEDULES**

N/A.