ADMINISTRATIVE REPORT

Report Date: March 24, 2009
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RTS No.: 07889
VanRIMS No.: 08-2000-20
Meeting Date: April 7, 2009

TO: Vancouver City Council

FROM: General Manager, Business Planning & Services

SUBJECT: Exploration of Options for Wi-Fi in Civic Buildings

RECOMMENDATION

THAT Council receive this report for information.

GENERAL MANAGER'S COMMENTS

The General Manager concurs with the findings and recommendations contained in this report.

CITY MANAGER'S COMMENTS

The City Manager concurs with the findings and recommendations contained in this report.

COUNCIL POLICY

There is no applicable Council Policy.

SUMMARY

Public access to wi-fi is provided at all Vancouver Public Libraries and at three community centres. This grass roots growth driven by individual Community Centre Associations is likely to increase slowly over time. However, Staff recommends that, if wi-fi is to be extended to all civic buildings, a consistent approach in terms of services, support and policy is required. Since the public also expects wi-fi to be provided free of charge (the café model), then the cost of providing this service would either need to be absorbed by the City, or recovered through increased fees or advertising. Finally, since there are a number of external providers with expertise in building and operating discrete wireless networks, Staff recommends that this service be delivered by an established supplier.

PURPOSE

The purpose of this report is to reply to Council's instruction of January 20, 2009 to report on the options for providing wi-fi capability in civic buildings. A number of City/Park Board owned sites currently offer free public wireless Internet access. This report provides background on the approach taken at these sites and reviews options and costs should the City wish to proceed with expanding access to other civic buildings.

BACKGROUND

On January 20, 2009, Council asked Staff to prepare a report and implementation plan on the cost required to provide public wireless high speed Internet coverage in all Vancouver's civic buildings.

City Staff had not previously investigated implementing public wi-fi specifically for civic buildings but had looked into building a wireless mesh network which would have covered a varying number of City sites, depending on the scope of the implementation. Staff considered two alternative scenarios in previous reports to Council: *1)* a City-wide wi-fi mesh network to be provided free to users[1] and *2)* a 2 km^2 pilot area to be installed in time for the 2010 Olympics[2]. To address Council's directive that the new wireless network be built at no cost to taxpayers, Staff issued a Request for Expressions of Interest (RFEOI) in June 2007 seeking a private-sector partner. None of the responses received from potential suppliers met Council's objectives: most delivered only partial business and technical solutions and none could be implemented without cost to the City. Suppliers proposed a variety of business models involving different risk- and cost-sharing arrangements: the average upfront investment was around ~$1.75M with projected operating costs of ~$300K/year. Most also expected the City to provide access to our fibre network (to 'backhaul' the wireless traffic) and/or to participate as an 'anchor tenant' on the supplier's network. However, the City is not currently in a position to be an anchor tenant because it has no mobile applications ready for immediate implementation and future applications (e.g., field inspections) will require a City-wide wireless network rather than just a pilot area. The City is also contractually prohibited from providing City-wide access to our fibre: much of the network has been built through fibre-for-conduit exchange agreements with established carriers and these agreements do not allow re-selling or re-use of bandwidth. In April 2008, Council therefore approved Staff's recommendation to defer further work on searching for a private partner to co-build and manage a municipal wi-fi network due to the costs and business risks highlighted by supplier responses to the RFEOI[3].

EXISTING WIRELESS ACCESS AT CIVIC BUILDINGS

Although Council decided not to proceed with a costly wireless mesh network, a number of City sites currently offer free Internet access via individual wi-fi hot spots: the Vancouver Public Library offers free wireless access at all 22 branches, as do 3 of the 22 Park Board community centres (Kitsilano, Marpole-Oakridge and Roundhouse). VPL Information Services built and manages its own wireless network. The wi-fi installations at the 3 community

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[1] RTS # 05576, February 2007
[2] RTS # 07386, May 2008
[3] *Request for Expressions of Interest (RFEOI) PS08004 – Community Wireless Broadband Initiative*

centres were initiated and funded by the Community Centre Associations; and were then built and are managed by Park Board community centre staff on a 'best efforts' basis.

The VPL was in a unique position in terms of building its own public wireless network as it already had a separate network in place for public Internet access computers. This 'untrusted' network was built to allow Library patrons to use the Internet without compromising the City's internal network used by VPL staff. The three community centres that provide wireless access to the Internet have also taken the safe approach of creating discrete networks for public and City traffic.

Of the City's current wi-fi sites, the VPL requires wireless users to authenticate with their library card number but does not filter or restrict content. Only one of the three community centres requires any authentication and none filters content. However, at a recent Community Centre Association Presidents' meeting, some Association presidents expressed concerns about patrons surfing inappropriate content in locations where children are present and strongly urged that content filtering be a part of any wider implementation of wi-fi services. In terms of hours of service, the VPL and Roundhouse limit availability to the hours that the centre is open, while the others provide service 7/24 (when the buildings are closed, wireless connection may be available to a limited radius outside).

AT VPL, the initial implementation cost was $115,000 for hardware and consulting services plus about ten days of staff time for installation and setup with annual support costs of about $8,500. VPL staff support the system in house and the VPL IT Help Desk gets about 2 – 3 calls a day from patrons having issues connecting to the network. Staff is only able to provide limited support to patrons due to the variety of hardware in use and the time required to troubleshoot problems.

While some Community Centres have provided public wi-fi through installations by in-house staff, wider implementation of this approach could lead to different implementations, connection procedures and policies at each location. Support and service levels would also vary from location to location and staff time would be required to provide support.

Wireless access at all libraries and community centres is free. In terms of cost recovery, the Roundhouse Community Centre gets its Internet service from Novus in exchange for advertising on the Roundhouse web site and its recreation program brochure, while the Community Associations pay for the service at Kitsilano and Marpole-Oakridge.

ALTERNATIVES/OPTIONS TO EXTEND WI-FI SERVICES TO OTHER CIVIC BUILDINGS

For security reasons, public wi-fi services could not ride on the City's business network. The options for offering a separate wi-fi service in civic buildings fall into the following categories: locations, installation/support and funding.

Locations

Since Staff is already connected to the main City network, the focus of this report will be on providing wireless capability at civic buildings with locations where a significant number of public gather (e.g., community centres and service desks). The cost of providing service would be proportional to the number of sites included in the program and the coverage provided at each site (e.g. whether wi-fi coverage is extended throughout a community

centre or provided at a single hotspot at the main reception area). For estimating purposes, Staff has assumed 40 hotspots across the City: e.g.,

- o City Hall Campus: 3rd floor - Council Chambers and Reception Area; 1st floor - Revenue Services and Engineering Services[4]; East Wing service counters

- o Park Board sites – main administration building, community centres, rinks, pools, golf courses, VanDusen Botanical Garden and Bloedel Conservatory. NB: For community centres that share buildings with libraries, there may be opportunities to extend the VPL wireless coverage to also cover the community centre.

- o Additional sites (e.g., Crossroads) could be added at a future date if required.

Installation Costs and Support Options

Implementing wi-fi in select City locations would require a consistent, planned approach. As the installation, maintenance, and operation of wi-fi hotspots are not part of the City's core business, Staff's recommendation is that, if Council wishes to provide this service, installation and support should be contracted out to a third-party supplier. There are many companies which currently provide this service for hotels, conference centres and cafés in Vancouver.

Initial budgetary estimates received by the City for third-party public wi-fi hotspot providers suggest that for a fully managed and supported service the City might expect to pay about $3,000 for installation and $3,000 per year ongoing cost per location. Third party providers who specialize in this business are familiar with the support, security, and technical issues related to public wi-fi and have the support infrastructure and help desk services to provide optimal support.

In addition to the basic monthly fee per hotspot, suppliers offer a number of options that the City may be interested in, including user authentication, advertising revenue sharing, bandwidth limits and control, extended technical support, and filtering to prevent users visiting sites deemed unacceptable by the City. If the City decides to go ahead with installing wi-fi hotspots in civic buildings, Staff recommends development and implementation of a consistent set of policies for all City hotspots on authentication, filtering and user support.

Staff recommends using a third-party provider to build and manage this service, but if the City were to build and manage its own public access wireless network, high level cost estimates based on VPL's experience would be about $2,000 for installation and $1,000 per year in ongoing cost (monthly Internet feed costs) per location. In addition there would be implementation project costs including project management, consulting/training, and funding for a temporary network technician to perform installations. Assuming a 3 month implementation project to install wi-fi at 40 locations, this would cost about $150,000. It is estimated that ongoing support for 40 sites would cost around $140,000 per year but Corporate IT will also explore a shared services arrangement with VPL as a means of reducing these costs.

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[4] with the potential of moving to Crossroads later in 2009

Funding Options

If the City wishes to offer free access, it will need either to absorb the costs of installation and operation, or try to recover costs via a combination of sponsorship, advertising, and increased fees (e.g., room rentals). Feedback from Parks' staff suggest that, even without a centrally-driven separately funded initiative, the number of Community Associations offering wireless service is likely to continue grow, but at a slow pace and without any likelihood of full adoption, nor with any consistency of service offerings and levels of support across civic buildings.

TECHNOLOGY CONSIDERATIONS

New technological developments indicate that wi-fi may have a limited life span. The high speed and low cost of wi-fi compared to cellular data services was a strong driver for the initial rollout of public wi-fi. But with the decreasing cost of cellular data plans (which should accelerate with increased competition due to the recent sale of spectrum by Industry Canada), the deployment of high speed cellular 3G data services, and increased sales of Smartphones, the growth in use of public wi-fi will very likely decline in the future.

Council asked staff to consider whether the organic growth of wi-fi in the City would supplant the need for the City to provide wi-fi in civic buildings. While it might be possible to connect to wi-fi networks in many places in the city (particularly in areas with high density housing), these networks are private networks that are available because the owners are unaware that they need to secure them to prevent others from using them. When users access these Internet connections, they do so without the permission of the owner who is paying for service.

There are cities where grassroots groups have created public wi-fi networks by allowing the public to connect to a network of privately owned wireless access points. In this model the owner of the wireless access point provides a portion of their Internet connection to the public for free. In Vancouver the VONIC group[5] has attempted to build a network this way, but to date it has only a few wi-fi access points in the city.

If Council's goal is to specifically provide wi-fi in civic buildings, as opposed to just generally increasing the number of locations public wi-fi is available in the city, then even a ubiquitous grassroots wi-fi network would still not provide coverage in most civic buildings due to the distance limitations of wi-fi signals. To address the request contained in the January 20, Council motion, the City would still need to fund, install and support wi-fi hot spot(s) in each civic building where it wanted to provide public wireless access.

FINANCIAL IMPLICATIONS

If the City decides to proceed with building wi-fi hot spots, initial planning estimates indicate that the cost will be in that range of $120,000 to build 40 sites and $120,000 / year to manage those sites. An RFP will be required to select a partner and finalize costs projections. If the City builds its own network for a similar number of sites, the cost could be in the range of $150,000 with annual operating costs of $140,000.

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[5] http://vonic.ca/

Alternatively, Council could decide to select some high-priority locations (e.g., the 3rd floor City Hall) and proceed with a lower cost solution.

PERSONNEL IMPLICATIONS

Should Council decide to proceed with implementing wi-fi capability at civic buildings, Staff recommends outsourcing this service to a third party provider. However, if the City opts to install and operate its own wi-fi hot spots, staff will be required to provide ongoing support (cost and effort to be determined based on the implementation approach).

ENVIRONMENTAL IMPLICATIONS

Concerns have been raised by members of the public about the potential health impacts of operating wireless antennae in public buildings, particularly community centres where there are large numbers of children. There is no consistent evidence to date that wi-fi and WLANs adversely affect the health of the general population. The signals are very low power, typically 0.1 watt (100 milliwatts) in both the computer and the router (access point) and the results so far show exposures are well within the guidelines provided by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) - a non-governmental organization formally recognised by World Health Organization (WHO)[6]. The exposure limits for EMF fields developed by the ICNIRP were developed following reviews of all the peer-reviewed scientific literature, including thermal and non-thermal effects. The standards are based on evaluations of biological effects that have been established to have health consequences. The main conclusion from the WHO reviews is that EMF exposures below the limits recommended in the ICNIRP international guidelines do not appear to have any known consequence on health.[7]

SOCIAL IMPLICATIONS

The January 20, 2009 Council motion noted that providing free public access to the Internet can lead to increased public involvement in government decision making. However, it should be noted that free Internet access – wired or wireless - should be seen as only a first step towards reaching this goal. The technologically disadvantaged also require access to a computer, software and training in order to take advantage of the free network connectivity the City would be providing at Community Centres.

CONCLUSION

There are a number of options for implementing public wi-fi access in civic buildings in terms of locations, services, installation/support and payment/cost recovery options. Staff recommends that Council review these options and provide direction on how to proceed.

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[6] UK Health Protection Agency
http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1199451940308
[7] WHO EMF Standards and Guidelines http://www.who.int/peh-emf/standards/en/