



Memo

To: Dr. Riggle, Superintendent  
From: Marcus Thimm, CTO  
Date: 12/02/2013  
Re: Firewall Refresh

Recommendation:

It is the recommendation to replace two Cisco firewall ASA5520 with two new Juniper SRX3600 firewalls and vGW (virtual firewall) software.

- The Juniper SRX firewall will protect the district's network facing the Internet. Additionally, the SRX is a full-featured network router. We currently do not have routers but need that functionality to use our two separate Internet services.
- The vGW virtual firewall software is a new feature that provides firewall security that is optimized for our VMware ESX virtualization platform. It provides an additional security layer for each of the virtualized server systems.

The Juniper SRX 3600 firewalls are capable to process up to 10GB/sec connections – this is needed to handle two 1 GB/sec connections on each firewall. It allows for Internet capacity upgrades up to 10 GB/sec without firewall replacements, and there are modules slots for additional services that can be added when the need arises.

The acquisition cost for two Juniper SRX 3600 firewalls and vGW software is:	\$82,380.48
Support, Licensing and Maintenance for 5 years of service:	\$85,152.30
<b>Total cost for 5 years \$167,532.78 or \$33,506.55 per year.</b>	

The equipment acquisition cost is budgeted in our long-range technology plan and financed over 5 years. Annual lease payments are approximately \$16,476.10 plus applicable interest and the annual support, licensing and maintenance costs of \$17,030.46 are budgeted in the tech departments software and licensing budget line item.

Cost of professional services for turnkey implementation	\$11,000.00
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The professional services costs are covered in the tech department's consulting services budget line item. Once the SRX firewalls are implemented we will explore additional functionality such as "next-generation firewall services" they can provide. We will brief the board at a later time to discuss benefits and costs of those enhancements.

## Background:

The district's Cisco firewalls were sufficient for Internet bandwidth capacities of up to 450 MB/s. With our implementation of 2 x 1 GB/sec Internet services these firewalls have become a service bottleneck, as they would not allow bandwidth to exceed their limits of 450MB/sec.

The district therefore needs to replace/upgrade its existing Cisco firewalls. Additionally, these firewalls have reached the end of their useful life of 5 years of service and are up for replacement under the district's long-range technology refresh plan.

The use of separate Internet service providers – Hurricane Electric and Comcast - requires use of the BGP routing protocols to allow both Internet services to be usable jointly and provide the desired redundancy. This BGP protocol requires routing capabilities, which we currently do not have.

The Juniper solution provides firewall support for the planned Internet bandwidth and future increases thereof. It also provides routing functionality and BGP protocol support through its full-fledged router feature set.

During the firewall and router product evaluation we reviewed Gartner reports, surveyed peer districts, and evaluated and piloted several vendor solutions. The list of products included: Cisco ASA 5585 firewall, Cisco ASR 1002 routers, Juniper SRX 1400 and SRX 3600, Dell SonicWall Supermassive 9000 and 10,000 series, PaloAlto, and Fortinet.

We had Dell, Juniper and Cisco equipment for evaluation and as well as participated in vendor web demos and meetings.

The next page shows the various vendor products and services with 5-year support costs. The smaller Juniper and Dell solutions do not meet our requirements but have been included for reference. The smaller Cisco solution meets the near term needs but will require licensing and module upgrades to fully support 10 GB throughput processing, thus increasing cost. To support IDS/IPS (Intrusion Detection and Prevention) functionality both Cisco solutions require a separate appliance and additional licensing whereas the Juniper solution includes this functionality.

The Juniper solution is an integrated router and firewall system. Other vendors provide only firewalls or routers as separate systems. To make the systems comparable we choose to use the Cisco routers for all vendors that do not provide routing. The Juniper vGW virtual firewall is unique to Juniper and is added to all other vendors, as they do not provide similar functionality.

VPN is the support cost to provide Virtual Private Network access currently part of existing Cisco firewall. Some vendors require separate VPN solution. Cost reflects those separate products.

AGENDA ITEM # 6.9



	<u>Juniper</u> <u>SRX 1400*</u>	<u>Juniper</u> <u>SRX 3600</u>	<u>Cisco</u> <u>5585X-S20</u>	<u>Cisco</u> <u>5585-S20P20XK9</u>	FortiGate 3600C	Dell SonicWall 9600*	Dell SonicWall 10600
Router Hardware			\$46,200.00	\$46,200.00	\$46,200.00	\$46,200.00	\$46,200.00
Firewall Hardware	\$42,151.20	\$44,553.60	\$46,854.00	\$88,913.00	\$78,477.38	\$43,677.12	\$125,000.00
10G upgrade modules		\$8,594.88					
5 Year Service	\$29,868.00	\$36,552.30	\$72,460.00	\$176,715.00	\$58,860.00	\$188,849.60	\$279,450.00
<i>VGW</i>	<i>\$29,232.00</i>	<i>\$29,232.00</i>	<i>\$29,232.00</i>	<i>\$29,232.00</i>	<i>\$29,232.00</i>	<i>\$29,232.00</i>	<i>\$29,232.00</i>
<i>VGW 5 Years Service</i>	<i>\$48,600.00</i>	<i>\$48,600.00</i>	<i>\$48,600.00</i>	<i>\$48,600.00</i>	<i>\$48,600.00</i>	<i>\$48,600.00</i>	<i>\$48,600.00</i>
<b>Subtotal</b>		<b>\$167,532.78</b>	<b>\$243,346.00</b>	<b>\$389,660.00</b>	<b>\$261,369.38</b>	<b>\$356,558.72</b>	<b>\$528,482.00</b>
Installation Services	\$11,000.00	\$11,000.00			\$10,000.00	\$16,000.00	\$16,000.00
VPN functionality	\$17,500.00	\$17,500.00			\$17,500.00		
Grand Total	\$178,351.20	\$196,032.78	\$197,146.00	\$343,460.00	\$242,669.38	\$326,358.72	\$498,282.00
Firewall, Router, virtual firewall Juniper vGW, VPN services							
firewall/router only costs		\$53,148.48	\$93,054.00	\$135,113.00	\$124,677.38	\$89,877.12	\$171,200.00
5-year Supp/Maint/Lic		\$36,552.30	\$72,460.00	\$176,715.00	\$58,860.00	\$188,849.60	\$279,450.00
<b>Subtotal:</b>		<b>\$89,700.78</b>	<b>\$165,514.00</b>	<b>\$311,828.00</b>	<b>\$183,537.38</b>	<b>\$278,726.72</b>	<b>\$450,650.00</b>

The Juniper solution is the lowest cost “Firewall/Router” option with the broadest range of security services. It also scales at lower costs than other vendor systems. Additionally, the Juniper vGW virtualized firewall is a unique firewall security solution for our virtualized server systems, adding another important layer of security to our systems.