

**City of Philadelphia
Office of Innovation and Technology**

**Request for Information
Core Network Upgrade**

Date: September 13, 2013

**1234 Market St
18th Floor
Philadelphia, PA 19107**

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PROJECT SCOPE AND OBJECTIVES

The purpose of the Core Network Upgrade project is to replace the City's current network (CityNet) core infrastructure with new equipment. It is expected that this upgrade will provide redundant connectivity and the capability to increase bandwidth on demand across independent paths between the (6) network core switches. The upgrade is also expected to ensure reliability, high performance, quality of service and optimize of service when accessing intranet, internet, system applications as well as VOIP and Video Conferencing and incorporate an MPLS solution across the new core.

Our objective with this RFI is to gather feedback from networking vendors regarding the best approaches, technologies, architectures and products with rough order of magnitude (RoM) cost requirements to meet our specifications.

BACKGROUND

Citynet was engineered as a flat network across 13 buildings which is the "core" environment and reaching out over multiple transmission means to over 200 remote buildings city wide. The core runs over redundant fiber rings (Optera) and there are multiple transmission means to the remote locations including Copper (Frame , T1, T3) as well as TLS (10 and 100mb and 1gb) and Fiber . The core data center provides 10gb connectivity to the over 500 node server environment. The City also supports 1gb video surveillance to the Police department that is a private network independent of the core while still part of the overall infrastructure.

As the network services the City provides grows, we wish to install a system that will provide efficiency, capacity and resiliency for the current and emerging technologies.

SUGGESTED SOLUTIONS AND SUBMISSIONS

The vendor's proposed equipment/solution must meet or exceed the following list of requirements, or if it does not meet the requirements explain why and the possible benefit of the proposed requirement adjustment.

In some cases (where noted within requirements list) vendor's opinion regarding best practices and feature use is requested.

Vendor must also fully disclose and explain their licensing model and state if each of the proposed parts or features are part of the base license or require additional licensing.

Vendor is also expected to fully disclose and explain their support structure as it relates to the proposed hardware, licenses and warranty.

We also request that responders also submit a proposed network topology diagram.

The proposed equipment/solution must meet the following requirements:

Switching:

1. 802.1q VLAN Trunking
2. Per VLAN Rapid Spanning tree
3. Support for over 150VLANs with 100+ Trunk ports
4. Please define maximum number of trunks per line card and maximum number of VLANs per each trunk (i.e. blade 10 can support 10 trunks while send and receiving all 100 VLANs per trunk OR blade 10 can support 48 trunks while send and receiving 2 VLANs per trunk)
5. Support for Interface bonding between two physical chassis (i.e. etherchannel, LACP, etc., with link 1 on chassis A and link 2 on chassis B, chassis A and B are connected)
6. Will the proposed solution minimize STP in the core? Explain.

Routing:

1. Interior Gateway routing protocol support (OSPF, etc...)
2. IPv4 routing
3. IPv6 Routing with defined feature set supported
4. Support for Routed virtual interface or Switched Virtual interface (IE Interface VLAN 12)
5. Support for a fault tolerant gateway address (VRRP, HSRP, etc...)

Layer2 and Layer3 QOS support:

1. Layer 2 bandwidth reservations to ESX host in 4+ different groups
2. Bandwidth reservations by VLAN (service console, vmotion, NFS, all other traffic)

MGMT Features:

1. TACACS+ for user authentication
2. User role based access (prefer with TACACS+)
3. SNMP, SYSLOG, SSH, Flow data support
4. Support for configuration rollback, and the device keeping local configuration archive (or appropriate alternatives).

Chassis based redundancy :

1. Separation of control plane and data-plane
2. Dual Supervisors

3. Dual Power supplies
4. Support for hitless code upgrades (if solution does not support this explain)

FCoE:

1. Define plans or support for FCoE. Detail should include but not limited to:
2. FCoE edge support
3. FCoE multi-hop (beyond 1st switch)
4. Dense-mode | Sparse-mode
5. If vendor does not foresee FCoE as a viable future solution, vendor should suggest an alternative direction and include the appropriate solution.

Misc:

1. Proposed solution must include 10 /100mb, /1gb 10gb supportable to 40gb and above
2. Does the proposed solution support top of rack switching? (rack quantities listed below)
Main site: 17 DataCenter cabinets with 48 port copper in each plus fiber uplinks
Remote site: 6 DataCenter cabinets with 48 port copper in each plus fiber uplinks
3. Does the proposed solution support flexible ports (i.e. change SFP optics to switch a 1 gig port to 10 gig port etc)?
Main site: 40, 10gig or higher ports needed
Remote site: 20, 10gig or higher ports needed
4. Is the proposed solution compatible with Juniper edge switches?
5. Will proposed solution have line rate forwarding (VPN) on every port? If not, vendor must define oversubscription.

COST

Vendor is expected to include line item list pricing for all proposed solutions and include any government discounts that would be extended to the City.

RETURN DATE

We request that all responses be sent to lmr@phila.gov by 9/27/13.

CONFIDENTIALITY

All information included in this RFI is confidential and only for the recipient knowledge. No information included in this document or in discussions connected with this document shall be disclosed to any other party.