

# BILOXI PUBLIC SCHOOL DISTRICT



## Ethernet Switches

*Request for Proposals  
E-Rate 2015-2016 - Internal Connections*

Submit Proposals To:

Purchasing Department  
Attn: Kassie Bourque  
160 St. Peter Street  
Biloxi, MS 39530  
or [Bids@biloxischools.net](mailto:Bids@biloxischools.net)



Biloxi Public Schools (BPS) is seeking proposals to upgrade and replace the network switches for 8 of our school campus locations.

- This RFP is for equipment only. No installation services are being sought.
- The purchase of this item is dependent upon the Biloxi School District receiving approval through the Federal E-Rate program. No purchase will be approved before such approval is received and no purchase will be made without such approval.
- The use of brand name specifications or vendor specific part numbers is to provide prospective vendors with product standards and/or guidelines for equipment needed; all equipment meeting or exceeding the brand name specifications will be given equal consideration. Any substitution must be approved by the Biloxi Schools Technology Department in advance.
- Biloxi Public Schools will review all responsive proposals and determine the successful proposal based on the fee proposed and your equipment's ability to meet or exceed the minimum specs.
- All data found in this RFP and associated documents are considered to be confidential information. Further, data gathered as a result of meetings and walk-through visits is considered to be confidential information. This confidential information shall not be distributed outside of organizations directly related to the contractor without expressed, written approval. Further, all data submitted by prospected contractors will be treated as confidential and proprietary; it will not be shared outside the vendor-evaluation committee.

### **Bid Submittals:**

1. Each bid is to list all labor, material, and hardware costs (where applicable) in an itemized fashion. The detail is to include itemized unit pricing, cost per unit, and extended prices for each of the material and hardware components as well as the specific labor functions.
2. There is also to be a scope of work provided that details all of the functions to be provided by the contractor for the project.
3. Bids will be submitted to:

Purchasing Department  
Attn: Kassie Bourque  
160 St. Peter Street  
Biloxi, MS 39530 or  
[Bids@biloxischools.net](mailto:Bids@biloxischools.net)

**Requirements for Submission:**

- Signed "Requirements for Submission" page.
- Total bid will include pricing breakdown per campus and total bid pricing will equal the sum total of all campus pricing.
- Product substitutions must be made in equal quantities unless an adequate demonstration of the viability of the product can be shown. These must be made in advanced by scheduling a demonstration with Mike Jennings before February 12, 2015.
- This project is based on receipt of E-Rate funding. Vendor agrees to all E-Rate requirements, invoicing, and payment terms.
- BPS is seeking a multi-year agreement, up to 36 months, to allow for the E-Rate funding process.
- Vendors must be a certified partner with the manufacturer.
- Bids must include warranty for one year after installation.
- All parts and materials must be new (not remanufactured or reused) and in the original manufacturer's packaging.
- Each firm will submit two itemized bids:
  - The first will contain listing of parts that are eligible under E-Rate.
  - The second will be everything that is ineligible. Each firm is required to ascertain what is and is not eligible.
- All bids must be received by 2:00 PM on **February 13, 2015**.
- Bids must include all necessary related equipment to include but not limited to interconnects, licensing, shipping, delivery, etc.
- The RFP is dependent on E-Rate funding or Biloxi School Board of Trustees approval, if E-Rate funding appears unlikely.
- I understand that BPS may remove the Nichols and/or Lopez sites from implementation based on the status of these schools at project commencement date.

Having examined the specifications on the items described on the attached pages, my firm agrees that if my proposal is accepted by the School Board, my firm will accept an order at the prices bid and these prices will remain in effect until the order is complete. Prices bid are on items as specified or of equal quality, unless so indicated. I understand that I may be required to remove items delivered to the school district at my cost and refund the cost of said items, if they do not meet specifications. I agree that, if I am the winning bidder, I will not submit invoices or request payment until the order is complete.

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Signature

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Company

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Name (Typed or Printed) & Title

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Street or P.O. Box

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Phone Number

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City, State, Zip

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Fax Number

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Email address

***All switching equipment must meet or exceed the following requirements.***

**Switch Requirements:**

Biloxi Public School District is looking to architect its campus using the most advanced technology currently available on the market. With the intent to be able to use the selected products for minimally 5-years, Biloxi Public School District expects the respondents to respond with the intent of allowing Biloxi Public School District to use the selected equipment for as much as 7 to 10-years. It is strongly encouraged that all versions of recommended product consist of the most current product lines available – not versions of older technology that simply have new or revised components. Non-Compliance, which will be subjective only by Biloxi Public School District evaluators, will result in a non-contestable disqualification and immediate elimination from consideration.

The equipment for bid should be capable of scaling to support education applications, which may include variations of desktop virtualization, multiple (5+) latency/bandwidth sensitive applications on the same infrastructure, and 10GbE/40GbE connections without additional hardware upgrades. The network should be capable of scalability using IPv4 and IPv6 services and scale port speeds to 10GbE and 40GbE.

Biloxi Public School District is requesting campus core switches that will serve as the future collapsed Layer3 routers for each site. Campus Core Switch must support Layer 3 IPv4 and IPv6 routing, as well as have support for dynamic routing protocols such as OSPF, BGP, and PIM. The switches should be line rate, non-oversubscribed forwarding performance at L2 and L3 on all ports. All ports, minimally 24 ports of 1GE and 8 ports of 10GE connectivity, with only optic replacement and incidental configuration file changes required for moving between the two data rates.

**I. Campus Core Switches**

- a. **Chassis High Availability Features:** Hitless stack failover (if deployed in a stacked configuration), redundant power option.
- b. **Oversubscription:** This switch must be proposed, designed, and architected to be line-rate, non-oversubscribed in a fully meshed, 100% port utilized architecture – for all ports counted/requested in the switch – measured in “Gigabits per Second” (Gbps). Distributed switching from Port to Port and within a stack is required. However, the bandwidth for port-to-port switching cannot be used in the port count to be “non-oversubscribed”. Biloxi Public School District is expecting that any port can talk to any other port on the switch without being oversubscribed.
- c. **Stack Performance:** Bandwidth between stacked switches in this class should be at least 160GbE half-duplex (or 320GbE full-duplex).
- d. **Forwarding Performance:** This switch must also be proposed, designed, and architected to be line-rate, non-oversubscribed with respect to forwarding performance – measured in “Millions of Packets per Second” (Mpps). It is generally acceptable that a single 1GE ports should be able to forward 1.4 to 1.5 Mpps for either IPv4 or IPv6 traffic. If there is a difference in forwarding capacity for traffic types, the responding vendor should define the performance of the chassis and all included ports whereby all traffic, IPv4 and IPv6, are forwarded at

the equal rates. The responding vendor should provide a clear calculation of forwarding performance including packet sizes used in calculations, based on the ports included in the proposed chassis, assuming both IPv4 and IPv6 traffic types. Latency numbers should be provided for the purposes of evaluating performance of L2/L3 traffic through the core platform, including latency information for frames with MTU of 8000 Bytes or higher.

- e. **Application QOS Support:** Switches should support at least 8 hardware queues per port for mapping at least 5 separate applications (e.g. VoIP, Interactive Video, IP Cameras, Latency sensitive applications, etc.) to distinct, individual 802.1p priorities. 802.1p priorities or HW queues must not be shared for at least 5 unique applications on the network.
- f. **Network Visibility:** This solution should have the embedded ability to monitor traffic on the network on any port without performance or resource impact to the networking equipment itself, scaling from each individual 10/100/1000 port to 10GE, without additional hardware or software. Always on monitoring of some or all ports should not increase the CPU of networking equipment, nor should dedicated ports be required for the monitoring solution. Data should be presented in an open standard format so that the Biloxi Public School District has option of using 3<sup>rd</sup> party tools to collect, store, and analyze this information. Network Visibility should include Layer 2, Layer 3, Layer 4 and Layer 7 Information as well as SNMP and RMON statics.

## II. Edge Switches

- a. **Edge Switches:** The edge switches should be line rate, non-oversubscribed forwarding performance at L2 and L3 on all ports. All ports, minimally 24 ports of 1GE or 4 ports of 10GE connectivity, with only optic replacement and incidental configuration file changes required for moving between the two data rates. Biloxi Public School District may want to use dynamic routing to the edge closet. The switches must include support for static routing and OSPF. The Edge Switch must be a fixed configuration switch.
- b. **STACK PERFORMANCE:** Bandwidth between stacked switches in this class should be at least 20GbE half-duplex (or 40GbE full-duplex).
- c. **APPLICATION QOS SUPPORT:** Switches should support at least 8 hardware queues per port for mapping at least 5 separate applications (e.g. VoIP, Interactive Video, IP Cameras, Latency sensitive applications, etc.) to distinct, individual 802.1p priorities. 802.1p priorities or HW queues must not be shared for at least 5 unique applications on the network.
- d. **UPLINK SPEEDS:** Switches support at least 2 10GbE uplinks out of each switch for future use. It is expected that these ports can be used concurrently with stacking (that is, that stacking and 10GbE uplinks are NOT mutually exclusive).
- e. **NETWORK VISIBILITY:** This solution should have the embedded ability to monitor traffic on the network on any port without performance or resource impact to the networking equipment itself, scaling from each individual 10/100/1000 port to 10GE, without additional hardware or software. Always on monitoring of some or all ports should not increase the CPU of networking equipment, nor should dedicated ports be required for the monitoring solution. Data should be presented in an open standard format so that the Biloxi Public

School District has option of using 3<sup>rd</sup> party tools to collect, store, and analyze this information. Network Visibility should include Layer 2, Layer 3, Layer 4 and Layer 7 Information as well as SNMP and RMON statics.

## Campuses To Be Bid:

### 1. Biloxi High School

1845 Richard Drive  
Biloxi, MS 39532

QTY	ITEM	DESCRIPTION
1	ICX6610-48P-PE	48 port 1G RJ45 PoE+, plus 8 x 1G SFPP uplinks ports(upgradeable to 10G). 4 x 40G stacking ports. Exhaust air flow. premium S/W
1	RPS16-E	ICX6610 PoE 1000W AC PSU, exhaust airflow
1	ICX6610-FAN-E	Exhaust direction FAN for the ICX6610
2	ICX6610-10G-LIC-POD	License to upgrade 4 ports of 1G SFPP uplink to 10G speeds
1	ICX6610-SVL-RMT-1	ESSENTIAL REMOTE SUPPORT, ICX 6610 24P & 48P
9	ICX6450-48P	48-port 1G Switch PoE+ 780W, 2x1G SFP+ (upgradable to 10G) & 2x1G/10G SFP+ Uplink/Stacking Ports
9	ICX6450-2X10G-LIC-POD	ICX 6450 2X10G Capacity Based License, Upgrade 1G Uplink/Stacking Ports to 1G/10G

### 2. Biloxi Junior High School

1424 Father Ryan Avenue  
Biloxi, MS 39530

QTY	ITEM	DESCRIPTION
1	ICX6610-48P-PE	48 port 1G RJ45 PoE+, plus 8 x 1G SFPP uplinks ports(upgradeable to 10G). 4 x 40G stacking ports. Exhaust air flow. premium S/W
1	RPS16-E	ICX6610 PoE 1000W AC PSU, exhaust airflow
1	ICX6610-FAN-E	Exhaust direction FAN for the ICX6610
2	ICX6610-10G-LIC-POD	License to upgrade 4 ports of 1G SFPP uplink to 10G speeds
1	ICX6610-SVL-RMT-1	ESSENTIAL REMOTE SUPPORT, ICX 6610 24P & 48P
3	ICX6450-48P	48-port 1G Switch PoE+ 780W, 2x1G SFP+ (upgradable to 10G) & 2x1G/10G SFP+ Uplink/Stacking Ports
3	ICX6450-2X10G-LIC-POD	ICX 6450 2X10G Capacity Based License, Upgrade 1G Uplink/Stacking Ports to 1G/10G
3	10G-SFPP-TWX-0101	DIRECT ATTACHED SFPP COPPER,1M,1-PACK

### 3. Gorenflo Elementary

771 Elder Street

Biloxi, MS 39530

QTY	ITEM	DESCRIPTION
1	ICX6610-48P-PE	48 port 1G RJ45 PoE+, plus 8 x 1G SFPP uplinks ports(upgradeable to 10G). 4 x 40G stacking ports. Exhaust air flow. premium S/W
1	RPS16-E	ICX6610 PoE 1000W AC PSU, exhaust airflow
1	ICX6610-FAN-E	Exhaust direction FAN for the ICX6610
2	ICX6610-10G-LIC-POD	License to upgrade 4 ports of 1G SFPP uplink to 10G speeds
1	ICX6610-SVL-RMT-1	ESSENTIAL REMOTE SUPPORT, ICX 6610 24P & 48P
2	ICX6450-48P	48-port 1G Switch PoE+ 780W, 2x1G SFP+ (upgradable to 10G) & 2x1G/10G SFP+ Uplink/Stacking Ports
2	ICX6450-2X10G-LIC-POD	ICX 6450 2X10G Capacity Based License, Upgrade 1G Uplink/Stacking Ports to 1G/10G

### 4. Jeff Davis Elementary

340 St. Mary Boulevard

Biloxi, MS 39530

QTY	ITEM	DESCRIPTION
1	ICX6610-48P-PE	48 port 1G RJ45 PoE+, plus 8 x 1G SFPP uplinks ports(upgradeable to 10G). 4 x 40G stacking ports. Exhaust air flow. premium S/W
1	RPS16-E	ICX6610 PoE 1000W AC PSU, exhaust airflow
1	ICX6610-FAN-E	Exhaust direction FAN for the ICX6610
2	ICX6610-10G-LIC-POD	License to upgrade 4 ports of 1G SFPP uplink to 10G speeds
1	ICX6610-SVL-RMT-1	ESSENTIAL REMOTE SUPPORT, ICX 6610 24P & 48P
4	ICX6450-48P	48-port 1G Switch PoE+ 780W, 2x1G SFP+ (upgradable to 10G) & 2x1G/10G SFP+ Uplink/Stacking Ports
4	ICX6450-2X10G-LIC-POD	ICX 6450 2X10G Capacity Based License, Upgrade 1G Uplink/Stacking Ports to 1G/10G

**5. Popp's Ferry Elementary**

364 Nelson Road  
Biloxi, MS 39531

<b>QTY</b>	<b>ITEM</b>	<b>DESCRIPTION</b>
1	ICX6610-48P-PE	48 port 1G RJ45 PoE+, plus 8 x 1G SFPP uplinks ports(upgradeable to 10G). 4 x 40G stacking ports. Exhaust air flow. premium S/W
1	RPS16-E	ICX6610 PoE 1000W AC PSU, exhaust airflow
1	ICX6610-FAN-E	Exhaust direction FAN for the ICX6610
2	ICX6610-10G-LIC-POD	License to upgrade 4 ports of 1G SFPP uplink to 10G speeds
1	ICX6610-SVL-RMT-1	ESSENTIAL REMOTE SUPPORT, ICX 6610 24P & 48P
7	ICX6450-48P	48-port 1G Switch PoE+ 780W, 2x1G SFP+ (upgradable to 10G) & 2x1G/10G SFP+ Uplink/Stacking Ports
7	ICX6450-2X10G-LIC-POD	ICX 6450 2X10G Capacity Based License, Upgrade 1G Uplink/Stacking Ports to 1G/10G

**6. North Bay Elementary**

1825 Popp's Ferry Road  
Biloxi, MS 39530

<b>QTY</b>	<b>ITEM</b>	<b>DESCRIPTION</b>
6	ICX6610-48P-PE	48 port 1G RJ45 PoE+, plus 8 x 1G SFPP uplinks ports(upgradeable to 10G). 4 x 40G stacking ports. Exhaust air flow. premium S/W
6	RPS16-E	ICX6610 PoE 1000W AC PSU, exhaust airflow
6	ICX6610-FAN-E	Exhaust direction FAN for the ICX6610
12	ICX6610-10G-LIC-POD	License to upgrade 4 ports of 1G SFPP uplink to 10G speeds
6	ICX6610-SVL-RMT-1	ESSENTIAL REMOTE SUPPORT, ICX 6610 24P & 48P
13	ICX6450-48P	48-port 1G Switch PoE+ 780W, 2x1G SFP+ (upgradable to 10G) & 2x1G/10G SFP+ Uplink/Stacking Ports
13	ICX6450-2X10G-LIC-POD	ICX 6450 2X10G Capacity Based License, Upgrade 1G Uplink/Stacking Ports to 1G/10G
10	10G-SFPP-TWX-0101	DIRECT ATTACHED SFPP COPPER,1M,1-PACK

**7. Nichols School**

590 Division Street

Biloxi, MS 39530

<b>QTY</b>	<b>ITEM</b>	<b>DESCRIPTION</b>
1	ICX6610-48P-PE	48 port 1G RJ45 PoE+, plus 8 x 1G SFPP uplinks ports(upgradeable to 10G). 4 x 40G stacking ports. Exhaust air flow. premium S/W
1	RPS16-E	ICX6610 PoE 1000W AC PSU, exhaust airflow
1	ICX6610-FAN-E	Exhaust direction FAN for the ICX6610
2	ICX6610-10G-LIC-POD	License to upgrade 4 ports of 1G SFPP uplink to 10G speeds
1	ICX6610-SVL-RMT-1	ESSENTIAL REMOTE SUPPORT, ICX 6610 24P & 48P
4	ICX6450-48P	48-port 1G Switch PoE+ 780W, 2x1G SFP+ (upgradable to 10G) & 2x1G/10G SFP+ Uplink/Stacking Ports
4	ICX6450-2X10G-LIC-POD	ICX 6450 2X10G Capacity Based License, Upgrade 1G Uplink/Stacking Ports to 1G/10G

**8. Lopez School**

140 St. John Avenue

Biloxi, MS 39530

<b>QTY</b>	<b>ITEM</b>	<b>DESCRIPTION</b>
1	ICX6610-48P-PE	48 port 1G RJ45 PoE+, plus 8 x 1G SFPP uplinks ports(upgradeable to 10G). 4 x 40G stacking ports. Exhaust air flow. premium S/W
1	RPS16-E	ICX6610 PoE 1000W AC PSU, exhaust airflow
1	ICX6610-FAN-E	Exhaust direction FAN for the ICX6610
2	ICX6610-10G-LIC-POD	License to upgrade 4 ports of 1G SFPP uplink to 10G speeds
1	ICX6610-SVL-RMT-1	ESSENTIAL REMOTE SUPPORT, ICX 6610 24P & 48P
3	ICX6450-48P	48-port 1G Switch PoE+ 780W, 2x1G SFP+ (upgradable to 10G) & 2x1G/10G SFP+ Uplink/Stacking Ports
3	ICX6450-2X10G-LIC-POD	ICX 6450 2X10G Capacity Based License, Upgrade 1G Uplink/Stacking Ports to 1G/10G