# Request for Proposals # 18-18-18

MOSS POINT SCHOOL DISTRICT

**Name of Proposal:** **CTE Wireless Access Points, Switches & Cabling**

**Purpose:** **To install cabling, switches and access points to all schools to make the campuses 100% wireless.**

**The Moss Point School District desires to purchase cabling, switches, and wireless access points to make all schools campuses Wi-Fi accessible.**

**Selection Schedule**

Questions must be submitted in email to Brian Bowman bjbowman@mpsdnow.org Allow for 24 hours for a response.

| | |
|---|---|
| RFP Released | **December 6th, 2017** |
| Final Day for Questions | **January 10th , 2018** |
| Bidder's Conference (Optional) | **January 3rd 2018 9 A.M.** |
| Response Deadline – Bids Close | **January 12th, 2018 – Bids must be mailed to or hand delivered no later than 2pm. Bids will be opened at 2pm the same day.** |
| Bid Opening | **January 2018** |
| Evaluation of bids | **February Board Meeting** |

**Submit Proposal to:**

**Technology**

**Administrative Building**

**4924 Church Street**

**Moss Point, MS 39563**

**Note:** Please submit (1) **one original** and (1) **one copy** of RFP. No faxed or emails RFPS will be acknowledged or allowed. Please enclose RFP proposal in a sealed envelope with the vendors return address, RFP Number and title of proposal. Mail or hand deliver to the submit proposal address listed above, no later than 2pm **January 12th, 2018**.

**RFP Specific Response Requirements**

Bidders must submit a description of their company's experience, qualifications, and the technical certifications of the personnel responsible for completion of the project. This should be no more than one page.

Bidders must submit the names and contact information for three customers who can provide specific references for the installation of building-wide Wi-Fi installations of Meraki or equivalent hardware and infrastructure.

1. Bids must be delivered to the Technical Contact by 2pm on **January 12th, 2018**
2. Questions must be submitted via email to the Technical Contact, telephone calls will not be accepted.

**CRITERIA FOR SELECTION**

MPSD will utilize the following criteria (based as the basis for the proposal evaluations and selection).

| Factor | Weight |
|---|---|
| Price of the E-Rate ELIGIBLE goods and services | 25% |
| Price of Other costs | 10% |
| Prior experience with the District | 20% |
| Company provides all services (no sub-contractors) | 25% |
| Preference to Mississippi based companies | 20% |
| Total | 100 |
| | |
| | |
| | |

**CONTRACT TERMS**

The initial term of the contract term will begin July 1, 2018 and end June 30, 2019. Contract should provide for extensions to align with service delivery deadline extension approvals granted by the Universal Service Administrative Company (USAC). **Initiation of the contract is dependent on E-Rate funding; in the event E-Rate does not fund the project then the contract will be null and void. The district reserves the right to waive the ERATE funding requirement.**

**BID SUBMISSION-EXCEL SPREADSHEET TEMPLATE REQUIRED**

Vendors shall use the Excel spreadsheet provided as part of this RFP to complete their response. All columns defined in the spreadsheet must be completed. Zero (0) should be entered in any column for which there is no cost. Vendors may add columns if they deem it necessary to provide accurate cost information. Vendors may add rows if there is an additional item needed for the suggested solution. No columns or rows may be deleted. Any rows or columns added should be highlighted and explained with supporting documentation.

Bidders must provide the E-rate eligible portion (0% - 100%) of all items. Bidders must read and understand the FCC E-Rate Eligible Services List for FY2016 - http://www.usac.org/sl/applicants/beforeyoubegin/eligible-services-list.aspx - and know the product E-Rate eligibility per the manufacturer for any item submitted for bid by the service provider.

Vendors must include a printed copy of the completed Excel spreadsheet with their proposal response. Vendors must include **ONE** electronic copy in .xls compatible format on media.

References to brand names, model numbers, or other descriptions are made to establish a required level of quality and functional capabilities and are not intended to exclude other manufacturers. Comparable products of other manufacturers will be considered if proof of comparability, equivalence, and compatibility is contained in the proposal. Vendors, if proposing other than specified, are to clearly identify the manufacturer and the model number and must provide written, complete justification as to how the product complies with all specifications outlined within this RFP and how the product integrates with existing devices as well as the complete list of manufacturer published specifications related to the requested products. It shall be the responsibility of the bidders to furnish descriptive literature with their proposal such that specifications, catalog pages, brochures or other data will provide an adequate basis for verifying the quality and functional capabilities of the product offered. Failure to provide this data will be considered valid justification for rejection of the proposal.

Unless otherwise specified, vendors shall provide everything required to make the devices, software, appliances, installation, etc. 100% operational.

**E-RATE COMPLIANCE**

It is expected that the awarded service provider shall be in compliance with rules and regulations of the Universal Services Support Mechanism for Schools and Libraries ("E-Rate Program") administered by the Universal Service Administrative Company (USAC). All charges for services provided during the period July 1, 2018 through June 30, 2018 for recurring services or July 1, 2018 through June 30, 2019 for non-recurring services should be billed and invoiced to both the District and SLD following USAC's invoicing procedures for E-rate funding year 2018.

The Service Provider is responsible for providing a valid SPIN (Service Provider Identification Number) at the time the bid is submitted. See: http://www.usac.org/sl/service-providers/step01/default.aspx.

The service provider is responsible for providing an FCC Registration Number with their proposal and evidence of being in green light status. See: https://fjallfoss.fcc.gov/coresWeb/publicHome.do

**DISQUALIFICATION:**
**Any potential bidder found to be in Red-Light Status will be disqualified from participation in the bidding process and will be considered non-responsive**.

**FAILURE TO PROVIDE A VALID SERVICE PROVIDER IDENTIFICATION NUMBER (SPIN) and FCC REGISTRATION NUMBER WILL RESULT IN DISQUALIFICATION OF BID AWARDS FOR E-RATE ELIGIBLE GOODS AND SERVICES.**

After the FCC Form 471 including funding requests associated with the awarded service provider's SPIN is filed by the District for FY 2018, the awarded service provider must file a Service Provider Annual Certification Form (SPAC-Form 473) for E-Rate funding year 2018.

All Service Providers will be responsible for procuring the approved E-rate discount amount from USAC using the Service Provider Invoicing ("SPI"- Form 474) method unless otherwise directed by the District. The District may utilize the reimbursement (Form 472) method at its sole option.

In the event of questions during the E-Rate program integrity assurance (PIA) review process, the successful service provider is expected to reply within 3 business days to questions associated with their proposal.
The Service Provider shall send copies of ALL forms and invoices submitted to USAC to the District for their records.

The awarded service provider(s) must agree to retain all relevant documentation related to the E-rate funding requests associated with their SPIN for a period of at least TEN years after the last day of service delivered. Furthermore, the awarded service provider must certify that they will retain all documents necessary to demonstrate compliance with the statute and Commission rules regarding the application for, receipt of, and delivery of services receiving schools and libraries discounts, and that if the District is audited, the service provider will make such records available to the District. All awarded service providers acknowledge that they may be audited pursuant to participation in the schools and libraries program.

References to brand names, model numbers, or other descriptions are made to establish a required level of quality and functional capabilities and are not intended to exclude other manufacturers. Comparable products of other manufacturers will be considered if proof of comparability, equivalence, and compatibility is contained in the proposal. Vendors, if proposing other than specified, are to clearly identify the manufacturer and the model number and must provide written, complete justification as to how the product complies with all specifications outlined within this RFP and how the product integrates with existing devices as well as the complete list of manufacturer published specifications related to the requested products. It shall be the responsibility of the bidders to furnish descriptive literature with their proposal such that specifications, catalog pages, brochures or other data will provide an adequate basis for verifying the quality and functional capabilities of the product offered. Failure to provide this data will be considered valid justification for rejection of the proposal.

Unless otherwise specified, vendors shall provide everything required to make the devices, software, appliances, installation, etc. 100% operational. This includes but is not limited to patch cables, connectors, dongles, mounting hardware, etc.
Due to the complexity and the amount of knowledge required for successful placement and configuration, MPSD is seeking a complete "turnkey" solution that covers equipment acquisition, installation, configuration,

and knowledge transfer.

There will be an onsite bidder's conference located in the Carl Ely Building 4924 Church Street, Moss Point, MS 39563. The conference is not mandatory but, will be the only open day for bidders to visit the CTE Building.

**Winning Bidders**

Winning C2 bidders will be required to complete the Item 21 templates within one week of notification of bid award.

**Installation Requirements**

- The selected vendor must be able to meet onsite with the MPSD IT staff to complete a schedule and scope of work before installations can begin. Vendor will coordinate with MPSD to schedule deployments of hardware in such a way as to minimize the impact on network users.
- Vendor will deliver all equipment to the MPSD Fixed Asset department to have asset tags affixed if necessary. MPSD will coordinate with the vendor to schedule the delivery and installation. Vendors are expected to pick up devices from the MPSD Fixed Assets warehouse for delivery to school locations as scheduled.
- Vendor will remove and dispose of all packaging and miscellaneous materials left over from any part of the installation and place all trash in an identified on-site dumpster or taken by the vendor to an off-site location. MPSD personnel will not dispose of any packing materials.
- All additional cables, connectors, screws, labor, miscellaneous plug parts, modules, etc. needed to make the wireless access points 100% operational should be included in the installation cost and provided by the vendor. Any costs not outlined in the vendor proposed budget that may be required for the successful completion of the installation of the devices are assumed to be provided by the vendor and at no cost to MPSD.
- All cabling to make the access points 100% operational shall be provided as part of the project. Cabling should be completed by certified technicians and meet all ANSI/TIA/EIA-568-B standards. Suitable wiring raceways, panduit, conduit and moldings to achieve a finished installation appearance must be used. All additional connectors, screws, labor, panduit, conduit, ties, hangers, jacks, cables, parts, modules, etc. needed to make the cables connecting the wireless access points to the designated switch and/or patch panel in order to make the access points 100% operational should be included in the installation cost and provided by the vendor. Any costs not outlined in the vendor proposed budget that may be required for the successful completion of the installation of the devices are assumed to be provided by the vendor and at no cost to MPSD.
- Hardware inventory will be provided to MPSD by the vendor including but not limited to device model number, serial number, MPSD asset tag number, MAC address, and location.
- Vendor will install and mount all switch components in the designated rack at each location. The vendor will provide all required rack mounting hardware needed for installation and mounting.
- Vendor will coordinate with MPSD IT staff to install and configure all software, appliances, and any other applications required to make the Wi-Fi devices 100% operational. The vendor will provide knowledge transfer to MPSD IT staff to demonstrate functionality of all devices and monitoring systems.

**Technical Requirements and Item Descriptions**

MPSD desires to purchase network switches/routers for all MDF and IDF closets, wireless access points and cabling to provide campus wide Wi-Fi in all MPSD schools. MPSD desires to purchase all cabling and hardware required for the successful completion of the project from a single provider.

MPSD currently has an Cisco switches with Cisco Access Points and it is important to the district to maintain the functionality of this existing infrastructure. All access points, switches, software or hardware proposed that differ from the specified items must be compatible and equivalent to the existing infrastructure and must be 100% functional with the existing network.

As part of the installation, vendors shall include any and all SFPs, cables, brackets, mounts, etc. to make each switch and module 100% operational. Any costs not included in the installation required for the successful installation of the devices are assumed to be provided by the vendor and at no cost to MPSD.

MPSD seeks to maximize technology infrastructure energy savings through the upgrading of the current Internet Infrastructure System. Respondents are encouraged to advocate the installation and implementation of improvements providing the greatest possible energy and operations/maintenance savings. Essential services and improvements sought are those that will reduce energy consumption in the Customer's facilities related to network and improvements to Wi-Fi/Internet based communications/technology systems.

**Specifications for devices or their equivalent are as follows:**

**The description below refers to how the controller must work with the access points and switches.**

- Solution must be compatible with our existing Meraki cloud architecture.
- Solution cannot include any "on-premise" management appliances, servers, or virtual machines.
- The wireless system must support a stateful application-layer firewall that can identify, classify, and prioritize applications using layer 7 intelligence. Applications should be able to be traffic shaped as well to ensure that recreational applications (like Pandora, Spotify, etc.) do not consume all of the available bandwidth.
- The wireless system must include intuitive multi-site scalability and management. Must be able to deploy multiple sites rapidly and monitor, manage and troubleshoot all sites from a single web-based interface. This includes being able to "clone" configurations of devices automatically, and easily re-assign assets to other network areas as needed. This must be 100% GUI based, and no Command-Line (CLI) programming for any features is permitted.
- The wireless system must support the ability to fingerprint client device types (i.e. iPad, Android, iPhone, Windows, etc) and apply security settings to those devices, without the need for additional appliances or licenses. For example: iPads on the Student SSID may have access to only the web and are rate limited to 512 kbps, and no peer to peer traffic is allowed.
- The wireless system must have commonly managed products (WLAN, Security Appliances, Access Switches, Integrated MDM) that allow for end-to-end deployment, monitoring, and troubleshooting from single pane of glass, and seamless expansion beyond the wireless network alone.
- The wireless system must support Bonjour gateway services to allow Airplay, printing, iTunes and other Bonjour-based services to flow seamlessly across the wireless network.
- The wireless system must support integration with Google Maps, with the ability to upload a custom floor plan and overlay it on the map.
- The wireless system must support the ability to easily replicate and clone configurations across multiple

different sites using a single click. Ideally, a configuration could be changed once and then replicated across multiple sites.

- The wireless system must support the ability to take a packet capture directly from the management interface. This packet capture should be able to filter based on client, IP address, and MAC address.
- The wireless system must support the ability to provide deep application visibility into all of the applications that are used on the wireless network, including hostname visibility to view the individual URLs of all of the applications. This information should be exportable and downloadable on a per network and per SSID basis.
- The wireless system should have built in guest access and not require any additional appliances or licenses for guest users.
- The wireless system must have a way to open cases with support and monitor their status directly from the management console.
- The wireless system must include a tagging function to provide easy search-ability across our network, device types, and users with search "tagging" functionality.
- The wireless system must support the ability to send summary reports to certain administrators on a daily, weekly and monthly basis. These summary reports should show information like top users, top applications, bandwidth consumed per day, etc. These summary reports should be able to be sent on a per school basis, or aggregated for multiple schools using a tagging mechanism. For example, one administrator may want to see summary report information for all elementary schools in aggregate every week.
- Solution must include a zero-cost, fully integrated, Mobile Device Management platform capable of managing Apple iOS, Android, Windows, and Mac OSX devices all from the same common management interface as the WLAN, Access Switching, and Security Appliance products. MDM functionality must require no local hardware, software, or virtual machine appliance to operate, and must be 100% Cloud based for management, with the ability to assign policies via the management interface to different users, networks, and device types based on preferences.
- Examples of attributes include VLANs, firewall rules, and splash pages. Must be able to easily prioritize and/or throttle specific applications or application type. Group policies must be universally applicable to all network components (access points, switches, and security appliances).
- The wireless system must be PCI Compliant. Built-in Payment Card Industry (PCI) DSS Level 1 Certified compliance reporting and remediation wizard required.
- Solution must provide rich layer 7 application visibility and control, with a full heuristics-driven engine (Not TCP/UDP Port Based) for classification (e.g. Skype, BitTorrent, web traffic) and shaping of that traffic.
- Solution must include fully integrated client, device, and OS visibility, with ability to assign policies via the management interface to different users, networks, and device types based on preferences. Group policies must be universally applicable to all access points and switches. Management interface must be 100% GUI based, and no Command-Line (CLI) programming for any feature is permitted.
- Solution must integrate with existing Cisco Prime Infrastructure management tool.
- Must maintain common management, inventory, and historical logging interface of existing network systems and new cloud based systems.
- Minimize any conflicts between existing and new wireless systems, and prevent any loss of coverage or operations with the existing wireless network.
- Wireless system must have built-in redundancy and reliability. Solution must be able to provide a 99.99% service level agreement, leveraging globally redundant cloud data centers.

- The wireless system must include a free of charge, Mobile Management application. This application must be supported on both Apple iOS and Android mobile operating systems. This single mobile application must be able to do the following:
- Monitor wireless, switching, and security infrastructure
- See all wireless, switching, and security infrastructure network status and usage via easy to read graphs and tables
- Receive push notifications for any network outages
- Scan access point barcodes to facilitate adding them to the network
- Utilize the mobile device's camera to photograph and document access point mounting locations
- Pinpoint access point location using Global Positioning System (GPS)
- Verify device and client connectivity using live tools like Ping, Traceroute, etc.
- Remotely reboot devices without on-site staff intervention
- Quickly deploy group policies to clients that control L3/L7 firewalling, traffic-shaping, and content filtering
- Provide the capability to easily block clients from the network
- Be both PIN code and Password securable
- Provide easy access to Support Case management
- Be able to read device event logs remotely
- Show individual client Application Usage history (example - YouTube, Instagram, Facebook, etc.)

**Cisco Meraki MR42Cloud Managed Access Point compatible and equivalent – MR42-HW**

**Quantity = 20 (locations are listed on later pages)**

**The quantity of access points needed is calculated using the square footage, classroom counts, and building design. The solution proposed should include one access point in every classroom, and should provide coverage in every common area, administrative area, and instructional space in each building. Portable classrooms are included. Access points and network design should be designed and installed with enough access and capacity to support 1:1 technology initiatives at each location with a student density of 25 devices per AP in each classroom and 80-100 devices in each common area.**

**Access to building drawings showing network MDF and IDFs will be provided at the bidder's conference. There will be no scheduled walkthroughs at each location; however, vendors may visit each location at their convenience. If a vendor needs/wants access inside each MDF/IDF, the vendor can contact the District and be given a time to meet IT personnel at the school location. The time scheduled will be at the discretion and convenience of the district.**

**Specifications for MR42**

Cisco Meraki MR42 or compatible and equivalent 802.11ac access point must include stateful firewalls, teleworker VPN, full-time intrusion and rogue scanning, Network Access Control, adult content filtering, and WPA2-Enterprise/802.1X integration. Solution must include cloud architecture that is fully integrated with the same cloud switch management as our existing Meraki infrastructure and remove the need for any controllers or hardware/software overlay management.

- 100/1000Base-T Ethernet (RJ45) with 48V DC 802.3at/802.3af PoE

- 3x3 Multiple input, multiple output (MIMO) with three spatial streams.
- 20, 40, and 80 MHz (802.11ac) 20 and 40 MHz channels (802.11n)
- Maximal ratio combining (MRC)
- Beamforming
- Packet aggregation
- VLAN tagging (802.1Q)
- Cyclic shift diversity (CSD) support
- Wireless Quality of Service (WMM/802.11e)
- Real-time WIPS with forensics
- Guest Isolation
- Support for fast Layer 2 roaming
- Layer 3 roaming
- Solution must include built-in PCI compliance wizard and remediation tool, and provide secure management access with password restrictions and two-factor authentication via SMS
- AP must include a third (non-client serving) radio dedicated to continuously and automatically monitoring surroundings to maximize Wi-Fi performance. This third radio will measure channel utilization, signal strength, throughput, signals from 3rd party access points, non-Wi-Fi interference, and automatically optimize Wi-Fi performance of individual access points and maximize system-wide performance
- Lifetime hardware warranty and advance replacement

**License for the Meraki MR42 Cloud Managed Access Point which includes cloud services, software upgrades and support for 5 years. - LIC-MR42-5YR**
**Quantity = 20 (locations are listed on later pages) MPSD**

**also desires pricing on an alternate Access Point**

**Alternate – Cisco Meraki MR42 Cloud Managed Access Point Compatible and equivalent – MR42-HW**
**License for the Meraki MR42 Cloud Managed Access Point which includes cloud services, software upgrades and support for 5 years. - LIC-MR42-5YR**
**Quantity = 20 (locations are listed on later pages)**

**Meraki MS420 Cloud Managed 48 Port GigE 720W PoE / PoE+ - MS420-48FP-HW compatible and equivalent**
**Quantity =4 (locations are listed on later pages)**

Solution must include cloud architecture that is fully integrated with the same cloud wireless management and existing Cisco prime infrastructure and removes the need for any controllers or hardware/software overlay management.

**Vendor must include in the installation costs all modules, transceivers, cables, connectors, etc. needed to make each device 100% operational. Any costs not included in the vendor proposed budget that may be required for the successful completion of the installation of the devices are assumed to be provided by the vendor and at no cost to MPSD.**

**Interfaces**

- 48 × 10/100/1000BASE-T Ethernet (RJ45) with auto-MDIX crossover
- 48V DC 802.3af/802.3at Power-over-Ethernet (PoE/PoE+) on the MS320-48P models, available on all ports (maximum of 30W per port for PoE+)
- 4 × SFP+ 10 Gigabit Ethernet interfaces for uplink
- Auto negotiation and crossover detection

**Ethernet switching capabilities**

- 802.1p Quality of Service prioritization
- 802.1Q VLAN tagging and Q-in-Q VLAN stacking with 4096 addressable tags
- 802.1D Spanning Tree Protocol (RSTP, STP)
- 802.1ab Link Layer Discovery Protocol (LLDP)
- 802.3ad link aggregation with up to 8 ports per aggregate
- Broadcast storm control
- IGMP snooping for multicast filtering
- MAC forwarding table entries: 8,000

**Security**

- Integrated two-factor authentication
- Role-based administration
- Corporate wide password policy enforcement
- IEEE 802.1X port-based security
- Performance
- Non-blocking fabric
- 176 Gpbs non-blocking switching capacity
- 2.5 microsecond latency

**Power over Ethernet (PoE models):**

- 802.3af (PoE) 15.4 W per port and 802/.3at (PoE+) 25.5 W per port
- MS320-48LP maximum PoE output: 370 W
- MS320-48FP maximum PoE output: 720 W
- PoE available on all ports simultaneously
- Pre-standard PoE: supports pre-standard PoE devices

**Management**

- Managed via the cloud using the Meraki dashboard or equivalent
- Integrated with Meraki wireless, routing, and firewall management or equivalent
- No-touch remote deployment (no staging needed)
- Detailed historical per-port and per-client usage statistics
- DHCP and hostname fingerprinting

- SNMP v2c
- Seamless over-the-web firmware upgrades

Lifetime hardware warranty with advanced replacement included.

**Meraki MS420 Enterprise License – compatible and equivalent – LIC-MS420-48FP-5YR**
**Quantity = 4 (locations are listed on later pages)**
License for the Meraki MS420 Cloud Managed 48 Port GigE 720W PoE / PoE+ switch which includes cloud services, software upgrades and support for 5 years.

**Vendor must include in the installation costs all modules, transceivers, cables, connectors, etc. needed to make each device 100% operational. Any costs not included in the vendor proposed budget that may be required for the successful completion of the installation of the devices are assumed to be provided by the vendor and at no cost to MPSD.**

**Network and Security Services**
- Stateful firewall, 1:1 NAT, DHCP, DMZ, static routing
- Identity-based policies
- Auto VPN™ self-configuring site-to-site VPN
- Client VPN (IPsec)
- User and device quarantine
- VLAN support and DHCP services

**Advanced Security Services**
- Content filtering (iBoss CIPA-compliant URL database)
- Web search filtering (including Google and Bing SafeSearch)
- YouTube for Schools
- Intrusion prevention (SourceFire Snort based)
- Antivirus and antiphishing filtering (iBoss-Sophos)
- Requires Advanced Security License

**WAN Performance Management**
- Web caching
- WAN link aggregation
- Application level (Layer 7) traffic analysis and shaping

- Automatic Layer 3 failover (including VPN connections)
- WAN uplink selection based on traffic type
- Note: web caching is not available on MX60 or MX60W models

**WAN Optimization**
- Byte-level caching (1 TB capacity)
- Universal data store with data redundancy elimination
- TCP transport compression and optimization
- Protocol optimization (CIFS, HTTP, FTP)

**Monitoring and Management**
- Web based management and configuration
- Throughput, connectivity monitoring and alerts
- Network asset discovery and user identification
- Built-in network-wide reporting, monitoring and alerts
- Centralized policy management
- Real-time diagnostic and troubleshooting over the web
- Automatic firmware upgrades and security patches
- Searchable network-wide event logs

**Interfaces**
- 2 × GbE (WAN)
- 8 × GbE
- 2 × SFP
- USB: 1 × USB 2.0 for 3G/4G failover (supported devices)

**Performance**
- Stateful firewall throughput: 500 Mbps
- VPN throughput: 250 Mbps
- WAN optimization storage: 1 TB
- Recommended for medium-sized branches (up to 500 users)

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- Automatic firmware upgrades and security patches
- Searchable network-wide event logs

**Interfaces**

- 2 × GbE (WAN)
- 8 × GbE
- 8 × GbE (SFP)
- 4 × 10 GbE (SFP+)
- USB: 1 × USB 2.0 for 3G/4G failover (supported devices)
- Performance

**Performance**

- Stateful firewall throughput: 1,000 Mbps
- VPN throughput: 325 Mbps
- WAN optimization storage: 1 TB
- Recommended for large campus / data centers (up to 2,000 users)

**Meraki MS420-48 Cloud Managed Aggregation Switch compatible and equivalent – MS420-24-HW (Quantity and locations are listed on later pages)**

**Interfaces**

- 24 × 10 GbE SFP+/SFP
- 1 × 10/100/1000 RJ45 management port

**Ethernet switching capabilities**

- 802.1p Quality of Service prioritization
- 802.1Q VLAN tagging and Q-in-Q VLAN stacking with 4096 addressable tags
- 802.1D Spanning Tree Protocol (RSTP, STP)
- 802.1ab Link Layer Discovery Protocol (LLDP)
- 802.3ad link aggregation with up to 8 ports per aggregate
- Broadcast storm control
- IGMP snooping for multicast filtering

**Layer 3 capabilities**

- Dynamic routing (OSPFv2)
- Static routing
- DHCP Relay
- DHCP Server
- Warm spare redundancy (VRRP)
- DHCP Failover

**Security**

- Integrated two-factor authentication
- Role-based administration
- Corporate wide password policy enforcement
- IEEE 802.1X port-based security

**Performance**

- Non-blocking fabric
- 480 Gbps switching capacity
- Hardware & Mounting
- Rack-mountable with included rack mount hardware
- Front-to-back airflow
- Field-replaceable, hot-swappable power supplies
- Field-replaceable, hot-swappable fans

**Management**

- Managed via the cloud using the Meraki dashboard
- Integrated with Meraki wireless, security appliance, and device management
- No-touch remote deployment (no staging needed)
- Detailed historical per-port and per-client usage statistics
- DHCP and hostname fingerprinting
- SNMPD allows integration with 3rd-party network management solutions
- Seamless over-the-web firmware upgrades

**Network Cabling (Drops) – Hardware and Installation**
**Quantity = 22(locations are listed on later pages)**

All installation and material charges associated with the installation of network cabling to make access points 100% operational should be included. All additional connectors, screws, labor, panduit, conduit, ties, hangers, jacks, cables, parts, modules, etc. needed to make the cables connecting the wireless access points to the designated switch and/or patch panel in order to make the access points 100% operational should be included in the installation cost and provided by the vendor. Patch panels and patch cables should be included when/ if necessary. Any costs not outlined in the vendor proposed budget that may be required for the successful completion of the installation of the devices are assumed to be provided by the vendor and at no cost to MPSD.

- All work must be performed in accordance with ANSI/TIA/EIA -568-B standards.

- All cables should be blue.
- All cable shall be CAT-6E POE rated cable terminated to industry certified RJ-45s jack at each specified outlook location.
- Any area that does not have a drop ceiling will require a wall mount bracket or other mounting option if required. Suitable wiring raceways, panduit, conduit and moldings to achieve a finished installation appearance shall be used.
- Cabling must be neatly run. Cables may not lie directly on ceiling tiles or on overhead lights. They must be suspended using J hooks where necessary. O-rings and cable tie wraps are not acceptable.
- All drops needed for this project shall be new. Drops may exist in a school close to a new AP location, but that connection shall not be re-used.
- All cable connections must be identifiable at both ends.
- All cables must be tested and certified. Hard copy or testing results and certification shall be provided electronically.

**Network Cabling (MDF to IDF) – Hardware and Installation**
**Quantity = Approx: 2 (locations are listed on later pages)**

- All cable runs between MDFs and IDFs must be Single Mode Fiber
- Some locations already have Multi Mode from MDF to IDF – this will be discussed in detailed at bidder's conference.

**APC Smart-UPS or APC Smart-UPS compatible for Data Racks**
**Quantity – 3 (locations are listed on later pages)**

- MPSD desires to purchase UPS' to provide a minimum of 15 minutes for the MDF at each school.
- All devices must be rack-mountable.
- All devices must plug into standard 120V outlets**.**

**Respectfully submitted,**

**COMPANY** _____

**ADDRESS** _____

_____

**PHONE** _____

**FAX** _____

**E-MAIL ADDRESS** _____

**SIGNED** _____

**WRITE OUT**
**SIGNATURE** _____

**TITLE** _____

**DATE** _____

| School Name | Description of Item Requested - Item Specified by the Vendor Should Be Equivalent and Compatible to the Item Described Below | Part Number | Qty | Make/Mfr | Model | Part Number | Description | Unit Cost $ | Extended Cost $ | Installation Cost $ | 1 Yr. Maint Cost $ | Total Cost $ | Erate Eligible % | Erate Ineligible % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Career & Technical Center** | Cisco Meraki MR42 Cloud Managed Access Point | MR42-HW | 20 | | | | | | | | | | | |
| | Meraki MR Enterprise License | LIC-ENT-5YR | 20 | | | | | | | | | | | |
| | Alternate AP: Cisco Meraki MR32 Cloud Managed Access Point | MR42-HW | Alternate: 20 | | | | | | | | | | | |
| | Alternate AP: Meraki MR Enterprise License | LIC-ENT-5YR | Alternate: 20 | | | | | | | | | | | |
| | Meraki MS420 Cloud Managed 48 Port GigE 720W PoE / PoE+ | MS420-48FP-HW | 4 | | | | | | | | | | | |
| | Meraki MS420 - 48FP Enterprise License | LIC-MS420-48FP - 5YR | 4 | | | | | | | | | | | |
| | Stacking Cable | MA-CBL-TA-1M | 2 | | | | | | | | | | | |
| | IDF Closet 1GE Uplink Modules | MA-SFP-1GB-SX | 2 | | | | | | | | | | | |
| | IDF Closet 1GE Uplink Modules | MA-SFP-1GB-LX10 | 2 | | | | | | | | | | | |
| | UPS in MDF Closet | APC SMART-UPS FOR DATA RACKS | 2 | | | | | | | | | | | |
| | Rack | EQUIPMENT RACK | 0 | | | | | | | | | | | |
| | Network Cabling and patch panel(Drops) - Installation | All installation charges associated with the | 22 | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | installation of network cabling to make AP's 100% operational. Cat 6A - all parts including cable, jacks, ties, hangers, etc. panduit, etc. to make APS 100% operational | | | | | | | | | | | | |
| | Network Cabling (MDF to IDF) - Installation | All installation charges associated with the installation of single mode fiber from each MDF to IDF closet. All parts including fiber, jacks, ties, hangers, etc. to make switches 100% operational. Every MDF has fiber coming in from AT&T. | 2 | | | | | | | | | | | |
| | Installation and configuration of Switches and UPSs | All installation charges associated with the installation of network devices and UPSs | 2 | | | | | | | | | | | |
| | Patch Panel | All Installation charges associated with the installation of 24-48 Port Patch Panel. | 2 | | | | | | | | | | | |

| Extended Cost $ | Installation Cost $ | 1 Yr. Maint Cost $ | Total Cost $ | Erate Eligible % | Erate Ineligible % |
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