

**ATTACHMENT A – SCOPE OF WORK
E-RATE NETWORK EQUIPMENT AND RELATED SERVICES**

I. EXECUTIVE SUMMARY

- A. The intent of this Invitation for Bid (IFB) is to provide network equipment and related services for school Local Area Network (LAN), Wireless LAN including but not limited to electronics, associated modules, software, applicable license, and related technical services to expand and/or replace the installed Local, Wide and Metro Area Networks at schools throughout the Los Angeles Unified School District.
- B. The purpose of this IFB is to establish a reliable and economical source of complete LAN equipment, parts for replacement, and to networks at specific sites where Cisco, Alcatel-Lucent, Aruba are the predominantly installed base of equipment.
- C. Procurements under this contract do not include, nor are they intended for the acquisition of services associated with public works e.g. trenching, pathways such as conduit/raceway, cabinet installations etc.

II. SCOPE OF THE CONTRACT

- A. This contract will be in effect for approximately twenty four months (24). The contract is subject to two (2) additional twelve (12) months extension for a maximum total of forty eight (48) months. The total contract value is estimated at \$40 million. The contract may be comprised of multiple packages awarded to one or more Contractor(s). Each package would consist of Materials and Services.
- B. The District is seeking the following:
 - 1. Package 1 – Specification compliant wired and wireless LAN that are interoperable with existing wired and wireless LAN equipment and related services in order to increase wireless access. Package 1 is identified as schools currently with specific equipment consisting of Cisco full router and wired/wireless LAN components. Bidders are to provide full bill-of-materials (BOM) and services per SOW and evidence of interoperability of the proposed solution with the existing site installed equipment.
 - 2. Package 2 – Specification compliant full wired and wireless LAN equipment from a single or multiple manufacturers and related services for complete school LAN equipment modernization in order to provide sufficient access. Package 2 is identified as schools currently with single manufacturer consisting of Cisco router, wired/wireless LAN or; integrated equipment consisting of Cisco router, Alcatel-Lucent wired/wireless LAN, and/or Aruba wireless LAN. Bidders are to provide full BOM and services per SOW and evidence of interoperability of the proposed solution.
- C. Any requested installation, configuration or provisioning of LAN/WLAN equipment shall be compliant with the requirements as detailed in LAUSD Attachment A, Scope of Work (this

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document); Attachment B, 25570 Quality Assurance Test and Acceptance; Attachment C, LAUSD Safety Standards; Attachment D, Asset Management New Installation Projects Procedure and related documents as included in this IFB; Attachment E, IT Asset Inventory; Attachment F, 25806 LAN SYSTEMS; Attachment G, 25810 Wireless LAN; Attachment H, School by Package; and Attachment J – Rate Schedule Instructions.

1. Materials: Network Electronics include, but are not limited to:

- a) Wired LAN and WAN equipment chassis, modules, software, all required applicable license, and associated components.
- b) Wireless LAN equipment, modules, software, all applicable license, and associated components.
- c) Uninterruptible Power Supplies, Modules, Batteries and associated components.

2. Services:

- a) Equipment integration, testing and certification.
 - (1) At the vendor's facilities, all equipment provided shall be assembled, tested and certified as fully operational prior to delivery and/or installation.
 - (2) Configuration
 - (3) All chassis and modules shall be shipped fully assembled and ready to install in the District facilities.
- b) Equipment replacement/removal
- c) Wired LAN/WAN
 - (1) Equipment Integration, Testing and Certification, as described under section heading II.C.2(a)
 - (2) Network Engineering Services
 - (a) Site survey and solution engineering
 - (b) On-site equipment replacement (excluding public works and related construction)
 - (3) Documentation as described in this Statement of Work and its Attachments.

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d) Wireless LAN (WLAN):

- (1) Equipment integration, testing and certification, as described under section heading II.C.2(a)
- (2) Configuration
- (3) Network Engineering Services
 - (a) WLAN site survey and proposed installation drawings
 - (b) WLAN as-built documentation
 - (c) On-site equipment replacement (excluding public works and related construction)

e) Participation in District Asset Management process (Attachments D and E).

(1) Serial Numbers and Registers

- (a) Upon delivery of any serialized Equipment, Contractor shall provide a complete asset register of serialized Equipment in accordance with District provided format and instructions.
- (b) The Contractor shall validate the accuracy of the asset register at the time of delivery.
- (c) The Contractor shall also provide updated serial numbers resulting from warranty repairs following the process and format provided by the District.

III. REQUIREMENTS FOR LAN/WAN EQUIPMENT AND SERVICES

A. Warranty: Warranties shall be as described in the Specifications.

B. Services required:

1. Delivery: All Equipment and Materials purchased by the District shall be inventoried, assembled, tested and certified as complete and in full compliance with all District requirements by the Contractor on their premises prior to Delivery, or Job Start. Unless otherwise notified by the District, no Delivery or Job Start shall proceed until all items ordered are in place at the Contractors' facilities. At no time shall the job site (School or Office) be contacted or visited without the express permission of the ITD Project Management Office, or other designated ITD Branch offices.

a) Purchase of Equipment and Services:

- (1) Purchase of equipment and/or materials shall proceed as follow:

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- (a) Quote shall be provided within two (2) working days
- (b) Goods shall be delivered within ten (10) working days of receipt of District Purchase Order unless otherwise instructed by the District in writing
- (c) Maximum of five (5) additional working days shall be allowed if equipment integration, testing, certification, and configuration services are required
- (d) Contractor shall notify the District two (2) business day notice before order is delivered
- (e) Contractor shall provide weekly status report in Microsoft Excel format that tracks the progress of the orders with the following information
 - (i) Site Name
 - (ii) LAUSD P.O.
 - (iii) Total P.O. amount
 - (iv) Date P.O. received
 - (v) Anticipated delivery date
 - (vi) Actual delivery date
- (2) Partial or incomplete deliveries of Equipment, Materials or services are not permitted unless authorized in writing by the District
- (3) Drop shipments will not be accepted unless previously authorized by the District.
 - (a) All Deliveries must be checked in by the District. Provide written inventories at the time of Delivery. This requirement applies to all modules and subassemblies where applicable. Deliveries at new school sites may require the wearing of a hard hat, safety vest, and safety shoes.
- (4) The District reserves the right to exercise any options allowed within the contract if delivery conditions are not met.

2. Deployment Scenario Description

- a) Traditional Network Topology – These schools have a hierarchal star cable topology with fiber backbone from the Main Distribution Frame (MDF) to

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IDFs and predominantly copper cabling extending out from the IDFs and LDFs to classrooms and other instructional support areas.

- b) CLDF Network Topology – These sites have a hierarchical star topology with a fiber backbone from the Main Distribution Frame (MDF) to IDFs and predominately, and secondary backbone fiber optic cabling extending out from the IDFs to LDC and LDFs located in classrooms and other instructional-support areas.

- 3. Equipment Design: Bidders shall use the following assumptions for bidding purposes:

General Provision for Package 1 as Follow:

- a) Specification Compliant of 802.11ac Wireless System:

- (1) One (1) 802.11n wireless bridge link per site
- (2) Two (2) access points (APs) per classroom
- (3) Two (2) APs per computer lab Two (2) APs per computer lab
 - (a) Elementary Schools: 3 computer labs
 - (b) Middle Schools: 5 computer labs
 - (c) Sr. High Schools: 8 computer labs
 - (d) Treat other school types as an Elementary school
- (4) One (1) Designated Student Online Assessment Area:
 - (a) Twelve (12) APs per elementary school
 - (b) Twenty (20) APs per middle school
 - (c) Thirty (30) APs per high school
 - (d) Treat other school types as an Elementary school
- (5) One (1) Library per site:
 - (a) Six (6) APs per elementary school
 - (b) Eight (8) APs per middle school
 - (c) Ten (10) APs per high school
 - (d) Six (6) APs per other type of schools

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(6) Additional APs equals to 50% (round up) of the total classroom count to cover instructional support areas. Assuming each site has one (1) of the following instructional support areas:

- (a) Administrative
- (b) Gymnasium
- (c) Multi-purposed room (MPR)
- (d) Cafeteria
- (e) Auditorium
- (f) Various outdoor areas
- (g) Parent Center

(7) Proposed 10% of AP with external antennas; 90% of AP with integrated antennas

(8) Provide site corresponding dual-band external antennas (minimum of 6dBi gain) for proposed quantity of AP with external antenna configuration

(9) One (1) specification compliant controller per site with sufficient license to support the proposed AP count

b) Wired LAN/WAN Equipment Provision

(1) One (1) Specification compliant router per school

(2) One (1) Specification compliant backbone switch (BBS) with appropriate network modules connecting all existing ESM, CESM, and ISM using following assumptions for existing equipment calculation and bidding purposes;

(a) Existing equipment:

- (i) For CLDF network topology; one (1) CESM per classroom plus quantity ESM equals to 15% of classroom count with single 1G fiber uplink to each CESM and dual 1G fiber uplink to each ESM.
- (ii) For Traditional network topology; minimum of one (1) ESM per IDF plus quantity of CESM equals to 5% of classroom count with dual 1G fiber uplink each.
- (iii) Two (2) ISM per site regardless of network topology with four (4) 1G fiber uplink each

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- (iv) 90% MMF and 10% SMF optics
- (b) New equipment:
 - (i) One (1) 10G uplink per new proposed ESM;
 - (ii) Use 10G stacking cable if there are more than one (1) ESM switches needed in the IDF
 - (iii) 90% MMF and 10% SMF optics
- (3) All APs will be connected to new ESMs; provide sufficient specification compliant ESM and corresponding data ports for proposed quantity of AP with minimum of one (1) specification compliant ESM per IDF
- (4) Provide minimum six (6) Gbps bandwidth of fiber connection between BBS and the proposed wireless LAN controller
- c) Refer to School List attachment for required number of IDF
- d) MDF UPS Provision
 - (1) One (1) specification compliant UPS unit including battery to support the following equipment or equivalent:
 - (a) One (1) Cisco 4451-X router
 - (b) One (1) of the Cisco 6500 switch; or Alcatel-Lucent OS9702E; or HP7500
 - (c) One (1) Cisco WAVE-694

General Provision for Package 2 as Follow:

- a) Specification Compliant of 802.11ac Wireless System
 - (1) One (1) 802.11n wireless bridge link per site
 - (2) Two (2) access points (APs) per classroom
 - (3) Two (2) APs per computer lab
 - (a) Elementary Schools: 3 computer labs
 - (b) Middle Schools: 5 computer labs

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- (c) Sr. High Schools: 8 computer labs
 - (d) Treat other school types as an Elementary school
- (4) Designated Student Online Assessment Area:
 - (a) Twelve (12) APs per elementary school
 - (b) Twenty (20) APs per middle school
 - (c) Thirty (30) APs per high school
 - (d) Treat other school types as an Elementary school
- (5) One (1) Library per site
 - (a) Six (6) APs per elementary school
 - (b) Eight (8) APs per middle school
 - (c) Ten (10) APs per high school
 - (d) Six (6) APs per other type of schools
- (6) Additional APs equals to 50% (round up) of the total classroom counts to cover instructional support areas. Assuming each site has one (1) of the following instructional support areas:
 - (a) Administrative
 - (b) Gymnasium
 - (c) Multi-purposed room (MPR)
 - (d) Cafeteria
 - (e) Auditorium
 - (f) Various outdoor areas
 - (g) Parent Center
- (7) Proposed 10% of AP with external antennas; 90% of AP with integrated antennas
- (8) Provide site corresponding dual-band external antennas (minimum of 6dBi gain) for proposed quantity of AP with external antenna configuration

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- (9) One (1) controller per site with sufficient license to support the proposed AP count

b) Wired LAN/WAN Equipment Provision

- (1) One (1) Specification compliant router per school
- (2) One (1) Specification compliant backbone switch (BBS) accommodating all ESM, CESM, and ISM
 - (a) One (1) 10G uplink per ESM; use 10G stacking cable if there are more than one (1) ESM switches needed in the IDF
 - (b) Single 1G fiber uplink per CESM
 - (c) 90% MMF and 10% SMF 10G optics
 - (d) All AP will be connected to ESM; provide sufficient data ports for proposed quantity of AP with minimum of one (1) specification compliant ESM per IDF
 - (e) Provide minimum six (6) Gbps bandwidth of fiber connection between BBS and the proposed wireless LAN controller
- (3) For CLDF Scenario; provide specification compliant for the following:
 - (a) Provide one (1) CESM per classroom
 - (b) Forty eight (48) data ports for all instructional support areas
 - (c) Twenty (20) data ports for cafeterias
 - (d) Twelve (12) data ports for elementary school library
 - (e) Forty (40) data ports for middle and high school libraries
 - (f) Forty (40) data ports for each computer
 - (i) Elementary Schools: 3 computer labs
 - (ii) Middle Schools: 5 computer labs
 - (iii) Sr. High Schools: 8 computer labs
 - (iv) Treat other school types as an Elementary school
- (4) For Traditional Scenario; provide specification compliant for the following:

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- (a) Provide one (1) data port for each AP
 - (b) Provide five (5) data port for each classroom
 - (c) Forty eight (48) data ports for all instructional support areas
 - (d) Twenty (20) data ports for cafeterias
 - (e) Twelve (12) data ports for elementary school library
 - (f) Forty (40) data ports for middle and high school libraries
 - (g) Forty (40) data ports for each computer
 - (i) Elementary Schools: 3 computer labs
 - (ii) Middle Schools: 5 computer labs
 - (iii) Sr. High Schools: 8 computer labs
 - (iv) Treat other school types as an Elementary school
- (5) Backbone and Uplink Provision
 - (a) Single 1G fiber uplink per CESM
 - (b) One (1) 10G uplink per ESM;
 - (c) Use 10G stacking cable if there are more than one (1) ESM switches needed in the IDF
 - (d) 90% MMF and 10% SMF 10G optics
- c) Refer to School List attachment for required number of IDF
- d) MDF UPS Provision
 - (1) One (1) specification compliant UPS unit including battery to support the following equipment or equivalent:
 - (a) One (1) Cisco 4451-X router
 - (b) One (1) of the Cisco 6500 switch; or Alcatel-Lucent OS9702E; or HP7500
 - (c) One (1) Cisco WAVE-694
- 4. Configuration Management: When required, the Vendor shall configure all provided equipment and document those configurations following LAUSD's required format, which will be provided to the winning bidder. Configuration services will be

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provided as specified by the ITD Project Management Office. If the District elects not to include equipment replacement/removal as a part of the services to be provided, configuration services shall commence at a time determined by the ITD Project Management Office, which will issue a formal written Notice to Proceed for these services.

a) Configuration services

- (1) Delivery and inventory of new network equipment using District format as shown below.

School Name	Page 1 of X			Date of Delivery:		
Item Description	Manufacturer.	QTY	Model	Serial Number	Missing	OK

- (a) Inventories shall be logically organized by major component, including all modules associated with that component listed after.
- (b) All chassis, modules software, firmware and other items shall be itemized on a line by line basis.
- (c) All Deliveries shall be accompanied by a signature sheet which includes the following information:
- (i) Vendor Name and Address
 - (ii) School Name and Address
 - (iii) District Purchase Order Number
 - (iv) Contract Number
 - (v) Name, signature and date lines for the following personnel:
 - Company Representative
 - ITD Representative
 - District Owners Authorized Representative (OAR)
 - General Contractor

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- (2) Upgrade all new Network Equipment to meet LAUSD's current specifications and standards.
 - (3) Implementation of District provided Internet Protocol (IP) address network assignments.
 - (4) Creation of trunking services between all existing equipment and newly installed equipment.
 - (5) Configuration requirements may include but are not limited to:
 - (a) IP Routing
 - (b) Multiple VLANs on all network equipment using District provided information
 - (c) Access Control List (ACL).
 - (d) Gateway
 - (e) SNMP read only and read/write community strings
 - (i) Query restrictions
 - (ii) Trap recipient
 - (f) Passwords
 - (g) Proper assignment of switch ports to the correct VLANs.
 - (h) Test DHCP from all applicable VLANs.
 - (i) Host name and IP address on all networking equipment.
 - (j) Configure existing equipment and newly installed equipment to current District standards.
- C. Engineering and Configuration Services for WLAN Equipment may include, but are not limited to:
- 1. WLAN services shall also include:
 - a) Configuration of:
 - (1) District provided WLAN system tuning configuration
 - (2) District provided SSID
 - (3) District provided data protection e.g. WPA2, AES

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(4) Authentication protocol as instructed by the District

b) WLAN Site Survey, Design and as-built procedures and documentation.

- (1) The number of potential users in any area of coverage will be identified in the Purchase Order and scoping documents.
- (2) Contractor shall execute and submit a site survey (SS) plan and subsequent design for the deployment of WLAN technology for each site. Site Survey, design drawings and as-built drawings shall, as a minimum identify and include the following:
 - (a) Channel selection, usage, overlap, and AP density.
 - (b) Cell Planning
 - (c) Range and throughput
 - (d) Potential sources of RF interference, such as cordless phones, microwave, neighboring APs located off the District property, or on-site rogue devices.
 - (e) Map of each AP location
 - (f) AP, Bridge, and Controller locations and mounting methodology
 - (g) Identify antenna make/model, locations and mounting methodology when external antennas are used
- (3) Submittals of proposed installation and as-built drawings shall be provided in both paper and AutoCAD (.dwf) formats in accordance with Specification, or as directed by the District.
 - (a) Paper copies shall show site building backgrounds, device locations, power settings, throughput density, pathways, and wired LAN connection points and composite heat map(as applicable) of the WLAN site coverage.
 - (b) A separate sheet for each of the following items shall be provided.
 - (i) WLAN Bridges
 - (ii) All levels of multi-story building Access Points
 - (iii) All ground level and outdoor Access Points

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IV. SUBMITTALS

A. Pricing

1. For all associated components, the Bidder shall, in addition to the pricing required in the bid response sheets, submit the manufacturer product cut-sheets for proposed equipment as part of the Bid response.
2. Bidder shall use the “Section III – Rate Schedule” to complete the materials and services indicated for each line item. Modification to the District’s “Rate Schedule” form may be deemed “non-responsive”.
3. Calculations in the Rate Schedule are examples. It is Bidder’s responsibility to ensure all entries and calculations are accurate.

B. Qualification of Contractor and Personnel

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1. Submit a list of at least three former clients, including Client business contact names and telephone numbers that the vendor has provided materials and services valued at one million dollars or more within the past three years. Submit the information as indicated in the Bidder's Questionnaire
2. Submit resumes and certifications of staff qualified to perform the required services as listed in this attachment.
3. Submit a copy of a letter from the manufacturer of submitted equipment certifying that the Vendor is an authorized distributor and maintenance provider of the submitted manufacturer's equipment.
4. Vendor shall have a service organization capable of responding to warranty service requests within 24 hours of receipt of written notification and resolution within 1 day for MDF equipment and 3 days for equipment located either in the classroom, IDF or LDF.
 - a) Vendor shall include a letter signed by a corporate officer, partner, or owner of the contracting company describing the service capability of the company and stating the company's commitment to maintain that service capability through the warranty period.
 - b) Vendor shall state authorization that they can sell proposed products. The District reserves the rights to validate this requirement with the manufacturers. Bidders that cannot meet this requirement may be deemed non-responsive.
 - c) Vendor shall have a service organization, with certified staff, that is qualified to replace/remove, configure, and service products that are proposed for this IFB.
5. Submit copies certifications for all replacement/removal and configuration proposed to perform the Work under this agreement. Certifications and background shall include at a minimum;
 - a) Manufacturer professional training level certification or equivalent for the proposed staff, e.g. Cisco CCNP, Aruba ACSP.
 - b) The contractor shall maintain valid certifications for the duration of the contract and any renewals thereof if such renewals are exercised as an option by the Los Angeles Unified School District. These certifications shall be presented to the District's request during the duration of the contract.

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