| | Savannah Elementary School | | | |
|---|---|---|---|---|
| | **Network Refresh** | | | |
| Part | Description | Qty | Unit Price | Total |
| | Switches and Optics | | | |
| **WS-C3850-24XU-S** | Cisco Catalyst 3850 24 mGig Port UPoE IP Base | 3 | $5,421.00 | $16,263.00 |
| CON-SW-WSC3852X | SNTC-NO RMA Cisco Catalyst 3850 | 3 | $0.00 | $0.00 |
| PWR-C1-BLANK | Config 1 Power Supply Blank | 3 | $0.00 | $0.00 |
| PWR-C1-1100WAC | 1100W AC Config 1 Power Supply | 3 | $0.00 | $0.00 |
| S3850UK9-163 | UNIVERSAL | 3 | $0.00 | $0.00 |
| C3850-NM-2-10G | Cisco Catalyst 3850 2 x 10GE Network Module | 3 | $975.00 | $2,925.00 |
| CAB-TA-NA | North America AC Type A Power Cable | 3 | $0.00 | $0.00 |
| STACK-T1-50CM | 50CM Type 1 Stacking Cable | 3 | $0.00 | $0.00 |
| CAB-SPWR-30CM | Catalyst 3750X and 3850 Stack Power Cable 30 CM | 3 | $0.00 | $0.00 |
| **WS-C2960X-48FPD-L** | Catalyst 2960-X 48 GigE PoE 740W, 2 x 10G SFP+, LAN Base | 15 | $3,118.05 | $46,770.75 |
| CON-SW-WSC296XL | SNTC-NO RMA Catalyst 2960-X 48 GigE PoE 740W, 2 x 10 | 15 | $0.00 | $0.00 |
| CAB-16AWG-AC | AC Power cord, 16AWG | 15 | $0.00 | $0.00 |
| C2960X-STACK | Catalyst 2960-X FlexStack Plus Stacking Module | 15 | $466.05 | $6,990.75 |
| CAB-STK-E-0.5M | Cisco FlexStack 50cm stacking cable | 15 | $0.00 | $0.00 |
| **CAB-STK-E-1M=** | Cisco Bladeswitch 1M stack cable | 4 | $78.00 | $312.00 |
| **SFP-H10GB-CU3M=** | 10GBASE-CU SFP+ Cable 3 Meter | 3 | $39.00 | $117.00 |
| **SFP-10G-LRM=** | 10GBASE-LRM SFP Module | 2 | $388.05 | $776.10 |
| | | | subtotal | $74,154.60 |
| | Fiber Jumpers | | | |
| **Fiber Jumpers** | Fiber Jumpers - 3M MMF 62.5/125 | 2 | $30.00 | $60.00 |
| | | | subtotal | $60.00 |
| | Professional Services | | | |
| **NET-PRO-SRVC** | Installation & Deployment per SoW | 1 | $6,310.00 | $6,310.00 |
| | | | subtotal | $6,310.00 |
| | | | **Site Total:** | **$80,524.60** |

| | Stephens Elementary School | | | |
|---|---|---|---|---|
| | **Network Refresh** | | | |
| Part | Description | Qty | Unit Price | Total |
| | Switches and Optics | | | |
| **WS-C3850-24XU-S** | Cisco Catalyst 3850 24 mGig Port UPoE IP Base | 3 | $5,421.00 | $16,263.00 |
| CON-SW-WSC3852X | SNTC-NO RMA Cisco Catalyst 3850 | 3 | $0.00 | $0.00 |
| PWR-C1-BLANK | Config 1 Power Supply Blank | 3 | $0.00 | $0.00 |
| PWR-C1-1100WAC | 1100W AC Config 1 Power Supply | 3 | $0.00 | $0.00 |
| S3850UK9-163 | UNIVERSAL | 3 | $0.00 | $0.00 |
| C3850-NM-2-10G | Cisco Catalyst 3850 2 x 10GE Network Module | 3 | $975.00 | $2,925.00 |
| CAB-TA-NA | North America AC Type A Power Cable | 3 | $0.00 | $0.00 |
| STACK-T1-50CM | 50CM Type 1 Stacking Cable | 3 | $0.00 | $0.00 |
| CAB-SPWR-30CM | Catalyst 3750X and 3850 Stack Power Cable 30 CM | 3 | $0.00 | $0.00 |
| **WS-C2960X-48FPD-L** | Catalyst 2960-X 48 GigE PoE 740W, 2 x 10G SFP+, LAN Base | 17 | $3,118.05 | $53,006.85 |
| CON-SW-WSC296XL | SNTC-NO RMA Catalyst 2960-X 48 GigE PoE 740W, 2 x 10 | 17 | $0.00 | $0.00 |
| CAB-16AWG-AC | AC Power cord, 16AWG | 17 | $0.00 | $0.00 |
| C2960X-STACK | Catalyst 2960-X FlexStack Plus Stacking Module | 17 | $466.05 | $7,922.85 |
| CAB-STK-E-0.5M | Cisco FlexStack 50cm stacking cable | 17 | $0.00 | $0.00 |
| **CAB-STK-E-1M=** | Cisco Bladeswitch 1M stack cable | 4 | $78.00 | $312.00 |
| **SFP-H10GB-CU3M=** | 10GBASE-CU SFP+ Cable 3 Meter | 2 | $39.00 | $78.00 |

| Part | Description | Qty | Unit Price | Total |
|---|---|---|---|---|
| SFP-10G-LRM= | 10GBASE-LRM SFP Module | 2 | $388.05 | $776.10 |
| | | | subtotal | $81,283.80 |
| | Fiber Jumpers | | | |
| Fiber Jumpers | Fiber Jumpers - 3M MMF 62.5/125 | 2 | $30.00 | $60.00 |
| | | | subtotal | $60.00 |
| | Professional Services | | | |
| NET-PRO-SRVC | Installation & Deployment per SoW | 1 | $7,012.00 | $7,012.00 |
| | | | subtotal | $7,012.00 |
| | | | Site Total: | $88,355.80 |

| | Wilson Elementary School | | | |
|---|---|---|---|---|
| | **Network Refresh** | | | |
| **Part** | **Description** | **Qty** | **Unit Price** | **Total** |
| | Switches and Optics | | | |
| **WS-C4500X-32SFP+** | Catalyst 4500-X 32 Port 10G IP Base, Front-to-Back, No P/S | 1 | $10,920.00 | $10,920.00 |
| CON-SW-C45X32SF | SNTC-NO RMA Catalyst 4500-X 32 Port 10G IP Base, Fro | 1 | $0.00 | $0.00 |
| C4KX-PWR-750AC-R/2 | Catalyst 4500X 750W AC front to back cooling 2nd PWR supply | 1 | $780.00 | $780.00 |
| C4KX-PWR-750AC-R | Catalyst 4500X 750W AC front to back cooling power supply | 1 | $780.00 | $780.00 |
| C4KX-NM-BLANK | Catalyst 4500X Network Module Blank | 1 | $0.00 | $0.00 |
| CAB-US515-C15-US | NEMA 5-15 to IEC-C15 8ft US | 2 | $0.00 | $0.00 |
| S45XUK9-38E | CAT4500-X Universal Crypto Image | 1 | $0.00 | $0.00 |
| C4500X-IP-ES | IP Base to Ent. Services license for 32 Port Catalyst 4500-X | 1 | $3,120.00 | $3,120.00 |
| **WS-C3850-24XU-S** | Cisco Catalyst 3850 24 mGig Port UPoE IP Base | 5 | $5,421.00 | $27,105.00 |
| CON-SW-WSC3852X | SNTC-NO RMA Cisco Catalyst 3850 | 5 | $0.00 | $0.00 |
| PWR-C1-BLANK | Config 1 Power Supply Blank | 5 | $0.00 | $0.00 |
| PWR-C1-1100WAC | 1100W AC Config 1 Power Supply | 5 | $0.00 | $0.00 |
| S3850UK9-163 | UNIVERSAL | 5 | $0.00 | $0.00 |
| C3850-NM-2-10G | Cisco Catalyst 3850 2 x 10GE Network Module | 5 | $975.00 | $4,875.00 |
| CAB-TA-NA | North America AC Type A Power Cable | 5 | $0.00 | $0.00 |
| STACK-T1-50CM | 50CM Type 1 Stacking Cable | 5 | $0.00 | $0.00 |
| CAB-SPWR-30CM | Catalyst 3750X and 3850 Stack Power Cable 30 CM | 5 | $0.00 | $0.00 |
| **WS-C2960X-48FPD-L** | Catalyst 2960-X 48 GigE PoE 740W, 2 x 10G SFP+, LAN Base | 25 | $3,118.05 | $77,951.25 |
| CON-SW-WSC296XL | SNTC-NO RMA Catalyst 2960-X 48 GigE PoE 740W, 2 x 10 | 25 | $0.00 | $0.00 |
| CAB-16AWG-AC | AC Power cord, 16AWG | 25 | $0.00 | $0.00 |
| C2960X-STACK | Catalyst 2960-X FlexStack Plus Stacking Module | 25 | $466.05 | $11,651.25 |
| CAB-STK-E-0.5M | Cisco FlexStack 50cm stacking cable | 25 | $0.00 | $0.00 |
| **SFP-H10GB-CU3M=** | 10GBASE-CU SFP+ Cable 3 Meter | 2 | $39.00 | $78.00 |
| **SFP-10G-LRM=** | 10GBASE-LRM SFP Module | 40 | $388.05 | $15,522.00 |
| | | | subtotal | $152,782.50 |
| | Fiber Jumpers | | | |
| **Fiber Jumpers** | Fiber Jumpers - 3M MMF 62.5/125 | 40 | $30.00 | $1,200.00 |
| | | | subtotal | $1,200.00 |
| | Professional Services | | | |
| **NET-PRO-SRVC** | Installation & Deployment per SoW | 1 | $10,868.00 | $10,868.00 |
| | | | subtotal | $10,868.00 |
| | | | Site Total: | $164,850.50 |

**Netsync Network Solutions - Quote AAAQ30159**      **GRAND TOTAL:**     **$333,730.90**

**DIR-TSO-2542 - Cisco**

### Savannah Elementary School

| Part | Description | Qty | Unit Price | Total |
|---|---|---|---|---|
| | **Network Refresh** | | | |
| | | | | |
| | Switches and Optics | | | |
| **WS-C3850-24XU-S** | Cisco Catalyst 3850 24 mGig Port UPoE IP Base | 3 | $5,421.00 | $16,263.00 |
| CON-SW-WSC3852X | SNTC-NO RMA Cisco Catalyst 3850 | 3 | $0.00 | $0.00 |
| PWR-C1-BLANK | Config 1 Power Supply Blank | 3 | $0.00 | $0.00 |
| PWR-C1-1100WAC | 1100W AC Config 1 Power Supply | 3 | $0.00 | $0.00 |
| S3850UK9-163 | UNIVERSAL | 3 | $0.00 | $0.00 |
| C3850-NM-2-10G | Cisco Catalyst 3850 2 x 10GE Network Module | 3 | $975.00 | $2,925.00 |
| CAB-TA-NA | North America AC Type A Power Cable | 3 | $0.00 | $0.00 |
| STACK-T1-50CM | 50CM Type 1 Stacking Cable | 3 | $0.00 | $0.00 |
| CAB-SPWR-30CM | Catalyst 3750X and 3850 Stack Power Cable 30 CM | 3 | $0.00 | $0.00 |
| **WS-C2960X-48FPD-L** | Catalyst 2960-X 48 GigE PoE 740W, 2 x 10G SFP+, LAN Base | 15 | $3,118.05 | $46,770.75 |
| CON-SW-WSC296XL | SNTC-NO RMA Catalyst 2960-X 48 GigE PoE 740W, 2 x 10 | 15 | $0.00 | $0.00 |
| CAB-16AWG-AC | AC Power cord, 16AWG | 15 | $0.00 | $0.00 |
| C2960X-STACK | Catalyst 2960-X FlexStack Plus Stacking Module | 15 | $466.05 | $6,990.75 |
| CAB-STK-E-0.5M | Cisco FlexStack 50cm stacking cable | 15 | $0.00 | $0.00 |
| **CAB-STK-E-1M=** | Cisco Bladeswitch 1M stack cable | 4 | $78.00 | $312.00 |
| **SFP-H10GB-CU3M=** | 10GBASE-CU SFP+ Cable 3 Meter | 3 | $39.00 | $117.00 |
| **SFP-10G-LRM=** | 10GBASE-LRM SFP Module | 2 | $388.05 | $776.10 |
| | | | subtotal | $74,154.60 |
| | | | | |
| | Fiber Jumpers | | | |
| **Fiber Jumpers** | Fiber Jumpers - 3M MMF 62.5/125 | 2 | $30.00 | $60.00 |
| | | | subtotal | $60.00 |
| | | | | |
| | Professional Services | | | |
| **NET-PRO-SRVC** | Installation & Deployment per SoW | 1 | $6,310.00 | $6,310.00 |
| | | | subtotal | $6,310.00 |
| | | | **Site Total:** | **$80,524.60** |

### Stephens Elementary School

| Part | Description | Qty | Unit Price | Total |
|---|---|---|---|---|
| | **Network Refresh** | | | |
| | | | | |
| | Switches and Optics | | | |
| **WS-C3850-24XU-S** | Cisco Catalyst 3850 24 mGig Port UPoE IP Base | 3 | $5,421.00 | $16,263.00 |
| CON-SW-WSC3852X | SNTC-NO RMA Cisco Catalyst 3850 | 3 | $0.00 | $0.00 |
| PWR-C1-BLANK | Config 1 Power Supply Blank | 3 | $0.00 | $0.00 |
| PWR-C1-1100WAC | 1100W AC Config 1 Power Supply | 3 | $0.00 | $0.00 |
| S3850UK9-163 | UNIVERSAL | 3 | $0.00 | $0.00 |
| C3850-NM-2-10G | Cisco Catalyst 3850 2 x 10GE Network Module | 3 | $975.00 | $2,925.00 |
| CAB-TA-NA | North America AC Type A Power Cable | 3 | $0.00 | $0.00 |
| STACK-T1-50CM | 50CM Type 1 Stacking Cable | 3 | $0.00 | $0.00 |
| CAB-SPWR-30CM | Catalyst 3750X and 3850 Stack Power Cable 30 CM | 3 | $0.00 | $0.00 |
| **WS-C2960X-48FPD-L** | Catalyst 2960-X 48 GigE PoE 740W, 2 x 10G SFP+, LAN Base | 17 | $3,118.05 | $53,006.85 |
| CON-SW-WSC296XL | SNTC-NO RMA Catalyst 2960-X 48 GigE PoE 740W, 2 x 10 | 17 | $0.00 | $0.00 |
| CAB-16AWG-AC | AC Power cord, 16AWG | 17 | $0.00 | $0.00 |
| C2960X-STACK | Catalyst 2960-X FlexStack Plus Stacking Module | 17 | $466.05 | $7,922.85 |
| CAB-STK-E-0.5M | Cisco FlexStack 50cm stacking cable | 17 | $0.00 | $0.00 |
| **CAB-STK-E-1M=** | Cisco Bladeswitch 1M stack cable | 4 | $78.00 | $312.00 |
| **SFP-H10GB-CU3M=** | 10GBASE-CU SFP+ Cable 3 Meter | 2 | $39.00 | $78.00 |

| Part | Description | Qty | Unit Price | Total |
|---|---|---|---|---|
| SFP-10G-LRM= | 10GBASE-LRM SFP Module | 2 | $388.05 | $776.10 |
| | | | subtotal | $81,283.80 |
| | Fiber Jumpers | | | |
| Fiber Jumpers | Fiber Jumpers - 3M MMF 62.5/125 | 2 | $30.00 | $60.00 |
| | | | subtotal | $60.00 |
| | Professional Services | | | |
| NET-PRO-SRVC | Installation & Deployment per SoW | 1 | $7,012.00 | $7,012.00 |
| | | | subtotal | $7,012.00 |
| | | | Site Total: | $88,355.80 |

| | Wilson Elementary School | | | |
|---|---|---|---|---|
| | **Network Refresh** | | | |
| **Part** | **Description** | **Qty** | **Unit Price** | **Total** |
| | Switches and Optics | | | |
| **WS-C4500X-32SFP+** | Catalyst 4500-X 32 Port 10G IP Base, Front-to-Back, No P/S | 1 | $10,920.00 | $10,920.00 |
| CON-SW-C45X32SF | SNTC-NO RMA Catalyst 4500-X 32 Port 10G IP Base, Fro | 1 | $0.00 | $0.00 |
| C4KX-PWR-750AC-R/2 | Catalyst 4500X 750W AC front to back cooling 2nd PWR supply | 1 | $780.00 | $780.00 |
| C4KX-PWR-750AC-R | Catalyst 4500X 750W AC front to back cooling power supply | 1 | $780.00 | $780.00 |
| C4KX-NM-BLANK | Catalyst 4500X Network Module Blank | 1 | $0.00 | $0.00 |
| CAB-US515-C15-US | NEMA 5-15 to IEC-C15 8ft US | 2 | $0.00 | $0.00 |
| S45XUK9-38E | CAT4500-X Universal Crypto Image | 1 | $0.00 | $0.00 |
| C4500X-IP-ES | IP Base to Ent. Services license for 32 Port Catalyst 4500-X | 1 | $3,120.00 | $3,120.00 |
| **WS-C3850-24XU-S** | Cisco Catalyst 3850 24 mGig Port UPoE IP Base | 5 | $5,421.00 | $27,105.00 |
| CON-SW-WSC3852X | SNTC-NO RMA Cisco Catalyst 3850 | 5 | $0.00 | $0.00 |
| PWR-C1-BLANK | Config 1 Power Supply Blank | 5 | $0.00 | $0.00 |
| PWR-C1-1100WAC | 1100W AC Config 1 Power Supply | 5 | $0.00 | $0.00 |
| S3850UK9-163 | UNIVERSAL | 5 | $0.00 | $0.00 |
| C3850-NM-2-10G | Cisco Catalyst 3850 2 x 10GE Network Module | 5 | $975.00 | $4,875.00 |
| CAB-TA-NA | North America AC Type A Power Cable | 5 | $0.00 | $0.00 |
| STACK-T1-50CM | 50CM Type 1 Stacking Cable | 5 | $0.00 | $0.00 |
| CAB-SPWR-30CM | Catalyst 3750X and 3850 Stack Power Cable 30 CM | 5 | $0.00 | $0.00 |
| **WS-C2960X-48FPD-L** | Catalyst 2960-X 48 GigE PoE 740W, 2 x 10G SFP+, LAN Base | 25 | $3,118.05 | $77,951.25 |
| CON-SW-WSC296XL | SNTC-NO RMA Catalyst 2960-X 48 GigE PoE 740W, 2 x 10 | 25 | $0.00 | $0.00 |
| CAB-16AWG-AC | AC Power cord, 16AWG | 25 | $0.00 | $0.00 |
| C2960X-STACK | Catalyst 2960-X FlexStack Plus Stacking Module | 25 | $466.05 | $11,651.25 |
| CAB-STK-E-0.5M | Cisco FlexStack 50cm stacking cable | 25 | $0.00 | $0.00 |
| **SFP-H10GB-CU3M=** | 10GBASE-CU SFP+ Cable 3 Meter | 2 | $39.00 | $78.00 |
| **SFP-10G-LRM=** | 10GBASE-LRM SFP Module | 40 | $388.05 | $15,522.00 |
| | | | subtotal | $152,782.50 |
| | Fiber Jumpers | | | |
| **Fiber Jumpers** | Fiber Jumpers - 3M MMF 62.5/125 | 40 | $30.00 | $1,200.00 |
| | | | subtotal | $1,200.00 |
| | Professional Services | | | |
| **NET-PRO-SRVC** | Installation & Deployment per SoW | 1 | $10,868.00 | $10,868.00 |
| | | | subtotal | $10,868.00 |
| | | | Site Total: | $164,850.50 |

**Netsync Network Solutions - Quote AAAQ30159**      **GRAND TOTAL:**      **$333,730.90**

**DIR-TSO-2542 - Cisco**

EDUCATION SERVICE CENTER REGION 11

E-Rate Category 1 Fiber Backbone Project

Hub Site Participation Meeting

3/24/2017

## Scope

The intent of this project is to provide high capacity Internet transport service for ESC11 supported districts over an E-Rate funded private backbone transport network. This would consist of a 100Gbps transport over two fiber backbone rings to designated hub locations in the ESC11 service area. 10Gbps handoff would then be provided to the local hub locations as well as to downstream spoke locations from these hub sites.

In light of increasing Internet access and transport costs and the elimination of HB2128, this service will provide lower cost per bit access for internet access services. This will also allow higher capacity transport, previously not commercially available to some locations in the ESC11 service area.

## Topology Overview

Each district location (including hub sites) will be provisioned with a demarcation router. This will be a Cisco ASR-920-4SZ-A. This will serve as the point at which the customer premised equipment (CPE) will connect to the ESC11 backbone network. Each customer will have the option to connect via 1Gbps or 10Gbps to the demarcation. This demarcation router should be located in the same cabinet as the hub site gear, or could be provisioned in another cabinet based on specific curcumstances. Distance limitations to the demark router will be determined by the optics inserted into the demarc router and will be specified during site survey activities.

Specifications on this router are found within this packet including power and rackmount requirements.

The uplink from the demarcation router will be connected via optics and cables that will be provided by ESC11. This will connect to a 10Gbps interface on a Cisco NCS2006 Optical Shelf. This shelf will take the local 10Gbp(s) interfaces as well as the downstream fiber connections to other districts and multiplex these connections over the backbone fiber connection.

Specifications for the NCS2006 are also included in this packet.

A subset of the hub locations including Fort Worth, Godley, Alvarado, Weatherford, Azle, Northwest and Grapevine will also house a Automated Protection Switch to provide additional path redundancy for the transport ring.

Specifications for this Protection Switch are included in this packet.

The fiber backbone rings will terminate into a pair of NCS Optical Shelves at ECS Region 11. This will then provide interconnect into a pair of ASR9904 Routers which will provide layer 3 services for the backbone. This will in-turn connect to dual 100Gbps Internet links to Zayo.

This topology will provide a high-availability based on hardware and transport redundancy strategies.