



Robert Frisby, Director of Technology Services

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## MEMORANDUM

TO: Dr. Rob Jackson, Superintendent

FROM: Robert Frisby, Director of Technology Services

CC: Tina Thorpe, Chief Financial Officer  
Lisa Sharpe, Accounts Payable, Purchasing, and Risk Control Manager

DATE: January 24, 2023

SUBJECT: Award Wide Area Network (WAN) Contract

The Buncombe County Schools (BCS) Wide Area Network (WAN) connects all BCS local area networks (LAN, buildings) to one central location and allows communication between each building.

Following the required E-Rate From 470 competitive bidding process the following vendor has been selected for our Wide Area Network service provider based on these factors:

- Price of Eligible Services
- Ineligible Cost Factors
- Prior Experience with Vendor
- Responsiveness/Local In-State Vendor
- Proposed Contract Terms & Conditions
- Technical Merit/Product Evaluation/Key Technical Features

Conterra Ultra Broadband, LLC represents the most effective solution in meeting the current and future WAN needs of Buncombe County Schools.

Service	Award	Annual Cost	Actual Cost to BCS
Wide Area Network	Conterra Ultra Broadband, LLC(i)	\$525,093.24	\$0.00 (After E-Rate discounts & NCDPI funding)

Technology Services recommends awarding the Wide Area Network (WAN) contract to Conterra Ultra Broadband, LLC

## WIDE AREA NETWORK TELECOMMUNICATIONS SERVICE AGREEMENT

This Telecommunications Service Agreement (the "Agreement") is entered into as of this \_\_\_\_ day of \_\_\_\_\_, 20\_\_ (the "Effective Date"), by and between Conterra Ultra Broadband, LLC ("CONTERRA"), a limited liability company organized under the laws of the State of South Carolina, with its principal place of business located at 5301 77 Center Drive, Charlotte, North Carolina, 28217, and Buncombe County Schools ("CUSTOMER"), with its principal place of business located at 175 Bingham Road, Asheville, North Carolina 28806. This Agreement sets forth the terms and conditions under which CONTERRA will deploy and provide certain telecommunications and related services described herein (the "Services") for the CUSTOMER and CUSTOMER'S employees, agents and students. CONTERRA and CUSTOMER may be individually referred to herein as "party" or collectively as "parties."

### DEFINITIONS

"USAC" shall mean the Universal Service Administrative Company that administers the Universal Service Fund under the Federal Telecommunications Act of 1996, including the Schools and Libraries Division ("SLD") thereof.

"E-Rate" shall mean the Schools and Libraries Universal Support Mechanism administered by the Schools and Libraries Division ("SLD") of USAC.

"E-Rate Discount" shall mean the discount percentage approved by SLD for the current Funding Year, as defined by SLD, as shown on the Funding Commitment Decision Letter, and for which SLD agrees to provide E-Rate Funding.

"E-Rate Funding" shall mean (i) the agreement by SLD to provide funds through E-Rate to CUSTOMER to subsidize the provision of the Services to CUSTOMER, and (ii) the funds so provided.

"FCDL" shall mean the Funding Commitment Decision Letter issued by SLD to the CUSTOMER and CONTERRA notifying CUSTOMER and CONTERRA of approval by SLD of E-Rate Funding.

"Certification" shall mean the verification by CONTERRA, as acknowledged by CUSTOMER, that the Services meet the performance requirements set forth in Attachment A.

"Deficient Minutes" shall be the total number of minutes in a calendar month that are in excess of the number of minutes of path non-availability permitted by the terms of the Services level standards that CONTERRA is required to meet under the terms of this Agreement.

"Deficiency Credit" shall mean an amount equal to the total number of Deficient Minutes in the calendar month for which such Deficiency Credit is sought multiplied by a fraction of which the numerator is the Monthly Service Fee, and the denominator is the number of minutes in the relevant month.

"Infrastructure" shall mean the CONTERRA-owned service delivery infrastructure deployed and maintained by CONTERRA and used in the provision of the Services to CUSTOMER.

"Service Locations" shall mean the location(s) specified in Attachment A at which Service and Infrastructure is deployed.

"Non-Recurring Charge" shall mean that portion of the total charge for the provision of the Services under this Agreement that is designated as the non-recurring charge listed on Attachment A for the use of the Infrastructure.

"Monthly Service Fee" shall, during the initial Term and any extension hereof enacted pursuant to Section 9 of this Agreement, mean the monthly service charge listed on Attachment A.

"Outage Event" shall mean any outage or other loss of the Services, other than any outage that (i) is not reported by CUSTOMER to CONTERRA within five (5) days of occurrence, (ii) is less than one (1) hour in duration, (iii) is attributable to CONTERRA's scheduled network maintenance, (iv) is attributable to failure

or outage of related telephone circuits (whether ordered by CONTERRA or CUSTOMER), (v) results from CUSTOMER's applications, equipment or facilities, (vi) results from any act or omission of CUSTOMER or any user of CUSTOMER's equipment or account, or (vii) is due to or occasioned by any riots, wars, acts of enemies, national emergency, acts of vandalism, strikes, floods, fires, hurricanes, tornados, acts of God, or by any other cause not within the control of CONTERRA that by the exercise of reasonable diligence CONTERRA is unable to prevent, (viii) results from CONTERRA not having been granted site access by the CUSTOMER, or (ix) results from CUSTOMER'S unauthorized use of equipment or the Services.

"Site Access" shall mean twenty-four (24) hours a day, seven (7) days a week, three hundred sixty-five (365) days a year ("24x7x365") access to CUSTOMER premise(s) provided to CONTERRA for routine or emergency maintenance of the CONTERRA network.

"Service Window" shall mean 7:00 a.m. through 5:00 p.m. local time where the Services are being provided, Monday through Friday, excluding federal holidays and other non-workdays.

## TERMS AND CONDITIONS

### 1. Conditions of this Agreement

- (a) The parties acknowledge that this Agreement is contingent upon CUSTOMER obtaining E-Rate Funding for this project from the SLD.

### 2. The Service, Deployment and Access.

- (a) The Services. Subject to and in accordance with the terms and conditions of this Agreement, CONTERRA shall provide to CUSTOMER at mutually-agreeable CUSTOMER'S designated locations the Services as defined in Attachment A hereto.
- (b) Deployment. CONTERRA, its agent(s) or contractor(s) shall schedule deployment meetings with the CUSTOMER. CONTERRA shall deploy the CONTERRA-owned service Infrastructure. CUSTOMER's appointed representative must be present on a regular basis during deployment to be performed by CONTERRA. CONTERRA assumes no liability for files, data, or other information that may be lost on CUSTOMER'S computer system during the deployment process and CUSTOMER agrees to hold CONTERRA harmless for all such lost files, data and other information. After deployment and during the Term of this Agreement, CUSTOMER shall provide CONTERRA with 24x7x365 access to CUSTOMER'S premise(s) to inspect, repair and maintain CONTERRA's Infrastructure. Upon termination or expiration of this Agreement, or disconnection of the Services, CUSTOMER shall be obligated to return the Infrastructure to CONTERRA or to provide CONTERRA with access to CUSTOMER'S premise(s) to recover such Infrastructure as CONTERRA in its sole discretion shall decide. CONTERRA shall not be held liable for, nor will CONTERRA restore or reconfigure the CUSTOMER'S new or existing network components after de-deployment. Even if the Infrastructure (or any portion of the Infrastructure) is or becomes physically attached in any manner to real estate at the Service Location (including any building on such real estate), in no event will the Infrastructure be deemed to be affixed to or as a part of such real estate. Rather, the Infrastructure is and shall remain CONTERRA's personal property. Alternatively, as a common carrier, CONTERRA may opt to leave the Infrastructure at the Service Locations. In such event, CONTERRA may continue to make any substitutions to or modifications of and maintain the Infrastructure. The Infrastructure shall not be for the exclusive use of the CUSTOMER but may be used by CONTERRA as CONTERRA shall decide. Throughout the useful life of the Infrastructure, CUSTOMER shall supply (or cause to be supplied) electricity to that Infrastructure and CUSTOMER grants CONTERRA an exclusive, non-revocable license and easement to use those parcels of real property that CONTERRA deems necessary to install, operate and maintain fiber optic cable thereon and to place certain buildings or enclosures thereon and such Infrastructure as CONTERRA determines may be necessary or compatible with the conduct of CONTERRA's business. In addition, CUSTOMER grants to CONTERRA an exclusive right to deploy transmission cables and lines between the CUSTOMER's property line and the Service Locations in connection with CONTERRA's use, maintenance, and operation of the Infrastructure. The license or easement granted shall include and also be classified, and documented, if necessary, as a leasehold interest for the limited purpose of CONTERRA gaining access to CUSTOMER property to construct, maintain, modify and service CONTERRA-owned and/or provided Infrastructure, thus enabling CONTERRA to comply with State and local construction laws and contractor requirements.

As a common carrier, CONTERRA may utilize all of the CONTERRA-owned Infrastructure to serve other customers, and for internal communications for the management and maintenance of its network. It is expressly understood that all rights granted to CONTERRA under this license are irrevocable until thirty years after the expiration or earlier termination of this Agreement, any Amendment thereto, or the provision of Services. CONTERRA may use the Infrastructure and real property for any activity in connection with the provision of other communication services as CONTERRA determines may be necessary or compatible with the conduct of CONTERRA's business. CONTERRA may make any substitutions to or modifications of the Infrastructure as it determines may be necessary or compatible with the conduct of CONTERRA's business. In addition, CONTERRA may lease capacity on its Infrastructure to a third party.

- (c) Governmental Approval. CONTERRA shall use commercially reasonable efforts to procure, process, or to receive any governmental licenses, permits, consents or approvals necessary for the deployment of the Infrastructure ("Authorizations"). CUSTOMER shall cooperate fully with CONTERRA in order to secure any such Authorizations. In the event that CONTERRA is unable to secure any such Authorizations within a reasonable time and at a reasonable cost (as determined by CONTERRA in its reasonable judgment), CONTERRA may terminate this Agreement by notifying CUSTOMER. All work hereunder which is required by the law of the state within which CUSTOMER is located to be performed by a licensed contractor shall be performed by an appropriately licensed contractor.
- (d) Changes in Deployment. In the event that CUSTOMER requests that CONTERRA modify the network design then CUSTOMER shall be responsible for all costs and related charges associated with any such request.
- (e) Change Order. Any changes requested or required by the CUSTOMER that differ from the network design must be properly authorized in a written directive from CUSTOMER. Any change is subject to the network design limitations and CUSTOMER shall pay, as a relocation or reconfiguration fee, CONTERRA's actual out-of-pocket cost and the cost of all labor and services of any such relocation or reconfiguration ("Costs") plus an additional twenty percent (20%) of the Costs.
- (f) Scalable Broadband Services. CONTERRA's network may be expanded to include additional locations and capacity increased at any time during the Term of this Agreement to meet CUSTOMER's requirements. CUSTOMER shall request specific service upgrades based on pricing quoted at time of request. CUSTOMER may add sites (subject to changes in pricing and/or fees) at any time during the Term of this Agreement.

### **3. CONTERRA Service Levels, Support, Maintenance and Indemnification.**

- (a) Availability Commitment. CONTERRA custom engineers each network solution up to 99.99% availability. CONTERRA shall use commercially reasonable efforts to maintain Services availability for the CUSTOMER 100% of the time, except during Outage Events. At CUSTOMER's request, CONTERRA shall calculate the Deficiency Credit for any calendar month. CONTERRA shall credit to CUSTOMER's account as a refund the Deficiency Credit upon written request by CUSTOMER.
- (b) Latency and Jitter Commitment. CONTERRA's goal is for round-trip transmissions between designated end-points to average ten (10) milliseconds or less except during Outage Events ("Latency Commitment"). The foregoing Latency Commitment is measured by averaging sample measurements taken during the Service Window between hub routers. Upon written request of CUSTOMER, for each minute in the Service Window during a calendar month for which CONTERRA fails to satisfy its Latency Commitment, CONTERRA shall credit to CUSTOMER's account as a refund the total number of latency minutes divided by the total number of minutes during the Service Window in that month. CONTERRA'S Jitter commitment is < 2 milliseconds one way.
- (c) Packet Loss Commitment. CONTERRA's network packet loss between designated end-points shall be limited to 0.1% or less each day except during Outage Events ("Packet Loss Commitment"). Packet loss is measured by standard, industry-accepted methods and measured during the Service Window between designated end-points. Upon written request of CUSTOMER, for each minute in the Service Window for which CONTERRA fails to satisfy its Packet Loss Commitment during a calendar month, CONTERRA shall refund the total number of minutes where there was a packet loss of more than .1% divided by the total number of minutes during the Service Window in that month.
- (d) CUSTOMER Reporting Commitment. CONTERRA shall provide CUSTOMER at least forty-eight (48) hours advance notice of scheduled outages for network maintenance. The standard weekly maintenance window is Monday through Sunday from 1:00 a.m. to 6:00 a.m. local time. Notice of other

scheduled maintenance outages will be provided to CUSTOMER's designated point of contact by telephone, e-mail, fax, or pager as elected by CONTERRA.

- (e) Credit Limit. In no event shall CUSTOMER's total credits for any calendar month exceed the Monthly Service Fee.
- (f) CONTERRA Support. CONTERRA shall, at its option and convenience, repair or replace any Infrastructure not functioning in accordance with CONTERRA'S contracted specifications for the Services. CONTERRA shall not provide technical support, maintenance, repair or deployment service for CUSTOMER's software, hardware or equipment unless CONTERRA, in its sole discretion, agrees to do so in a separate written contract. CONTERRA shall provide CUSTOMER support for use of the Services only as, when, and to the extent CONTERRA deems appropriate from time to time in its sole discretion. CUSTOMER support will be available on a commercially reasonable basis via telephone, via electronic mail or through CONTERRA's Internet site ([www.conterra.com](http://www.conterra.com)) ("Internet Site"). Telephone numbers for such CUSTOMER support are posted on the CONTERRA Internet Site and are included in Section 7 of this Agreement. If CUSTOMER'S use of the Services requires that CONTERRA visit CUSTOMER'S premises for assistance, repair, deployment or connection, CONTERRA shall be entitled to charge CUSTOMER CONTERRA's then prevailing labor rates and related costs for each such visit, and CUSTOMER agrees to pay CONTERRA such charges. CONTERRA does not undertake to correct or repair and shall have no responsibility for the correction or repair of, software, hardware or equipment that CONTERRA does not supply. CONTERRA will undertake commercially reasonable network management, traffic analysis, operational procedures and user policies to support the service level standards provided in this Section 3.
- (g) CONTERRA Response Times. CONTERRA shall provide a CUSTOMER support service contact point. CONTERRA shall respond within an average of four (4) hours to any CUSTOMER notification made to this contact point, of any failure of any Infrastructure to meet CONTERRA'S published specifications for the Services.
- (h) Indemnification. CONTERRA agrees to indemnify and hold harmless CUSTOMER, and its board members, employees, agents and representatives (collectively, "CUSTOMER Indemnities") against any and all costs, claims, liabilities or expenses that any of the CUSTOMER Indemnities may incur as a result of, or arising out of, or related to CONTERRA'S willful, negligent, tortious or criminal acts or omissions. In the event of any claim, which, if true, would be subject to indemnification hereunder, CUSTOMER or the affected CUSTOMER Indemnities shall notify CONTERRA and CONTERRA shall cooperate in their defense at CONTERRA's cost and expense.

#### **4. CUSTOMER'S Obligations.**

- (a) FCC Form 471 Application Review. CUSTOMER shall promptly notify CONTERRA of any PIA review, Selective Review, audit, or other contact from the SLD during review of its FCC Form 471 Description of Services Ordered which may affect the availability or amount of funds due from the SLD during the Term of this Agreement, including any extensions hereof. CUSTOMER shall comply with SLD requests for additional or clarifying information according to E-Rate program rules as established by the FCC and administered by USAC.
- (b) Certification of Services and FCC Form 486. CUSTOMER shall provide prompt acknowledgement of the Certification by CONTERRA of the Services when CONTERRA demonstrates the performance of the Infrastructure in accordance with Attachment A. CUSTOMER shall promptly file FCC Form 486 Receipt of Service Confirmation with USAC. Failure to file the Form 486 in a timely manner may result in CUSTOMER becoming liable to CONTERRA for the discounted portion of any funds due hereunder.
- (c) Payment.
  - i. Non-Recurring Charge. Upon Certification of the deployment of the Infrastructure, CONTERRA shall invoice CUSTOMER the applicable Non-Recurring Charge specified in Attachment A. CUSTOMER shall pay the Non-Recurring Charge within thirty (30) days of the invoice. If applicable, CONTERRA will invoice CUSTOMER on a per site basis until all sites are operational.
  - ii. Monthly Service Fee. CONTERRA shall invoice CUSTOMER each month in advance for a Monthly Service Fee as shown in Attachment A of this Service Agreement. CUSTOMER shall pay the Monthly Service Fee within thirty (30) days of the invoice. If applicable, CONTERRA will invoice CUSTOMER on a per site basis until all sites are operational.
  - iii. Collection of SLD Funds. CONTERRA will be responsible for collection of the E-Rate Discount from SLD by filing an FCC Form 474 Service Provider Invoice.
  - iv. CUSTOMER Ultimately Responsible. NOTWITHSTANDING ANYTHING TO THE CONTRARY,

CUSTOMER IS RESPONSIBLE FOR PAYMENT OF ALL FEES INCLUDING ANY DISCOUNT AMOUNTS OWED BY USAC.

- v. *Failure To Pay.* If CUSTOMER fails to pay the Monthly Service Fee within thirty (30) calendar days of the due date, CONTERRA may impose a late fee or disconnect the Services, or both, in its sole discretion. CUSTOMER shall pay CONTERRA such late fees. CONTERRA's late payment fee shall be five (5%) of the Monthly Service Fee.
- vi. *Re-connect.* If CUSTOMER disconnects the Services or if CUSTOMER'S Services are disconnected due to nonpayment or other breach of this Agreement, and if CONTERRA subsequently agrees to reconnect the Services, CUSTOMER may be charged a fee for reconnecting and redeploying the Services. Such fee shall be equal to one hundred percent (100%) of the then applicable Monthly Service Fee.
- vii. *Charges for other services or goods.* From time-to-time CUSTOMER may decide to select additional services or purchase additional goods offered by CONTERRA or by third parties. The Monthly Service Fee does not cover any such services and goods, and the CUSTOMER shall be charged separately for them. CUSTOMER agrees to pay for such other services and goods that it selects or purchases.
- viii. *Taxes and Surcharges.* Except for taxes based on CONTERRA'S net income, all applicable federal, state or local taxes and surcharges, now or hereinafter enacted or placed into effect including without limitation all use, sales, excise, commercial, gross receipts, privilege, right-of-way, occupation, surcharges, or other similar taxes and surcharges, whether charged to or against CONTERRA or CUSTOMER (collectively, the "Taxes"), will be payable by CUSTOMER, including, without limitation, any cost recovery fee which will represent an accurate and non-inflated recovery of CONTERRA's, or any underlying provider's, miscellaneous tax and surcharge payments to federal, state or local governmental authorities associated with the provision of the Services (including any WAN facilities) by CONTERRA to CUSTOMER pursuant to this Agreement. CUSTOMER shall be required to provide documentation evidencing its exemption from any such Taxes. CUSTOMER acknowledges and certifies that, for the duration of the Term, the interstate traffic will constitute ten percent (10%) or less of the total traffic on the fiber network that has been provided by CONTERRA. In the event the interstate telecommunication service traffic exceeds ten percent (10%) of the total traffic on the fiber network provided by CONTERRA, CUSTOMER shall notify CONTERRA and provide CONTERRA any and all relevant documentation necessary to establish the percentage of interstate telecommunications service traffic utilized by CUSTOMER on the fiber network provided by CONTERRA. For purposes of this paragraph, the term interstate telecommunications services includes international telecommunications service but does not include information service of any kind, including but not limited to internet access service.
- (d) E-Rate Applications. CUSTOMER has an obligation to obtain and maintain E-Rate Funding throughout the Term of this Agreement. Failure of CUSTOMER to file all appropriate paperwork within established USAC deadlines and perform all administrative tasks to obtain and maintain E-Rate Funding will result in CUSTOMER becoming liable to CONTERRA for the discounted portion of any funds due hereunder. CUSTOMER also agrees it has an obligation to secure and maintain E-Rate Funding for the entire Term of the Agreement, notwithstanding the fact that CUSTOMER's FCC Form 470 Description of Services Requested may have been submitted for a single-year rather than multi-year term.
- (e) Utilities. CUSTOMER shall provide electrical services to the CONTERRA Infrastructure as required by CONTERRA.
- (f) Current address and information. CUSTOMER is required, and agrees, to keep CONTERRA notified in a timely manner of any changes in the information CUSTOMER provides to CONTERRA, including information provided when CUSTOMER initiates use of the Services.
- (g) Assignment or Sharing of Service. CUSTOMER may not resell, share, sublicense or otherwise distribute the Services, or any portion thereof, to any third party without the prior written consent of CONTERRA.
- (h) School/Facility Closure. CUSTOMER shall immediately notify CONTERRA if CUSTOMER becomes aware that the school or facility governed by this Agreement will be closed prior to the Term of this Agreement or any extension. CUSTOMER has the duty to notify CONTERRA as soon as CUSTOMER receives such information. CUSTOMER shall be responsible for all remaining monthly recurring costs and fees associated with the school or facility for the remainder of the Service Term or any then current Extension Term.

**5. CUSTOMER'S Warranties, Representations and Indemnification.**

- (a) Warranties and Representations. CUSTOMER warrants and represents that CUSTOMER shall use the Services only for the originally intended purpose(s), in accordance with this Agreement, all FCC and USAC rules and regulations, and all applicable laws, and CUSTOMER shall make all payments required herein plus any and all applicable Taxes. CUSTOMER warrants that all funds due from CUSTOMER hereunder have been allocated for the uses contemplated in this Agreement or if they have not been allocated, CUSTOMER believes that such funds will be allocated (on an annual basis for the term of the contract and any corresponding extension or renewal), that there is no current basis to believe that such funds will not be allocated, and that CUSTOMER has taken every necessary step to assure the availability of CUSTOMER funds hereunder.
- (b) CUSTOMER Indemnification. To the fullest extent allowed by law, CUSTOMER agrees to indemnify and hold harmless CONTERRA, its parent, subsidiaries and affiliates, assigns and the members, officers, directors, employees, contractors, agents and representatives of CONTERRA and its subsidiaries and affiliates (together "CONTERRA Indemnities") against any and all costs, claims, liabilities or expenses any of the CONTERRA Indemnities may incur as a result of, or arising out of, or related to: (i) CUSTOMER'S breach of this Agreement or of CUSTOMER'S warranties and representations made herein; (ii) CUSTOMER'S willful, negligent, tortious or criminal acts or omissions; (iii) any improper use of CUSTOMER'S password, name or user name; or (iv) CUSTOMER'S violation of any third party's rights. In the event of any claim, which, if true, would be subject to indemnification hereunder, CONTERRA or the affected CONTERRA Indemnities shall notify CUSTOMER and CUSTOMER shall cooperate in their defense at CUSTOMER'S sole cost and expense. As part of CUSTOMER'S indemnification obligations, CUSTOMER shall reimburse CONTERRA for any costs that CONTERRA incurs, including complaint fees charged by jurisdictional authorities, network or service providers, and investigation expenses, due to complaints filed regarding CUSTOMER'S activity (or activity for which CUSTOMER is responsible) in using the Services.

**6. CONTERRA's Ownership of Service Infrastructure, Hardware and Appurtenances.**

The Infrastructure, hardware and appurtenances (to include, but not limited to, fiber optic cabling and apertures) to be located on CUSTOMER premises by CONTERRA to provide the Services under this Agreement are, and shall remain, the property of CONTERRA. Additionally, such of these items as CONTERRA may request shall be returned to CONTERRA in good and working condition upon the termination or expiration of this Agreement, or the disconnection of CUSTOMER'S Services. CUSTOMER shall use reasonable care to avoid damaging any and all Infrastructure and hardware components of the CONTERRA deployment, and shall not alter, modify, sell, license, lease, assign, encumber, relocate, move or tamper with any of the same. Additionally, CUSTOMER shall be responsible for all costs of repair or replacement of items returned damaged or in poor working condition due to CUSTOMER's negligence or failure to properly care for said Infrastructure, hardware or appurtenances. CONTERRA reserves the right to make modifications to the Infrastructure for purposes of providing services to other entities. In the event that CONTERRA elects to leave any Infrastructure on the CUSTOMER's premises after such termination or expiration hereof, CUSTOMER grants CONTERRA an exclusive license to maintain and access such Infrastructure for the useful life of same and also agrees to allow CONTERRA to purchase electrical service to maintain such Infrastructure at market price for the actual cost of such electrical service used. CONTERRA shall continue to maintain all insurances required hereunder during the duration of this exclusive license.

**7. Contact Us.**

- (a) Notices. All notices, invoices and other communications required or permitted under this Agreement shall be in writing and shall be deemed to have been given only if and when: (i) personally delivered (including by means of a messenger service), or (ii) by United States first class mail postage prepaid (registered or certified) return receipt requested, or (iii) when delivered (and receipted for) by an overnight delivery service, in each case addressed to the address set forth in the first paragraph of this Agreement.
- (b) Billing Information, Questions or Concerns. If CUSTOMER has questions or concerns or simply would like more information about the costs CUSTOMER might incur in using the Services or with CUSTOMER'S particular account, CUSTOMER may contact CONTERRA at 1.877.365.6701.
- (c) General Information. For general information about CONTERRA and CONTERRA's services, CUSTOMER may visit the CONTERRA Internet Site or contact CONTERRA at 1.877.365.6701.

- (d) CUSTOMER Support and Service. For CUSTOMER service and support, CUSTOMER may contact CONTERRA via telephone, via electronic mail or via the CONTERRA Internet Site. CUSTOMER shall visit the CONTERRA Internet Site for up-to-date contact information.

**8. Disclaimers and Limitation of CONTERRA's Liability.**

- (a) CUSTOMER EXPRESSLY ACKNOWLEDGES AND AGREES THAT (i) THE SERVICES, SOFTWARE, DATA AND ANY OTHER SERVICES, SOFTWARE OR INFRASTRUCTURE PROVIDED BY CONTERRA UNDER THIS AGREEMENT ARE NOT GUARANTEED TO BE ERROR FREE, UNINTERRUPTED, SECURE OR ALWAYS AVAILABLE OR AVAILABLE WITH SUFFICIENT CAPACITY; (ii) THE USE OF THE SERVICES, THE INTERNET, AND ANY SOFTWARE OR INFRASTRUCTURE PROVIDED BY CONTERRA IS AT CUSTOMER'S SOLE RISK; AND (iii) ANY AND ALL CONTERRA SERVICES AND PRODUCTS ARE PROVIDED "AS IS AND AS AVAILABLE" WITHOUT WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, WARRANTIES OF TITLE, NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OTHER THAN WARRANTIES WHICH CANNOT LEGALLY BE EXCLUDED. CONTERRA MAKES NO WARRANTY THAT THE SERVICE WILL WORK ON CUSTOMER'S PARTICULAR COMPUTER, NETWORK OR COMPUTER SYSTEM EXCEPT AS DEFINED BY THE IEEE STANDARD 802.3 DEFINING THE PHYSICAL LAYER AND TRANSPORT LAYER OF ETHERNET. CUSTOMER FURTHER EXPRESSLY ACKNOWLEDGES AND AGREES THAT (i) CONTERRA SHALL HAVE NO RESPONSIBILITY FOR DAMAGE OR DESTRUCTION TO CUSTOMER'S COMPUTER OR NETWORK SYSTEM, DATA, INFORMATION OR INFRASTRUCTURE UNLESS THROUGH NEGLIGENCE ON BEHALF OF CONTERRA; (ii) CONTERRA HAS NO RESPONSIBILITY WHATSOEVER FOR ANY THIRD PARTY CONTENT, DATA, INFORMATION, PROGRAMS OR OTHER MATERIAL THAT CUSTOMER MAY USE WITH OR ACCESS USING THE SERVICES; (iii) IT IS SOLELY THE CUSTOMER'S RESPONSIBILITY TO EVALUATE THE ACCURACY, COMPLETENESS AND USEFULNESS OF ALL OPINIONS, ADVICE, SERVICES, MERCHANDISE AND OTHER INFORMATION PROVIDED THROUGH THE SERVICE OR ON THE INTERNET GENERALLY; AND (iv) IN NO EVENT SHALL CONTERRA BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, ACTUAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS OF ANY KIND WHATSOEVER) ARISING OUT OF OR RELATED TO THIS AGREEMENT OR THE DEPLOYMENT, USE, MAINTENANCE, FAILURE, REMOVAL OR OPERATION OF THE SERVICES, SOFTWARE OR INFRASTRUCTURE PROVIDED BY CONTERRA, WHETHER BASED ON CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE, EVEN IF CONTERRA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BECAUSE SOME STATES AND OTHER JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO CUSTOMER AND IN SUCH STATES OR OTHER JURISDICTIONS CONTERRA'S LIABILITY SHALL BE LIMITED TO THE MAXIMUM EXTENT PERMITTED BY LAW.
- (b) SUBJECT TO THE FOREGOING, CUSTOMER EXPRESSLY ACKNOWLEDGES AND AGREES THAT (i) CONTERRA'S MAXIMUM LIABILITY TO CUSTOMER UNDER THIS AGREEMENT OR ARISING OUT OF OR RELATED TO THE SERVICES WILL BE THE AGGREGATE AMOUNT CUSTOMER HAS ACTUALLY PAID TO CONTERRA FOR THE SERVICE; (ii) CONTERRA HAS ESTABLISHED ITS PRICING FOR THE SERVICES AND ENTERED INTO THIS AGREEMENT IN RELIANCE UPON THE LIMITATIONS OF LIABILITY SET FORTH HEREIN, AND THAT THE SAME FORM AN ESSENTIAL BASIS OF THE BARGAIN BETWEEN THE PARTIES; AND (iii) THE LIMITATIONS AND EXCLUSIONS OF LIABILITY AND DISCLAIMERS SPECIFIED IN THIS TELECOMMUNICATIONS SERVICE AGREEMENT SHALL SURVIVE AND APPLY EVEN IF FOUND TO HAVE FAILED THEIR ESSENTIAL PURPOSE. THE FOREGOING IS SUBJECT ONLY TO THE SPECIFIC SERVICE LEVEL STANDARDS AND REMEDIES SET FORTH IN SECTION 3 ABOVE.

**9. Term and Termination.**

- (a) Services Term. The initial term of this Agreement shall begin on the Effective Date. The initial term of Services under this Agreement (the "Services") shall begin on July 1, 2023 or when Services commence and, unless earlier terminated as hereinafter provided, shall expire on June 30, 2028 ("Expiration Date"). The Agreement shall be coterminous with this date. Upon commencement of Services, CUSTOMER is responsible for and shall provide USAC with the Agreement termination date (within 10 days thereof) via the applicable form(s).



- (b) Extension of Term. The initial Term or any subsequent term, may be extended by exercising any of the following options:
- (i.) CUSTOMER has the option to extend for ten (10) extension periods of one (1) year each ("Extension Term"), through the provision of written notice to CONTERRA not less than one hundred eighty (180) days before the expiration date or the end the Extension Term. The Monthly Service Fee may be adjusted as of the first day of any Extension Term (the "Adjustment Date") by mutual agreement, in writing, by the parties no later than 180 days prior to the Expiration Date or the end of the Extension Term.
  - (ii.) The CUSTOMER may request an extension of the initial contract Term, or any Extension Term, if such extension is necessary, to make this Agreement coincide with the "funding year" or "implementation period" as defined by E-Rate rules. Any such request must be made no less than ninety (90) days prior to the expiration of the Term during which a request pursuant to this subsection was made ("Current Term"), whether it is the initial contract Term or an Extension Term and must include the new proposed termination date of the Agreement. CONTERRA is not required to agree to such a request, and nothing in this subsection creates any obligation on the part of CONTERRA to continue providing service to CUSTOMER following the expiration of the Current Term. In the event CONTERRA agrees to a request made pursuant to this subsection, CUSTOMER agrees to pay the Monthly Service Fee for each month past the Current Term during which service is provided by CONTERRA.
- (c) Termination by CONTERRA for Loss of E-Rate Funding. The parties acknowledge and agree that this Agreement is contingent upon CUSTOMER filing for and obtaining E-Rate Funding for the Services from the SLD. If E-Rate Funding for this project is not maintained by SLD after the first year of this Agreement, CONTERRA will make all reasonable efforts to maintain Services for CUSTOMER. CUSTOMER may assume full liability for Services or, after the third year of this Agreement, request a re-price of Services. Notwithstanding the above, CONTERRA reserves the right to terminate this Agreement if new payment arrangements cannot be made and will face no financial penalties by providing prompt written notification of such occurrence to CUSTOMER. In such event this Agreement will terminate on the last day of the fiscal period for which commitments were received. CUSTOMER will remain liable to CONTERRA for any payments attributable to periods for which E-Rate funds have been committed. In addition, CUSTOMER is liable for all remaining monthly recurring costs and fees for the remainder of the Service Term or any then current Extension Term. CUSTOMER shall be responsible for returning the Infrastructure that CONTERRA requests be returned.
- (d) Termination by CUSTOMER. The parties further acknowledge and agree that if the CUSTOMER terminates this Agreement after the network is deployed, CUSTOMER shall pay CONTERRA the cost to de-deploy the CONTERRA-owned Infrastructure. In addition, the CUSTOMER shall pay all remaining monthly costs and fees due through the end of the contract Term. In such event this Agreement will terminate on the last day of the fiscal period for which commitments were received. CUSTOMER also agrees to not procure services from any other provider which are similar or analogous to services provided under this Agreement for the entire unexpired initial Term of this Agreement.
- (e) Termination by CUSTOMER. If CONTERRA repeatedly and persistently fails to substantially provide the Services as required by the terms of this Agreement, CUSTOMER may terminate this Agreement by written notice to CONTERRA. CUSTOMER shall give CONTERRA ninety (90) days written notice of such intention to terminate and an opportunity to cure any such default. In the event that CONTERRA commences to cure and diligently pursues cure during that ninety (90) day period, then CUSTOMER may not terminate this Agreement.
- (f) Termination by CONTERRA. If CUSTOMER breaches this Agreement and following a minimum thirty (30) day written notice to CUSTOMER, CONTERRA reserves the right in its discretion to suspend or terminate this Agreement and to disconnect the Services, in whole or in part, with just cause as provided for by this Agreement, and providing the cause has been fully declared to the CUSTOMER, allowing the CUSTOMER the thirty (30) days to cure said cause. In addition, CUSTOMER shall pay CONTERRA the cost to de-deploy the CONTERRA-owned Infrastructure, and CUSTOMER shall be liable for all remaining monthly recurring costs and fees for the remainder of the Service Term or any then current Extension Term.
- (g) Termination by CONTERRA. If CONTERRA is unable to secure lease, licenses, easements, right of ways, pole attachments or other necessary requirements or provision a third-party intermediary site under commercially reasonable terms and conditions as determined in the sole discretion of

CONTERRA, and the site in question is essential to providing the Services, CONTERRA may terminate this Agreement in part or whole.

- (h) Termination of Agreement in Order to Seek Alternate Services. In the event that this Agreement is terminated under Section 9(d) or (f), CUSTOMER shall not procure services from any other provider which are similar or analogous to the Services provided under this Agreement for the remainder of the initial Term or any then in effect Extension Term of this Agreement.

**10. Governing Law.** This Agreement shall be governed by the laws of the State of North Carolina without regard to its conflict of laws principles.

**11. Mediation.** In the event of an alleged breach of this Agreement by CONTERRA or CUSTOMER or in the event of any other dispute arising out of this Agreement and involving CONTERRA and CUSTOMER such breach or dispute initially shall be submitted to nonbinding mediation prior to the institution of any litigation. The parties agree to utilize the services of a retired judge, or other qualified mediator mutually acceptable to both parties.

**12. Miscellaneous.**

- (a) Entire Telecommunications Service Agreement. This Agreement constitutes the entire agreement between the parties on the subject matter hereof and may be amended or modified solely by written agreement signed by each of the parties hereto. For purposes of clarification, with regards to the subject matter hereof, the parties acknowledge that any RFP, including CONTERRA's response to the same, is specifically superseded by the terms contained herein.
- (b) No Third-Party Beneficiaries. This Agreement is not intended to confer and does not confer any rights or remedies upon any person or entity other than the parties to this Agreement and the CONTERRA Indemnified Parties.
- (c) Severability. If any part of this Agreement is held invalid or unenforceable, that portion shall be construed in a manner consistent with applicable law to reflect, as nearly as possible, the original intentions of the parties and the remaining portions shall remain in full force and effect.
- (d) No Assignment. CUSTOMER may not assign this Agreement and CUSTOMER'S rights and obligations under this Agreement may not be assigned in whole or in part without CONTERRA's prior written consent. CONTERRA may freely assign this Agreement.
- (e) CUSTOMER Contact. CUSTOMER shall designate a Representative who shall have the authority to represent and bind the CUSTOMER in all of its dealings with CONTERRA and shall serve as a contact person in the event that CONTERRA needs to contact the CUSTOMER for any reason. Representative's contact information is as follows:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Telephone: \_\_\_\_\_

Facsimile: \_\_\_\_\_

E-mail: \_\_\_\_\_

- (f) Replacement of CUSTOMER Representative. In the event that CUSTOMER replaces Representative, CUSTOMER shall appoint a new Representative and provide CONTERRA with written notice of such change and the new Representative's contact information within five (5) days.
- (g) Site Specific Services. The Services are provided to the sites initially selected by CUSTOMER and reflected on Attachment A. CUSTOMER may not transfer the Services to another location without CONTERRA's prior written consent (even if CUSTOMER moves to a new place of business).
- (h) Information Availability. CONTERRA shall have no obligation to make any specific information, data,

service, programs, newsgroups or other material available through the Services and may block any such material in its sole discretion.

- (i) Policies. CONTERRA's Privacy Policy, Acceptable Use Policy and other policies set forth on the CONTERRA Internet Site from time to time are incorporated herein by reference and are an integral part of this Service Agreement.
- (j) Remedies Non-Exclusive. Wherever a remedy is expressly provided to CONTERRA hereunder, such remedy is intended to add rather than to restrict all of CONTERRA's remedies in law and equity.
- (k) No Waiver. If CONTERRA fails, at any time, to enforce any right or remedy available to it under this Agreement, that failure will not be construed to be a waiver of the right or remedy with respect to that or any other breach or failure by CUSTOMER. Any waiver must be in writing and signed by CONTERRA.
- (l) Counterparts. This Agreement may be executed in separate original counterparts, each of which is deemed to be an original and all of which taken together shall constitute one and the same Agreement.

BY SIGNING BELOW, I AUTHORIZE DEPLOYMENT AND ACKNOWLEDGE THAT I HAVE READ, FULLY UNDERSTAND, AND AGREE TO ALL OF THE PRECEEDING TERMS AND CONDITIONS SET OUT IN THIS AGREEMENT AND THE POLICIES INCORPORATED HEREIN BY REFERENCE.

**Buncombe County Schools**

By: \_\_\_\_\_

By: \_\_\_\_\_

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Chairperson  
Title

\_\_\_\_\_  
Superintendent  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

By: \_\_\_\_\_

By: \_\_\_\_\_

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Chief Finance Officer  
Title

\_\_\_\_\_  
Director of Technology Services  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

**Conterra Ultra Broadband, LLC**

By: \_\_\_\_\_

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

**ATTACHMENT A**

The deployment of the Services set forth herein are subject to but not limited to the procurement of leases, licenses, easements, right of ways, pole attachments, and other ancillary requirements. In the event CONTERRA is not able, through no fault of its own, to procure the ancillary requirements in a commercially reasonable time and manner, CONTERRA reserves the right to modify the network as CONTERRA deems appropriate.

**Buncombe County Schools**

Quantity	Product or Service Description	Non-Recurring Charge (per site)	Monthly Service Fee (per site)
44	TBD	TBD	TBD
<b>Total</b>			
	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>

Service Locations					
Site Name	Address	City	State	Zip	
A C Reynolds High	1 Rocket Drive	Asheville	NC	28803	
A C Reynolds Middle	2 Rocket Drive	Asheville	NC	28803	
Avery's Creek Elementary	15 Park South Blvd.	Arden	NC	28704	
Barnardsville Elementary	20 Hillcrest Dr.	Barnardsville	NC	28709	
Black Mountain Elementary	100 Flat Creek Rd.	Black Mtn.	NC	28711	
Black Mountain Primary	301 East State St.	Black Mtn.	NC	28711	
Buncombe Co Transportation Department	74 Washington Ave.	Asheville	NC	28804	
Buncombe County Early College & Middle College High School	340 Victoria Road	Asheville	NC	28801	
Candler Elementary	121 Candler School Rd.	Candler	NC	28715	
Cane Creek Middle	570 Lower Brush Creek Rd.	Fletcher	NC	28732	
Central Office & Martin L. Nesbitt Disc Academy	175 Bingham Rd.	Asheville	NC	28806	
Charles C Bell Elementary	90 Maple Springs Rd.	Asheville	NC	28805	
Charles D Owen High	99 Lake Eden Rd.	Black Mtn.	NC	28711	
Charles D Owen Middle	730 Old U.S. 70	Swannanoa	NC	28778	
Charles T. Koontz Intermediate	305 Overlook Rd.	Asheville	NC	28803	
Clyde A Erwin High	60 Lees Creek Rd.	Asheville	NC	28806	
Clyde A Erwin Middle	20 Erwin Hills Rd.	Asheville	NC	28806	
Community High School	235 Old US 70	Swannanoa	NC	28778	
Emma Elementary	37 Brickyard Rd.	Asheville	NC	28806	
Enka High	475 Enka Lake Rd.	Candler	NC	28715	
Enka Intermediate School	125 Asheville Commerce Parkway	Candler	NC	28715	
Enka Middle	390 Asbury Rd.	Candler	NC	28715	
Fairview Elementary	1355 Charlotte Hwy.	Fairview	NC	28730	
Glen Arden Elementary	50 Pinehurst Cr.	Arden	NC	28704	
Haw Creek Elementary	10 Bethesda Rd.	Asheville	NC	28805	
Hominy Valley Elementary	450 Enka Lake Rd.	Candler	NC	28715	
Joe P. Eblen Intermediate	59 Lees Creek Rd.	Asheville	NC	28806	
Johnston Elementary	230 Johnston Blvd.	Asheville	NC	28806	
Leicester Elementary	31 Gilbert Rd.	Leicester	NC	28748	
North Buncombe Elementary	251 Flat Creek Church Rd.	Weaverville	NC	28787	
North Buncombe High	890 Clarks Chapel Rd.	Weaverville	NC	28787	
North Buncombe Middle	51 N. Buncombe School Rd.	Weaverville	NC	28787	
North Windy Ridge	20 Doan Rd.	Weaverville	NC	28787	
Oakley Elementary	753 Fairview Rd.	Asheville	NC	28803	
Pisgah Elementary	1495 Pisgah Hwy.	Candler	NC	28715	
Sand Hill-Venable Elem	154 Sand Hill School Rd.	Asheville	NC	28806	
T C Roberson High	250 Overlook Rd.	Asheville	NC	28803	
Valley Springs Middle	224 Long Shoals Rd.	Arden	NC	28704	
W D Williams Elementary	161 Bee Tree Rd.	Swannanoa	NC	28778	
Weaverville Elementary	129 S. Main St.	Weaverville	NC	28787	
Weaverville Primary	39 S. Main St.	Weaverville	NC	28787	
West Buncombe Elementary	175 Erwin Hills Rd.	Asheville	NC	28806	
William W Estes Elementary	275 Overlook Rd.	Asheville	NC	28803	
Woodfin Elementary	108 Elk Mountain Rd.	Asheville	NC	28804	

### Description of Services

The prices in this contract are based on the following assumptions:

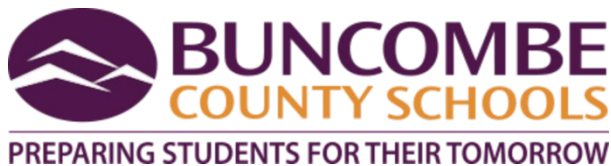
- IT Director and/or Superintendent have authority to approve work plans and infrastructure locations.
- CUSTOMER provides assistance and support for zoning and building permits as required by the local municipalities.
- CUSTOMER provides site access as required by CONTERRA personnel and contractors and provides contact names, phone numbers, fax numbers and e-mail addresses.
- CUSTOMER provides connectivity between CONTERRA and CUSTOMER's equipment with a standard Layer 2 interface in the form of a LC-LC MM fiber cable.
- CUSTOMER provides a free and clear path from the exterior of the building to interior infrastructure location(s) for all cable and other necessary cable/wire runs including, but not limited to, building penetrations, inside conduit and proper authorizations from the building owner.
- CUSTOMER provides unobstructed access to the grounds, interior and roof top(s) for infrastructure location and construction regardless of building ownership. Infrastructure may include, but not be limited to fiber mounting structures, cabinets and wall racks.
- Interior environmental conditions conducive to the proper operations of electronics infrastructure.
- CUSTOMER's existing back-up power supply, where available, accepts Conterra's infrastructure.
- All Change Orders will be billed at cost plus 20% and are borne by the CUSTOMER.

### Additional Notes on E-Rate Eligible Services

- All infrastructure utilized in the provision of this service belongs to CONTERRA and if physically located at a particular site is only used as integral component of the eligible Services listed above.
- All on-premise Infrastructure which is used by CONTERRA to provide Services listed above is provided by CONTERRA and not by another service provider.
- As clearly indicated in this Agreement, responsibility for maintaining the infrastructure rests solely with CONTERRA and not with another service provider.
- Ownership of CONTERRA's Infrastructure will not transfer to the CUSTOMER in the future, and as clearly indicated in this Agreement, CUSTOMER does not have an option to purchase the infrastructure.
- CONTERRA's on-premise Infrastructure will not be used by the CUSTOMER for any other purpose other than to receive the eligible Services listed above.
- CUSTOMER's Local Area Network, if any, is functional without dependence on CONTERRA's Infrastructure.
- As indicated in this Agreement, there is no contractual, technical, or other limitation that would prevent CONTERRA from using its network Infrastructure in part for other customers.

**Conterra Ultra Broadband, LLC**  
Request for Proposal Response for:

Buncombe County Schools / Technology Department  
FCC Form 470 Number 230004858



**Original Response**

Due Date: January 3, 2022

Attn: Kimberly A Buckner  
Technology Bookkeeper  
175 Bingham Road  
Asheville, NC., 28806

**Bidding Entity**

This bid is being submitted by Conterra Ultra Broadband, LLC. ("Conterra"), a wholly owned subsidiary of Conterra Ultra Broadband Holdings.

**Proposal Validity Period**

The information and pricing contained in this proposal is valid for a period of **180** days from the date on the proposal cover page unless extended in writing by Conterra Ultra Broadband, LLC.

**Terms and Conditions**

Unless otherwise stated herein, this proposal is conditioned upon negotiation of mutually acceptable terms and conditions.

**Copyright Notice and Statement of Confidentiality**

Conterra Ultra Broadband, LLC, Conterra Limitless Communications, Detel Wireless, LLC, Network USA, LLC, BroadPlex, LLC, Tim Ron Enterprises, Conterra Wireless Broadband and Conterra Ultra Broadband of California and all other Conterra marks contained herein are trademarks of Conterra and or affiliated companies. The contents of this document are unpublished, proprietary, and confidential and may not be copied, disclosed, or used, in whole or part, without the express written permission of Conterra Ultra Broadband, LLC or affiliated companies, **except to the extent required by law and insofar as is reasonably necessary to review and evaluate the information contained herein.**

## CORPORATE INFORMATION

---

**Contract Authority****Devin Nichols**

E-Rate Sales Manager

252-567-5211

[dnichols@conterra.com](mailto:dnichols@conterra.com)**Corporate Offices**

**5301 77 Center Drive  
Charlotte, North Carolina 28217  
704.936-1800  
877.365.6701 toll-free  
www.conterra.com**

**Conterra Ultra Broadband, LLC  
Incorporated 2001, South Carolina LLC**

**Federal ID # 20-5280276  
SPIN # 143025700  
FCC FRN # 0009750324  
Form 499: Filer ID# 823694  
Full Time Employees ~ 370  
D&B # 61-944-9726  
NC CLEC # P-1359, Sub 1**



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## Section 1: Letter of Transmittal

Conterra Ultra Broadband, LLC  
5301 77 Center Drive  
Charlotte, North Carolina 28217

January 3, 2022

Buncombe County Schools / Technology Department  
175 Bingham Road  
Asheville, NC., 28806

Attn: Ms. Kimberly A Buckner, Technology Bookkeeper

RE: BCS WAN RFP FY2023

Thank you for the opportunity to respond to your solicitation for Wide Area Network Services as outlined in the above referenced RFP.

Conterra Ultra Broadband, LLC ("Conterra") is a national provider of facilities-based broadband services for K-12 entities has provided Wide Area Networking and Internet services to approximately 200 school and library districts in 22 states.

We specialize in providing dedicated managed optical fiber solutions for multi-site K-12 Wide Area Networks that include the system design, engineering, deployment, service, maintenance and on-going monitoring of the network. Our network services are 100% E-Rate Category 1 eligible.

### The Proposed Offering

Conterra has made a significant investment, stabilizing, and providing continued improvement to Buncombe County School District's WAN network that was inherited from Broadplex. Conterra is committed to continue to provide "Best In Class" Private Dedicated Fiber Optic WAN services with a customized state-of-the-art offering. Our dedicated WAN Service will meet and exceed the State bandwidth recommendations; offering superior scalability and performance that will support the districts needs for the foreseeable future.

Additionally, Buncombe County Schools will not experience transition risks as Conterra is the current carrier.

A minimum requested bandwidth of private fiber connection is constructed from the main Data Center at 175 Bingham Road Asheville, NC., 28806 to each of the (44) remote sites.

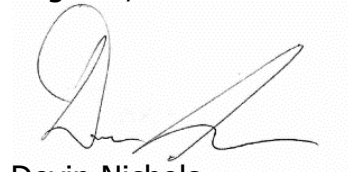
Conterra would welcome the opportunity to provide additional information regarding our services as well as how Conterra can produce the best value solution in meeting Buncombe County Schools / Technology Department's needs today and for the district's future.

## Terms and Conditions

- a. 60 Month Optional Ten (10) - One (1) Year Extensions
- b. Conterra accepts either BEAR or SPI invoicing
- c. All services and price proposals are E-Rate Eligible

Should you require any clarification or further explanation regarding our response, we are more than happy to make ourselves available to you.

Regards,



Devin Nichols  
E-Rate Sales Manager  
252-567-5211  
[dnichols@conterra.com](mailto:dnichols@conterra.com)

## Section 2: Proposal Requirements

### SCOPE OF SERVICES

Buncombe County School District is requesting proposals from Service Providers to secure pricing for the items contained within this proposal for a multi-year contract for leased lit fiber for delivery of Wide Area Network (WAN) Ethernet/IP network. The term of service for this proposal should begin July 1, 2023 and follow the E-Rate Funding Year. The prices for the items contained herein shall remain firm for the period to be stated in the agreement. This proposal must allow for flexibility of increase/decrease bandwidth over the life of the agreement as well as increase/decrease the number of site locations as needed with no early termination fees. Any additional sites must be coterminous with the existing contractually agreed upon dates.

Response: Conterra acknowledges and currently has an agreement in place with Buncombe County School District. Conterra commits to continuing delivery of Dedicated, Symmetrical, Guaranteed Fiber Optic Wide Area Network connectivity services beginning July 1, 2023.

Service is expected to originate at the district hub site at BCS Central Office, 175 Bingham Road, Asheville, NC 28806 and be delivered to all (44) sites that are listed in the Buncombe County Schools Site Locations Sheet (Appendix A) of this RFP. Buncombe County Schools is seeking pricing for full-duplex committed bandwidth service of 5Gbps, 10Gbps, and 20/25/40/50/100Gbps or greater as listed in Appendix B & C as well as 99.99% uptime (low latency, low jitter, low bit-error).

Response: Conterra acknowledges and submits for review Section 3: Scope Work > Description of Proposal and, Section 5: Service Level Agreement > Service Metrics.

### Project Minimum Requirements:

- Up to 10 Gbps or greater per each remote site, all to connect to Buncombe Co. Central Office NOC, Aggregation Point

Response: Conterra acknowledges the Project Minimum Requirements and is proposing to continue providing a minimum of 5 Gbps upgradable to 100 Gbps or greater per forty-four (44) remote sites connected to Buncombe County School District HUB located at 175 Bingham Road Asheville, NC., 28806.

- Up to 100 Gbps or greater host circuit/link at Buncombe Co. Central Office NOC and Enka Intermediate School if shared/routed network

Response: Conterra acknowledges the Project Minimum Requirements and is proposing to continue to providing a minimum of 10 Gbps upgradable to 100 Gbps or greater at Central Office & Martin L. Nesbitt Disc Academy located at 175 Bingham Rd., Asheville, NC 28806 and, Enka Intermediate School located at 125 Asheville Commerce Parkway, Candler, NC 28715.

- SLA with 99.99% or better availability

Response: Conterra acknowledges and submits for review Section 5: Service Level Agreement > Service Metrics.

- Latency less than 4 milliseconds

Response: Conterra acknowledges and submits for review Section 5: Service Level Agreement > Service Metrics.

- Full duplex upstream and downstream committed bandwidth

Response: Conterra is proposing to continue to provide a high-speed dedicated symmetrical fiber optic wide area network. See Section 3: Scope of Work > Description of Proposal.

- Disclosure of full SLA, response time, repair time, escalation path & service outage credits

Response: Conterra acknowledges and submits for review the Conterra "Best In Class" Service Level Agreement. See Section 5: Service Level Agreement. As part of our SLA, Conterra has included the support policies for review. See Section 5: Service Level Agreement > Customer Service and Support.

- Disclosure for chronic trouble

Response: Conterra acknowledges and submits for review Section 5: Service Level Agreement > Customer Service and Support > Trouble Ticketing Procedures.

- Optional scalability and/or burstable beyond 5 Gbps/10 Gbps or greater per remote site

Response: Conterra acknowledges and is proposing a minimum of 5 Gbps upgradable to 10 Gbps without a truck roll. The 5 Gbps are burstable to 10 Gbps.

- There is no right of Service Provider to limit or throttle the capacity of the circuit at any time for any reason

Response: Conterra does not throttle.

- Web-based customer network monitoring application

Response: Conterra provides a "Real Time" web portal that enables customers to monitor both real time and historical utilization and performance metrics of the Conterra WAN service with granularity to an individual location or aggregation metrics of all locations. See Section 5: Service Level Agreement > Customer Service and Support > Web Portal – Customer Network Monitoring Application.

- All sites must be included in the bid.

Response: Conterra acknowledges and submits for review Section 3: Scope of Work>Site Locations and, Section 6: Proposal Pricing > Cost Proposal > Appendix B and, Appendix C.

- District will accept bids for only dedicated fiber solution

Response: Conterra acknowledges and is proposing a Highspeed, Dedicated Symmetrical Fiber Optic Network.

- Service provider's terms of service must be clearly defined

Response: Conterra acknowledges and is proposing a Sixty (60) month term with Ten (10) Optional – One (1) Year Extensions.

## Non-negotiable Items:

If a vendor other than the incumbent is selected as the most cost-effective solution, the new vendor will be solely responsible for any Month to Month (MTM) charges from the incumbent if the service is not live on July 1, 2023, and includes every MTM charge until the service is live.

Proposed services must include the following specifications for all BCS locations:

- The service provider shall provide all fiber cabling, pathways and spaces to accommodate the fiber (i.e. conduit) and Ethernet equipment necessary to connect the District's sites with switched 5Gbps/10Gbps/20Gbps/25Gbps/40Gbps/50Gbps, and 100Gbps or greater Ethernet connectivity.

Response: Conterra is the incumbent and commits to continue providing dedicated, symmetrical fiber optic wide area network services.

- According to E-Rate guidelines, ownership of the fiber, conduit or equipment will remain the property of the Service Provider and will never transfer to the District and there will be no option to purchase the fiber, conduit or equipment in the future.

Response: Conterra acknowledges and agrees.

- The District's internal data communications system shall function without dependence on the Service Provider's equipment. Included in the Service Provider's proposal must be all construction costs to bring in the fiber from the street to the District's established Carrier Demarcation point on each campus. Any conduit and trenching from the street to the Major Point of Entry (MPOE) must include replacement of conduit, pavement, and returning the ground to its original condition. All installation of cabling, pathways, etc. shall be to BICSI specification and the design specifications of Buncombe County Schools.

Response: Conterra is the incumbent and will not require any construction. The current network has been designed to BICSI specification and the design specifications of Buncombe County Public District.



- Solutions bringing service to the property line but not to the demarcation point are not acceptable.

Response: Conterra is the incumbent. All locations are ON-NET.

- All solutions must terminate service or infrastructure in the demarcation point at each site specified in Appendix A.

Response: Conterra is the incumbent. All locations are ON-NET and currently in operation.

- Service provider must specify specific demarcation setup included in base fees, e.g. wall mounted CPE and CAT6a or fiber handoff, rack mount patch panel, etc. This includes any necessary permanent or temporary demarc relocation necessary due to construction/renovation/act of God.

- The District requests the following services for this proposal. The services shall consist of, but not be limited to:
  - A private secure Layer 3 Switched Ethernet Network with an appropriately aggregated service of up to 100Gbps or greater to the Buncombe County Schools NOC and Enka Intermediate School, and up to 10Gbps or greater service to each school site.

Response: Conterra acknowledges and complies. See Section 3: Scope of Work > Description of Proposal.

- Services shall support the following protocols: IEEE 802.3, IEEE 802.3ae, IEEE 802.1q

Response: Conterra acknowledges and complies. See Section 3: Scope of Work > Description of Proposal > Managed "Lit" Fiber Network Service Overview.

- Full Duplex operation and listed speeds of committed bandwidth both upstream and downstream.

Response: Conterra acknowledges and complies. See Section 3: Scope of Work > Physical Interface.

- Local handoff shall be 1000Base-SX or 1000Base-LX, 10000Base-SX, 10000Base-LX, CPAK-100G-SR10 based upon the current needs of each individual site.

Response: Conterra acknowledges and complies. See Section 3: Scope of Work > Physical Interface.

- The system shall be monitored 24x7x365 by a Network Operations Center.

Response: Conterra acknowledges and complies. See Section 5: Service Level Agreement > Customer Service and Support > Network Operations.

- Notification of any planned service outages at least 5 business days in advance.

Response: Conterra acknowledges and will comply. See Section 5: Service Level Agreement > Service Metrics.

- Service Level Objectives shall be: Network Availability 99.99%, Packet Delivery Rate 99.99%, Network Latency <4ms port to port. Mean Time to repair 4 hours (including local loop).

Response: Conterra acknowledges and will comply. See Section 5: Service Level Agreement > Service Metrics.

- Service Provider will notify BCS within 15 minutes of all outages.

Response: Conterra acknowledges and agrees.

- ○ Service Provider will provide an estimated time of repair as soon as possible.

Response: Conterra acknowledges and agrees. See Section 5: Service Level Agreement > Customer Service and Support > Dedicated Account Management and Customer Care.

- The District desires data services up to 100Gbps or greater at the Central Office hub location at 175 Bingham Road, Asheville, NC 28806, and the Enka Intermediate School site at 125 Asheville Commerce Parkway, Candler, NC 28715. All vendors must provide the following:

- Detailed description of the data service you propose based on the information included in Appendix A.

Response: Contrerra acknowledges and submits for review Section 3: Scope of Work > Description of Proposal and, Site Locations.

- Detailed diagram of your internal network and how it interconnects with customer locations included in Appendix A with your proposal.

Response: Contrerra acknowledges and submits for review Section 3: Scope of Work > Logical Map and, Physical Map.

- Detailed description of the remote management and monitoring capabilities of the WAN circuits that will be put in place for this service. This service should include customer access to metrics and diagnostic information.

Response: Contrerra acknowledges and submits for review Section 5: Service Level Agreement > Customer Service and Support > Web Portal – Customer Network Monitoring Application.

- Description of any guaranteed level of bandwidth for the proposed data service. Also, please describe any bursting ability of the WAN connections.

Response: Contrerra acknowledges and guarantees a 99.99% uptime on all circuits. See Section 5: Service Level Agreement > I. SLA Guarantees. Contrerra is proposing a minimum of 5 Gbps upgradable to 10 Gbps without a truck roll. The 5 Gbps are burstable to 10 Gbps.

- List of the equipment you will install at District facilities, as well as the space requirements, power and environmental requirements, product specification sheets and special requirements such as service entries into buildings.

Response: Contrerra acknowledges and submits for review Section 3: Scope of Work > Physical Interface > Customer Premise Requirements.

The product specification sheets can be review in Section 7: Attachments & Addendums > Attachment H: Equipment Specification Sheets.

- ○ Description of the scalability of your data service. Provide the procedure that would be used if more bandwidth would be required by the District. Describe the ability of your service to provide more bandwidth.

Response: Contrerra acknowledges and submits for review Section: 3 Scope of Work. Each remote site can be upgraded/downgraded from 5 Gbps to 10 Gbps without a truck roll by simply calling either of your Dedicated Account Management Team, See Section 5: Service Level Agreement > Customer Service and Support > Dedicated Account Management and Customer Care. The Hub Site can be upgraded/downgraded from 10 Gbps to 100 Gbps during the term of the agreement.

- The District desires a minimum of downtime during the transition from the existing Wide Area Network to the new system. The district requires that the district Switched Ethernet Network be built out and ready for service by the beginning of the contract 07/01/2023.

Response: Contrerra commits to continue providing dedicated symmetrical fiber optic wide area network services and will continue all services on 07/01/2023.

- Provide a detailed summary of the process you would use to cut over from our existing Wide Area Network to the proposed Wide Area Network.

Response: Contrerra will not require cutover process.

- ○ Provide an estimated timeframe for this process.

Response: Contrerra proposes to continue services and will not have any cutover time required.

- Provide an estimate of Wide Area Network downtime incurred by this process.

Response: Contrerra will not require any downtime.

- The District requires a timely resolution for any problems that may arise relative to its connection with Vendor provided services. Solution will provide customer support functions including problem tracking, resolution, and escalation support management on a 24x7x365 basis. Provide the procedure used in the event of a service outage and any notification service that you will provide to the District. Include:

Response: Conterra acknowledges and submits a comprehensive customer care plan, See Section 5: Service Level Agreement > Customer Service and Support.

- How service calls will be prioritized

Response: Conterra acknowledges and submits for review Section 5: Service Level Agreement > Customer Service Call Handling > Service Outage Process

- Qualifications of technicians who will respond to calls for support or repair

Response: Engineers are either Cisco CCNA or Cisco CCNP certified with experiences in an IT or ISP environment.

- Number of support technicians available for support and where they are located relative to Buncombe County Schools

Response: Conterra maintains approximately Ten (10) field operations and Outside Plant personnel within the Buncombe County region. Conterra commits to four (4) hour mean-time to repair.

- Procedures for sending BCS status information and incident reports

Response: For service outages where the service is completely down, notifications are sent out hourly unless otherwise stated in one of the notifications until the issue is resolved.

- Problem resolution timeframes

Response: Conterra strives for less than 4 hour mean time to repair. See Section 5: Service Level Agreement > Service Metrics.

- Escalation procedures for trouble tickets. Will a dedicated liaison be provided to assist with completion of escalated tickets?

Response: Conterra acknowledges and submits for review Section 5: Service Level Agreement > Customer Service and Support > Conterra Customer Call Handling > Trouble Ticket Procedures, Fiber Restoration Plan, Administrative Escalation List and Dedicated Account Management and Customer Care.

- Escalation list for the account team, with names, telephone numbers, and email addresses

Response: Conterra acknowledges and submits for review Section 5: Service Level Agreement > Customer Service and Support > Administrative Escalation List, Dedicated Account Management and, Customer Care.

- Identify credits for outages of a certain duration or longer

Response: Conterra acknowledges and submits for review Section 5: Service Level Agreement > VII. Service Credits

## GENERAL CONDITIONS

The following submission guidelines & E-Rate requirements apply to this RFP:

- Service Provider must provide a valid Service Provider Identification Number (SPIN)

Response: Conterra acknowledges and submits for review Section 7: Attachments & Addendums > Attachment A: CUB SPIN

- Service Provider must provide a valid FCC Registration Number (FCC RN)

Response: Conterra acknowledges and complies, FCC FRN # 0009750324.

- Service Provider must have current Service Provider Annual Certification (SPAC) on file with USAC.

Response: Conterra acknowledges and complies, see Section 7: Attachments & Addendums > Attachment B: CUB Greenlight Status.

- Service Provider must comply with local, state, and federal requirements including agreement to fully cooperate with audit/PIA review and ten-year document retention requirements. Document Retention Rules may be found here at <https://www.usac.org/e-rate/resources/document-retention/>

Response: Conterra acknowledges and certifies the compliance with all local, state, and federal requirements including agreement to fully cooperate with audit/PIA review and ten-year document retention requirements.

- Contract start and end dates must coincide with the E-rate Funding Year (July 1 through June 30).

Response: Conterra acknowledges and agrees.

- Service Provider shall submit service level agreement (SLA)

Response: Conterra acknowledges and submits for review Section 5: Service Level Agreement.

- Service Provider must include site names and addresses on the contract.

Response: Conterra acknowledges, and as standard practice include site names and addresses on all contracts.

- Service Provider shall submit current qualifications, and at least three (3) customer references of other comparably sized K-12 school districts for whom you have provided WAN services to demonstrate technical ability to install, test, and maintain the proposed system and subsystems.

Response: Conterra acknowledges and submits for review Section 4: Organization's Capabilities & Experience. Also see Conterra references Section 4: Organization's Capabilities & Experience > Proposers References.

- Pricing shall be all inclusive of all recurring and nonrecurring costs, taxes, and fees that Buncombe County Schools will incur over the term of the contract with the vendor, including startup costs, installation fees, cabling fees, equipment costs, port fees, telecommunication costs, taxes, etc. Recurring MTM pricing should be inclusive of all taxes and fees.

Response: Conterra acknowledges and has submitted complete costs. See Section 6: Proposal Pricing. Conterra will not require nonrecurring costs.

- Service Provider must complete the Buncombe County Schools Cost Sheets (Appendix B & C) which must be filled out completely with all pricing options request.

Response: Conterra acknowledges and submits for review Section 6: Proposal Pricing > Appendix B and, Appendix C.

- Service Provider shall include and clearly indicate all E-Rate eligible charges including monthly charges, special construction charges, installation, activation, surcharges, taxes (including federal, state and local taxes) or fees.

Response: Conterra acknowledges and has submitted complete costs. See Section 6: Proposal Pricing. All costs/pricing in this proposal is E-Rate eligible. Conterra will not require nonrecurring costs.



- Service Provider shall clearly indicate any E-Rate ineligible services, costs or fees.

Response: Conterra acknowledges and certifies that there are no ineligible costs in the Conterra response to FCC Form #230004858.

- Service Provider shall clearly acknowledge that the contract is contingent upon annual E-rate funding approval. Eligible Services List (ESL) is available at: <https://www.usac.org/e-rate/applicant-process/before-you-begin/eligible-services-list/>

Response: Conterra acknowledges and agrees that the contract is contingent upon annual E-rate funding approval.

- Service Provider agrees to bill and receive a portion of the payment for the provisions of goods and services described herein directly from USAC via the Form 474 Service Provider Invoice (SPI). Buncombe County School District will only be responsible for paying its non-discounted share cost and does not intend to use the BEAR process (Form 472)

Response: Conterra acknowledges and agrees to provide Form 474 Service Provider Invoicing.

- Service Provider shall submit a signed and dated contract with their bid. All terms and conditions will be subject to negotiation. All prices or notations must be typed or written in ink. Proposals written with pencil will not be accepted. Verify all proposals before submission, as no corrections will be permitted after the proposals are opened.

Response: Conterra acknowledges and has included a signed contract for review. See Section 7: Attachments & Addendums > Attachment G: Wide Area Network Telecom Service Agreement.

- Service Provider will provide Bulk Upload Spreadsheets for FCC Form 471 will be provided upon award of contract,

Response: Conterra acknowledges and agrees to provide Bulk Upload Spreadsheets for FCC Form 471

- It is understood that failure to provide all items requested in this RFP are grounds for disqualification

Response: Conterra acknowledges and includes for review all requested items listed in Buncombe County School District RFP, BUNCOMBE COUNTY SCHOOLS-BCS\_WAN\_FY23 and Form 470# 230004858.

- Protest Deadline is understood

Response: Conterra acknowledges and confirms the protest deadline, Protest Deadline 1/28/2023 from RFP BUNCOMBE COUNTY SCHOOLS-BCS\_WAN\_FY23.

- The District reserves the right to evaluate, in its absolute discretion, the total proposal of each firm/contractor so as to select the supplies or equipment which best serves the needs and the best interest of the District that represents the best value with price as the most heavily weighted factor.

Response: Conterra acknowledges, understands, and agrees.

- Any firm may withdraw its proposal, either personally or by written request, at any time prior to the scheduled time for opening of proposals but not after.

Response: Conterra acknowledges, understands, and agrees.

- The contract presented to BCS should contain the ability to continue with "month to month" services after the contract has concluded. These "month to month" services should retain the prices detailed in the contract. Month to month services should be able to be discontinued at the discretion of BCS with an undefined time limit.

Response: Conterra acknowledges and has included for review Section 7: Attachments & Addendums > Attachment G: Wide Area Network Telecom Service Agreement.

- Background Check Compliance - Buncombe County Schools requires that all contractors that come into contact with District students perform background checks of all its employees and subcontractors. The background check must be given to the District prior to commencing work on the project. In no event shall the Contractor or any of its employees come into contact with the District's students before the certification is completed and approved by the District.

Response: Conterra acknowledges, understands, and agrees.

- Default by contractor. The District shall hold the firms(s) responsible for any damage that may be sustained because of failure or neglect to comply with any term or condition listed herein. If the successful firm(s) fails or neglects to furnish or deliver any of the materials, supplies or services listed herein at the prices named and at the time and place herein stated, or otherwise fails or neglects to comply with the terms of the proposal, the District may, upon 30 day written notice to the firm by certified mail, cancel the Contract in its entirety or cancel or rescind any or all items affected by such default, and may, whether or not the contract is canceled in whole or in part, purchase the materials, supplies or services elsewhere without further notice to the firm.

Response: Conterra acknowledges, understands, and agrees.

## Section 3: Scope of Work

### Description of Proposal

#### Scope of Work

Conterra Ultra Broadband will provide a turnkey Managed "Lit" Fiber Solution that includes:

- Professional Design, Network Engineering, Deployment, Systems Integration and Project Management
- Turn-up, Testing, and Training
- Service includes all equipment racks, digital equipment, data cabling, and associated termination equipment as required for Layer 2 transport
- Network Operations and Command and Control Monitoring
- On-site Maintenance for the Term of the Contract

#### Managed "Lit" Fiber Network Service Overview:

Conterra will provision the newly constructed fiber network to provide any of the following options:

- Conterra will configure the HUB Site BCS Central Office, located at 175 Bingham Road Asheville, NC., 28806 a minimum symmetrical bandwidth speed of 5 Gbps upgradable to 100 Gbps. Each forty-four (44) remote sites will connect to the private network with a minimum symmetrical bandwidth (upstream and downstream) speed of 5 Gbps upgradable up to 100 Gbps.
- Dedicated fiber strands and routing equipment exclusive to BCS.
- Service includes all equipment racks, digital equipment, data cabling, and associated termination equipment required for Layer 2 transport.
- Highly scalable bandwidth.
- Fiber is provisioned all the way into each location's demarc and terminated in the facilities Main Communication closet (MDF) with a minimum of a 10 Gbps fiber handoff. Additional handoffs may be added at later dates.
- Edge site connections are monitored by Conterra.

- Utilizes standardized ITU, IEE and IETF methods and techniques to implement appropriate Quality of Service objectives within its network including methods supporting packet and ingress/egress port prioritization with up to seven traffic classifiers; eliminating the potential for latency and jitter for high priority traffic such as may be required for VoIP and video applications.
- Specifically supports and is fully compliant with IEEE 802.3, 802.1d, 802.1p, 802.1Q, 802.1QinQ, 802.1ad, 802.3u and 802.3z standards and related IETF RFCs.
- Conterra client premise equipment (CPE) space & power requirements are minimal. A typical site installation requires 4U rack space and approximately 20 amps of 120-volt AC power.
- The network interface will be a 10Gb Ethernet with 802.3 10GBASE multi-mode fiber interface.
- On-Going Network Operations, Monitoring and On-site Maintenance for the Term of the Contract.
- Conterra designs its networks to accommodate many additions, moves and changes. Networks are built with retrievable slack points and storage loops.
- Conterra will leave the district with complete as built documentation of the network components including all network route information and circuit identification numbers.

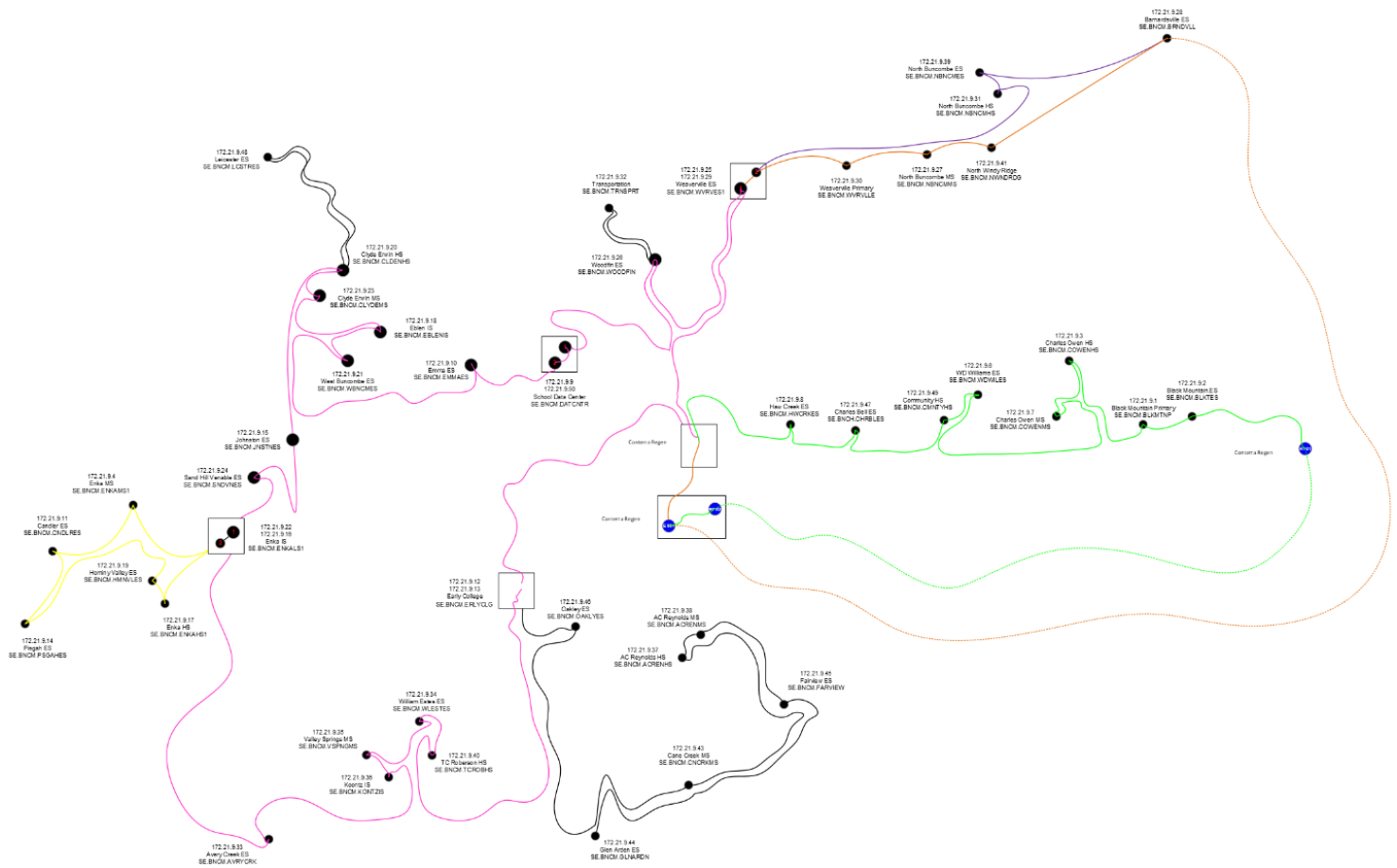
## Appendix A - Site Locations

### Appendix A Buncombe County School Sites

School Entity Number	SCHOOL NAME	ADDRESS	Current Bandwidth Gbps
30282	A C Reynolds High	1 Rocket Dr., Asheville, NC 28803	10
30283	A C Reynolds Middle	2 Rocket Dr., Asheville, NC 28803	10
30099	Avery's Creek Elementary	15 Park South Blvd., Arden, NC 28704	2
30107	Barnardsville Elementary	20 Hillcrest Dr., Barnardsville, NC 28709	1
30110	Black Mountain Elementary	100 Flat Creek Rd., Black Mtn. NC 28711	1
30108	Black Mountain Primary	301 East State St., Black Mtn. NC 28711	1
16020656	Buncombe Co Transportation Department	74 Washington Ave, Asheville, NC 28804	1
16050074 & 16020654	Buncombe County Early College & Middle College High School	340 Victoria Road., Asheville, NC 28801	2
30130	Candler Elementary	121 Candler School Rd., Candler, NC 28715	2
222140	Cane Creek Middle	570 Lower Brush Creek Rd., Fletcher, NC 28732	10
16023519 & 30303	Central Office & Martin L. Nesbitt Disc Academy	175 Bingham Rd., Asheville, NC 28806	10
30290	Charles C Bell Elementary	90 Maple Springs Rd., Asheville, NC 28805	2
30111	Charles D Owen High	99 Lake Eden Rd., Black Mtn. NC 28711	10
30228	Charles D Owen Middle	730 Old U.S. 70, Swannanoa, NC 28778	10
16061303	Charles T. Koontz Intermediate	305 Overlook Rd., Asheville, NC 28803	10
30308	Clyde A Erwin High	60 Lees Creek Rd., Asheville, NC 28806	10
30294	Clyde A Erwin Middle	20 Erwin Hills Rd., Asheville, NC 28806	10
30225	Community High School	235 Old US 70, Swannanoa, NC 28778	1
30299	Emma Elementary	37 Brickyard Rd., Asheville, NC 28806	2
30155	Enka High	475 Enka Lake Rd., Candler, NC 28715	10
17001392	Enka Intermediate School	125 Asheville Commerce Parkway, Candler, NC 28715	10
30133	Enka Middle	390 Asbury Rd., Candler, NC 28715	10

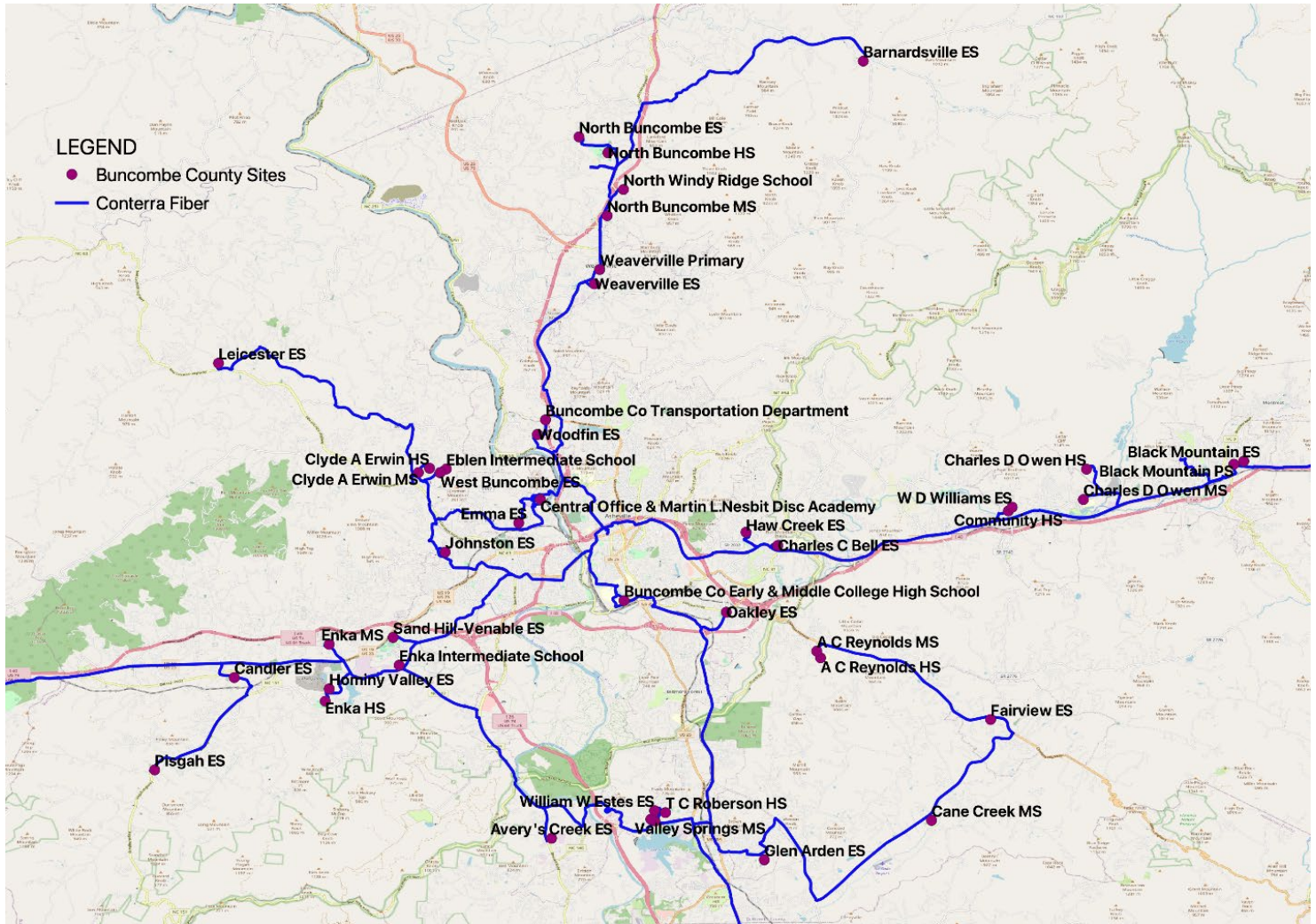
30158	Fairview Elementary	1355 Charlotte Hwy., Fairview, NC 28730	2
30098	Glen Arden Elementary	50 Pinehurst Cr., Arden, NC 28704	2
30288	Haw Creek Elementary	10 Bethesda Rd., Asheville, NC 28805	2
222138	Hominy Valley Elementary	450 Enka Lake Rd., Candler, NC 28715	2
16061304	Joe P. Eblen Intermediate	59 Lees Creek Rd., Asheville, NC 28806	10
30293	Johnston Elementary	230 Johnston Blvd., Asheville, NC 28806	2
30184	Leicester Elementary	31 Gilbert Rd., Leicester, NC 28748	2
30252	North Buncombe Elementary	251 Flat Creek Church Rd., Weaverville, NC 28787	2
30251	North Buncombe High	890 Clarks Chapel Rd., Weaverville, NC 28787	10
30253	North Buncombe Middle	51 N. Buncombe School Rd., Weaverville NC 28787	10
232457	North Windy Ridge	20 Doan Rd., Weaverville, NC 28787	10
30276	Oakley Elementary	753 Fairview Rd., Asheville, NC 28803	2
30129	Pisgah Elementary	1495 Pisgah Hwy., Candler, NC 28715	1
30291	Sand Hill-Venable Elem	154 Sand Hill School Rd, Asheville, NC 28806	2
30281	T C Roberson High	250 Overlook Rd., Asheville, NC 28803	10
30100	Valley Springs Middle	224 Long Shoals Rd., Arden, NC 28704	10
30226	W D Williams Elementary	161 Bee Tree Rd., Swannanoa, NC 28778	2
30250	Weaverville Elementary	129 S. Main St., Weaverville, NC 28787	2
30249	Weaverville Primary	39 S. Main St., Weaverville, NC 28787	1
30295	West Buncombe Elementary	175 Erwin Hills Rd., Asheville, NC 28806	2
30280	William W Estes Elementary	275 Overlook Rd., Asheville, NC 28803	2
30284	Woodfin Elementary	108 Elk Mountain Rd., Asheville, NC 28804	1

## Logical Map





## Physical Map



## Final Fiber Acceptance Testing Procedures

Acceptance tests for lit fiber service performed by Conterra will be accomplished in the following manner:

- A. Conterra will splice and test network as it becomes available, or in the order the deployment requires. We will have all network fibers OTDR tested and acceptable design loss verified.
- B. All splicing will be by the fusion method. Each splice of each fiber shall be individually accepted for splice loss not to exceed .05 dB using a properly calibrated profile alignment fusion-splicing machine. OTDR (Optical Time Domain Reflectometer) readings prior to and after placing in operation must be made at both 1310 nm and 1550 nm.
- C. The splice will be made with approximately 100 feet of slack cable on each side of the case for future maintenance and to facilitate splicing in a protected environment. Slack shall be stored so that the minimum-bending radius of 15 times the cable diameter is not violated.
- D. Conterra shall not permit a cable bending radius at the splice location less than the radii recommended by the cable manufacturer in order to prevent attenuation at 1310 and 1550 nm wavelength. Notwithstanding the above, cable bends shall not be less than 15 times the outside diameter of the cable.
- E. Attenuation test results will be provided on standardized test forms showing the test results of each fiber strand at each wavelength tested. Reflectometry test results will be provided in the form of an OTDR trace for each fiber strand at each wavelength test.

## Physical Network Construction

Conterra will provide all Fiber Plant installation necessary to establish the Internet services.

- a- Single mode fiber (pair) to 16.
- b- All installation cost is specified in costing attachment
- c- If applicable, Conterra will share conduit if needed

## Fiber Performance Specifications

All fiber optic cables will be Corning SMF-28e or equivalent (ITU-T G.652.D compliant). All fiber builds will be new "greenfield" segments. All splicing will be by the fusion method. Each splice of each fiber shall be individually accepted for splice loss not to exceed .05 dB using a properly calibrated profile alignment fusion-splicing machine. OTDR (Optical Time Domain Reflectometer) readings prior to and after placing in operation must be made at both 1310 nm and 1550 nm.

## Underground (Buried) Construction

A minimum cover 36" is required for all parallel excavations. Any exceptions require prior written approval. The minimum depth for perpendicular road crossings, railways crossings, waterway crossings, etc. will be determined by the entity that is being crossed and noted on the Construction Drawings and applicable crossing permit.

## Physical Interface

Conterra client premise equipment (CPE) space & power requirements are minimal. A typical site installation requires 4U rack space and approximately 20 amps of 120-volt AC power.

The network interface will be 10Gb Ethernet with 802.3 - 10GBASE interface Multi Mode Fiber

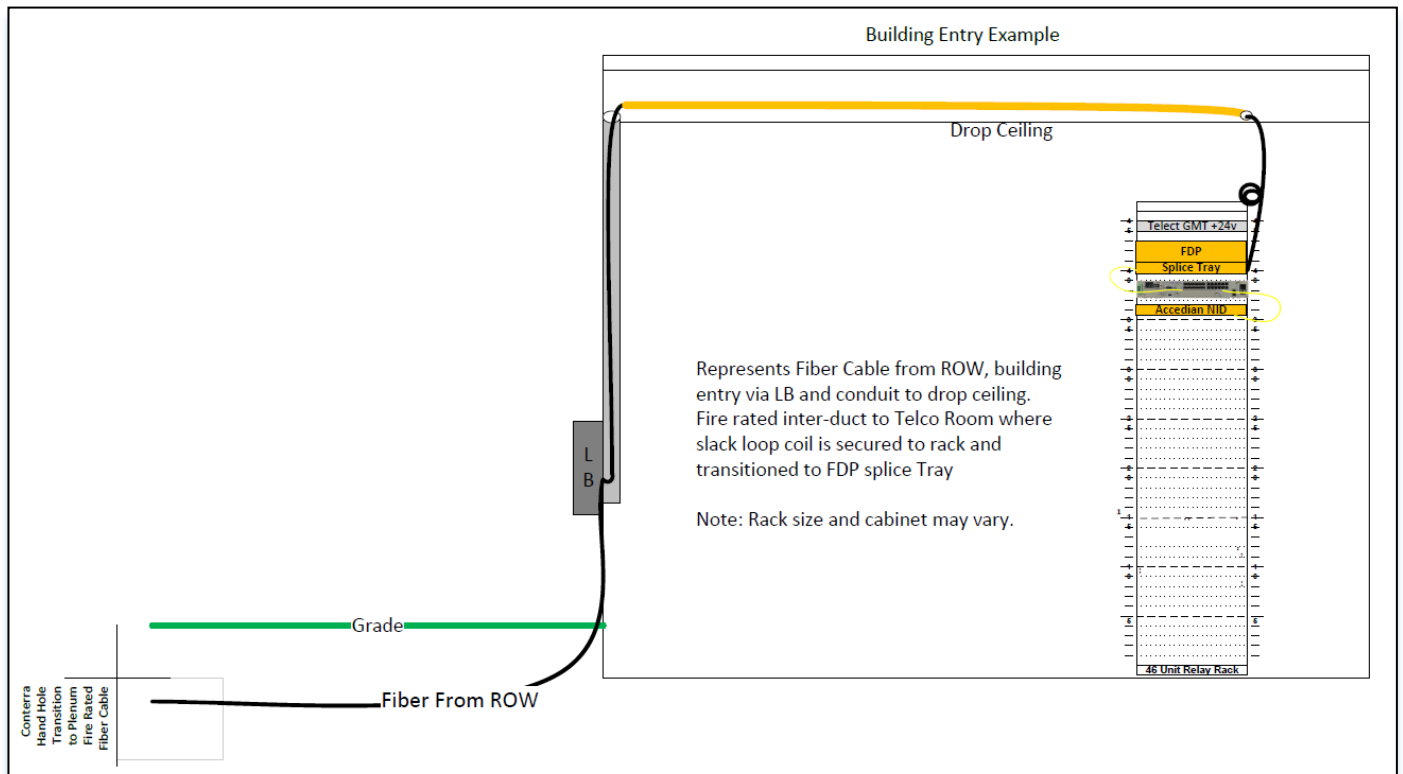
## Customer Premise Requirements

Conterra will typically access a customer's demarcation point in their building by pulling the delivered type of fiber through either a below grade or above ceiling level penetration. This penetration is properly weatherized and built to the applicable building codes for the structure.

The fiber is installed from the building penetration point to the Demarc through existing wire chases or existing/new conduits. The location and methods are first reviewed and approved by the applicable building code reviewing agencies and the customer. The fiber cable is then terminated at the Demarc equipment rack, properly grounded to meet all codes and tested for proper installation and performance.

Conterra provided hardware will interface with the districts' existing Switches/Routers to facilitate connectivity between the Local Area Networks and the Wide Area Network. Conterra client premise equipment (CPE) space & power requirements are minimal.

A typical site installation requires 4U rack space and approximately 20 amps of 120-volt AC power. The network interface will be a 10Gb Ethernet with 802.3 10GBASE interface.



**Example: Conterra to Customer Demarc Handoff**

## Section 4: Organization's Capabilities & Experience

### Conterra Ultra Broadband Overview

Conterra Ultra Broadband, LLC ("Conterra") is a national provider of facilities-based broadband services for K-12 entities and has provided its high- capacity Private Fiber Transport Services to approximately 200 school and library districts nationwide. Conterra currently operates in North Carolina and 21 other states, meeting the daily educational data transport requirements of millions of students, teachers, and administrators.

Conterra has an extensive twenty-year history of service expertise in fiber-optic based, high-reliability data transport network design, engineering, construction, service implementation and delivery. We provide unparalleled service and support for school and libraries in the southern states. We are the preeminent provider of Private Fiber Wide Area Network for the K-12 community in North Carolina .

Conterra is a facilities-based Competitive Local Exchange Carrier (CLEC) certificated by the Public Utilities Commission of North Carolina as a Service Provider with Operating Authority to provide telecommunication services throughout the state of North Carolina.

Conterra is recognized by the Universal Service Administrative Company (SPIN # 143025700) as an eligible telecommunications provider. We are similarly recognized by the Federal Communication Commission (FCC FRN # 0009750324) Conterra certifies that the company is not the subject of the FCC's Red Light Rule.

## Conterra Internet Access Technological Advantages

Our Dedicated Internet Access delivered through our Fiber Optic Network will provide superior technological and financial advantages.

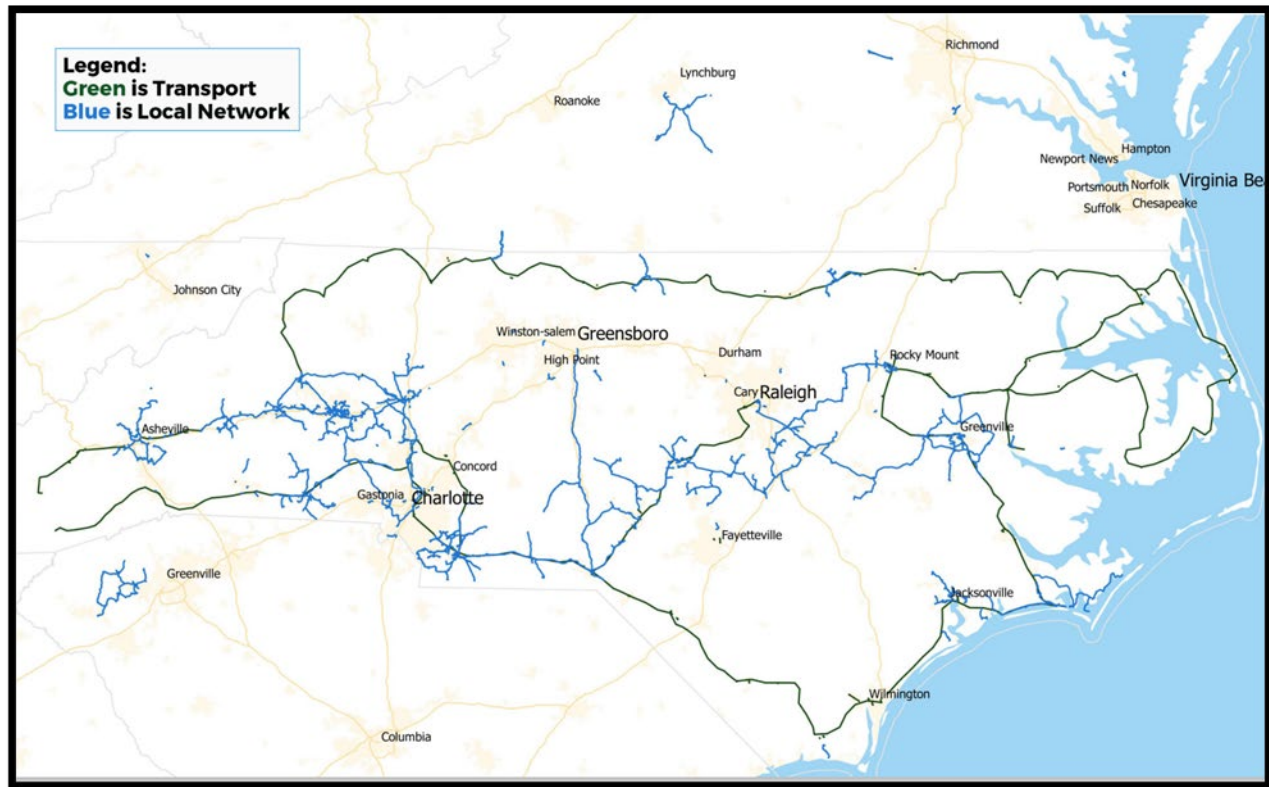
- **Scalability** - infrastructure will already be in place to grow with your bandwidth needs without additional construction.
- **Performance** - low-latency performance from minimal equipment interfaces and active components.
- **Security/Reliability** - no other entity is on your dedicated internet access circuit.
- **Operational** - not affected by any shared infrastructure.
- **Cost-efficiencies** - bandwidth upgrades do not require new fiber installation.

All Conterra service offerings will provide high availability; high bandwidth services that support data, voice and video simultaneously. Our dedicated internet access allows the district to have the bandwidth to meet the needs of today with the ability to scale bandwidth quickly and easily as the district's requirements grow.

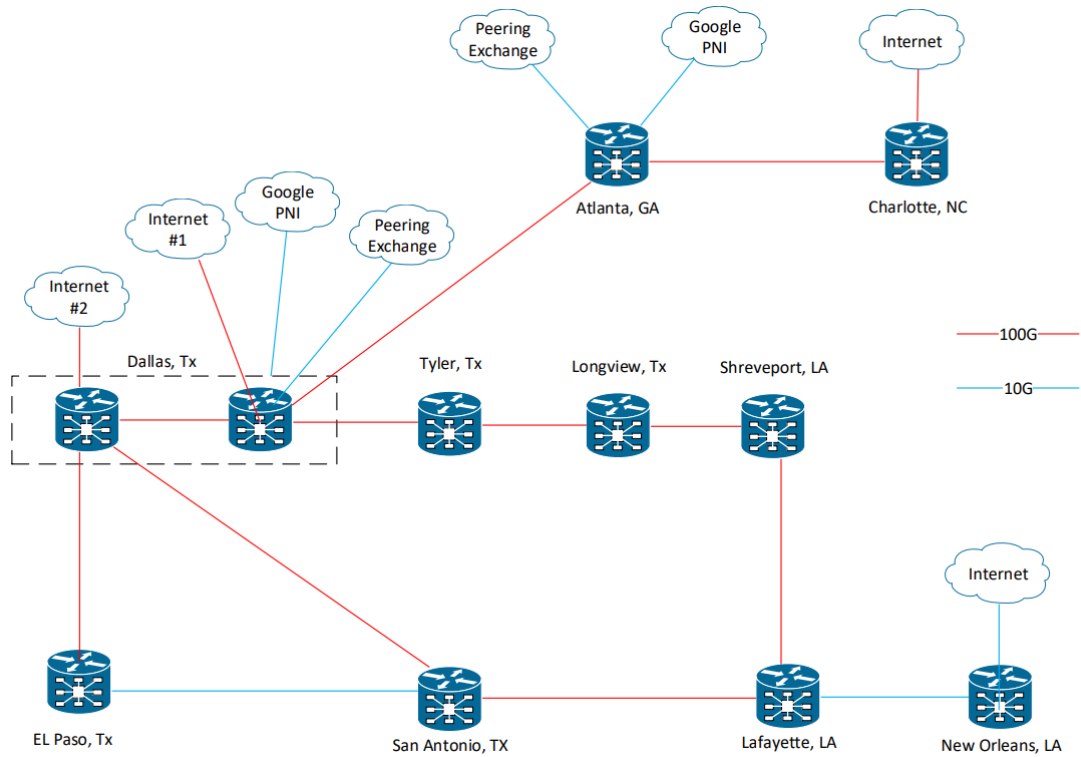
This is a departure from traditional LEC, or Cable-Co architecture based on shared networks. Within our network, the fiber and equipment are dedicated which allows your network to economically accommodate increasing bandwidth demands and better manage the priority of applications, without having to support legacy handoffs.



## 100GB Southeast Backbone Ring Network Architecture



## ISP Map





## Proposer's References

School District or Library System	Contact Name	Email Address	Telephone Number
Chatham County School District 369 West St Pittsboro, NC 27312	Jimmy Schwankl WAN Engineer	<a href="mailto:schwankl@chatham.k12.nc.us">schwankl@chatham.k12.nc.us</a>	919-542-3626
Rowan-Salisbury Schools 500 North Main St. Salisbury, NC 28144	David Blattner Executive Dir. of Technology	<a href="mailto:dblattner@iss.k12.nc.us">dblattner@iss.k12.nc.us</a>	704-924-2047
Iredell-Statesville School District 549 N. Race St. Statesville, NC 28677	Tim Ivey Chief Technology and Facilities Officer	<a href="mailto:tivey@iss.k12.nc.us">tivey@iss.k12.nc.us</a>	704-978-2062
Moore County School District 180 Pinckney Rd. Carthage, NC 28327	Kendt Eklund Director of Technology	<a href="mailto:keklund@ncmcs.org">keklund@ncmcs.org</a>	910-947-6672

## Section 5: Service Level Agreement

In the unlikely event of a service impairing issue, Conterra's Service Level Agreement (SLA) provides credits for such occurrences which are commensurate with the period of degraded performance or unavailability. Additionally, the Conterra SLA provides for guaranteed response times and mean time to repair (MTTR) for such issues based on the following criteria:

### Service Metrics

Description	Metric
Bandwidth	Non-Throttled Contracted Rates
Network Health Monitoring	24 X 7 X 365 Conterra Monitoring
Customer "Web Portal" Monitoring Tool	Conterra Supplied
Response Time for Outages	<15 minutes
Availability Objective per Month	>99.99%
Latency Commitment	<5 milliseconds round trip
Jitter Commitment	<2 milliseconds
Bit-Error Rate Commitment	<0.1% between designated end points
Mean Time-to-Repair	<4 hours
Scheduled Maintenance Reporting Commitment	>5 Days

#### I. SLA Guarantees

Service	Availability	Mean Time to Repair	Latency	Packet Loss
Dedicated Internet Access & Ethernet Service	End-to-End 99.99%	Priority 1 Outages within 4 Hours	10 ms	<0.1%

#### II. Network Availability

"Network Availability" is calculated as the total number of minutes in a calendar month less the number of minutes that the circuit is unavailable due to a Priority 1 Outage ("Downtime"), divide by the total number of minutes in the calendar month. Downtime excludes (i) planned outages, (ii) routine maintenance, (iii) time when Conterra is unable to gain access to Customer's premises to troubleshoot, repair or replace equipment or the circuit, (iv) service problems resulting from acts or omissions of Customer, (v) Customer equipment failures, and (vi) Force Majeure Events (collectively "Excluded Disruptions").

**III. Latency (On-Net)**

Latency is the average round trip network delay, measured every 5 minutes during a calendar month, to adequately determine consistent average monthly performance level for latency for each circuit. The roundtrip delay is expressed in milliseconds (ms). For Internet, Conterra measures latency using a standard 64-byte ping from the Internet Service site to the Conterra POP.

Latency is calculated as follows:

$$\text{Latency} = \frac{\text{Sum of the round trip delay measurements for a circuit}}{\text{Total \# of measurements for a circuit}}$$

**IV. Packet Loss (On Net)**

Packet Loss is defined as the percentage of packets that are not successfully received compared to the total packets that are sent in a calendar month. The percentage calculation is based on the packets that are transmitted from a network origination point and received at the network destination point (District Hub (Core) to Campus entities).

Packet Loss is calculated as follows:

$$\text{Packet Loss (\%)} = 100 (\%) - \text{Packets Received (\%)}$$

**V. Mean Time to Repair ("MTTR")**

The MTTR measurement for a Priority 1 Outage is the cumulative length of time it takes Conterra to restore Service for a circuit in a calendar month divided by the corresponding number of trouble tickets for Priority 1 Outages opened during the calendar month for that circuit.

MTTR per calendar month is calculated as follows:

$$\text{MTTR} = \frac{\text{Cumulative length of time to restore Priority 1 Outage(s)}}{\text{Total number of Priority 1 Outage trouble tickets per circuit}}$$

**VI. Network Maintenance**

Maintenance Notice:

Customer understands that from time to time, Conterra will perform routine network maintenance for network improvements and preventative maintenance, which will usually be conducted within routine maintenance windows. Conterra will use reasonable efforts to provide at least 96 hours' notice of such maintenance.

**VII. Service Credits**

The credits described in this SLA will be constitute Customer's sole and exclusive remedies, and Conterra's sole and exclusive liabilities, with respect to Conterra's failure to meet any service level commitments outlined herein.

If Conterra is unable to restore a portion of the service as required hereunder, or in the event of a Service Outage, Customer (and USAC if the customer is receiving E-Rate discounts), shall be entitled to a credit for the prorated monthly recurring charges for the affected Circuits for all unplanned outages.

Credit allowances, if any, shall be deducted from the charges payable by the Customer hereunder and shall be expressly indicated on a subsequent bill to the Customer.

A Service Outage begins when Conterra is notified or becomes aware of the failure, whichever occurs first.

A Service Outage ends when the affected line and/or associated station equipment is fully operational, subtracting and delay time associated with Conterra's ability to access the Customer or End User Premise.

If the Customer reports services or a facility or Circuit to be inoperative but declines to release it for testing and repair, it is considered impaired, but shall not be deemed a Service Outage.

- (a) Credit Allowances do not apply to Service Outages (i) caused by the negligence or acts of Customer and/or End User or its agents, (ii) due to failure of power; (iii) the failure or malfunction of non-Conterra equipment or systems; (iv) circumstances or causes beyond the control of Conterra or its agents; (v) during any period in which Conterra is not given access to the Service Premises; or (vi) a Planned Service Outage, unscheduled Emergency Maintenance, scheduled maintenance, alteration or implementation as described herein.
- (b) Customer must request a credit allowance for a Service Outage within five (5) business days after the Service Outage occurs or any claim for an allowance may be waived. Unless otherwise specifically stated, Service Outages are not aggregated for purposes of determining the credit allowance.

Upon written request of CUSTOMER, for each minute in the Service Window during a calendar month for which CONTERRA fails to satisfy its Service Commitment, CONTERRA shall credit to CUSTOMER's account the Credit Percentage listed in the table above.

**Chronic Trouble**

If a customer reports to Conterra (or vice versa) that a circuit has Chronic Trouble, defined as a service outage of more than 24 consecutive hours or more than 3 service outages of any period in excess of 30 minutes within any 30-day period, Conterra shall immediately perform a detailed investigation and report the findings to the Customer.

## Project Management

Conterra will provide a comprehensive project management plan that will be delivered by the Project Manager. Conterra knows project management is critical to the success of the project.

Immediately upon execution of a contract with Conterra, the following project tasks will be accomplished:

### **I. Assignment of Project/Account Management Team**

Throughout the project, the designated Conterra Project Manager will provide oversight to all project activities. He will work together with your representative in the coordination of the project schedule and resources. The Conterra Project Manager will also provide regular status updates to your personnel on all project activities.

### **II. Project Initiation**

Upon execution of a Service Agreement, an initial kick-off meeting will be conducted with your district staff. The project team and infrastructure will be determined, and roles and responsibilities will be identified. A baseline project plan will be developed, and processes for status reporting, issue escalation, etc., will be defined. The project plan will be a working document and will be updated regularly during the project.

## Project Control Functions

Conterra's Project Management provides consistent processes for planning deliverables, managing change, managing quality, and handling training activities. A few of the key project control processes include:

### 1. Planning

Planning begins with the understanding of your district's objectives and requirements. The next step is to establish a Work Breakdown Structure of the specific tasks required to accomplish the project objectives. Time estimates are made for each task, dependencies are determined, and a Gantt Chart is created. A detailed Project Plan is written, and these two documents become the baseline by which the project is managed, tracked, and measured.

### 2. Communication

Communication is accomplished through day-to-day contact with the Conterra Project Manager and customer personnel, along with weekly status meetings and written reports. A determination is made as to what is important to the key stakeholders and the status reports are geared to satisfying their information needs. The reports will focus on schedule and key action items.

### 3. Quality Assurance and Measurement Procedures

All OSP fiber builds performed by Conterra follow a rigid engineering and construction review process to ensure both QOS and structural integrity of the infrastructure. Conterra ascertains the strategic direction of the project, and then establishes a clear set of requirements with the customer and sub-contractors. Each segment of OSP is engineered to RUS guidelines, permits are obtained by our engineering section from DOT, local, and state permitting agencies along with Senior Engineer review of the completed design prints. Any required professional engineering requirements are met and the final job is then approved for construction.

### 4. Project Change Control

Scope creep is a risk that causes many programs to fail. Uncontrolled changes can disrupt development and implementation and influence the balance between schedule and quality. A baseline must be maintained against which the impact of approved changes is assessed. Conterra uses a five-step model for the change control process.

- **Define** — review the request for change and its impact
- **Evaluate** — conduct impact analysis and log and report status
- **Approve** — negotiate necessary contract changes, log and communicate status and obtain sign-off and document
- **Implement** — update the baseline information, track and report status
- **Verify** — check for correctness and completeness, log and report final status

## 5. Escalation Process

From time-to-time issues may arise during the implementation of a project relative to Conterra or your organization's performance or there may be a change in direction. When such issues arise and cannot be dealt with in an expeditious manner at the Project level the following escalation process will apply:

Conterra's Program Manager reports the issue to Conterra's EVP of Network Deployment. If the issue cannot be resolved at the EVP level the issue will be escalated to the Conterra Chief Operating Officer until the issue is resolved.

## 6. Project Staffing

Conterra will establish a Project Management Team (PMT). Conterra staffs numerous project managers who have been implementing high-performance networks from coast to coast for three decades. Our thorough deployment system was designed by seasoned subject matter experts to achieve best-in-class results that are on time and on budget.

## 7. Vendor/Sub-Contractor Management

Conterra provides vendor/sub-contractor management that utilizes a proven 3-Level approach that starts with a Senior Management approval but is driven by the Project Manager. Reputation, suitability, and quality are key elements that are evaluated.

Vendors are managed at the project level by the Project Manager. They are monitored and assessed on a regular basis with milestone tracking, reports and quality metrics. Issue resolution is handled first at the Project Management level and then escalated as described above.

Conterra utilizes an extensive list of subcontractors specializing in fiber deployment from which we will select for this project. Each undergoes our extensive pre-qualification process for all contractors involved in our projects. Qualifications including, but not limited to, knowledge of the specific task(s) to be supported, past work history, current

activity, references, financial stability and customer satisfaction are among the many items reviewed and evaluated. All sub-contractors are appropriately background checked, licensed and insured.



## Customer Service and Support

### Network Operations

Conterra's Network Operations organization provides network monitoring and maintenance, which includes surveillance, troubleshooting, and trouble resolution through its state-of-the-art 24 X 7 X 365 Network Operation Center (NOC) at our corporate headquarters in Charlotte, NC with back-up operations in Longview, TX. The NOC continuously monitors the network equipment, service health, and performance of the Conterra network, responds to network events and service degradations, dispatches local Conterra field technicians, and informs customers of service issues.

In addition, the Network Operations group also provides technical support for customers through a staff of Technical Support Representatives on a 24 X 7 X 365 basis.

The NOC maintains a staff of engineers and technicians that are trained in an array of networks, elements, and technologies in the Conterra network (Ethernet, Sonet, TDM, Internet Access, VoIP, Firewalls, etc.). Conterra engineers have earned many industry certifications, including: MEF Metro Ethernet Forum, CCIE (Cisco Certified Internetwork Expert), Cisco Certified Network Associate (CCNA), Cisco Certified Network Professional (CCNP), Microsoft Certified Systems Engineer (MCSE), A+, Network+, and other certifications in specific vendor equipment.

### **The Conterra NOC provides the following automated management functions:**

- ***Continuous Network Monitoring 24 X 7 X 365*** of all critical components delivering proactive monitoring, notification, web-based reporting and automated service restoration of the network.
- ***Configuration Management*** provides remote automatic configuration of networks and manages any changes or upgrades to the network.
- ***Fault Management*** contains functions for acquisition, presentation, and storage of alarms and events from the network.
- ***Security Management*** handles security within the NOC accessing control over the network elements.
- ***Performance Monitoring*** of all network metrics.

Our Internet services are delivered over our dedicated carrier-class equipment and highly reliable dedicated fiber circuits. Our around the clock network monitoring is performed to

detect circuit faults and proactive measures are taken to restore upon notification. Conterra maintains a comprehensive database of all relevant information associated with our fiber routes and equipment is maintained to ensure prompt identification and appropriate response to all maintenance situations.

## Conterra Customer Call Handling

**The Conterra Network Operations Center ("NOC") provides proactive support for all customers through a professionally staffed help desk; 24 X 7 x 365.**

We can be reached two ways:

- The toll-free Conterra NOC number is [800-634-1374](tel:800-634-1374).
- Through our web portal at [WWW.CONTERRA.COM](http://WWW.CONTERRA.COM).
- Via E-Mail: [NOC@Conterra.com](mailto:NOC@Conterra.com) or [Support@Conterra.com](mailto:Support@Conterra.com)
- During the Conterra Training Course, you will receive a welcome packet of information that includes all your Conterra points of contact, including the names, numbers, email address etc. of the assigned account personnel.

### ***SERVICE OUTAGE PROCESS***

Priority Level	Criteria	Response Time	MTTR Goal	Ticket Updates
<b>Level 1 "Critical"</b>	a. Total Loss of Service  b. Service disruption to the point of where the Customer is unable to use the service	15 minutes to respond to customer with a trouble ticket # and information	Less than 4 hours	Constantly as milestones are met
<b>Level 2 "Major"</b>	Service degraded but usable	15 minutes to respond to customer with a trouble ticket # and information	Less than 4 hours	Constantly as milestones are met
<b>Level 3 "Minor"</b>	A problem that does not impact Service	On an alert from the Customer		As milestones are met

## Trouble Ticketing Procedures

- The Network Management System and NOC personnel analyze all customer affecting faults within seconds of alarms to isolate the location of the fault (e.g. which network segment has an issue).
- NOC personnel perform first level diagnostics on the network segments and elements to further isolate the issues to a component level when possible.
- If the problem is complex or involves a carrier outage, the customer is notified within 10 minutes by e-mail and/or pager and given a trouble ticket reference number and an explanation of what action is being taken.
- When first level diagnostics are not conclusive, the NOC manager dispatches field personnel for further fault isolation and coordinates additional diagnostics with our customers.
- After the fault is isolated, the NOC technician coordinates with field personnel and the customer to remediate issues including network element reboots and replacements.
- All replaced equipment is tested by Conterra for root cause analysis.
- After root cause is determined, the Conterra trouble ticket is closed, and all related trouble tickets are closed.

## Fiber Restoration Plan

1. Cable and conduit maintenance and repair are conducted on a 24/7/365 basis. Conterra's qualified personnel staff of administration support, IT and field repair services ensure the performance of network monitoring, maintenance, and service restoration. Our repair crews carry the proper test equipment (Optical Time-Domain Reflectometers) and tooling for the job. The OTDR locates and diagnoses many of the problems associated with physical cable-plant.
2. Fibers are prioritized. Conterra networks have spare fibers. When your system is down, the priority fibers are fixed first.
3. Conterra Field Technicians carry spare connectors and a connectorization kit or a mechanical-splice kit.
4. Conterra maintains local trained cable locate and repair crews to terminate and test the fiber network. All local Field Technicians are certified by Conterra to maintain the

service infrastructure. They are strategically located to guarantee an on-site MTTR of 4 hours or less.

## Administrative Escalation List

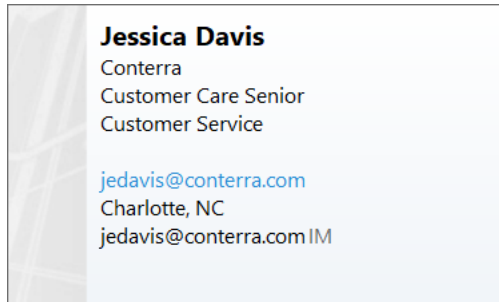
Level 1	Shift Supervisor	(980) 701-9024	On Duty Supervisor	
Level 2	Senior NOC Manager	(704) 565-2007 (o) (704) 641-0775 (c)	Kyle Hoover	<a href="mailto:khoover@conterra.com">khoover@conterra.com</a>
Level 3	Director, Operations Center	(704) 565-2005 (o) (828) 320-2657 (c)	Bee Moua	<a href="mailto:bmoua@conterra.com">bmoua@conterra.com</a>
Level 4	Vice President, Service Delivery and Assurance	(903) 323-4568 (o) (903) 720-2992 (c)	Tony Doria	<a href="mailto:tdoria@conterra.com">tdoria@conterra.com</a>
Level 5	Executive Vice President & Chief Operations Officer	(704) 936-1804 (o) (207) 740-3303 (c)	Mike Tompkins	<a href="mailto:mtompkins@conterra.com">mtompkins@conterra.com</a>

## Dedicated Account Management and Customer Care

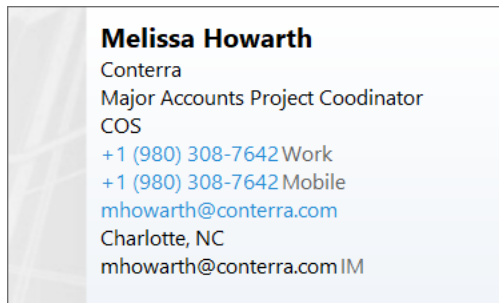
Conterra will provide a dedicated Account Management Team that maintains the customer relationship and will provide answers to any customer concerns from the deployment "kick-off" meeting through the term of the contract. They provide strong relations and communications skills, applying technical knowledge and policies in direct support of your district.

Our Account Management Team will meet with district personnel on a regular basis to review the network Service Level Availability and all other strategic metrics. They will keep you abreast of industry changes and events and make recommendations on network additions, changes, and upgrades. Our goal is for you to have the most cost-efficient network available.

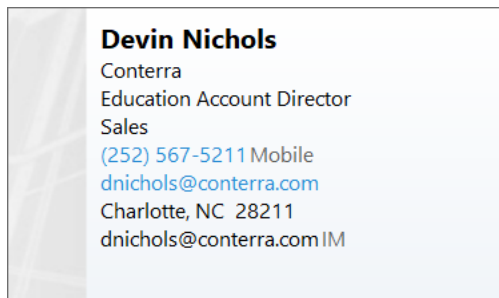
Jessica Davis is the Senior Manager for Service Delivery and Customer Care. Her team is responsible for installations and post-install non-technical support. Jessica has over 12 years of telecom experience in varying roles and responsibilities. Jessica recently joined Conterra from Charter Communications where she led their Client Services back-office team which handled MACD and Complex Billing and Account Issues. Her goal and her department's goal are to provide an exceptional customer experience to all Conterra's customers.



Melissa Howarth has recently been added to the Customer Care team to focus specifically on Education and Carrier customers. She worked with Jessica previously and has a proven ability to solve complex issues while providing a superior customer support experience. With 5 years of telecom experience, Melissa has the knowledge and work ethic to assist Conterra's largest customers.



Devin Nichols - Account Director, E-Rate and RHC Devin brings years of experience in telecommunications, associate development, community engagement, along with business and government account management to Conterra. Devin has provided complex voice and data solutions to numerous large customers including the State of North Carolina, East Carolina University, Vidant Health, as well as numerous other Schools and local Government entities. His skills include RFI/RFP/Negotiation, Contract Management, Customer Experience, Solution Design and Project Management.



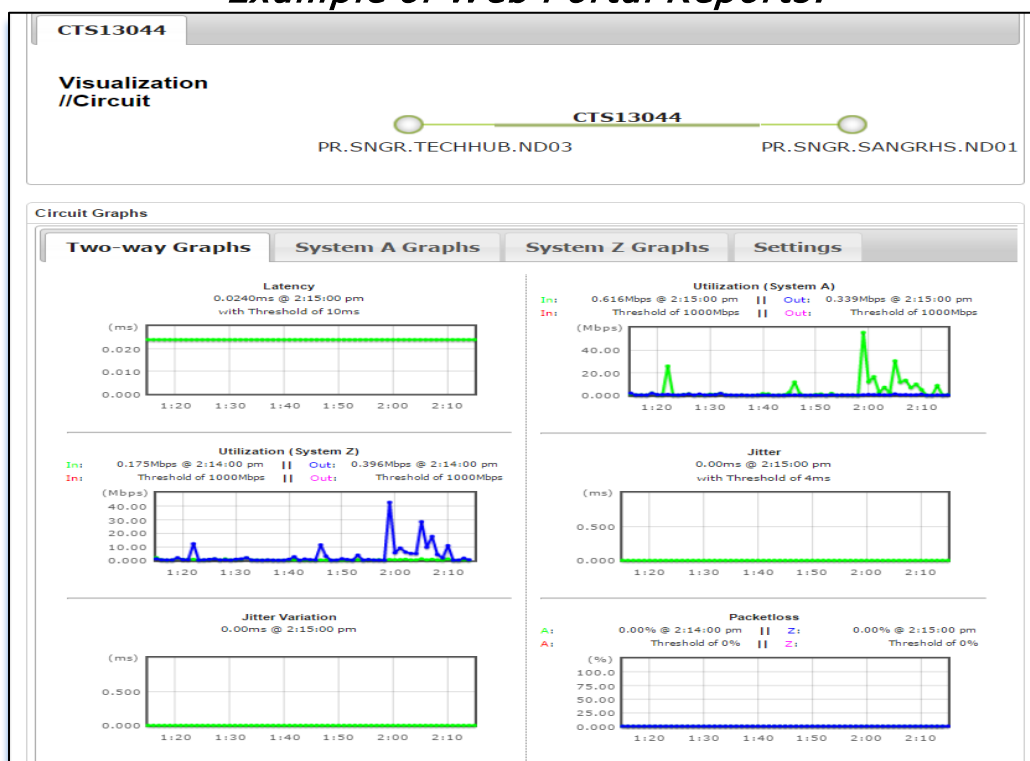
## Web Portal - Customer Network Monitoring Application

In addition to our proactive network monitoring, Conterra provides a **"Real Time" web portal** that enables customers to monitor both real time and historical utilization and performance metrics of the Conterra WAN service with granularity to an individual location or aggregation metrics of all locations.

The application: an easy-to-use intuitive reporting interface which provides data for any time period in both graphical and tabular data formats. Conterra supplied Network Interface Devices collect two-way performance information continually and provide high precision bandwidth, latency, and jitter measurements. Based upon custom profiles and reporting, you can easily define screens and develop graphic analysis. Performance information is presented in a customizable web portal which provides easy-to-read visualization of circuits, performance graphs, and tabular data suitable for download and analysis in programs such as Excel.

The SLA and/or Application Report Manager provides Service Assurance-based Availability and Performance reporting of individual or groups of circuits based on domain selection. The availability and performance reports allow for date & time filtering (5 minutes to annual reports) upon selection of a specific report type. Reports are provided in tabular format which offer per data type / column sorting (ascending & descending) as well as capability to export uptime, downtime, and perform reports.

### Example of Web Portal Reports:



The Web Portal can produce Internet Access Usage Reports and access is provided without additional cost to customer

## USAC/E-RATE Assistance

Conterra provides a professionally trained staff to assist applicants in all facets of the E-Rate cycle including an E-Rate and Regulatory Manager to stay abreast of rules issued by USAC, the Schools and Libraries Division, the Federal Communications Commission, Federal Courts and Congress. The Conterra E-Rate Manager, Contracts Manager and Accounting Supervisor all attend the annual E-Rate Training Seminar offered by the Schools and Libraries Division and participate in the monthly SLD Service Provider Conference Call. Conterra's experience with this program and federal and state regulation allows us to move as smoothly as possible through the funding and deployment process insuring the timely and accurate filing of crucial forms.

Conterra utilizes either BEAR or SPI Service Agreements that detail the procedures to be followed should the applicant lose E-Rate funding or if the E-Rate program is significantly changed.

Conterra will work closely with the customer to ensure the annual Form 471 is filed in a timely manner. Conterra will complete and send the Item 21 attachment to the applicant for filing. We will provide support for any follow-up questions/clarifications from PIA reviews. Conterra will also contact all customers as soon as the 471-filing window opens annually to begin the filing process.



## Section 6: Price Proposal

### Appendix B Itemized: Extended Pricing with Tax

<b>Z – Location HUB: 175 Bingham Road Asheville, NC., 28806</b>					
Description	60 Month	NRR	State Tax		Total MRR
10 Gbps Ethernet	\$ 839.00	\$0.00	\$ 64.21		\$ 903.21
20 Gbps Ethernet	\$1,659.00	\$0.00	\$ 126.96		\$1,785.96
25 Gbps Ethernet	\$2,150.00	\$0.00	\$ 164.54		\$2,314.54
40 Gbps Ethernet	\$2,999.00	\$0.00	\$ 229.51		\$3,228.51
50 Gbps Ethernet	\$3,750.00	\$0.00	\$ 286.99		\$4,036.99
100 Gbps Ethernet	\$5,100.00	\$0.00	\$ 390.30		\$5,490.30
<b>44 Sites - Remote Pricing</b>					
Description	60 Month	NRR	State Tax		Total MRR
10 Gbps Ethernet	\$ 839.00	\$0.00	\$ 64.21		\$ 903.21
20 Gbps Ethernet	\$1,659.00	\$0.00	\$ 126.96		\$1,785.96
25 Gbps Ethernet	\$2,150.00	\$0.00	\$ 164.54		\$2,314.54
40 Gbps Ethernet	\$2,999.00	\$0.00	\$ 229.51		\$3,228.51
50 Gbps Ethernet	\$3,750.00	\$0.00	\$ 286.99		\$4,036.99
100 Gbps Ethernet	\$5,100.00	\$0.00	\$ 390.30		\$5,490.30

### Proposal Terms

60 Month Optional Ten (10) - One (1) Year Extensions

## Appendix B Cost Proposal #1

## Appendix B COST PROPOSAL #1 Switched-Ethernet Wide Area Network

**INSTRUCTIONS:**

Indicate the cost for each area in the fields provided.

Quote #1: Quote for a 5-year contract option, with up to ten (10) voluntary extensions, to be considered with pricing for 10 Gbps or greater for all sites.						
School Entity Number	School Name	Gbps	E-Rate Eligible Monthly Rate	E-Rate Ineligible Monthly Rate	E-Rate Eligible Non-Reoccurring Charge	E-Rate Ineligible Non-Occurring Charge
30282	A C Reynolds High	10	\$903.21	\$0.00	\$0.00	\$0.00
30283	A C Reynolds Middle	10	\$903.21	\$0.00	\$0.00	\$0.00
30099	Avery's Creek Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30107	Barnardsville Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30110	Black Mountain Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30108	Black Mountain Primary	10	\$903.21	\$0.00	\$0.00	\$0.00
16020656	Buncombe Co Transportation Department	10	\$903.21	\$0.00	\$0.00	\$0.00
16050074 & 16020654	Buncombe County Early College & Middle College High School	10	\$903.21	\$0.00	\$0.00	\$0.00
30130	Candler Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
222140	Cane Creek Middle	10	\$903.21	\$0.00	\$0.00	\$0.00
16023519 & 30303	Central Office & Martin L. Nesbitt Disc Academy	20/25/40/50 /100	See Below: *NOTE Pg. 2	\$0.00	\$0.00	\$0.00
30290	Charles C Bell Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30111	Charles D Owen High	10	\$903.21	\$0.00	\$0.00	\$0.00
30228	Charles D Owen Middle	10	\$903.21	\$0.00	\$0.00	\$0.00
16061303	Charles T. Koontz Intermediate	10	\$903.21	\$0.00	\$0.00	\$0.00
30308	Clyde A Erwin High	10	\$903.21	\$0.00	\$0.00	\$0.00

30294	Clyde A Erwin Middle	10	\$903.21	\$0.00	\$0.00	\$0.00
30225	Community High School	10	\$903.21	\$0.00	\$0.00	\$0.00
30299	Emma Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30155	Enka High	10	\$903.21	\$0.00	\$0.00	\$0.00
17001392	Enka Intermediate School	20/25/40/50 /100	See below: *NOTE	\$0.00	\$0.00	\$0.00
30133	Enka Middle	10	\$903.21	\$0.00	\$0.00	\$0.00
30158	Fairview Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30098	Glen Arden Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30288	Haw Creek Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
222138	Hominy Valley Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
16061304	Joe P. Eblen Intermediate	10	\$903.21	\$0.00	\$0.00	\$0.00
30293	Johnston Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30184	Leicester Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30252	North Buncombe Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30251	North Buncombe High	10	\$903.21	\$0.00	\$0.00	\$0.00
30253	North Buncombe Middle	10	\$903.21	\$0.00	\$0.00	\$0.00
232457	North Windy Ridge	10	\$903.21	\$0.00	\$0.00	\$0.00
30276	Oakley Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30129	Pisgah Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30291	Sand Hill-Venable Elem	10	\$903.21	\$0.00	\$0.00	\$0.00
30281	T C Roberson High	10	\$903.21	\$0.00	\$0.00	\$0.00
30100	Valley Springs Middle	10	\$903.21	\$0.00	\$0.00	\$0.00
30226	W D Williams Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30250	Weaverville Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30249	Weaverville Primary	10	\$903.21	\$0.00	\$0.00	\$0.00
30295	West Buncombe Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30280	William W Estes Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00
30284	Woodfin Elementary	10	\$903.21	\$0.00	\$0.00	\$0.00

## \*NOTE:

10 Gbps Ethernet \$903.21  
 20 Gbps Ethernet \$1,785.96  
 25 Gbps Ethernet \$2,314.54

40 Gbps Ethernet \$3,228.51  
 50 Gbps Ethernet \$4,036.99  
 100 Gbps Ethernet \$5,490.30

## Appendix C Itemized: Extended Pricing with Tax

<b>Z – Location HUB: 175 Bingham Road Asheville, NC., 28806</b>					
Description	60 Month	NRR	State Tax		Total MRR
10 Gbps Ethernet	\$ 895.00	\$0.00	\$ 68.49		\$ 963.49
20 Gbps Ethernet	\$ 1,659.00	\$0.00	\$ 126.96		\$1,785.96
25 Gbps Ethernet	\$ 2,150.00	\$0.00	\$ 164.54		\$2,314.54
40 Gbps Ethernet	\$ 2,999.00	\$0.00	\$ 229.51		\$3,228.51
50 Gbps Ethernet	\$ 3,750.00	\$0.00	\$ 286.99		\$4,036.99
100 Gbps Ethernet	\$ 5,100.00	\$0.00	\$ 390.30		\$5,490.30
<b>44 Sites - Remote Pricing</b>					
Description	60 Month	NRR	State Tax		Total MRR
5 Gbps Ethernet	\$ 685.00	\$0.00	\$ 52.42		\$ 737.42
10 Gbps Ethernet	\$ 895.00	\$0.00	\$ 68.49		\$ 963.49
20 Gbps Ethernet	\$ 1,659.00	\$0.00	\$ 126.96		\$1,785.96
25 Gbps Ethernet	\$ 2,150.00	\$0.00	\$ 164.54		\$2,314.54
40 Gbps Ethernet	\$ 2,999.00	\$0.00	\$ 229.51		\$3,228.51
50 Gbps Ethernet	\$ 3,750.00	\$0.00	\$ 286.99		\$4,036.99
100 Gbps Ethernet	\$ 5,100.00	\$0.00	\$ 390.30		\$5,490.30

### Proposal Terms

60 Month Optional Ten (10) - One (1) Year Extensions

## Appendix C Cost Proposal #2

## Appendix C

### COST PROPOSAL #2

### Switched-Ethernet Wide Area Network

**INSTRUCTIONS:**

Indicate the cost for each area in the fields provided.

Quote #2: Quote for a 5-year contract option, with up to ten (10) voluntary extensions, to be considered with pricing for specified Gbps or greater for all sites listed below.						
School Entity Number	School Name	Gbps	E-Rate Eligible Monthly Rate	E-Rate Ineligible Monthly Rate	E-Rate Eligible Non-Reoccurring Charge	E-Rate Ineligible Non-Occurring Charge
30282	A C Reynolds High	10	\$963.49	\$0.00	\$0.00	\$0.00
30283	A C Reynolds Middle	10	\$963.49	\$0.00	\$0.00	\$0.00
30099	Avery's Creek Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30107	Barnardsville Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30110	Black Mountain Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30108	Black Mountain Primary	5	\$737.42	\$0.00	\$0.00	\$0.00
16020656	Buncombe Co Transportation Department	5	\$737.42	\$0.00	\$0.00	\$0.00
16050074 & 16020654	Buncombe County Early College & Middle College High School	5	\$737.42	\$0.00	\$0.00	\$0.00
30130	Candler Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
222140	Cane Creek Middle	10	\$963.49	\$0.00	\$0.00	\$0.00
16023519 & 30303	Central Office & Martin L. Nesbitt Disc Academy	20/25/40/50/100	See below: *NOTE Pg.2	\$0.00	\$0.00	\$0.00
30290	Charles C Bell Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30111	Charles D Owen High	10	\$963.49	\$0.00	\$0.00	\$0.00
30228	Charles D Owen Middle	10	\$963.49	\$0.00	\$0.00	\$0.00
16061303	Charles T. Koontz Intermediate	10	\$963.49	\$0.00	\$0.00	\$0.00
30308	Clyde A Erwin High	10	\$963.49	\$0.00	\$0.00	\$0.00

30294	Clyde A Erwin Middle	10	963.49	\$0.00	\$0.00	\$0.00
30225	Community High School	5	\$737.42	\$0.00	\$0.00	\$0.00
30299	Emma Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30155	Enka High	10	963.49	\$0.00	\$0.00	\$0.00
17001392	Enka Intermediate School	20/25/40/ 50/100	See below: *NOTE	\$0.00	\$0.00	\$0.00
30133	Enka Middle	10	963.49	\$0.00	\$0.00	\$0.00
30158	Fairview Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30098	Glen Arden Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30288	Haw Creek Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
222138	Hominy Valley Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
16061304	Joe P. Eblen Intermediate	10	963.49	\$0.00	\$0.00	\$0.00
30293	Johnston Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30184	Leicester Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30252	North Buncombe Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30251	North Buncombe High	10	963.49	\$0.00	\$0.00	\$0.00
30253	North Buncombe Middle	10	963.49	\$0.00	\$0.00	\$0.00
232457	North Windy Ridge	10	963.49	\$0.00	\$0.00	\$0.00
30276	Oakley Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30129	Pisgah Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30291	Sand Hill-Venable Elem	5	\$737.42	\$0.00	\$0.00	\$0.00
30281	T C Roberson High	10	963.49	\$0.00	\$0.00	\$0.00
30100	Valley Springs Middle	10	963.49	\$0.00	\$0.00	\$0.00
30226	W D Williams Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30250	Weaverville Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30249	Weaverville Primary	5	\$737.42	\$0.00	\$0.00	\$0.00
30295	West Buncombe Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30280	William W Estes Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00
30284	Woodfin Elementary	5	\$737.42	\$0.00	\$0.00	\$0.00

## \*NOTE:

10 Gbps Ethernet \$963.49	40 Gbps Ethernet \$3,228.51
20 Gbps Ethernet \$1,785.96	50 Gbps Ethernet \$4,036.99
25 Gbps Ethernet \$2,314.54	100 Gbps Ethernet \$5,490.30

Page 15 of 16

The undersigned hereby proposes and agrees to furnish and deliver the goods or services in accordance with the terms, conditions, prices and specifications herein proposed.

Firm Name: Conterra Ultra Broadband, LLC

Signature: 

Print Name: Devin Nichols

Title: Education Account Director

Date:

## Section 7: Attachments & Addendums

- Attachment A: CUB SPIN
- Attachment B: CUB Green Light Status
- Attachment C: Insurance
- Attachment D: W9
- Attachment E: North Carolina Utilities Commission P-1359, Sub 1
- Attachment F: North Carolina Certificate of Authorization
- Attachment G: Wide Area Network Telecom Service Agreement
- Attachment H: Equipment Specification Sheets
- Addendum #1 – RFP for Wide Area Network Service E-Rate Form 470 # 230004858 Application
- Attachment J: Addendum #2 – RFP for Wide Area Network Service E-Rate Form 470 # 230004858 Revised Bid



## Attachment A: CUB SPIN

SPIN ▲	Service Provider Name	Doing Business As	Contact Name	Contact Address	Contact Phone	Form 499 Filer	SPAC Filed
143025700	Conterra Ultra Broadband, LLC	Conterra Fiber Solutions	Sonia M Roussel	5301 77 Center Drive Charlotte NC 28217	318657-1008	Y	2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022

## Attachment B: CUB Green Light Status

FRN	FRN Name	Red Light Status
0008228124	Detel Wireless, LLC	Green Light
0008763179	Network USA, LLC	Green Light
0009750324	Conterra Ultra Broadband, LLC	Green Light
0010198877	Tim Ron Enterprises, LLC	Green Light
0010652980	Sun America Communications, L.L.C.	Green Light
0013324066	Broadplex LLC	Green Light
0017361015	Conterra Wireless Broadband, LLC	Green Light
0027048453	Network USA, LLC	Green Light

## Attachment C: Insurance

Page 1 of 1



## CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)  
12/03/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Willis Towers Watson Southeast, Inc. c/o 26 Century Blvd P.O. Box 305191 Nashville, TN 372305191 USA		<b>CONTACT</b> NAME: Willis Towers Watson Certificate Center PHONE (A/C, No, Ext): 1-877-945-7378 FAX (A/C, No): 1-888-467-2378 E-MAIL ADDRESS: certificates@willis.com													
<b>INSURED</b> Conterra Ultra Broadband, LLC 5301 77 Center Drive Charlotte, NC 28217		<b>INSURER(S) AFFORDING COVERAGE</b> <table border="1"> <tr> <td>INSURER A: Travelers Property Casualty Company of Ame</td> <td>NAIC # 25674</td> </tr> <tr> <td>INSURER B: Travelers Indemnity Company of CT</td> <td>25682</td> </tr> <tr> <td>INSURER C: Phoenix Insurance Company</td> <td>25623</td> </tr> <tr> <td>INSURER D: Lloyd's</td> <td>B7874</td> </tr> <tr> <td>INSURER E:</td> <td></td> </tr> <tr> <td>INSURER F:</td> <td></td> </tr> </table>		INSURER A: Travelers Property Casualty Company of Ame	NAIC # 25674	INSURER B: Travelers Indemnity Company of CT	25682	INSURER C: Phoenix Insurance Company	25623	INSURER D: Lloyd's	B7874	INSURER E:		INSURER F:	
INSURER A: Travelers Property Casualty Company of Ame	NAIC # 25674														
INSURER B: Travelers Indemnity Company of CT	25682														
INSURER C: Phoenix Insurance Company	25623														
INSURER D: Lloyd's	B7874														
INSURER E:															
INSURER F:															

## COVERAGES

CERTIFICATE NUMBER: W23010807

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input checked="" type="checkbox"/> LOC <input type="checkbox"/> OTHER:			H-630-9W225373-TTL-21	09/10/2021	09/10/2022	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMPIOP AGG \$ 2,000,000
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS ONLY			810 9N235735	09/10/2021	09/10/2022	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			CUP-9023X017	09/10/2021	09/10/2022	EACH OCCURRENCE \$ 15,000,000 AGGREGATE \$ 15,000,000
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N No	N/A	UB-9N229311-21-I3-G	09/10/2021	09/10/2022	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
D	Technology Errors & Omissions Media Liability Network Security			W30452210101	09/10/2021	09/10/2022	Per Claim \$ 5,000,000 Per Claim \$ 5,000,000 Per Claim \$ 5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

## CERTIFICATE HOLDER

## CANCELLATION

Evidence of Coverage	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE 

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ACORD 25 (2016/03)

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Box 2 of the attached Form W-9 includes the following business names and entities, which are not recognized for tax purposes:

- |                                    |                 |
|------------------------------------|-----------------|
| • Conterra Networks                |                 |
| • Detel Wireless, LLC              | EIN: 71-0905220 |
| • Conterra Ultra Broadband, LLC    | EIN: 58-2615152 |
| • Conterra Wireless Broadband, LLC | EIN: 20-1038023 |
| • Broadplex, LLC                   | EIN: 56-2157178 |
| • Network USA, LLC                 | EIN: 72-1379201 |
| • Sun America Communications, LLC  | EIN: 05-0533074 |
| • Tim Ron Enterprises, LLC         |                 |
| • Network Communications           | EIN: 33-1006635 |

[www.Conterra.com](http://www.Conterra.com)

5301 77 Center Drive, Charlotte, NC 28217

## Attachment E: North Carolina Utilities Commission P-1359, Sub 1

**STATE OF NORTH CAROLINA  
UTILITIES COMMISSION  
RALEIGH**

DOCKET NO. P-1359, Sub 1

**CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY  
AUTHORIZING THE PROVISION OF INTRASTATE LOCAL EXCHANGE  
AND EXCHANGE ACCESS TELEPHONE SERVICE**

**BEFORE THE NORTH CAROLINA UTILITIES COMMISSION**

Know All Men By These Presents, That

**CONTERRA ULTRA BROADBAND, LLC**

**Suite 200E  
2101 Rexford Road  
Charlotte, NC 28211**

is hereby granted this

**CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY**

This Certificate is hereby granted to Conterra Ultra Broadband, LLC pursuant to N.C.G.S. 62-110 authorizing the provision of intrastate local exchange and exchange access telephone service as a Competing Local Provider in the State of North Carolina. This Certificate is hereby issued subject to all of the terms and conditions adopted by the North Carolina Utilities Commission in Docket No. P-100, Sub 133, Commission Rules and Regulations, and any further amendments and supplements thereto.

ISSUED BY ORDER OF THE COMMISSION.

This the 10<sup>th</sup> day of July, 2013.

NORTH CAROLINA UTILITIES COMMISSION

*Gail L. Mount*

Gail L. Mount, Chief Clerk

GM071013.01

## Attachment F: North Carolina Certificate of Authorization

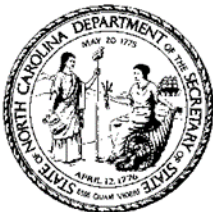
**NORTH CAROLINA**  
**Department of the Secretary of State****CERTIFICATE OF AUTHORIZATION**  
**(Limited Liability Company)**

I, Elaine F. Marshall, Secretary of State of the State of North Carolina, do hereby certify that

**CONTERRA ULTRA BROADBAND, LLC**

a limited liability company organized under the laws of South Carolina, was authorized to transact business in the State of North Carolina by issuance of a certificate of authority on the 19th day of August, 2005.

I FURTHER certify that the said limited liability company's certificate of authority is not suspended for failure to comply with the Revenue Act of the State of North Carolina; that the said limited liability company's certificate of authority is not revoked for failure to comply with the provisions of the North Carolina Limited Liability Company Act; and that a certificate of withdrawal has not been issued in the name of the said limited liability company as of the date of this certificate.



Scan to verify online.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Raleigh, this 27th day of January, 2016.

*Elaine F. Marshall*

Secretary of State

Certification# 97934131-1 Reference# 12893292- Page: 1 of 1  
Verify this certificate online at <http://www.sos.nc.gov/verification>

## Attachment G: Wide Area Network Telecom Service Agreement

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CONTERRA

Contract Number: BCS WAN 2023-2028

Page 1 of 12

### WIDE AREA NETWORK TELECOMMUNICATIONS SERVICE AGREEMENT

This Telecommunications Service Agreement (the "Agreement") is entered into as of this \_\_\_\_ day of \_\_\_\_\_, 20\_\_ (the "Effective Date"), by and between Conterra Ultra Broadband, LLC ("CONTERRA"), a limited liability company organized under the laws of the State of South Carolina, with its principal place of business located at 5301 77 Center Drive, Charlotte, North Carolina, 28217, and Buncombe County Schools ("CUSTOMER"), with its principal place of business located at 175 Bingham Road, Asheville, North Carolina 28806. This Agreement sets forth the terms and conditions under which CONTERRA will deploy and provide certain telecommunications and related services described herein (the "Services") for the CUSTOMER and CUSTOMER'S employees, agents and students. CONTERRA and CUSTOMER may be individually referred to herein as "party" or collectively as "parties."

### DEFINITIONS

"USAC" shall mean the Universal Service Administrative Company that administers the Universal Service Fund under the Federal Telecommunications Act of 1996, including the Schools and Libraries Division ("SLD") thereof.

"E-Rate" shall mean the Schools and Libraries Universal Support Mechanism administered by the Schools and Libraries Division ("SLD") of USAC.

"E-Rate Discount" shall mean the discount percentage approved by SLD for the current Funding Year, as defined by SLD, as shown on the Funding Commitment Decision Letter, and for which SLD agrees to provide E-Rate Funding.

"E-Rate Funding" shall mean (i) the agreement by SLD to provide funds through E-Rate to CUSTOMER to subsidize the provision of the Services to CUSTOMER, and (ii) the funds so provided.

"FCDL" shall mean the Funding Commitment Decision Letter issued by SLD to the CUSTOMER and CONTERRA notifying CUSTOMER and CONTERRA of approval by SLD of E-Rate Funding.

"Certification" shall mean the verification by CONTERRA, as acknowledged by CUSTOMER, that the Services meet the performance requirements set forth in Attachment A.

"Deficient Minutes" shall be the total number of minutes in a calendar month that are in excess of the number of minutes of path non-availability permitted by the terms of the Services level standards that CONTERRA is required to meet under the terms of this Agreement.

"Deficiency Credit" shall mean an amount equal to the total number of Deficient Minutes in the calendar month for which such Deficiency Credit is sought multiplied by a fraction of which the numerator is the Monthly Service Fee, and the denominator is the number of minutes in the relevant month.

"Infrastructure" shall mean the CONTERRA-owned service delivery infrastructure deployed and maintained by CONTERRA and used in the provision of the Services to CUSTOMER.

"Service Locations" shall mean the location(s) specified in Attachment A at which Service and Infrastructure is deployed.

"Non-Recurring Charge" shall mean that portion of the total charge for the provision of the Services under this Agreement that is designated as the non-recurring charge listed on Attachment A for the use of the Infrastructure.

"Monthly Service Fee" shall, during the initial Term and any extension hereof enacted pursuant to Section 9 of this Agreement, mean the monthly service charge listed on Attachment A.

"Outage Event" shall mean any outage or other loss of the Services, other than any outage that (i) is not reported by CUSTOMER to CONTERRA within five (5) days of occurrence, (ii) is less than one (1) hour in duration, (iii) is attributable to CONTERRA's scheduled network maintenance, (iv) is attributable to failure



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**CONTERRA****Contract Number: BCS WAN 2023-2028**

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or outage of related telephone circuits (whether ordered by CONTERRA or CUSTOMER), (v) results from CUSTOMER's applications, equipment or facilities, (vi) results from any act or omission of CUSTOMER or any user of CUSTOMER's equipment or account, or (vii) is due to or occasioned by any riots, wars, acts of enemies, national emergency, acts of vandalism, strikes, floods, fires, hurricanes, tornados, acts of God, or by any other cause not within the control of CONTERRA that by the exercise of reasonable diligence CONTERRA is unable to prevent, (viii) results from CONTERRA not having been granted site access by the CUSTOMER, or (ix) results from CUSTOMER'S unauthorized use of equipment or the Services.

"Site Access" shall mean twenty-four (24) hours a day, seven (7) days a week, three hundred sixty-five (365) days a year ("24x7x365") access to CUSTOMER premise(s) provided to CONTERRA for routine or emergency maintenance of the CONTERRA network.

"Service Window" shall mean 7:00 a.m. through 5:00 p.m. local time where the Services are being provided, Monday through Friday, excluding federal holidays and other non-workdays.

## **TERMS AND CONDITIONS**

### **1. Conditions of this Agreement**

- (a) The parties acknowledge that this Agreement is contingent upon CUSTOMER obtaining E-Rate Funding for this project from the SLD.

### **2. The Service, Deployment and Access.**

- (a) The Services. Subject to and in accordance with the terms and conditions of this Agreement, CONTERRA shall provide to CUSTOMER at mutually-agreeable CUSTOMER'S designated locations the Services as defined in Attachment A hereto.
- (b) Deployment. CONTERRA, its agent(s) or contractor(s) shall schedule deployment meetings with the CUSTOMER. CONTERRA shall deploy the CONTERRA-owned service Infrastructure. CUSTOMER's appointed representative must be present on a regular basis during deployment to be performed by CONTERRA. CONTERRA assumes no liability for files, data, or other information that may be lost on CUSTOMER'S computer system during the deployment process and CUSTOMER agrees to hold CONTERRA harmless for all such lost files, data and other information. After deployment and during the Term of this Agreement, CUSTOMER shall provide CONTERRA with 24x7x365 access to CUSTOMER'S premise(s) to inspect, repair and maintain CONTERRA's Infrastructure. Upon termination or expiration of this Agreement, or disconnection of the Services, CUSTOMER shall be obligated to return the Infrastructure to CONTERRA or to provide CONTERRA with access to CUSTOMER'S premise(s) to recover such Infrastructure as CONTERRA in its sole discretion shall decide. CONTERRA shall not be held liable for, nor will CONTERRA restore or reconfigure the CUSTOMER'S new or existing network components after de-deployment. Even if the Infrastructure (or any portion of the Infrastructure) is or becomes physically attached in any manner to real estate at the Service Location (including any building on such real estate), in no event will the Infrastructure be deemed to be affixed to or as a part of such real estate. Rather, the Infrastructure is and shall remain CONTERRA's personal property. Alternatively, as a common carrier, CONTERRA may opt to leave the Infrastructure at the Service Locations. In such event, CONTERRA may continue to make any substitutions to or modifications of and maintain the Infrastructure. The Infrastructure shall not be for the exclusive use of the CUSTOMER but may be used by CONTERRA as CONTERRA shall decide. Throughout the useful life of the Infrastructure, CUSTOMER shall supply (or cause to be supplied) electricity to that Infrastructure and CUSTOMER grants CONTERRA an exclusive, non-revocable license and easement to use those parcels of real property that CONTERRA deems necessary to install, operate and maintain fiber optic cable thereon and to place certain buildings or enclosures thereon and such Infrastructure as CONTERRA determines may be necessary or compatible with the conduct of CONTERRA's business. In addition, CUSTOMER grants to CONTERRA an exclusive right to deploy transmission cables and lines between the CUSTOMER's property line and the Service Locations in connection with CONTERRA's use, maintenance, and operation of the Infrastructure. The license or easement granted shall include and also be classified, and documented, if necessary, as a leasehold interest for the limited purpose of CONTERRA gaining access to CUSTOMER property to construct, maintain, modify and service CONTERRA-owned and/or provided Infrastructure, thus enabling CONTERRA to comply with State and local construction laws and contractor requirements.



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CONTERRA

Contract Number: BCS WAN 2023-2028

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As a common carrier, CONTERRA may utilize all of the CONTERRA-owned Infrastructure to serve other customers, and for internal communications for the management and maintenance of its network. It is expressly understood that all rights granted to CONTERRA under this license are irrevocable until thirty years after the expiration or earlier termination of this Agreement, any Amendment thereto, or the provision of Services. CONTERRA may use the Infrastructure and real property for any activity in connection with the provision of other communication services as CONTERRA determines may be necessary or compatible with the conduct of CONTERRA's business. CONTERRA may make any substitutions to or modifications of the Infrastructure as it determines may be necessary or compatible with the conduct of CONTERRA's business. In addition, CONTERRA may lease capacity on its Infrastructure to a third party.

- (c) Governmental Approval. CONTERRA shall use commercially reasonable efforts to procure, process, or to receive any governmental licenses, permits, consents or approvals necessary for the deployment of the Infrastructure ("Authorizations"). CUSTOMER shall cooperate fully with CONTERRA in order to secure any such Authorizations. In the event that CONTERRA is unable to secure any such Authorizations within a reasonable time and at a reasonable cost (as determined by CONTERRA in its reasonable judgment), CONTERRA may terminate this Agreement by notifying CUSTOMER. All work hereunder which is required by the law of the state within which CUSTOMER is located to be performed by a licensed contractor shall be performed by an appropriately licensed contractor.
- (d) Changes in Deployment. In the event that CUSTOMER requests that CONTERRA modify the network design then CUSTOMER shall be responsible for all costs and related charges associated with any such request.
- (e) Change Order. Any changes requested or required by the CUSTOMER that differ from the network design must be properly authorized in a written directive from CUSTOMER. Any change is subject to the network design limitations and CUSTOMER shall pay, as a relocation or reconfiguration fee, CONTERRA's actual out-of-pocket cost and the cost of all labor and services of any such relocation or reconfiguration ("Costs") plus an additional twenty percent (20%) of the Costs.
- (f) Scalable Broadband Services. CONTERRA's network may be expanded to include additional locations and capacity increased at any time during the Term of this Agreement to meet CUSTOMER's requirements. CUSTOMER shall request specific service upgrades based on pricing quoted at time of request. CUSTOMER may add sites (subject to changes in pricing and/or fees) at any time during the Term of this Agreement.

### 3. CONTERRA Service Levels, Support, Maintenance and Indemnification.

- (a) Availability Commitment. CONTERRA custom engineers each network solution up to 99.99% availability. CONTERRA shall use commercially reasonable efforts to maintain Services availability for the CUSTOMER 100% of the time, except during Outage Events. At CUSTOMER's request, CONTERRA shall calculate the Deficiency Credit for any calendar month. CONTERRA shall credit to CUSTOMER's account as a refund the Deficiency Credit upon written request by CUSTOMER.
- (b) Latency and Jitter Commitment. CONTERRA's goal is for round-trip transmissions between designated end-points to average ten (10) milliseconds or less except during Outage Events ("Latency Commitment"). The foregoing Latency Commitment is measured by averaging sample measurements taken during the Service Window between hub routers. Upon written request of CUSTOMER, for each minute in the Service Window during a calendar month for which CONTERRA fails to satisfy its Latency Commitment, CONTERRA shall credit to CUSTOMER's account as a refund the total number of latency minutes divided by the total number of minutes during the Service Window in that month. CONTERRA'S Jitter commitment is < 2 milliseconds one way.
- (c) Packet Loss Commitment. CONTERRA's network packet loss between designated end-points shall be limited to 0.1% or less each day except during Outage Events ("Packet Loss Commitment"). Packet loss is measured by standard, industry-accepted methods and measured during the Service Window between designated end-points. Upon written request of CUSTOMER, for each minute in the Service Window for which CONTERRA fails to satisfy its Packet Loss Commitment during a calendar month, CONTERRA shall refund the total number of minutes where there was a packet loss of more than .1% divided by the total number of minutes during the Service Window in that month.
- (d) CUSTOMER Reporting Commitment. CONTERRA shall provide CUSTOMER at least forty-eight (48) hours advance notice of scheduled outages for network maintenance. The standard weekly maintenance window is Monday through Sunday from 1:00 a.m. to 6:00 a.m. local time. Notice of other

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**CONTERRA****Contract Number: BCS WAN 2023-2028**

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scheduled maintenance outages will be provided to CUSTOMER's designated point of contact by telephone, e-mail, fax, or pager as elected by CONTERRA.

- (e) Credit Limit. In no event shall CUSTOMER's total credits for any calendar month exceed the Monthly Service Fee.
- (f) CONTERRA Support. CONTERRA shall, at its option and convenience, repair or replace any Infrastructure not functioning in accordance with CONTERRA'S contracted specifications for the Services. CONTERRA shall not provide technical support, maintenance, repair or deployment service for CUSTOMER's software, hardware or equipment unless CONTERRA, in its sole discretion, agrees to do so in a separate written contract. CONTERRA shall provide CUSTOMER support for use of the Services only as, when, and to the extent CONTERRA deems appropriate from time to time in its sole discretion. CUSTOMER support will be available on a commercially reasonable basis via telephone, via electronic mail or through CONTERRA's Internet site ([www.conterra.com](http://www.conterra.com)) ("Internet Site"). Telephone numbers for such CUSTOMER support are posted on the CONTERRA Internet Site and are included in Section 7 of this Agreement. If CUSTOMER'S use of the Services requires that CONTERRA visit CUSTOMER'S premises for assistance, repair, deployment or connection, CONTERRA shall be entitled to charge CUSTOMER CONTERRA's then prevailing labor rates and related costs for each such visit, and CUSTOMER agrees to pay CONTERRA such charges. CONTERRA does not undertake to correct or repair and shall have no responsibility for the correction or repair of, software, hardware or equipment that CONTERRA does not supply. CONTERRA will undertake commercially reasonable network management, traffic analysis, operational procedures and user policies to support the service level standards provided in this Section 3.
- (g) CONTERRA Response Times. CONTERRA shall provide a CUSTOMER support service contact point. CONTERRA shall respond within an average of four (4) hours to any CUSTOMER notification made to this contact point, of any failure of any Infrastructure to meet CONTERRA'S published specifications for the Services.
- (h) Indemnification. CONTERRA agrees to indemnify and hold harmless CUSTOMER, and its board members, employees, agents and representatives (collectively, "CUSTOMER Indemnities") against any and all costs, claims, liabilities or expenses that any of the CUSTOMER Indemnities may incur as a result of, or arising out of, or related to CONTERRA'S willful, negligent, tortious or criminal acts or omissions. In the event of any claim, which, if true, would be subject to indemnification hereunder, CUSTOMER or the affected CUSTOMER Indemnities shall notify CONTERRA and CONTERRA shall cooperate in their defense at CONTERRA's cost and expense.

#### **4. CUSTOMER'S Obligations.**

- (a) FCC Form 471 Application Review. CUSTOMER shall promptly notify CONTERRA of any PIA review, Selective Review, audit, or other contact from the SLD during review of its FCC Form 471 Description of Services Ordered which may affect the availability or amount of funds due from the SLD during the Term of this Agreement, including any extensions hereof. CUSTOMER shall comply with SLD requests for additional or clarifying information according to E-Rate program rules as established by the FCC and administered by USAC.
- (b) Certification of Services and FCC Form 486. CUSTOMER shall provide prompt acknowledgement of the Certification by CONTERRA of the Services when CONTERRA demonstrates the performance of the Infrastructure in accordance with Attachment A. CUSTOMER shall promptly file FCC Form 486 Receipt of Service Confirmation with USAC. Failure to file the Form 486 in a timely manner may result in CUSTOMER becoming liable to CONTERRA for the discounted portion of any funds due hereunder.
- (c) Payment
  - i. Non-Recurring Charge. Upon Certification of the deployment of the Infrastructure, CONTERRA shall invoice CUSTOMER the applicable Non-Recurring Charge specified in Attachment A. CUSTOMER shall pay the Non-Recurring Charge within thirty (30) days of the invoice. If applicable, CONTERRA will invoice CUSTOMER on a per site basis until all sites are operational.
  - ii. Monthly Service Fee. CONTERRA shall invoice CUSTOMER each month in advance for a Monthly Service Fee as shown in Attachment A of this Service Agreement. CUSTOMER shall pay the Monthly Service Fee within thirty (30) days of the invoice. If applicable, CONTERRA will invoice CUSTOMER on a per site basis until all sites are operational.
  - iii. Collection of SLD Funds. CONTERRA will be responsible for collection of the E-Rate Discount from SLD by filing an FCC Form 474 Service Provider Invoice.
  - iv. CUSTOMER Ultimately Responsible. NOTWITHSTANDING ANYTHING TO THE CONTRARY,

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CUSTOMER IS RESPONSIBLE FOR PAYMENT OF ALL FEES INCLUDING ANY DISCOUNT AMOUNTS OWED BY USAC.

- v. *Failure To Pay.* If CUSTOMER fails to pay the Monthly Service Fee within thirty (30) calendar days of the due date, CONTERRA may impose a late fee or disconnect the Services, or both, in its sole discretion. CUSTOMER shall pay CONTERRA such late fees. CONTERRA's late payment fee shall be five (5%) of the Monthly Service Fee.
- vi. *Re-connect.* If CUSTOMER disconnects the Services or if CUSTOMER'S Services are disconnected due to nonpayment or other breach of this Agreement, and if CONTERRA subsequently agrees to reconnect the Services, CUSTOMER may be charged a fee for reconnecting and redeploying the Services. Such fee shall be equal to one hundred percent (100%) of the then applicable Monthly Service Fee.
- vii. *Charges for other services or goods.* From time-to-time CUSTOMER may decide to select additional services or purchase additional goods offered by CONTERRA or by third parties. The Monthly Service Fee does not cover any such services and goods, and the CUSTOMER shall be charged separately for them. CUSTOMER agrees to pay for such other services and goods that it selects or purchases.
- viii. *Taxes and Surcharges.* Except for taxes based on CONTERRA'S net income, all applicable federal, state or local taxes and surcharges, now or hereinafter enacted or placed into effect including without limitation all use, sales, excise, commercial, gross receipts, privilege, right-of-way, occupation, surcharges, or other similar taxes and surcharges, whether charged to or against CONTERRA or CUSTOMER (collectively, the "Taxes"), will be payable by CUSTOMER, including, without limitation, any cost recovery fee which will represent an accurate and non-inflated recovery of CONTERRA's, or any underlying provider's, miscellaneous tax and surcharge payments to federal, state or local governmental authorities associated with the provision of the Services (including any WAN facilities) by CONTERRA to CUSTOMER pursuant to this Agreement. CUSTOMER shall be required to provide documentation evidencing its exemption from any such Taxes. CUSTOMER acknowledges and certifies that, for the duration of the Term, the interstate traffic will constitute ten percent (10%) or less of the total traffic on the fiber network that has been provided by CONTERRA. In the event the interstate telecommunication service traffic exceeds ten percent (10%) of the total traffic on the fiber network provided by CONTERRA, CUSTOMER shall notify CONTERRA and provide CONTERRA any and all relevant documentation necessary to establish the percentage of interstate telecommunications service traffic utilized by CUSTOMER on the fiber network provided by CONTERRA. For purposes of this paragraph, the term interstate telecommunications services includes international telecommunications service but does not include information service of any kind, including but not limited to internet access service.
- (d) E-Rate Applications. CUSTOMER has an obligation to obtain and maintain E-Rate Funding throughout the Term of this Agreement. Failure of CUSTOMER to file all appropriate paperwork within established USAC deadlines and perform all administrative tasks to obtain and maintain E-Rate Funding will result in CUSTOMER becoming liable to CONTERRA for the discounted portion of any funds due hereunder. CUSTOMER also agrees it has an obligation to secure and maintain E-Rate Funding for the entire Term of the Agreement, notwithstanding the fact that CUSTOMER's FCC Form 470 Description of Services Requested may have been submitted for a single-year rather than multi-year term.
- (e) Utilities. CUSTOMER shall provide electrical services to the CONTERRA Infrastructure as required by CONTERRA.
- (f) Current address and information. CUSTOMER is required, and agrees, to keep CONTERRA notified in a timely manner of any changes in the information CUSTOMER provides to CONTERRA, including information provided when CUSTOMER initiates use of the Services.
- (g) Assignment or Sharing of Service. CUSTOMER may not resell, share, sublicense or otherwise distribute the Services, or any portion thereof, to any third party without the prior written consent of CONTERRA.
- (h) School/Facility Closure. CUSTOMER shall immediately notify CONTERRA if CUSTOMER becomes aware that the school or facility governed by this Agreement will be closed prior to the Term of this Agreement or any extension. CUSTOMER has the duty to notify CONTERRA as soon as CUSTOMER receives such information. CUSTOMER shall be responsible for all remaining monthly recurring costs and fees associated with the school or facility for the remainder of the Service Term or any then current Extension Term.

**5. CUSTOMER'S Warranties, Representations and Indemnification.**

- (a) Warranties and Representations. CUSTOMER warrants and represents that CUSTOMER shall use the Services only for the originally intended purpose(s), in accordance with this Agreement, all FCC and USAC rules and regulations, and all applicable laws, and CUSTOMER shall make all payments required herein plus any and all applicable Taxes. CUSTOMER warrants that all funds due from CUSTOMER hereunder have been allocated for the uses contemplated in this Agreement or if they have not been allocated, CUSTOMER believes that such funds will be allocated (on an annual basis for the term of the contract and any corresponding extension or renewal), that there is no current basis to believe that such funds will not be allocated, and that CUSTOMER has taken every necessary step to assure the availability of CUSTOMER funds hereunder.
- (b) CUSTOMER Indemnification. To the fullest extent allowed by law, CUSTOMER agrees to indemnify and hold harmless CONTERRA, its parent, subsidiaries and affiliates, assigns and the members, officers, directors, employees, contractors, agents and representatives of CONTERRA and its subsidiaries and affiliates (together "CONTERRA Indemnities") against any and all costs, claims, liabilities or expenses any of the CONTERRA Indemnities may incur as a result of, or arising out of, or related to: (i) CUSTOMER'S breach of this Agreement or of CUSTOMER'S warranties and representations made herein; (ii) CUSTOMER'S willful, negligent, tortious or criminal acts or omissions; (iii) any improper use of CUSTOMER'S password, name or user name; or (iv) CUSTOMER'S violation of any third party's rights. In the event of any claim, which, if true, would be subject to indemnification hereunder, CONTERRA or the affected CONTERRA Indemnities shall notify CUSTOMER and CUSTOMER shall cooperate in their defense at CUSTOMER'S sole cost and expense. As part of CUSTOMER'S indemnification obligations, CUSTOMER shall reimburse CONTERRA for any costs that CONTERRA incurs, including complaint fees charged by jurisdictional authorities, network or service providers, and investigation expenses, due to complaints filed regarding CUSTOMER'S activity (or activity for which CUSTOMER is responsible) in using the Services.

**6. CONTERRA's Ownership of Service Infrastructure, Hardware and Appurtenances.**

The Infrastructure, hardware and appurtenances (to include, but not limited to, fiber optic cabling and apertures) to be located on CUSTOMER premises by CONTERRA to provide the Services under this Agreement are, and shall remain, the property of CONTERRA. Additionally, such of these items as CONTERRA may request shall be returned to CONTERRA in good and working condition upon the termination or expiration of this Agreement, or the disconnection of CUSTOMER'S Services. CUSTOMER shall use reasonable care to avoid damaging any and all Infrastructure and hardware components of the CONTERRA deployment, and shall not alter, modify, sell, license, lease, assign, encumber, relocate, move or tamper with any of the same. Additionally, CUSTOMER shall be responsible for all costs of repair or replacement of items returned damaged or in poor working condition due to CUSTOMER's negligence or failure to properly care for said Infrastructure, hardware or appurtenances. CONTERRA reserves the right to make modifications to the Infrastructure for purposes of providing services to other entities. In the event that CONTERRA elects to leave any Infrastructure on the CUSTOMER's premises after such termination or expiration hereof, CUSTOMER grants CONTERRA an exclusive license to maintain and access such Infrastructure for the useful life of same and also agrees to allow CONTERRA to purchase electrical service to maintain such Infrastructure at market price for the actual cost of such electrical service used. CONTERRA shall continue to maintain all insurances required hereunder during the duration of this exclusive license.

**7. Contact Us.**

- (a) Notices. All notices, invoices and other communications required or permitted under this Agreement shall be in writing and shall be deemed to have been given only if and when: (i) personally delivered (including by means of a messenger service), or (ii) by United States first class mail postage prepaid (registered or certified) return receipt requested, or (iii) when delivered (and receipted for) by an overnight delivery service, in each case addressed to the address set forth in the first paragraph of this Agreement.
- (b) Billing Information, Questions or Concerns. If CUSTOMER has questions or concerns or simply would like more information about the costs CUSTOMER might incur in using the Services or with CUSTOMER'S particular account, CUSTOMER may contact CONTERRA at 1.877.365.6701.
- (c) General Information. For general information about CONTERRA and CONTERRA's services, CUSTOMER may visit the CONTERRA Internet Site or contact CONTERRA at 1.877.365.6701.

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- (d) CUSTOMER Support and Service. For CUSTOMER service and support, CUSTOMER may contact CONTERRA via telephone, via electronic mail or via the CONTERRA Internet Site. CUSTOMER shall visit the CONTERRA Internet Site for up-to-date contact information.

**8. Disclaimers and Limitation of CONTERRA's Liability.**

- (a) CUSTOMER EXPRESSLY ACKNOWLEDGES AND AGREES THAT (i) THE SERVICES, SOFTWARE, DATA AND ANY OTHER SERVICES, SOFTWARE OR INFRASTRUCTURE PROVIDED BY CONTERRA UNDER THIS AGREEMENT ARE NOT GUARANTEED TO BE ERROR FREE, UNINTERRUPTED, SECURE OR ALWAYS AVAILABLE OR AVAILABLE WITH SUFFICIENT CAPACITY; (ii) THE USE OF THE SERVICES, THE INTERNET, AND ANY SOFTWARE OR INFRASTRUCTURE PROVIDED BY CONTERRA IS AT CUSTOMER'S SOLE RISK; AND (iii) ANY AND ALL CONTERRA SERVICES AND PRODUCTS ARE PROVIDED "AS IS AND AS AVAILABLE" WITHOUT WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, WARRANTIES OF TITLE, NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OTHER THAN WARRANTIES WHICH CANNOT LEGALLY BE EXCLUDED. CONTERRA MAKES NO WARRANTY THAT THE SERVICE WILL WORK ON CUSTOMER'S PARTICULAR COMPUTER, NETWORK OR COMPUTER SYSTEM EXCEPT AS DEFINED BY THE IEEE STANDARD 802.3 DEFINING THE PHYSICAL LAYER AND TRANSPORT LAYER OF ETHERNET. CUSTOMER FURTHER EXPRESSLY ACKNOWLEDGES AND AGREES THAT (i) CONTERRA SHALL HAVE NO RESPONSIBILITY FOR DAMAGE OR DESTRUCTION TO CUSTOMER'S COMPUTER OR NETWORK SYSTEM, DATA, INFORMATION OR INFRASTRUCTURE UNLESS THROUGH NEGLIGENCE ON BEHALF OF CONTERRA; (ii) CONTERRA HAS NO RESPONSIBILITY WHATSOEVER FOR ANY THIRD PARTY CONTENT, DATA, INFORMATION, PROGRAMS OR OTHER MATERIAL THAT CUSTOMER MAY USE WITH OR ACCESS USING THE SERVICES; (iii) IT IS SOLELY THE CUSTOMER'S RESPONSIBILITY TO EVALUATE THE ACCURACY, COMPLETENESS AND USEFULNESS OF ALL OPINIONS, ADVICE, SERVICES, MERCHANDISE AND OTHER INFORMATION PROVIDED THROUGH THE SERVICE OR ON THE INTERNET GENERALLY; AND (iv) IN NO EVENT SHALL CONTERRA BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, ACTUAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS OF ANY KIND WHATSOEVER) ARISING OUT OF OR RELATED TO THIS AGREEMENT OR THE DEPLOYMENT, USE, MAINTENANCE, FAILURE, REMOVAL OR OPERATION OF THE SERVICES, SOFTWARE OR INFRASTRUCTURE PROVIDED BY CONTERRA, WHETHER BASED ON CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE, EVEN IF CONTERRA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BECAUSE SOME STATES AND OTHER JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO CUSTOMER AND IN SUCH STATES OR OTHER JURISDICTIONS CONTERRA'S LIABILITY SHALL BE LIMITED TO THE MAXIMUM EXTENT PERMITTED BY LAW.
- (b) SUBJECT TO THE FOREGOING, CUSTOMER EXPRESSLY ACKNOWLEDGES AND AGREES THAT (i) CONTERRA'S MAXIMUM LIABILITY TO CUSTOMER UNDER THIS AGREEMENT OR ARISING OUT OF OR RELATED TO THE SERVICES WILL BE THE AGGREGATE AMOUNT CUSTOMER HAS ACTUALLY PAID TO CONTERRA FOR THE SERVICE; (ii) CONTERRA HAS ESTABLISHED ITS PRICING FOR THE SERVICES AND ENTERED INTO THIS AGREEMENT IN RELIANCE UPON THE LIMITATIONS OF LIABILITY SET FORTH HEREIN, AND THAT THE SAME FORM AN ESSENTIAL BASIS OF THE BARGAIN BETWEEN THE PARTIES; AND (iii) THE LIMITATIONS AND EXCLUSIONS OF LIABILITY AND DISCLAIMERS SPECIFIED IN THIS TELECOMMUNICATIONS SERVICE AGREEMENT SHALL SURVIVE AND APPLY EVEN IF FOUND TO HAVE FAILED THEIR ESSENTIAL PURPOSE. THE FOREGOING IS SUBJECT ONLY TO THE SPECIFIC SERVICE LEVEL STANDARDS AND REMEDIES SET FORTH IN SECTION 3 ABOVE.

**9. Term and Termination.**

- (a) Services Term. The initial term of this Agreement shall begin on the Effective Date. The initial term of Services under this Agreement (the "Services") shall begin on July 1, 2023 or when Services commence and, unless earlier terminated as hereinafter provided, shall expire on June 30, 2028 ("Expiration Date"). The Agreement shall be coterminous with this date. Upon commencement of Services, CUSTOMER is responsible for and shall provide USAC with the Agreement termination date (within 10 days thereof) via the applicable form(s).



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- (b) Extension of Term. The initial Term or any subsequent term, may be extended by exercising any of the following options:
- (i.) CUSTOMER has the option to extend for ten (10) extension periods of one (1) year each ("Extension Term"), through the provision of written notice to CONTERRA not less than one hundred eighty (180) days before the expiration date or the end the Extension Term. The Monthly Service Fee may be adjusted as of the first day of any Extension Term (the "Adjustment Date") by mutual agreement, in writing, by the parties no later than 180 days prior to the Expiration Date or the end of the Extension Term.
- (ii.) The CUSTOMER may request an extension of the initial contract Term, or any Extension Term, if such extension is necessary, to make this Agreement coincide with the "funding year" or "implementation period" as defined by E-Rate rules. Any such request must be made no less than ninety (90) days prior to the expiration of the Term during which a request pursuant to this subsection was made ("Current Term"), whether it is the initial contract Term or an Extension Term and must include the new proposed termination date of the Agreement. CONTERRA is not required to agree to such a request, and nothing in this subsection creates any obligation on the part of CONTERRA to continue providing service to CUSTOMER following the expiration of the Current Term. In the event CONTERRA agrees to a request made pursuant to this subsection, CUSTOMER agrees to pay the Monthly Service Fee for each month past the Current Term during which service is provided by CONTERRA.
- (c) Termination by CONTERRA for Loss of E-Rate Funding. The parties acknowledge and agree that this Agreement is contingent upon CUSTOMER filing for and obtaining E-Rate Funding for the Services from the SLD. If E-Rate Funding for this project is not maintained by SLD after the first year of this Agreement, CONTERRA will make all reasonable efforts to maintain Services for CUSTOMER. CUSTOMER may assume full liability for Services or, after the third year of this Agreement, request a re-price of Services. Notwithstanding the above, CONTERRA reserves the right to terminate this Agreement if new payment arrangements cannot be made and will face no financial penalties by providing prompt written notification of such occurrence to CUSTOMER. In such event this Agreement will terminate on the last day of the fiscal period for which commitments were received. CUSTOMER will remain liable to CONTERRA for any payments attributable to periods for which E-Rate funds have been committed. In addition, CUSTOMER is liable for all remaining monthly recurring costs and fees for the remainder of the Service Term or any then current Extension Term. CUSTOMER shall be responsible for returning the Infrastructure that CONTERRA requests be returned.
- (d) Termination by CUSTOMER. The parties further acknowledge and agree that if the CUSTOMER terminates this Agreement after the network is deployed, CUSTOMER shall pay CONTERRA the cost to de-deploy the CONTERRA-owned Infrastructure. In addition, the CUSTOMER shall pay all remaining monthly costs and fees due through the end of the contract Term. In such event this Agreement will terminate on the last day of the fiscal period for which commitments were received. CUSTOMER also agrees to not procure services from any other provider which are similar or analogous to services provided under this Agreement for the entire unexpired initial Term of this Agreement.
- (e) Termination by CUSTOMER. If CONTERRA repeatedly and persistently fails to substantially provide the Services as required by the terms of this Agreement, CUSTOMER may terminate this Agreement by written notice to CONTERRA. CUSTOMER shall give CONTERRA ninety (90) days written notice of such intention to terminate and an opportunity to cure any such default. In the event that CONTERRA commences to cure and diligently pursues cure during that ninety (90) day period, then CUSTOMER may not terminate this Agreement.
- (f) Termination by CONTERRA. If CUSTOMER breaches this Agreement and following a minimum thirty (30) day written notice to CUSTOMER, CONTERRA reserves the right in its discretion to suspend or terminate this Agreement and to disconnect the Services, in whole or in part, with just cause as provided for by this Agreement, and providing the cause has been fully declared to the CUSTOMER, allowing the CUSTOMER the thirty (30) days to cure said cause. In addition, CUSTOMER shall pay CONTERRA the cost to de-deploy the CONTERRA-owned Infrastructure, and CUSTOMER shall be liable for all remaining monthly recurring costs and fees for the remainder of the Service Term or any then current Extension Term.
- (g) Termination by CONTERRA. If CONTERRA is unable to secure lease, licenses, easements, right of ways, pole attachments or other necessary requirements or provision a third-party intermediary site under commercially reasonable terms and conditions as determined in the sole discretion of

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CONTERRA, and the site in question is essential to providing the Services, CONTERRA may terminate this Agreement in part or whole.

- (h) Termination of Agreement in Order to Seek Alternate Services. In the event that this Agreement is terminated under Section 9(d) or (f), CUSTOMER shall not procure services from any other provider which are similar or analogous to the Services provided under this Agreement for the remainder of the initial Term or any then in effect Extension Term of this Agreement.

- 10. Governing Law.** This Agreement shall be governed by the laws of the State of North Carolina without regard to its conflict of laws principles.

- 11. Mediation.** In the event of an alleged breach of this Agreement by CONTERRA or CUSTOMER or in the event of any other dispute arising out of this Agreement and involving CONTERRA and CUSTOMER such breach or dispute initially shall be submitted to nonbinding mediation prior to the institution of any litigation. The parties agree to utilize the services of a retired judge, or other qualified mediator mutually acceptable to both parties.

**12. Miscellaneous.**

- (a) Entire Telecommunications Service Agreement. This Agreement constitutes the entire agreement between the parties on the subject matter hereof and may be amended or modified solely by written agreement signed by each of the parties hereto. For purposes of clarification, with regards to the subject matter hereof, the parties acknowledge that any RFP, including CONTERRA's response to the same, is specifically superseded by the terms contained herein.
- (b) No Third-Party Beneficiaries. This Agreement is not intended to confer and does not confer any rights or remedies upon any person or entity other than the parties to this Agreement and the CONTERRA Indemnified Parties.
- (c) Severability. If any part of this Agreement is held invalid or unenforceable, that portion shall be construed in a manner consistent with applicable law to reflect, as nearly as possible, the original intentions of the parties and the remaining portions shall remain in full force and effect.
- (d) No Assignment. CUSTOMER may not assign this Agreement and CUSTOMER'S rights and obligations under this Agreement may not be assigned in whole or in part without CONTERRA's prior written consent. CONTERRA may freely assign this Agreement.
- (e) CUSTOMER Contact. CUSTOMER shall designate a Representative who shall have the authority to represent and bind the CUSTOMER in all of its dealings with CONTERRA and shall serve as a contact person in the event that CONTERRA needs to contact the CUSTOMER for any reason. Representative's contact information is as follows:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Facsimile: \_\_\_\_\_

E-mail: \_\_\_\_\_

- (f) Replacement of CUSTOMER Representative. In the event that CUSTOMER replaces Representative, CUSTOMER shall appoint a new Representative and provide CONTERRA with written notice of such change and the new Representative's contact information within five (5) days.
- (g) Site Specific Services. The Services are provided to the sites initially selected by CUSTOMER and reflected on Attachment A. CUSTOMER may not transfer the Services to another location without CONTERRA's prior written consent (even if CUSTOMER moves to a new place of business).
- (h) Information Availability. CONTERRA shall have no obligation to make any specific information, data,

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service, programs, newsgroups or other material available through the Services and may block any such material in its sole discretion.

- (i) Policies. CONTERRA's Privacy Policy, Acceptable Use Policy and other policies set forth on the CONTERRA Internet Site from time to time are incorporated herein by reference and are an integral part of this Service Agreement.
- (j) Remedies Non-Exclusive. Wherever a remedy is expressly provided to CONTERRA hereunder, such remedy is intended to add rather than to restrict all of CONTERRA's remedies in law and equity.
- (k) No Waiver. If CONTERRA fails, at any time, to enforce any right or remedy available to it under this Agreement, that failure will not be construed to be a waiver of the right or remedy with respect to that or any other breach or failure by CUSTOMER. Any waiver must be in writing and signed by CONTERRA.
- (l) Counterparts. This Agreement may be executed in separate original counterparts, each of which is deemed to be an original and all of which taken together shall constitute one and the same Agreement.

BY SIGNING BELOW, I AUTHORIZE DEPLOYMENT AND ACKNOWLEDGE THAT I HAVE READ, FULLY UNDERSTAND, AND AGREE TO ALL OF THE PRECEEDING TERMS AND CONDITIONS SET OUT IN THIS AGREEMENT AND THE POLICIES INCORPORATED HEREIN BY REFERENCE.

Buncombe County SchoolsConterra Ultra Broadband, LLC

By: \_\_\_\_\_

Name

Title

Date

By: \_\_\_\_\_

Michael Brady

Name

EVP, CRO

Title

December 14, 2022 | 11:06:08 AM PST

Date



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**ATTACHMENT A**

The deployment of the Services set forth herein are subject to but not limited to the procurement of leases, licenses, easements, right of ways, pole attachments, and other ancillary requirements. In the event CONTERRA is not able, through no fault of its own, to procure the ancillary requirements in a commercially reasonable time and manner, CONTERRA reserves the right to modify the network as CONTERRA deems appropriate.

**Buncombe County Schools**

Quantity	Product or Service Description	Non-Recurring Charge (per site)	Monthly Service Fee (per site)
44	TBD	TBD	TBD
Total		TBD	TBD

Service Locations					
Site Name	Address	City	State	Zip	
A C Reynolds High	1 Rocket Drive	Asheville	NC	28803	
A C Reynolds Middle	2 Rocket Drive	Asheville	NC	28803	
Avery's Creek Elementary	15 Park South Blvd.	Arden	NC	28704	
Barnardsville Elementary	20 Hillcrest Dr.	Barnardsville	NC	28709	
Black Mountain Elementary	100 Flat Creek Rd.	Black Mtn.	NC	28711	
Black Mountain Primary	301 East State St.	Black Mtn.	NC	28711	
Buncombe Co Transportation Department	74 Washington Ave.	Asheville	NC	28804	
Buncombe County Early College & Middle College High School	340 Victoria Road	Asheville	NC	28801	
Candler Elementary	121 Candler School Rd.	Candler	NC	28715	
Cane Creek Middle	570 Lower Brush Creek Rd.	Fletcher	NC	28732	
Central Office & Martin L. Nesbitt Disc Academy	175 Bingham Rd.	Asheville	NC	28806	
Charles C Bell Elementary	90 Maple Springs Rd.	Asheville	NC	28805	
Charles D Owen High	99 Lake Eden Rd.	Black Mtn.	NC	28711	
Charles D Owen Middle	730 Old U.S. 70	Swannanoa	NC	28778	
Charles T. Koontz Intermediate	305 Overlook Rd.	Asheville	NC	28803	
Clyde A Erwin High	60 Lees Creek Rd.	Asheville	NC	28806	
Clyde A Erwin Middle	20 Erwin Hills Rd.	Asheville	NC	28806	
Community High School	235 Old US 70	Swannanoa	NC	28778	
Emma Elementary	37 Brickyard Rd.	Asheville	NC	28806	
Enka High	475 Enka Lake Rd.	Candler	NC	28715	
Enka Intermediate School	125 Asheville Commerce Parkway	Candler	NC	28715	
Enka Middle	390 Asbury Rd.	Candler	NC	28715	
Fairview Elementary	1355 Charlotte Hwy.	Fairview	NC	28730	
Glen Arden Elementary	50 Pinehurst Cr.	Arden	NC	28704	
Haw Creek Elementary	10 Bethesda Rd.	Asheville	NC	28805	
Hominy Valley Elementary	450 Enka Lake Rd.	Candler	NC	28715	
Joe P. Eblen Intermediate	59 Lees Creek Rd.	Asheville	NC	28806	
Johnston Elementary	230 Johnston Blvd.	Asheville	NC	28806	
Leicester Elementary	31 Gilbert Rd.	Leicester	NC	28748	
North Buncombe Elementary	251 Flat Creek Church Rd.	Weaverville	NC	28787	
North Buncombe High	890 Clarks Chapel Rd.	Weaverville	NC	28787	
North Buncombe Middle	51 N. Buncombe School Rd.	Weaverville	NC	28787	
North Windy Ridge	20 Doan Rd.	Weaverville	NC	28787	
Oakley Elementary	753 Fairview Rd.	Asheville	NC	28803	
Pisgah Elementary	1495 Pisgah Hwy.	Candler	NC	28715	
Sand Hill-Venable Elem	154 Sand Hill School Rd.	Asheville	NC	28806	
T C Roberson High	250 Overlook Rd.	Asheville	NC	28803	
Valley Springs Middle	224 Long Shoals Rd.	Arden	NC	28704	
W D Williams Elementary	161 Bee Tree Rd.	Swannanoa	NC	28778	
Weaverville Elementary	129 S. Main St.	Weaverville	NC	28787	
Weaverville Primary	39 S. Main St.	Weaverville	NC	28787	
West Buncombe Elementary	175 Erwin Hills Rd.	Asheville	NC	28806	
William W Estes Elementary	275 Overlook Rd.	Asheville	NC	28803	
Woodfin Elementary	108 Elk Mountain Rd.	Asheville	NC	28804	

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CONTERRA

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Description of Services

The prices in this contract are based on the following assumptions:

- IT Director and/or Superintendent have authority to approve work plans and infrastructure locations.
- CUSTOMER provides assistance and support for zoning and building permits as required by the local municipalities.
- CUSTOMER provides site access as required by CONTERRA personnel and contractors and provides contact names, phone numbers, fax numbers and e-mail addresses.
- CUSTOMER provides connectivity between CONTERRA and CUSTOMER's equipment with a standard Layer 2 interface in the form of a LC-LC MM fiber cable.
- CUSTOMER provides a free and clear path from the exterior of the building to interior infrastructure location(s) for all cable and other necessary cable/wire runs including, but not limited to, building penetrations, inside conduit and proper authorizations from the building owner.
- CUSTOMER provides unobstructed access to the grounds, interior and roof top(s) for infrastructure location and construction regardless of building ownership. Infrastructure may include, but not be limited to fiber mounting structures, cabinets and wall racks.
- Interior environmental conditions conducive to the proper operations of electronics infrastructure.
- CUSTOMER's existing back-up power supply, where available, accepts Conterra's infrastructure.
- All Change Orders will be billed at cost plus 20% and are borne by the CUSTOMER.

Additional Notes on E-Rate Eligible Services

- All infrastructure utilized in the provision of this service belongs to CONTERRA and if physically located at a particular site is only used as integral component of the eligible Services listed above.
- All on-premise Infrastructure which is used by CONTERRA to provide Services listed above is provided by CONTERRA and not by another service provider.
- As clearly indicated in this Agreement, responsibility for maintaining the infrastructure rests solely with CONTERRA and not with another service provider.
- Ownership of CONTERRA's Infrastructure will not transfer to the CUSTOMER in the future, and as clearly indicated in this Agreement, CUSTOMER does not have an option to purchase the infrastructure.
- CONTERRA's on-premise Infrastructure will not be used by the CUSTOMER for any other purpose other than to receive the eligible Services listed above.
- CUSTOMER's Local Area Network, if any, is functional without dependence on CONTERRA's Infrastructure.
- As indicated in this Agreement, there is no contractual, technical, or other limitation that would prevent CONTERRA from using its network Infrastructure in part for other customers.

## Attachment H: Equipment Specification Sheets

### Ciena 3928



Ciena's 3928 Platform is a cost-effective solution for 10 Gb/s service delivery in a variety of business or mobile backhaul environments.

The 3928 features a high-capacity 48 Gb/s switching fabric supporting four 10GbE/1GbE ports and 8 1GbE ports in a compact 1RU chassis. The unit is powered by fixed, dual AC or DC power supplies, and is supported in environments requiring extended temperatures (DC option) such as outdoor cabinets or other uncontrolled environments.

The unit is a carrier-grade platform based on the Service-Aware Operating System (SAOS) used in all of Ciena's Routing and Switching products to deliver a consistent set of benefits, including interoperability between platforms, improved efficiency of operations, and service consistency among applications. The ease with which these products can be automated and managed has been demonstrated over hundreds of thousands of deployments worldwide.

The SAOS not only delivers benefits of a field-proven and time-tested set of features, but also allows owners to offer services that cost-effectively stay ahead of bandwidth demands, protecting the operator's investment. The feature capabilities address the widely varying demands of end-customers and a multitude of deployment scenarios, all of which lead to reduced cost of ownership and increased end-user satisfaction.

This broad service support enables detailed Service Level Agreement (SLA)-conformance testing from the Network Operations Center (NOC) and dramatically lowers OPEX. In combination with the low-touch deployment methods Ciena provides, operators can achieve a very profitable business case, even in highly competitive markets.

#### Efficient 10GbE service delivery

While the 3928 provides the ability to deploy with 10GbE services, not all customers will require the full line rate. The flexibility to adjust bandwidth with a simple swap of transceivers offers investment protection to both the operator and end-user. This level of efficiency means no forklift change-outs are needed to migrate to higher bandwidths, and no wasted capital investments.

#### Features and Benefits

- Offers 48 Gb/s of non-blocking switching capacity in a compact service demarcation device, running Ciena's SAOS for advanced OAM and QoS functions
- Features low footprint 1RU packaging with:
  - 4 x 10GbE/10GbE SFP+ ports
  - 8 x 1GbE SFP ports
- Benefits from Ciena's MCP multilayer provisioning support for end-to-end network management control and planning
- Allows for orchestration via Blue Planet MDSO or a third-party solution; a truly open platform for integration of best-in-breed software functions
- Can be configured as an IP Router (SAOS 10.x) or Universal Access Platform (SAOS 6.x)
- Supports secure ZTP to minimize OPEX and accelerate service turn-up while providing 10G line-rate, built-in traffic generation and reflection testing
- Fixed dual AC or DC power supplies with extended temperature support (DC version)
- Complies with MEF 3.0 specifications for E-Line, E-LAN, E-Tree, and E-Access services

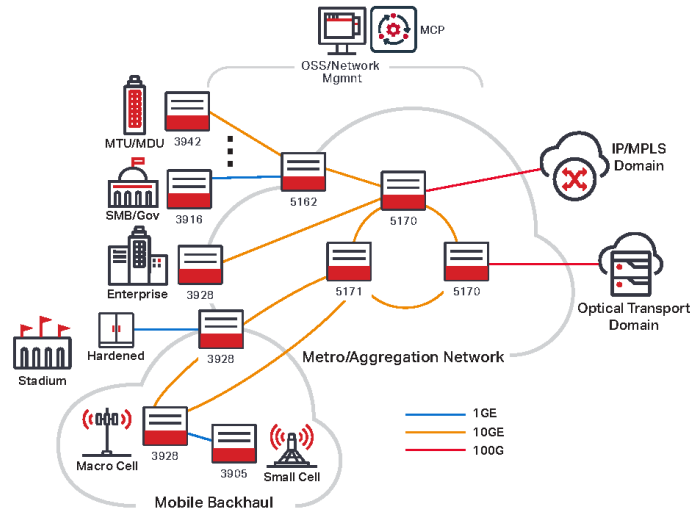


Figure 1. Sample metro aggregation network

For operators with a predominantly 1GbE access network, the 3928 enables a single platform deployment and tactical use of 10GbE where needed, plus an up-sell ability to market multi-gigabit service to current 1GbE end-customers.

#### Fine-grained SLA monitoring and enforcement

The 3928 includes performance benchmark testing based on ITU-T Y.1564 and RFC2544, enabling end-to-end 10G line-rate traffic measurements across virtual circuits. This approach can improve end-customer satisfaction, enabling operations personnel to proactively respond to network events and increasing performance visibility for end-customer SLA reporting.

#### Comprehensive OAM functions

Ciena's Routing and Switching products incorporate an extensive Operations, Administration, and Maintenance (OAM) feature suite providing comprehensive link, service, and network monitoring and performance metrics.

#### Flexible deployment options

The design of the 3928 also provides flexibility to enable deployment in a wide range of physical operating environments supporting:

- Commercial temperature range for AC-powered variant
- Extended temperature range for DC-powered variant
- Redundant AC or DC power options provide increased service availability

#### Synchronization and timing

The cost-effectiveness and versatility of networking is driving the convergence of services and placing new network synchronization requirements onto the access/aggregation network. Provision of accurate frequency, phase, or time references from the network is also beginning to emerge as a service in its own right. The 3928 provides the ability to address these requirements with support for synchronous Ethernet, IEEE 1588v2 and Stratum 3E holdover. Additionally, the DC variant of the 3928 provides external interfaces for synchronization including BITS, frequency reference and 1pps phase reference.

#### Zero-Touch Provisioning

Ciena's Zero-Touch Provisioning (ZTP) simplifies system turn-up and enables device deployment, service turn-up, and SLA performance testing to be run from the network operations center. This efficiency can significantly lower OPEX, eliminating the need for on-site personnel or adjunct test equipment and ensuring consistent, reproducible test reports are made available to the end-user. Operators can ramp service rollouts faster, securely, and at lower cost, often avoiding truck rolls altogether.

**Simplified multilayer management and control**

Ciena's Manage Control and Plan (MCP) software offers a unique and comprehensive solution for the administration of mission-critical networks that span access, metro, and core domains, while providing unprecedented multi-layer visibility from the photonic to the packet layers. With this innovative management approach, MCP returns control of the metro network and services directly to the network operator.

By providing a unified view to the network from the photonic to the data layer, network operations are simple, secure, and highly cost-effective.

**IP Router Configuration (SAOS 10.x)**

When configured with SAOS software stream 10.x, the 3928 operates as an IP router supporting NETCONF/YANG to enable an open SDN environment with full visibility via telemetry and automated provisioning using open APIs. The 3928 is purpose-built to provide Layer 2 and Layer 3 services over carrier-grade infrastructure, by supporting a rich suite of Ethernet, IP/MPLS, BGP, IS-IS, and OSPF. The 3928 is open and standardized, making it the perfect platform for deployments in both greenfield and brownfield scenarios.

**Universal Access Configuration (SAOS 6.x)**

The 3928 provides unmatched flexibility to address multiple applications, business models, and deployment environments without sacrificing service capabilities or Quality of Service (QoS). To accomplish this, it employs a variety of packet transport options for Ethernet services, including G.8032 rings, MPLS-TP, 802.1q VLANs, and 802.1ad provider VLANs (Q-in-Q).

Operators can use combinations of these capabilities to address the specific needs of their packet network deployment. Multi-Chassis Link Aggregation (MC-LAG), G.8032 Ethernet ring protection, or MPLS-TP alternate path capabilities provide redundancy and resilience by addressing single-point-of-failure concerns and maintaining high levels of customer satisfaction. The platform supports interworking between these transport options via a flexible and scalable switching architecture, leading to complete service ingenuity and optimal utilization of network resources.

**Technical information (Common)****Interfaces**

4 x 10GbE/1GbE SFP+ ports  
4 x 1GbE/100M SFP ports  
4 x 1GbE SFP ports  
1 x RJ-45 BITS input/output port (DC version)  
1 x SMB frequency input/output port (DC version)  
1 x SMB 1pps phase input/output port (DC version)  
1 x 10/100/1000M RJ-45 management port  
1 x serial console (RJ-45, EIA-561)  
1 USB2.0 port

**Power Requirements**

DC Input: -24, +24, -48 VDC (nom)  
DC max power consumption 62W  
AC Input: 100V, 240V AC (nom)  
AC frequency: 50Hz, 60Hz  
AC max power consumption 96W

**Physical Characteristics**

**Dimensions:**  
17.5" (W) x 9.9" (D) x 1.75" (H);  
444mm (W) x 252mm (D) x 44mm (H)  
**Weight:** 11.0 lbs; 5.0 kg

**Environmental Characteristics**

NEBS Level 3 compliant  
ETSI Class A compliant  
Operating Temperature:  
DC: -40°F to +149°F (-40°C to +65°C)  
AC: +32°F to +122°F (-0°C to +50°C)  
Storage Temperature:  
-40°F to +158°F (-40°C to +70°C)  
Relative Humidity:  
5% to 90% (non-condensing)

**Standards Compliance**

**Emissions, Immunity (EMC):**  
CISPR 22  
CISPR24  
CISPR 32  
EN 300 386  
EN 55032  
EN55024  
FCC Part 15 Class A  
GR-1089 Issue 6  
Industry Canada ICES-003 Class A  
VCCI CISPR 32  
AS/NZS CISPR 32

**Environmental:**

RoHS Directive  
WEEE  
GR-1089 Issue 6  
GR-63-Core Issue 5  
ETSI EN 300 132-2  
ETSI EN 300 132-3  
**Safety:**  
UL 60950-1 2nd edition 2007  
CAN/CSA C22.2 No. 60950-1-07  
EN 60950-1  
IEC 60825-1  
IEC 60825-2  
Service Security  
Broadcast Containment  
Egress Port Restriction  
Hardware-based DOS Attack Prevention  
Layer 2, 3, 4 Protocol Filtering  
User Access Rights

**Technical information (SAOS 10.x) – Router Configuration****Ethernet**

IEEE 802.3 Ethernet  
 IEEE 802.3u Fast Ethernet  
 IEEE 802.3z Gigabit Ethernet  
 IEEE 802.3-2008 10-Gigabit Ethernet  
 IEEE 802.3ab 1000Base-T via copper SFP  
 IEEE 802.1D MAC Bridges  
 IEEE 802.1ad Provider Bridging (Q-in-Q) VLAN full S-VLAN range  
 IEEE 802.1p Class of Service (CoS) prioritization  
 IEEE 802.1Q VLANs  
 VLAN tunneling (Q-in-Q) for Transparent LAN Services (TLS)  
 IEEE 802.3ad Link Aggregation Control Protocol (LACP)  
 Layer 2 Control Frame Tunneling  
 Link Aggregation (LAG): Active/Active; Active/Standby  
 Jumbo frames to 9216 bytes  
 Per-VLAN MAC Learning Control

**MEF 3.0 Compliance**

E-Line  
 E-LAN  
 E-Tree  
 Access E-Line  
 Transit E-Line

**Carrier Ethernet OAM**

- Dying Gasp with Syslog and SNMP Traps
- IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
- IEEE 802.1ag Connectivity Fault Management (CFM)
- ITU-T Y.1731 Performance Monitoring (SLM; DMM)

**Synchronization**

ITU-T G.8262 Synchronous Ethernet  
 ITU-T G.8262/G.8264 EEC option1 and option2  
 ITU-T G.8264 for SyncE ESMC/SSM  
 ITU-T G.781  
 GR-1244  
 ITU-T G.813  
 ITU-T G.823/G.824  
 IEEE 1588v2 Precision Time Protocol  
 ITU-T G.8275/G.8275.1  
 Stratum 3E oscillator

**External Timing Interfaces (DC version):**

- BITS in or out (1.544Mb/s, 2.048MHz and 2 Mb/s)
- Frequency in or out (1.544MHz, 2.048MHz, and 10MHz)
- 1pps and ToD in or out (NMEA 0183, MSTs)

**Line Timing Interfaces:**

- 1GbE/10GbE In and Out

**Networking Protocols**

ISO10598 IS-IS intra-domain routing protocol  
 RFC1195 Use of OSI Is-Is for Routing in TCP/IP and Dual Environments  
 RFC3359 Reserved Type, Length and Value (TLV) Codepoints in Intermediate System to Intermediate System  
 RFC3719 Recommendations for Interoperable Networks using IS-IS  
 RFC3787 Recommendations for Interoperable IP Networks using IS-IS  
 RFC.5309 Point-to-Point Operation over LAN in Link State Routing Protocols  
 RFC.5303 Three-Way Handshake for IS-IS Point-to-Point Adjacencies  
 RFC.5302 Domain-Wide Prefix Distribution with Two-Level IS-IS  
 RFC.5301 Dynamic Hostname Exchange Mechanism for IS-IS  
 RFC 3787 Recommendations for interoperable IP networks using IS-IS  
 RFC 3359 Reserved TLV Codepoints in IS-IS  
 RFC1772 BGP basic functions support  
 RFC1930 Guidelines for creation, selection, and registration of an Autonomous System (AS)  
 RFC1997 BGP Community Attribute  
 RFC1998 An Application of the BGP Community Attribute in Multi-home Routing  
 RFC2270 Using a Dedicated AS for Sites Homed to a Single Provider  
 RFC2439 BGP Route Flap Damping  
 RFC2519 A Framework for Inter-Domain Route Aggregation  
 RFC4364 BGP/MPLS IP Virtual Private Networks (VPNs)  
 RFC2918 Route Refresh Capability for BGP-4  
 RFC3107 Support BGP carry Label for MPLS  
 RFC4271 A Border Gateway Protocol 4 (BGP-4)  
 RFC4360 BGP Extended Communities Attribute  
 RFC4364 BGP/MPLS IP Virtual Private Networks  
 RFC4760 Multiprotocol Extensions for BGP-4  
 RFC6793 BGP Support for Four-Octet Autonomous System (AS) Number Space  
 RFC5004 Avoid BGP Best Path Transitions from One External to Another  
 RFC5398 Autonomous System (AS) Number Reservation for Documentation Use  
 RFC5492 Capabilities Advertisement with BGP-4  
 RFC 7911 Advertisement of Multiple Paths in BGP

RFC4684 Constrained Route Distribution for Border Gateway Protocol/Multiprotocol Label Switching (BGP/MPLS) Internet Protocol (IP) Virtual Private Networks (VPNs)  
 RFC5668 4-Octet AS Specific BGP Extended Community  
 RFC2764 A Framework for IP Based Virtual Private Networks  
 RFC5681 TCP Congestion Control  
 RFC2873 TCP Processing of the IPv4 Precedence Field  
 RFC 3443 MPLS TTL processing  
 RFC 3032 MPLS label stack encoding  
 RFC5036 LDP Specification  
 RFC3215 LDP State Machine  
 RFC5037 Experience with the LDP protocol  
 RFC5561 LDP Capabilities  
 RFC3031 Multiprotocol Label Switching Architecture  
 RFC5462 Multiprotocol Label Switching (MPLS) Label Stack Entry: "EXP" Field Renamed to "Traffic Class" Field  
 RFC1321 The MD5 Message-Digest Algorithm  
 RFC4250 Protocol Assigned Numbers  
 SSH File Transfer Protocol, Draft 13  
 RFC1812 Requirements for IP Version 4 Routers  
 RFC2865 Remote Authentication Dial in User Service (RADIUS)  
 RFC2475 An Architecture for Differentiated Services  
 RFC2597 Assured Forwarding PHB Group  
 RFC2697 A Single Rate Three Color Marker.  
 RFC2698 A Two Rate Three Color Marker  
 RFC3260 New Terminology and Clarifications for Diffserv

**Networking Protocols continued**

RFC4632 Classless Inter-domain Routing (CIDR): The Internet Address Assignment and Aggregation Plan  
 RFC6310 Pseudowire (PW) Operations, Administration, and Maintenance (OAM) Message Mapping  
 RFC2328 OSPF Version 2  
 BGP Prefix Independent Convergence draft-ietf-rtgwg-bgp-pic-08.txt  
 RFC7737 Label Switched Route (LSP) Ping and Traceroute Reply Mode Simplification  
 RFC 6241 Network Configuration Protocol (NETCONF)

**Technical information (SAOS 10.x) – Router Configuration (continued)****Network Management**

Alarm Management & Monitoring Configuration  
 Event and Alarm Notification/Generation Comprehensive Management  
 • Via CLI Management  
 • Via Netconf/YANG Models  
 IPv4 & IPv6 Management Support

Remote Auto configuration via TFTP, SFTP  
 RFC2131 DHCP Client  
 RFC5905 NTP Client  
 RFC1350 Trivial File Transfer Protocol (TFTP)  
 Secure File Transfer Protocol (SFTP)  
 Secure Shell (SSHv2)  
 Software upgrade via FTP, SFTP

Syslog Accounting  
 TACACS + AAA  
 gRPC based Telemetry  
 RADIUS, AAA  
 Zero-Touch Provisioning (ZTP)

**Technical information (SAOS 6.x) – Universal Access Configuration****Ethernet**

IEEE 802.3 Ethernet  
 IEEE 802.3u Fast Ethernet  
 IEEE 802.3z Gigabit Ethernet  
 IEEE 802.3-2008 10-Gigabit Ethernet  
 IEEE 802.3ab 1000Base-T via copper SFP  
 IEEE 802.1D MAC Bridges  
 IEEE 802.1ad Provider Bridging (Q-in-Q) VLAN full S-VLAN range  
 IEEE 802.1p Class of Service (CoS) prioritization  
 IEEE 802.1Q VLANs  
 VLAN tunneling (Q-in-Q) for Transparent LAN Services(TLS)  
 ITU-T G.8032 Ethernet Ring Protection Switching  
 IEEE 802.3ad Link Aggregation Control Protocol (LACP)  
 Hierarchical Quality of Service (HQoS) w/ Ingress Metering/Egress shaping  
 Layer 2 Control Frame Tunneling  
 Link Aggregation (LAG): Active/Active; Active/Standby  
 Multi-chassis LAG (MC-LAG) active/standby  
 Jumbo frames to 9216 bytes  
 MEF 10.2 Egress Bandwidth Shaping per EVG per CoS  
 MEF 10.3 Excess/Uncoupled Bandwidth Sharing (Token Cascading)  
 MEF 10.3/35.1 Performance Monitoring KPIs  
 Per-VLAN MAC Learning Control  
 Private Forwarding Groups  
 MSTP/RSTP

**MEF 3.0 Certified**

E-Line  
 E-LAN  
 E-Tree  
 Access E-Line  
 Transit E-Line

**Carrier Ethernet OAM**

EVC Ping (IPv4)  
 IEEE 802.1ab Link Layer Discovery Protocol (LLDP)

IEEE 802.1ag Connectivity Fault Management (CFM)  
 IEEE 802.3ah EFM Link-fault OAM  
 ITU-T Y.1564 Ethernet Service Activation Test Methodology  
 RFC 2544 Benchmarking Methodology for Network Interconnect Devices Generation and Reflection at 10GbE  
 ITU-T Y.1731 Performance Monitoring (SLM/DM)  
 RFC 5618 TWAMP Responder and Receiver TWAMP Sender  
 Dying Gasp with Syslog and SNMP Traps

**Synchronization**

ITU-T G.8262 Synchronous Ethernet  
 ITU-T G.8262/G.8264 EEC option1 and option2  
 ITU-T G.8264 for SyncE ESMC/SSM  
 ITU-T G.781  
 GR-1244  
 ITU-T G.813  
 ITU-T G.823/G.824  
 IEEE 1588v2 Precision Time Protocol  
 ITU-T G.8275/G.8275.1  
 Stratum 3E oscillator

**External Timing Interfaces (DC version):**

- BITS in or out (1.544Mb/s, 2.048MHz and 2 Mb/s)
- Frequency in or out (1.544MHz, 2.048MHz, and 10MHz)
- 1pps and ToD in or out (NMEA 0183, MSTs)

**Line Timing Interfaces:**

- 1GbE/10GbE In and Out

**Networking Protocols**

Alarm Indication Signaling (AIS) with Link Down Indication (LDI) and Remote Defect Indication (RDI)  
 Automatic Pseudowire Reversion  
 ITU-T G.8032 v1, v2, v3 Ethernet Ring Protection Switching  
 Layer 2 Control Frame Tunneling over MPLS Virtual Circuits  
 MPLS Label Switch Path (LSP) Tunnel Groups  
 MPLS Label Switch Path (LSP) Tunnel

MPLS Multi-Segment Pseudowires  
 MPLS Virtual Private Wire Service (VPWS)  
 OSPF/IS-IS for Dynamic MPLS-TP Control Plane  
 RFC 2205 RSVP  
 RFC 3031 MPLS architecture  
 RFC 3209 RSVP-TE: Extensions to RSVP for LSP  
 RFC 3630 OSPF-TE  
 RFC 4447 Pseudowire Setup & Maintenance using Label Distribution Protocol (LDP)  
 RFC 4448 Encapsulation Methods for Transport of Ethernet over MPLS Networks (PW over MPLS)  
 RFC 4664 Framework of L2VPN (VPLS/VPWS)  
 RFC 4665 Service Requirement of L2 VPN  
 RFC 4762 VPLS (Virtual Private LAN Service) and Hierarchical VPLS (H-VPLS)  
 RFC 5654 MPLS-Transport Profile (TP)  
 LSP Static provisioning  
 LSP Dynamic provisioning  
 1:1 Tunnel protection  
 RFC 5884 LSP Bidirectional Forwarding Detection (BFD) via GAL/G-Ach channels  
 RFC 6215 MPLS Transport Profile User-to-Network and Network-to-Network Interfaces  
 RFC 6426 MPLS On-demand Connectivity Verification and Route Tracing  
 RFC 6428 LSP and PW Connectivity Verification and Trace Route

**Networking Protocols continued**

Static ARP and MAC Destination Address Resolution  
 VCCV (Virtual Circuit Continuity Check) Ping and Trace Route  
 IEEE 802.3ad Link Aggregation Control Protocol (LACP)  
 Jumbo Frames to 9216 bytes  
 Layer 2 Control Frame Tunneling  
 DHCPv4 Relay Agent with Option 82  
 G.8032/IGMP interworking  
 IGMP over MPLS-TP  
 IGMPv3 with SSM  
 8 Hardware Queues per-Port  
 Committed and Excess Information Rates (CIR and EIR)



**Technical information (SAOS 6.x) – Universal Access Configuration (continued)**

Classification based on IEEE 802.1D priority  
VLAN, source port, destination port, IP  
Precedence and IPDSCP  
Layer 2, 3 Quality of Service  
Ingress metering per-port  
Ingress metering per-port per-CoS  
Ingress metering per-port per-VLAN  
Up to ~2000 Ingress Meters per-port  
Up to 2048 Ingress Meters per-system  
C-VLAN Priority to S-VLAN Priority Mapping  
S-VLAN Priority based on C-VLAN ID Per-  
VLAN Classification, Metering, and  
Statistics  
Per-port, per-VLAN QoS with CIR and EIR  
traffic on Egress Queues

**Agency Approvals**

Australia RCM (Australia/New Zealand)  
CE mark (EU)  
NRTL (NA)  
VCCI (Japan)  
Mexico  
BSMI (Taiwan)

CCC (China)  
KC (Korea)  
ANATEL (Brazil)

**Network Management**

Alarm Management & Monitoring  
Configuration  
Comprehensive Management via Enhanced CLI  
Integrated Firewall  
IPv4 & IPv6 Management Support  
Local Console Port  
Per-VLAN Statistics Port State Mirroring  
RADIUS Client and RADIUS Authentication  
Remote Auto configuration via TFTP, SFTP  
Remote Link Loss Forwarding (RLLF)  
RFC 959 File Transfer Protocol (FTP)  
RFC 1035 DNS Client  
RFC 1213 SNMP MIB II  
RFC 1493 Bridge MIB  
RFC 1573 MIB II interfaces  
RFC 1643 Ethernet-like Interface MIB  
RFC 1757 RMON MIB - including persistent  
configuration

RFC 2021 RMON II and RMON Statistics  
RFC 2131 DHCP Client  
RFC 3877 Alarm MIB  
RFC 4291 – IPv6 addressing (for Management  
Plane)  
RFC 4443 – ICMPv6  
RFC 4862 – Stateless address auto-  
configuration  
RFC 5905 NTP Client  
RFC 1350 Trivial File Transfer Protocol (TFTP)  
Secure File Transfer Protocol (SFTP)  
Secure Shell (SSHv2)  
SNMP v1/v2c/v3  
SNMP v3 Authentication and Message  
Encryption  
Software upgrade via FTP, SFTP  
Syslog with Syslog Accounting  
TACACS + AAA  
Telnet Server  
Virtual Link Loss Indication (VLLI)  
Secure Zero Touch Provisioning

Visit the Ciena Community  
Answer your questions

**Ordering Information (SAOS 10.x) - Router Configuration**

Part Number	Description
170-3928-910	3928,(4)100M/1G SFP,(4)1G SFP,(4)10/1G SFP+,SAOS 10.X,SYNCH,DUAL AC POWER,REQ. POWER CABLE
170-3928-911	3928,(4)100M/1G SFP,(4)1G SFP,(4)10/1G SFP+,SAOS 10.X,SYNCH,EXT. TEMP,DUAL DC POWER
<b>Required OS Base System Perpetual Software Licenses</b>	
S75-LIC-3928EO-P	SAOS BASE OS, ETHERNET & OAM SOFTWARE LICENSE FOR 3928, PERPETUAL
<b>Optional OS Applications</b>	
S75-LIC-3928MPLS-P	SAOS ROUTING AND MPLS SOFTWARE LICENSE FOR 3928, PERPETUAL
S75-LIC-3928SYNCH-P	SAOS SYNCHRONIZATION SOFTWARE LICENSE FOR 3928, PERPETUAL
S75-LIC-392810G-P	SAOS 10G SOFTWARE LICENSE FOR 3928, PERPETUAL
S75-LIC-3928SEC-P	SAOS SECURITY SOFTWARE LICENSE FOR 3928, PERPETUAL

**Ordering Information – (SAOS 6.x) - Universal Access Configuration**

Part Number	Description
170-3928-908	3928,(4)100M/1G SFP,(4)1G SFP,(4)10/1G SFP+,SAOS 6.X,SYNCH,DUAL AC POWER,REQ. POWER CABLE
170-3928-909	3928,(4)100M/1G SFP,(4)1G SFP,(4)10/1G SFP+,SAOS 6.X,SYNCH,EXT. TEMP,DUAL DC POWER
<b>Required OS Base System Perpetual Software Licenses</b>	
S70-0040-900	SAOS ADVANCED ETHERNET & OAM PERPETUAL SOFTWARE LICENSE FOR 3928
<b>Optional OS Applications</b>	
S70-0040-902	SAOS ADVANCED MPLS APPLICATION PERPETUAL SOFTWARE LICENSE FOR 3928
S70-0040-903	SAOS ADVANCED SYNCHRONIZATION PERPETUAL SOFTWARE LICENSE FOR 3928
S70-0040-905	SAOS ADVANCED 10G PERPETUAL SOFTWARE LICENSE FOR 3928
S70-0040-906	SAOS ADVANCED SECURITY PERPETUAL SOFTWARE LICENSE 3928
<b>ESM Related</b>	
S70-0041-900	ESM CARRIER ED RIGHT TO MANAGE PERPETUAL SOFTWARE LICENSE FOR 3928

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**ciena.**



## Ciena 5170



Ciena's 5170 Platform cost-effectively addresses business opportunities related to high-bandwidth applications at the network edge. With IP router configurations and universal aggregation, the 5170 delivers up to 100GbE connectivity to enterprises, mobile backhaul sites, and Data Center Interconnect (DCI) in a small-footprint, low-power solution to address today's network challenges.

### Driving the industry toward 10GbE and 100GbE service delivery

Continued annual growth in bandwidth demands, from access to metro, is resulting in a mix of connections and services, from 1GbE to 10GbE aggregation and 10GbE to 100GbE aggregation. In addition, demand for high-speed 100GbE UNI services is increasing unabated. The rising popularity of services exceeding 1 Gb/s—and even 10 Gb/s rates—is creating new business opportunities for highly optimized 10GbE to 100GbE aggregation. This shift to higher-bandwidth services means regional IP and Ethernet networks, once optimized for lower 1GbE rates, are no longer aligned to ongoing and emerging metro network traffic trends. The specific mix of speeds and feeds of the 5170 is purpose-built to address this shift towards higher rates towards the edge.

### Dense, compact form-factor platform

Efficient use of real estate assets is a growing concern for network operators, who either host their own network equipment, or lease power and space in collocation facilities. As services multiply, operators have been forced to stack 10G-capable equipment, incurring additional collocation rental and power costs. The 5170's density allows the addition of 10GbE services without increasing the operator's footprint.

Space is increasingly limited and expensive, and network operators face substantial capital expenditures to activate new locations or must retire active equipment to free space for service delivery. Addressing bandwidth demand growth by deploying more and/or larger equipment is simply unsustainable business—economically and environmentally. Ciena's 5170 cost-effectively offers dense 100GbE service delivery in a 1RU, 600mm deep, fixed form-factor with dual pluggable power supplies and redundant cooling fans to minimize any downtime.

### Features and benefits

- Outstanding 10GbE and 100GbE density in compact form to address space constraints
- 4 x 100GbE (SFP28) + 36 x 1GbE/10GbE SPF+ Ports + 4 x 1GbE/10GbE/25GbE SFP28 Ports
- Hardware-assisted OAM scaled to deliver 100GbE services with guaranteed SLA differentiation
- Advanced QoS with Hierarchical Egress Shaping and Hierarchical Ingress Metering
- Carrier Ethernet, IP Routing, MPLS and Segment Routing
- ZTP for rapid, secure, and error-free turn up of services
- Integrated, line-rate Service Activation Testing capabilities with built-in 100 Gb/s traffic generation and analysis
- Ciena's MCP multi-layer provisioning support for end-to-end network management control and planning
- NETCONF/YANG mechanisms to enable a fully open SDN environment
- Redundant, hot-swappable power supplies (AC or DC) and fan modules

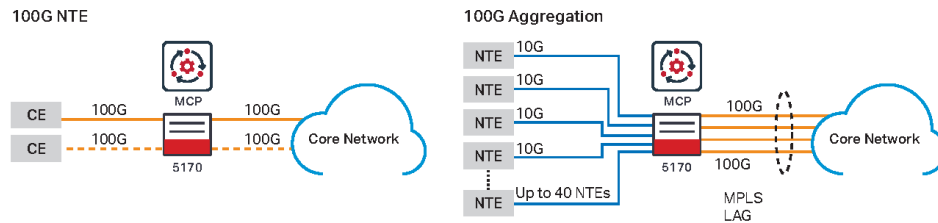


Figure 1. 5170 service delivery and aggregation functions

### Differentiation through accelerated service velocity

Service velocity has become a critical competitive advantage for network operators. In many cases, service velocity is the determining factor in winning new business opportunities. The 5170 implements Ciena's unique Zero-Touch Provisioning (ZTP) capabilities, allowing service providers to rapidly deploy new IP/MPLS services in a fully automated manner. By reducing or eliminating costly and time-consuming manual intervention, provisioning errors are completely eliminated via ZTP to ensure the utmost in service security and reliability.

### Rich Operations, Administration, and Maintenance (OAM) suite of capabilities

As network operators and their customers increasingly rely on new IP/MPLS networks, providers must offer and reliably maintain guaranteed service levels. This is achieved via a rich suite of OAM capabilities to ensure operators can proactively and reactively maintain and report on the ongoing health of their offered network services. The 5170 also supports a comprehensive set of hardware-assisted OAM capabilities. The 5170 is architected to power Service Level Agreement (SLA) metrics and OAM at a high scale allowing operators to take full advantage of the port density and 800 Gb/s fabric for delivering the maximum number of services at the lower cost. Consistent with this SLA focus, the 5170 has an embedded line-rate Service Activation Test (SAT) engine (RFC2544, Y.1564) with traffic generation to a full 100 Gb/s to guarantee strict, market-differentiating SLAs, without relying on costly external test equipment.

### Simplified multi-layer management and control

Ciena's Manage, Control and Plan (MCP) domain controller offers a unique and comprehensive solution for the administration and management of mission-critical networks that span access, metro, and core network domains. It provides

unprecedented multi-layer visibility from photonic to packet layer. With its innovative management, MCP supports a programmable and automatable solution that provides a fully open approach to installing, manipulating, and monitoring service behaviors in an SDN environment.

### Advanced QoS support

5170 supports fine-grained SLA monitoring and enforcement techniques to help operators successfully deliver upon stringent SLA guarantees. These capabilities enable greater revenue generation by optimizing available asset utilization. The platform offers deep buffers managed by Ciena's Service-Aware Operating System (SAOS) to adapt to specific application requirements. Sophisticated VLAN tag manipulation and control supports innovative customer traffic separation approaches alongside a rich set of classification-of-service flows through the platform's fabric.

Ingress metering can be configured, offering the ultimate in flexible flow control based on L2, L3, and L4 classification. In addition, egress bandwidth shaping on a per-EVC basis is built to allow fine-tuning delay and buffering efficiency within the device. The 5170 also provides deep buffers to maximize traffic throughput and reliability by enabling operators to optimize and/or adjust buffer depths to match service types and SLA requirements, such as minimizing latency or maximizing delivery.

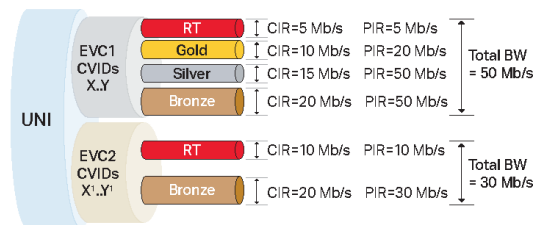


Figure 2. Hierarchical QoS supports multiple services

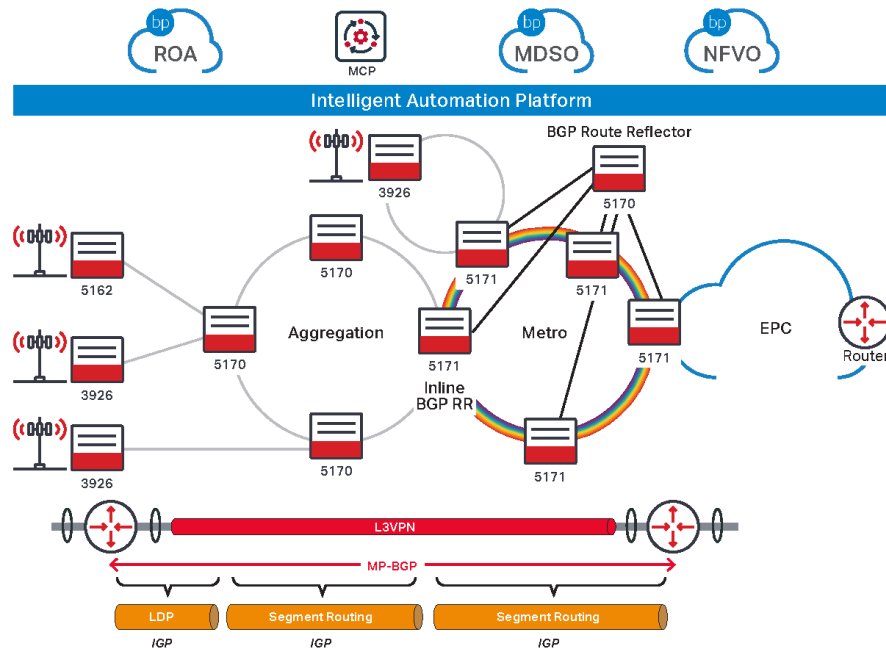


Figure 3. Ciena's Adaptive IP™ solution supporting mobile network evolution

#### IP Router Configuration (SAOS 10.x)

When configured with SAOS software stream 10.x, the 5170 operates as an IP router supporting NETCONF/YANG to enable an open SDN environment with full visibility via telemetry and automated provisioning using open APIs. The 5170 is purpose-built to provide Layer 2 and Layer 3 services over carrier-grade infrastructure, by supporting a rich suite of Ethernet, IP/MPLS, BGP, IS-IS, OSPF, and Segment Routing. The 5170 is open and standardized, making it the perfect platform for deployments in both greenfield and brownfield scenarios.

#### Universal Aggregation Configuration (SAOS 8.x)

When configured with the SAOS 8.x software stream, the 5170 operates as a cost-effective universal aggregation solution—including support for Pulse Amplitude Modulation 4 (PAM4) via QSFP28 DWDM pluggable optics—addressing 1/10/100GbE service delivery and aggregation challenges.

Ciena's 5170 supports a wide range of service offerings, including MEF CE-compliant E-Line, E-LAN, E-Tree, and E-Access services, over a carrier-grade, connection-oriented infrastructure. It also supports a rich suite of L2 Ethernet, MPLS, OAM, Sync, ACL, and QoS capabilities to support a broad range of applications.

**Technical information (SAOS 10.x) – Router Configuration****Interfaces**

4 x 100G/40G QSFP28 ports 40 x 1G/10G Ethernet Ports

- 4 x 1GbE/10GbE/25GbE SFP28 ports
- 36 x 1GbE/10GbE SFP+ ports
- 4 x 100GbE SFP28 ports

**Ethernet**

IEEE 802.1ad Provider Bridging (Q-in-Q) VLAN full S-VLAN range

IEEE 802.1D MAC Bridges

IEEE 802.1p Class of Service (CoS) prioritization

IEEE 802.1Q VLANs

IEEE 802.3 Ethernet

IEEE 802.3ab 1000Base-T via copper SFP

IEEE 802.3ad Link Aggregation Control Protocol (LACP)

IEEE 802.3ba-2010 40GbE & 100GbE

IEEE 802.3z Gigabit Ethernet

Layer 2 Control Frame Tunneling

Link Aggregation (LAG): Active/Active; Active/Standby

Jumbo frames to 9216 bytes

VLAN tunneling (Q-in-Q) for Transparent LAN Services (TLS)

**MEF CE Compliant**

E-Access: Access EPL, Access EVPL E-LAN; EP-LAN, EVP-LAN

E-LINE: EPL, EVPL

E-Tree: EP-Tree, EVP-Tree

**Carrier Ethernet OAM**

Dying Gasp with Syslog and SNMP Traps

EVC Ping (IPv4) (SAOS 8.x)

Generation and Reflection at 100GbE (SAOS 8.x)

IEEE 802.1ab Link Layer Discovery Protocol (LLDP)

IEEE 802.1ag Connectivity Fault Management (CFM)

IEEE 802.3ah EFM Link-fault OAM (SAOS 8.x)

ITU-T Y.1731 Performance Monitoring (SLM; DMM)

**Synchronization****External Timing Interfaces:**

BITS in or out (1.544Mb/s, 2.048MHz and 2 Mb/s)

Frequency in or out (1.544MHz, 2.048MHz, and 10MHz)

**1pps and ToD in or out Line Timing Interfaces:**

1GbE/10GbE In and Out

40GbE/100GbE In and Out

ITU-T G.8262/G.8264 EEC option1 and option2

IEEE 1588v2 PTP

ITU-T G.8262 Synchronous Ethernet Stratum 3E oscillator

**Networking Protocols**

ISO10598 IS-IS intra-domain routing protocol

OSPF Segment Routing extension

OSPF TI-LFA Topology Independent Fast Reroute using Segment Routing

RFC1195 Use of OSI Is-Is for Routing in TCP/IP and Dual Environments

RFC1997 BGP Community Attribute

RFC2328 OSPF Version 2

BGP Prefix Independent Convergence

EVPN FXC draft-ietf-bess-evpn-vpws-fxc-03.txt

RFC2698 A Two Rate Three Color Marker

RFC2865 Remote Authentication Dial In User Service (RADIUS)

RFC3031 Multiprotocol Label Switching (MPLS) Architecture

RFC3032 MPLS label stack encoding

RFC3107 Support BGP carry Label for MPLS

RFC4271 A Border Gateway Protocol 4 (BGP-4)

RFC4360 BGP Extended Communities Attribute

RFC4364 BGP/MPLS IP Virtual Private Networks (VPNs)

RFC4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)

RFC4632 Classless Inter-domain Routing (CIDR): The Internet Address Assignment and Aggregation Plan

RFC4760 Multiprotocol Extensions for BGP-4

RFC4762 Virtual Private LAN Service (VPLS) Using Label Distribution Protocol (LDP) Signaling (HVPLS)

RFC5004 Avoid BGP Best Path Transitions from One External to Another

RFC5036 LDP Specification

RFC5037 Experience with the LDP protocol

RFC5301 Dynamic Hostname Exchange Mechanism for IS-IS

RFC5302 Domain-Wide Prefix Distribution with Two-Level IS-IS

RFC5303 Three-Way Handshake for IS-IS Point-to-Point Adjacencies

RFC5309 Point-to-Point Operation over LAN in Link State Routing Protocols

RFC5396 Textual Representation of Autonomous System (AS) Numbers

RFC5398 Autonomous System (AS) Number Reservation for Documentation Use

RFC5492 Capabilities Advertise with BGP-4

RFC5561 LDP Capabilities

RFC5668 4-Octet AS Specific BGP Extended Community

RFC6241 Network Configuration Protocol (NETCONF)

RFC6310 Pseudowire (PW) Operations, Administration, and Maintenance (OAM) Message Mapping

RFC6793 BGP Support for Four-Octet Autonomous System (AS) Number Space

RFC7432 EVPN VPWS/VPLS

RFC7737 Label Switched Route (LSP) Ping and Traceroute Reply Mode Simplification

SR-MPLS TI-LFA Topology Independent Loop Free Alternate

Reroute using Segment Routing draft-ietf-rtgwg-segment-routing-ti-lfa-03

RFC7911 Advertisement of Multiple Paths in BGP

RFC8214 Virtual Private Wire Service Support in Ethernet VPN

**Network Management**

Alarm Management & Monitoring Configuration

Event and Alarm Notification/Generation Comprehensive Management

- Via CLI Management
- Via Netconf/YANG Models

IPv4 & IPv6 Management Support

Remote Auto configuration via TFTP, SFTP

RFC2131 DHCP Client

RFC5905 NTP Client

RFC1350 Trivial File Transfer Protocol (TFTP)

Secure File Transfer Protocol (SFTP)

Secure Shell (SSHv2)

Software upgrade via FTP, SFTP

Syslog Accounting

TACACS + AAA

gRPC based Telemetry

RADIUS, AAA

Secure Zero-Touch Provisioning (SZTP)

**Technical Information (SAOS 8.x) – Universal Aggregation Configuration****Interfaces****Ethernet Ports**

- 4 x 1GbE/10GbE/25GbE SFP28 ports
- 36 x 1GbE/10GbE SFP+ ports
- 4 x 100GbE SFP28 ports

**Other**

- 1 x RJ-45 BITS input/output port
- 1 x SMB frequency input/output ports
- 1 x SMB 1pps phase input/output ports
- 1 x 10/100/1000M RJ-45 management port
- 1 x serial console (RJ-45, EIA-561)
- 1 USB2.0 Off-switch memory

**Ethernet**

- IEEE 802.1ad Provider Bridging (Q-in-Q) VLAN full S-VLAN range
- IEEE 802.1D MAC Bridges
- IEEE 802.1p Class of Service (CoS) prioritization
- IEEE 802.1Q VLANs
- IEEE 802.3 Ethernet
- IEEE 802.3ab 1000Base-T via copper SFP
- IEEE 802.3ad Link Aggregation Control Protocol (LACP)
- IEEE 802.3ba-2010 40GbE & 100GbE
- IEEE 802.3z Gigabit Ethernet
- Layer 2 Control Frame Tunneling
- Link Aggregation (LAG): Active/Active; Active/Standby
- Jumbo frames to 9216 bytes
- VLAN tunneling (Q-in-Q) for Transparent LAN Services (TLS)
- Hierarchical Quality of Service (HQoS) including Ingress Metering/Egress shaping
- Private Forwarding Groups
- Multi-chassis LAG (MC-LAG) active/standby
- MEF 10.2 Egress Bandwidth Shaping per EVC per COS
- Per-VLAN MAC Learning Control

**MEF CE 2.0 Compliant**

- E-Access: Access EPL, Access EVPL E-LAN; EP-LAN, EVP-LAN
- E-LINE: EPL, EVPL
- E-Tree: EP-Tree, EVP-Tree

**MEF 3.0 Certified**

- E-Access: Access EPL, Access EVPL E-LAN; EP-LAN, EVP-LAN
- E-LINE: EPL, EVPL
- E-Tree: EP-Tree, EVP-Tree

**Carrier Ethernet OAM**

- Dying Gasp with Syslog and SNMP Traps
- EVC Ping (IPv4) (SAOS 8.x)
- Generation and Reflection at 100GbE (SAOS 8.x)
- IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
- IEEE 802.1ag Connectivity Fault Management (CFM)

- IEEE 802.3ah EFM Link-fault OAM (SAOS 8.x)
- ITU-T Y.1731 Performance Monitoring (SLM; DMM)
- ITU-T Y.1731 Performance Monitoring (SLM; DM) with simultaneous session
- RFC 2544 Benchmarking Methodology for Network Interconnect Device
- RFC 5618 TWAMP Responder and Receiver
- TWAMP Sender

**External Timing Interfaces**

- ITU-T G.703 Frequency in or out (2.048MHz, and 10MHz)
- ITU-T G.703 1pps and ToD in or out
- ITU-T G.8262/G.8264 EEC option1 and option2
- ITU-T G.8275.1 full timing support T-GM, T-BC and T-TSC
- G.8275.2 clock, Class C\*
- Stratum 3E oscillator

**Networking Protocols**

- Alarm Indication Signaling (AIS) with Link Down Indication (LDI) and Remote Defect Indication (RDI)
- Control Channel types CC1, CC2, CC4
- Connectivity Verification types 1, 2
- DHCPv4 Relay Agent with Option 82
- G.8032/IGMP interworking
- DHCPv6
- IGMPv3 with SSM IGMP over MPLS-TP
- IS-IS Route Summarization
- ITU-T G.8032 v1, v2, v3 Ethernet Ring Protection Switching
- Layer 2 Control Frame Tunneling over MPLS Virtual Circuits
- LSP Dynamic provisioning 1:1 Tunnel protection
- MPLS AIS-LDI with Signal Degrade
- MPLS Label Switch Path (LSP) Tunnel Groups
- MPLS Label Switch Path (LSP) Tunnel
- MPLS Multi-Segment Pseudo wires
- MPLS Static VC Shaping Automatic
- MPLS Virtual Private Wire Service (VPWS)
- OSPF/IS-IS for Dynamic MPLS-TP Control Plane
- Pseudowire Reversion
- Redundancy Topology LDP
- RFC 2205 RSVP IS-IS L1/L2
- RFC 3031 MPLS architecture
- RFC 3209 RSVP-TE: Extensions to RSVP for LSP RFC 3630 OSPF-TE
- RFC 4447 Pseudo wire Setup & Maintenance using Label Distribution Protocol (LDP)
- RFC 4448 Encapsulation Methods for Transport of Ethernet over MPLS Networks (PW over MPLS)
- RFC 4664 Framework of L2VPN (VPLS/VPWS)
- RFC 4665 Service Requirement of L2 VPN

- RFC 4762 VPLS (Virtual Private LAN Service) and Hierarchical VPLS (H-VPLS)
- RFC 5654 MPLS-Transport Profile (TP) LSP Static provisioning
- RFC 5884 LSP Bidirectional Forwarding Detection (BFD) via GAL/G-Ach channels
- RFC 6215 MPLS Transport Profile User-to-Network and Network-to-Network Interfaces
- RFC 6426 MPLS On-demand Connectivity Verification and Route Tracing
- RFC 6428 LSP and PW Connectivity Verification and Trace Route
- Static ARP and MAC Destination Address Resolution
- VCCV (Virtual Circuit Continuity Check) Ping and Trace Route
- VCCV BFD based PW Pseudo wire Switchover Multicast

**Network Management**

- Alarm Management & Monitoring Configuration
- Comprehensive Management via OneControl
- Enhanced CLI
- Integrated Firewall
- IPv4 & IPv6 Management Support Local Console Port
- Per-VLAN Statistics Port State Mirroring
- RADIUS Client and RADIUS Authentication
- Remote Auto configuration via TFTP, SFTP
- Remote Link Loss Forwarding (RLLF)
- RFC 959 File Transfer Protocol (FTP) RFC 1035
- DNS Client
- RFC 1213 SNMP MIB II
- RFC 1350 Trivial File Transfer Protocol (TFTP)
- Secure File Transfer Protocol (SFTP)
- RFC 1493 Bridge MIB
- RFC 1573 MIB II interfaces
- RFC 1643 Ethernet-like Interface MIB
- RFC 1757 RMON MIB - including persistent configuration
- RFC 2021 RMON II and RMON Statistics RFC 2131 DHCP Client
- RFC 3877 Alarm MIB
- RFC 4291 - IPv6 addressing (for Management Plane)
- RFC 4443 - ICMPv6
- RFC 4862 - Stateless address auto-configuration RFC 5905 NTP Client
- Secure Shell (SSHv2) SNMP v1/v2c/v3
- SNMP v3 Authentication and Message Encryption
- Software upgrade via FTP, SFTP Syslog with Syslog Accounting TACACS + AAA
- Telnet Server
- Virtual Link Loss Indication (VLLI) Zero Touch Provisioning

**Technical information (Common)****Agency Approvals:**

Anatel (Brazil)  
 Australia RCM (Australia/New Zealand) CE mark (EU)  
 EMC Directive (2014/30/EU) LVD Directive (2006/95/EC) RoHS2 Directive (2011/65/EU) ETSI 300 019 Class 1, 2, 2.2, 3.2  
 GR-1089 Issue 6 – NEBS Level 3  
 GR-63-CORE, Issue 4 – NEBS Level 3, NOM (Mexico)  
 VCCI (Japan)  
 Zone 4 Earthquake NRTL (NA)

**Physical Characteristics Dimensions:**

17.5" (W) x 22" (D) x 1.75" (H);  
 444mm (W) x 560mm (D) x 44mm (H)  
**Weight:** 29.6 lb (13.4kg)

**Power Requirements:**

Max Power Consumption 360W Typical Power Consumption 285W

**Standards Compliance**

**Emissions:**  
 CISPR 22 Class A CISPR 32 Class A EN 300 386  
 EN 55032  
 FCC Part 15 Class A GR-1089 Issue 6  
 Industry Canada ICES-003 Class A VCCI Class A

**Environmental:**

RoHS2 Directive (2011/65/EU)  
 WEEE 2002/96/EC

**Operating Temperature:**

+32F to +104F (0C to +40C)

**Storage Temperature:**

-40F to +158F (-40C to +70C)

**Humidity:**

Non-condensing 5% to 90%

**Immunity (EMC):**

GR-1089 Issue 6

**Power:**

CISPR 24  
 ETSI EN 300 132-2  
 ETSI EN 300 132-3

**Safety:**

ANSI/UL 60950-1 2nd edition 2007 CAN/CSA C22.2 No. 60950-1-07 EN 60950-1  
 IEC 60825-1 2nd edition (2007)  
 IEC 60825-2 3rd edition (2004)

**Service Security**

Broadcast Containment Egress Port Restriction  
 Hardware-based DOS Attack Prevention Layer 2, 3, 4 Protocol Filtering  
 User Access Rights Local user authorization

Ordering information (SAOS 10.x) – Router Configuration	
Part Number	Description
170-5170-910	5170,(4)100G QSFP28,(40)10/1G SFP+,SAOS 10.X,SYNC,(2)SLOTS AC OR DC PSU
170-0092-900	5162/5170,DC PLUGGABLE POWER SUPPLY,-48V
170-0093-900	5162/5170,AC PLUGGABLE POWER SUPPLY, WIDE RANGE 120/240V
170-0130-900	5170,SPARE PLUGGABLE FAN UNIT
Required OS Base System Perpetual Software Licenses	
S75-LIC-5170EO-P	SAOS BASE OS, ETHERNET & OAM SOFTWARE LICENSE FOR 5170, PERPETUAL
Optional OS Applications	
S75-LIC-5170MPLS-P	SAOS IP/MPLS APPLICATION PERPETUAL SOFTWARE LICENSE FOR 5171
S75-LIC-5170SYNC-P	SAOS SYNCHRONIZATION PERPETUAL SOFTWARE LICENSE FOR 5171
S75-LIC-5170100G-P	SAOS 100G PERPETUAL SOFTWARE LICENSE FOR 5171
S75-LIC-5170SEC-P	SAOS SECURITY PERPETUAL SOFTWARE LICENSE FOR 5171

Ordering information (SAOS 8.x) – Universal Aggregation Configuration	
Part Number	Description
170-5170-907	5170,(4)100G QSFP28,(40)10/1G SFP+,SAOS 8.X,SYNC,(2) SLOTS AC OR DC PSU
170-0092-900	5162/5170,DC PLUGGABLE POWER SUPPLY,-48V
170-0093-900	5162/5170,AC PLUGGABLE POWER SUPPLY, WIDE RANGE 120/240V
170-0130-900	5170,SPARE PLUGGABLE FAN UNIT
Required OS Base System Perpetual Software Licenses	
S70-0031-900	SAOS ETHERNET & OAM PERPETUAL SOFTWARE LICENSE FOR 5170
Optional OS Applications	
S70-0031-902	SAOS MPLS APPLICATION PERPETUAL SOFTWARE LICENSE FOR 5170
S70-0031-903	SAOS SYNCHRONIZATION PERPETUAL SOFTWARE LICENSE FOR 5170
S70-0031-905	SAOS SECURITY PERPETUAL SOFTWARE LICENSE FOR USE WITH 5170
S70-0031-904	SAOS 100G PERPETUAL SOFTWARE LICENSE FOR 5170

Visit the Ciena Community  
 Get answers to your questions



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**ciena**

## Attachment I: Addendum #1 – RFP for Wide Area Network Service E-Rate Form 470 # 230004858 Application



175 Bingham Road, Asheville, NC 28806

[www.buncombeschools.org](http://www.buncombeschools.org)

Monday, December 12, 2022

Addendum #1 – RFP for Wide Area Network Service E-Rate Form 470 # 230004858 Application Questions


To: Service Providers

From: Kimberly Buckner, Technology Bookkeeper/E-Rate Coordinator

Subject: Addendum #1 RFP for Wide Area Network Service E-Rate Form 470 # 230004858 Application Questions

The following documentation is hereby made a part of the original document.

Addendum #1 Includes: Service Provider questions and answers (1 page)

Addendum #1			
		<b>Request for Proposals for Wide Area Network Service</b> <b>E-Rate Form 470 # 230004858</b> <b>RFP Questions Submitted to BCS E-Rate Application Questions</b>	
<b>Questions Submitted pertinent to RFP E-Rate Project Application Form 470 #230004858</b>		<b>Buncombe County Schools Answers</b>	
Must the underlying transport service be Layer 3 such as MPLS or is it OK if the transport Layer 2 as long as there are routers and COS capabilities provided for all sites?		Yes, The network must support Layer 3. We will be using routing protocols to transport packets. Each location will be in a different ip subnet.	
Will a proposal still be considered if a respondent is unable to provide service to all locations?		No, the solution must provide service to all locations.	
The due date is nationally recognized holiday. Is this firm date or will consideration be given to changing it?		<b>We will adjust our timeline as follows:</b>	
		Posting of Form 470 and RFP	11/30/22
		Emailed Questions Received Until 3pm (EST)	12/9/22
		Answers to Questions Posted by 4pm (EST)	12/14/22
		<b>Proposals Due by 1:30pm (EST) (NEW DATE)</b>	<b>1/3/2023</b>
		<b>Public Bid Opening 1:30pm (EST) at BCS Central Office (NEW DATE)</b>	<b>1/3/2023</b>
		Bid Evaluation	1/4/2023
		Contract Awarded (BCS Board Meeting)	1/12/2023
		Winning Bidder Notified	1/13/2023
		Protest Deadline	1/28/2023



## Attachment J: Addendum #2 – RFP for Wide Area Network Service E-Rate Form 470 # 230004858 Revised Bid



175 Bingham Road, Asheville, NC 28806

[www.buncombeschools.org](http://www.buncombeschools.org)

Monday, December 12, 2022

Addendum #2 – RFP for Wide Area Network Service E-Rate Form 470 # 230004858 Revised Bid  
Due Date

To: Service Providers

From: Kimberly Buckner, Technology Bookkeeper/E-Rate Coordinator

Subject: Addendum #2 RFP for Wide Area Network Service E-Rate Form 470 # 230004858  
Revised Bid Due Date

The following documentation is hereby made a part of the original documents.  
Due to January 2, 2023 being the observed New Years Holiday, we are  
changing our Proposal due date to January 3, 2023.

The Request for Proposal timeline as follows:	
Posting of Form 470 and RFP	11/30/22
Emailed Questions Received Until 3pm (EST)	12/9/22
Answers to Questions Posted by 4pm (EST)	12/14/22
<b>Proposals Due by 1:30pm (EST) (NEW DATE)</b>	<b>1/3/2023</b>
<b>Public Bid Opening 1:30pm (EST) at BCS Central Office (NEW DATE)</b>	<b>1/3/2023</b>
Bid Evaluation	1/4/2023
Contract Awarded (BCS Board Meeting)	1/12/2023
Winning Bidder Notified	1/13/2023
Protest Deadline	1/28/2023

**WAN Form 470# 210003014 Bid Evaluation Matrix FY23**

Factors	Points Available	Conterra	ERC Broadband	Spectrum
Price of Eligible Services - 30%	30	30	28	0
Ineligible Cost Factors - 5%	5	5	5	0
Prior Experience With Vendor - 25%	25	15	10	18
Responsiveness/Local In-State Vendor 10%	10	5	10	10
Proposed Contract Terms & Conditions 15%	15	15	15	0
Technical Merit/Product Evaluation/Key Technical Features - 15%	15	15	15	15
<b>TOTAL</b>	<b>100</b>	<b>85</b>	<b>83</b>	<b>43</b>

**Wide Area Network Service**
**Winner: Conterra**
**Date: Jan 24, 2023**

Notes:

Spectrum did not include taxes and fees in their response					
		Conterra	ERC Broadband		Spectrum
		All inclusive pricing	Monthly fee ONLY	Includes USF & Telecom tax	Excludes taxes and fees
Price 5G Circuit (5 YR Contract)		Not Presented	\$1,050.00	\$1,448.19	\$910.00
Price 10G Circuit (5YR Contract) (10G All Sites Except Hubs)		\$903.21	\$1,200.00	\$1,655.08	\$1,220.00
Price 20G Circuit (5YR Contract) (10G All Sites Except Hubs)		\$1,785.96	\$1,500.00	\$2,068.85	\$1,700.00
Price 25G Circuit (5YR Contract) (10G All Sites Except Hubs)		\$2,314.54	\$1,600.00	\$2,206.77	Not Presented
Price 40G Circuit (5YR Contract) (10G All Sites Except Hubs)		\$3,228.51	\$1,750.00	\$2,413.65	\$2,690.00
Price 50G Circuit (5YR Contract) (10G All Sites Except Hubs)		\$4,036.99	\$1,800.00	\$2,482.61	\$2,990.00
Price 100G Circuit (5YR Contract) (10G All Sites Except Hubs)		\$5,490.30	\$2,000.00	\$2,758.46	\$4,040.00
Price 5G Circuit (5 YR Contract) (Varied G/Site)		\$737.42	Same as listed above		Same as listed above
Price 10G Circuit (5YR Contract) (Varied G/Site)		\$963.49	Same as listed above		Same as listed above
Price 20G Circuit (5YR Contract) (Varied G/Site)		\$1,785.96	Same as listed above		Same as listed above
Price 25G Circuit (5YR Contract) (Varied G/Site)		\$2,314.54	Same as listed above		Same as listed above
Price 40G Circuit (5YR Contract) (Varied G/Site)		\$3,228.51	Same as listed above		Same as listed above
Price 50G Circuit (5YR Contract) (Varied G/Site)		\$4,036.99	Same as listed above		Same as listed above
Price 100G Circuit (5YR Contract) (Varied G/Site)		\$5,490.30	Same as listed above		Same as listed above
Surcharges, Taxes, Fees		Pricing above includes taxes (all inclusive)	Pricing above EXCLUDES taxes and fees - listed separately	Pricing above INCLUDES USF (updated quarterly, currently 28.9%) & Telecom taxes	Pricing above EXCLUDES taxes and fees - taxes and fees not listed in proposal

**WAN Form 470# 210003014 Bid Evaluation Matrix FY23**

Factors	Points Available	Conterra	ERC Broadband	Spectrum
Service All Sites		Yes	Yes	Yes
60 Month (5 year) Term + Extension Term		60 Month Term + up to (10) One-year extensions	60 Month Term + up to (10) extensions	60 Month Term + (24) Month extension
Monitoring		24 x 7 x 365	24/7/365	24x7x365
Response time		<15 Minutes	<15 Minutes	<15 Minutes
Service level Agreement Criteria		>99.99% / SLA Guarentee 10ms	99.99%	>99.99%
Latency		<5 millisecond round trip	"Latency less than 4 milliseconds" ERC Understands and will Comply	<10ms
Jitter Commitment		<2 milliseconds	"Low latency, low jitter, low bit-error" ERC Understand and will Comply	<2ms
Bandwidth Guarantee		Each forty-four (44) remote sites will connect to the private network with a minimum symmetrical bandwidth (upstream and downstream) speed of 5 Gbps upgradable up to 100 Gbps.	Each location will be configured to the subscribed level of bandwidth with no bursting capabilities.	Unless otherwise set forth in an Attachment or service level agreement, Spectrum will use commercially reasonable efforts to provide the Services to Customer twenty-four (24) hours per day, seven (7) days per week. Spectrum does not offer burstable bandwidth
Throttling		Conterra does not Throttle	ERC Understands and will Comply	Spectrum does not block, slow down, or discriminate against lawful internet content, nor does Spectrum engage in unlawful paid prioritization
Bit-Error Rate Commitment		<0.1% between designated end points	ERC Understands and will Comply	Not Specified
Prioritization		Level 1 Critical - 15 mins to respond to customer with trouble ticket # & Info Level 2 Major - 15 mintues to respond to customer with trouble ticket # & info Level 3 Minor - On an alert from Customer	ERC Understands and will Comply	Priority 1 - total loss
Mean Time to Repair		<4 hours	"Mean time to repair 4 hours" ERC Understand and will comply	4 hours
Scheduled Maintenance Reporting Commitment		>5 days	No less than 5 business days prior	Typically ten days prior notice

**WAN Form 470# 210003014 Bid Evaluation Matrix FY23**

Factors	Points Available	Conterra	ERC Broadband	Spectrum
Credit Allowances		<p>Customer must request a credit allowance for a Service Outage within five (5) business days after the Service Outage occurs or any claim for an allowance may be waived. Unless otherwise specifically stated, Service Outages are not aggregated for purposes of determining the credit allowance.</p> <p>Upon written request of CUSTOMER, for each minute in the Service Window during a calendar month for which CONTERRA fails to satisfy its Service Commitment, CONTERRA shall credit to CUSTOMER's account the Credit Percentage listed in the table above.</p>	<p>Duration of Service Interruption in hours/730 hours) x Monthly Recurring Charge (MRC) for impacted service component</p>	<p>Customer must submit credit requests to Spectrum Enterprise within (30) days of calendar month in which the SLA Target was missed:</p> <p>Service Availability 30%</p> <p>Mean Time to Restore (MTTR) between 4-8 hours 4% ; &gt;8 hours 10%</p> <p>Latency / Frame Delay (roundtrip) 5%</p> <p>Jitter / Frame Delay Variation 5%</p> <p>Packet Loss / Frame Loss 5%</p>
Trouble Contact		<p>Conterra maintains local trained cable locate and repair crews to terminate and test the fiber network.</p>	<p>10 member team residing in Asheville/Greater Asheville/Buncombe Area</p>	<p>On-site technicians are typically Spectrum employees focused on educational and business customers and who reside locally to provide the quickest turnaround possible.</p>
Online Portal for visibility		Yes - Web Portal monitoring	Yes - private web-portal	Yes - Spectrum Enterprise client portal
Topology		Incomplete ring 87%	100% Ring	100% EP LAN
Transition Time		N/A - Current Provider	Estimated 80% completed by June 1st if started in February	Spectrum's implementation goal is 90 to 120 days
Will pay any MTM charges incurred during transition?		N/A - Current Provider	ERC Understands and will Comply	<b>NO - will NOT pay MTM fees</b>

Calculated cost for monthly & yearly cost of WAN service for Buncombe County Schools 46 entities/44 sites. E-Rate Form 470# 230004858 FY23					
School Entity Number	School Name	Gbps	Conterra	ERC	Spectrum
30282	A C Reynolds High	10	\$903.21	\$1,655.08	\$1,220.00
30283	A C Reynolds Middle	10	\$903.21	\$1,655.08	\$1,220.00
30099	Avery's Creek Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30107	Barnardsville Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30110	Black Mountain Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30108	Black Mountain Primary	10	\$903.21	\$1,655.08	\$1,220.00
16020656	Buncombe Co Transportation Department	10	\$903.21	\$1,655.08	\$1,220.00
16050074 & 16020654	Buncombe County Early College & Middle College High School	10	\$903.21	\$1,655.08	\$1,220.00
30130	Candler Elementary	10	\$903.21	\$1,655.08	\$1,220.00
222140	Cane Creek Middle	10	\$903.21	\$1,655.08	\$1,220.00
16023519 & 30303	Central Office & Martin L. Nesbitt Disc Academy	50	\$4,036.99	\$2,482.61	\$2,990.00
30290	Charles C Bell Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30111	Charles D Owen High	10	\$903.21	\$1,655.08	\$1,220.00
30228	Charles D Owen Middle	10	\$903.21	\$1,655.08	\$1,220.00
16061303	Charles T. Koontz Intermediate	10	\$903.21	\$1,655.08	\$1,220.00
30308	Clyde A Erwin High	10	\$903.21	\$1,655.08	\$1,220.00
30294	Clyde A Erwin Middle	10	\$903.21	\$1,655.08	\$1,220.00
30225	Community High School	10	\$903.21	\$1,655.08	\$1,220.00
30299	Emma Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30155	Enka High	10	\$903.21	\$1,655.08	\$1,220.00
17001392	Enka Intermediate School	20	\$1,785.96	\$2,068.85	\$1,700.00
30133	Enka Middle	10	\$903.21	\$1,655.08	\$1,220.00
30158	Fairview Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30098	Glen Arden Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30288	Haw Creek Elementary	10	\$903.21	\$1,655.08	\$1,220.00
222138	Hominy Valley Elementary	10	\$903.21	\$1,655.08	\$1,220.00
16061304	Joe P. Eblen Intermediate	10	\$903.21	\$1,655.08	\$1,220.00
30293	Johnston Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30184	Leicester Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30252	North Buncombe Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30251	North Buncombe High	10	\$903.21	\$1,655.08	\$1,220.00
30253	North Buncombe Middle	10	\$903.21	\$1,655.08	\$1,220.00
232457	North Windy Ridge	10	\$903.21	\$1,655.08	\$1,220.00
30276	Oakley Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30129	Pisgah Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30291	Sand Hill-Venable Elem	10	\$903.21	\$1,655.08	\$1,220.00
30281	T C Roberson High	10	\$903.21	\$1,655.08	\$1,220.00
30100	Valley Springs Middle	10	\$903.21	\$1,655.08	\$1,220.00
30226	W D Williams Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30250	Weaverville Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30249	Weaverville Primary	10	\$903.21	\$1,655.08	\$1,220.00
30295	West Buncombe Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30280	William W Estes Elementary	10	\$903.21	\$1,655.08	\$1,220.00
30284	Woodfin Elementary	10	\$903.21	\$1,655.08	\$1,220.00
	<b>Total Monthly Cost:</b>		<b>\$43,757.77</b>	<b>\$74,064.82</b>	<b>\$55,930.00</b>
	<b>Total Yearly Cost:</b>		<b>\$525,093.24</b>	<b>\$888,777.84</b>	<b>\$671,160.00</b>
					Spectrum's pricing does NOT include taxes and fees