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Broadband Enhancement

RFP Response for

Vance County, NC

Vance County Broadband Initiative (VCBI)

October 18, 2018

Open Broadband, LLC | PO Box 723. Waxhaw, NC 28173 | 704-237-0102
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Legal form:
Open Broadband, LLC is a North Carolina Limited Liability Corporation

FEIN:
81-4019167

Tax Year: Calendar

FCC Registration Number (FRN): 0026202879.

North Carolina Secretary of State: C2016 270 00880

/s/ Alan Fitzpatrick
Alan Fitzpatrick – CEO

/s/ Kent Winrich
Kent Winrich - CTO

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EXECUTIVE SUMMARY

Open Broadband, LLC (http://openbb.net) is a privately held, for-profit ISP headquartered in Waxhaw, NC. We offer a hybrid fiber and fixed-wireless broadband solution to government, education, business, and residential users, with a specific focus on unserved and underserved areas in North Carolina.

We were selected for a Pilot Program in the RFI process by Wayne County in 2017 and have since deployed service centered in Mount Olive in the southern part of the county, spilling over into Duplin County. We also announced gigabit service in Goldsboro. Open Broadband was recently selected as the winner of the RFP process for a Public-Private-Partnership with Orange County where we are building a network to reach the underserved areas of the county.

Our service includes residential and business internet from 25Mpbs to 1000Mbps, and public Wi-Fi Zones for towns, universities, and parks. We provide service to various municipal entities including town halls, police stations, parks and recreation, public works, fire stations, and an airport. Our gigabit (1000 Mbps) service is provided to entrepreneurship centers in Gaston and Mecklenburg Counties, and to business clients like Hannon Orthodontics in Belmont NC.

Open Broadband is engaged in economic development in the communities in which we work. Our CEO founded CharlotteHeartsGigabit.com, one of the leading advocacy groups in the country on promoting gigabit broadband, and NC Hearts Gigabit, the equivalent statewide effort which holds an annual interactive conference at the NC Rural center. Our founders spoke at **Gigabit City Summit** and **Gigabit Cities Live** events, Broadband Communities conferences, the Connect(x) Wireless Conference, and brought Mozilla to Charlotte to host a Gigabit 101 Workshop. We co-hosted a 5 city **Gigabit Hackathon** (GIGHacks) in Charlotte, and emceed an ethical hacking competition in Wilson NC.

Our CEO is on the City of Charlotte's **Digital Inclusion Steering Committee**, focusing on closing the digital divide. A member of our team is an experienced trainer of **Digital Literacy and Digital Inclusion** programs. We offer a series of classes to help residents leverage internet access for job search, medical information, education, and other applications critical to being successful in society today. We believe broadband infrastructure is an essential need, similar to electricity, and everyone needs home access.

Open Broadband was founded by 2 veterans of the telecom industry each with 25+ years of operations providing broadband service. In 2016 we saw the great need for broadband connectivity in underserved areas and decided to depart our employers to form a company, Open Broadband LLC, to address it. The company is partnered with Lumos Networks, a 100+ year old fiber-based service provider in the Mid-Atlantic region for our data center and internet upstream connectivity, and the town of Wilson NC for our customer call center.

A key partner to Open Broadband is Lumos Networks, who recently merged with Spirit Communications. The combination of Spirit Communications and Lumos Networks creates a super-regional fiber bandwidth network of over 21,000 miles of fiber in the Mid-Atlantic and Southeast United States. The company has more than 9,000 on-net locations and 45,000 near-net locations across forty-four markets in nine states. The Company offers a full range of Ethernet, MPLS, dark fiber, advanced voice and cloud services to thousands of carrier, enterprise, data center and government customers. Nearly 10,000 enterprises, over 400 government agencies, and 300 school districts rely on us for their communications needs.

Both Lumos Networks and Spirit Communications are EQT portfolio companies. EQT is a global investment group with a demonstrated commitment to supporting market-leading technology businesses and to taking a long-term approach towards value creation for all stakeholders. EQT, which has raised over €30 billion for approximately 20 different funds, has portfolio companies in the U.S., Europe and Asia, with which it partners to achieve sustainable growth, operational excellence, and market leadership. EQT is committed to investing over $700 Million in capital over the next several years to grow this super-regional network.

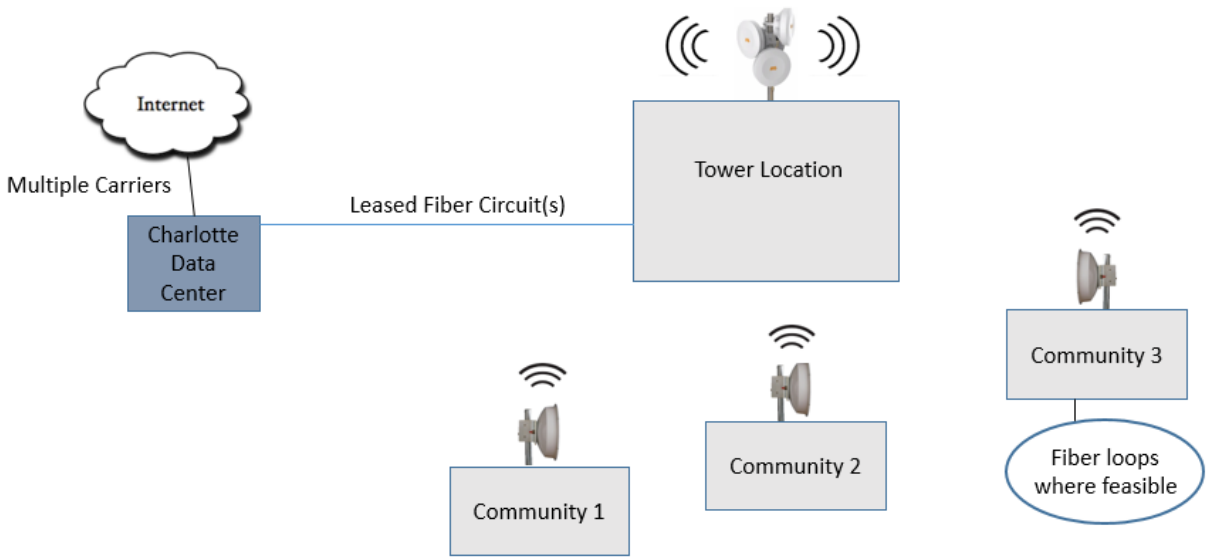
This RFP response is on behalf of Open Broadband LLC, however for fiber projects we partner with Lumos/Spirit. Additional information on their fiber capabilities are attached as Exhibits to this RFP response.

Open Broadband Network Design

We use a hybrid technology of fiber and fixed-wireless. It consists of the following components:

- Data Center with multi-carrier BGP routed internet upstream connections.
- Leased point-to-point fiber circuit(s) from the data center to tower site(s) in Vance County (to be negotiated). Fiber circuit will be ordered from one of the available carriers: Spectrum, CenturyLink, Lumos, etc. The fiber circuit can transmit 10 Gbps today, but the ordered capacity will be based on the initial 3-year demand, and grown as traffic grows. The fiber backhaul to our data center future-proofs the network for growth.
- Fixed Wireless antennas operating in various frequencies, including 24 GHz and 11Ghz for backhaul and 5 GHz and below for customer connections. This includes the licensed 3.5-3.7GHz spectrum used by LTE and the upcoming release of the CBRS spectrum, and selected use of 2.4Ghz where applicable. Symmetric speeds can be provided on 5 GHz and above radios, and Open Broadband has the majority of clients using symmetric service at 25 Mbps, 50 Mbps, and 100 Mbps speeds. To a lesser degree we have customers using us for symmetrical 200 Mbps, 300 Mbps, and 1000 Mbps. In non-line-of-sight applications we use 3.65 Ghz and/or 2.4 GHz spectrum, which operates most efficiently today at 25 Mbps x 3 Mbps. We purchase these radios “off-the-shelf” from the manufacturers. As radio technology continues to improve we will upgrade our fixed-wireless radios to faster speeds. We are hopeful that the radio manufacturers will develop symmetric 100 Mbps service in the 3.65 GHz (CBRS) spectrum in the future.

- Select use of fiber loops where clusters of homes/businesses make it economically viable



We use a hybrid network design as we've found it to be the most cost effective, fastest to install technology that results in the fastest broadband speeds and lowest cost to consumers. Fiber alone often does not make economic sense in rural areas due to the high cost of installation and having to pass every property on the route. Wireless alone can have limitations on bandwidth and network expansion. A hybrid approach takes the best of each technology, using fiber for high bandwidth to the data center and community clusters, while using last mile fixed-wireless to quickly turn up just those users who subscribe to the service. This is a scalable solution that is easily grown to meet demand 20 years in the future.

Open Broadband Service Timeline

It typically takes 6 months from the time of signed service agreement to turn-up of the first service in a new community. See Exhibit 1 for a high-level overview of the steps from month 1 to month 6.

Open Broadband Service Availability

Our network is designed with the following specifications:

- Data Center: SSAE 16 compliant, PCI DSS compliant, and HIPAA compliant. The data center is staffed 24x7x365 and has a 99.999% network uptime guarantee.
- Fiber circuits are on carrier backbones with a 99.999% network uptime guarantee.
- Fixed-wireless antennas are rated for 99.99% uptime.
- Fixed-wireless circuits are designed to withstand typical weather patterns including heavy rain, winds, and snow.
- 11GHz fixed-wireless backhaul circuits are licensed links to avoid interference.

- Consumer connections in the 3.5 – 3.7 GHz and 2.4GHz spectrum are designed to work through, or around obstructions such as heavy foliage.

Open Broadband Service Level Agreement

For our business and government customers we offer a money back SLA as follows:

Network Uptime – Wireless circuit

Length of 100% packet loss	**Credit Against Monthly Services**
0 - 120 minutes	0%
120-240 minutes	10%
240-360 minutes	25%
360 minutes and above	50%

The details of our business class SLA can be found here, which is a link at the bottom of our website: https://openbb.net. We are willing to negotiate specific SLA requirements for clients. (Lumos/Spirit SLAs are shown in the Exhibits.)

It should be noted that our dedicated fixed-wireless connections are 128-bit encrypted. Free public Wi-Fi zones are not.

Open Broadband Service Offerings in Vance County:

A key differentiator in our service is we do not force the customer to bundle services in order to get a low rate. Our rate is a stand-alone price for the service. Unlike the large carriers we do not use 'teaser rates' which go up after 12 months. Our price is the price, and for residential users there is typically no contract. Also there are no data caps, no overage charges, and no throttling. We offer flat rate billing with no surprises.

Our intentions are to provide the rural areas in our state with broadband speeds and prices as close as possible to the metro areas, with a starting point of less than $50/month for residential service. It should be noted by the county that some users may be located in areas where there are technical challenges. Our intention is to offer service to everyone, but there are likely to be some users that require additional build costs. We prefer not to charge this upfront to the user, but we may require a term commitment from the user in order to recoup the additional costs to serve.

Open Broadband offers internet service speeds starting at 25 Mbps and going up to 1000 Mbps. We can deliver symmetrical speeds up to 300 Mbps within 5 miles of an antenna with clear line-of-sight. We can deliver symmetrical gigabit service for clear line-of-sight customers within 2500 ft. of an antenna. Where possible we offer service in symmetrical model. This applies to all fiber customers and line-of-sight fixed-wireless customers. Service is available to anyone; resident, business, school, or government agency.

Open Broadband is agreeable to develop unique pricing and/or packages for key community stakeholders and populations (e.g., government, community colleges, universities and K-12

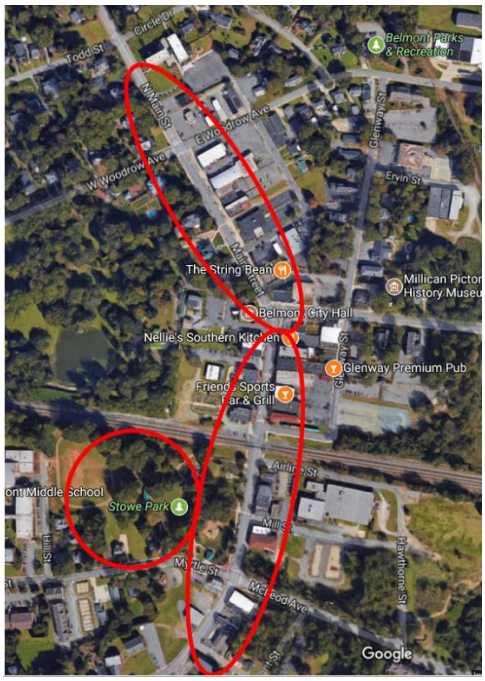
facilities. Several of these stakeholders in other counties have signed with Open Broadband as a result of our superior value proposition. See section later in this document on special pricing for the locations listed in the RFP.

Public Wi-Fi Zones: Open Broadband provides free public Wi-Fi Zones in parks, communities, and business areas. We believe public access in common areas is one of the most cost effective ways to bridge the Digital Divide; getting broadband service in the hands of more people, faster. Wi-Fi Zones can be added in just about any area selected by the county, and we propose one for the business district in downtown Henderson in this proposal. A user does not need to be a customer of Open Broadband to utilize free public Wi-Fi Zones.

We discourage businesses from using free public Wi-Fi zones by establishing sign-in credentials and auto time-out after an hour. For business use we offer dedicated, 128-bit encrypted service. Wi-Fi Zones can also include IP cameras for surveillance capability for law enforcement, and we can implement a complete IP surveillance system as needed.

We also offer a Data Analytics service for Wi-Fi zones (described below) so the county/town can measure the results of the service and can control access pages, advertisements, and announcements.

A map of the downtown Belmont Wi-Fi zone we deployed, covering north and south Main St and Stowe Park is shown here:



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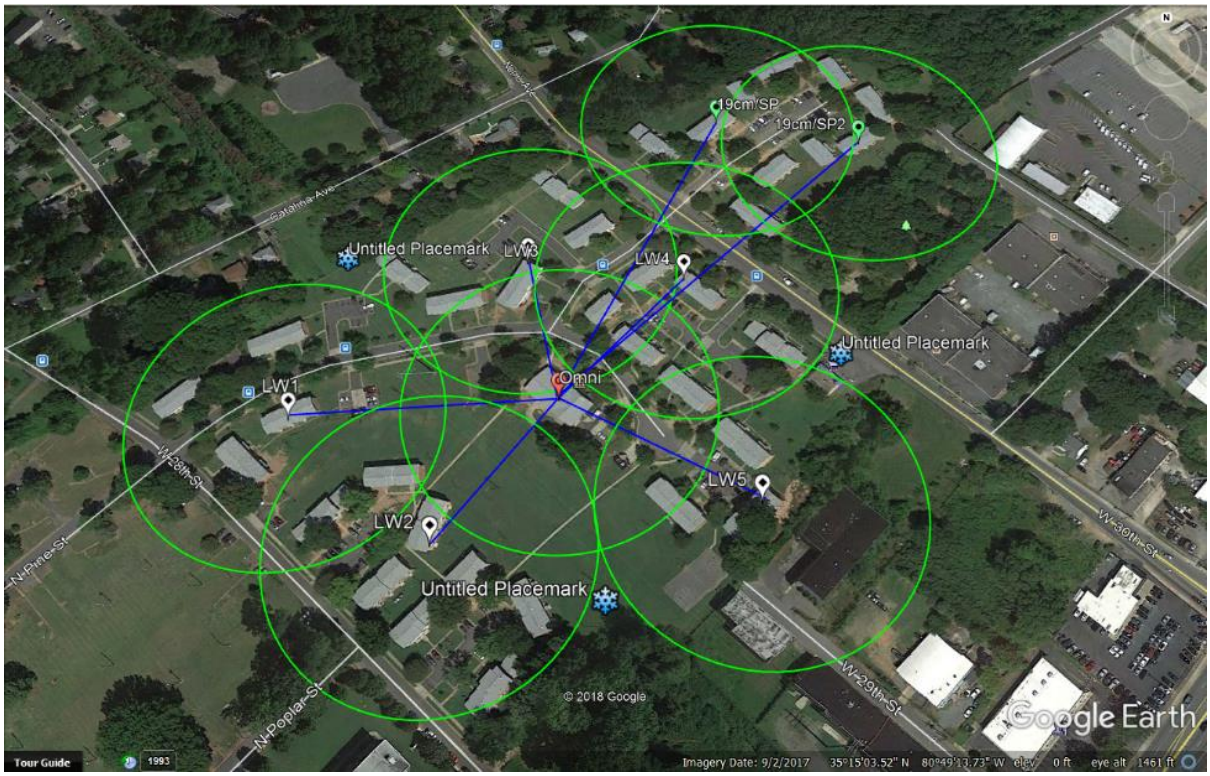
Open Broadband manages free public Wi-Fi zones in Belmont, NC, Mount Olive, NC, the sports complex in Berkeley Park in Goldsboro, NC, Romare Bearden Park in Charlotte, and free Wi-Fi coverage of the sports complex at Pfeiffer University's campus in Stanly County.

We also serve Public Housing communities. Open Broadband contracted with the City of Charlotte to provide free public Wi-Fi service to 136 family units in the Dillehay Courts community. Residents can access the network from any phone/tablet/laptop simply by selecting the Wi-Fi SSID and logging in. Similar service can be provided to Public Housing communities in Vance County. A diagram of the Dillehay Courts Wi-Fi coverage is shown here:



Access to County Controlled Assets

As described in the RFP, Open Broadband requests access to vertical assets that are owned by the county or allow county providers to access them. We request that Vance County leverage existing business relationships with some or all of its partner organizations, e.g., municipalities, schools, colleges and universities, to facilitate access agreements. Open Broadband also requests the county to provide assistance and support to Open Broadband if/when applying for North Carolina or Federal grants used to address unserved and underserved areas of Vance County.

Co-working spaces

Open Broadband loves to serve the entrepreneurial community, We provide gigabit service to Packard Place in Charlotte, gigabit and Wi-Fi service to TechWorks in Belmont NC, and high-speed Wi-Fi to Tabbris Co-working in Charlotte (they plan to order gigabit from us in 1Q19). We frequently speak at startup events and would be happy to support the Vance County ecosystem in a similar fashion.

Business districts, business parks, and residential communities

The vast majority of our targeted unserved and underserved areas are rural, however there are pockets where neighborhoods and businesses are clustered. For each of these areas we evaluate the need of the users and will deploy either a fixed-wireless solution or a GPON fiber-to-the-premise solution. The latter will require a high adoption rate as cost is based on buildings passed, not just those that sign up for service. For this reason, we are likely to initially provide service in these areas with fixed-wireless until high adoption rates make it more attractive for fiber.

If/when fiber is an attractive investment in these areas, our plans are to install one or more outdoor enclosures with GPON fiber splitters designed for 16:1 up to 32:1. From the enclosures we build a network of fiber optic cables in conduit (if buried) or on poles if aerial. An optical network terminal is placed on the side of each business or home. Our use of GPON technology is similar to how Google Fiber and Ting Internet deploy their fiber-to-the-premise network.

Roles and Responsibilities

- Network design – Open Broadband
- Network construction – Open Broadband, our partner Lumos/Spirit, and selected vendors for tower climbing and fiber builds as needed
- Network operations and management – Open Broadband and Lumos/Spirit
- Customer support – Open Broadband and Greenlight
- Publicly available information – Open Broadband
- Marketing and outreach – Open Broadband

Technology

We believe in solving the customer need regardless of technology, and will deliver service over fixed-wireless, fiber, or a hybrid depending on the situation. Our fiber-to-the-home solution leverages the extensive experience of Lumos and Spirit.

Our fixed-wireless service leverages a variety of spectrums, depending on the area being covered. These options include licensed LTE/CBRS 3.5 GHz, non-licensed bands of 2.4GHz, 5GHz, 24GHz, and 60-70 GHz, and licensed bands at 11GHz, and 80 GHz. The wireless design consists of placing antennas on tall structures/towers and beaming signals to another antenna at a customer location. For close-in line-of-sight customers we can deliver 1000 Mbps speed using 60-80 GHz. For line-of-sight customers farther from the tower, we are delivering symmetrical speeds up to 100 Mbps using the 5GHz frequency.

Fixed-wireless technology is impacted by vegetation and line-of-sight factors. In areas with heavy vegetation we have to use the lower frequencies (2.4 GHz, or LTE/CBRS at 3.5 GHz), and as a result, target 25 Mbps down by 3 Mbps up in those areas. Most of the unserved and underserved areas in Vance County fall into this category.

Fixed wireless radios and antennas are readily available from distributors in North Carolina, including Double Radius in Indian Trail. Vendors include Ubiquiti, IgniteNet, Baicells, RF Elements, Mimosa, Cambium, and Carlson. The technology we are deploying is state of the art with an expected minimum life span of 5 years. Open Broadband will install maintain, and upgrade its network equipment as needed to maintain high service levels. Open Broadband owns all network equipment and does not expect the county to hold a lease on any equipment.

Video and phone service

Video services are not provided by Open Broadband, but we will support the wide variety of commercially available over-the-top service options such as Sony VUE, Sling.tv, YouTube.tv, Netflix and others. Our high-speed service easily accommodates multiple video streams, allowing households to have multiple video streams happening simultaneously.

For phone service we recommend several VoIP options that include an ATA (analog telephone adapter) that connects to our internet service. Service is less than $20/month/line. Other solutions such as magicJack offer a full year of VoIP service for $35.

Rather than provide our own video and VoIP services we simply point customers to these commercially available offerings which work well with our broadband service.

Customer Support

Through our relationship with the City of Wilson, the 24x7x365 Call Center at Greenlight supports 80% calls answered within 30 seconds. Users may also submit support requests 24x7x365 via the website. Some service requests can be resolved in a self-service manner by the FAQs, others within minutes over the phone with the call center agent. Other service requests may require on-site support (e.g. storm damage) and thus longer repair times including next business day.

We strive to provide superior customer service, and are offering SLAs to businesses and anchor institutions as described in the next section. Storm damage, downed trees, lightning damage, etc. will result in longer times to repair. Our overall approach to meet or beat the SLAs offered by the major ISPs in the metro areas (Spectrum, CenturyLink, AT&T, etc.).

Business and anchor institutions (government, schools, etc.) will receive priority restoration service. These customers have active monitoring and proactive identifications of outages, enabling Open Broadband to addresses issues even prior to the customer becoming aware they have an issue. We offer these groups an SLA of 99.95% service availability, with the ability to receive service credits if we are unable to perform (excepting Acts of God events). These

groups will also receive out-of-business-hours on-site support per our agreements with our local maintenance crews.

Residential customers have the 24x7 support previously described, and we will make best efforts to resolve troubles as fast as possible. While individual homes are not proactively monitored or include SLAs, the network as a whole is proactively monitored by Open Broadband support. We will take action on service issues as identified through our network alarming, prior to any user trouble submission.

The Call Center is staffed 24x7x365, and all customers (SLA and non) call into this center. All calls are immediately handled according to the nature of the trouble and the call center agent's ability to resolve it over the phone. All calls not resolved by the agent are dispatched to either Open Broadband's technical team, or our on-site maintenance crews. Normal hours of operation of these groups is Monday through Friday from 8 am – 5 pm, with the exception of Tier 1 and Tier 2 clients identified below.

Priority is first given to Tier 1 organizations, such as hospitals, government, schools, airports, and other important anchor institutions. Tier 2 priority are business clients, with the priority being their hours of operation. Service restoration efforts may require the business to have a person on-site, and will therefore need to be scheduled. We support on-site, off-hours/nights/weekends for Tier 1 and Tier 2 clients.

Tier 3 priority is standard residential service, and could possibly require a site visit and need to be scheduled. This tier includes the 24x7x365 phone support previously mentioned, as well as the ability to email tickets and use of the FAQ section on the website. However, in order to provide low rates to our customers, this tier level does not include night/weekend on-site support. If/when needed, on-site support for residential issues will be the next business day.

Key Management and Staff

Key Open Broadband, LLC resources include:
Alan Fitzpatrick, CEO, LinkedIn: https://www.linkedin.com/in/alanfitzpatrick/
Kent Winrich, CTO, LinkedIn: https://www.linkedin.com/in/kentwinrich/
Mario Aldayuz, Director of Network Engineering
Tom Roberson, Area Manager Western NC
Jeff Pressly, Area Manager Eastern NC

See the About Us tab on our website for additional background information on the staff.

Depending on the scope of work Open Broadband is selected in Franklin, Granville, and Vance Counties, we may appoint a new Area Manager with general authority to manage the territory.

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Backgrounds of the Open Broadband, LLC Founders:

Alan Fitzpatrick, CEO, has over 25-years' experience (LinkedIn Profile: https://www.linkedin.com/in/alanfitzpatrick):

- COO of DC74 Data Centers in Charlotte, NC, providing internet service from 50Mb to 10Gb to business customers in the greater Charlotte region. While at DC74 Alan spearheaded the build of the region's first internet peering exchange.
- Global VP of Network Services at ACN in Concord NC. Led the engineering and operations functions for the company serving residential users in the U.S., Canada, Puerto Rico, and 14 countries in Europe.
- Senior Vice President of US LEC Corp., a competitive telecom provider based in Charlotte NC, serving internet to business customers in 27 cities, from Miami to New York to New Orleans. Alan led the Engineering, NOC, and Vendor Management functions for the publicly traded company.
- Prior to US LEC Alan was VP of Engineering for NET-tel Communications in Washington DC, Director of Engineering for CTC Communications in Concord, NC, and a variety of functions in engineering and operations for AT&T in Georgia and Florida servicing both residential and business internet customers.

Kent Winrich, CTO, has over 25-years' experience (LinkedIn profile: https://www.linkedin.com/in/kentwinrich):

- Director of Broadband and Infrastructure at Fibrant (City of Salisbury municipal network), providing internet service from 10Mb to 10Gb to residential, educational and business customers in Salisbury NC.
- Senior Engineer at Hibernia Media. Responsible for the complete European Fiber Optic Network for Hibernia, from Dublin to Moscow, working with large data users, and provided service from 50Meg to 100Gigs. Kent led the worldwide engineering team as well as planning for bandwidth needs throughout Europe.
- Head of Broadcast Services at Vidyo. The VidyoCast division of Vidyo offered broadcast quality video encoding over the open internet. He was responsible for all connectivity and engineering worldwide, and performed in countries such as India, New Zealand, Peru, Singapore, South Africa, and throughout Europe and the US.
- Director of Engineering at Clear Channel. Kent was in charge of all transmission facilities from high power AM stations, to FM to Microwave, as well as all real estate assets and all things technical. He was also responsible for interacting with the FCC to ensure all FCC rules were followed and was responsible for every FCC license.
- Kent also has experience at BAE Systems, where he was stationed at Ft Bragg, performing propagation predictions, antenna design, as well as training soldiers on RF and electrical theory.

As evidenced by the background specifics identified above, the Open Broadband founders have a great deal of experience building and operating some of the highest quality broadband networks in the world. We've served institutions and organizations with the highest uptime requirements, and built Network Operations Centers to support these high demands. We understand how to alarm for network conditions, and to build processes for technical support and troubleshooting.

Open Broadband has built a team of highly experienced telecom veterans with expertise in wireless and fiber. We are uniquely equipped to bring the latest in high-speed broadband to underserved markets, while instilling the same level of customer and technical support required by the largest companies in the world. We have spent a lifetime in the craft.

Background of the company

Open Broadband, LLC is a privately owned, for-profit ISP, organized in the state of North Carolina in 2016, and financed through private investors. (North Carolina Secretary of State: C2016 270 00880). Our fiber and data center partner is Lumos Data Centers, part of Lumos Networks, a 100+ year old fiber-based company headquartered in Virginia. We design and build a hybrid fiber and fixed-wireless network that brings broadband to rural North Carolina. Our network design utilizes fiber from our data center to towers hosting our fixed-wireless antennas. We also deploy fiber to select neighborhoods and areas that justify the cost. We believe in getting fiber as deep into the community as possible, and serve the last mile in a hybrid of point-to-multipoint wireless and fiber-to-the home.

As experienced telecom industry veterans, we've built personal connections with most of the major carriers in the U.S. Our data center relationship with Lumos Data Centers in Charlotte gives us access to 12 carriers for internet upstream connectivity and for leasing point-to-point fiber circuits. We have carrier contracts with Spectrum, Level 3, and Spirit, and have access to several others including AT&T, Windstream, and CenturyLink. For Customer Call Center operations, we are partnering with the City of Wilson to use the same call center used for the Greenlight broadband network.

Alan Fitzpatrick and Kent Winrich are the two founders of Open Broadband, LLC, and the company has additional private investors. Open Broadband is happy to provide copies of our North Carolina organization documents and financial documents upon award of the RFP.

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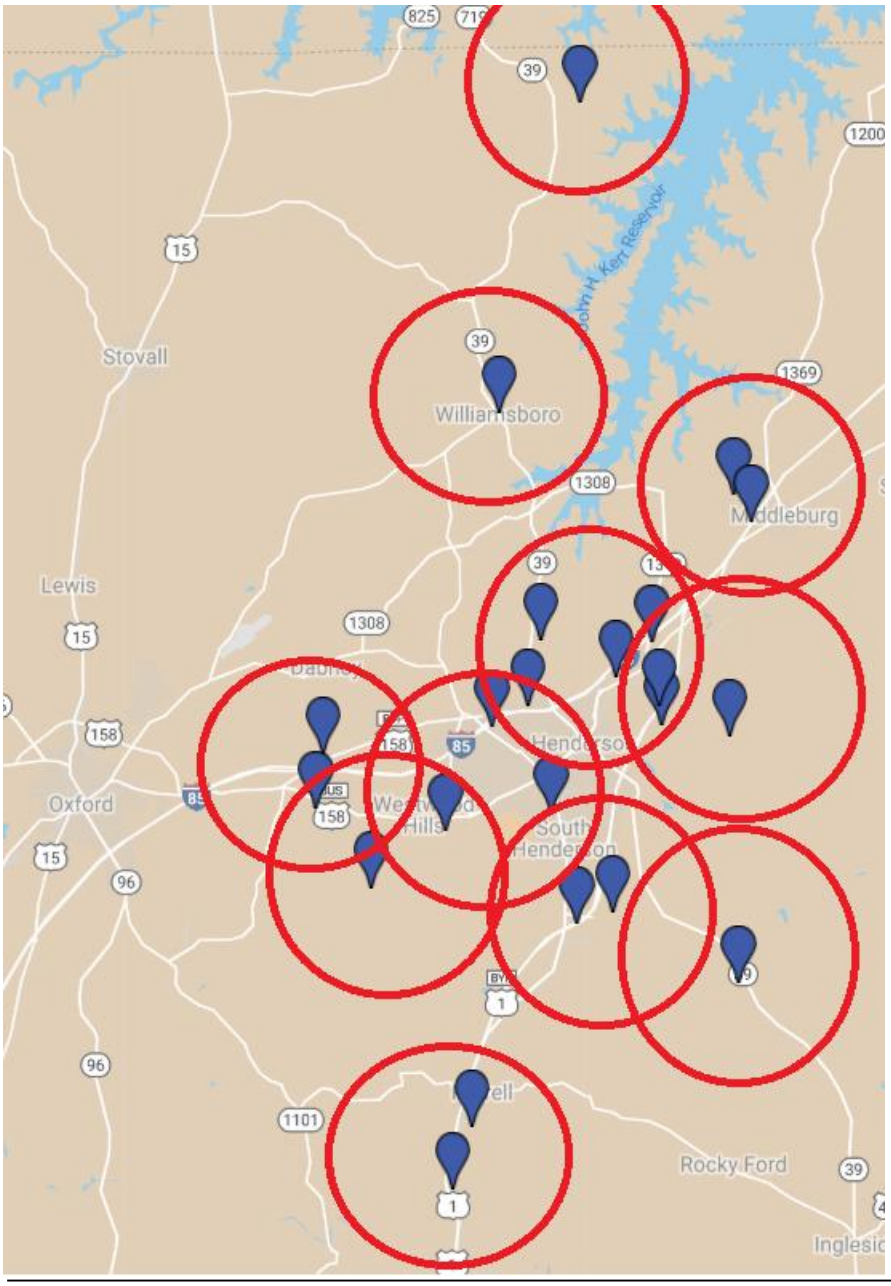
Open Broadband's Proposed Service Areas in Vance county

County-wide

Open Broadband will offer to provide a near county-wide fixed-wireless network designed to cover 80-90% of the population, including areas largely underserved. In order to achieve this objective, we will need access to 11 towers as identified in the RFP, with service areas shown on the diagram below:



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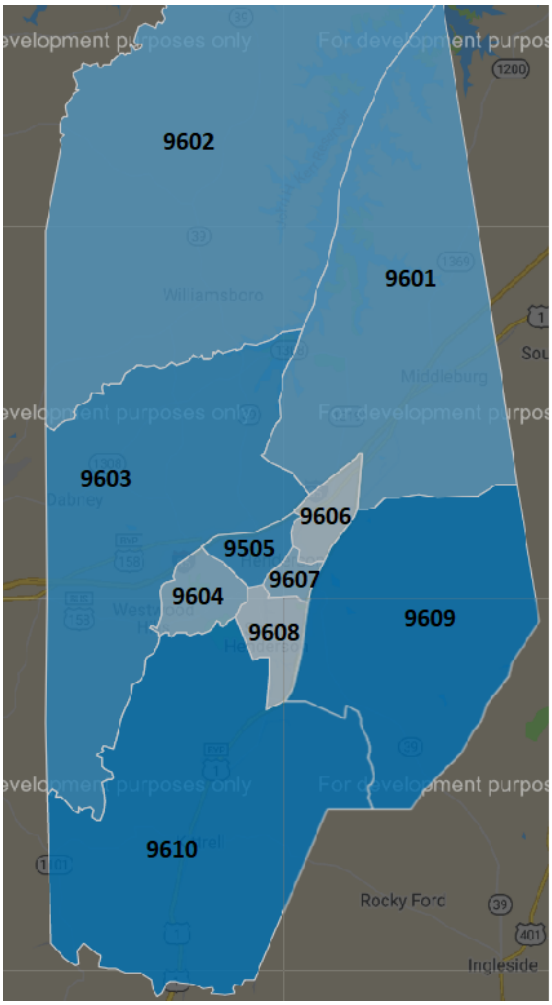
These towers will be equipped with fixed-wireless radios and antennas operating at the 3.65 GHz non-line-of-sight spectrum to deliver a minimum of 25Mbps x 3Mbps internet service. The towers will also be equipped with 5GHz radios/antennas to serve line-of-sight customers with symmetric speeds up to 200Mbps. Some of the towers in the densely populated areas will be equipped with 60GHz radios/antennas to provide gigabit speed service.

Multiple fiber connections will be delivered to the county from our Charlotte data center using at least 2 different carriers. We will deploy licensed 11GHz wireless links between towers to spread the capacity across the county.

Every census tract in the county will receive service. It is not possible to achieve 100% fixed-wireless coverage, but based on the tower locations and the population of the census tracts as shown below, we believe 80%+ population availability is possible.



Select Data

Population ▾ More Data Points...

Population

Areas and Data

UAID	Name	Data	Actions
480781	Census Tract 9601	4227	
480779	Census Tract 9602	4170	
480780	Census Tract 9603	5151	
480782	Census Tract 9604	3960	
480795	Census Tract 9605	5107	
480783	Census Tract 9606	1566	
480784	Census Tract 9607	4136	
480785	Census Tract 9608	2306	
480793	Census Tract 9609	8484	
480794	Census Tract 9610	6315	

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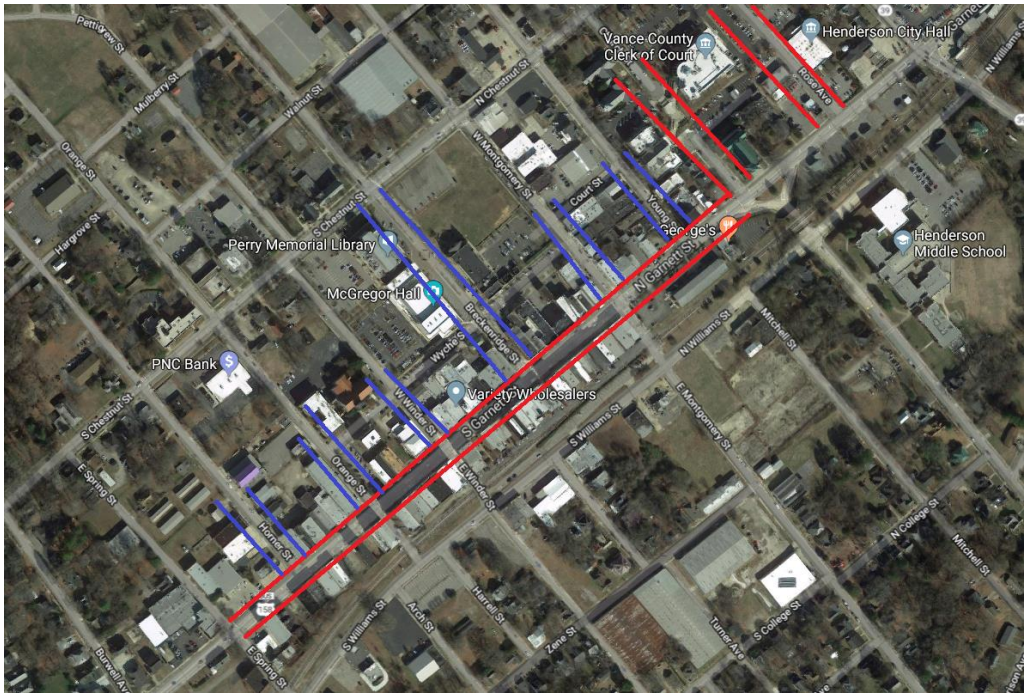
In order to implement a county-wide network it will require up to $2M in project cost and will take between 12-24 months to turn up. As a Tier 1 designated county in NC, Vance County is eligible for the GREAT program broadband grants. If the county selects this option, and would support Open Broadband in an application to the state, we would like to work together in a public-private-partnership to obtain the funds to build the network.

If the county-wide approach is not achievable, Open Broadband would still offer the following services:

Henderson

1. **A free public Wi-Fi Zone in downtown Henderson**
   To help bring more visitors to downtown merchants, and to address the digital divide with unserved and underserved residents, Open Broadband will design, furnish, install, and maintain free public Wi-Fi service for external areas along north and south Garnett Street, Rose St, and Church St as indicated in Red in the picture below. Coverage area will be outdoor only, and focused on the sidewalks and streets.

   If the town desires, Open Broadband can also extend the Wi-Fi Zone along the side streets from Garnett as marked in Blue below. We recommend a planning meeting with the Town of Henderson to fine-tune the coverage areas. As an option, an outdoor Wi-Fi Zone can be implemented for the Middle School grounds.



- The service is perfect for downtown visitors, vendors and visitors at the festivals, and for students that may need to access free public Wi-Fi for homework assignments. The Wi-Fi service will be an amenity for the residents, allowing them to utilize their laptops, tablets, and phones without incurring data usage on a cellular plan.
- The amenity will provide another location for low-income residents who do not have home broadband service to access the internet free of charge.
- Installation cost will depend on the final design of covered areas. For the areas marked in Red there is a $2,500 one-time cost
- We recommend feeding the downtown Wi-Fi Zone with a gigabit of internet bandwidth, spread out between various access points distributed throughout downtown. The gigabit service is $2000/month, which includes the internet usage, maintenance, updates, repairs, and software upgrades.
- 5-year fixed price agreement, with the option to renew at same price.
- IP Camera surveillance system with NVR available at an additional cost.
- Areas marked in Blue are available at an additional cost.
- Covering the Middle School grounds with free public Wi-Fi is available at an additional cost.

2. **Service to Henderson Government Buildings**

Provided the downtown public Wi-Fi zone is purchased, Open Broadband will provide symmetrical internet service to the following town locations at these prices:

Henderson Middle School	219 Charles Street Henderson, NC 27536
Vance County Sheriff (911 center)	156 Church St # 4, Henderson, NC 27536
Vance County Tax Office	122 Young St, Henderson, NC 27536
Vance County Jail	516 Breckenridge St, Henderson, NC 27536
Vance County Cooperative Extension	305 Young St, Henderson, NC 27536
Vance County Veteran's Services	300 S Garnett St # B, Henderson, NC 27536
Perry Library	205 Breckenridge St, Henderson, NC 27536
City of Henderson-City Hall	134 Rose Avenue, Henderson, NC 27536

Pricing per site:

Upload/download speeds up to 25Mbps: $80/month
Upload/download speeds up to 50Mbps: $120/month
Upload/Download speeds up to 100 Mbps: $150/month
Upload/Download speeds up to 200 Mbps: $225/month
Upload/Download speeds up to 1000 Mbps: $575/month
One-time installation fee of $150/site
Five-year contract (renewable at same rate)

*Fiber to the premise is available, but Lumos/Spirit will have to conduct site surveys to quote costs

**Open Broadband can also provide indoor Wi-Fi at any location

3. **Service to Residents and Businesses**
Once the Wi-Fi zone(s) and government locations are installed and in service, Open Broadband will offer broadband service to all the businesses and residents within the wireless serving area of our antennas. Service speeds start at 25 Mbps x 3 Mbps, with higher speed options for those within line-of-sight of the antenna. In other NC markets Open Broadband offers symmetrical 25 Mbps, 50 Mbps, 100 Mbps, 200 Mbps, and gigabit. We anticipate offering the same speeds in Vance County to those that meet the technical parameters. Residential service plans without an SLA typically start under $50/month (25 Mbps x 3 Mbps). Open Broadband did not identify an entrepreneurship center in town, but if the town is interested in establishing one we would be happy to work jointly to define the internet services for the facility and provide a quote.

4. **Rooftop/tower space**
In order to deliver the fixed-wireless internet service Open Broadband will need to mount small antennas on government owned building rooftops and/or water and communication towers. Client understands this is a requirement for service delivery, and will enter into a tower/rooftop agreement with no fees. Client also agrees to allow Open Broadband to install a small amount of electronics at service locations in a 'telecom closet' or other area normally used for utility services, and allow access to a standard 110v power outlet at each location.

5. **Co-marketing support**
Open Broadband agrees to help promote the new free public Wi-Fi Zones as an amenity for residents and visitors. The details will be mutually agreed upon, and can include social media and PR announcements, flyers, stickers, etc.

Kittrell

1. **Broadband service to government, residents, churches, businesses, education**
Provided a minimum revenue commitment of $600/month is reached, and we are granted free use of the water tower and the fire station tower for antenna placement, Open Broadband will install a circuit and provide asymmetric broadband service (minimum of 25 Mbps x 3 Mbps) to the downtown areas of Kittrell for $60/month/location. This offer includes service to the Fire Station and the Elementary School.

We are happy to provide symmetric service to the community if a minimum commitment level of $1500/month is reached. Symmetric service would be priced the same as Henderson.

*Fiber to the premise is available, but Lumos/Spirit will have to conduct site surveys to quote costs

2. We did not identify a ready downtown area to suggest a free public Wi-Fi Zone. However, if the town would like to establish one, Open Broadband would be happy to work jointly to define the coverage area and quote the service.

3. Open Broadband did not identify an entrepreneurship center in town, but if the town is interested in establishing one we would be happy to work jointly to define the internet services for the facility and provide a quote.

4. If the county-wide option is not pursued, and the minimums are not possible to guarantee, Open Broadband requests the county and/or town support Open Broadband with a GREAT grant application for Kittrell.

Middleburg

1. Open Broadband will offer to provide Middleburg the same service as Kittrell, however the water tower and fire station tower assets in Kittrell do not appear to be replicated in Middleburg. If a commercial cell tower is needed to serve the community, the cost of tower lease will need to be included in the cost of the service.

2. If the town is interested in installing a 120 ft. tall Rohn 25 tower for our use (about $10k one-time cost), we would be able to offer service under the same terms as Kittrell as the cell tower would not be needed.

3. If the county-wide option is not pursued, Open Broadband requests the county and/or town support us with a GREAT grant application for Middleburg.

Wi-Fi Authentication and Data Analytics Service
(applicable to all of the proposed Wi-Fi zones)

Open Broadband offers a customized Wi-Fi Authentication & Analytics platform that empowers administrators with the ability to increase control over their Wi-Fi networks while simultaneously utilizing the analytics platform to derive user & platform statistics. This platform is cross site and cross network compatible enabling a wider range of data to be collected across geographical locations.

The end users experience is a simple login page followed by a brief, optional, communications page where important messages or advertisements can be displayed. The full authentication

process occurs once per device, followed by a simple authentication in proceeding access, creating a routine access process.

Main Platform Features:

- Entirely Cloud Based – Designed for maximum speed, stability, and security through our Amazon Web Services hosted platform.
- Unlimited User Base – No monthly fees for increased user count or traffic meaning no surprises or throttling.
- Custom Login Branding – Customized login screen to the specific site to increase brand awareness and give customers the confidence to sign in.
- Easy Data Access – Full visitor information easily downloaded or integrated with several marketing automation providers to make it an easy process.
- Platform Dashboard and Analytics – Login and manage your Wi-Fi network 24/7 anywhere in the world including a full suite of analytics and reporting options
- Engage and Communicate – Login page, engagement page, and account page can all be customized to deliver content.
- Social authentication through Facebook, Google, and LinkedIn, or Email enables customers a multitude of sign-in options.
- Wi-Fi Analytics is compatible with nearly 100% of devices on the market today through any standard web browser.

Analytics & Metrics:

- User quantity
- User location (on network)
- User location history (on network)
- User frequency of access
- User bandwidth
- User last seen
- User access time
- User profile information (social profile, email, etc.)
- User device types
- User device registrations
- Custom Data Available

Initial Setup includes:

- Setting up accounts
    - Amazon Web Service (AWS)
    - Stripe (if payments are collected)
    - SendGrid (email integration)
- AWS deployment of database and Wi-Fi Analytics services
- Configuring all email templates
- Configuring all branding and images

- Configuration of one network
- Configuration for access points
- Setup of service monitors and alerts
- Help with configuring initial routers

Monthly Service includes:

- Management of application scale and load balancing.
- Service uptime monitoring.
- Rapid response support for outages related to application stack.
- 48-hour response for noncritical issues.
- Periodic inspection of service quality.
- Configuration support for 1 network with up to 50 access points.
- 1 hour per month generating custom reports.

Analytics Pricing:

- One-time setup and configuration charge per network: $5,000
- Monthly service per network: $500
- Term: 5-years
- Multi-year plans are available

Financial Investment:

As a Tier 1 designated county, Vance County should pursue GREAT broadband grant funding from the state with the ISP partner of choice. If Open Broadband is selected as your partner, we will jointly work with you to design a network to cover the greatest number of people with the fastest possible speeds. The GREAT funding request can be county-wide, or specific projects in the high density areas or underserved areas.

If a GREAT broadband grant is not pursued, Open Broadband will need the following support:

1. Purchase of our proposed services under 5-year term for the Wi-Fi zones, the service to government locations and/or the Wi-Fi Analytics service.
2. Open Broadband will begin a network build once we've agreed upon the selected scope of work, and there is a collective minimum revenue commitment of at least $3,000/month overall, as well as the respective revenue commitments for the smaller towns without proposed Wi-Fi zones. The collective commitment can be from several different sources (it does not have to be one payment just from the county).
3. Free use of the tower assets required to deploy our fixed-wireless last mile solution. This includes the town water towers, county water towers and communications towers, rooftops, and towers at fire stations and schools where available. Free means no lease rate, no fee for power, no structural analysis fee, no application fee, etc.

4. Open Broadband is willing to expand 25 Mbps x 3 Mbps service into the underserved areas if the county is willing to install towers for our use. In other NC counties we'd had 120' Rohn 25 guyed towers installed for our use in serving broadband to the underserved. These towers cost the owner ~$10k each, and they retain ownership of the asset. If the county is interested in this solution, we will work with the county to identify ideal locations.
5. If the county likes our model, but doesn't see a desired solution mentioned in this response, we are willing to discuss your needs and negotiate a mutually acceptable arrangement.

Areas of Cooperation

This RFP response is on behalf of Open Broadband LLC, however, we partner with Lumos and Spirit to expand coverage, speed deployment, and/or bring greater financial resources to bear. This includes delivery of FTTX solutions.

Other Information, advice, counsel

At Open Broadband, we believe that once broadband infrastructure is available, the conversation quickly shifts to 'how do you leverage it?'. Through our efforts with NC Hearts Gigabit and Charlotte Hearts Gigabit we can bring both an economic development, and a Digital Inclusion focus to Vance County. Open Broadband would be happy to help in these efforts, regardless of the carrier selected for county broadband services.

Thank you for the opportunity to respond to the RFP. We welcome questions and additional conversations about working together to foster greater broadband service.

Alan Fitzpatrick
CEO
Open Broadband, LLC
704-237-0102

openbroadband

Exhibit 1

	Sample Deployment Planning Sheet					
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Purchase Order completed						
Hire staff as needed						
Obtain tower/roof agreements						
Obtain fiber quotes and order circuits						
Engineering design based on towers						
Equipment orders finalized and placed						
Equipment received and configured						
Fiber turnup						
Schedule Tower Climbers						
Establish OSS support (billing, support, etc.)						
Equipment installation at towers/roofs						
Align and establish wireless backhaul circuits						
Begin customer service						

Exhibit 2


ADVANCED.
PROTECTED.
UNRIVALED.
VOICE. DATA. INTERNET.
Built For Your Business
Are your services tailored to YOUR needs, coupled with unparalleled product sets & capable of growing with your business?
GIGABIT Connectivity
Can your Internet connectivity handle the increasing bandwidth-intensive demands of today's applications (streaming, graphic & data file transmission, etc.) without interruption?
Seamless Solutions
Can you seamlessly connect ALL of your communications together, with one provider, to get the maximum flexibility with the highest quality, to converge your voice, data & Internet services?
Cybercrime Protected
Are you truly protected from the increasing threat of Cybercrime?
Dependable Firewall
How effective is your Firewall? Do you have the knowledge or time to fully manage your business' firewall?
Proactive Monitoring
Do you have a local Network Operations Center staff proactively monitoring your network 24 hours a day, 7 days a week, to keep you connected & your traffic secure?
Proven Service
How does your provider demonstrate their expertise in your community?
Trusted Provider
Has your provider proven they are a trusted provider?
Our Fiber. Our Network.
Is your Internet service running on the largest digital fiber-optic network, on a connection reserved for your exclusive voice, data, video & multimedia?
ENHANCE YOUR INTERNET.
Spirit lights up the region as the largest digital fiber-optic network provider. Our private, extensive network, with ultra-fast speeds, takes your services to another level while ensuring your traffic never touches the public Internet.
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Built For Your Business.
Spirit Communications

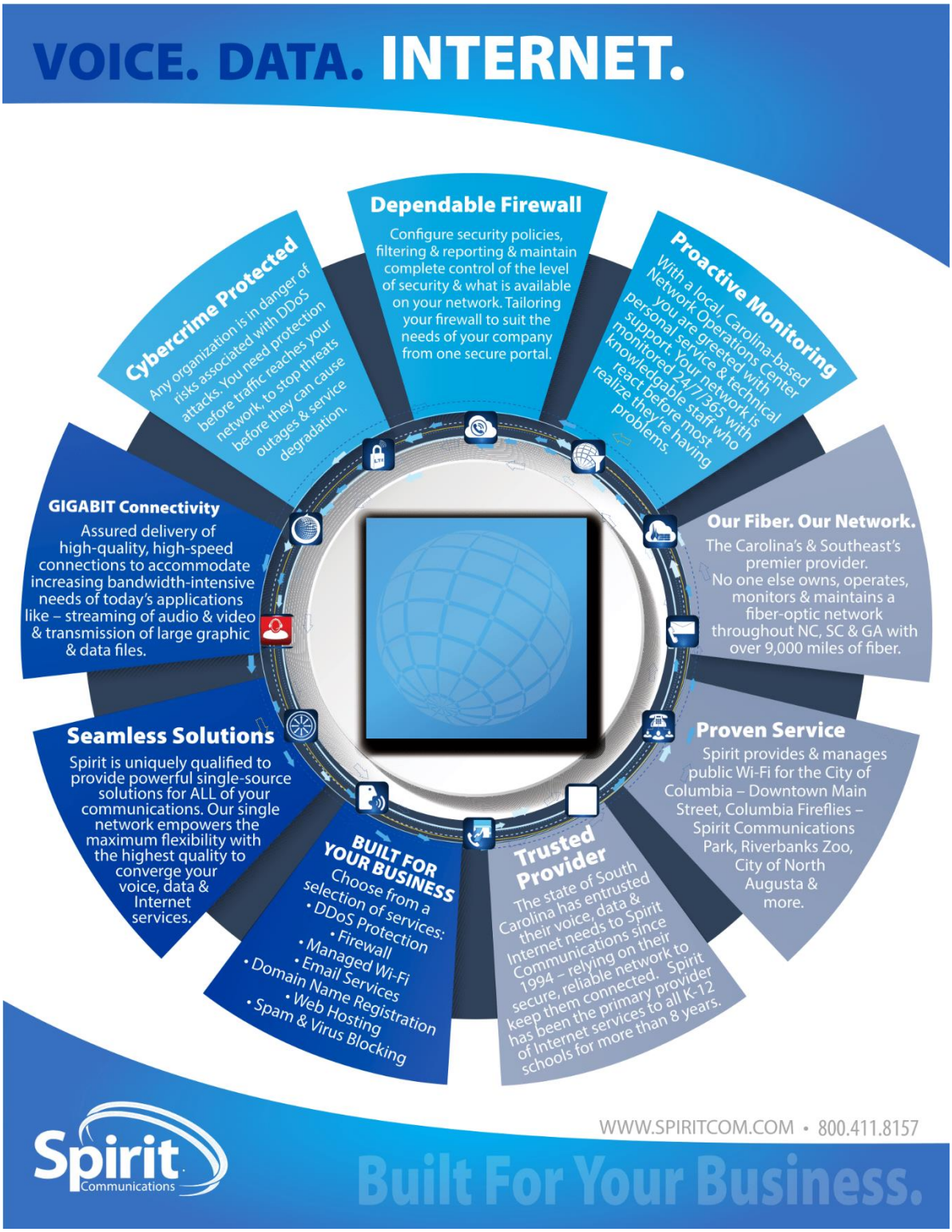
VOICE. DATA. INTERNET.
Dependable Firewall
Configure security policies, filtering & reporting & maintain complete control of the level of security & what is available on your network. Tailoring your firewall to suit the needs of your company from one secure portal.
Cybercrime Protected
Any organization is in danger of risks associated with DDoS attacks. You need protection before traffic reaches your network, to stop threats before they can cause outages & service degradation.
Proactive Monitoring
With a local, Carolina-based Network Operations Center you are greeted with personal service & technical support. Your network is monitored 24/7/365 with knowledgable staff who react before most realize they're having problems.
GIGABIT Connectivity
Assured delivery of high-quality, high-speed connections to accommodate increasing bandwidth-intensive needs of today's applications like – streaming of audio & video & transmission of large graphic & data files.
Our Fiber. Our Network.
The Carolina's & Southeast's premier provider. No one else owns, operates, monitors & maintains a fiber-optic network throughout NC, SC & GA with over 9,000 miles of fiber.
Seamless Solutions
Spirit is uniquely qualified to provide powerful single-source solutions for ALL of your communications. Our single network empowers the maximum flexibility with the highest quality to converge your voice, data & Internet services.
Proven Service
Spirit provides & manages public Wi-Fi for the City of Columbia – Downtown Main Street, Columbia Fireflies – Spirit Communications Park, Riverbanks Zoo, City of North Augusta & more.
BUILT FOR YOUR BUSINESS
Choose from a selection of services:
• DDoS Protection
• Firewall
• Managed Wi-Fi
• Email Services
• Domain Name Registration
• Web Hosting
• Spam & Virus Blocking
Trusted Provider
The state of South Carolina has entrusted their voice, data & Internet needs to Spirit Communications since 1994 – relying on their secure, reliable network to keep them connected. Spirit has been the primary provider of Internet services to all K-12 schools for more than 8 years.
Spirit Communications
WWW.SPIRITCOM.COM • 800.411.8157
Built For Your Business.

Exhibit 3

WWW.SPIRITCOM.COM • 800.411.8157

SPIRIT BUSINESS SELECT
PRODUCT SHEET

Spirit Communications has the ability to serve customers in selected cities of North and South Carolina with a business-class service providing guaranteed bandwidth and secure reliable access for a customer's vital communication services. It is ideal for businesses with critical communication needs that include HD voice, data and Internet applications.

The service is simple to use and deploy and provides a seamless connection for multiple applications.

- Dedicated connection for uninterrupted voice and Internet service
- Highly scalable, bandwidth can be increased
- Symmetrical broadband reduces upload and download time
- Fully 911 Compliant

*service available based on qualification of customer site

Spirit Business Select Hosted

Spirit Business Select Hosted is a low-cost, fully-hosted voice business solution to replace costly PBX, Key systems or Centrex services and can significantly reduce communication costs, while offering a much more feature-rich service that is easy to manage.

The services are powered by Spirit's private and secure SONET network.

As a hosted service, features and applications that give businesses greater choice in productivity across multiple locations or departments are located in Spirit's data center in Columbia. The customer's local area network (LAN) becomes the delivery system for the innovative technology.

Much like 'cloud computing', the hosted service puts control in the hands of the customers. Moves, adds and changes can be completed easily and quickly using a Web-based provisioning tool.

Employees can work from the office, from home or a mobile phone. Individual users can control voice mail, call forwarding and availability right from the phone or from a convenient Web interface. Microsoft applications provide easy access to call logs with click-to-dial functionality. Voice mail messages can be retrieved through email.

As Spirit upgrades the services in the hosted product, they are automatically made available to the customer.

Spirit Business Select Converged

This is a converged service interconnecting with existing PBX or Key systems. By converged we mean that the voice portion and Internet portion of the service share the same circuit, or bandwidth. It provides greater flexibility for businesses with premise-based voice systems, automatically prioritizing voice and data traffic to ensure the most efficient use of the available bandwidth.

The converged service gives businesses an effective means of controlling the cost of service while having the flexibility to increase their available bandwidth as needed. The voice lines can be configured as analog lines, PRIs or trunks based on the customer requirements.

Got Multiple Locations?

Our solutions allow you to create point-to-point and multi-point to multi-point connections and tie all of your locations together over a secure Multi-protocol Label Switching (MPLS) network.

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Spirit Communications

openbroadband

SPIRIT BUSINESS SELECT

PRODUCT SHEET

	BUSINESS SELECT			
	HOSTED		CONVERGED	
	1.5x6	3x12	1.5x5	3x10
INTERNET	1.5Mb	3Mb	1.5Mb	3Mb
VOICE LINES	6	12	5	10
LONG DISTANCE	200 Min. Per Line	200 Min. Per Line	200 Min. Per Line	200 Min. Per Line
LATA-WIDE CALLING	Unlimited	Unlimited	Unlimited	Unlimited
CONFERENCING	NO	1 Seat with 500 Minutes	NO	1 Seat with 500 Minutes
PERFORMANCE MONITOR	NO	NO	NO	NO
EQUIPMENT	YES	YES	YES	YES
VOICE MAIL, UNIFIED AND FAX MESSAGING	YES	YES		
SPIRIT ANYWHERE	YES	YES		
AUTO ATTENDANT	YES	YES		

User Services

- Alternate Numbers
- Anonymous Call Rejection
- Authentication
- Automatic Hold/Retrieve
- Basic Call Logs
- Broadworks Receptionist - Enterprise
- Busy Lamp Field
- Call Forwarding Always
- Call Forwarding No Answer
- Call Forwarding Selective
- Calling Line ID Blocking Override
- Calling ID Delivery Blocking
- Calling Name Retrieval
- Call Notify
- Call Return
- Call Transfer
- Call Waiting
- CommPilot Express
- Directed Call Pickup
- Diversion Inhibitor
- Do Not Disturb
- External Calling Line ID Delivery
- Flash Call Hold
- Internal Calling Line ID Delivery
- Last Number Redial
- Multiple Call Arrangement
- N-Way Call
- Outlook Integration
- Push To Talk
- Remote Office
- Selective Call Acceptance
- Selective Call Rejection
- Sequential Ring
- Shared Call Appearance
- Simultaneous Ring Personal
- Speed Dial 100
- Speed Dial 8
- Spirit Assistant - Enterprise
- Three-way Call
- Voice Messaging User

Group Services

- Account Codes
- Authorization Codes
- Auto Attendant
- Call Park
- Call Pickup
- Hunt Group
- Music On Hold
- Voice Messaging Group

We have built our business and reputation on trust and mutual respect. We believe our customers come first, just like our owners who started helping businesses communicate more than 100 years ago.

Many businesses are looking for ways to get more from the money they spend on their telephone, data and internet services. We've helped companies like yours do just that. We may be able to increase your capacity while lowering your cost.

Spirit Communications

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Built For Your Business.

Exhibit 4

Spirit Communications
Data & Voice Service Level Agreement

General. This Data & Voice Service Level Agreement (SLA) describes target network performance and service level metrics for end user data and voice services provided by South Carolina Telecommunications Group Holdings, LLC d/b/a Spirit Communications via Ethernet or TDM.

1. **Access Circuit Network Availability.**

1.1 "Network Availability" is the percentage of total minutes during a calendar month that the Services are available to the Customer. Network Availability is calculated as follows:

$$\text{Network Availability\%} = \frac{[(\text{Total Minutes in the Month}) - (\text{Sum of Total Outage Minutes})] \times 100}{\text{Total Minutes in the Calendar Month}}$$

The Services shall be deemed to be "unavailable" whenever an outage is recorded on a Spirit Communications trouble ticket classified as "major" or "critical" by Spirit Communications Network Operations Center which results in Customer not having the ability to transmit or receive packets by means of the Services, and "Total Outage Minutes" shall be deemed to be the length of time during which the Services are unavailable to the Customer, as reflected on such trouble tickets. "Total outage minutes" shall not include any outages (i) occurring during scheduled maintenance activities; (ii) attributable to any act or omission of Customer; (iii) attributable to Customer's applications, equipment or facilities; (iv) resulting from reasons of Force Majeure or other causes beyond the reasonable control of Spirit Communications or (iv) lasting ten minutes or less.

1.2 The objective for Network Availability is 99.99 %. For any month in which the objective is not met, Customer will receive a credit, which may be applied towards Customer's subsequent monthly invoice(s), up to and not exceeding the monthly recurring charges for the affected Services (i.e., the portion(s) of the Services directly made unavailable as a result of the outage(s) in question) for each cumulative hour or portion thereof during which such Services are unavailable to the Customer (subject to the limitations set forth herein). Unavailability and credits will be prorated and paid in 15-minute increments.

2. **Access Circuit Mean Time to Repair**

2.1 Mean Time to Repair (MTTR) is the average time required to repair service to an operational condition if service(s) are not active or Customer is experiencing consistent service degradation. The MTTR objective is four (4) hours depending on for outages due to electronic equipment failure and fiber optic facilities failure and ten (10) hours for outages due to fiber cuts.

2.2 If the MTTR is not met, Customer may request a credit, to be applied towards Customer's subsequent monthly invoice(s), up to and not exceeding the monthly recurring charges for each hour over the four-hour MTTR (i.e., the portion(s) of the Services directly made unavailable as a result of the outage(s) in question) per violation. For any month in which the objective is not met, customer may receive a credit for each location

2.3 **Exclusion:** MTTR statistics will not include any time lost waiting on repair-related information from customer or access to customer premises.

3. Circuit Latency

3.1 "Average Latency" is the monthly average round-trip latency from a core network node to any other designated core network node on the Spirit Communications network, determined by measuring round-trip network responses over such portions of the network.

Metro Area Market 10ms Latency	WAN 30ms Latency	National 90ms Latency
Round trip where both sites A and Z are within the same Metro Area Market	Round trip between any 2 Metro Area Markets within the same WAN	Round trip between any two WANs
• Columbia, SC • Florence, SC • Charleston, SC • Myrtle Beach, SC • Greenville, SC • Raleigh, NC • Charlotte, NC • Asheville, NC • Raleigh, NC • Fayetteville, NC • Wilmington, NC • Greensboro, NC	Carolinas and Georgia WAN	

3.2 The objective for Average Latency is to not be greater than 8 milliseconds inside a Metropolitan Area. The objective for average latency is to not be greater than 30 milliseconds between Metropolitan markets. For any month in which the objective is not met, Customer will receive a credit, which may be applied towards Customer's monthly invoice, equal to 1/30 of the monthly recurring charges for the Services.

$$\text{Latency} = \frac{\text{Sum of the roundtrip delay measurements for an On-Net Service}}{\text{Total \# of measurements for an On-Net Service}}$$

4. Circuit Jitter

4.1 "Average Jitter" is the monthly average variation in the time between packets arriving, as measured at designated portions of the Spirit Communications network, determined by measuring Jitter over such portions of the network during a calendar month.

4.2 The objective for Average Jitter is to not be greater than 5 milliseconds. For any month in which the objective is not met, Customer will receive a credit, which may be applied towards Customer's monthly invoice, up to and not exceeding the monthly recurring charges for the Services.

5. Packet Loss

Packet Loss or Frame Loss Ratio is defined as the percentage of frames that are not successfully received compared to the total frames that are sent in a calendar month, except where any packet or frame loss is the result of an Excluded Disruption. The percentage calculation is based on frames that are transmitted from a network origination point and received at a network destination point (Spirit Communications network hub to Spirit Communications network hub). Packet Loss / Frame Loss Ratio is calculated as follows:

Packet Loss / Frame Loss (%) = 100 (%) – Frames Received (%)

6. Force Majeure. Causes beyond Spirit's reasonable control, including, without limitation, Acts of God, fire, explosion, vandalism, storm, extreme temperatures, or other similar catastrophes; any Law, order, regulation, direction, action, or request of the United States government, or of any other government, including state and local governments having jurisdiction over Spirit or Customer, or of any department, agency, commission, court, bureau, corporation, or other instrumentality of any one or more of said governments, or of any civil or military authority; national emergencies, insurrections, riots, wars, or strikes, lock-outs, or work stoppages.

7. Chronic Outage and Missed Service Standard

7.1 Chronic Outage and/or Missed Service Standards is measured as three trouble tickets or missed service standards within a calendar month.

7.2 In the event that the objective for Chronic Outages or Missed Service Standard is exceeded then the affected site will be eligible for an additional 10% credit of the monthly recurring charge.

8. Service Credits

8.1 In order to receive any of the service credits described in this SLA, Customer must notify Spirit Communications within ninety days from the time Customer becomes eligible to receive a service credit. Failure to comply with this requirement will forfeit Customer's right to receive a service credit.

8.2 Reports are prepared and credits for documented occurrences are issued within 60 business days of receipt of Customer notice.

Exhibit 5

Spirit Communications
Data & Voice Service Level Agreement

General. This Data & Voice Service Level Agreement (SLA) describes target network performance and service level metrics for end user data and voice services provided by South Carolina Telecommunications Group Holdings, LLC d/b/a Spirit Communications via Ethernet or TDM.

9. Access Circuit Network Availability.

9.1 "Network Availability" is the percentage of total minutes during a calendar month that the Services are available to the Customer. Network Availability is calculated as follows:

Network Availability% = [(Total Minutes in the Month) – (Sum of Total Outage Minutes)] x 100
Total Minutes in the Calendar Month

The Services shall be deemed to be "unavailable" whenever an outage is recorded on a Spirit Communications trouble ticket classified as "major" or "critical" by Spirit Communications Network Operations Center which results in Customer not having the ability to transmit or receive packets by means of the Services, and "Total Outage Minutes" shall be deemed to be the length of time during which the Services are unavailable to the Customer, as reflected on such trouble tickets. "Total outage minutes" shall not include any outages (i) occurring during scheduled maintenance activities; (ii) attributable to any act or omission of Customer; (iii) attributable to Customer's applications, equipment or facilities; (iv) resulting from reasons of Force Majeure or other causes beyond the reasonable control of Spirit Communications or (iv) lasting ten minutes or less.

9.2 The objective for Network Availability is 99.99 %. For any month in which the objective is not met, Customer will receive a credit, which may be applied towards Customer's subsequent monthly invoice(s), up to and not exceeding the monthly recurring charges for the affected Services (i.e., the portion(s) of the Services directly made unavailable as a result of the outage(s) in question) for each cumulative hour or portion thereof during which such Services are unavailable to the Customer (subject to the limitations set forth herein). Unavailability and credits will be prorated and paid in 15-minute increments.

10. Access Circuit Mean Time to Repair

10.1 Mean Time to Repair (MTTR) is the average time required to repair service to an operational condition if service(s) are not active or Customer is experiencing consistent service degradation. The MTTR objective is four (4) hours depending on for outages due to electronic equipment failure and fiber optic facilities failure and ten (10) hours for outages due to fiber cuts.

10.2 If the MTTR is not met, Customer may request a credit, to be applied towards Customer's subsequent monthly invoice(s), up to and not exceeding the monthly recurring charges for each hour over the four-hour MTTR (i.e., the portion(s) of the Services directly made unavailable as a result of the outage(s) in question) per violation. For any month in which the objective is not met, customer may receive a credit for each location

10.3 **Exclusion:** MTTR statistics will not include any time lost waiting on repair-related information from customer or access to customer premises.

11. Circuit Latency

11.1 "Average Latency" is the monthly average round-trip latency from a core network node to any other designated core network node on the Spirit Communications network, determined by measuring round-trip network responses over such portions of the network.

Metro Area Market 10ms Latency	WAN 30ms Latency	National 90ms Latency
Round trip where both sites A and Z are within the same Metro Area Market	Round trip between any 2 Metro Area Markets within the same WAN	Round trip between any two WANs
• Columbia, SC • Florence, SC • Charleston, SC • Myrtle Beach, SC • Greenville, SC • Raleigh, NC • Charlotte, NC • Asheville, NC • Raleigh, NC • Fayetteville, NC • Wilmington, NC • Greensboro, NC	Carolinas and Georgia WAN	

11.2 The objective for Average Latency is to not be greater than 8 milliseconds inside a Metropolitan Area. The objective for average latency is to not be greater than 30 milliseconds between Metropolitan markets. For any month in which the objective is not met, Customer will receive a credit, which may be applied towards Customer's monthly invoice, equal to 1/30 of the monthly recurring charges for the Services.

$$\text{Latency} = \frac{\text{Sum of the roundtrip delay measurements for an On-Net Service}}{\text{Total \# of measurements for an On-Net Service}}$$

12. Circuit Jitter

12.1 "Average Jitter" is the monthly average variation in the time between packets arriving, as measured at designated portions of the Spirit Communications network, determined by measuring Jitter over such portions of the network during a calendar month.

12.2 The objective for Average Jitter is to not be greater than 5 milliseconds. For any month in which the objective is not met, Customer will receive a credit, which may be applied towards Customer's monthly invoice, up to and not exceeding the monthly recurring charges for the Services.

13. Packet Loss

Packet Loss or Frame Loss Ratio is defined as the percentage of frames that are not successfully received compared to the total frames that are sent in a calendar month, except where any packet or frame loss is the result of an Excluded Disruption. The percentage calculation is based on frames that are transmitted from a network origination point and received at a network destination point (Spirit Communications network hub to Spirit Communications network hub). Packet Loss / Frame Loss Ratio is calculated as follows:

Packet Loss / Frame Loss (%) = 100 (%) – Frames Received (%)

14. Force Majeure. Causes beyond Spirit's reasonable control, including, without limitation, Acts of God, fire, explosion, vandalism, storm, extreme temperatures, or other similar catastrophes; any Law, order, regulation, direction, action, or request of the United States government, or of any other government, including state and local governments having jurisdiction over Spirit or Customer, or of any department, agency, commission, court, bureau, corporation, or other instrumentality of any one or more of said governments, or of any civil or military authority; national emergencies, insurrections, riots, wars, or strikes, lock-outs, or work stoppages.

15. Chronic Outage and Missed Service Standard

15.1 Chronic Outage and/or Missed Service Standards is measured as three trouble tickets or missed service standards within a calendar month.

15.2 In the event that the objective for Chronic Outages or Missed Service Standard is exceeded then the affected site will be eligible for an additional 10% credit of the monthly recurring charge.

16. Service Credits

16.1 In order to receive any of the service credits described in this SLA, Customer must notify Spirit Communications within ninety days from the time Customer becomes eligible to receive a service credit. Failure to comply with this requirement will forfeit Customer's right to receive a service credit.

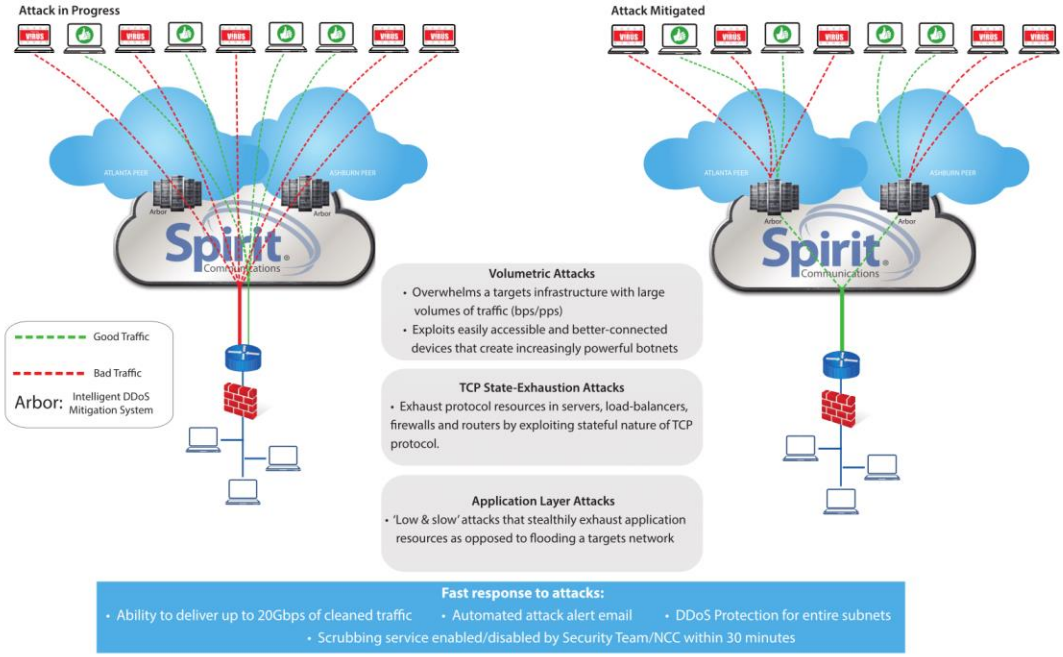
16.2 Reports are prepared and credits for documented occurrences are issued within 60 business days of receipt of Customer notice.

Exhibit 6

WWW.SPIRITCOM.COM • 800.411.8157

SPIRIT DDoS PROTECTION
PRODUCT SHEET

Distributed Denial of Service (DDoS) attacks can strike at any time with potentially devastating effects to your network. At a minimum, these assaults compromise your user/customers' experience and can often shut down networks completely, resulting in lost productivity, revenue and costly bandwidth charges. With these attacks becoming a regular threat to the online business community, it pays to be prepared. Spirit Communications' DDoS Protection Service employs a multi-layered approach to DDoS defense to ensure your organization is safeguarded from both complex, stealthy DDoS attacks, and the very large attacks that can quickly saturate Internet connectivity.



Spirit Communications has deployed devices with robust DDoS detection, mitigation/scrubbing capacity and is prepared to combat large-scale attacks. Upon detection of a DDoS attack, Spirit Communications' Network Control Specialist analyzes key network indicators and rapidly re-directs your incoming traffic to flow through our cloud-based mitigation platform. The DDoS Protection Service platform is built on best-in-class technology, which removes the attack traffic and passes clean traffic through to your network, keeping you open for business online.

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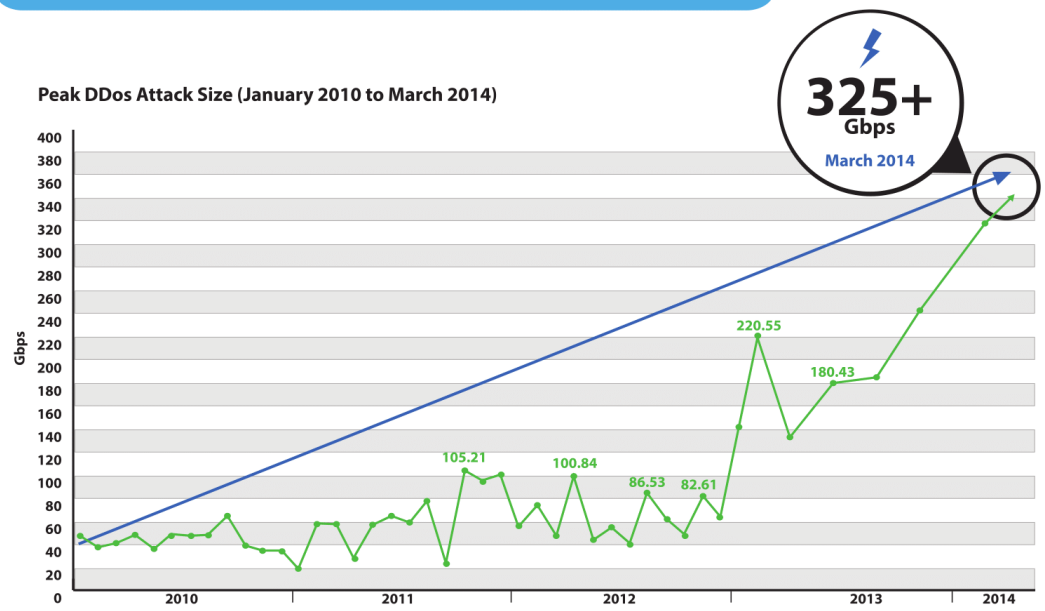
SPIRIT DDoS PROTECTION

PRODUCT SHEET

- Deployed at strategic Internet locations
- Efficient 'cloud' mitigation as attack traffic enters our network where capacity is at its greatest
- Resilient, secure and scalable (Nx10Gps capabilities)
- Technology from Industry leading DDoS monitoring & mitigation vendor
- Surgically removes attack traffic without interrupting legitimate traffic

Peak DDos Attack Size (January 2010 to March 2014)



Increased Vulnerability

- There was a 33% increase in the number of DDoS attacks in 2014
- Availability of better connected and accessible Botnets increases growth of DDoS attacks for many motivations
- Infrastructure attacks (e.g. flood, state exhaustion) account for ¾ of all attacks
- Average attack size (Mbps/Gbps) continues to increase
- Traditional security devices are not designed to cope with DDoS attacks
- 150 attacks over 100 Gpbs reported worldwide in 2014

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