Proposal to City of Perris, California

Broadband Network Grid RFP

July 25, 2022

Index

Summary

In this solution, BearCom will design, deliver, and install a CBRS wide area, Private LTE network to extend the city's internet to public parks and spaces to reach undeserved residents and businesses. The city will be able to utilize one city wide wireless infrastructure to provide internet access in a multi-tenant configuration using separate APNs. The multi-APN approach allows for the city to configure segmented access through the city's networks with varying degrees of security and Quality of Service ("QOS"). For example, the city could provide internet access to park and public spaces at a lower priority and bandwidth if the system is expanded to incorporate mission critical city services in the future.

The proposed Evolved Packet Core (EPC), essentially the headend of the system, can support up to 10,000 connections providing room for future growth beyond connecting the City of Perris parks and public spaces. The EPC will include local and geo redundancy with auto failover providing the City of Perris with a robust system in which their residents can have confidence.

1. Cover Letter / Introduction

Thank you for allowing BearCom the opportunity to submit a Private LTE proposal to the City of Perris for a Broadband Network Grid. We have prepared this document carefully with the goal of providing you with a complete understanding of our qualifications, capabilities, and commitment to your Private LTE project. On each Private LTE project our firm undertakes, we are with you for the duration of the project ensuring you and all relevant stakeholders our satisfied with our solution and the final deployment. Plus, we are ready to support you after deployment with ongoing maintenance, support, and troubleshooting and repair should it ever be necessary. It is one of the reasons that at BearCom we say we are *AlwaysOn*.

If you are not familiar with BearCom, we want you to know that we design and deliver high performance integrated wireless voice, video and data solutions to reduce digital inequity by serving cities and their citizens, boosting efficiency, and increasing safety. Whether our clients need a Citizens Broadband Radio Service (CBRS) network, a multi-point wireless network, an integrated two-way radio system, a bi-directional amplifier to enable communications between first responders, or a video surveillance system to protect people and property, BearCom's Network Solution Team is prepared to help.

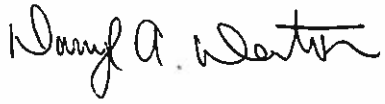
For more than 40 years, BearCom has been *AlwaysOn* serving governments, public safety professionals, schools, leading airlines, major sports arenas, manufacturing and petrochemical plants, distribution centers, hotels and resorts, construction firms, and more across North America, with more than 75 locations in the US and Canada. In addition, BearCom's rental team supports major sporting events, award shows, conventions, and fairs, as well as the largest music festivals in North America.

BearCom is the also the largest integrator of Motorola Solutions products in the world, earning Motorola Solutions' premier Service Elite Specialist designation for selling and servicing Avigilon video and access control and Motorola's two-way radio systems. In addition to Avigilon video surveillance solutions, BearCom offers technical expertise in two-way radio systems for wireless voice and data communications, Point-To-Point and Point-To-Multipoint networks, Vigilant LPR and facial matching, NITRO / CBRS networking, and complete system design and installation of Bi-Directional Amplifiers (BDA) and Distributed Antenna Systems (DAS). When working with BearCom, you're partnering with a wireless solutions provider that invests in you to understand your goals in to provide the best wireless solutions supporting the City of Perris, today, tomorrow, and into the future. Our team thanks you for your consideration.

Darryl A. Deaton
VP of Network Solutions & Enterprise Sales
615-589-6180
Darryl.Deaton@BearCom.com

BearCom Corporate Office
4009 Distribution Dr. Suite 200
Garland, TX 75041

BearCom has the ability and willingness to comply with all Terms and Conditions and provisions stated herein.



Darryl A. Deaton

VP Network Solution & Enterprise Sales

2. Project Understanding

The overall solution BearCom is proposing addresses the need for broadband services to serve citizens of the City of Perris, California in public parks and public spaces. BearCom's proposal utilizes the CBRS band to deliver wireless 'WIFI type' connectivity to citizens to 19 public areas selected by the City of Perris, but it can be expanded in the future to cover public buildings, public schools, and future Smart City initiatives. This solution will provide the City of Perris a highly controlled system serving 700 simultaneous connections per tower with speeds of at least 100Mbps Down/20Mbps up within proximity of a tower site. However, citizens will likely be able to achieve speeds of 25Mbps Down/3Mbps as far as one to two miles away from these public spaces. The solution is upgradeable to service even more simultaneous connections at higher throughput speeds with additional hardware and software upgrades.

We propose a 5G capable Private LTE System that is robust, scalable, and highly available. Each individual site deployment will utilize enabled access points to ensure ready connectivity and availability. The overall deployment will include the following:

1. 11 monopole sites, designed, installed, and commissioned
2. EPC Core with High Availability and software installation, 5000 user licenses, scalable to 10,000 subscribers
3. 3800 provisioned EPC SIMs
4. 1000 End User Devices (included value added option supporting expanded business and home residential connectivity)
5. 1000 High Gain Antennas (included value added option supporting expanded business and home residential connectivity)
6. 11 LoRaWAN Gateways (included value added option for future Smart City initiatives)
7. All radios, antennas, cabling, fabrication, and NEMA enclosures
8. Network design, Installation, project management, configuration, optimization, CPI ('Certified Professional Installer' for SAS services) and commissioning services
9. Site design, structural analysis, and permitting/zoning costs
10. Annual maintenance and licensing of hardware and software

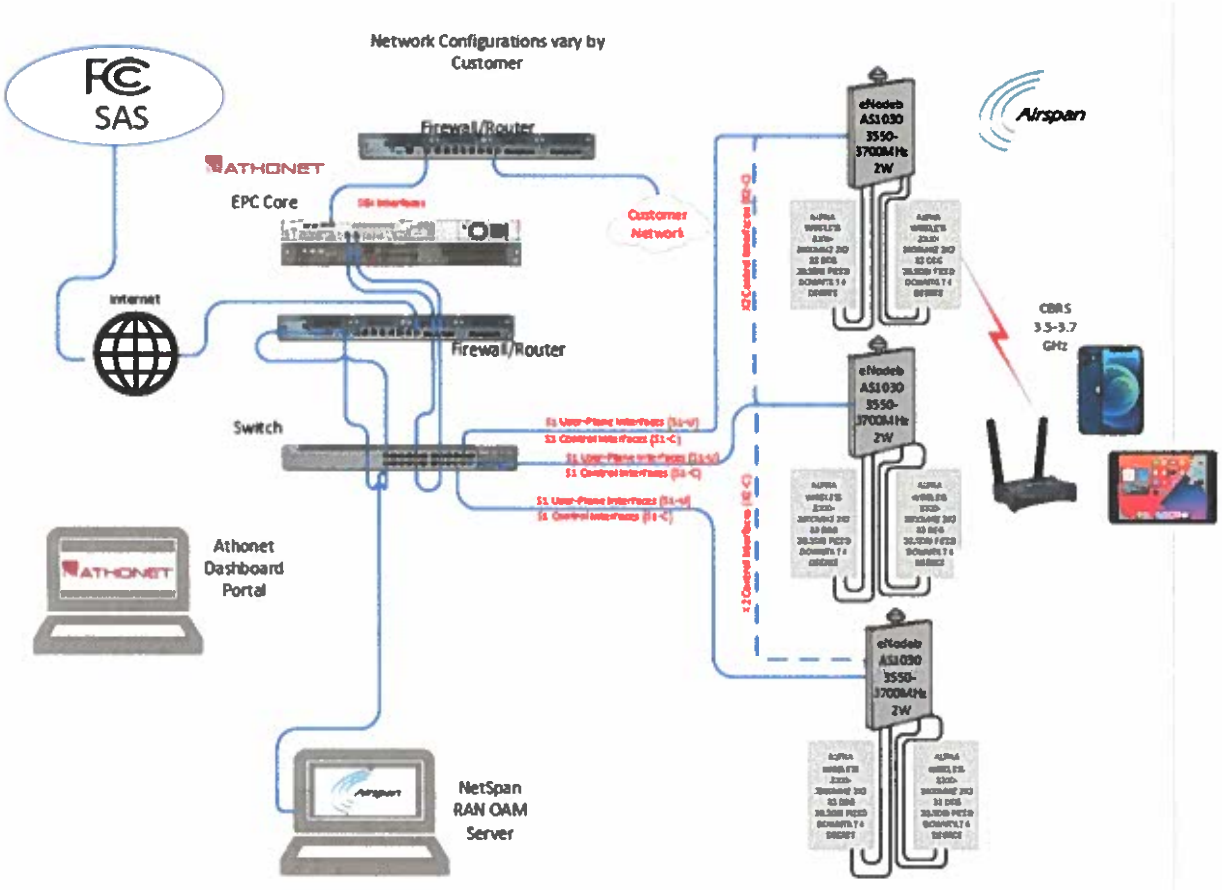
This platform's configuration is designed as highly available with scalability up to 10,000 subscribers and is capable of multi-tenant support with revenue sharing opportunities across multiple public agencies if desired. Each site is capable of 700 simultaneous connections, but like the large cellular carriers, over-sampling assumes that not all end users will always be connected. (In other words, 700 simultaneous connections can actually support 1000+ users, as long as everyone is not trying to download Netflix at the same time.) As city growth continues the system is robust and flexible enough to grow with it. Although some equipment would need to be swapped during an upgrade cycle, many components can be upgraded via software. You can always modify coverage areas, the number of supported users, system speeds, and more

as your needs change. There is no need to rip and replace, you simply adjust and modify as your needs change.

Private LTE Technical Design Overview

The figure below is the basic technical design of the system that BearCom would install:

- High power Outdoor rated radios on towers or rooftops
- RAN (Radio Access Network) and EPC core, S&P gateways directly connected to your network
- Cabling between antennas, radios, and network components
- SAS interconnectivity
- Citizen provided end user devices which register and authenticate over wireless to the network
- Typical deployments use a Dell R640 for the EPC with virtualized server software on VMware for the core. Switches and firewalls, if desired, can be designated by the city of Perris.



BearCom is utilizing a recently released band of shared spectrum to implement wide area network using the Citizens Broadband Radio Service (CBRS) that is now available due to recent orders provided by the FCC. The FCC has allocated valuable spectrum, previously reserved for the US Navy, for use in commercial and public applications like smart city, IoT applications, and

distance learning, as well as variety of other applications including video streaming, access control, and community WIFI. This spectrum is high capacity, high speed, and highly secure as the technology utilized is private LTE with SIM-based device access.

CBRS can be used as a backhaul platform for smart city and WIFI applications while also enabling direct connectivity for citizens utilizing a variety of consumer level devices currently available on the market. As a backhaul component, CBRS operates just like a carrier cellular network providing broad area or city-wide coverage. WIFI access points can then be attached to the network to allow for open or secure WIFI access for citizens and city employees. The system can be built to provide connectivity outdoors and indoors by using combinations of high power outdoor and indoor radios.

The City of Perris will be able to utilize a unified wireless infrastructure to provide internet access in a multi-tenant configuration using separate APNs. This will allow the city to provide internet service to multiple agencies and 'customers' with potentially different internet service providers. The multi-APN approach allows for the city to configure segmented access through the City Networks with varying degrees of security and Quality of Service ("QOS").

The network will be capable of speeds up to 100 Mbps and can serve up to 700 end users per site. The 100Mbp down/20Mbps up throughput is achievable near the site with speeds declining to 25Mbps down/3Mbps up as far away as two miles. Coverage and throughput in this frequency band at optimal power output for the radios would be up to two miles in diameter for usable outdoor coverage in perfect conditions. The actual RF signal propagation is highly dependent on numerous factors including, but not limited to, terrain, clutter (trees, buildings, etc.), atmospheric conditions, and receptivity of end user devices. These metrics are a function of the band and the power output (governed by the FCC) in optimal conditions. The wireless network will conform to industry LTE standards as outlined and published by 3GPP.

The cell sites and radios can be deployed on a rooftop if there is adequate height (65'-75') or on a new or existing monopole. We will separately deploy an LTE Evolved Packet Core (EPC) in a customer designated data center. BearCom's IT team and CPI resources will work in direct collaboration with the City Project Manager to design the network components and properly configure the core and radios to seamlessly connect to the City's network. The configuration and routing plan will be based on your requirements and will be highly flexible and scalable. Our solution integrates with your network without the need for changes to your network to implement this solution. It is based on open standards and will work well on most OEM branded network switches (Cisco, Juniper, etc.) Our CPI will ensure the radio units are properly configured and authenticated with the SAS (Spectrum Access Service – a third party FCC mandated frequency coordinator).

Bearcom has designed the system for high availability offering a 1+1 active/standby redundancy setup for auto failover in the EPC core software. The cluster has 2 dedicated links that will be used for cluster monitoring and synchronization of the configuration database within the cluster.

All the software modules are monitored via a watchdog. Should a Network Function (NF) fail, the watchdog will automatically restart the failed module. If the same process fails n times (where n is configurable), a failover can be triggered to the server currently in standby by making it the active one. On the hardware side, a keepalive is used between the 2 servers: if the active server stops being reachable, it automatically triggers a failover. When a switchover occurs, the processes are automatically restarted on the new active node.

The system can be designed to scale to more than 10,000 end points/users. Expanding the scale includes increasing nodes or Serving and Packet (S&P) gateways, possible increase of the server hardware operating the evolved packet core (EPC), and the master site license for the core. There are no end user subscription costs/licenses which allows for the customer to scale the system in a capex model while minimizing heavy opex expenditures. Additionally, there are capacity limitations on the sites. As the end user environment scales, the number of sites would need to scale with the expansion to ensure a positive end user experience. We can employ an over-subscription model (like the carriers) to minimize costs, and we can collaborate on the most appropriate ratios of oversubscription for the use cases contemplated.

Security

Our private LTE systems are built with the standards provided by Third Generation Partnership Project ("3GPP") which is the standard organization for all private LTE and commercial LTE (Verizon, AT&T, etc.) deployments utilize. These standards are subject to NIST (National Institute for Standards and Technology) guidelines and provide application layer and over the air encryption. Any connection to the network requires SIM based access control and authentication. Certificates are used by the core and the SIM card for user validation. All over the air transmissions are fully encrypted at 256 bits. All EPC software and hardware are owned by the customer, placed behind a customer's firewall, and subject to all security protocols employed at the customer's data center, content filters, and firewall policies. No customer data leaves the network, and no device can access the network unless the customer provides a user a SIM card to access the network.

Network Management

This system has an EMS (Element Management System) that allows the customer to manage Performance Management, Configuration Management, and Service Management. The EMS is a web-based GUI which is simple to operate also remotely via IP connectivity.

The following main features are included in the EMS:

- System configuration for networking and nodes
- Installation and insertion of license key
- System configuration backup
- System service monitoring
- Subscriber registration status
- System performance reporting (CPU, RAM, disk usage, network)
- Aggregated KPIs (registration, call statistics)

- Secure access to the GUI via dual-authentication method

The system also has QoS support in order to deliver quality for data communication. It is possible to configure the system to use the Rx interface, in order to instruct the PCRF (Policy and Charging Rules Function) to establish a network initiated dedicated bearer. The dedicated bearer is instrumental to enforcing QoS parameters such as QCI, DSCP, Maximum Bitrate for UL and DL, Guaranteed Bitrate for UL and DL and the Allocation Retention Priority. The Rx interface specification is implemented according to the 3GPP standard TS 23.203, 29.214.

Private LTE vs. other wireless technologies

There are multiple technologies available in the market for delivering wide area network access, but based on our experience gained from prior deployments we advocate using CBRS/PLTE for the vision the City of Perris is contemplating with the below considerations:

- Solving digital inequity
- Providing the ability to scale City wide
- Enabling IoT for future Smart City initiatives
- Providing a system designed for mobility
- Delivering a system supported by the largest consumer wireless device companies in the world: Apple, Google, Samsung, Dell

We see value in the control and scalability PLTE provides. We see value in the elimination of potential interference (and the loss of capital investment) that inevitably comes with many other wireless technologies. We also like the mobility aspect of these systems. Private LTE was built around the ability to provide mobility (as well as fixed access) to users

Understanding the evolution of the entire LTE eco system is another vital consideration when evaluating private networks. All US based cellular carriers are currently utilizing LTE as standard and are evolving their networks to include the CBRS band. Ultimately, a cell phone/tablet user will be able to roam from the macro network (Verizon, AT&T, T-Mobile, etc.) to a private network inside a building, stadium or elsewhere with a seamless handoff. This is good for the user given additional in-building coverage and outdoor roaming capabilities. It is also good for the carriers because they can off-load traffic from their congested network to a private network while never dropping the call.

The large OEMs like Apple, Google, Samsung recognize that this ability to leverage the macro and private networks cohesively is a big value to consumers, citizens, and enterprise/agency staff. These interconnected private and carrier networks will provide the users with even better throughput, coverage and capacity which benefits everyone. Standalone outdoor mesh Wi-Fi benefits citizens with respect to accessing the internet. However, those networks only provide internet access or IoT data collection and will never be able to provide seamless voice/data

handoffs to private networks. Taking the integrated LTE approach is simply a better value for the City of Perris over the long term.

Common Consumer Devices

As a result of the FCC order allowing general commercial use of this spectrum, many of the world's largest companies have adopted the band and the technology to quickly make the service readily available to consumers. Like Cellular, Wi-Fi, and Bluetooth before it, CBRS is quickly becoming the next standard in wireless access. Apple, Samsung and Google already have phones and tablets readily available for the spectrum and OEM providers are delivering Radio Access Network (RAN) and subscriber equipment. The commitment to this standard and the availability of devices against this standard will make the transition for general consumers, staff and connected vehicles easy for administrators. The figure below shows a few CBRS devices available today, although the full list of 452 certified devices is available at https://ongoalliance.org/certification/fcc-authorized-end-user/.

CBRS Enabled Consumer Devices

LoRaWAN Technical Design Overview

(included value added option supporting future Smart City initiatives)

The LoRaWAN® specification is a Low Power, Wide Area (LPWA) networking protocol designed to wirelessly connect battery operated 'things' to the internet in regional, national or global networks, and targets key Internet of Things (IoT) requirements such as bi-directional communication, end-to-end security, mobility and localization services.

LoRaWAN® network architecture is deployed in a star-of-stars topology in which gateways relay messages between end-devices and a central network server. The gateways are connected to the network server via standard IP connections and act as a transparent bridge, simply converting RF packets to IP packets and vice versa. The wireless communication takes advantage of the Long-Range characteristics of the LoRa® physical layer, allowing a single-hop link between the end-device and one or many gateways. All modes are capable of bi-directional communication, and there is support for multicast addressing groups to make efficient use of spectrum during tasks such as Firmware Over-The-Air (FOTA) upgrades or other mass distribution messages.

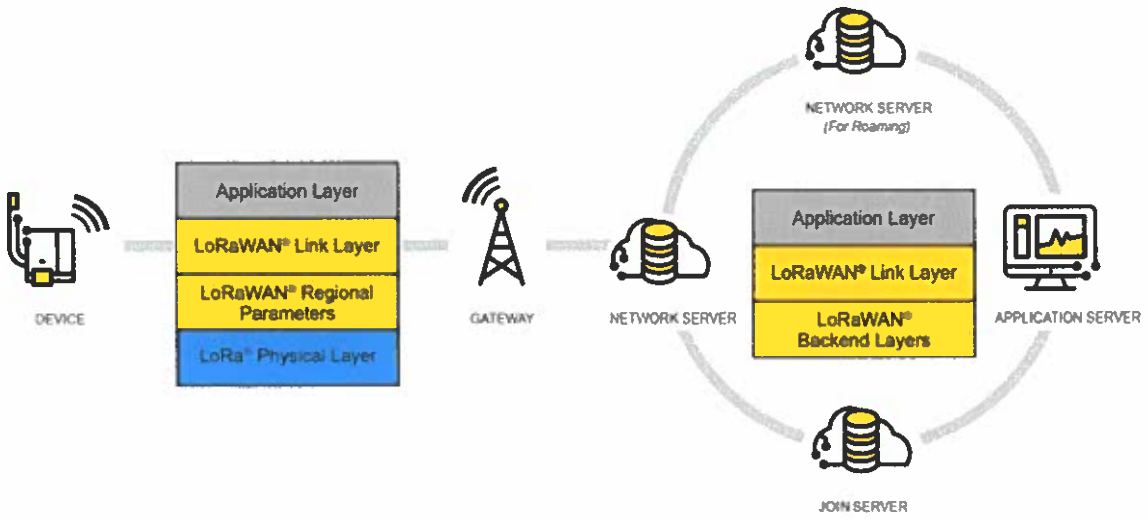
The specification defines the device-to-infrastructure (LoRa®) physical layer parameters & (LoRaWAN®) protocol and so provides seamless interoperability between manufacturers, as demonstrated via the device certification program.

While the specification defines the technical implementation, it does not define any commercial model or type of deployment (public, shared, private, enterprise) and so offers the industry the freedom to innovate and differentiate how it is used.

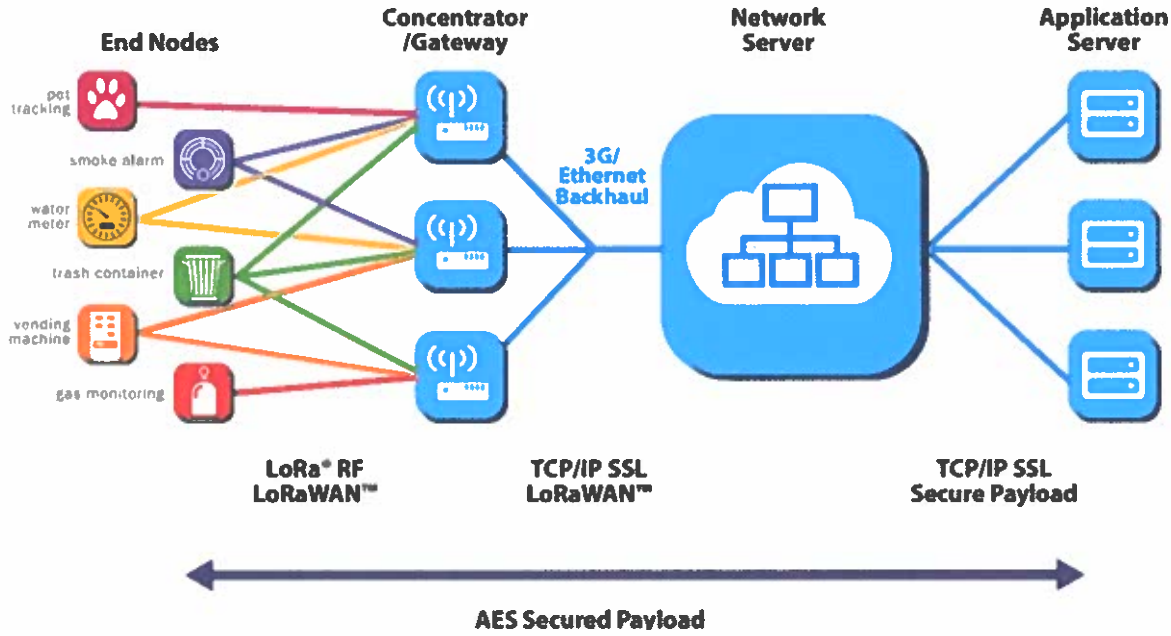
The LoRaWAN® specification is developed and maintained by the LoRa Alliance®: an open association of collaborating members.

The figure below describes the LoRaWAN® architecture with details about the device, gateway and services Layers within the hosted cloud environment. The LoRaWAN® services can leverage the CBRS/pLTE as a backhaul to gain access to the Network Server in the cloud.

LoRaWAN® Network Architecture



Design Use Cases



Security

Security is a primary concern for any mass IoT deployment and the LoRaWAN® specification defines two layers of cryptography:

- A unique 128-bit Network Session Key shared between the end-device and network server
- A unique 128-bit Application Session Key (AppSKey) shared end-to-end at the application level

AES algorithms are used to provide authentication and integrity of packets to the network server and end-to-end encryption to the application server. By providing these two levels, it becomes possible to implement 'multi-tenant' shared networks without the network operator having visibility of the user's payload data.

RF Planning and Prediction Maps

This map represents an estimated area of RF coverage, approximately 1 mile in radius from each site location

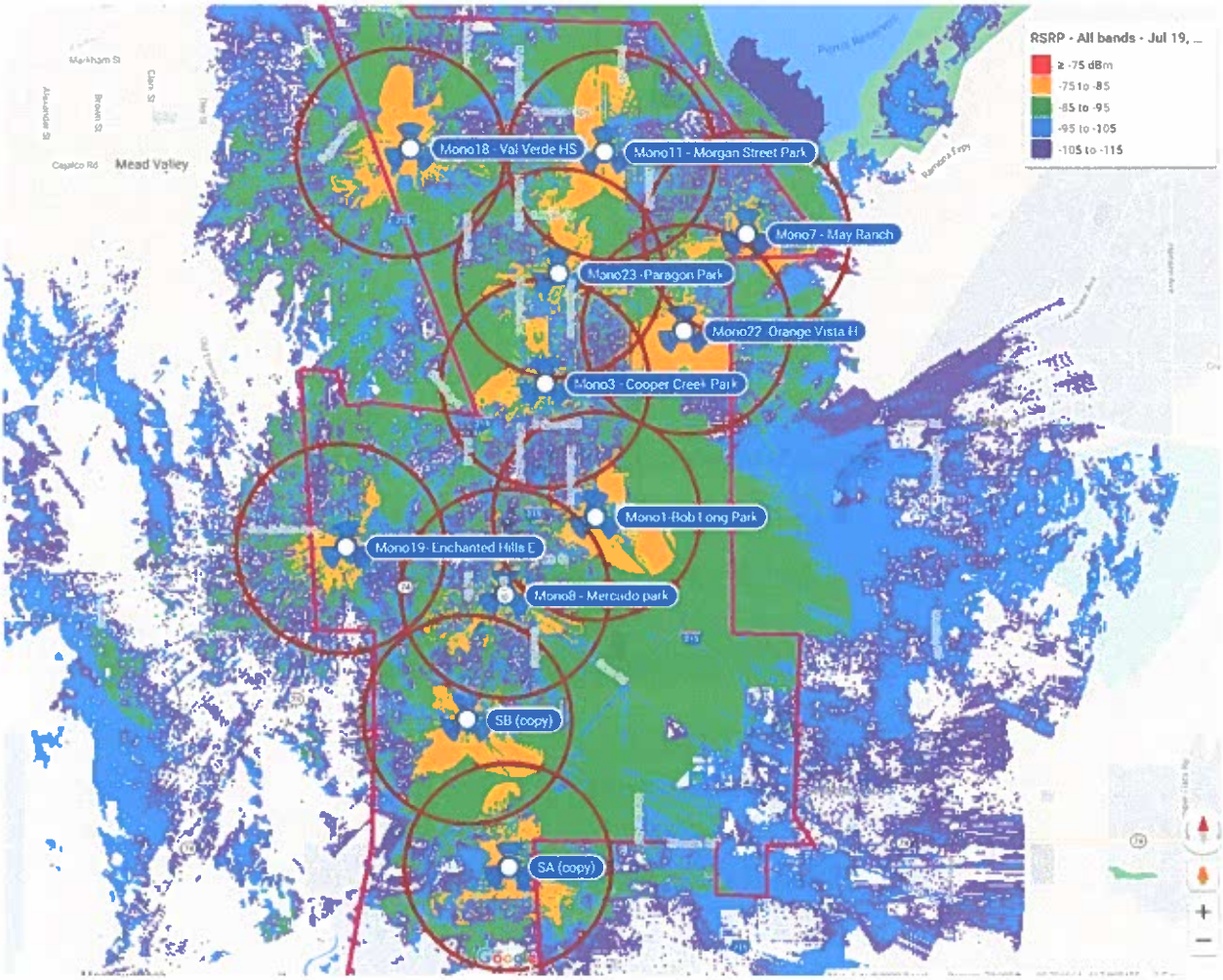
Note: The actual RF signal propagation is dependent on numerous factors including, but not limited to, terrain, clutter (trees, buildings, etc.), atmospheric conditions, and receptivity of end user devices.

RF Coverage Planning Map

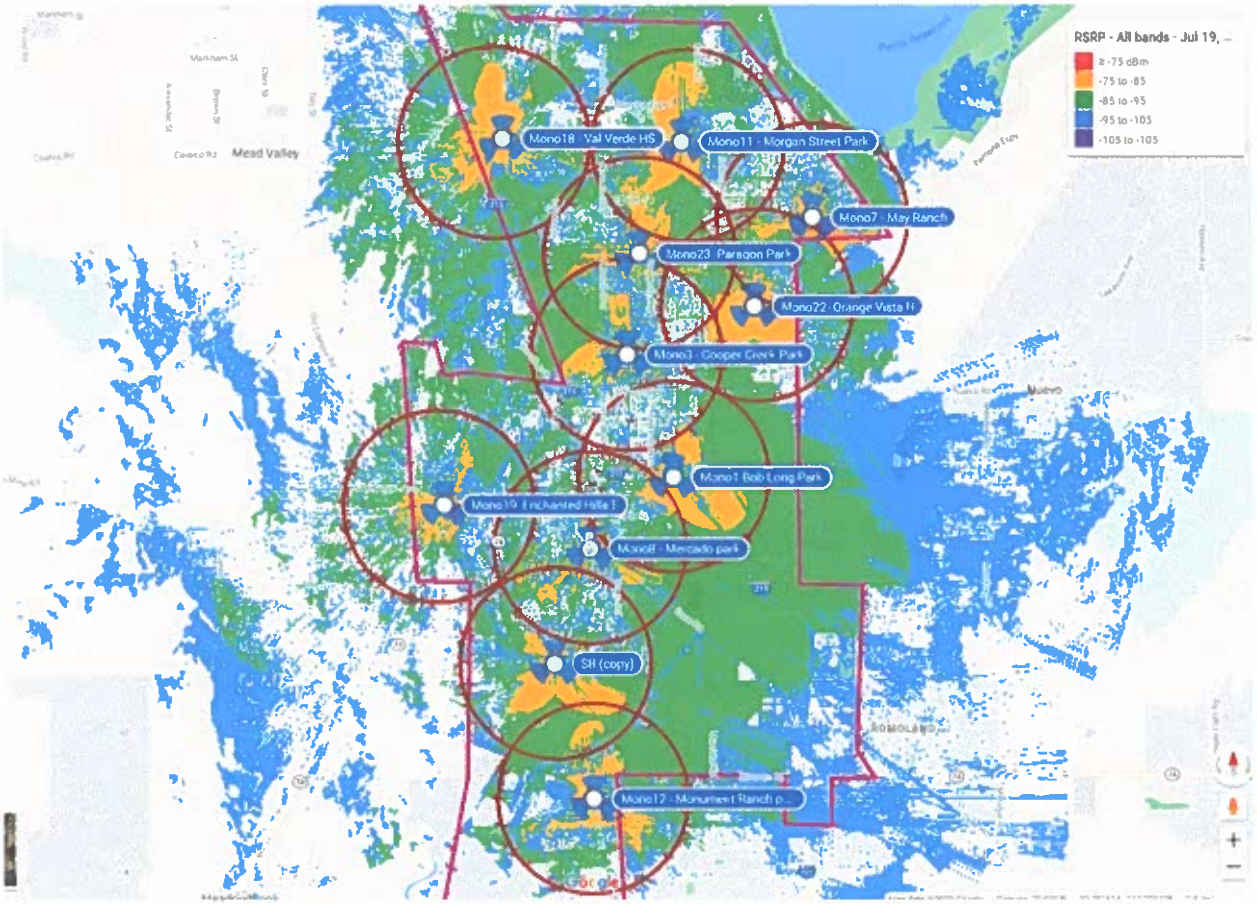
11 of 11

- Mono1-Bob Long Park
- Mono11 - Morgan Street Park
- Mono12 - Monument Ranch park
- Mono18 - Val Verde HS
- Mono19- Enchanted Hills E
- Mono21- Railway ES
- Mono22 -Orange Vista H
- Mono23 -Triple Crown ES
- Mono3 - Cooper Creek Park
- Mono7 - May Ranch
- Mono8 - Mercado park

RF Coverage Prediction Map – Outdoor Coverage



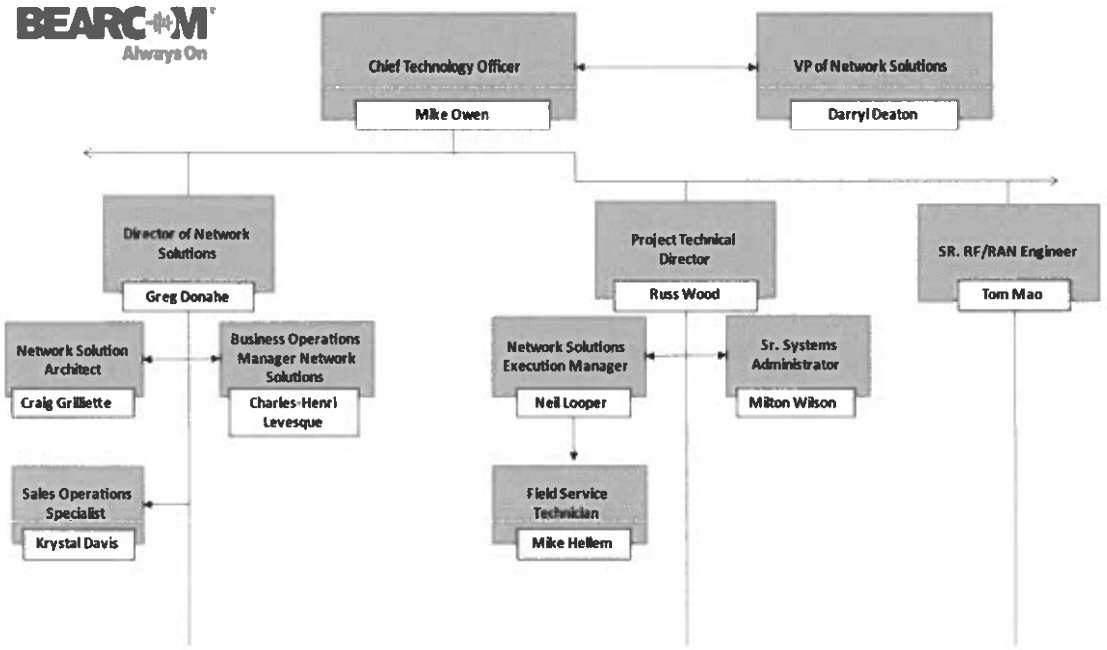
RF Coverage Prediction Map – Indoor Coverage



3. Approach and Management Plan

BearCom's approach keeps all the system planning, design, and engineering in-house. System deployment is primarily carried out by BearCom employees although when tower crews are required (for installation work occurring above 30 feet) we routinely sub that work to tower specialists. However even though portions of tower work may be subbed out, BearCom maintains 100% control and oversight of those activities and is your single point of contact for the entire scope of the project.

The BearCom Network Solutions team has a simple and straightforward organizational approach to ensure our customers receive a great experience. At the top level, Mike Owen oversees BearCom's entire wireless network business with his direct reports managing the solution development (led by Greg Donahe), the system deployment (led by Russ Wood), and system engineering (led by Dr. Tom Mao.) The Network Solutions team organizational chart is provided below as a reference.



4. Qualifications, Experience, and References

Key BearCom Stats

- Founded 1981 - Leader in wireless industry
- 75+ coast-to-coast branch offices across North America
- Corporate Headquarters and 96,000 Sq. Ft. Distribution Center located in Garland, Texas
- National Service Depot
- Over 30,000 customers nationwide
- More than 1,300 employees, including 350+ in Technical Services Group

BearCom has earned several awards and accolades since 1981 for innovation, customer service, and industry leadership. BearCom is a board-level member of the Enterprise Wireless Alliance (EWA) and is regularly recognized as a leader in the wireless industry. In addition, BearCom has been named a Motorola Solutions Empower Circle winner multiple times, an honor that recognizes independent distributors, resellers, and dealers for outstanding sales performance and customer service.

The BearCom Technical Services Group includes more than 350 highly knowledgeable, highly experienced wireless and technology industry professionals, many of whom hold advanced engineering degrees. Our team stays up to date with wireless technology by earning the latest credentials for CBRS, PTP, PMP, Avigilon, DMR and P25 networking, R56 site installation, and other key industry certifications.

With our proven expertise serving more than 30,000 customers in nearly every commercial and public sector, you can count on BearCom to design and deliver the best solutions for your organization. Our highly skilled professionals are ready to meet your challenges with a wide selection of innovative equipment, infrastructure, applications, and solutions that enhance the success of your voice/video/data communications, IoT, and M2M programs.

Private LTE Experience and Past Performance

BearCom has been deploying the Private LTE/CBRS solution for over two years and we have deployed several public sector clients during that time. We vet the technology (radio access network, core services, end user devices, and antenna systems) in our lab in Garland TX where we have been running two different versions of LTE cores for over a year. We know how to design, install, commission, enable, and sustain the networks and are one of the few providers in the USA that can deliver the solution from end to end.

We have a team of seasoned engineers on staff that work with the technology and have hands-on experience building and commissioning these networks. We are confident in our knowledge of turning up, implementing, commissioning, and supporting LTE core services.

We have recently deployed private LTE systems with Patterson Schools in California, Dallas ISD, Fort Worth ISD and are actively deploying a number of other Private LTE implementations around the country. We continue to engage and educate city and school leaders, board members, and

council members on the technology and regular engage commercial customers on Private LTE/CBRS technology.

Reference 1:

Organization Name: Patterson Joint Unified Schools

Contact Person/Title: Nicholas De Pauw/Director of Technology

Telephone/Email: 209-895-7716

Date of Installation:07/20/2020

Number of campuses Using Service: Private LTE for approximately 2000 end users

Contract Amount: approximately $2 million

Reference 2:

Organization Name: Ft. Worth ISD

Contact Person/Title: Marlon Shears/CIO

Telephone/Email: 818-807-0906/marlon.shears@fwisd.org

Date of Installation Phase 1: 3/1/2022

Date of Installation Phase 2: Ongoing

Number of campuses Using Service: district-wide coverage

Contract Amount: approximately $5.0 million

Other Past Performance Projects with Similar Size and Scope

Amazon

BearCom is the exclusive provider of in-building coverage and radio solutions for all of the Amazon distribution centers around country. We are continuing a multi-year effort to support their tremendous growth and ensuring the safety and efficiency of their employees is maintained at a very high level. We are completing work on about two distribution centers per month and have doing so during the past three years. We are anticipated delivering on another 60 locations over the next 18 months. Amazon is currently talking with us about implementation of CBRS as part of their continued effort to deliver reliability for their autonomous workflows.

American Bank Center

American Bank Center, Corpus Christi's primary entertainment and event venue, needed an upgrade in their security apparatus. They had radios that did not work very well or at all in certain locations, analog video which was essentially useless due to poor image quality and no analytics and poor access control to exterior and interior doors. BearCom worked with ABC to design and integrated system that allowed venue to integrate two-way radio, video, access control, license plate recognition and software so that they could detect and analyze real time situations. The venue now has a system on which they can

communicate and their security environment and is more stable, reliable and useable in real time scenarios. We completed this project in the summer of 2019.

Bastrop ISD

Bastrop ISD implemented an initiative to improve their safety and security in the school in light of the number of school shootings happening around the country. They had outdated analog cameras with no analytics and poor resolution. Investigating an incident often took tedious hours of sifting through footage and tracking and individual from camera to camera was not possible. Access control for exterior doors was minimal leaving vulnerable points of entry into the school. BearCom worked with Bastrop to install a high-end AI analytics-based camera and access control system that allowed the school to integrate these technologies with two-way radios, cell phones and desktop software. The school now has much better command and control over their security environment and is able to prevent adverse events or at least know in real time when and adverse event is happening in order to respond and mitigate in real time. We completed this project in the summer of 2019.

5. Staffing Plan

Should BearCom be awarded The City of Perris Broadband Network Grid contract the Network Solutions team as outlined in Section 3 and further detailed in Section 8, are the professionals that will be assigned to support this project. Each of these individuals has the capacity and creativity to fully support this effort and is hopeful that they will have the opportunity to demonstrate it to The City of Perris team.

Certainly, each of these employees is involved with other clients and projects, however BearCom's Network Solution team is appropriately staffed to support existing and prospective clients. However, the Private LTE market is poised for rapid growth, and as such BearCom is actively interviewing and is adding additional resources to the team on an ongoing basis.

Although the solution proposed to the City of Perris is custom, our process for determining a solution, designing the network, and deploying a solution is not. BearCom utilizes a centralized team to manage all Private LTE projects to ensure consistent execution regardless of the geographic market in which they are delivered. Our process consistently yields projects that are completed on-time and on-budget, and mostly importantly meet the customers goal and objectives.

6. Work Plan and Schedule Including Installation Milestones

Project scope and timelines are highly dependent on the number of sites, number of end users, and the availability of viable site locations. Site location variables include meeting the desired height, having network and power connections, permitting new and building monopoles or permitting existing towers, and being situated in the geographic area desired to cover the end users. Assuming a site and the related radio equipment is available, it generally takes two weeks to build each site. Equipment delivery timelines are somewhat unpredictable given the continued effects of Covid, global chip shortages, and various manufacturing supply chain issues. End user devices are especially adversely affected and timelines for delivery windows can be multiple months.

The EPC core design, configuration and installation is dependent on the customers network configuration, available resources to build IP schemes and routing plans, and access to data center resources. With a dedicated and collaborative effort from the customer and BearCom, the EPC design and installation will take between three to five weeks.

Assuming favorable conditions for equipment delivery, site allocations, construction of sites, the network, data center and site locations, the project for the City of Perris will take between 6-9 months. However, Monopole installations can run longer due to permitting lead-times.

The table below is a preliminary high-level project timeline for the City of Perris project.

Task Name	Duration	Start	Finish	% Complete
Project Initiation	10 days	10/1/2022	10/11/2022	0%
Site Walks	10 days	10/12/2022	10/22/2022	0%
Design Validation	10 days	10/23/2022	11/2/2022	0%
Procurement	45 days	11/3/2022	12/18/2022	0%
PTP Roof Top Installation	10 days	1/1/2023	1/10/2023	0%
Site 1 Installation	10 days	1/11/2023	1/21/2023	0%
Site 2 Installation	10 days	1/22/2023	2/1/2023	0%
Site 3 Installation	10 days	2/2/2023	2/12/2023	0%
Site 4 Installation	10 days	2/13/2023	2/23/2023	0%
Site 5 Installation	10 days	2/24/2023	3/6/2023	0%
Site 6 Installation	10 days	3/7/2023	3/17/2023	0%
Site 7 Installation	10 days	3/18/2023	3/28/2023	0%
Site 8 Installation	10 days	3/29/2023	4/8/2023	0%
Site 9 Installation	10 days	4/9/2023	4/19/2023	0%
Site 10 Installation	10 days	4/20/2023	4/30/2023	0%
Site 11 Installation	10 days	5/1/2023	5/11/2023	0%
Deploy End User Devices	120 days	1/11/2023	5/21/2023	0%
Testing & Cutover Prep	10 days	5/12/2023	5/22/2023	0%
System Cutover	5 days	5/22/2023	5/27/2023	0%
Post Cutover Testing	10 days	5/28/2023	6/7/2023	0%
Project Closure	10 days	6/8/2023	6/18/2023	0%

7. Quality Control and Assurance

BearCom will leverage the BearCom Total Quality Management process that includes Acceptance Test Procedures, Pre-Staging, Testing, Install Reviews, Sign-off, Performance validation tests, Punch Lists, etc. that are part of the BearCom QM process. This TQM will be adapted to each Customer's specific scenario. BearCom has key process indicators that are monitored throughout the QM process. Examples of Key process indicators that are monitored: Continual business improvements in customer and supplier partnerships, training and resource allocation, Continual Process capability improvements for our products and processes and On-Time delivery that meets our customer's needs. The figure below is an example of the TQM methodology that BearCom utilizes:

Figure 1: BearCom TQM

Several examples of quality control documents include the following:

Example of Requirements Gathering Document:

CBRS - BearCom

General Requirements Gathering Document

What is the purpose of the CBRS / Private LTE system?

Who will be connecting to the network?
(Private, Public, or both)

How and what will be connecting to the network?
(new and/or existing devices, type of devices, mobility requirements?)

Level of security required.

How much geography do you intend to cover?
(sq miles, people, buildings)

Is the network intended for exterior, interior use or both?

How many end user devices will be connected?
(Limited to 250 connections per radio)

End user device type
(Smart Phone, LTE Modem, Laptop, etc.)

Throughput expectations to EUD?
(Uplink / Downlink)

Traffic	Bandwidth	Number of Devices	Total Bandwidth
480p video	2.5 Mbps		
720p video	3 Mbps		
1080p video	8 Mbps		
4k HD video	20-25 Mbps		
Voice	12 kbps		
HD Voice	50 kbps		

Example of Requirements Gathering Document:

Infrastructure Requirements

Existing Wi-Fi networks in place?
(possible device or application specific network allocation capability)

For exterior use, where do you anticipate erecting towers?
(existing infrastructure, new sites, on top of buildings, how many?)

How do you anticipate connecting the RAN into your network?
(Fiber ring, IDF rooms, PTP links, etc.)

Are there any RF limiting factors?
(trees, terrain, physical barriers, etc.)

Business Continuity / Disaster Recovery Considerations?
(How critical are the uptime considerations for the network? What level of reliability needs to be designed into the system?)

Anticipate growth next 1 to 3 years?

3-5-year expansion plans to consider?
(Application, bandwidth, coverage area, device?)

Example of Scope of Work document.

Scope of Work – Template

The following tasks will be associated with the completion of this Statement of Work ("SOW" or "Agreement"):

- **Project Kick-off Meeting**
  - Project timelines
  - Roles and responsibilities
    - Client stakeholders
    - Service Provider team
  - Review project expectations
  - Confirm site locations
  - Discuss Accessibility
  - Confirm bucket truck availability

- **Discovery**
  - Review all IDF, Fiber, & network connectivity points.
  - Review tower locations
  - Determine location for RF survey testing
  - Current network and computing environment

- **Data Collection**
  - Spectrum Analysis
  - Onsite RF Survey – selected areas
    - Passive Survey of 2.4 GHz and 5 GHz spectrums using AirMagnet Survey Pro
    - Active Survey
    - Merging of passive & predicted surveys
  - Modeled Surveys
  - IDF, Closet, & tower info
  - BOM & SOW insertions

- **Project Management**
  - Appoint a Project Manager as a single point of contact
  - Project manager shall maintain a project schedule, coordinate activities related to the implementation
  - The PM shall hold regularly scheduled project meetings
  - The PM shall maintain all project documentation relevant to the infrastructure implementation

Example of Acceptance Testing document

CBRS ATP

The CBRS Phase 1 Acceptance Test Procedure (ATP) will demonstrate the operation of the CBRS system. This test assumes that all applicable system network devices, architecture, and associated antenna systems have been installed and checked to verify basic coverage. This test also assumes any cloud-based interconnectivity requirements are active.

1. Test basic connectivity between the CBSD and CPE devices (e.g., through ping tests, etc.). This test verifies radio network connectivity and proper wireless network configuration.
    a. Test wireless connectivity between the CBSDs and all deployed CPE devices.

        PASS_____ FAIL_____

    Test Notes:

2. Test connectivity between remote network devices and CBSD, and test connectivity to wired local data network (e.g., customer applications).
    a. Verify connectivity between the customer wired data network and remote network devices.

        PASS_____ FAIL_____

    Test Notes:

3. Test coverage area by moving crane (or similar mobile CPE unit) along the path of the cranes (e.g., within the light pole area of a CBSD, depending on actual number of CBSDs deployed in the area).
    a. Verify that CPE stays connected with good signal strength (RSRP>-100dBm) during the test (using CPE diagnostics interface or remote network UE measurements).

        PASS_____ FAIL_____

    Test Notes:

4. Test coverage area by moving CPE throughout the area of coverage expectation. Also identify and address any areas of coverage deficiency. Note that results will depend on CPE antenna heights, so that actual use cases should be closely modeled.
    a. Verify that CPE coverage is available across the expected coverage area with adequate signal strength levels for data transmission (RSRP>-120dBm).

        PASS_____ FAIL_____

    Test Notes:

5. Test CPE seamless connection handoff between CBSD devices.
    a. Start with a CPE connected to one CBSD device. Move towards the next nearest CBSD device along the path of the RTG. Verify the CPE successfully hands over to the second CBSD device. (This can be verified with the CPE diagnostics interface, or on the base station network management side, and depends on the number of CBSDs mounted & operational in the area.)

        PASS_____ FAIL_____

    Test Notes:

6. Test multiple CPE handoffs between multiple CBSD devices.
    a. Start with 2 or more CPE devices connected to the same CBSD device. Move towards the next nearest CBSD device along the path of the RTG. Verify the CPE device successfully connects to the second CBSD device. Repeat test for the other CPEs and CBSDs, and test reconnection back to original CBSD. (This can be verified with the CPE diagnostics interface, or on the MSI base station network mgmt. side, and also depends on the number of CBSDs mounted/operational in the area.)

        PASS_____ FAIL_____

    Test Notes:

8. Statements and Information

The original City of Perris Request for Proposal (RFP) for a citywide mesh network for city and public use is incorporated into BearCom's proposal response.

The RFP and this proposal response will become part of the Agreement for Professional Consultant Services for this project when said Agreement is fully executed by BearCom and City Project Manager.

A. BearCom's service and fees therefor will in accordance with the RFP except as otherwise specified in section 10 under Additions or Exceptions to the City's Request for Proposal.

D. Statement of Qualification

Team Member	Qualifications	Project Duties
Mike Owen	CTO and Network Solutions Leader, 30+ years in technology and US military.	Provide high-level oversite of project from RFP preparation through solution deployment.
Darryl Deaton	Business leader and customer development executive for 30+ years.	Primary customer contact for solution development, RFP preparation, contracting, as well as POC for City Manager.
Greg Donahe	30+ year operational and deployment leader for multiple LOBs.	Works directly with City Manager to maintain solution alignment with City goals and objectives ensuring solution meets all stated objectives.
Craig Grilliette	Network Solutions Architect with 25+ years industry experience.	Solution architect and system designer. Works directly with client IT on system integration. Ongoing post deployment support.
Russ Woods	30+ years in multiple ops and deployment leadership roles across multiple LOBs.	Oversees frontline deployment team ensure execution is in alignment with RFP and other customer commitments.
Dr. Tom Mao	Electrical Engineering PHD. Sr. RAF/RAN Engineer with 30+ years of experience.	RF planning and solution engineering.
Neil Looper		Deployment leader overseeing all onsite resources involved in staging, installing, and troubleshooting solutions.
Krystal Davis-Dearing		Administrative leader and coordinator for customer experience.

E. BearCom has over 40 years' experience in providing wireless voice, video, and data solutions to more than 30,000 customers. BearCom's footprint extends across North America with over 75 brick and mortar locations spread across most major market. With nearly 1300 employees BearCom is uniquely positioned to provide a complete turnkey solution that is delivered and executed by BearCom employees.

   Resumes of all key personnel are included in Addendum.

F. There are no known conflicts with any current BearCom clients or staff members of the City of Perris.

G. BearCom does not typically utilize an hourly schedule for Network Solution projects. If extra work is requested by the City of Perris, BearCom would prefer to provide a quote for that specific scope of work however as requested an hourly pricing table is provided.

Trip/Hour	Installer	Field Service Tech	Professional Services
$110	$180	$205	$225

H. All charges for BearCom services are a 'Not-to-Exceed-Fee.'

I. BearCom will document and provide the results of the work to the satisfaction of the City of Perris, which may include preparation of field and final reports or similar evidence of attainment of the Agreement objectives.

J. BearCom will not discriminate against any employee or applicant for employment because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sex, age, sexual orientation, ethnicity, status as a disabled veteran, or veteran of the Vietnam era.

K. BearCom will adhere to all federal laws and regulations notwithstanding any state or local laws and regulations. In case of conflict between federal, state, or local laws, or regulations the strictest shall be adhered to.

9. Additional Relevant Information

Proposal Assumptions

- Identified customer building locations are suitable for rooftop mounts (permitted, adequate height, weight load approved, etc. Costs may increase if other rooftops must be used or if site locations need to be constructed.
- Customer to provide building / site access – to include badging or site-specific access requirements and point of contact.
- Where necessary, the Customer will provide a dedicated delivery point, such as a warehouse, for receipt, inventory, and storage of equipment prior to delivery to the sites.
- Electrical supply and fiber/cat6 needs are customer responsibility, within 3-feet of radio equipment location.
- Customer will provide R56 compliant grounding connection point within 3-feet of equipment location.
- Customer to provide for a safe working environment and conditions for BearCom representatives.
- Unless otherwise stated or agreed to elsewhere, work is to be performed during normal business hours, Monday through Friday, 8:00 AM to 5:00 PM Central Time.
- BearCom will have access to all work locations during the previously agreed to times and a point of contact will be made available during those work times.
- Equipment installed is covered by the manufacturer, defined by the manufacturer in their warranty terms. Warranty repair or replacement does not include labor, unless stated otherwise.
- BearCom installation is covered by a one-year warranty and does not cover damage from customer negligence or natural disasters. Labor to repair or replace equipment is included during this timeframe.
- Support contract includes remote or on-site troubleshooting and repair of infrastructure related equipment and annual preventive maintenance.
- Estimates includes pricing for equipment (radios, antennas, cabling from antennas to radios, mounting hardware, and a support contract). Estimates also includes pricing for certain outdoor and indoor CPE and end user devices.
- Detailed RF coverage is based upon completion of propagation study after the project site walk at which time the selected RAN placement is validated.
- Without a completed site walk study, BearCom is assuming that existing towers and non-penetrating roof top mounting plan for this system will be adequate. Costs may change if the proposed installation configuration must be modified.
- BearCom does not provide a support or maintenance contract for any end user devices.
- All copper runs should be less than 100m. Network connections must be at least 10 Gbps.
- Customer is to provide internet connectivity.
- Customer will provide appropriate IT resources for this project to ensure that connectivity, power, routing, internet, ports, and firewalls will be supported.

- Customer is responsible for leading the permitting effort for new monopole sites. BearCom will support the permitting effort with engineering drawings and site plan as well as completion of necessary permitting paperwork.

10. Additions or Exceptions to the City's Request for Proposal

None noted.

11. Cost Proposal

Private LTE - CBRS Quotation	
Equipment, Services, Licensing and Maintenance costs.	Extended Cost
Services:	
Description:	
Network Design, RF engineering, network engineering, installation of radios/antenna system kits, Installation of EPC core network, commissioning, enablement, optimizing of Radio Access Network , CPI configuration and compliance, project management for the sites	$ 1,470,585
Construction management, core samples, structural analysis, construction drawings, permit/zoning, permit fees	$ 379,500
Services: Subtotal	$ 1,850,085
Equipment:	
Description:	
Radios/antenna system kits, gateways, switches, EPC Core, tower equipment kits, enclosures, custom fab, cabling, CBSDs, sims, end user devices, parsec antenna's @ 25% of UE's (325 of 1300)	$ 3,200,002
Equipment: Subtotal	$ 3,200,002
Licensing:	
CBSD Licensing	$ 33,264
Maintenance	
Hardware and software Maintenance contract	$ 112,912
Licensing & Maitenance: Subtotal	$ 146,176
Grand Total	$ 5,196,263

License and Maintenance Years 2-5	$ 691,593
Year 2	$ 165,310
Year 3	$ 170,269
Year 4	$ 175,377
Year 5	$ 180,638
Grand Total - Equipment/Services/Maintenance/Licensing for five years	$ 5,887,856

12. Addendum – Resumes

MIKE OWEN, CTO

Highly motivated, creative, versatile, culturally sensitive, and internationally traveled professional with 25+ years of experience in business development, communications, training, engineering, project management, marketing, and direct leadership of highly skilled, technical, and multinational employees. Possesses exceptional skills in team building, improving productivity and working relationships between different organizational clients and project staff. Additional assets include an in-depth understanding of emerging technologies, a talent for analyzing problems and successfully finding innovative solutions, developing, and simplifying procedures, forecasting project costs, and managing multimillion-dollar budgets, planning, and directing activities which provide innovative information technology, telecommunications, and customer service with a high level of quality and satisfaction. As a leader in an ever-changing technology industry, it is through commitment to achieve the highest level of professional and personal excellence that creates positive results which drives a company forward.

EXPERTISE

- Quality and Performance Improvement
- Budgeting and Financial Reporting
- Relationship and Team Building
- Decision Making and Problem Solving
- Presentations, Negotiations and Deal Closing
- Full Life Cycle Project Management
- Strategic and Operational Planning
- Turnaround and Crisis Management

PROFESSIONAL EXPERIENCE

Vice President, Information Technology, and Innovation
2019-Present

BearCom

- Lead for both the Information Technology and Innovation organization Developed PLTE system to deliver broadband connectivity for both outdoor and indoor coverage
- Technical SME supporting customer engagements across multiple vertical sectors
- Architected new IT infrastructure to increase the cyber security of corporate networks
- Working to develop innovative solutions supporting migration to Industry 4.0
- Design and implement CBRS/PLTE solutions for customer
- Restructured IT department to better server internal customers, reduced IT tickets by over 72%

Director Research
2014-2019

United Rentals, Plano, TX

- Spearheaded the development of fully automated water delivery systems
- Lead team of developers for autonomous driving vehicles
- Researched and vetted new technologies to reduce cost and increase productivity
- Developed systems to utilize Lidar technologies on drones

Vice President, Information Technology

BakerCorp

- Team leader for both the application development and infrastructure organizations
- Worked directly with the CIO to establish and monitor the IT budget, ~$4M annually
- Implemented a conversion from MPLS to SD-WAN and VoIP, annual cost reduction of $725K
- Created MSSQL Data Warehouse and Reporting Services for corporate operations
- Migrated Tableau reporting to SQL for annual cost savings of $250K
- Established in-house C# development team, created mobile applications to support business operations
- Converted On-Premises Exchange email and SharePoint to Office 365 and SharePoint online
- Grew infrastructure from seven bare metal servers to VMWare environment supporting 100+ servers
- Defined Management Metrics reporting service in conjunction with business to enhance branch operations
- Develop first in the market tank monitoring application that was certified to operate in refineries, to date has generated over $200K of revenue and $1.5M of drag-along revenue
- Teamed with the Marketing organization to develop BakerInSite customer technology strategy

Information Architecture
2013-2014

Texas Capital Bank

- Acute knowledge of hardware, software, networking, applications, and systems engineering
- Familiar with architectural concepts of Information Technology Infrastructure Library, Open Group Architecture Framework, and Institute of Electrical and Electronics Engineers

- Excellent communication, presentation, and organizational skills
- Provided comprehensive information architecture related to the selection, acquisition, and operation of agency's IT investments; thus, enabled the agency to better understand and control its IT portfolio
- Create future vision architecture to expedite delivery of new products and services to market while meeting company's cost and risk reduction objectives
- Helped define and operate a repository that enabled development projects to share best practices

Director of Architecture
2009-2013

- Safety-Kleen Inc., a Clean Harbors Company, Richardson, TX
- Provide Enterprise level architectural standards and governance
- Perform analysis of current and future architectural designs
- Directly support stakeholders developing strategies to align process and business goals
- Establish best practices for developing and implementing information systems

Sr. Enterprise Architect / PMO Manager

- Architect enterprise IT systems to include database, infrastructure and applications
- Develop ETL process to move data from SAP to transformation data stores
- Model relational database and BI warehouses
- Develop cross-domain database models to support integrated applications
- Ability to interpret new directions in technology
- Design n-tier software applications
- Modeled and developed interface between .Net and SAP applications
- Model Biztalk orchestrations to support XML to IDOC conversions
- Implement Biztalk solutions to support EDI transactions
- Manage Safety-Kleen IT PMO organization
- Responsible for strategic planning
- Provide direction and oversight for Project managers
- Establish processes and procedures for project execution

Sr. Consultant 2007-
2009

BT INS, Irving, TX

- Development and deployment of SharePoint .Net application
- Experience with WCF, LINQ, AppFabric, Unity and Entity Framework
- Develop C# (Sharp) .Net applications for customers
- Create scripts and stored procedures for SQL and Oracle databases (T-Sql and PL-Sql)

- Develop SSIS packages and SSRS reports
- Consult with customers on the migration to Service Oriented Architecture
- Develop SOA applications using Windows Communication Foundation
- Migrate applications from classic .Net to WWF and WCF
- Utilization of the Biztalk rules engine to support business driven changes
- Ability to understand and gather complex business requirements
- Strong knowledge of Microsoft Team Foundation Server

Sr. Engineer/ Sr. Consultant 2005-2007

Adea Solutions Inc., Irving, TX

- Managed Software development and deployment of SharePoint .Net application
- Provide Consulting services in support of Customer Technology and Marketing strategies
- Project Managed the Design and Development of Share Point Portal for RF Engineering Project
- Perform software upgrades on Unix Servers, ATM Switches, Firewalls, Routers, and other devices
- Perform software upgrades on Nortel Customer CDMA NBSS and EVDO networks
- Delivered Knowledge Transfer sessions for Nortel customers on CDMA NBSS and EVDO networks
- Maintain Lab equipment for upgrade training and in support of Nortel Training Center
- Develop software tools to support training courses
- Developed software simulator for Nortel Multi Service Switch upgrades (Perl and C#)

Director of Operations
2001-2004

GTCI Allen, TX

- Supported and oversaw documentation, training, engineering, and information technologies departments
- Responsible for entire company's project proposals and budget projections
- Consulted with customers to determine project requirements and deliverables
- Responsible for end-to-end activities on all projects
- Resolved issues, Risk management and performed Root Cause Analysis
- Successfully managed multiple projects (up to 43 at one time)
- Increased company staffing from 15 to 50 professionals which included project managers, technical writers, IT and other support staff
- Increased company revenues by $5,000,000 in less than eleven months by increasing project performance
- Focus on creating and managing budget, schedule, and specifications/scope of work

- Developed, issued and executed Request for Quotes, Proposals and Information
- Interview, resource and hired project teams
- Trained project managers on the use of the Waterfall methodology for documentation projects

Sr. Manager, Wireless Internet Market Development
1995-2001

Nortel Networks Richardson, TX

- Developed programs to support wireless marketing and sales organization
- Project managed events and programs
- Consulted as a Liaison between Customers and the R&D organization
- Performed market research and forecasting of trends in the wireless arena
- Developed Programs on the Evolution of VoIP in the Wireless Industry
- Lectured and presented in support of Wireless Internet Market initiatives
- Manager, Wireless Installation and Commissioning Training Department
- Managed the rebuilding of I&C training group
- Coordinated department restructuring project as part of an overall organizational restructuring program
- Maintained a million+ dollar budget
- Expanded department size from two to sixteen instructors and developers
- Increased the number of training days from 300 a year to 300 per month
- Managed full life cycle build-out of new internal training facility
- Coordinated the efforts of a staff of 16 writers and instructors
- Worked with internal and external customers to initiate, plan and develop training curriculums

Lead Engineer, Nortel Caribbean, and Latin America CDMA department

- Deployed new Code Division Multiple Access (CDMA) networks in both Guatemala and Haiti
- Responsible for developing and executing database implementation projects as part of the overall deployment programs
- Documented best-practices for network deployments
- Installed and commissioned all major subsystems (Base Station Controller, Base Station Manager and Base Transceiver Subsystem and Unix networks)
- Performed optimization of the networks, post install

Senior Engineer, Nortel Sprint Validation Office Team

- Lead the development and deployment of TCL/TK based software programs for CDMA OA&M

- Responsible for scoping, initiation, planning execution, and completion of database migration project for customer networks (Performed with the following software tools, perl, expect, TCL/TK, shell, SQL)
- Mitigated potential risk of database migrations through the utilization of test cases and lab testing
- Coordinated activities between design organization and VO office on software development project. This project included the development of new software tool for system loading.
- Strong knowledge of computer systems and networking, to include UNIX, Microsoft, TCP/IP, and scripting languages

Senior Wireless Instructor/Developer

- Developed and delivered first CDMA BSM courses for Nortel Networks
- Maintained all CDMA equipment in Nortel Networks wireless training lab
- Scripted and maintained all data fill for wireless training lab BSM, BSC and BTSs
- Certified Nortel instructor on all CDMA BSC, BSM and BTS courses to include ATM switch

MILITARY EXPERIENCE

147th ATKW TXANG USAF
2019-Present

Ellington Field JRB, Houston, TX

- Chief Enlisted Manager for the Communication Flight
- Senior enlisted advisor to the CF Commander
- Provide leadership training for enlisted members of the CF

10th Air Force Headquarters USAF
2015-2019

Carswell Joint Reserve Base, Ft. Worth, TX

- Cyber Superintendent for 10th AF A3/X
- Subject matter expert for AFRC cyber weapons systems
- Perform Command Directive Compliance Assessments for subordinate units
- Support the General and Directorate Staff on strategic planning for cyber units

Texas Air National Guard
1994-2014

Dallas, TX

- Developed master station log Asp .Net web application that is utilized by Combat Communication units

- Designed and engineered tactical communication networks to include all voice and data circuitry
- Developed circuit and frequency plans for tactical communication networks, to include all microwave links, switch trunks, satellite and point to point circuits
- Operated the AN/TSQ-111 Communications Nodal Control Element (CNCE) tactical communications technical control facility
- Obtained four separate Air Force Specialty Codes (Career fields)

Massachusetts Air National Guard 1989-1994
Worcester, MA

- Operated and maintained the AN/TPS-43 Tactical Air Control Radar System
- Operated and maintained the AN/GSQ-120 Radar Remote Microwave System
- Operated and maintained the AN/TSC-100A/93B Satellite Communications Terminals
- Operated and maintained the AN/TRC-97/170 Tropospheric Scatter Microwave Radio Terminal
- EDUCATION
- Master of Science, Cyber Security
- Bachelor of Science, Information Technology
- Associates Degree Electronic Systems Technology
- UNIX System Administrator Certificate
- CompTIA A+, Network+, Security+ and Project+ Certified
- Microsoft Certified Professional
- Oracle Java and JScript Certified
- CIW Web and Database Certified Developer
- CPI – Certified Professional Installer (SAS certification)

DARRYL A. DEATON, VICE PRESIDENT, NETWORK SOLUTIONS & ENTERPRISE SALES

QUALIFICATIONS

- Proven leadership skills; able to motivate sales professionals and resource teams in order to improve productivity and meet or exceed company performance goals.
- High energy, aggressive, and persuasive personality for building relationships with customers, suppliers, and partners.
- Hard working, dynamic, and positive attitude utilized to reset and establish team culture.
- Willing and able to make tough people, pricing, and customer decisions.
- Skilled at developing professional respect and confidence with internal stakeholders for corporate level sales teams.
- Enthusiastic, dedicated, persistent, and self-motivated with excellent verbal and written communication skills.
- Strong presentation skills in one-on-one or small group meetings; engaging public speaker in larger venues.
- High personal standards, ethics, and integrity.

EMPLOYMENT, ACCOMPLISHMENTS, AND RESULTS

BearCom – Nashville, TN

Vice President, Network Solutions & Enterprise Sales: February 2022 – Present

Vice President, Enterprise Sales: August 2019 – February 2022

- Build the Network Solutions sales strategy, selling structure, and business development efforts, while leading and expanding the Enterprise Sales platform for the company.
- Accomplishments: Established SF.com usage and performance standards focused on customer and opportunity management. Created a strategic account template and implemented a strategic account planning process for the Enterprise Sales team. Initiated sales activity tracking with plan to establish activity targets for FY2023. Maintained a minimum of 2-3 hours per month of one-on-one coaching for each direct report.
- Results: Achieved 123.5% of gross profit budget and 96.5% of revenue budget for FY2022. Grew Enterprise Sales team opportunity pipeline to $40.3M.

Safety-Kleen – Nashville, TN

Sr. Vice President, Corporate Accounts: July 2015 – August 2019

Vice President, Corporate Accounts: July 2014 – July 2015

- Managed the Corporate Account sales organization, including four sales directors, 23 corporate account managers (CAMs), and two Key Account Managers (KAMs) covering the US and Canada. Responsible for managing and growing $271M in revenue, 108M used motor oil gallons, and 1M gallons of finished lubricants.
- Accomplishments: Established world class performance expectations for sales pipeline management, sales activities, new business wins, and results to quota. Launched biweekly call cadence with corporate account sales team to set tone, provide business guidance, drive results and report team performance. Created and implemented a quarterly CAM score carding process with recognition for CAM of the Quarter. Researched, designed, and produced standardized strategic account template. Expanded strategic account planning process across entire corporate account team. Designed and instituted new comprehensive corporate account sales report. Expanded the professional development of corporate account managers and directors. Completed 360° survey of entire corporate account sales and support organizations in order to identify management performance gaps and establish corrective action plans. Led team to capture single largest used motor oil customer in company history. Led team to reduce company's customer payments for used motor oil collection services by over $93M.
- Results: 20 consecutive quarters of >100% performance to quota. Achieved world class performance levels in CY 2018 with 95% of CAMs achieving sales activity targets, pipeline percent active, and pipeline percent current. Also realized world class team results with 85% of Corporate Account Managers exceeding closed-won business goals. Improved percentage of CAMs achieving pipeline quota ratios each quarter with team moving toward world class performance levels.

Sales Director, Key Accounts: March 2012 – July 2014

- Managed eight National Account Managers covering the Southeast Region and Government Services. Responsible for $107M in combined revenue and used motor oil gallons. Measured and managed individual performance. Provided sales guidance and support.
- Accomplishments: Created team environment. Developed strategic account planning template and review process. Established performance expectations for sales pipeline management. Communicated sales activities and account strategies to corporate resource teams to foster goal alignment.
- Results: 100% to 2013 quota and 110% to prior year. Promoted.

Univar Solutions (formerly Ashland Distribution) – Dublin, OH

Sales Director, Corporate Accounts: April 2011 – March 2012

- Managed six Corporate Account Managers covering the Chemical Manufacturing and Personal Care market verticals. Responsible for $254M in annual revenue and $37M in gross margin.
- Accomplishments: Improved CAM sales competency, aggressively managed underperformance, added new talent, and began building a highly focused strategic selling approach utilizing detailed account plans to maximize 'value creating' sales opportunities for the team.
- Results: Exceeded 2011 gross margin budget, 102.8% to plan. Exceeded gross margin per pound and gross margin percent targets.

Business Development Manager: August 2010 – April 2011

- Responsible for implementing Quality of Service project including mentoring and coaching of customer service, purchasing, and sales personnel for the Chemical line of business
- Accomplishments: Established and aligned service matrix with customer segmentation. Identified, notified, and modified customer expectations to align with actual company service capabilities. Created 'Service Is Back' culture by implementing a defined escalation process allowing the customer service organization to solve service problems without sales input.
- Results: Implemented Quality of Service program across the entire Chemical line of business. 2010 Game Ball Award recipient for outstanding contributions to organizational improvement. Promoted.

Corporate Account Manager: December 2006 – August 2010

- Responsible for growing and maintaining sales to 16 corporate accounts generating over $63.4M in annual sales revenues.
- Accomplishments: Achieved top-level performance with price and margin management. Built and leveraged customer relationships to improve profits. Effectively managed high-risk credit accounts balancing sales and profits with financial exposure. Captured 16.6M pounds of new business. Earned top 20-vendor status with PPG Industries. Achieved and maintained 'certified supplier' status with Eastman Kodak for outstanding quality, delivery, lead time, and productivity performance.
- Results: Units: -6.1% to prior year. Gross profit dollars: -0.1% to prior year. (This was considered outstanding performance as the market was down 25 %.) Achieved E (exceeds expectations) rating. Promoted.

InnoSource – New Albany, OH

Director of Sales: June 2004 – December 2006

- Responsible for all sales and marketing efforts of the company. Responsible for creating a sustainable, repeatable sales process.
- Accomplishments: Prospected and developed new accounts. Created detailed prospecting plan and prospect tracking mechanism to maximize sales efforts. Updated, customized, and created sales literature to market InnoSource to specific target markets. Created a competitor analysis and sales analysis to better understand the marketplace.
- Results: Sales dollars: + $957,000 to prior year. Sales dollars: 249% to prior year. Developed eleven new accounts.

Univar Solutions (formerly Ashland Distribution) – Dublin, OH and Doraville, GA

District Manager: May 2002 – May 2004

- Managed ten sellers covering the northern Ohio and eastern Pennsylvania territory. Responsible for district P&L, establishing performance goals, managing performance to plan, providing sales guidance, and mentoring all sellers.
- Accomplishments: Realigned sales territories, improved manager/seller communications, developed talent, and eliminated underperformers.
- Results: Generated $80M in annual revenues and $10M in annual gross profit dollars. Gross profit dollars: 106.6% to budget, 115% to prior year. Sales dollars: 100% to budget, 106.3% to prior year.

Supply Manager: May 2000 – May 2002

- Managed and coordinated the corporate relationships with five of the division's top ten suppliers. Negotiated corporate volume agreements and incentive plans, negotiated preferred payment terms, and ensured that regional purchases aligned with national plan.
- Accomplishments: Negotiated supply contracts with a total value of $500M. Created reporting tools that tracked actual purchases versus planed purchases to ensure maximum corporate rebate levels were obtained.
- Results: Generated $18M in corporate incentives (100% to goal) while corporate purchase volumes declined 15%. Promoted.

Account Manager: May 1999 – May 2000

- Managed a highly competitive sales territory with annual revenues of $7.5M. Responsible for growing and maintaining sales of commodity and specialty chemical

products to new and existing customers in the detergent and cleaning products industry.

- Accomplishments: Developed a minimum of three contacts at every account in top 20. Lead the New South Synergy Team. Improved accuracy of customer pricing and price letters. Increased average selling prices and raised gross profit by $0.025 lb.
- Results: Gross profit dollars: 108% to plan, 116% to prior year. Improved territory receivables to 95% current. Promoted.

Territory Manager: September 1996 – May 1999

- Managed a highly competitive sales territory with annual revenues of $7.5M. Responsible for growing and maintaining sales of commodity and specialty chemical products to new and existing customers in the detergent and cleaning products industry.
- Accomplishments: Raised average selling prices by $0.03 lb.
- Results: Gross profit dollars: 98% to plan, 106% to prior year. Sales dollars: 101% to plan, 98% to prior year. Promoted.

Waste Management (formerly CWM Resource Management) – Morrow, GA

- Product Manager: July 1993 – September 1996
- Managed eight state sales territory generating $4.6M in annual sales. Responsible for selling and supporting the company's hazardous waste disposal program to existing and new customers by effective marketing and sales calls on large waste generators.
- Accomplishments: Developed knowledge of DOT and RCRA regulations. Learned to sell an intangible service.
- Results: Sales dollars: 105% to plan.

Univar Solutions (formerly Ashland Distribution) – Birmingham, AL

Sales Specialist: October 1991 – July 1993

- Represented the company's product lines to existing and prospective customers.
- Accomplishments: Grew hazardous waste sales by 300%. Increased sales of 'new specialty products' by 50%. Developed 11 new accounts (goal was six.)
- Results: Gross profit dollars: 98.6% to plan. Sales dollars: 95% to prior year.

Sales Representative: July 1990 – October 1991

- Represented the company's product lines to existing and prospective customers.
- Accomplishments: Increased the customer base by effective canvassing. Developed knowledge of industrial sales to manufacturing companies.
- Results: Promoted to Sales Specialist.

EDUCATION

BBA in Marketing, University of Kentucky – Lexington, KY (May 1990)

- Graduated with High Distinction
- Major GPA 3.93/4.0
- Cumulative GPA 3.86/4.0

RUSSELL WOOD – PROJECT TECHNICAL DIRECTOR – NETWORK SOLUTIONS

Over 35 years of experience in IT and telecommunication system design, delivery, operation, and maintenance for multi-national corporations and government agencies. Proven track record of managing design, installation, and commissioning of complex telecommunication systems in industrial environments. Acknowledged ability to manage and train technical personnel in direct support of customer business objectives.

PROFESSIONAL EXPERIENCE

BEARCOM, Garland, Texas 2021 – Present

Project Technical Director

- Develop and Lead the Project Management Office for BearCom's Network Solutions Business.
- Drive projects from pre-sales through presenting, quoting, engineering, installation, closing, and billing.
- Create and optimize Private LTE network designs, implementation, and project processes.
- Certify that as-built designs and post installation documentation is accurate and complete.
- Assure continuous improvement and enhancements are developed and implemented as required.
- Lead change management and the roll out of network solutions playbooks, leveraging best practices across our network.

SGV INTERNATIONAL, LLC – Houston, Texas 2012 – 2021

Construction / Project Manager

- Manage IT Construction projects for new rig delivery.
- Deliver custom IT products for worldwide projects.
- Manage IT assets at remote customer locations.
- Troubleshoot IT and AV system issues at offshore facilities.
- Work with customer to provide custom solutions required for International and offshore locations.
- Complete IT System surveys for power, environmental, equipment space, and user requirements.
- Complete redline/as-built drawings as required.

TEXAS MILITARY FORCES - Austin, Texas 2008 – 2012

Vulnerability Assessment Team Systems Analyst

- Assigned to Department of Homeland Security (DHS) to determine systems vulnerabilities of critical civilian infrastructure during site assistance visits. Complete database entries for DHS and provide options for infrastructure owners.

GTCI - Richardson, Texas 2003 – 2008

Director of Technical Training and Documentation

- Manage all technical training and documentation writing projects. Work directly with Vendor Managers, Customer Project Managers, GTCI Project Managers and Staff to scope, schedule and cost writing projects and training delivery.

Senior Technical Instructor / Developer

- Develop and present technical training courses, for wireless/CDMA Base station Transceiver Subsystem's (BTS). Ensure the highest quality product to the customer while meeting all stated course objectives.

TEXAS AIR NATIONAL GUARD - Garland, Texas 1995 – 2013

Chief of Cyber Operations, 221st Combat Communications Squadron, 254th Combat Communications Group

- Manage communications assets and 100 plus personnel for Combat Communications Squadron. Planned exercises and contingency operations utilizing squadron communications assets to meet customer's communications needs at worldwide locations.

MAGNETEK TELECOM POWER GROUP - Dallas, Texas 2003 – 2004

Senior Sales Engineer

- Develop power and enclosure solutions for telecom and other customers. Prepare RFP/RFQ for customers. Provide support to the customer and sales team throughout the entire sales process.

US AIR FORCE - Tyndall, Air Force Base Florida 2002 – 2003

Superintendent of System Control (SYSCON)

- Organize the crew structure and associated position requirements. Direct the development and implementation of the training plan. Track and report status of all communications electronics assets assigned including Air Defense Sectors mission systems, assigned radar systems, and ground to air radio facilities.

SUMMIT WIRELESS – Dallas, Texas 2000 – 2002

Director, Technical Services

- Responsible for system design criteria, purchase requests, equipment vendor selections, Switch and BTS site design and construction, contractor selection, invoice approvals for project management, construction, budget, microwave clearing and cost sharing obligations.

NORTEL NETWORKS – Dallas, Texas 1997 – 2000

Senior Sales Engineer

- Present Technical and Marketing information to customers involved in making vendor and technology selections. Prepare RFP/RFQ and quotations for customers. Provide technical support and problem-solving solutions to customers throughout the entire sales process. Represent various Nortel Networks products at industry trade shows

Senior Technical Instructor/Developer

- Develop and present technical training courses, for wireless/CDMA branch, including Nortel Network's Legacy and Metro Cell Base Station Transceiver Subsystem's (BTS). Ensure the highest quality product to the customer while meeting all stated course objectives. Maintain CDMA BTS' in training lab.

SPRINT PCS – Dallas, Texas 1996 – 1997

Lead RF Technician

- Fulfill duties of Network Operations Supervisor for Ft Worth area of Dallas MTA. Project manager for initial deployment of Nortel Networks BTS' in Dallas MTA. Scheduled and tracked deployment, initial turn up, testing and drive testing. Post deployment duties include Schedule maintenance, open work orders, assign routes, ensure all required maintenance is completed, provide technical expertise to 10 other technicians in operations and maintenance of PCS system, and provide quarterly and annual reviews to technicians

SOUTHWESTERN BELL MOBILE SYSTEMS– Euless, Texas 1995 – 1996

System Technician II

- Maintain AT&T autoplex 1000 cellular sites and microwave radio backhaul systems. Duties include initial turn-up, daily maintenance of network, quarterly and annual FCC inspections, adding and removing T1 and DS3 spans

UNITED STATES AIR FORCE 1983 – 1995

Satellite/Microwave Communications Equipment Specialist

- Deployed, operated, and maintained mobile microwave, satellite earth terminals, and associated equipment. Installed and maintained user circuits.

Instructor

- Taught courses for mobile satellite communications earth terminals, mobile microwave terminals, and associated equipment. Developed course of instruction for advanced technician course for mobile satellite terminals, including lesson plans, visual aids, course material, tests, and measurement devices.

PROFESSIONAL AFFILIATIONS/CERTIFICATION

- PRINCE2 Project Management Practitioner Certified
- Various Nortel Networks training courses
- Various Military Technical and Managerial courses
- CompTIA A+, Network+, Security+ Certified

GREGORY DONAHE – DIRECTOR OF NETWORK SOLUTIONS

Dedicated professional with history of meeting company goals utilizing consistent and organized practices. Skilled in working under pressure and adapting to new situations and challenges to best enhance the organizational brand.

SKILLS

- Strategic Planning and Alignment
- Operational Processes
- Market Strategy Development
- Effective Customer Communication
- Professional Development
- Growth Strategies

PROFESSIONAL EXPERIENCE

BearCom Operating LLC

Director Of Network Solutions- BearCom 2021 – Present

- Supported Network Solutions team as point-of-contact for questions and concerns and assisted with high-level projects, meetings, and presentations.
- Established, initiated, and optimized business development strategies based on company targets, product specifications, market data and budget factors.
- Captured new customers by optimizing business strategies and launching products to diversify offerings.
- Evaluated consumer preferences and behaviors, combined with market trends and historical data, to adjust and enhance campaigns.
- Aligned activities with corporate objectives by coordinating marketing, sales, and IT processes.
- Mentored local personnel on best practices and protocols to maximize productivity.

Regional Rental Director- BearCom 2019 – 2021

- Drove departmental performance and achievement of service levels through focused team operational reviews, structured coaching and managing to enterprise targets.
- Communicated all learning and performance objectives, schedules and training assessments within the regions
- Developed departmental systems and procedures to better align workflow processes.
- Led daily, weekly, and monthly coaching, counseling and feedback sessions.
- Alternated training methods to diversify instruction, strengthen learning opportunities and enhance program success.
- Directed training programs and development paths for managers and supervisors.

General Manager- BearCom 2000 – 2019

- Managed budget implementations, employee reviews, training, schedules and contract negotiations.
- Maximized efficiency by coaching and mentoring personnel on management principles, industry practices, company procedures and technology systems.
- Implemented operational strategies and effectively built customer and employee loyalty.
- Organized budgets oversaw P&Ls and achieved margin targets consistently to stay on track with growth plans.
- Drove year-over-year business growth while leading operations, strategic vision, and long-range planning.
- Set, enforced, and optimized internal policies to maintain responsiveness to demands.

Account Executive- BearCom 1996 – 2000

- Built and strengthened relationships with new and existing accounts to drive revenue growth.
- Prospected new clientele through networking, cold calling, canvassing and referrals.
- Drove new business development through qualifying leads, building relationships, and executing strategic sales.
- Strengthened customer relationships with proactive and collaborative approach to managing needs.
- Managed sales cycle from first contact to established customer sale and maintained solid customer base.
- Identified client business needs by gaining understanding of goals, objectives, and processes.

TOM MAO, PHD, PRINCIPAL RF/RAN SOLUTIONS ARCHITECT

Dynamic, quality-driven, highly motivated, professional expert with 20+ years RF/RAN, 3 years 5G and 11 years LTE. Solid RF/RAN knowledge and practice of 2G, 3G, LTE/VoLTE, and 5G technology. Mastery skills in customer network deployments include required definitions, project planning, and project execution for global operators. Excellent knowledge of 2G-5G network designing, analyzing, performance, optimization, and developing commercially viable E2E solutions.

EXPERTISE

- Develop technology opportunities into detailed solutions and proposals
- Supporting the sales and delivery organization with network integration expertise
- Radio Network Performance Optimization
- Delivering results & meeting customer expectations
- Support deployment of a wireless solutions
- Competitive knowledge in RF / RAN, including solution, technology, and product offering
- Works with internal and external partners to design, integrate and test solutions in a lab environment and before deployment
- Outstanding ability to multitask and manage various projects simultaneously

PROFESSIONAL EXPERIENCE

Principal RF/RAN Solution Architect (SME), BearCom
2021-Present

Responsible for RF Design, installation, and Optimization for Private LTE network solutions.

- Propagation model tuning, network prediction/design, interference analysis with Planet
- Frequency coordination, cell site (Antenna) solution, feature verification
- Optimization with TEMS/OSS
- Network design guideline development
- Process development and research and development

Principal RF/RAN Solution Architect (SME), ZTE
2008-2021

Responsible for ZTE Global 2G-5G RAN/RF solutions as a SME focusing on network Design and Optimization:

- 5G NSA Private Network (NPN) for Seaport for China Unicom – Tianjin, China.
- 5G SA field trial for Orange in Valencia, Spain and won a 5G deployment contract
- 5G NR mmWave (24G-28GHz) field trial in Shanghai, China
- AMX &/Telcel LTE/5G RFx, Lab/Field trial in Mexico City
- Lab features/performance test

- Propagation model tuning, network prediction/design, interference analysis with Atoll Frequency coordination, cell site (Antenna) solution, feature verification
- Optimization with TEMS/OSS
- Network design guideline development
- Provided a series of 5G technical workshops: *5G Architecture *LTE/5G Convergent Networks *Network Slicing *5G FWA * eCPRI *vRAN
- MTN 2G-4G Multi-RAT Network Swap & DAS design (E/// and Huawei) - South Africa
- DU 5G RAN Solution workshops – UAE
- Multi-RAT (2G-4G) Small cells network design and Optimization for Ooredoo - Algiers Airport
- Telefonica Panama 2G-4G network design and optimization
- Telcel Mexico – LTE Small cells workshop/Field trial
- Telemex LTE FWA – Solutions and network design with Atoll
- CommNet UMTS/LTE Solutions and network design
- Viva Dominican Republic WiMax/LTE Swap
- Entel UMTS/LTE network design and optimization – Bolivia
- Etc.

Sir. RAN/RF Design and Optimization Engineer, T-Mobile West Region
2007-2008

- UMTS Network design and design optimization with Planet EV
- Both Ericsson & Nokia UMTS RAN
- Path-loss Tuning (WiNEs)/ACP
- RFDS and design report development

Sir. RF Optimization Engineer, AT&T East Region
2007-2007

- Responsible for GSM UMTS combined network optimization (Ericsson RAN)
- GSM/UMTS ACP optimization (Optimi x-ACP)
- GSM/UMTS network design (Atoll)
- Network performance analysis

Regional RAN PM for AT&T Account, Ericsson US
2005-2006

- PM for GSM deployment in Boston/Connecticut/Rhode Island

RAN Product Specialist, Ericsson Sweden
2005-2005

- GSM R13 release guidelines development

Technical Solutions RAN Manager, Ericsson KAM (AT&T)
2003-2005

Responsible for AT&T GSM network solution and network performance

- Lead a group of E2E (MSC/BSC/Transmission/BTS) engineers for MAXCAP
- Responsible for the project performance, resources and schedules

Director of Network Design and Optimization, Ericsson China
1997-2003

- P&L management, forecasting, budgeting, strategic planning, and internal resources management, ASP/ARP management
- Nationwide ND/NO for China Unicom/China Mobile with Asset

Sr. RF Consultant, Ericsson US
1994-1997

- Responsible Network design and Optimization for AT&T
- New product and solutions field trial
- In-building DAS Network Design and Optimization with Planet EV
- Design/Optimization Engineering guideline development and approval

EDUCATION

Ph.D. - University of Texas at Dallas

- Sept 1991 to April 1994, Ph.D. in Electrical Engineering
- Thesis: Nonlinear Multi-H Phase Codes for Continuous Phase Frequency Shift Keying Modulation

MS.E. E - University of Texas at Dallas, Sept. 1989- July 1991

Status: * US citizen Covid-19 vaccination completed

CRAIG GRILLIETTE, NETWORK ARCHITECT

Customer Facing, Network Design Solutions Architect with career expertise maximizing network performance, specializing in LAN and WAN Internetworking Technologies, Secure Networking Technologies, Routers, Switches, IP Services, Next-Generation Networking and Telecommunication Services and Next-Generation Wireless Technologies. B2B Sales and Pre-Sales Support, developing RFP's, RFI's, RFQ's, for enterprise Clients. Foster customer relationships to identify needs, design, deploy, and maintain networks that achieve objectives, enhance user experience, minimize risk, and deliver quality service with high levels of organization, attention to detail, and troubleshooting.

EXPERTISE

- Core competencies include Private LTE/CBRS services and architecture, Cloud Services Fundamentals (AWS and Azure, VM and Containers)
- Mastery experience in Network Architecture, Network design, system integration, B2B sales and pre-sales support
- Ability to convert customer requirements into logical solution designs
- Demonstrate viable technology by facilitating proof of concepts and pilot activities
- Performing concept and feasibility assessments (scope, time, and cost) of potential solutions based on customer requirements and technology
- Supporting procurement specialists, as technical subject matter experts, in the procurement processes such as RFI and RFP
- Supporting project management activities throughout the project
- Working knowledge of Over the Air (OTA) technologies allowing updates to SIM cards and devices.
- Intelligent WAN technologies
- Converged Network Technologies
- WAN optimization Services.

PROFESSIONAL EXPERIENCE

BearCom 2021-Present

Network Solutions Architect, Dallas / Fort Worth

Serve as Customer facing Lead Design, and Solutions Architect supporting BearCom clients. Translate business needs into offerings leveraging BearCom services. Provide Technical Consulting, review and approve Network Architecture Design and Implementations for Regional and Global Projects around Network Infrastructure Solutions Design and Architecture.

- Provide Infrastructure Solutions Design / architecture and implement new and existing WAN / LAN / Wireless / Security / Private LTE(CBRS) Solutions for BearCom customers.

- Lead Network Solutions Team within the supporting the BearCom Accounts responsible for Solutions and Designs of the Wireless Network Infrastructures within Client base, both the Core, Edge, and Internet Services, including the integration of the BearCom Wireless solutions into the Clients infrastructure
- Perform as Network Solutions Lead within the BearCom Accounts Implementing and Designing Converged Networks with Voice, Data, WAN/LAN, and Evolved Packet Core inclusive of large-scale (Large School Districts, Smart-City and Enterprise) and small-scale (Proof-of-concept and Pilot) client projects.
- Knowledge of 4G, 5G and LTE Architecture Packet Core and Evolved Packet Core, Radio Access Network (RAN), RAN OA&M, and LTE Nodes including MME, SGW, PGW, HSS, and PCRF.
- Expertise in network and systems virtualization services in support of Next-Generation Network solutions.
- Design and implement both the WAN, LAN, Internet Services and Routing in support of Private and Public Cloud offerings.
- Promote movement towards Cloud hosted and on-premises Next-Generation Wireless Solutions (4G LTE, 5G NSA, 5G SA).

iOPEX Technologies 2020-2021

Network Solutions Architect, Dallas / Fort Worth

Serve as Customer facing Lead Design Architect supporting DXC clients. Translate business needs into offerings leveraging AT&T services and leveraged DXC services. Provide Technical Consulting, review and approve Network Architecture Design and Implementations for Regional and Global Projects in the area of Network Infrastructure Solutions Design and Architecture.

- Design and implement both the WAN, LAN, Cisco Unified Collaboration and Communications Services, and Internet Services and Routing in support of Private and Public Cloud offerings both within DXC Leveraged Data Centers and DXC Azure Cloud Client Services with the DXC Customer Base.
- Provide Infrastructure Solutions Design / architecture and implement new and existing WAN / LAN / Wireless / Security / R&D Networking Solutions for DXC customers. Supported accounts include Nokia and Energy Harbor.
- Served as Subject Matter Expert Escalation Tier to support the Network Operations/Run Organization.
- Lead Network Solutions Team within the Americas Region Projects Team supporting the DXC Nokia Account responsible for Solutions and Designs of the Network Infrastructure within the Nokia Global Network, both the Core, Edge and Internet Services, including over 3000 devices, over 300 Sites in 50 Countries.
- Perform as Network Solutions Lead within the DXC Accounts Implementing and Designing large-scale facilities moves of offices and R&D Labs, Partner and Hosted

Services for Alcatel-Lucent and Nokia sites. Network Services include WAN/LAN/WLAN/Security and Internet services.

- Design and deploy the Nokia Next-Generation and Intelligent Ultra-Broadband Global Core and Edge SDN Ready Networks (SDWAN and NFV foundations) and Next-Generation Security Services in over 60 countries and over 400 sites to support the Nokia Global R&D, Corporate, Partner, Cloud Hosted and Data Center Services.
- Promoted movement towards Cloud and SD WAN solutions.

AT&T / DXC Technology 2017 – 2020

Network Solutions Architect / Customer Engineering, Dallas / Fort Worth, TX, 2018 – 2020

Network Solutions Architect - DXC Technology, Plano, TX, 2016 - 2018

Serve as Customer facing Lead Design Architect supporting DXC clients. Translate business needs into offerings leveraging AT&T services and leveraged DXC services. Provide Technical Consulting, review and approve Network Architecture Design and Implementations for Regional and Global Projects in Network Infrastructure Solutions Design and Architecture.

- Design and implement both the WAN, LAN, and Internet Services and Routing in support of Private and Public Cloud offerings both within DXC Leveraged Data Centers and DXC Azure Cloud Client Services.
- Provide Infrastructure Solutions Design / architecture and implement new and existing WAN / LAN / Wireless / Security / R&D Networking Solutions for DXC customers. Supported accounts include Nokia and Energy Harbor.
- Served as Subject Matter Expert Escalation Tier to support the Network Operations/Run Organization.
- Provide Networking Designs to support Cisco Unified Collaboration and Communications Services deployments within the DXC Customer Base.
- Lead Network Solutions Team within the Americas Region Projects Team supporting the DXC Nokia Account responsible for Solutions and Designs of the Network Infrastructure within the Nokia Global Network, both the Core, Edge and Internet Services, including over 3000 devices, over 300 Sites in 50 Countries.
- Perform as Network Solutions Lead within the DXC Accounts Implementing and Designing large-scale facilities moves of offices and R&D Labs, Partner and Hosted Services for Alcatel-Lucent and Nokia sites. Network Services include WAN/LAN/WLAN/Security and Internet services.
- Design and deploy the Nokia Next-Generation and Intelligent Ultra-Broadband Global Core and Edge SDN Ready Networks (SDWAN and NFV foundations) and Next-Generation Security Services in over 60 countries to support the Nokia Global R&D, Corporate, Partner, Hosted and Data Center Services.

- Leveraged the DXC Managed Network Services within the Nokia Account to include WAN, LAN, WLAN, R&D Networking and Security Services.
- Promoted movement towards Cloud and SD WAN solutions.

HPE / HP, Plano, TX 2009 - 2017

Network Solutions Lead Americas Region
2012 - 2017

Served as Network solutions lead for DXC for Infrastructure Solutions Design and Architecture for Global Projects within the Americas Region. Designed and Implemented Global WAN architecture and Infrastructure for Core and Edge Services.

- Implemented/Designed large scale facilities (2-3000 people) move of office and R&D labs (2-20 labs) inclusive of WAN / LAN / WLAN / Converged Networks within Alcatel-Lucent.

Senior Network Engineer – HPE
2009 – 2012

- Provided Solutions/Project Escalation (SME) Tier to the Run Organization for the Americas Region.
- Lead Infrastructure Solutions Designer and SME for Global Network Projects for Alcatel-Lucent WAN and Partner meet-points within the Americas Region for the ALU account across 6 Data Centers and over 300 Sites.
- Served as Technical Lead for the Alcatel-Lucent Wide Area Network and Partner Meet Points for the Americas Region across 6 Data Centers and 8 Regional Network Hubs.

Alcatel-Lucent / Alcatel USA, Inc. Plano, TX 2000 - 2009

Team Lead Network Services 2006 - 2009

Team Lead WAN Services 2000 –2006

Led Mergers, Acquisitions and Divestitures

- Served as Lead Design Engineer/Architect for the MPLS implementation and Third-Party Access Areas in the Americas Region including Quality and Class of Services to support the Converged Network Services across 120 sites and 8 Alcatel-Lucent DMZ's.
- Achieved a telecom reduction of $5.6 Million within in the SMART Project Team.
- Implemented the full deployment of the MPLS IPVPN Network at 120 sites within 120 days.

- Served as Lead Engineer for the Pilot and Implementation of the Alcatel America's dynamic Regional ATM network transformation. Brought implementation times down by 50% for bandwidth/CoS provisioning.
- Supervised and trained four Network Engineers in the WAN Services Group.
- Achieved a cost reduction of $6.4 Million within the Alcatel Cost Reduction Tiger Team.

ADDITIONAL RELEVANT EXPERIENCE

- SkyTel Communications, a WorldCom Company, Plano, TX | Senior Network Engineer

MILITARY EXPERIENCE

- U.S. Navy, Guam / Scotland, UK | Secure Communications Maintenance Technician-Shift Supervisor

EDUCATION

- Bachelor of Science in Computer Networking, Strayer University
- Alpha Chi Honor Society

AWARDS

- Alcatel-Lucent Night out award for exemplary actions to establish a critical research and development connection for the Voice Network Division.
- Joint Meritorious Unit Award from the Secretary of Defense, Defense Intelligence Agency, Washington, D.C.
- Joint Achievement Medal from the Director of Defense Intelligence Agency, Washington, D.C.
- Letter of Commendation from the Commanding Officer of Naval Computer and Telecommunications Area Master Station, Western Pacific, Guam
- Letters of Commendation and Achievement from the Commanding Officer of Naval Security Group Activity, Edzell, Scotland

TECHNICAL SKILLS

- Cisco Switches
- Routers
- VPN Concentrators
- Firewalls
- Load Balancers
- Alcatel-Lucent Enterprise Switches
- Nokia Service Routers
- HP Networking Switches / Routers
- Next-Generation Security appliances (Check Point | Juniper | Fortinet)
- WAN Optimization (Riverbed)

- Converged / Digital Networks
- Linux
- Cloud Technologies Fundamentals (AWS/Azure, VM and Containers)
- LTE Technologies Fundamentals (4G/5G LTE Architecture and nodes, Evolved Packet Core, On-Premises and Hosted Core and NFV Services) • RF Design Fundamentals (Radio Protocols (MIMO and handoff), coverage and capacity planning, radio propagation modeling and prediction, traffic modeling and RF Hardware))

PROTOCOLS

TCP/IP • EIGRP • OSPF • BGP • MBGP • VRRP • HSRP • IRF • IPSec • MPLS • VPLS • Vrf • VPRN • QoS • CoS • VoIP • STP • MLPPP • IPnIP • GRE • RIP • IPv4 • IPv6 •LTE Architecture (EPC, RAN, UE) • LTE (S1-U/C, X2, S3, S4, S5, S8, S10 and 11)