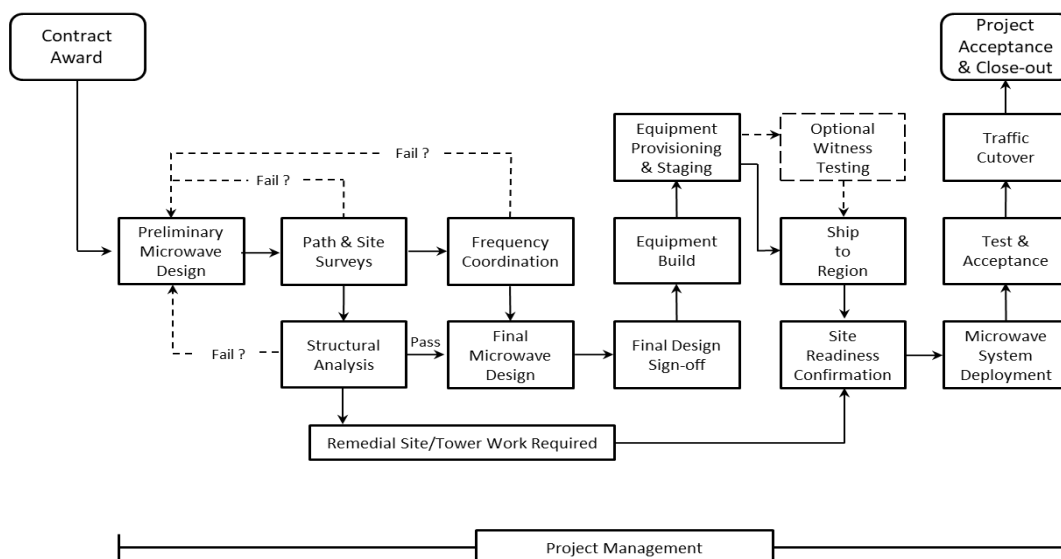


Solution Narrative

Introduction

The following Solution Narrative outlines the standard process that Ceragon has developed over many years and thousands of installation projects. While the equipment being installed is important a process that assures Quality, Reliability and Safety are as important. Ceragon is responding to Exhibit B-1 sections 5.1 and 5.2 which define specific equipment configurations and functionality however, beyond the specific technical requirement the basic system architecture is very similar. The most notable difference is the data transport from the indoor unit controller IP20A to the antenna. The reference Bill of Materials (BOM) provides an example of the more complex all indoor system (Exhibit B-1 section 5.1) with waveguide and ancillary attachment hardware. The system referenced in Exhibit B-1 section 5.2 allows for the RF unit to be either directly mounted to the antenna or remotely on the tower near the antenna.

Upon contract award, Ceragon program management, systems engineering, and overall project implementation work will commence. A preliminary project flow is shown below. To realize the full potential of this network while benefiting from deployment efficiencies and over overall cost savings, the network is proposed to be deployed in one continuous effort.



Note this figure represents the types of services that can be offered. Specific project services are based on the project requirements and a Scope of Work.

Figure 1 - Typical High Level Microwave Project Sequence

Summary of Services

The offer proposed includes the following services:

- Program Management
- Systems Engineering
- Technical Site Survey
- Equipment Staging & Pre-configuration Testing
- Equipment Installation of Contracted Materials from Ceragon
- Integration of additional channels into the existing network
- Final Link Testing based on baseline performance

Project Organization and Management

The project team is organized in a project centric structure. This brings many advantages to the project as the resources are focused on supporting the objectives of the channel upgrade.

The organizational structure includes:

- The Programmatic and Institutional Authorities.
 - o The Programmatic function has overall responsibility for meeting the project objects within the compliance of the contract.
 - o The Institutional function are the technical personnel that provide the expertise to meet the system requirements of the project.

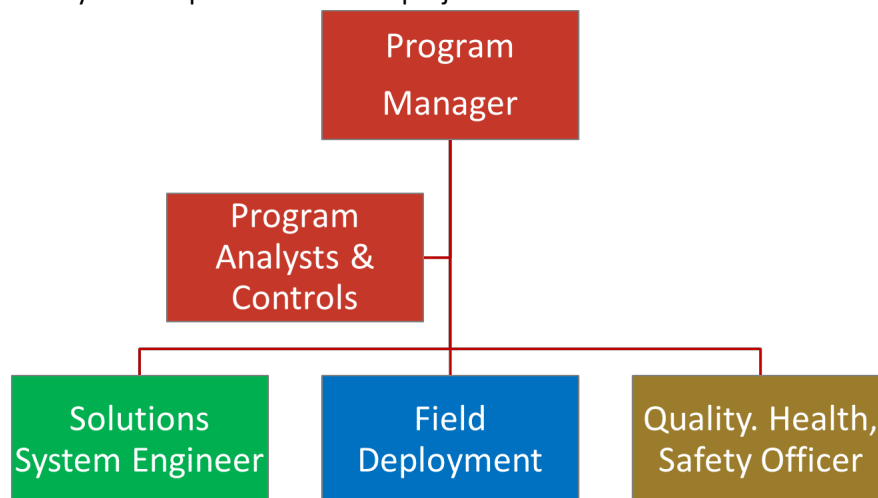


Figure 2 - Project Organization

The team consists of Subject Matter Experts in the various disciplines with competencies in all phases of the design-build and deploy of the network with institutional knowledge.

Further defined from the organization chart, which enables each team member to understand their role and responsibility, the following table defines the responsibilities. Identifying these roles early in the project is crucial to successfully providing a design that is cost-effective, meets project requirements, sustainable, and constructible. Each member of our team was chosen based on their experience with design-build projects and their expertise related to the Microwave Network Channel Growth to 16+0.

Position	Role & Responsibility
Program Manager	Primary point-of-contact. Responsible for executing the project to the contract requirements, schedule, procedures, quality, and accountability
Program Analysis & Controls	Program Analysis and Controls – Responsible for the PMO. Monitors budgets, project finances, acceptances and back office management controls.
Solutions System Engineer	Lead technical focal point to all elements of the design ensuring technical requirements and performance objectives are met.
Field Deployment	Lead technical focal point to ensure all elements of the network are deployed, provisioned, tested and performs as designed to project objectives.
Quality, Health Safety Officer	Confirm standards and specifications are being followed with high quality workmanship. Makes sure all disciplines are trained and provide the proper equipment, tools and resources to perform the work

Table 1 - Position Responsibilities

Program Management

A Program Manager will be assigned with the responsibilities for overall project direction and coordination of the Ceragon project-related activities. Program management at Ceragon represents a formal extension of the general management function into the daily direction of specific programs. This policy is recognized throughout the company and allows the designated program manager to enforce technical schedule requirements, reviews commitments, and conduct critical program reviews.

Briefly, the program management tasks can be categorized as follows:

- Define, maintain and interpret project requirements as related to the contractual requirements
- Authorize and direct participating functions within Ceragon to perform in accordance with project objectives
- Analyze project progress and forecast future performance
- Issue project schedules and status reports to the customer
- Implement corrective action to maintain project control and maximize effectiveness
- Provide the major focal point between the customer and Ceragon

The program manager heads a team of key individuals from all necessary functional areas within Ceragon. This team is required to support the successful implementation of the project. Working closely with contracts and engineering, the program manager ensures that all contractual obligations and engineering objectives of the project are met.

Systems Engineering

The Ceragon system engineering organization has full responsibility for all technical aspects of the microwave network design. The engineering group furnishes the necessary technical expertise and disciplines to affect a detail system design that meets the scope and requirements of the project. In general, system engineering covers the following activities, but these may vary as a function of project scope:

- Design of the overall system
- Path Design /Engineering
- Selection and integration of specific equipment configurations
- Definition of equipment requirements to Ceragon manufacturing organizations
- Definition and requisition of all vendor-manufactured hardware and materials
- Preparation of applicable drawings, plans, and specifications
- System acceptance test plans

A senior engineer will be assigned prime responsibility for the system engineering related activities.

Preliminary Desktop Design

Ceragon will provide preliminary desktop designs of the microwave radio paths shortly after contract award. The desktop designs are the first step in determining the potential viability of finding a cost effective and technical sound microwave radio path. The desktop designs are performed using information from many sources including but not limited to:

- Customer provided data
- Satellite Imagery
- Aerial Photography
- Digital Elevation Model (DEM) Data

Results of the preliminary desktop designs are provided to the customer to determine the feasibility to performing a Line of Sight (LOS) survey / LOS Clearance Verification. Results of the desktop designs would include

- A preliminary system map of the path(s)
- Preliminary path profiles (including proposed antenna size and location)
- Path calculations of estimated performance

Line of Sight (LOS) survey / LOS Clearance Verification

Upon customer authorization, personnel will be dispatched to the region to determine if adequate clearance conditions exist for the proposed preliminary designed paths. The effort requires driving the path and ascertains site coordinates and location, ground elevation, on-path obstruction location and height, tower information, proposed antenna centerline information, and other basic parameters required to evaluate and perform a final design of the microwave radio link. The presents of observable on-path obstructions, such as existing vegetation and existing buildings are evaluated and incorporated into the LOS survey where applicable and appropriate. Where appropriate, roof top access may be required in the survey effort, however; existing towers are not climbed as a part of the LOS activity.

The results of this activity would include a revision to the information provided as part of the preliminary desktop design for those paths that prove in or in the case where a path does not prove in, an explanation to why it is a fallout to the design.

Final Path Design

The final path design will include profiling the path to determine antenna centerline requirements, and path calculations to determine the radio types necessary to meet the projects microwave link performance and availability objectives. Recommended antenna centerlines are determined for a range of K-factors expected to occur during an average year and by Fresnel zone clearance criteria based on industry standards. For areas where poor propagation conditions are known to exist, paths are assessed for susceptibility to obstruction fading outages. Additionally, paths are analyzed for ground-based reflections.

Microwave link availability (path availability) is evaluated using current North American industry accepted models for predicting outage times and diversity improvement factors associated with normal atmospheric multipath fading (flat and dispersive), rain fading, and obstruction fading. Every effort is made to anticipate occurrence of abnormal propagation conditions based on historical documentation, experience, geographical location, and field survey data.

The final path design documentation includes the following:

- A map of the path(s)
- Final path profiles
- Path performance calculations

It should be noted that the final designs are based on conformance to the project availability objectives for normal atmospheric multipath fading. Ceragon cannot be responsible for excessive outages or degraded performance due to abnormal fading conditions.

Technical Site Survey

Once the preliminary design is approved, Ceragon will perform a detailed site survey.

The Technical Site Survey (TSS) addresses each site's unique constraint by customizing the engineering and material requirements. The TSS will cover accessibility, space, power, cable routing, antenna mounting and other unique site attributes.

Due to the nature of the upgrade based on the initial deployment, the critical focus of the survey relates to the tower-mounted equipment, transmission line runs, feed line entrance ports, and overall installation workmanship based on the self-performed installations post hurricane and subsequent channel growths.

For completeness during the survey, the following physical parameters will be reviewed.

- General site information and logistics
- General information on the compound
- Tower or antenna structure information to include
 - Tower and cable Run Information
 - General antenna structure data
 - Visual inspection of proposed antenna centerline
 - Feed line runs between antenna structure and or cabinet/shelters
- Outside plant grounding details
- Shelter, equipment rooms and outdoor cabinets
 - Measurements
 - Feed line entrance ports
 - Racks, cable racks, and cable trays
 - DC power plant
 - Existing rack space availability
 - Existing microwave equipment (if applicable)
 - Routers or demarcation points for equipment being installed
 - Inside plant grounding details

Upon completion, a TSS report is issued to the customer for review. This document along with photographs will serve as the basis for determining the final Statement of Work for Services.

Statement of Work for Services

Upon review of the findings from the Technical Site Survey (TSS), a Final Statement of Work for Services will be created. The document will describe the specific services Ceragon Networks, Inc. agrees to provide based on the mutual understanding by both parties.

The document also addresses the unique constants of each site that may vary from the standard assumptions included in the proposal/contract as well as any unexpected changes that may have surfaced leading up to and during the physical deployment activities.

The Statement of Work for Services will contain the following sections:

- Preamble
- Scope
- Project Schedule
- Responsibilities and Acceptance
- Workmanship Guidelines and Standards
- Change Control Management (Change Notices)
- Acceptance of Statement of Work
- Services Assumptions & Conditions

Network Rollout Activities

The deployment of the network will be performed in accordance with the Installation Design Plan. The activities are described below:

Equipment Staging

Pre-Configuration Testing Plan

All equipment for the channel upgrade contacted from Ceragon will be staged at our facility in Richardson, Texas. All products will follow the same Pre-Configuration Testing Plan:

1. Equipment will be unpackaged, and power applied to the unit using supplied power source
2. Equipment interface will be analyzed to assure unit's firmware is on the latest version
3. All Out-of-Box failures will be caught and rectified before Configuration
4. All units, accessories, and boxes will be labeled with IP information, site location, and where the unit connects within the network

Equipment Configuration

1. Each unit will have IP information added per the customers IP scheme
2. Each unit will have all software licenses added to the unit
3. All data for each unit will be recorded for future documentation

Configuration Testing Plan

1. After each unit has been configured it will be passed to Quality Assurance to confirm the configuration for each unit matches the design configuration plan

Radio Link Testing

Each link of new equipment will be tested as a network of continuously connected microwave links. The testing will be performed as deployed

1. Each link will have their radios paired and set up in the facility per link
2. The capacity of the link will be tested to make sure bandwidth surpasses expected bandwidth requirements

3. All radio paths will be simulated with variable attenuators connected and used to test radio performance
4. Once the system has passed the Factory Acceptance Testing the racks will be packed and staged with other equipment on a per site basis.

The process is diagrammed below:

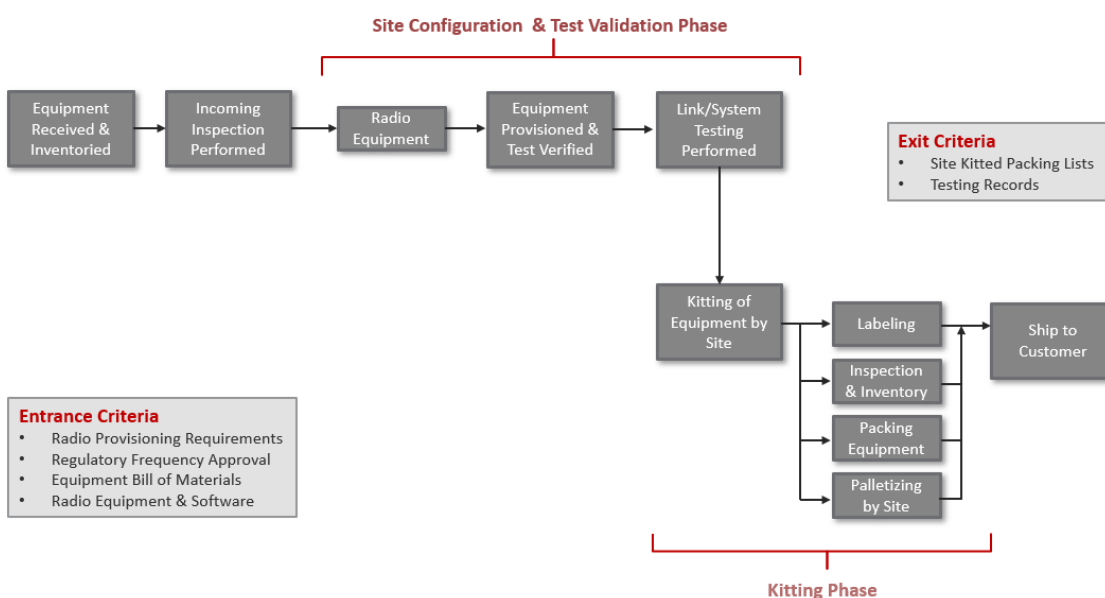


Figure 3 - Equipment Staging, Site Configuration, Test Validation, and Kitting Process

Customer Witness Testing

Ceragon offers customer witnessing of standard system level tests of the Ceragon manufactured equipment furnished under this project. The witness testing is performed in conjunction with the System Staging & Logistics. Ceragon will notify the customer fifteen (15) business days in advance prior to the commencement of these tests. Such notice will be understood to be approximate in nature, subject to change, and will be confirmed seven (7) business days prior to commencement of testing.

Time will be made available to discuss and answer any questions related to the testing activities and operation of the equipment in a roundtable format.

The customer will be responsible for all transportation charges, lodging, and subsistence allowances incurred by customer personnel or official representatives in association with this effort.

Equipment Deployment

- Installation, testing and commissioning of all Ceragon provided equipment contracted as part of this effort. Equipment includes the following:
 - Microwave radios at each of the locations as per the network design
 - Install and mount ODU equipment
 - Run, secure, ground and terminate the transmission lines
 - Integrate the new equipment to the existing installed equipment to include
 - ODU reconfiguration of the OCBs and waveguide branching as required per the design
 - Perform all acceptance testing based on the latest or current Ceragon installation/product manual supportive of the software load at the time of deployment
 - Verify new equipment reports back to the NOC
- Other activities based on the projects specific requirements could include:
 - Structural analysis of any of the antenna support structures
 - Integration of existing network links or third party equipment including routers
 - Connection of any external or housekeeping alarms to the radios
 - Decommissioning of any tower mounted equipment required to make space available for the new deployed equipment

Radio Link Testing and Commissioning

The purpose of the commissioning tests is to verify correct and proper operation of the product. All testing will be based on the latest or current Ceragon product/installation manual supportive of the software load at the time of deployment. Any additional testing activity beyond what is included will be provided as mutually agreed upon.

Workmanship Guidelines and Standards

All work performed under this offering will comply with Ceragon or the OEM manufactures' guidelines as published in product manuals, bulletins, and guidelines and established industry standards.

All testing will be performed as mutually agreed and within the requirements of the product specifications outlined in the latest or current Ceragon product/installation manual supportive of the software load at the time of deployment.

Compliance to any other customer specific guidelines not specifically identified prior to the execution of the Statement of Work will be performed under the Change Notice (CN) process

Scope of Responsibilities

A responsibility matrix of shared responsibilities of each party for the project will be provided specific to the project requires. The matrix will include all key functions of the Scope of Work.

Project Acceptance

Project acceptance is determined on a per link basis in two phases for the Network Rollout:

- Provisional Acceptance Certificate (PAC) – Phase I
- Final Acceptance Certificate (FAC) – Phase II

A list of deliverables will be the basis of the project acceptance based on the phases of acceptance.

Change Control Management (Change Notice)

It is recognized the scope of this offering was based on information solely provided by the customer as a baseline of effort, it is further recognized that actual site conditions may and will vary from the scope provided to build the network as intended. To that extent a site survey will further validate the actual scope of effort required. The Change Notice (CN) process will be used to identify any potential increased work effort that may impact cost related to labor, materials or schedule.

Any and all on site discrepancies/requests for out of scope work shall be submitted to the customer in the form of a Change Notice (CN) to be approval prior to performing the work.

Typical Fully configured All indoor System with all Ancillary parts

The following BOM was part of a Critical Infrastructure project that mandated products with specific country of origin requirements due to us grant monies being provided by the US government. All 3rd party equipment such as antennas and Waveguides were Commscope.

#	P/N	Description	IP-20A, RFU-A, 1+1 HSB , 6L GHz / 60Mhz		Remarks
1. FibeAir IP-20A					
	IP-20A-28U/10-Slot-Base-2x48v	IP-20A 28U/10-slot base package w/ 2x48v	1	1	
	IP-20-TCC-B2-XG-MC+SD	IP-20 TCC-B2-XG-MC, w/ SD-Card	2	2	TCC redundancy optional
	IP-20-RMC-B	IP-20 RMC-B	2	2	
	IP-20-LIC-X-E4-Elec	IP-20 Extended LIC Eth-4x1GE elec	1	1	
	IP-20-LIC-X-E4-Opt	IP-20 Extended LIC Eth-4x1GE opt			optional
2. IP-20 Activation keys					
	SL-Capacity-300M	SL - Capacity 300M, per carrier	2	2	
	SL-ACM	SL - ACM, per carrier	2	2	
	SL-MC-ABC	SL - MC-ABC, per carrier	2	2	
	SL-Edge-CET-Node	SL - Edge-CET-Node mode	1	1	
	SL-GE-Port	SL - GE port	2	2	
	SL-Main-Card-Redundancy	SL - Main card redundancy	1	1	TCC redundancy optional
	SL-Secure-Management	SL - Secure Management	1	1	optional SNMP v3
3. FibeAir RFU-HP					
	RFU-Aep-S-57-6L	RFU-A Premium Enhanced 5.7 6LG sampler	2	2	
4. RF Accessories - Ceragon Design					
	DRW-Af-xxxY-aWb-SD-TL/H	DRW-Af-xxxY-aWb-SD-TL/H	1	1	
	DRW-Af-xxxY-aWb-i	DRW-Af-xxxY-aWb-i	1	1	
	Lbend-A6-T1	RFU-A 6GHz L-Bend T1	1	1	
	Lbend-A6-T2	RFU-A 6GHz L-Bend T2	1	1	
	Term-A6	RFU-A 6GHz Termination	2	2	
	CHS-A6	RFU-A 6GHz system Housing	2	2	
	RFU-A-blank	RFU-A blank panel	2	2	
	RFU-A-FixPit	RFU-A-FixPit	1	1	
	WG-A6-3ft	RFU-A Extension WaveGuid 6GHz 3ft Kit	2	2	
optional 2ft	WG-A6-2ft	RFU-A Extension WaveGuid 6GHz 2ft Kit			
5. IDU Accessories & Cables					
	CBL-IF, TNC-SMA RA Male, 1.0m	CABLE,TNC TO SMA RA MALE,1.0M,0.5GHZ	2	2	
	SFP-GE-LX	SFP optical interface 1000Base-LX*ROHS	1	1	
	GBE-SPL-SM	SM/LC Optical splitter conn. 1300nm 50/5			optional if optical GE optical ports will be taken from TCC redundancy
	OP-SM-CBL-LC-LC-DPLX 10M	Duplex Optical Cable LC-LC SM 10M	1	1	
	CBL-PWR-DType/OE-40A-2.2m	Power cable D-Type/Open-end, 40A, 2.2m	2	2	
	IP20-EXT-ALARMS-CBL-2.5m-PROT	CABLE,D-9fx2 TO OE, 2.5M,EXT ALARMS	1	1	
	15P-PROT-CBL	E1/T1/Ethernet protection cable	1	1	TCC redundancy optional
6. WG & Accessories					
	32T-Fix-WG-2FT-6	3200T fix WG 2FT 6GHz			optional 2ft flex WG
	FLXT900-CPR137G/CPR137G	WG,3FT,WR137,CPR137G/CPR137G	4	4	for both edges of elliptical WG
	WAVEGUIDE-6-4FT	FLEX WG 1.2m 6GHz			optional 4ft flex WG
	FLX-HNGR-6Ghz	FLX-HNGR-6Ghz	4	4	one per each flex WG
	Prs-Wndw-137-A	Pressure Window CPR137 Andrew	2	2	
	WG-Cnt-6L-A	Connector Fixed Tuned for 6L Andrew	4	4	
	EWG-6L-A	Elliptical WG. 5.925-6.425GHz per meter	58	86	
	HST-GRP-6-A	HOISTING GRIP FOR EWP52 AND EWP63 6GHz	1	1	
	GND-kit-6-A	Grounding Kit for 6GHz	4	4	
	19 inch Rack ALM	19" Univrsl Lab Rack Aluminum	1	1	
	PDU 2X63A/10X10A/48	PDU 2X63A/10X10A/48	1	1	
	WG-BT-6L-A	Wave Guide Boot for 6LGHz	2	2	
	Hng-kit-6L-A	Hangers Kit of 10 for 6L GHz	6	9	
	Angl-adp-A	Compact Angle Adapter.	6	9	
	WEATHERPROOF KIT	WEATHERPROOF KIT FOR SEALING CONNECTORS	1	1	
	OUTDOOR TIES	Outdoor TIEs 50pcs	1	1	
	INDOOR TIE	Indoor TIEs 100pcs	1	1	
	Threaded Rod Support CRNT	Threaded Rod Support CRNT	10	10	optional
7. Antenna					
	DPSA-6-6-A	ANT,6FT,5.925-7.125GHz,DP,CPR137G	1	1	one strut included + one A-4 6-STRT-INBRD-A struts added
	A-4 6-STRT-INBRD-A	Strut for TMW/VL3 4 6ft Antenna - Andrew	1	1	
	A-8-12-STRT-BTTM-A	Strut Bottom for std antenna 8FT-12FT			
	Ant Pol mount 4-6FT	Ant Pol mount 4-6FT	1	1	
8. NetMaster					
	NETM-NMS-SERVER	NetMaster NMS Application Server including one Client ex. HW. Mandatory item			
	NM_PRO_TRX	NetMaster NMS Application Server, TRX Licenses, Unlimited Concurrent Clients	2	2	
	NETM-LIC-NE-OPENSMP	Open SNMP manager NE. Price per NE	1	1	
9. Services					
	Prime Plus	24x7 phone, 7 day AR, software U/G	10	10	
	Training	IP20A / NetMaster			

Typical Fully configured Split mount System with all Ancillary parts

The following was an example BOM that was part of a regional public safety network deployment .All 3rd party equipment such as antennas were Commscope.

Ceragon Site:

Caterpillar Site:			IP-20A, RFU-D HP, 2+0, 6L GHz		
#	P/N	Description	Site 1	Site 2	Remarks
1. FibeAir IP-20N					
1	IP-20A-2RU/10-Slot-Base-2x48v	IP-20A 2RU/10-slot base package w/ 2x48v	1	1	
3	IP-20-TCC-B2-XG-MC+SD	IP-20 TCC-B2-XG-MC, w/ SD-Card	1	1	
4	IP-20-RIC-D	IP-20 Dual Interface Radio Interface Card	1	1	
5	IP-20-LIC-X-E4-Opt	IP-20 Extended LIC Eth-4x1GE opt	1	1	
2. IP-20 Activation keys					
6	SL-Capacity-200M	SL - Capacity 200M, per carrier	2	2	
7	SL-ACM	SL - ACM, per carrier	2	2	
8	SL-XPIC	SL - XPIC, per carrier	2	2	
9	SL-MC-ABC	SL - MC-ABC, per carrier	2	2	
10	SL-Edge-CET-Node	SL - Edge-CET-Node mode	1	1	
11	SL-GE-Port	SL - GE port	2	2	
12	SL-RFU-2nd-Core-Act.	Act.Key RFU-D 2nd Core Activation	1	1	
3. FibeAir RFU-D					
13	RFU-D-06	RFU-D, Dual Core, Split Mount Radio only, L6 GHz	1	1	
15	DXDL6-Unspecified-H	RFU-D Diplexer Cover, L6, Unspecified, TH	0	1	
16	DXDL6-Unspecified-L	RFU-D Diplexer Cover, L6, Unspecified, TL	1	0	
4. RF Accessories					
17	IP-20C_OMT_kit_6G	IP-20C OMT kit 6GHz	1	1	
5. Antennas					
18	Am-4-6-CIRC-A	ANT,4FT,5.925-7.125GHz,DP,RFU-C TYPE/CIRCULAR	1	1	
19	Am-6-6-CIRC-A	ANT,6FT,5.925-7.125GHz,DP,RFU-C TYPE/CIRCULAR	1	1	
6. Accessories & Cables					
20	SFP-GE-LX	SFP optical interface 1000Base-LX*ROHS	2	2	
22	CBL-PWR-DType/OE-40A-2.2m	Power cable D-Type/Open-end, 40A, 2.2m	2	2	
23	CAT5E_SFUTP_Outdoor_100m_drum	CAT5E_SFUTP_Outdoor_100m_drum	1	1	
24	UNIV_GRD_KIT_1/2	Universal Grounding Kit up to 1/2" cable	2	2	
25	GBE_Connector_kit	GBE_Connector_kit	1	1	
26	CBL-GND	GROUND CABLE FOR IDU and ODU	1	1	
27	OUTDOOR TIES	OUTDOOR TIES 50pcs	1	1	
28	Ant Pol mount 4-6FT	Ant Pol mount 4-6FT	1	1	
7. NetMaster - SW					
30	NM_PRO_NE	NetMaster application Server Software , unlimited Clients, E2E se	2	2	
8. Services and Support					
40	SLA-PRM+ 24X7 HR SR ARP	Prime+ Services Package + Advance Replacement Premium	3	3	

End of Document