



Network Planning

DragonWave's planning organization delivers the highest levels of expertise, with extensive experience in the planning and design of thousands of communications networks around the globe. Network planning and design services consist of a comprehensive set of activities involving:

- Network requirements gathering
- Network architecture selection
- Product and technology recommendations
- Detailed network analysis and design
- License coordination

Line Of Sight (LoS) Survey

The LoS service from DragonWave is intended to provide an accurate assessment of the viability of a planned link between two points for MW deployment. While as much detail as possible is considered during the planning stage, a validation of the link with an on-site visit and visual verification is a critical step in the deployment of the microwave network.

A standard Line of Site survey will include the following:

- On-site visit and visual verification of the two end points
- One set of flashpoints (if required) with digital photos for the link
- Recommended placements at each endpoint for the microwave antenna equipment
- Comprehensive LoS survey report

Assumptions:

- Both endpoints are known (street address & GPS coordinates)
- Distance between the endpoints are less than 6 km
- Endpoints are on easily accessible rooftops
- Site access is the responsibility of the site acquisition team and must be obtained prior to LoS
- No special equipment or personnel is required (example tower sites & greenfield applications)



Link Installation Service

Link installation is performed by qualified crews certified on DragonWave equipment by our training & customer support department. Installation pricing is per link and includes the following:

- Validation of antenna placement per approved LoS survey report
- Installation of dish antenna (up to 2.5 ft diameter) on existing antenna mast
- Running of required cables from Out-Door Unit to the designated In-Door Unit (IDU) location
- Connection of DC power from provided source to the ODU as required
- Validation of correct powering of system
- Placing of identification labels (provided by customer) on microwave system as required

Assumptions:

- Installation is on an easily accessible rooftop location at both ends of the link
- LoS survey report is completed and available
- Up-to-date rooftop drawings and antenna placements available
- Non-redundant (1+0) installation
- Cable conduit (run) is open and easily accessible (closed conduits are not included)

Microwave Site Commissioning

Configuration of standard and advanced parameters on the DragonWave microwave system is covered under the site commissioning service. The following is included in this service for equipment at both ends of the link:

- Configuration of the IP parameters for the radio units
- Configuration of the RF and IF parameters specific to the microwave design
- Validation of the communication from IDU location to ODU equipment
- Configuration of the SNMP parameters per network management design
- Configuration of the Quality of Service (QoS) parameters per design
- Configuration of the Alarm Thresholds, Modulation and Timing parameters per design

Assumptions:

- All configuration parameters are available for programming at the time of commissioning



Link Integration & Testing Service

After the configurations of all parameters at both ends of the link are complete, the ends must be aligned and tested as a standalone microwave link. This service covers the following:

- Precise alignment of antennae at both ends of the link to achieve design Receive Signal Levels
- Validation of traffic continuity of the link at the designed throughput speeds
- Measurement of latency and throughput values per recommended DragonWave practices
- 1 (one) hour Bit Error Rate test to confirm error-free traffic for the link

Assumptions:

- Link Installation and Site Commissioning completed per DragonWave accepted practices