

# OUR CORE SERVICES

## 1. Enterprise WiFi Network Design

- Site surveys (predictive and active)
- RF coverage and capacity planning
- Access point placement optimization
- Channel and power planning
- Controller and management architecture
- Network topology design
- Quality of Service (QoS) configuration
- Roaming and handoff optimization

## 2. WiFi 6/6E/7 Planning

- 802.11ax (WiFi 6) implementation strategies
- 6 GHz spectrum planning (WiFi 6E)
- WiFi 7 (802.11be) readiness and future-proofing
- Multi-gigabit wireless design
- OFDMA and MU-MIMO optimization
- Target Wake Time (TWT) for IoT devices
- Enhanced security (WPA3) implementation

## 4. Specialized WiFi Solutions

- Healthcare wireless networks (medical devices, RTLS)
- Hospitality WiFi (hotels, resorts, cruise ships)
- Retail and point-of-sale connectivity
- Manufacturing and warehouse wireless
- Outdoor and harsh environment WiFi
- Public WiFi and guest access networks
- Smart building and IoT integration

## 5. Network Security & Policy Design

- Secure SSID architecture and segmentation
- WPA3-Enterprise and WPA3-Personal implementation
- 802.1X authentication design (RADIUS/NAC)
- Guest network isolation and captive portals
- Role-based access control (RBAC)
- Wireless intrusion prevention (WIPS)
- Compliance planning (HIPAA, PCI-DSS, GDPR)

## 6. WiFi Performance Optimization

- RF interference analysis and mitigation
- Spectrum analysis and management
- Co-channel and adjacent channel optimization
- Automatic Radio Resource Management (RRM)
- Application performance monitoring design
- Network analytics and reporting architecture

## **7. Migration & Upgrade Planning**

- Legacy WiFi system assessment
- Technology refresh strategies (WiFi 5 to WiFi 6/6E)
- Phased deployment planning
- Minimal-disruption migration designs
- Coexistence planning during transitions
- ROI analysis and business case development

# **OUR DESIGN APPROACH**

### **1. Requirements Analysis**

Understanding your coverage areas, user density, application requirements, device types, security policies, performance expectations, budget parameters, and future growth plans.

### **2. Site Survey & Assessment**

Conducting predictive (pre-deployment) and active (post-deployment validation) site surveys including RF measurements, interference analysis, building material assessment, and existing infrastructure evaluation.

### **3. RF Design & Modeling**

Creating detailed heat maps, access point placement plans, channel assignments, power levels, coverage predictions, capacity analysis, and interference mitigation strategies using industry-leading planning tools.

### **4. Network Architecture**

Designing controller placement, management systems, authentication infrastructure, network segmentation, VLAN architecture, QoS policies, and integration with wired infrastructure.

### **5. Security Planning**

Implementing authentication methods, encryption standards, access policies, guest network isolation, intrusion detection, and compliance requirements specific to your industry.

### **6. Documentation & Specifications**

Delivering comprehensive design packages, equipment specifications, installation guidelines, configuration templates, testing procedures, and validation criteria.

### **7. Validation & Optimization**

Post-deployment site surveys, performance testing, coverage verification, capacity validation, and fine-tuning recommendations.

# **DESIGN DELIVERABLES**

### **Comprehensive Planning Package:**

#### **Site Survey Reports**

- RF coverage heat maps (signal strength, SNR, data rates)
- Channel utilization and interference analysis

- Spectrum analysis results
- Existing network assessment (if applicable)
- Building floor plans with AP placements
- Predictive vs. actual comparison (validation surveys)

## **Network Design Documentation**

- Network architecture diagrams
- Access point placement plans with coordinates
- Channel and power assignment tables
- Controller and management infrastructure design
- VLAN and network segmentation architecture
- IP addressing and DHCP schemes
- QoS policies and traffic prioritization

## **RF Engineering Analysis**

- Link budget calculations
- Coverage overlap analysis
- Co-channel interference modeling
- Adjacent channel interference mitigation
- Signal-to-noise ratio (SNR) planning
- Minimum basic rate configurations
- Roaming threshold recommendations

## **Equipment Specifications**

- Access point models and quantities by location
- Controller hardware/virtual specifications
- Power over Ethernet (PoE) requirements
- Switch port counts and capabilities
- Licensing requirements
- Antenna selections (internal/external)
- Mounting hardware and accessories

## **Security & Policy Configuration**

- SSID design and broadcast policies
- Authentication method specifications
- Encryption standards and protocols
- Guest network architecture
- Role-based access policies
- Firewall rules and ACLs
- Compliance documentation

## **Implementation Documentation**

- Bill of materials with part numbers
- Installation guidelines and standards
- Cable routing specifications
- AP mounting instructions and heights
- Configuration templates and scripts
- Pre-deployment checklist

- Testing and acceptance procedures
- Commissioning plan

## **Validation & Testing**

- Post-deployment survey methodology
- Performance testing criteria
- Coverage validation procedures
- Capacity testing protocols
- Application performance benchmarks
- User acceptance testing guidelines

## **Ongoing Management**

- Network monitoring recommendations
- Performance baseline documentation
- Change management procedures
- Optimization guidelines
- Capacity expansion planning
- Technology refresh roadmap

# **PERFORMANCE OPTIMIZATION STRATEGIES**

## **Coverage Optimization**

- Optimal AP placement based on building materials
- Appropriate power levels avoiding over-coverage
- Antenna selection and orientation
- Eliminating dead zones and weak spots
- Seamless roaming between access points

## **Capacity Management**

- Right-sizing AP density for user loads
- OFDMA and MU-MIMO utilization
- Band steering (2.4 GHz to 5 GHz)
- Load balancing across access points
- Client steering for optimal connections

## **Interference Mitigation**

- Non-overlapping channel planning
- Avoiding co-channel interference
- Spectrum analysis and rogue AP detection
- Coordination with neighboring networks
- Bluetooth and IoT device coexistence

## **Application Performance**

- QoS policies for critical applications
- Voice and video traffic prioritization
- Bandwidth allocation and rate limiting
- Application visibility and control

- Deep packet inspection integration

## SITE SURVEY TYPES

### Predictive Site Survey

Pre-deployment RF modeling using building floor plans, construction materials, and planned AP locations. Provides preliminary design before equipment purchase. Cost-effective for planning and budgeting.

### Passive Site Survey

Walking facility with survey tools measuring existing RF environment. Identifies coverage holes, interference sources, and signal quality. Essential for understanding current state and optimization.

### Active Site Survey

Connecting to deployed network while walking coverage area, measuring throughput, latency, packet loss, and roaming performance. Validates design meets requirements and identifies issues.

### Validation Survey

Post-deployment survey verifying network meets design specifications and performance requirements. Provides documentation for project acceptance and future baseline.

### Predictive vs. Validation Comparison

Comparing predictive models to actual deployed performance. Identifies variances, validates modeling accuracy, and provides lessons learned for future projects.