

NETWORK MAINTENANCE, MODERNIZATION & OPTIMIZATION



REGION AUTHORITY CORP: YOUR INTELLIGENT ALTERNATIVE

Leveraging over 20 years' experience in the telecommunications industry, Region Authority provides comprehensive infrastructure engineering services, IT solutions, training, and management services. Tailored to meet the needs of various industries, our out-of-the-box thinking and innovative capabilities enable our clients to reinvent and rebrand themselves in the global marketplace.

RAC SERVICES

Our management consulting services fall into four broad areas:

- Network Design & Planning
- Network Integration & Testing
- Network Maintenance, Modernization & Optimization
- Enterprise Learning Platform

WHY RAC?

Based on extensive experience and a deep understanding of the industry, Region Authority Corp provides expert telecommunications infrastructure consulting, project planning, training, and management services. Using advanced, data-driven analytics and innovative software platforms, our highly skilled team offers the optimal technological solutions and knowledge sharing to help you realize your vision, drive competitive differentiation, and protect your business.

To learn more, visit us at regionauthority.com.

NETWORK MAINTENANCE, MODERNIZATION & OPTIMIZATION

As subscriber expectations increase and technologies evolve, operating environments become increasingly complex. Existing equipment requires ongoing maintenance and upgrades, while outdated infrastructure needs to be decommissioned and replaced. And while legacy fixed and wireless networks often coexist with newer technologies, these limit your response to customer demand and generate less revenue per square foot, impacting your ability to accelerate growth by taking advantage of new business opportunities.

In addition, limited skills and resources—compounded by the demand for ever-increasing bandwidth and performance—create challenges when it comes to maintaining accurate records of existing assets, upgrading and introducing new equipment, and fine-tuning operation.

RAC'S NETWORK MAINTENANCE, MODERNIZATION & OPTIMIZATION (NMMO) SERVICES:

- Document the state of your telecoms network
- Reduce maintenance and operational costs
- Support new next-gen technologies enabling bandwidth-intensive services
- Optimize network efficiency, performance, reliability, and scalability
- Reduce infrastructure footprint and power consumption
- Accelerate business growth, customer acquisition and onboarding, and revenue
- Enable best-fit provisioning with vendor-agnostic technology recommendations

FLEXIBLE, VENDOR AGNOSTIC MANAGEMENT CONSULTING SERVICES

Uniquely capable of providing the perspective and leadership your project demands, our holistic approach guides you through the process of evaluating and managing all of your audit, planning, and implementation needs. Focused on improving network KPIs, our experts assess performance data, recommend cost-saving maintenance best practices, and work with you to plan and execute optimization and modernization initiatives, minimizing risk and ensuring consistently high-quality outcomes.

Our end-to-end management services encompass the following components:

- **Knowledge:** Get to you, your business objectives, and your current environment
- **Strategy:** Explore current strategies and present alternative, value-based options
- **Assessment:** Comprehensive audit of your network topology, equipment inventory, and sites
- **Analysis:** Detailed report of findings and prioritized recommendations for modernization and/or optimization
- **Design:** Oversee the engineering design of new implementations and deployments
- **Project Planning:** Develop project plans for procurement, testing, deployment, and migration
- **Installation and Verification:** Oversee the installation, configuration, and testing of new equipment.
- **Migration:** Oversee the execution of the migration strategy, ensuring zero subscriber impact
- **Decommissioning:** Oversee the removal of legacy equipment as per corporate and government regulations
- **Maintenance:** Document cost-saving maintenance requirements and scheduling
- **Documentation:** Document all inventory, configurations, labeling, and procedural changes

RAC'S NETWORK MAINTENANCE, MODERNIZATION & OPTIMIZATION SERVICE PORTFOLIO

In addition to our Network Design & Planning (NDP) and Network Integration & Testing (NIT) services, our NMMO portfolio includes—but is not limited to—the following services:

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SUPPLIER LIFE-CYCLE, PROCUREMENT & INVENTORY MANAGEMENT PLATFORM

To simplify the maintenance, modernization, and optimization of your network, we've developed an enterprise SaaS application for end-to-end field management reflecting years of experience and best practices. Packed with powerful but easy-to-use features, the application enables you to:

- Streamline and accelerate onboarding of new suppliers
- Manage the entire supplier life-cycle, including
 - Procurement
 - Inventory
 - Upgrades
 - EOL
 - Disposal
- Deliver cross-functional performance evaluations
- Assure effective governance and risk mitigation



NETWORK AUDITS

DESCRIPTION

Carefully designed network audits touch every aspect of your network and operations. Conducted by technology and process experts following a consultative approach, this service assesses and documents the infrastructure, tools, and processes, identifies gaps and non-compliance, compares the findings to current strategy and corporate goals, and provides recommendations for improvement.

APPROACH

Our approach to conducting a thorough network audit entails:

- Collecting all available data pertinent to the existing network
- Verifying the collected data during on-site and on-field inspections
- Documenting any discrepancies and informing the customer
- Incorporating updates as required during the project

OUTPUT

The network audit report comprises a comprehensive list of recommendations for the maintenance, modernization, and optimization of the network to ensure compliance, performance, and scalability to meet your operational and strategic goals, including ideas for expanding operations and increasing subscriber value. These recommendations cover the following areas:

- Availability
- Compliance
- Cost
- Efficiency
- Performance
- Resilience
- Scalability

The final report includes cost-benefit analysis, gap analysis, and options for refining your strategy, accelerating implementation, and reducing costs, identifying quick wins for rapid execution. In addition, we provide a list of new technologies—including automated solutions to help record and track moves, adds, and changes—and partners to help you realize your goals—faster.



NETWORK AUDIT SERVICES

Our network audits comprise the following options along with their key activities.

NMMO-NA-1.X NETWORK AUDITS

The 1.X package includes all of the network audit options described below.

NMMO-NA-1.1 NETWORK AUDIT: STRATEGY

This high-level assessment covers:

- Evaluating network strategy and ability to execute
- Validation of network architecture and expansion plans
- Comparison of the deployed network vs. original specifications
- Exploration of emerging technologies to meet goals

NMMO-NA-1.2 NETWORK AUDIT: PHYSICAL & LOGICAL INFRASTRUCTURE

This comprehensive assessment of both on-site and in-field capabilities encompasses:

- Standardized equipment, configuration, and inventory management
- Cooling, power, space, and related site infrastructure
- Active physical equipment incl. ports, routers, switches, etc.
- Passive network infrastructure incl. fiber, shelter, tower, etc.
- Existing configurations against standardized configuration
- Unused or obsolete equipment for decommissioning and disposal
- Planned vs. implemented physical parameters
- Network resiliency and disaster recovery plans

NMMO-NA-1.3 NETWORK AUDIT: CAPACITY & PERFORMANCE

This assessment uses tools to analyze capacity and performance, identifying:

- Used and unused capacity
- Performance bottlenecks and route causes
- Legacy processes and technologies impacting performance
- Potential for optimizing operations to increase performance and throughput



NMMO-NA-1.4 NETWORK AUDIT: OPERATIONS

This broad assessment of operational capabilities covers:

- Certification and compliance
- Standard operating procedures and methods
- Performance monitoring and measurement
- Operational achievements based on defined network KPIs
- Process design, flow analysis, modeling, and hand-off
- Service and work order issuing
- Alignment and mapping of skillsets to roles and responsibilities
- Best-practices for preventative maintenance

NMMO-NA-1.5 NETWORK AUDIT: TOOLS

This audit looks at the tools used to manage the network and supporting services. The assessment includes:

- Performance and usage of existing tools including upgrades and patch management
- Mapping of business support system (BSS) and operations support system (OSS) tools to workflow to ensure compliance with desired requirements in the following areas:
 - inventory
 - procurement
 - installation
 - provisioning
 - configuration
 - maintenance
 - trouble-ticketing
 - workforce management
- Identifying gaps and recommending alternate tools to meet requirements

NMMO-NA-1.6 NETWORK AUDIT: SECURITY

This in-depth analysis of the network covers the following areas:

- Technology (hardware and software) vulnerabilities
- Infrastructure management and security practices
- Network management and security practices
- Application management and security practices
- Data security, privacy, and compliance
- Intrusion detection and prevention
- Penetration testing



SITE SURVEYS

DESCRIPTION

As telecom operators evolve and upgrade their networks, and the operating environment becomes increasingly complex, accurate information becomes invaluable for network planning and managing costs. In reality, poorly updated—or non-existent—documentation of what’s installed where leaves much to be desired, with the trend of network sharing between multiple operators only compounding the problem.

Site surveys conducted by RAC telecom engineers and technicians provide a clear, well-documented inventory of your telecommunications equipment together with the environment in which they operate. It provides a comprehensive picture of your current capabilities, and provides a reliable basis for strategic planning and informed decision-making.

APPROACH

Our approach to conducting a thorough site survey entails:

- Collecting all available data pertinent to each site
- Verifying the collected data during on-site inspections
- Documenting any discrepancies and informing the customer
- Incorporating updates as required during the project

OUTPUT

The site survey report varies according to the specific area of interest and option chosen. Each report highlights for refining your site strategy, planning your network modernization or optimization, identifying quick wins for rapid execution, accelerating implementation, and reducing costs. In addition, we provide a list of new technologies and partners to help you realize your goals—faster.



SITE SURVEY SERVICES

Our site survey services cover a variety of new and existing deployment options, including:

NMMO-SS-1.1 SITE SURVEY: IN-BUILDING SOLUTIONS (IBS)

Airports, hotels, railway stations, shopping centers, and large corporate clients are rolling out mobile networks to increase capacity and coverage while freeing up outdoor cell capacity. A site survey provides the information required to architect the best solution to meet demand, including those based on Distributed Antenna Systems (DAS) and Fiber Optic Distribution Antenna Systems (FODS).

- Telecommunication services supplied to the building incl. copper, cable, fiber and optical fiber
- Telecommunication capacity supplied to the building incl. copper, cable, fiber and optical fiber
- Rooftop satellite and wireless dishes incl. frequencies and service providers
- Telecommunication equipment in the main telco room incl. routers, multiplexers, smart jacks, and cables
 - Rack/shelf layouts and power distribution
 - Equipment plans (including serial numbers)
- Building facilities, including roof access rights, power, cooling, access, and security.
 - Floor plans (2D and 3D)
 - Site power supply layout
 - › Cooling
 - › 24x7 UPS capability
 - Site access and security control

NMMO-SS-1.2 SITE SURVEY: NETWORK (IT/WIRELESS/LOCAL)

RAC's network site survey covers all essential areas to determine the number and placement of wired and wireless access points to provide adequate coverage throughout the facility. The information provided includes network components (routers, switches, servers, cabling, etc.), network capacity, data rates, Wi-Fi coverage, roaming capability, and Quality of Service (QoS). It also includes details of landline access points, signal readings, and possible data rates near the outer propagation boundary of each access point for input into future upgrades.

- Telecommunication equipment in the main telco room incl. routers, multiplexers, smart jacks, and cables
 - Rack/shelf layouts and power distribution
 - Equipment plans (including serial numbers)

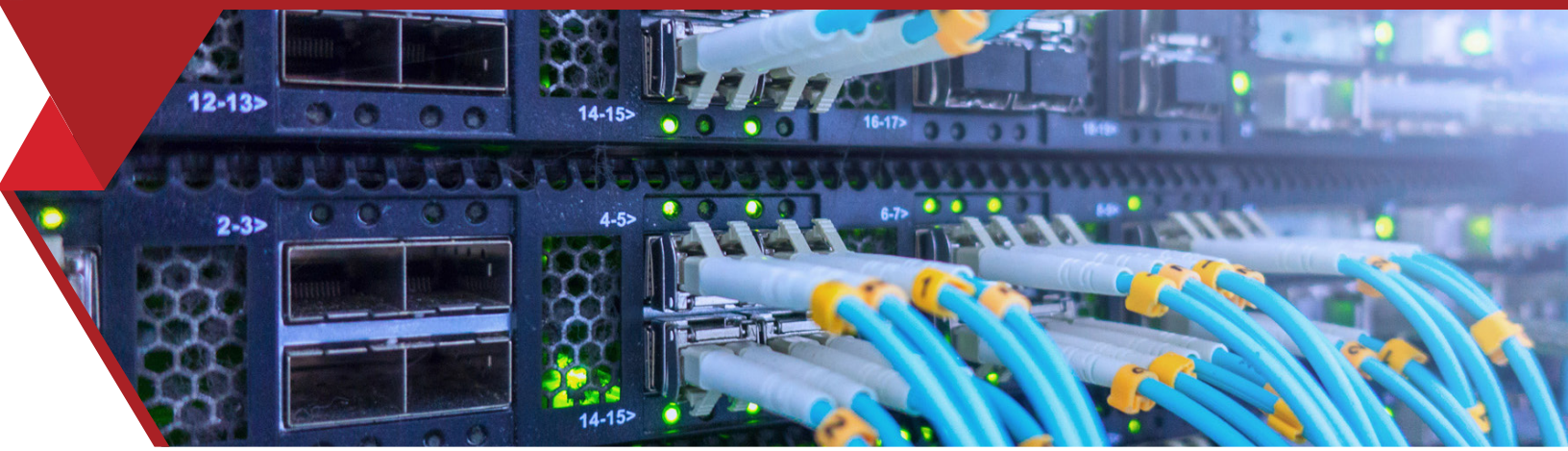


- Location and capacity of telco closets on each floor
- Datacenter/core networking
 - Routing
 - Switching
- LAN/WAN design
 - Wireless LAN
 - Wired LAN Solutions
 - Quality of Service (QoS)
- Obsolete equipment for decommissioning and/or removal
- Building facilities, including roof access rights, power, cooling, access, and security.
 - Floor plans (2D and 3D)
 - Site power supply layout
 - › Cooling
 - › 24x7 UPS capability
 - Site access and security control

NMMO-SS-1.3 SITE SURVEY: MICROWAVE & RF

A microwave and RF site survey provides information regarding the geographical and physical framework—including route design if required—of the existing or proposed network, and identifies both new elements and those eligible for upgrade, replacement, or obsolescence. It also includes recommendations for the deployment of new technologies or services to meet local, state, and federal regulatory compliance in addition to adhering to RF safety standards. This comprehensive site survey includes the following elements:

- Collection of site data for potential locations
- Clarify use of microwave bands and alternate frequencies
- Identification of potential terminal and repeater sites
- Study of the topographical map to identify potential obstacles
- Verification of information through a field survey
 - Identify potential issues and possible alternative routings to avoid obstructions
 - Determine the proximity of existing stations and microwave bands
 - Eliminate less than optimal site locations
- Recommendation for the final site, radio locations, repeater points (if required), and path data



NMMO-SS-1.4 SITE SURVEY: GREENFIELD/OUTDOOR SITES (e.g. sports stadiums)

The goal of a Greenfield or outdoor site survey is to provide all the information required to determine the number and placement of RF antennas, thereby ensuring optimal coverage throughout the facility. Among other aspects, the survey covers the following:

- Capacity, coverage, and scalability requirements
- Building architecture, ceiling construction, floor plans, and ducts for cable routing
- Existing BSC, BRS, and antenna locations, signal levels, and cell information
- Future plans for buildings currently under construction



CORE NETWORK ENGINEERING

DESCRIPTION

Delivering flexible, far-reaching solutions, our results-focused maintenance and optimization services transform the output of our network audits and site surveys into actionable intelligence, ensuring optimal capacity, availability, reliability, and scalability to meet the ever-increasing demands of your customers.

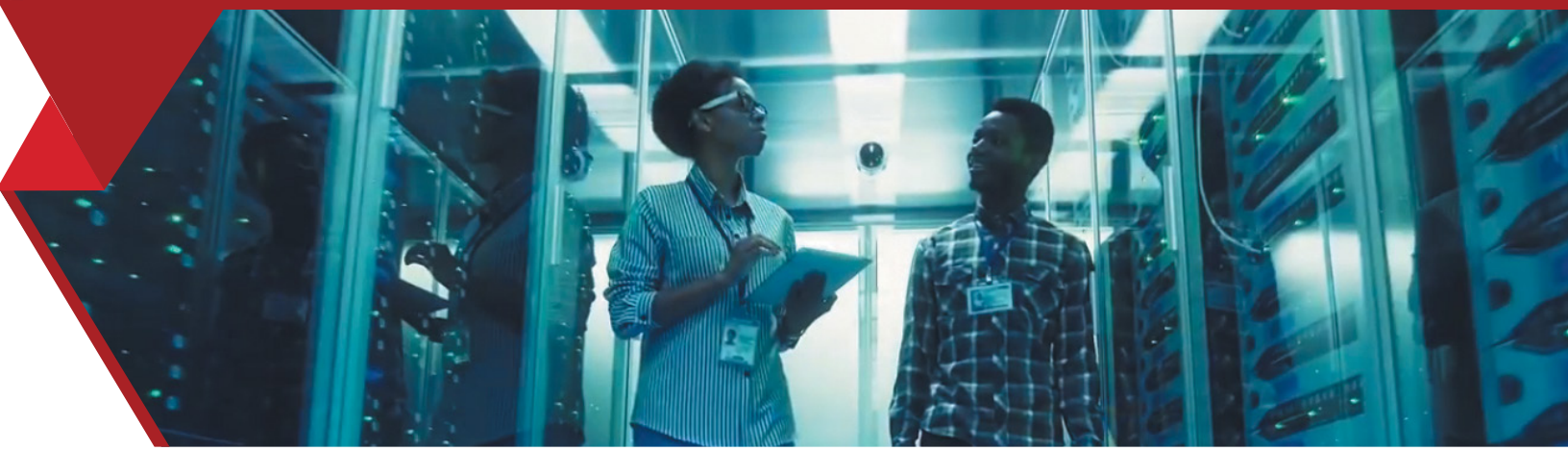
APPROACH

From designing and integrating new technologies and core platforms to maintaining and optimizing existing systems, our customized management services include:

- Design consultation
- Integration and support of modern platforms
- Back-office core support services
- Logistics and supply chain support
- Alarm reduction programs
- Core incident/ticket management services
- Service enhancement and continuous improvement schedules
- Training and team mentoring

NMMO-CNE-X.X CUSTOMIZED MANAGEMENT SERVICES

For additional details on how RAC leverages the insights derived from our network audits and site surveys to deliver transformative projects tailored to meet your specific needs, please contact your RAC Account Manager or email us at director@regionauthority.com.



SUPPLEMENTARY SERVICES

In addition to our tailored core network engineering services, RAC provides supplementary services designed to meet your immediate needs.

NMMO-SV-1.X SITE VISIT TROUBLESHOOTING (4, 6, OR 8 HOURS)

Telecommunication networks are dynamic, complex systems. When problems occur, troubleshooting can be a challenge. RAC technicians are equipped with the necessary expertise, experience, and tools to identify and resolve readiness issues preventing the start of work for other projects. These include, but are not limited to:

- Equipment failure
- Network congestion
- Inclement weather line damage
- Issues with the change process

Available in 4, 6, and 8-hour increments, pre-purchasing these troubleshooting site visit services streamlines procurement and speeds up time-to-recovery.

NMMO-SU-4.1 SOFTWARE UPGRADES

RAC's software upgrade is a customized package based on your specific requirements. All our engineers and technicians are certified across a wide range of technologies and software packages, offering you quality installation, configuration, integration, and testing. Our software upgrades services include:

- Plan software maintenance incl. configuration and customization
- Procure software (if required)
- Run patchmgr precondition check and address issues
- Install patches/upgrades
- Reboot the system and perform verification checks
- Configure/customize/integrate based on customer requirements e.g. SSH equivalence
- Document upgrade in the asset inventory system



WHY REGION AUTHORITY CORP?

Maximum Network Uptime: We excel at managing the provision of end-to-end solutions aimed at achieving maximum network uptime— one of the main concerns of most telecom service providers.

Increased Performance: Our innovative, proven tools help our clients increase productivity and optimize performances with highly-effective EPIT (engineer, provision, install, and test) Services.

Expertise & Experience: We're proud to count on a team of highly-skilled professionals with decades of training and experience handling all types of network equipment and communication systems.

Vendor Network: We work hard to maintain stable relationships with our equipment manufacturer and software vendor partners, enabling us to serve our global customers in the most efficiently and cost-effectively.

Attention to Detail: All of our customers receive detailed closeout documentation for every project we deliver, with full proof of compliance as required by the relevant authorities.

For any of the following management services, call us on 215.278.6955 or email us at director@regionauthority.com

- Document and Data Management Services
- Land Mobile Radio & BTS Systems
- Broadband Network Systems
- Wireline Access & Switching
- Optical Transport & Switching Systems
- DC Power & Infrastructure
- Rack & Stack

To learn more, visit us at regionauthority.com.



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