Global Capacity’s Managed Network Operations services assist customers in achieving improved service levels, lower operational costs, and provide flexibility for future infrastructure decisions. Global Capacity’s solutions leverage dual Customer Network Operations Centers (CNOCs) and provide customers with monitoring, management and technical services required to maintain a highly available network.

Global Capacity’s Managed Network Operations services provide customers with proactive, end-to-end, network and equipment monitoring and management including network performance monitoring, trouble ticketing, problem determination and resolution, and predictive analysis tools. Global Capacity’s multiple network operations facilities are staffed 7X24 by highly trained professionals, have well-established methods and procedures with a track record of success supporting a multitude of vendor equipment and complex networks.

Global Capacity has been in the business of providing transport and access network design, implementation and remote management services for over thirteen years. Our model is based on a collaborative relationship, driven by specific customer requirements, ensuring a customized service delivery experience in order to meet the unique operational and business needs of our customers. Our private-label offering is a service that provides Managed Network Operations services to network operators, managed service providers and businesses who wish to expand or outsource their own infrastructure. Managed Network Operations services are flexible and can be designed as a primary or a backup service to meet customer’s specific business and operational needs.

**Customer Network Operations Center (CNOCs)**

Global Capacity’s Customer Network Operation Centers are based in Chicago, IL and Waltham, MA. Each facility is serviced via diverse carrier support, with emergency power and redundancy. The facilities can be operated remotely, with the technical staff using secure access, in the event that situations prevent staff from working at their physical duty stations.

Together, the CNOCs deliver services 24 hours a day, 7 days a week, 365 days per year. The CNOCs are staffed by highly-skilled networking and optical certified level two and three engineer technicians. They are supported by a principal engineering team for backup support and ongoing analysis of network performance as well as chronic problem investigation.

The CNOC personnel work with a wide range of high-end network management systems, tools, and a knowledge base-driven correlation engine to provide effective network operation services to our customers, in accordance with the best methods and practices found in the industry.
Global Capacity uses an IP Surveillance Network (SNET) delivered over diverse vendor transport networks to provide a secure communication link between the CNOCs and each customer’s network. The links enable the transfer of SNMP traps, telemetry information and control operations, but have no access to customer specific data.

The CNOC provides a structured environment that effectively coordinates operational activities with all participants and vendors related to the function of the network.

**Methods, Procedures and Capabilities**

Managed Network Operations services can be designed as a primary or a backup service to meet the unique business and operational needs of the customer. Backup services can be customized to support a customer’s network operations, equipment and facilities based on a specific needs assessment including technology, experience, time of day, and resource demand. A unique statement of work is mutually developed with each customer, defining the framework of how the companies will work together.

Service features delivered by the CNOC are grouped into four functional areas:

<table>
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<tr>
<th>Functional Areas</th>
<th>Description</th>
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<tr>
<td>Monitoring and Intervention</td>
<td>Monitoring and Intervention identifies the function of detecting and correcting network operating faults.</td>
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<tr>
<td>Provisioning</td>
<td>Provisioning encompasses efficiently allocating and reallocating network resources to fulfill a customer’s service order.</td>
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<tr>
<td>Analysis</td>
<td>The Analysis function is the ongoing analysis and profiling of the performance, reliability, and capacity of the network and network</td>
</tr>
<tr>
<td>Data Management</td>
<td>The Data Management function is to ensure that all of the service capabilities of the NOC are applied effectively and consistently to the customer specific service requirements.</td>
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Global Capacity’s Managed Network Operations services deliver high quality network management support of Ethernet, Dense Wave Division Multiplexing (DWDM) and SONET networks. A range of platforms from various equipment manufacturers are supported by the CNOC, including Cisco, Ciena, Nortel, Overture, Juniper, and ADVA. Additional products are added based on specific customer requirements. Experienced professionals are trained and certified on equipment from optical to LAN and from edge access solutions to core equipment, so no matter how your network is architected, our CNOC support will maximize its availability and performance.

The Global Capacity technology integration process provides a systematic methodology to add new technologies and products to the Global Capacity operational support system. This process is achieved working in close partnership with the technology vendors and customers, and includes sourcing equipment, developing alarm/event correlation maps, validating support methods and providing training to CNOC staff. New technology integration includes the installation of the equipment into the Global Capacity lab network and simulated acceptance testing to confirm Global Capacity’s ability to provide remote monitoring and management services for the technology.

### Service features include:

**Monitoring and Intervention**
- Continuous monitoring
- Shift-specific monitoring
- Troubleshooting and diagnostics
- Advanced troubleshooting and diagnostics
- Problem management and resolution coordination
- Vendor management
- Recurring problem management
- Maintenance coordination

**Provisioning**
- Network M/A/C coordination
- Software/hardware upgrades
- Network expansion

**Analysis**
- Recurring problem tracking and reporting
- Major failure analysis and reporting
- Network capacity and utilization planning

**Data Management**
- As-built engineering documentation
- Network topology
- Device configuration
- Customer Reference Guide (CRG)

### Remote Monitoring and Management Support Model

The Global Capacity CNOC accomplishes monitoring and management via trap and alarm collection and active device polling, based on the capability of the monitored devices, to provide availability and performance of all network elements and circuits. Detection of a problem triggers fault correlation, error reduction and automatic trouble ticket generation, identifying specific circuits and devices that are affected by the situation. Notification can be provided in multiple formats including telephone or email, based on a mutually developed operations plan.

In the event of a malfunction or failure of any circuits or network elements, and following the execution of appropriate diagnostic tasks, the Global Capacity CNOC initiates maintenance service (diagnostic tests, on-site service requests, parts delivery, parts replacement, etc.). The CNOC also initiates service with the appropriate
fiber/circuit provider, based on the results of problem determination diagnostics and a mutually developed operations plan. CNOC engineers will subsequently monitor the fulfillment of service requests in order to verify compliance with established maintenance support terms or service level commitments.

It is Global Capacity’s practice that all service-affecting faults are designated with a critical severity and are treated aggressively by the CNOC. These faults are supported by an automatic technical management escalations policy if the problem remains unresolved beyond specific targets. The purpose of escalating an open case is to ensure that all appropriate resources are focused on solving the problem and executing an action plan to resolve the issue, as well as ensuring communication to the appropriate resources. In all cases, a customer may initiate an escalation at any time, for any reason.

Global Capacity’s CNOC delivers a 15-minute notification Service Level Agreement (SLA) for all events. After the first 15-minute interval in which a critical service-affecting problem remains unresolved, the CNOC engineer will automatically escalate a report of the problem to the next sequential level according to the escalation plan that has been co-developed with the customer’s operations staff. Escalations continue within the CNOC, carrier operations, vendor operations and management infrastructure until the problem has been identified, resolved, tested and service has been restored.

The CNOC staff will coordinate with customer operations teams in support of discretionary maintenance on circuits and network elements. Once logged, the CNOC technical engineer initiates a customer review of all planned events for operations scheduling, conflict identification, risk assessment and resource requirements based on a mutually developed operations plan.

The Global Capacity CNOC provides proactive maintenance through ongoing performance assessment and threshold triggers that alert for non-service affecting issues that signal the need for additional analysis and actions. The CNOC staff uses commercial and internally developed performance management tools to identify, investigate, and pursue to resolution chronic network operating problems that, while not generating acute malfunctions or performance issues that are visible to the customer, nonetheless reflect unexpected (and generally unwanted) system behavior.

Global Capacity’s CNOC engineers have found that evaluating a chronic problem may entail conducting one or more disruptive testing episodes in order to isolate and characterize the issue. When necessary, the CNOC professional will coordinate requests for authorized maintenance windows through standard operating procedures with the customer operations team. If the participation of multiple vendors is required during these diagnostic tests, the CNOC technical engineers will coordinate, schedule, and synchronize the activities of all the participants. The CNOC engineering staff will verify compliance by all participants with the scheduled limits and impact of the customer’s authorized maintenance window.
When a chronic problem has been satisfactorily characterized, a senior-level CNOC engineer will devise a recommended plan of action to alleviate or resolve the problem, and forward a resolution proposal to the customer’s operations staff for review and approval.

Global Capacity provides monthly reports and conducts a monthly operations meeting with the customer to review service performance and client satisfaction. The meeting also provides the opportunity to discuss ongoing scheduled activities, projects, performance improvement/monitoring plans and vendor schedules/issues.

**Additional Services**

Global Capacity offers Engineering Services to complement Managed Network Operations and Remote Management services. Engineering Services provide the technical expertise and logistical support to build out networks, including staging, installation, test and turn-up, and operations hand-off. Global Capacity’s project based model provides significant cost savings, complimenting in-house project management and engineering staff. Global Capacity’s technical experience across hundreds of projects dramatically reduces project risk, accelerates implementation time and ensures high quality workmanship.

The Global Capacity Network Operations, Engineering and Remote Management services model is based on carrier class technology and methodologies, providing experience-based risk mitigation that is delivered as a collaborative extension of our customers’ operations.