



## CENTURYLINK INFRASTRUCTURE & APPLICATION MANAGEMENT SERVICES SERVICE GUIDE FOR NETWORK MANAGEMENT SERVICES

This Service Guide ("SG") sets forth a description of the Network Management services ("Services") for CenturyLink Infrastructure & Application Management Services, including technical details and additional requirements or terms, if any. This SG is subject to and incorporated into the governing agreement and SOW between the parties. The specific details of the Service ordered by Customer will be set forth on the relevant SOW. CenturyLink and Customer responsibilities and service description terms are set forth in this SG.

### SERVICE DESCRIPTION

Services are infrastructure management services that provide network management for Customer.

(A) CenturyLink will provide monitoring and management for these network infrastructure components:

- Routers
- Firewalls
- Switches
- Load Balancers
- Wireless Access Points
- Mux
- Modems

(B) The functions associated with the Services are as follows:

- Management of network infrastructure components
- Firewall and Security Appliance Management
- Fault Monitoring
- Performance Monitoring
- Service Availability Monitoring
- Recovery from Network Outages
- Minor System Changes
- Coordination of Incident Resolution and Problem Management with Customer's LAN/WAN vendors

### SERVICE OPERATIONS

CenturyLink is responsible for service operations consisting of the following tasks related to the Services:

(A) **Network Management.** Tasks associated with the Services that are in-scope include

- Network Operating System Management
- Network asset management
- Software/firmware update and patches
- Capacity planning for WAN/LAN
- Capturing the routers in NMS (define)
- Backup Management
- Customer Network Device Management
- Network Device Monitoring
- Log Management
- User Administration
- PRI Capacity and Usage monitoring
- Load Balancer Management
- DMZ (Port forwarding and NATing)
- Site to Site Tunnels
- Quality of Service (Network)

**(B) Firewall and Security Appliance Management.** Tasks associated with the Services that are in-scope include

- Firewall Administration
- Console Server Management
- Proxy Server Management
- Site Blocking & Content Filtering System Management
- System configuration Documentation
- Log Management
- Capacity Planning
- Review and Implement Spanning Tree to Build Network Redundancy
- Active-Active Paths

**(C) Fault and Performance Monitoring.** Tasks associated with the Services that are in-scope include:

- WAN equipment and software faults excluding Telco's
- LAN Equipment and Software faults including wireless
- VLAN configuration
- Review/Manage Buffer Size & Oversubscription Issues
- Review/Manage Forwarding & ARP tables
- Review/Manage Routing Policies
- Review/Manage VLAN Policies
- System Logs
- Review and implementation of spanning tree to build redundancy in network

**RESPONSIBILITY MATRIX**

The responsibilities of CenturyLink and Customer associated with the delivery of Services are set forth below. During the transition of Services, CenturyLink and Customer will agree on parameters to be monitored, associated thresholds, actions to be taken and reports to be produced. These parameters along with delivery processes and procedures will be documented in Customer's Service Operations Documentation.

Responsibility – Network Management Services	CenturyLink	Customer
<b>Procurement of:</b>		
• Network devices to refresh existing infrastructure and/or support growth.		✓
• VPN Concentrators at CenturyLink data centers.		✓
• OEM hardware support contracts.		✓
• IDS/IPS and VPN Concentrator devices located at CenturyLink data centers.		✓
<b>Define security roles and profiles.</b>		✓
<b>Approve or validate security roles and profiles.</b>		✓
<b>Installation and maintenance of network, IDS/IPS and VPN Concentrator devices in CenturyLink data centers.</b>	✓	
<b>Monitor, analyze and respond to Incidents and non-conformance issues:</b>		
• Network Operating Systems for availability (i.e. up/down status).	✓	
• VPN Concentrator logs.	✓	
• Alerts that are received when faults occur or monitoring thresholds are exceeded.	✓	
• IDS/IPS for security events, including application and file integrity.	✓	

<b>Responsibility – Network Management Services</b>	<b>CenturyLink</b>	<b>Customer</b>
<ul style="list-style-type: none"> <li>Assigning Incident tickets to pre-determined resolver groups based upon alert information.</li> </ul>	✓	
<b>Create, modify and deactivate:</b>		
<ul style="list-style-type: none"> <li>Network Operating System configurations.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Security roles and profiles.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>VPN configurations.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>VPN accounts.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Firewall rule bases.</li> </ul>	✓	
<b>Analyze and complete:</b>		
<ul style="list-style-type: none"> <li>Remote Restoration of Service for Incidents within the scope of CenturyLink's Services.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Remote VPN tunnel connectivity issues.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Case management for verified security events.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Problem Management.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Service Requests.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Change Requests.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Minor System Changes</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Installation of software/firmware update and patches</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Capacity plans.</li> </ul>	✓	
<b>Consult with Customer on:</b>		
<ul style="list-style-type: none"> <li>Firewall rule base design, testing and acceptance.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Improvements in VPN security settings.</li> </ul>	✓	
<b>Operation of:</b>		
<ul style="list-style-type: none"> <li>Management of the firewall protecting the Customer systems, monitoring and troubleshooting.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>IDS/IPS system management, monitoring, troubleshooting and reporting.</li> </ul>		✓
<ul style="list-style-type: none"> <li>Network device backup systems.</li> </ul>	✓	
<b>Report on the following items</b>		
<ul style="list-style-type: none"> <li>SLA performance.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Actual Service volumes relative to expected levels.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Capacity utilization, CPU. I/O, etc.</li> </ul>	✓	
<ul style="list-style-type: none"> <li>Problem Management activities, including root cause analysis, recommendations and project status.</li> </ul>	✓	