



## Service Description

### Network Managed Services

## Network Managed Services

### 1. Service Tiers

Lightstream's Network Managed Services consist of network management functions of infrastructure devices, such as routers, firewalls, switches, etc. Lightstream offers two tiers of the service: (1) Managed Services and (2) Monitoring and Carrier Management. Section 2 of this Service Description describes the Managed Services offering, while Section 3 of this Service Description describes the Monitoring and Carrier Management offering.

## 2. Managed Services

### 2.1. Overview

Lightstream’s Network Management – Managed Services offering includes “full-stack” management of a network infrastructure device, including incident managed of connected network elements, as well as configuration management, change management, and break/fix of the managed device.

### 2.2. Service Elements

The following Service Elements are supported by Lightstream Network Management – Managed Services offering. A description of each respective service element is provided in the reference section indicated.

#### Summary of Service Elements

Network Management – Managed Services	
Section	Service Element
2.3	24x7 Up/Down and SNMP Monitoring and Alerting
2.4	Incident Management
2.5	Problem Management
2.6	Escalation Management
2.7	Change Management
2.8	Configuration Management
2.9	Support Team Structure
2.10	Standard Operating Procedures (SOPs)
2.11	Service Event Prioritization
2.12	Service Level Objective (SLO)
2.13	Reporting & Documentation
2.14	API Integration
2.15	Customer Onboarding

### 2.3. 24x7 Up/Down, SNMP and API Monitoring and Alerting

Lightstream Managed Services provides 24x7x365 up/down monitoring and alerting via ICMP, SNMP, and API (if applicable) on managed network devices, as outlined in a Statement of Work (“SOW”). This monitoring and alerting provides proactive up/down notification of the supported device and associated connectivity service and supports capture of SNMP and API (If Applicable) data to assist in trouble isolation and resolution. Managed Services includes support of the following key capabilities:

**Alerting/Alarm based on observed failure:**

- Device Availability: up/down (alert/alarm on observed failure)

**Data Capture to support problem isolation and resolution**

- Device Health: (CPU and memory utilization)
- Interface Status: up/down
- Interface Performance: – utilization, in/out traffic rate
- Interface Errors: error and discard rate, CRC and collision errors
- Buffer Usage: – small, medium, large and huger buffer utilization and failures
- VPN: – IKE and IPsec tunnel availability
- Hardware Monitoring: disk, memory module, chassis temperature, fan, power, voltage

Lightstream can only monitor via SNMP or API what is made available by the hardware manufacturer. If information is not made available via SNMP or API by the hardware vendor, it is a technical limitation and Lightstream may not be able to capture all key monitoring parameters.

## 2.4. Incident Management

Lightstream will provide 24x7 incident management support for an event which is not part of the standard operation of a covered device and which causes, or may cause, an interruption to, or a reduction in the quality of that service.

An incident may be raised via the Lightstream monitoring platform, via a ticket opened directly with the Lightstream service desk using the Customer accessible portal, via phone, via email, or using a bi-directional automated ticket exchange between the Customer service desk and the Lightstream incident management platform.

As part of the incident management process Lightstream will follow Standard Operating Procedures (SOPs) outlined in section 2.8 of this Service Description to validate the issue as a qualifying service event and to restore normal operation as quickly as possible with the least possible impact on either the business or the user experiencing the identified incident.

## 2.5. Problem Management

Lightstream will provide problem management for any incident that is validated as a qualifying service event via the Standard Operating Procedures (“SOPs”) outlined in section 2.10. Problem management will include incident triage and troubleshooting to determine appropriate steps required to provide remediation of the observed incident and to fulfill the obligations identified in this Service Description.

As part of the problem management process Lightstream will remotely troubleshoot and fix observed issues. If the SOP fails to resolve the problem, the ticket will then be updated and immediately escalated as appropriate to attempt to remedy the failure and restore the Customer environment to working order. Escalation may be directed towards higher level technical resources within Lightstream, Customer resources, or third-party vendor resources.

All ticket activities will be logged into a Customer accessible event management platform. Tickets will be updated consistent with any material activities or change of status on the service event. Updates will include a chronology of steps taken to remediate the incident.

## 2.6. Escalation Management

Lightstream will provide escalation management for incidents supported under the Managed Services offering. Escalation will be based on SOPs and may include escalation to higher level Lightstream technical resources, Customer resources, or third-party vendor resources.

As necessary to support escalation requirements, Customer is required to maintain valid support contracts with third-party vendors as applicable.

In order to provide escalation support Customer may be required to provide authorization for Lightstream to act on its behalf when troubleshooting issues or coordinating with respective vendor support organizations.

All escalation involving third-party resources will be managed to, and dependent on, identified Service Level Agreements established, and in place, between respective vendors and Customer.

## 2.7. Change Management

Lightstream will provide change management support for components covered under Managed Services. Lightstream change management support is designed to ensure that standardized methods and procedures are used for efficient and prompt handling of changes to IT infrastructure. Change requests may arise in response to identified issues/problems, from service requests, via externally imposed requirements (e.g. legislative changes), or to enable or reflect business initiatives, projects or service improvement requirements.

Lightstream supports the following change types under its Managed Services offering:

- **Routine change.** This is a predefined and pre-approved change within the existing Customer infrastructure. A list of predefined and pre-approved changes is to be defined and agreed to between Lightstream and Customer prior to supporting such changes. These changes do not explicitly require a system downtime or maintenance window. Lead time for routine changes is a minimum of 5 business days. Routine change volume is expected to average one or fewer changes per month. Examples of routine change include change of network configuration settings, creating new VLAN, etc.
- **Normal change.** This is a change in an existing infrastructure that is not predefined or routine. This type of change requires a request for change submitted by Customer and approved by both Lightstream and Customer prior to completion of the change. These changes usually require downtime or a maintenance window for completion. Lead-time for requested changes is ten (10) days prior to the agreed to maintenance window. Normal change volume is expected to average one or fewer changes per month.
- **Emergency change.** This is a mandatory change which impacts the network availability and therefore needs to be implemented immediately. Emergency changes may also be a result from a requirement to meet legislative or other governmental obligations or to mitigate security or security breaches as required by hardware manufactures or suppliers. Based on the urgent nature of this type of change in some cases the formal approval of the change is to be obtained after completion of the change management activity. Only authorized and named Customer personnel are allowed to raise emergency changes for immediate implementation request. Lightstream will not perform such changes without approval from the authorized Customer contact. No lead-time applies for emergency changes (e.g.: immediate HW/appliance repair due to failure). Emergency change requests will be addressed as quickly as possible to support Customer need.

- Lightstream understands there may be some fluctuation in change requests and will take this into consideration; however, excessive normal or routine change requests may incur additional charges on a time & material basis. Emergency change requests requiring short turnaround and extensive resource may also result in additional charges on a time & materials basis.
- Change management activity will be documented included in the monthly service review discussion with the Customer.

## 2.8. Configuration Management

Lightstream will provide configuration management for components covered under Managed Services. As part of this support, Lightstream will maintain a configuration backup of supported network devices (when applicable and available) along with a difference report between any two revisions of configuration backup request for up to 30 days. This configuration backup will be stored in the Lightstream configuration management platform.

If a configuration backup process did not run on a device during the scheduled time, Lightstream will investigate the issue and work to resolve the issue. If the device has missed or failed two consecutive scheduled configuration captures, Lightstream will alert on the missed configuration capture and escalate the issue for resolution.

Configuration change requests, or modifications to device configurations will be managed through the change management process outlined in section 2.7 (Change Management) above. Based on frequency and nature of the change, additional charges may apply.

Configuration backup is an automated process. For a component to be supported by this function the device must have the ability to support automated configuration capture via the Lightstream configuration management platform. If an automatic process is not supported by the network device, then Lightstream will not be able to provide a backup of network device configuration.

## 2.9. Support Team Structure

Lightstream will provide 24x7 resource coverage to support the service elements outlined in this Section 2. This support will include a variety of resource types including tier-1 support desk resources, tier-2 technical resources, tier-3 technical support and engineering resources, and associated management and escalation team resources.

Lightstream will also provide a Client Engagement Manager. This Client Engagement Manager will be the main technical point of contact for the Customer for service events related to this Agreement. The Client Engagement Manager will be responsible for the Customer support experience and will focus on managing expectations, providing escalation support, generating and review metrics and reporting, and conducting checkpoint meetings throughout the term of the agreement.

Lightstream will provide a Customer-specific escalation matrix upon execution of a SOW for Managed Services.

## 2.10. Standard Operating Procedures (SOPs)

### 2.10.1. Event Management and Remediation – Standard Operating Procedure

- Lightstream will monitor supported devices on a 24x7x365 basis using Lightstream network management tools and platforms.

- Upon observed failure, Lightstream support platform will create an alert for observed issues.
- Incoming alerts will be initially validated to identify false alerts, or alerts where no action is required.
- Actionable alerts will be prioritized using the prioritization matrix outlined in section 2.11 (Service Event Prioritization).
- Upon prioritization the actionable alert will be ticketed in the Lightstream event management platform by the appropriate Lightstream personnel and routed to the appropriate resource group to begin initial troubleshooting efforts.
- Lightstream resources will then triage the issue to isolate the problem observed. Triage may include a wide range of standard troubleshooting activities based on the nature of the observed problem, Customer technology infrastructure topology, device access, and a variety of other factors.
- Upon identification of the suspected root cause, appropriate steps will be taken to remedy the identified issue based on the nature of the issue and appropriate operating procedure required to remedy the issue.
- If the SOPs fail to resolve the problem, the ticket will then be updated and immediately escalated for further troubleshooting and remediation as appropriate. Escalation may include engagement of additional higher level Lightstream resource, identified third-party vendor resource, or Customer resource based on the nature of the issue and approved Customer escalation process.
- All information, actions taken, and information pertaining to ticketed events will be tracked in Lightstream event management platform.
- Upon resolution of the identified issue Lightstream will notify client of remediation of outage event.
- Lightstream will conduct Root Cause Analysis (RCA) of incidents to identify underlying problem when applicable.
- All ticket activities will be logged into a Customer accessible event management platform, and tickets will be updated with complete chronology and steps taken to remediate the incident.

### 2.10.2. Carrier Management – Standard Operating Procedure

Lightstream will support telecommunications or Internet service provider vendor escalations for internet, leased lines, 4G LTE, MPLS, and other carrier connectivity options in the event of an outage condition.

Lightstream will create tickets with the telecommunications or Internet service provider and escalate the issue to the provider following the respective provider service level agreement structure in place between Customer and provider.

- Lightstream will monitor WAN connectivity using the Lightstream Managed Services platform.
- In the event of an observed connectivity outage, Lightstream will contact the connectivity provider, via phone or via the carrier online ticketing portal, and open a trouble ticket for the observed connectivity failure or issue.

- Lightstream will work with the carrier provider to assist in troubleshooting, testing, and problem resolution when applicable.
- Lightstream will escalate the issue to carrier provider as per a standard escalation process in place between Customer and provider to facilitate problem resolution.
- Lightstream will track carrier ticket information and relevant resolution notes in the Lightstream event management platform.
- It is required that Customer provide a valid letter of authorization allowing Lightstream to act on their behalf during service outage events (Letter of Agency or Authorization) with each respective carrier service provider.
- Customer is responsible for maintaining valid support contracts with any carrier/connectivity providers covered under Managed Services.

### 2.10.3. Hardware Vendor Management – Standard Operating Procedure

Lightstream will provide hardware vendor management in an effort to remedy an outage caused by a failed hardware component for devices covered under Managed Services.

- Lightstream will monitor hardware components of managed devices using the Lightstream Managed Services platform.
- In the event of an observed hardware failure, Lightstream will contact the identified hardware vendor if required to remedy the observed issue. If required by the hardware vendor, Lightstream will open a case number, trouble ticket, or other issue request with the vendor.
- Lightstream will work with the hardware provider to assist in troubleshooting, testing, and problem resolution when applicable.
- Lightstream will work with hardware vendor to facilitate replacement of the failed device.
- Customer is responsible to ensure hardware replacement component is available (via purchase or via hardware maintenance contract) if necessary to remedy device failure.
- Lightstream will track hardware provider ticket information and relevant resolution notes in the Lightstream event management platform.
- It is required that Customer provide a valid letter of authorization allowing Lightstream to act on their behalf regarding device failure or service events (Letter of Agency or Authorization) with each respective hardware provider for devices covered under Managed Services.
- Customer is responsible for maintaining valid support contracts with any hardware component covered under Managed Services.
- Support functions are based on SLA's provided in hardware support contract.

### 2.10.4. Third-Party Vendor Management – Standard Operating Procedure

Lightstream will provide vendor management and vendor coordination for the purpose of resolving issues.

- Vendor management and vendor coordination will be limited to support required to remedy service issues covered under Managed Services.
- Lightstream will document relevant information and resolution notes regarding third-party vendor management and coordination in the Lightstream event management platform.
- Any third-party vendor information would need to be provided by Customer. This would include all required contact information, account information, authorizations or other data necessary to provide support for Managed Services.
- It is required that Customer provide a valid letter of authorization, if required, allowing Lightstream to act on their behalf regarding contact with any third-party vendors.
- Customer is responsible for maintaining valid support contracts with any third-party vendor included in this process.
- Support functions are based on SLA's provided by third-party vendor.

#### 2.10.5. Customer Escalation/Communication – Standard Operating Procedure

Lightstream will manage Customer communication and escalation as part of the Lightstream Managed Services offering.

- Lightstream will provide portal access to the Lightstream event management platform for any identified, authorized Customer contact. This platform will provide real-time access to ticketed events and troubleshooting activities.
- Lightstream will notify Customer contact of any ticketed service event via an automated notification from the Lightstream ticketing platform.
- Lightstream will notify authorized Customer contacts upon resolution of ticketed event.
- Lightstream will provide a Customer specific escalation matrix outlining Lightstream escalation process and contacts.
- Lightstream reserves the right to escalate issues to authorized Customer contacts for events requiring Customer activity or assistance, higher level access, or additional levels of support.
- Lightstream will escalate issues or events that are deemed to be outside of the scope of the Managed Services to identified Customer contacts.
- Lightstream will track all relevant Customer escalation and communication information in the Lightstream event management platform.

## 2.11. Service Event Prioritization

Lightstream defines event severity by impact and urgency. The tables below outline how Lightstream defines the impact and urgency around each individual Managed Services event supported by this service:

### Impact Definition

This categorization is based on the customer business impact of a validated service event.

Impact	Measurement / Description	Priority
<b>Extensive / Widespread</b>	Affects the entire site or all devices (scope), OR areas outside of the company will be affected (visibility), OR material impact to the business/potential loss of critical data (operations), OR core processes or functions affected (operations)	<b>1</b>
<b>Moderate / Limited</b>	Affects some devices (scope), OR business units will be affected (visibility), OR non-core processes or functions affected (operations)	<b>2</b>
<b>Minor / Localized</b>	Affects a single device (scope), OR there is limited visibility of the defect (visibility), OR isolated impact to the business (operations).	<b>3</b>

### Urgency Definition

This categorization is based on how quickly a validated service event must be resolved to avoid significant impact to business operations.

Urgency	Measurement / Descriptions	Priority
<b>Critical / High</b>	System(s) OR device(s) is/are down or unusable with no available work-around, impairing business activities; or further work cannot occur	<b>1</b>
<b>Medium</b>	System(s) OR device(s) is/are not working as designed but a reasonable work-around exists.	<b>2</b>
<b>Low</b>	System(s) OR device(s) is/are working but maintenance is required to improve functionality of the system; or system is working in such a manner that affects user experience..	<b>3</b>

### 2.11.1. Priority Assignment

Event Priority is derived by combining service event impact and urgency. It provides a ranking as to which incident should be worked next.

Priority Matrix		Urgency			
		Critical	High	Medium	Low
Impact	Extensive / Widespread	Priority 1	Priority 1	Priority 2	Priority 2
	Moderate / Limited	Priority 1	Priority 1	Priority 2	Priority 3
	Minor / Localized	Priority 2	Priority 2	Priority 3	Priority 3

### 2.12. Service Level Objective (SLO)

Lightstream Managed Services will have two key performance indicators (KPIs) used to measure and track expected service level on validated service events. These two KPIs are **Average Response Time** and **Average Resolution Time**.

#### 2.12.1. Service Level Objective (SLO) Targets

Lightstream has established SLO targets specific to Average Response Time and Average resolution time for ticketed service events. These targets are outlined in the following table:

Priority	Response Methodology	Response Time Objective	* Resolution Time Objective
Priority 1	An immediate and sustained effort will be put forth using all available resources until resolved. Major incident procedures activated, vendor support invoked. After hours may activate on-call, or duty manager escalation procedures.	15 minutes	4 hours
Priority 2	A support personnel responds using normal processes, assesses the situation, and may interrupt other staff working low priority issues for assistance.	4 hours	8 hours
Priority 3	Respond using standard procedures	8 hours	48 hours

\* **Resolution Time Objective** is exclusive of the time dependent on Customer or third-party action.

### 2.13. Reporting and Documentation

Lightstream will provide reporting and documentation in support of this service. Reporting information will contain up-to-date information related to open problems, incidents and service requests, SLA fulfillment, information regarding network appliances in production, performance statistics, and other data that is relevant to components covered in this service description.

The Lightstream Client Engagement Manager will conduct a regularly schedule status review with Customer. During this meeting, overall service performance, issues, and risks will be reviewed.

Lightstream provides standard report structures and report content. Customer specific reporting details and report frequency will be determined based on service components and must be mutual agreement between both parties. Custom reporting requirements may be incur additional charges.

### 2.14. API Integration

Lightstream may work with Customer to establish appropriate API integration between Lightstream event management platforms and Customer event management platforms. Details of this process would be on an ICB basis and identified in a separate Statement of Work.

### 2.15. Customer Onboarding

Lightstream will work with Customer to ensure timely and efficient onboarding for Managed Services provided.

As part of the onboarding process Lightstream and Customer agree to finalize an onboarding timeline within 30 days of signature of this any managed services agreement between the parties.

Following are the obligations for both Lightstream and Customer specific to onboarding.

#### 2.15.1. Customer's Obligations

- Customer will provide lead onboarding contact and associated contact information to act as Customer main point of contact during onboarding process. Additional Customer contact information for key stakeholders should also be provided as necessary.
- Complete and provide documents and tasks required for the establishment of Lightstream Services as outlined by Lightstream.
- Provide Lightstream with any existing network documentation such as network diagrams, CI reports, and configurations, or other pertinent information.
- Create and provide administrative access to the necessary applications and systems for the establishment of Lightstream Services.
- Provide all necessary Letters of Authorization, Agency, or written approval required to support hardware, network, and infrastructure components covered under this service.

#### 2.15.2. Lightstream's Obligations:

- Lightstream will provide a lead onboarding contact and associated contact information to act as Lightstream main point of contact during onboarding process.
- Lightstream will provide required documentation data set details to Customer.
- Lightstream will provide timeline expectations and timeline delivery requirements for onboarding.
- Lightstream will provide portal access and training for the Lightstream event management portal
- Lightstream will provide all appropriate escalation information for Customer.
- Lightstream will provide necessary information regarding data and obligations as outlined above for the Client to complete their deliverables.
- Lightstream will establish and manage onboarding status calls/updates with appropriate Customer contacts.

### 3. Monitoring and Carrier Management

#### 3.1. Overview

Lightstream’s Network Management – Monitoring and Carrier Management Services offering includes a scaled down service as compared with the “full-stack” management offering of Lightstream’s traditional Managed Services described in Section 2 above. Monitoring and Carrier Management Services includes real-time, read-only monitoring of managed infrastructure devices, along with triage and resolution of carrier outages for circuits connected to managed infrastructure devices.

#### 3.2. Service Elements

The following Service Elements are supported by Lightstream Network Monitoring and Event Management. A description of each respective service element is provided in the reference section indicated.

##### Summary of Service Elements

Network Monitoring and Carrier Management Service	
Section	Service Element
3.3	24x7 Up/Down Alerting and SNMP Data Capture
3.4	Incident Management
3.5	Problem Management
3.6	Escalation Management
3.7	Support Team Structure
3.8	Standard Operating Procedures (SOPs)
3.9	Service Event Prioritization
3.10	Service Level Objective (SLO)
3.11	Reporting & Documentation
3.12	API Integration
3.13	Customer Onboarding

#### 3.3. 24x7 Up/Down, SNMP, and API Monitoring and Alerting

Lightstream Network Monitoring & Carrier Management provides 24x7x365 monitoring and alerting via ICMP, SNMP, and API (if applicable) on managed network devices, as outlined in a Statement of Work (“SOW”). This monitoring and alerting provides proactive up/down notification of the supported device and associated connectivity service and supports capture of SNMP data to assist in trouble isolation and resolution. Network Monitoring and Carrier Management support includes the following key capabilities:

**Alerting/Alarm based on observed failure:**

- Device Availability: up/down (alert/alarm on observed failure)

**Data Capture to support problem isolation and resolution**

- Device Health: (CPU and memory utilization)
- Interface Status: up/down
- Interface Performance: – utilization, in/out traffic rate
- Interface Errors: error and discard rate, CRC and collision errors
- Buffer Usage: – small, medium, large and huge buffer utilization and failures
- VPN: – IKE and IPsec tunnel availability
- Hardware Monitoring: disk, memory module, chassis temperature, fan, power, voltage

Lightstream can only monitor via SNMP or API what is made available by the hardware manufacturer. If information is not made available via SNMP or API by the hardware vendor, it is a technical limitation and Lightstream may not be able to capture all key monitoring parameters.

### 3.4. Incident Management

Lightstream will provide 24x7 incident management support for an event which is not part of the standard operation of a covered device and which causes, or may cause, an interruption to, or a reduction in the quality of that service.

An incident may be raised via the Lightstream monitoring platform, via a ticket opened directly with the Lightstream service desk using the customer accessible portal, via phone, via email, or using a bi-directional automated ticket exchange between the Customer service desk and the Lightstream incident management platform.

As part of the incident management process Lightstream will follow Standard Operating Procedures (SOPs) outlined in section 3.8 of this Service Description to validate the issue as a qualifying service event and to restore normal operation as quickly as possible with the least possible impact on either the business or the user experiencing the identified incident.

### 3.5. Problem Management

Lightstream will provide problem management for any incident that is validated as a qualifying service event via the standard operating procedures (“SOPs”) outlined in section 3.8. Problem management will include incident triage and troubleshooting to determine appropriate steps required to provide remediation of the observed incident and to fulfill the obligations identified in this Service Description.

As part of the problem management process Lightstream will remotely troubleshoot and fix observed connectivity provider issues. If the SOP fails to resolve the problem, the ticket will then be updated and immediately escalated as appropriate to attempt to remedy the failure and restore the customer environment to working order. Escalation may be directed towards higher level technical resources within Lightstream, Customer resources, or third-party vendor resources.

All ticket activities will be logged into a customer accessible event management platform. Tickets will be updated consistent with any material activities or change of status on the service event. Updates will include a chronology of steps taken to remediate the incident.

### 3.6. Escalation Management

Lightstream will provide escalation management for incidents supported under Monitoring and Carrier Management offering. Escalation will be based on SOPs and may include escalation to higher level Lightstream technical resources, Customer resources, or third-party vendor resources.

As necessary to support escalation requirements, Customer is required to maintain valid support contracts with third-party vendors as applicable.

In order to provide escalation support Customer may be required to provide authorization for Lightstream to act on their behalf when troubleshooting issues or coordinating with respective connectivity providers and vendor support organizations.

All escalation involving third-party resources will be managed to, and dependent on, identified Service Level Agreements established, and in place, between respective vendors and Customer.

### 3.7. Support Team Structure

Lightstream will provide 24x7 resource coverage to support the service elements outlined in this Section 3. This support will include a variety of resource types including tier-1 support desk resources, tier-2 technical resources, tier-3 technical support and engineering resources, and associated management and escalation team resources.

Lightstream will also provide a Client Engagement Manager. This Client Engagement Manager will be the main technical point of contact for the Customer for service events related to this Agreement. The Client Engagement Manager will be responsible for the customer support experience and will focus on managing expectations, providing escalation support, generating and review metrics and reporting, and conducting checkpoint meetings throughout the term of the agreement.

Lightstream will provide a Customer-specific escalation matrix upon execution of a SOW for Monitoring and Carrier Management.

### 3.8. Standard Operating Procedures (SOPs)

#### 3.8.1. Event Management and Remediation – Standard Operating Procedure

- Lightstream will monitor supported devices on a 24x7x365 basis using Lightstream network management tools and platforms.
- Upon observed failure, Lightstream support platform will create an alert for observed issues.
- Incoming alerts will be initially validated to identify false alerts, or alerts where no action is required.
- Actionable alerts will be prioritized using the prioritization matrix outlined in section 3.10: Service Event Prioritization.
- Upon prioritization the actionable alert will be ticketed in the Lightstream event management platform by the appropriate Lightstream personnel and routed to the appropriate resource group to begin initial troubleshooting efforts.
- Lightstream resources will then triage the issue to isolate the problem observed. Triage may include a wide range of standard troubleshooting activities based on the

nature of the observed problem, Customer technology infrastructure topology, device access, and a variety of other factors.

- Upon identification of the suspected root cause, appropriate steps will be taken to remedy the identified issue based on the nature of the issue and appropriate operating procedure required to remedy the issue.
- If the SOPs fail to resolve the problem, the ticket will then be updated and immediately escalated for further troubleshooting and remediation as appropriate. Escalation may include engagement of additional higher level Lightstream resource, identified third-party vendor resource, or Customer resource based on the nature of the issue and approved Customer escalation process.
- All information, actions taken, and information pertaining to ticketed events will be tracked in Lightstream event management platform.
- Upon resolution of the identified issue Lightstream will notify client of remediation of outage event.
- Lightstream will conduct Root Cause Analysis (RCA) of incidents to identify underlying problem when applicable.
- All ticket activities will be logged into a customer accessible event management platform, and tickets will be updated with complete chronology and steps taken to remediate the incident.

### 3.8.2. Carrier Management – Standard Operating Procedure

Lightstream will support telecommunications or Internet service provider vendor escalations for internet, leased lines, 4G LTE, MPLS, and other carrier connectivity options in the event of an outage condition.

Lightstream will create tickets with the telecommunications or Internet service provider and escalate the issue to the provider following the respective provider service level agreement structure in place between Customer and provider.

- Lightstream will monitor WAN connectivity using the Lightstream management platform.
- In the event of an observed connectivity outage, Lightstream will contact the connectivity provider, via phone or via the carrier online ticketing portal, and open a trouble ticket for the observed connectivity failure or issue.
- Lightstream will work with the carrier provider to assist in troubleshooting, testing, and problem resolution when applicable.
- Lightstream will escalate the issue to carrier provider as per a standard escalation process in place between Customer and provider to facilitate problem resolution.
- Lightstream will track carrier ticket information and relevant resolution notes in the Lightstream event management platform.
- It is required that Customer provide a valid letter of authorization allowing Lightstream to act on their behalf during service outage events (Letter of Agency or Authorization) with each respective carrier service provider.
- Customer is responsible for maintaining valid support contracts with any carrier/connectivity providers covered under Monitoring and Carrier Management.

### 3.8.3. Hardware Vendor Management – Standard Operating Procedure

Lightstream will assess outage condition to determine if a hardware failure has occurred in an effort to remedy an outage caused by a failed hardware component for devices covered under this service.

- Lightstream will monitor hardware components of managed devices using the Lightstream network management platform.
- In the event of an observed hardware failure, Lightstream will contact appropriate customer contact to notify them of the identified hardware issue.
- Customer is responsible to ensure hardware replacement component is available (via purchase or via hardware maintenance contract) if necessary to remedy device failure.
- Customer is responsible for hardware replacement in the event of failure. Lightstream can support this effort by providing on-site technician services on a time-and-materials basis (or per existing contract if applicable) as requested by Customer.
- Upon hardware replacement/restoral, the Lightstream Network Operations Center will work with Customer/on-site resource to verify device is operating and accessible via the Lightstream monitoring platform and that the site has been restored to working order.
- If it is required that Lightstream work with hardware manufacturer, then Customer must provide a valid letter of authorization allowing Lightstream to act on their behalf regarding device failure or service events (Letter of Agency or Authorization) with each respective hardware provider for managed devices.
- Customer is responsible for maintaining valid support contracts with any hardware component to be managed.
- Support functions are based on SLA's provided in hardware support contract.

### 3.8.4. Customer Escalation/Communication – Standard Operating Procedure

Lightstream will manage customer communication and escalation as part of the Monitoring and Carrier Management offering.

- Lightstream will provide portal access to the Lightstream event management platform for any identified, authorized Customer contact. This platform will provide real-time access to ticketed events and troubleshooting activities.
- Lightstream will notify Customer contact of any ticketed service event via an automated notification from the Lightstream ticketing platform.
- Lightstream will notify authorized Customer contacts upon resolution of ticketed event.
- Lightstream will provide a Customer specific escalation matrix outlining Lightstream escalation process and contacts.
- Lightstream reserves the right to escalate issues to authorized Customer contacts for events requiring Customer activity or assistance, higher level access, or additional levels of support.

- Lightstream will escalate issues or events that are deemed to be outside of the scope of Monitoring and Carrier Management service to identified Customer contacts.
- Lightstream will track all relevant customer escalation and communication information in the Lightstream event management platform.

### 3.9. Service Event Prioritization

Lightstream defines event severity by impact and urgency. The tables below outline how Lightstream defines the impact and urgency around each individual Managed Services event supported by this service:

#### Impact Definition

This categorization is based on the customer business impact of a validated service event.

Impact	Measurement / Description	Priority
<b>Extensive / Widespread</b>	Affects the entire site or all devices (scope), OR areas outside of the company will be affected (visibility), OR material impact to the business/potential loss of critical data (operations), OR core processes or functions affected (operations)	<b>1</b>
<b>Moderate / Limited</b>	Affects some devices (scope), OR business units will be affected (visibility), OR non-core processes or functions affected (operations)	<b>2</b>
<b>Minor / Localized</b>	Affects a single device (scope), OR there is limited visibility of the defect (visibility), OR isolated impact to the business (operations).	<b>3</b>

#### Urgency Definition

This categorization is based on how quickly a validated service event must be resolved to avoid significant impact to business operations.

Urgency	Measurement / Descriptions	Priority
<b>Critical / High</b>	System(s) OR device(s) is/are down or unusable with no available work-around, impairing business activities; or further work cannot occur	<b>1</b>
<b>Medium</b>	System(s) OR device(s) is/are not working as designed but a reasonable work-around exists.	<b>2</b>
<b>Low</b>	System(s) OR device(s) is/are working but maintenance is required to improve functionality of the system; or system is working in such a manner that affects user experience..	<b>3</b>

### 3.9.1. Priority Assignment

Event Priority is derived by combining service event impact and urgency. It provides a ranking as to which incident should be worked next.

Priority Matrix		Urgency			
		Critical	High	Medium	Low
Impact	Extensive / Widespread	Priority 1	Priority 1	Priority 2	Priority 2
	Moderate / Limited	Priority 1	Priority 1	Priority 2	Priority 3
	Minor / Localized	Priority 2	Priority 2	Priority 3	Priority 3

### 3.10. Service Level Objective (SLO)

Lightstream Managed Services will have two key performance indicators (KPIs) used to measure and track expected service level on validated service events. These two KPIs are **Average Response Time** and **Average Resolution Time**.

#### 3.10.1. Service Level Objective (SLO) Targets

Lightstream has established SLO targets specific to Average Response Time and Average resolution time for ticketed service events. These targets are outlined in the following table:

Priority	Response Methodology	Response Time Objective	* Resolution Time Objective
Priority 1	An immediate and sustained effort will be put forth using all available resources until resolved. Major incident procedures activated, vendor support invoked. After hours may activate on-call, or duty manager escalation procedures.	15 minutes	4 Hours
Priority 2	A support personnel responds using normal processes, assesses the situation, and may interrupt other staff working low priority issues for assistance.	4 Hours	8 Hours
Priority 3	Respond using standard procedures	8 Hours	48 hours

\* **Resolution Time Objective** is exclusive of the time dependent on Customer or third-party action.

### 3.11. Reporting and Documentation

Lightstream will provide reporting and documentation in support of this service. Reporting information will contain up-to-date information related to open problems, incidents and service requests, SLA fulfillment, information regarding network appliances in production, performance statistics, and other data that is relevant to components covered in this service description.

The Lightstream Client Engagement Manager will conduct a regularly schedule status review with Customer. During this meeting, overall service performance, issues, and risks will be reviewed.

Lightstream provides standard report structures and report content. Customer specific reporting details and report frequency will be determined based on service components and must be mutual agreement between both parties. Custom reporting requirements may be incur additional charges.

### 3.12. API Integration

Lightstream may work with Customer to establish appropriate API integration between Lightstream event management platforms and Customer event management platforms. Details of this process would be on an ICB basis and identified in a separate Statement of Work.

### 3.13. Customer Onboarding

Lightstream will work with Customer to ensure timely and efficient onboarding for Network Monitoring and Carrier Management Services provided.

As part of the onboarding process Lightstream and Customer agree to finalize an onboarding timeline within 30 days of signature of this any managed services agreement between the parties.

Following are the obligations for both Lightstream and Customer specific to onboarding.

#### 3.13.1. Customer's Obligations

- Customer will provide lead onboarding contact and associated contact information to act as Customer main point of contact during onboarding process. Additional Customer contact information for key stakeholders should also be provided as necessary.
- Complete and provide documents and tasks required for the establishment of Lightstream Services as outlined by Lightstream.
- Provide Lightstream with any existing network documentation such as network diagrams, CI reports, and configurations, or other pertinent information.
- Create and provide administrative access to the necessary applications and systems for the establishment of Lightstream Services.
- Provide all necessary Letters of Authorization, Agency, or written approval required to support hardware, network, and infrastructure components covered under this service.

### 3.13.2. Lightstream's Obligations:

- Lightstream will provide a lead onboarding contact and associated contact information to act as Lightstream main point of contact during onboarding process.
- Lightstream will provide required documentation data set details to Customer.
- Lightstream will provide timeline expectations and timeline delivery requirements for onboarding.
- Lightstream will provide portal access and training for the Lightstream event management portal
- Lightstream will provide all appropriate escalation information for Customer.
- Lightstream will provide necessary information regarding data and obligations as outlined above for the Client to complete their deliverables.
- Lightstream will establish and manage onboarding status calls/updates with appropriate Customer contacts.