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INNOVATION DELIVERED

MANAGED SD-WAN - SERVICE GUIDE

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1 MANAGED NETWORK SERVICES OVERVIEW

Managed Network and Monitoring Services provides organizations with the management and monitoring of their network infrastructure, to improve availability, whether the infrastructure is on premises, a third-party datacenter or the cloud. This Service Guide describes Managed Network Services in general (part one) and then describes the specific details of the managed network devices for which this service guide is intended (part two). This document clarifies the scope of the service, service level, roles and responsibilities, and other specifications of the service for customers of this service. This document may get updated from time to time to add additional clarification and details related to this service.

1.1 MANAGED NETWORK SERVICES - GENERAL SERVICE DETAILS

In Scope

- This Managed Service offers management and monitoring of devices and software according to this Service Guide and the InterVision Work Order to aid in resuming normal operations. Additional requests above and beyond will be based upon time and material expense to the Customer.
- Detection, isolation, diagnosis of each fault and restoration to normal operating conditions, testing and documenting each fault within the InterVision trouble ticket system
- Ownership of resolution of the problem on behalf of the Customer and act as an agent for the Customer under executed letters of agency
- Notify the Customer of the progress of all faults per Customer provided contact process.
- Critical software and firmware updates.
- Summary reports delivered via our monitoring portal to help the Customer understand traffic, clients and application usage
- Assistance with warranty replacement and vendor escalations.
- Changes to individual devices. Mass additions/deletions or changes (greater than 5) are not covered via the Managed Network Services agreement and will be considered project billable tasks.
- Safeguard customer's proprietary information using commercially reasonable efforts to securely access client network through an encrypted tunnel.
- ***If, during the life cycle of the contract, a device becomes of "Out of Scope / Unsupported", Operational Support will be reduced to the following:
    a. Actions related to Device Failures, including those due to failed recovery during the InterVision execution of Client Approved changes, are limited to:
        i. Device replacement (client provided device or new purchase) with existing configuration included.
        ii. Additional remediation at T&M.
    b. The risks of operating Unsupported Software with known vulnerabilities that cannot be addressed due to the lack of vendor support are considered "Accepted" by the client.
    c. All Operations Center related Incident Remediation efforts are limited to two hours in scope within standard contract language; any additional efforts are subject to T&M.
    d. Hardware Component failures are the responsibility of the client or must be addressed through T&M / Dispatch.
    e. Recurring Alerts for Out of Scope / Unsupported devices with no In Scope resolution paths available will be transitioned to Monitor Only.
    f. Actions requiring a change in code version (requested software enhancements / features that require newer version of code / updates to address vulnerabilities) are the responsibility of the client or must be addressed through T&M / Dispatch.

Out of Scope

- Hardware or Software installation or non-RMA replacement is not included with network support unless specifically stated below. Professional services may be engaged to assist with installation, upgrade or replacement.
- Software license and subscriptions are not included. Management devices and software provided as part of the Managed Service will be licensed.
- Netflow reporting is available as an additional optional paid service. The device to be covered by Netflow must support the application and have the necessary capabilities to provide reporting appropriate to need.
- Mass configuration changes to covered devices that are required, due to Customer upstream or downstream projects, are not covered as part of the service.
- Coverage for devices not under agreement are ineligible for support of any type.

Customer Requirements

To allow for successful monitoring and management of devices and execution of SLAs, Customer responsibilities include:

- Providing all network and device information for the InterVision Managed Services team and tools to discover the contracted devices and enable monitoring. This information includes network diagrams, site information, circuit information and Customer Vendors, Letters of Agency, and current software levels.
- Providing computing resources to run InterVision's monitoring and collection tools, and the means for the Collector to contact the InterVision Data Center.
- Performing configuration of devices and network, as necessary, to facilitate monitoring and management of the contracted devices. In the event the customer is unable or does not have the personnel to enable monitoring and management of devices, InterVision's Professional Services can be engaged for assistance at an incremental cost.
- Provide devices access - Remote access to devices must be available for support. The client is responsible for out of band access, along with in-band access.
- Provide a distribution list of Customer contacts to receive alarm triggered emails and reports
- Supply InterVision team with all the necessary security information including dial-in numbers, access ID's, passwords, SNMP community names necessary for InterVision to perform the Services
- Provide notification contact and escalation lists for use by InterVision during business and non-business hours.
- Provide InterVision team with site contact to facilitate access to equipment and connection terminations, along with out-of-hours access procedures
- Notify InterVision within 72 hours of any changes to the contracted devices via a service/change ticket.
- Execute letters of agency notifying vendors, such as carriers, that InterVision will represent the Customer by isolating and troubleshooting Customer's network problems
- All devices and applications must have vendor support contracts and operate at currently supported vendor versions.
- All devices must be in a supportable state, including current versions of software supported by vendor, with all critical patches applied, in a production capable state with no known failures or functions in order to be covered. Remediation efforts to bring software to current version including patches to make a device production capable will be billable to the customer.

1.2 SERVICE LEVEL OFFERS

- Monitoring Service provides 24/7 monitoring and customer notification. Notification includes automated alerts as well as notification via service personal to client for critical events. This does not include trouble shooting and device support. Support is available for changes to monitoring settings and assistance with reports.
- Standard Service offers 24/7/365 phone and ticket support. it does not include dispatch for onsite support.
- Enhanced Service offers 24/7/365 phone and ticket support. It includes dispatch for onsite support[1, 2] where remote support is unable to fulfill eligible service events such as RMA device replacement.

- Premium Service is available for SD-WAN devices. See Managed SD-WAN Service description and details for additional details

[1] *Applies to devices covered under Managed Network Services in the continental US. International onsite coverage may be added via a custom scope of work.*
[2] *Onsite support is at the discretion of InterVision as determined necessary*

1.3 SUPPORT

Service	Monitor Only	Standard	Enhanced	Premium
Event notification	Included	Included	Included	Included
Phone & Ticket Support 24 hours, 7 days a week	Included for monitoring issues	Included, with SLA	Included, with SLA	Included, with SLA
Onsite Support 7AM-7PM MON-FRI**	Not Included	Not Included, No SLA.	Included, with SLA	Included, with SLA
Onsite Support Off-Hours**	Not Included	Not Included, No SLA	Included, with SLA	Included, with SLA
Phone Support – Devices Not Covered by NetTend	Not Included	Not Included	Not Included	Not Included
Onsite Support – Devices Not Covered by NetTend	Not Included	Not Included	Not Included	Not Included

* All coverage times are based on the local time zone of the supported device.
** Applies to devices covered under Managed Services in the continental US. International onsite coverage may be added via a custom scope of work.

- In the event that an outage or network problem occurs which is determined to be a site related issue InterVision managed service team will document the Incident within its ticketing system. Examples of site related Incidents are: Loss of power to site, damage to premise cabling, accidental disconnection of site cabling or Equipment.
- In the event that an outage or network problem occurs which is determined to be a Broadband Carrier circuit failure, InterVision will, via a Letter of Agency from Customer, contact the relevant Carrier or ISP and report the Incident for resolution. InterVision will then continue to manage the problem and follow up with the Carrier or ISP to ensure service is restored as quickly as possible.
- In the event that an outage or network problem occurs which is determined to be a failure of CPE, InterVision will diagnose and attempt to resolve the issue remotely. If the outage cannot be resolved remotely, InterVision will escalate to the Customer and/or technician dispatch when needed. Determination of the necessity of on-site services is at the sole discretion of InterVision, If dispatch is requested and cancelled within 48 hours of requested dispatch time, a $500 cancellation fee will be applied.

1.4 REPORTING

For all Managed Network Services, the following reports are available provided quarterly.

- Hardware availability
- Device performance and capacity
- Trouble tickets
- Change tickets
- Monthly overview reports
- SLA reports

1.5 SERVICE ACTIVATION

InterVision employs a structured process to help ensure a smooth transition to Managed Infrastructure and Monitoring services. Our Project Management Office (PMO) owns the process with the Onboarding Engineer (OE), holding the ultimate responsibility and serving as the single point of contact (SPOC).

Steps to activate service

1. Data gathering
    a. Customer service manual
    b. Order form
2. Monitoring collector/ Support workstation Deployment and Configuration
3. Onboard customer devices
4. Add data from step one into systems
5. Finalize customer onboarding
6. Send any found issues with onboarding for client to review
7. Go Live/ Customer training
8. Perform true up / Project Closeout

1.6 SERVICE DELIVERY - INCIDENT AND DEVICE IMPACT CLASSIFICATION

The Managed Infrastructure and Monitoring service employs a sophisticated algorithm called the Ticket Enrichment Engine that utilizes the severity of the incident, and the business criticality of the device to determine the appropriate priority levels. Devices such as SD-WAN, routers and firewalls are defaulted to classification as critical devices, and are automatically prioritized higher than other devices. Customers are able to designate other devices as critical, to decrease/increase their prioritization based upon their business impact

Severity 1	No Ticket	
Severity 2	No Ticket	
Severity 3	No Ticket	
Severity 4	Notification Ticket Closed State	
Severity 5	Notification Ticket Closed State	Upgrade Eligible

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Severity 6	P3 Ticket	
Severity 7	P3 Ticket	Upgrade Eligible
Severity 8	P2 Ticket	
Severity 9	P2 Ticket	Upgrade Eligible
Severity 10	P1 Ticket	

Emergency (P1 or P2) services require a phone call to create an incident.

2 MANAGED SD-WAN SERVICE SPECIFICATIONS

This service falls under the Managed Network Service scope detailed in the Service Description above. Service Details below are specific to managing a Managed SD-WAN environment.

This service is designed to pick up day-to-day monitoring and management of the SD-WAN environment, after it has been designed, implemented and is running in production. Design, implementation and additional security services may be obtained via Professional Services. This service is provided for both Silver Peak and Meraki SD-WAN environments.

- This is a managed service for client-owned Managed Network Services supported SD-WAN equipment. For a list of supported devices, please contact your account or service representative.
- The Managed SD-WAN service offers management and monitoring of devices and software according to the agreement between customer and Hosted Cafe' to aid in resuming normal operations. Refer to the *Roles and Responsibilities Matrix* below for SD-WAN specific service coverage and.
- The Managed SD-WAN Service requires extra information to be collected in addition to the default information.
    - For onboarding, a network diagram must be available. The network diagram should show the logical design and include the following:
        - IP addressing
        - MPLS/Internet Service providers
        - Circuit IDs
        - Traffic policies and BIOs used for SD-WAN
- SD-WAN-specific on-boarding form
- A listing of business-specific polices the customer wishes to follow

- This is a managed service for client owned equipment.

This service is available in multiple service tiers which includes: 1) Standard; 2) Enhanced; 3) Premium.

Standard – this tier offers essential and responsive managed services to maintain the environment as is and to remediate issues as they are discovered or detected.

Enhanced – This tier includes all the capability of the Standard service and adds the ability to provide remote hands service at your site to assist with device replacements and other issues requiring skilled remote hands to resolve.

Premium - This tier builds upon the previous tiers and adds additional life-cycle management capabilities as well as proactive capacity and performance management. This service level adds a designed engineer to understand your

environment and provide this heighten level of service and engineering. This service tier is available with SilverPeak SD-WAN.

2.1 ROLES AND RESPONSIBILITY MATRIX

	Client	Managed SD-WAN Standard	Managed SD-WAN Premium	Extended Services (Professional Services)
General				
SD-WAN Router & Management Console information (account. password, location, MAC address,…)	X			
SD-WAN Router SNMP string (*not necessary for Meraki implementation)*	X			
Client escalation information	X			
Vendor support contracts	X			
Console access for co-management	X			
Provide Circuit bandwidth information	X			
Installation and Configuration				
Port Configuration		X	X	
Initial design and configuration of router and WAN/LAN	X			X
Physical or virtual router/switch install	X			X
Determine and Implement Quality of Service (QOS) policies or Business Intent Overlays	X			X
Set up initial notification profiles	X			X

	Client	Managed SD-WAN Standard	Managed SD-WAN Premium	Extended Services (Professional Services)
Installation and configuration of new circuits	X			X
Installation and configuration of site moves	X			X
Monitoring				
Setup monitoring and logging		X	X	
Setup standard reports		X	X	
Update monitoring thresholds per client requirements		X	X	
Manage notification profiles		X	X	
Monitoring for Orchestrator hardware (Silver Peak)[1]		X	X	
Incident and Problem Management				
Incident management		X	X	
Root cause analysis		X	X	
Vendor management (Escalations, RMA,…)		X	X	
Troubleshoot down router/switch		X	X	
Troubleshoot circuits		X	X	
Troubleshoot NAT and port forwarding rules		X	X	
Troubleshoot high availability features for SD-WAN edge device		X	X	

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	Client	Managed SD-WAN Standard	Managed SD-WAN Premium	Extended Services (Professional Services)
Technical overlay with specific knowledge of client environment			X	
Initiate and verify SilverPeak Orchestrator backup jobs to a client provided backup storage target			X	
Onsite remote hands services		2	X	
Patch Management*				
Firmware updates (to resolve router issues)		X	X	
Router Critical Security vulnerability patching (as required)		X	X	
Router Software – minor feature releases, non-critical patches[3]		X	X	
Router Software - major upgrades				X
Review patch and software releases and recommend which updates to apply			X	
Management				
Administer cloud console		X	X	
Administer devices accounts		X	X	
Administer user access (with client approval)		X	X	
Regular device health and performance checks, recommend changes as needed **			X	

	Client	Managed SD-WAN Standard	Managed SD-WAN Premium	Extended Services (Professional Services)
Maintain technical documentation			X	
Change Management				
HW physical replacement (Enhanced Only)		2	X	
HW replacement configuration migration to new device (if compatible with config backup)		X	X	X
Create new network sub-interface (virtual interface)	X			X
Create and Implement High Availability Features	X			X
Create Access Control Lists (ACL)	X			X
Create Business Intent Overlays or routing policies	X			X
Implement or extend existing ACL		X	X	
Update or modify Business Intent Overlays or routing policies		X	X	
Periodic review of SilverPeak ACL to identify significant policy risks and provide notification of issues			X	
Designated individual with knowledge of client environment to review changes for risk and impact			X	
Capacity Analysis				
Performance Tuning and Management			X	

	Client	Managed SD-WAN Standard	Managed SD-WAN Premium	Extended Services (Professional Services)
Capacity Analysis			X	
Reporting				
Standard Reports		X	X	
Custom Reports			X	
Life-cycle Management				
License Management – identify improvements (eg. Boost licensing)			X	
Life cycle management notification (EOL, EOS, updates)			X	
Recommend hardware replacement due to capacity or end-of life status			X	
In the event of the virtual router failure, OVA redeploy is done by: 1) Customer if the Customer owns OVA deployment (their VMware); 2) Hosted Cafe' if Hosted Cafe' owns OVA image	1	2	2	

Meraki software updates are set to "stable" by default during set up. Hosted Cafe' can change the standard settings if requested.

** This is intended to support a well-designed environment, provide on-going optimization recommendation and policy tuning. This applies to an Hosted Cafe' designed and implemented environment. This does not include audits of client or 3rd party implemented policies or an overhaul of routing and policies.

[1] On-premise orchestrator requires technical approval by Hosted Cafe' to be accepted

[2] Available with Enhanced service tier

[3] As determined by Hosted Cafe' Operations Center. All routers must maintain common code revisions

2.2 MONITORING - SD-WAN

Managed SD-WAN monitors for the customer's cloud portal device as well as SD-WAN router devices. There are over 100 alerts on operational conditionals of these devices.

2.2.1 SILVER PEAK

Below is a list of the critical alerts being monitored to alert on operational conditions.

- Device Reboot Due to Process Crash
- IP SLA Down
- LAN Next Hop Unavailable
- License Issue
- Multiple Tunnels Down
- Orchestrator Backup Failure
- Multiple Tunnels Down
- Orchestrator Backup Failure
- Portal Hostname Unresolvable
- Unexpected Reboot
- VRRP Instance Down
- VRRP State Changed to Back up
- WAN Next Hop Unreachable
- WCCP Adjacency Down

2.2.2 MERAKI

- Meraki Device Interface Down
- Meraki Device Not Responding
- Meraki Device Port Cable Error
- Meraki Device VPN Connectivity Down
- Meraki Unreachable Device
- Meraki VPN Failover

Refer to the "Service Delivery - Incident and Device Impact Classification" section above for description of severity levels and mapping to operations center priority levels. (ex. Severity 10 is our highest severity and maps to our Priority 1 service level)

2.3 REPORTING - SD-WAN

2.3.1 SILVER PEAK

Managed SD-WAN with **Silver Peak** provides the following standard Global Report as part of on-boarding. Report frequency can be scheduled and emailed to recipients of the customer's choosing. Standard sections within the report include

The Appliance Report which includes the following

- Application Chart

- Top 10 traffic
- Application pie chart
- Application Trends

- Tunnel Chart

- All overlays
- Health map
- Loss
- Out-of-order packets
- Tunnel Bandwidth

- Appliance Chart

- Top Talkers
- Top Domain
- Top Ports
- Top Countries
- Appliance Bandwidth
- Bandwidth Utilization
- Appliance Max Bandwidth
- Interface Summary
- Boost

The Voice Report which includes the following

- Tunnel Chart

- All Overlays
- Loss
- Out-of-Order Packets
- Latency
- Jitter
- Mean Opinion Score

- Appliance Chart

- DSCP Bandwidth
- Traffic Class Bandwidth
- DSCP Trends
- QoS Trends
- Interface Summary

2.3.2   MERAKI

Managed SD-WAN with **Meraki** provides the following standard Summary Report as part of on-boarding. Report frequency can be scheduled and emailed to recipients of the customer's choosing. Standard sections within the report include

Report Name	Report Description
Usage	A high-level overview of total traffic across all devices on this network over the time period selected.
Top devices by usage	Top 10 Cisco Meraki devices in the network, ranked by total network usage, along with the total number of unique clients that used the device.
Top clients by usage	Top 10 clients on the network based on total usage (upload and download) during the time period.
Top client device manufactures by usage	Top 10 device manufacturers by total usage. In addition to aggregate information from the section above, it also provides a total number of clients with the indicated manufacturer.

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Top device models by per	Top 10 Cisco Meraki device models in this network based on average usage (upload and download) per device.
Top applications by usage	Top 10 applications on this network based on overall usage (upload and download).
Top operating systems by usage	10 Operating Systems (OS) on the network based on overall usage (upload and download), along with a count of how many clients on the network are using that OS.
Number of sessions over time	This section lists the number of wireless device sessions per day.

Custom reports can be created at an incremental fee.

2.4 DEFINITIONS

Enhanced- Hosted Cafe' will place the Customer premise equipment ("CPE"), Cloud Services, and Software under support and monitoring service. With this version of the Service the customer receives both unlimited phone support and onsite support as detailed in an applicable Service Order.

EOL - End of Life

EOS - End of Support

Hosted Cafe' - Hosted Cafe is a name for the InterVision managed services organization and team. It is used to differentiate the services from other services such as professional services or Customer IT operations.

Monitor only- Hosted Cafe' will place the Customer premise equipment ("CPE") under support and monitoring only service. The Service covers the specific IT infrastructure devices as detailed in an applicable Service Order . There is no phone support or onsite support with this service.

RMA - Return Merchandise Authorization. This refers to like-for-like device replacement under vendor warranty.

Standard- Hosted Cafe' will place the Customer premise equipment ("CPE"), Cloud Services, and Software under support and monitoring service. The Service covers the specific IT infrastructure devices as detailed in an applicable Service Order and includes unlimited phone support.

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