



## Service Description: Cisco Service Provider Network Optimization Service (SP NOS)

This document describes Cisco's Service Provider Network Optimization Service (SP NOS)

**Related Documents:** This document should be read in conjunction with the following documents also posted at [www.cisco.com/go/service-descriptions/](http://www.cisco.com/go/service-descriptions/): (1) Glossary of Terms; (2) List of Services Not Covered; and (3) Severity and Escalation Guidelines. All capitalized terms in this description have the meaning ascribed to them in the Glossary of Terms.

**Direct Sale from Cisco.** If you have purchased these Services directly from Cisco, this document is incorporated into your Master Services Agreement (MSA), Advanced Services Agreement (ASA), or equivalent services agreement executed between you and Cisco. All capitalized terms not defined in the Supplemental Glossary of Terms for Service Provider Network Optimization Service at the end of this document have the meaning ascribed in the MSA or equivalent services agreement executed between you and Cisco. If not already covered in your MSA or equivalent services agreement, this document should be read in conjunction with the Related Documents identified above. In the event of a conflict between this Service Description and your MSA or equivalent services agreement, this Service Description shall govern.

This Service Provider Network Optimization Service is intended to supplement a current support agreement for Cisco products and is only available where all Product(s) in Customer's Network is supported through a minimum of core services such as Cisco's SP Base, Software Application Services, or the Partner Support Service offering from within the Cisco Services Partner Program. Cisco shall provide the Service Provider Network Optimization Service described below as selected and detailed on the Purchase Order for which Cisco has been paid the appropriate fee. Cisco shall provide a Quote for Services ("Quote") setting out the extent of the Services and duration that Cisco shall provide such Services. Cisco shall receive a Purchase Order that references the Quote agreed between the parties and that, additionally, acknowledges and agrees to the terms contained therein. Availability of Services described herein and service delivery may vary by geographical region.

### Service Summary

Service Provider Network Optimization Service supports those Products operating on Customer's core transport and aggregation Network technology. Service Provider Network Optimization Service provides the following services:

#### Network Health Check

- Data Collection Tool
- Technology or Protocol Audit
- Configuration Best Practices Report
- Custom Configuration Report
- Syslog Analysis Report
- Hardware EoX Report
- Hardware Field Notice Report
- Network Improvement Plan
- Network Health Analysis and Dashboard

#### Network Support

- Bug Analysis
- Design Collaboration
- Topology Diagram Report
- Detailed Design Report
- Implementation Plan Review
- Network Topology Modeling Analysis
- Software Management Strategy Review
- Software Recommendation Report
- Software Infrastructure Analysis Report
- Software Security Alert
- Software Lifecycle Management Dashboard
- Automated Risk Assessment and Recommendation Report
- Critical Bug Notification Software Maintenance Update Notification
- Validation and Test Cycle Review Standard
- Scheduled Change Support
- Unscheduled Change Support
- Onsite Network Consulting Support
- Onsite Network Optimization Support

#### Continuous Learning

- Knowledge Transfer and Mentoring
- Technical Knowledge Library
- Formal Training
- Virtual Training Session
- Curriculum Planning Review

#### Annual Assessment

- Operations Risk Management Assessment
- IPv6 Architecture Strategy Assessment
- Network Resiliency Assessment

#### Change and Release Management

- Configuration Policy Remediation
- Software Deployment
- Flexible Support

#### Analytics

Foundational Analytics  
 OnPrem Analytics  
 Automated Fault Detection and Service Request Notification

### EnergyWise Optimization Service

## **Service Provider Network Optimization Service**

### **Cisco Responsibilities**

Cisco's Service Provider Network Optimization Service consists of the provision of, at a minimum, Network Support service, selected by Customer from the Services described below, which Cisco shall provide for the Customer's network during Normal Business Hours (unless stated otherwise). The number of audits, assessment and/or reports provided by Cisco under this Service will be specified in the Quote and will be reviewed by the parties at each quarterly business review. Cisco shall provide the following General Support provisions for all Services selected by Customer:

### **General Support**

- Designate an engineer ("Advanced Services Engineer") to act as the primary interface with Customer for its Network.
- Schedule with Customer up to four (4) quarterly visits per year (not to exceed eight (8) days in aggregate) to Customer's site to review proactive deliverables and activities and to plan for next quarter. Additional visits will be mutually agreed at Cisco's then-current travel and labor rates.
- Schedule periodic conference calls (usually weekly) to review Customer's Network status, planning and the Services being provided.
- Make collaboration tools available for hosting meetings, managing documentation, instant messaging, desktop sharing, and collaborative spaces.
- Establish a Customer-specific Cisco email alias to facilitate communication with Advanced Services Engineer.
- Provide certain Data Collection Tools that Cisco identifies as appropriate for Network data collection during the Term of the Services, provided that all fees due and owing to Cisco under this Appendix have been paid. Data Collection Tools may or may not include Hardware or Software. Customer acknowledges and agrees that Cisco shall retain full right, title and interest to the Data Collection Tools.
- In addition to Cisco provided tools, the Advanced Services Engineer may utilize Customer provided

data, scripts or internal tools to assist in collecting data from the Customer Network.

### **Network Health Checks**

- **Data Collection Tool**

In order for Cisco to provide the Network Health Audits and Network Health Reports specified below, a Data Collection Tool must be installed on Customer Network in order to capture relevant Network data. The data will be analyzed through a combination of best practices via back end tools and Cisco network consulting engineering guidance. The analysis is profiled and reported back to Customer along relevant recommendations.

- **Technology or Protocol Audit**

Provide a predetermined set of technology solution, platform or protocol audit reports or other performance analysis reports. Such audit or performance analysis typically includes amongst other information, the following:

- Collection of key performance data
- Identification of exception reports
- Analysis of key device configurations
- Analysis of resource utilization
- Assist Customer to define Network-specific performance criteria
- Report on performance optimization recommendations such as system tuning and protocol optimization changes

The typical size an audit will cover is up to 500 devices. For a large network, several audits will need to be completed over time for consistency.

- **Configuration Best Practices Report**

Provide a predetermined set of configuration best practice reports on Cisco IOS, IOS-XE, IOS-XR and NX-OS devices. Such reports typically focus on the following areas:

- Technology-for example, LAN, VXLAN IP/IPv6 routing
- Protocol-for example, Enhanced Interior Gateway Routing Protocol (EIGRP), Locator/ID Separation Protocol (LISP), Border Gateway Protocol (BGP)
- Application Centric Infrastructure (ACI)
- Security settings
- Network management settings

- **Custom Configuration Report**

These reports typically analyze Customer's production configurations (per device) to compare them to Customer's configuration

standards templates or Cisco's recommended configuration templates

- **Syslog Analysis Report**

Provide a predetermined set of periodic syslog analysis reports on Products to proactively identify Network optimization opportunities based on the following:

- Syslog event correlation
- Device health information
- Baseline metrics

- Provide a predetermined set of proactive advisory reports, which will contain recommendations that the Customer may elect to implement. Reports are typically generated after the AS Engineer has assessed the following and determined applicability to Customer's Network.

- **Hardware EoX Report**

These reports typically provide information about Cisco's product family milestones such as:

- End of Sale (the product is no longer sold by Cisco)
- End of Engineering (the product is no longer receiving engineering maintenance)
- End of Life (the product is no longer supported by Cisco)

- **Hardware Field Notice Report**

These reports provide information about Cisco's Field Notices and typically include:

- Analysis of how a Cisco Field Notice may or may not affect Customer's Network
- Recommendations to mitigate risk
- List of affected or potentially affected Networking devices

- **Network Improvement Plan** (Only relevant for standalone when Network Health Analysis and Dashboard is not purchased).

These plans integrate recommendations from Network Optimization Service Deliverables and Activities into a single living document. The Network Improvement Plan represents the Customer-approved and agreed-upon Cisco recommendations as prioritized by a joint steering committee comprised of Cisco and Customer, and may be used by Customer to track future projects.

- **Network Health Analysis and Dashboard**

Automated network improvement plan – provides consolidated reporting and automated analysis and trending of correlated exceptions within the following areas:

- Configuration Best Practices
- Custom Configuration
- Engineering Recommendation

- Software Infrastructure Analysis
- Software Security Alerts
- Syslog Analysis
- Technology or Protocol Audits
- Topology Diagram

- Online access to Network Performance Analytics Portal -- Provide Customer access to online portal supporting unified delivery of the following high-level features
- Metrics that leverage the correlated exceptions mentioned above:
  - Overall Customer network health index and index trending
  - Risk/compliance/problem management metrics
  - Index showing progress against established Customer-specific improvement initiatives
- On-line access to automated network Improvement plan details

### Network Support Service

- **Bug Analysis**

Provide periodic proactive critical bug analysis report for identified Software Track(s) or key Network Software feature categories.

- **Design Collaboration**

- Consult with Customer networking staff in a series of meetings to develop a thorough understanding of Customer Network design requirements, with a focus on concerns such as resiliency, self-recovery, scalability, and ability to handle increased traffic demands and QoS.
- Provide ongoing, incremental Network design and architecture consultation.
- Provide ongoing information on design related to Cisco security alerts that may impact key Network Products.

- **Topology Diagram Report**

This report provides a visual representation of the network from device configuration details for the purpose of understanding, documenting, troubleshooting and optimizing customer networks

- **Detailed Design Report**

Provide detailed design report(s) that may include, amongst other information, the following:

- Review of Customer's design requirements, priorities, and goals.

- Analysis of impact of new requirements on existing Network.
- Review of protocol selection and configuration.
- Review of feature selection and configuration.
- Review of security considerations (i.e. authentication, VLANs, subnet isolations, etc.).
- Report describing the design with recommendations.

The number of detailed design reports will vary depending on the technology mix and Network expansion or change plans.

- **Implementation Plan Review**

Collaboration with Customer to evaluate the potential impact of the proposed scheduled change, review implementation procedures, and be available to assist Customer to resolve problems with Network Hardware and configuration during a major deployment into a live Network.

- **Network Topology Modeling Analysis**

Cisco will consult with Customer via a series of meetings to improve end to end network availability and resiliency by analyzing the core routing and switching components that support mission critical applications and services. The service models current operational state and provides actionable recommendations. A Network Topology Modeling Analysis service may include, among other information, the following:

- Network Topology Representation
- Network Resiliency Analysis
- Network Availability Analysis

- **Software Management Strategy Review**

Cisco will consult with Customer via a series of meetings to develop a thorough understanding of Customer's Software management requirements and practices such as standards, migration triggers, and implementation methodologies. A Software Management Strategy Review will contain overall strategy recommendations and may include, among other information:

- Review of Customer's Software management concerns and challenges
- Analysis of Customer's current practices related to establishing and managing Software release standards and Software migration triggers

- Analysis of Customer's current practices related Software selection, testing, staging, deployment, and troubleshooting
- Report describing the analysis comparing Customer's current practices to Cisco's recommended best practices and Cisco's recommendations
- Assistance establishing Software Track methodologies
- Assistance defining Customer-specific Software migration triggers
- Assistance in defining feature requirements and performance/availability objectives as relates to Software strategy

- **Software Recommendation Report**

Provide proactive Software recommendation reports (each report covers single Software Track), which may include:

- Review of new Software feature releases (Cisco IOS Software and Cisco IOS-XR Software)
- Inclusion of a Software referral version and risk analysis.
- Overall Software recommendation to proceed with testing and Feature Set Upgrade deployment or wait for future Maintenance Release.
- Contingency plan for transitioning Software in Customer networking environment.

The number of Software recommendation reports will vary depending on number of Hardware platforms and Software versions Customer expects to change or review during the annual service term.

- **Software Infrastructure Analysis Report**

Information in these reports typically include:

- Customer standards and conformance to Software release recommendations
- Software release diversity
- Software Track related high-level analysis of Software Advisories, Software Deferrals, and Software release milestones such as End of Sale, End of Engineering, and End of Life status

- **Software Security Alert**

These reports provide information about Cisco's Software Advisories and typically include:

- Analysis of how a Cisco Security Advisory may or may not affect Customer's Network
- Recommendations to mitigate risk
- List of affected or potentially affected Networking devices

- **Software Lifecycle Management Dashboard.**

Provide customer access to online dashboard providing details on critical bugs affecting OS/Platform/Release. Customer needs to subscribe for a specific OS/Platform/Release of choice to view the critical bugs. The dashboard will include the following

- Software Adoption Trends and Benchmarking. Analysis of software release upgrade trends observed in install base. Software usage benchmarks across platforms and best practices
- Software Release Bug Tracking. Periodic insights and tracking of critical bugs for specified software release standards. Customers access to Dashboard will be valid until the duration of the engagement. Cisco Platforms and associated OS types delivered through the dashboard are as follows.
  - ASR9K, CRS, NCS 6K Cisco IOS-XR
  - Nexus 3K, 5K, 7K, 9K NX-OS
  - 7600, 6500, Cat 2k,3k,4k IOS
  - ASR1K IOS-XE

- **Automated Software Risk Assessment and Recommendation Report**

This report contains information on Cisco's software recommendation based on a customer's request of a feature/release belonging to Cisco platform and will be delivered to the customer through the Software Lifecycle Management Dashboard. The report includes the following:

- Analysis of findings of Customer-specific tracks and release standards which may include the following
- Overall Software recommendation. Customer should test and consider.
- Descriptions of new Software features
- Unresolved Software bugs to which Customer may be exposed and if possible, appropriate workaround.
- Software feature upgrade analysis of identified software versions relative to the Customer's current and future software feature requirements
- Critical Bug Notification. These alert subscriptions inform the Customer about occurrence, status change or resolution of Critical issues on Cisco's platforms based on Customer's platform of interest. The alerts include the following:
  - Provide periodic notifications alerting the Customer of discovery, status change or resolution of critical bugs in the Software release tracks preferred by the Customer

- **Software Maintenance Update Notification**

These alert subscriptions inform the Customer about availability or modifications to the Software

Maintenance Updates on Cisco's platforms based on Customer's platform and release of interest. The alerts include the following:

- Provide periodic notifications alerting the Customer of the availability of patch or software maintenance update containing fix for a specific bug/feature/software release of interest

- **Validation and Test Cycle Review Standard**

Cisco will consult with Customer via a series of meetings to develop a thorough understanding of Customer's solution testing goals and requirements, and generate a proposed Test Plan. Once agreed, Cisco will execute the tests documented in the Test Plan and report findings to Customer. Validation and Testing Support may include, among other information, the following:

- Review of Customer's testing goals and business objectives for the solution;
- Analysis of requirements such as software strategy, platforms, topology, protocols, and configurations
- Test Plan development or review/refine existing test plan;
- Schedule facilities, equipment and resources;
- Test Set Up – Perform the Physical Lab Setup;
- Test Execution – Execute the Test Plan; and,
- Test Results Analysis – Document the results in a Test Report.
- Validation-Test Cycle and Review - Standard Support is estimated to last between 8 to 12 weeks.
- Validation and Testing Support is only available to certain geographic locations and will be specified in the Quote for Services.

- **Onsite Network Consulting Support.**

In addition to conditions defined in the "General Support" section, designate an engineer ("Advanced Services Engineer") onsite at Customer's designated location to act as the primary interface with Customer, providing general advice and guidance related to Customer's Network. Customer directed tasks to be performed by Advanced Services Engineer are subject to Cisco approval, which shall not be unreasonably withheld. An Onsite Network Consulting Support is only available to certain geographic locations and will be specified in the Quote if provided. Where available, the following may include:

- Ongoing, onsite support and technical leadership from a local Cisco Advanced Services Engineer available up for to five days per week (pending local work restrictions) during Normal Business Hours excluding Cisco holidays, locally recognized country holidays, vacation, and training days.

- **Onsite Network Optimization Support.**

In addition to conditions defined in the “General Support” section, designate an engineer (“Advanced Services Engineer”) onsite at Customer’s designated location to act as the primary interface with Customer for its Network, providing general advice and guidance to lead the delivery of the Network Optimization Service ordered by Customer. Customer directed tasks to be performed by Advanced Services Engineer are subject to Cisco approval, which shall not be unreasonably withheld. Onsite Network Optimization Support is only available to certain geographic locations and will be specified in the Quote if provided. Where available, the following may include:

- Ongoing, onsite support and technical leadership from a local Cisco Advanced Services Engineer available up for to five days per week (pending local work restrictions) during Normal Business Hours excluding Cisco holidays, locally recognized country holidays, vacation, and training days.

- **Scheduled Change Support**

Provide Customer with remote resource to support critical scheduled changes, which may include:

- One (1) eight (8) hour window per twenty-four (24) hour period.
- Cisco will make available, upon receipt of not less than twenty-one (21) days prior written request by Customer to Cisco, a designated support contact that can consult with customer on a 24-hour 7-day standby basis to remotely assist Customer in major Network service changes (for example, major Hardware upgrade(s), major site installation(s) and major configuration changes). Customer agrees to submit a detailed request and schedule to Cisco prior to any such activity. The number of Events will vary depending on the size of Customer Network Install Base and Network activity.

- **Unscheduled Change Support**

Provide a remote resource to provide support for any unscheduled changes to Network to Customer to minimize the impact of individual device failures on the overall Network. Customer must open a service request with the Cisco’s TAC prior to contacting the

Advanced Services Engineer for any unscheduled change support. To support any unscheduled changes to Network, Cisco will:

- Designate an engineer (“Cisco Advanced Services Engineer”) to act as the primary technical contact to with Customer and Cisco Technical Assistance Center (TAC).
- Provide technical evaluation of initial TAC problem diagnosis based on knowledge of Customer’s Network.
- Provide technical evaluation of proposed unscheduled change to Network.
- Provide technical representation in regularly scheduled conference calls.

### Continuous Learning

- **Knowledge Transfer and Mentoring**

Provide informal technical update training on a topic that is mutually agreed upon and relevant to the Products and Cisco technologies. The quantity of training sessions will be pre-determined in the Quote based on Customer requirements and future plans.

- **Technical Knowledge Library**

Provide Technical Knowledge Library. The Technical Knowledge Library is made available by Cisco through either a web-based portal (“Portal”) or a Cisco content engine, which is placed on the Customer Network. The Technical Knowledge Library is only available to certain geographic locations and will be specified in the Quote if provided. Where available, the following is provided:

- Installation, configuration, and testing assistance for the content engine; or, user account creation for the Portal
- Initial assistance in getting the Technical Knowledge Library operational with appropriate authentication and authorizations for user community
- Content available to the specified number of authorized viewers
- Multimedia clips in the form of video on demand or audio on demand content
- Customer-specific deliverables archive when delivered as part of an Advanced Services subscription engagement
- Sidebar content such as white papers, case studies, design guides, configuration guides, troubleshooting guides, training documents, deployment guides, online textbooks and/or manuals, or bumper clips
- Listed web based trainings provided via Technical Knowledge Library to authorized viewers

- Preventative maintenance in accordance with Cisco's normal maintenance schedules and procedures
- Troubleshooting assistance for issues submitted to Cisco
- Updated content as Cisco may revise, update, and/or remove previously-released multimedia clips and/or sidebar content ("updated content") and whereby Customer should discontinue any use of superseded content

- **Formal Training**

Cisco will provide Formal Training sessions. The quantity of formal training sessions is pre-determined based on the Quote provided. Formal training sessions can be delivered on Customer premises. Sessions are selected from any course listed on 'www.cisco.com/go/ase. Each course will have maximum of twelve (12) students and is only open to Customer.

- **Virtual Training Session**

Provide Virtual Training Sessions. The quantity of the sessions will be predetermined in the Quote provided by Cisco. Cisco will consult with Customer to identify requirements and topics on Advanced Technologies for virtual training sessions. Virtual Training Sessions are:

- Delivered in English.
- Delivered to a maximum of 12 students.
- Delivered remotely and up to twelve (12) hours in length (covered in two contiguous, 6 hour day maximum). Lab exercises and session materials can be included.
- Relevant to the Cisco products and technologies as agreed to between Customer and Cisco.
- For a list of current supported topics go to [www.cisco.com/go/ase](http://www.cisco.com/go/ase) and select 'Virtual Training Services.

- **Curriculum Planning Review**

The Curriculum Planning Review is comprised of the service elements described in the Cisco Curriculum Planning Review Service shown at [http://www.cisco.com/c/dam/en\\_us/about/doing\\_business/legal/service\\_descriptions/docs/curriculum\\_planning\\_review.pdf](http://www.cisco.com/c/dam/en_us/about/doing_business/legal/service_descriptions/docs/curriculum_planning_review.pdf), incorporated herein by reference.

#### Annual Assessment Service

- **Operations Risk Management Assessment**

Cisco will consult with Customer via a series of meetings to understand Customer's operational practices. An Operations Risk Management Assessment may include, among other information, the following:

- Review Customer's operational processes regarding incident management, problem management, configuration management, change management, release management, Network performance and capacity management, availability management, service level management, Network resiliency, security management, IT service continuity management, and staffing
- Review Customer's operational processes of Network management systems tools and instrumentation
- Report describing specific operations optimization recommendations based on industry leading practices

- **IPv6 Architecture Strategy Assessment**

IPv6 Architecture Strategy Assessment evaluates the Customer's network infrastructure and its ability to support IPv6. This service helps to determine the network's readiness to deploy IPv6 and provides an architecture strategy and recommendations and may include amongst other information, the following:

- Consult with Customer via a series of meetings to understand Customer's business and technical requirements and goals for IPv6.
- Perform an IPv6 architecture assessment on Customer's current network infrastructure.
- Provide an IPv6 Architecture Strategy report is comprised of the following
  - Customer IPv6 requirements and goals
  - Analysis of findings
  - IPv6 architecture strategy proposal with recommendations

- **Network Resiliency Assessment**

Cisco will consult with Customer via a series of meetings to understand Customer's Network architecture or design, primarily focusing on resiliency and availability. A Network Resiliency Assessment will contain recommendations to improve resiliency and availability and may include, among other information:

- Review Customer's Network architecture and design specific to resiliency requirements
- Analysis of strategic locations within the IP infrastructure examining topology, protocols, configurations, Network services, power, and environment
- Report describing the analysis comparing Customer's current practices to Cisco's recommended best practices and recommendations to improve Network resiliency

#### Change and Release Management

- **Configuration Policy Remediation** - Provide a predetermined set of custom policy audit scripts. Such audit scripts include, amongst other information, the following:
  - Report the collection on the key audit violations on the set of the network elements.
  - Content available in different formats – online and offline for authorized viewers.
  - Customer – specific scripts based on the Configuration Best Practices Report / Audit report when delivered as a Cisco Services subscription engagement.
  - Ability to remediate the fixes identified from of the audit violation report.
- **Software Deployment** - Provide a predetermined set of Software deployment scripts. Such Software deployment scripts includes amongst other information, the following:
  - Customer – specific scripts based on the Method of Procedure document(s), when delivered as a part of a Cisco Services subscription engagement.
  - Detailed reports of the success of the Software upgrade activity.
  - Software upgrade visual view delivered through the dashboard for authorized viewers.
- **Flexible Support.** Provides coverage for additional Customer-specific requirements such as onsite-visits, special considerations that needed to be taken into account (to implement policy remediation and/or software deployment) for mission-critical or high complex devices in the network

### EnergyWise Optimization Service

The EnergyWise Optimization Service is comprised of the service elements described in the Cisco EnergyWise Optimization Service shown at <  
[http://www.cisco.com/c/dam/en\\_us/about/doing\\_business/legal/service\\_descriptions/docs/Cisco\\_EnergyWise\\_Optimization\\_Service.pdf](http://www.cisco.com/c/dam/en_us/about/doing_business/legal/service_descriptions/docs/Cisco_EnergyWise_Optimization_Service.pdf)>, incorporated herein by reference.

### Customer Responsibilities

#### • **General Responsibilities**

- Designate at least two (2) but not more than six (6) technical representatives, who must be Customer's employees in a centralized Network support center (Customer's technical assistance center), to act as the primary technical interface to the Advanced Services Engineer. Customer will designate as contacts senior engineers with the authority to make any necessary changes to the Network configuration. One individual, who is a senior member of management or technical staff, will be designated as Customer's primary point of contact to manage the implementation of services

under this Service Description (e.g., chair the weekly conference calls, assist with prioritization of projects and activities).

- Within one (1) year from the commencement of the Services in this Service Description, Customer will have at least one (1) Cisco Certified Internetworking Expert ("CCIE") trained employee or one (1) employee that have achieved, in Cisco's sole determination, an equal standard through training and experience as designated contacts.
- Customer's technical assistance center shall maintain centralized network management for its Network supported under this Service Description, capable of providing Level 1 and Level 2 support.
- Provide reasonable electronic access to Customer's Network to allow the Advanced Services Engineer to provide support.
- Data Collection Tools. Customer shall ensure that such Data Collection Tools or scripts are under lock and key and with access restricted to those Customer employee(s) or contractor(s) who have a need to access the Data Collection Tools and/or a need to know the contents of the output of Data Collection Tools. In the event Data Collection Tool provided by Cisco is Software, Customer agrees to make appropriate computers available and download Software as needed. Customer shall remain responsible for any damage to or loss or theft of the Data Collection Tools while in Customer's custody.
  - Initial Set-up (One Time). If Cisco provides Data Collection Tools or scripts located at Customer's site, an initial set-up is required by Customer and the following must be performed:
    - Complete the Data Collection Tools installation questionnaire and return it together with the Data Collection Tools system configuration (IP address, netmask, hostname, etc) to the Advanced Services Engineer.
    - Install the Data Collection Tool in a secure area with limited physical access.
    - Connect the Data Collection Tool to the Network. Secure it behind Customer's corporate firewall.
    - Provide remote access to Data Collection Tools (Virtual private Network (VPN) access to the Graphical User Interface (GUI) is preferred) for use by Cisco to install, troubleshoot, and maintain the Data Collection Tools. SSH, Telnet, or dial are other options but VPN is recommended.
    - Provide Data Collection Tools with HTTPS (SSL) access back to Cisco CCO/CCX servers



located at [nettools-upload.cisco.com](http://nettools-upload.cisco.com) for daily data uploads. HTTP/FTP/PFTP may be used but Cisco strongly recommends HTTPS (SSL).

- Provide Data Collection Tools with SSH to the [nettools-upload.cisco.com](http://nettools-upload.cisco.com) server to support the transfer of Data Collection Tools patches, Solaris security patches, and Rule Based Markup Language (RBML) update packages. FTP may be used but Cisco strongly recommends use of SSH.
- Provide Data Collection Tools with SNMP and Command Line Interface (CLI) access to all Product(s) in the Network. This is needed to facilitate collection of inventory and configuration information.
- Provide Data Collection Tools with the Network Product list in Seedfile format containing SNMP Read Only (RO) community string and CLI (vty/enable or TACACS uid/pwd) for access to all Product(s) in the Network. This is needed to create the Data Collection Tools Seedfile.
- Provide Syslog server and upload information.
- Data Collection Tool Management (Ongoing). In the event Data Collection Tools are installed on Network by either Cisco or Customer, the following items must be performed on a regular or as needed basis by Customer to support the operation of Data Collection Tools in the Network:
  - Notify Cisco about changes made to the Network such as Product(s) added/deleted and changes made to Product credentials.
  - Fix access problems (Access Control List's, firewall, etc) that may periodically occur between Data Collection Tools and the Product(s) in the Network.
  - Fix data communication problems that prevent Data Collection Tools from uploading data to Cisco or prevent the remote maintenance of the Data Collection Tools.
  - When performing Network audits, Cisco recommends the number of changes made to the Product(s) that are being audited is minimized while the Network audit data is being collected (1-day or 7-day period). If feasible, no configuration changes should be made in order to avoid erroneous Network audit results.
  - Notify the Advanced Services Engineer when changes are made to Syslog, DNS, proxy and gateway servers IP address.

- Provide a Network topology map, configuration information, and information of new features being implemented as needed.
- Notify Advanced Services Engineer of any major Network changes (e.g., topology, configuration, new IOS releases.).
- In the event the Network composition is altered, after the selected Services in this Service Description are in effect, Customer is responsible to notify Cisco in writing within ten days (10) of the change. Cisco may require modifications to the fee if the Network composition has increased beyond the original pricing quote for Services.
- Create and manage an internal email alias for communication with Advances Services Engineer.
- Retain overall responsibility for any business process impact and any process change implementations.

### Architecture Strategy

#### **IPv6 Architecture Strategy Assessment**

- Consult with Cisco via a series of meetings to discuss business and technical requirements and goals for IPv6.
- Provide information on current network infrastructure, which may include diagrams and topologies.

### Network Support

- **Design Support.** In addition to the General Responsibilities, Customer shall provide the following:
  - Provide a document describing a specific set of technical requirements and design goals. The level of details must be sufficient to be used as input to a design and implementation plan.
  - Ensure key detailed design stakeholders and decision-makers are available to participate during the course of the Service.
  - Provide or extract additional information required in the design effort (e.g., current and planned traffic characteristics).
  - Any documentation of business requirements and technical requirements for the new design.
  - Any Information on Information on current and planned traffic characteristics or constraints
- **Software Support.** In addition to the General Responsibilities, Customer shall provide the following:

- Information on current releases running in the Network and current configuration templates.
- Information on Customer business and technical requirements for new Software releases.
- Information on planned changes. New technology applications or major design changes (short term and long term). Contact information and Customer escalation process.
- Information on Customer certification process and lab testing process.
- Information on Customer change control process.
- **Network Health Checks.** In addition to the General Responsibilities, Customer shall provide the following:
  - Information on any service level agreements or Network performance requirements.
  - Information on critical applications supported by the Network.
  - Information on expected Network growth and application mix changes.
  - Data collection activities as needed to facilitate a specific Cisco analyses.
  - Allow a Data Collection Tool to be installed on Customer Network in order to capture relevant Network data.
- **Network Change Support.** In addition to the General Responsibilities, Customer shall provide the following:
  - Designate person(s) from within its technical support organization to serve as a liaison to the Advanced Services Engineer.
  - Provide its designated person(s) with instructions on process and procedure to engage the Advanced Services Engineer.
  - Information on architecture (which may include remote sites and size of remote sites).
  - Identify low risk and high risk areas of the Network based on their Network traffic.
  - Information on Customer Implementation plan and deployment schedule.
  - Maintenance window information and any other constraints.
  - Information on Customer change control process.
  - Contact information and customer escalation process.
- Review details of planned changes with Advanced Services Engineer.
- Advise Cisco of its standard operating procedures related to its business practices, its internal operational nomenclature and Network to allow Cisco to effectively communicate and discuss changes with Customer in the context of Customer's business environment.
- Provide all necessary information to enable Cisco to perform root cause analysis.
- Provide reasonable electronic access to Customer's Network to assist Cisco in providing support.

#### **Onsite Network Optimization Support and Onsite Network Consulting Support**

- Provide Advanced Services Engineer with reasonable access to computer equipment, workstation, facilities, workspace and telephone
- Provide badge to Advanced Services Engineer to enable unescorted access into Customer buildings
- Involve Advanced Services Engineer in Network infrastructure planning and operations
- Unless otherwise agreed to by the parties, Customer shall respond within two (2) business days of Cisco's request for documentation or information needed during performance of the Service
- For the Project shall provide reasonable access to computer equipment, facilities, work-space and telephone for Onsite TAC engineer's use during the project

#### **Continuous Learning**

- **Knowledge Transfer and Mentoring.** In addition to the General Responsibilities, Customer shall provide:
  - Details on desired topics Customer wants to see covered through knowledge transfer and mentoring, with background information on the skill sets of the audience or mentoring program participants.
  - Ensure that facilities and equipment are available to host the informal technical update sessions.
- **Technical Knowledge Library.** In addition to the General Responsibilities, Customer shall provide:
  - Customer is responsible for installation of the Content Engine or testing of the Portal interface, depending on which method for delivery is selected by Cisco., If the Content Engine delivery method is selected by Cisco, the Customer is also responsible for power and surge protection, security, Network connection, IP address

assignment, and any required firewall or Access Control List changes required on Customer's Network in order for the Services to be provided by Cisco and to provide Cisco with the necessary remote access to Cisco equipment.

- Provide shipment contact information such as: contact name, title, address, telephone number, e-mail address, and fax number.
- For the Content Engine delivery method, provide Cisco physical and remote access to the Content Engines(s) and all related hardware, as reasonably requested by Cisco, to provide, support, and maintain the Content Engine. The following TCP/IP ports are required for outbound remote access initiated from Content Engine on Customer premises:
  - HTTPS/SSL (TCP 443)
  - SSH (TCP 22)
  - HTTP (TCP 80); possibly required
  - DNS (UDP 53); possibly required
- Install and remove the Content Engine.
- Notify Cisco of any technical support requests or troubleshooting issues related to the Services.
- **Formal Training and Virtual Training Sessions.** The formal training offering, also known as "Private Courses" and virtual training sessions are defined as closed enrollment courses delivered to Customer. Each type of session is provided only to Customer students
  - General.
    - Each event can support up to a maximum of 12 students.
    - Customer will ensure that all students will have computers provided by Customer for use in class as needed to support labs. Customer provided computers must meet the minimum requirements for lab access for the course.
    - Customer may cancel a Private Course or virtual training session at any time for any reason upon written notice to the Cisco point of contact. Cancellations made within thirty (30) business days of the first day of class will, at Cisco's sole discretion, result in rescheduling, if possible by Cisco, or Cisco shall deem the class as having been completed with no further obligation with respect to such cancelled class. If Cisco must cancel a course offering, then Cisco's shall either attempt to reschedule the class, subject to resource availability, or issue a credit in the amount of the course fee to be applied towards future purchases by Customer.
  - For each student, provide remote access to instructional lab facilities as required, to enable access to the Internet, including static IP addresses when required.
  - For virtual course delivery, agree to temporary use of Cisco's VPN AnyConnect client software to enable secured VPN access to lab facilities for course duration. Customer acknowledges that its personnel will be required to accept licensing terms as part of client software download and such terms can be reviewed at [www.cisco.com/go/ase](http://www.cisco.com/go/ase).
  - Agree that all instructional content is the sole property of Cisco and/or Cisco subcontractors and are exclusively for the benefit of the course attendee only and for his/her internal use and shall not be reproduced in any way and shall always be subject to both confidentiality and IPR provisions in the Cisco Advanced Services Network Optimization Service Master Services Agreement appendix/addendum.
  - Completion. Formal Training and virtual training sessions shall be deemed complete upon the completion of the course as evidenced by the completed course roster provided to Customer.
  - Facilities for Formal Training Sessions.
    - Customer will provide classroom facilities for all Private Courses delivered by Cisco.
    - The room must be dedicated to the class, with plenty of table space for each student.
    - Each student requires a clear view of the projection system and whiteboards. Customer is responsible for receiving the Cisco provided equipment, tracking and maintaining it until the delivery of Formal Training, and will assist with equipment setup.
    - Customer will provide Cisco access to the facility at least one day prior to the first day of course delivery.
    - Customer will provide Cisco with access to telephone and network connectivity when engagement is held at a Customer facility. If remote access and/or internet connectivity is required, Customer will provide that connectivity and static IP addresses as required.
    - Customer will provide access to the World Wide Web via telnet services. Cisco will provide the IP address to Customer to sample the ability to gain access past any corporate firewalls.
    - Customer will provide an extra Ethernet connection at the front of the room for the instructor. It is a standard part of the instructor's

presentation to present the slide portion of the lecture and then demonstrate actions to the students prior to the students performing labs.

- VGA or SVGA projection system (either a Projection Panel combined with an overhead projector, or LCD projector) to be connected to the external monitor port of the Instructor's IBM-compatible computer.
- Minimum of 2 whiteboards, each approximately 4 foot by 6 foot (three whiteboards are preferred). These whiteboards should be usable even when the projection system is simultaneously active.
- Classroom Checklist. For each course, Customer will provide, the following administrative items, some of which may be provided by the students.
  - Notepads for students, writing tools for students and instructor (highlighters and pens),
  - Whiteboard markers and eraser available in classroom
  - Extra overhead projector bulb (if used) in the classroom
  - Name tents for students

### **Analytics**

**Foundational Analytics** Foundational Analytics identifies deficiencies and potential risks that should be resolved to help optimize availability and performance of the Cisco infrastructure and application environment. Foundational Analytics also helps assess the effectiveness of the Cisco environment for purposes of planning current and future changes based on evolving business imperatives and requirements.

Foundational Analytics involves collection and analysis of data as part of a periodic examination of post deployment, or audited environments, that require additional examination guided by Customer needs and concerns.

### **Cisco responsibilities**

- Conduct interviews with administrative and operational personnel for information gathering and analysis
- Establish Foundational Analytics requirements and strategies
- Cisco will consult with Customer via a series of meetings to develop a thorough understanding of Customer's Software release and conformance objectives such as but not limited to:
  - Customer's current practices for establishing and managing software release standards and conformance
  - Software selection process and software migration triggers

- Cisco data collection is required and provided by Cisco to gather the following information:
  - Design and configuration data
  - Hardware and software levels
  - Diagnostic information
  - Baseline of Customer's standards and conformance of deployed software release standards & objectives, requirements and strategies
  - Criteria for grouping of software releases into Customer-specific tracks and release standards
- Analyze information from data collected and identify deficiencies and potential risks based on Cisco leading practices
- Provide a Cisco Cloud Hosted Analytics & Insights Portal for delivering Foundational Analytics and recommendations which includes the following:
  - Assist Customer in account creation for the Portal
  - Make content available for up to five Customer personnel as Portal administrators.
  - Provide preventative maintenance in accordance with Cisco's normal maintenance schedules and procedures.
  - Provide technical assistance to the Customer as Cisco may deem necessary to properly provide the Portal
  - Cisco Cloud Hosted Analytics & Insights based on information gathered, analysis of findings and ongoing actionable insights and recommendations for the following standard features:
    - Configuration Best Practices
    - Policy Configuration Conformance
    - Hardware Lifecycle Milestones
    - Diagnostic Analysis & Recommendations
    - Field Notices where applicable
    - Software Track Conformance
    - PSIRTs Analysis where applicable
- Conduct up to two hourly remote collaborative sessions per month with the key personnel to review key actionable insights from the Cisco Analytics & Insights Portal and determine next steps

### **Deliverables:**

- Cisco Cloud Hosted Analytics & Insights Portal

### **Customer responsibilities:**

In addition to the Customer General Responsibilities, the following Cisco Cloud Hosted Analytics & Insights Portal specific responsibilities apply:

- Customer's use of the Cisco Cloud Hosted Analytics and Insights Portal is subject to the Universal Cloud Terms located at <http://www.cisco.com/c/en/us/products/universal-cloud-agreement.html>, which is incorporated herein by reference.

- Customer is responsible for testing of the Portal interface
- Customer is responsible for security, network connection, IP address assignment and any required firewall or Access Control List changes required on Customer's network in order for the end-users to access the Portal.
- Designate & provide list of up to five persons, as Portal Administrators, to be responsible for management of portal accounts.
- For the Customer Portal Administrators, provide onboarding information as follows: contact name, title, Email-IDs, address, telephone number, e-mail address of primary and secondary team lead or manager
- Participate in collaborative sessions with Cisco to discuss Cisco recommendations.
- Notify Cisco of any technical support requests or troubleshooting issues related to the Portal

**On-Prem Analytics** OnPrem Analytics identifies deficiencies and potential risks which should be resolved to optimize availability and performance of the Cisco infrastructure and application environment. OnPrem Analytics also helps assess the effectiveness of the Cisco environment for purposes of planning current and future changes based on evolving business imperatives and requirements.

OnPrem Analytics involves collection and analysis of data as part of a periodic examination of post deployment, or audited environments, that require additional examination guided by Customer needs and concerns. OnPrem Analytics Tool is designed to collect and analyze customer data on-premise, the data never leaves the customer site.

#### **Cisco responsibilities**

- Conduct interviews with administrative and operational personnel for information gathering and analysis
- Establish OnPrem Analytics requirements and strategies
- Cisco will consult with Customer via a series of meetings to develop a thorough understanding of Customer's Software release and conformance objectives such as but not limited to:
  - Customer's current practices for establishing and managing software release standards and conformance
  - Software selection process and software migration triggers
- Provide a Cisco OnPrem Analytics Tool (software only) for gathering the following:
  - Design and configuration data
  - Hardware and software levels
  - Baseline of Customer's standards and conformance of deployed software release standards & objectives, requirements and strategies
  - Criteria for grouping of software releases into Customer-specific tracks and release standards

- Provide Cisco OnPrem Analytics Tools (Software Only) Cisco identify as appropriate for Network data collection and analysis during the Term of the Services.
- Cisco will require access to Cisco approved Customer-provided hardware to Install, update and maintain the Cisco OnPrem Analytics Software.
- Analyze information from data collected and identify deficiencies and potential risks based on Cisco practices
- Provide Following Reports based on information gathered, analysis of findings and recommendations which include the following:
  - Configuration Best Practices
  - Hardware Lifecycle Milestones
  - Field Notices where applicable
  - Software Track Conformance Report
  - PSIRTs where applicable

#### **Deliverables:**

- Configuration Best Practices Report
- Hardware Lifecycle Milestones Report
- Field Notices where applicable Report
- Software Track Conformance Report
- PSIRTs where applicable Report

#### **Customer Responsibilities:**

- Customer agrees and acknowledges to purchase, install and make available Cisco supported Hardware for Cisco OnPrem Analytics Tool (Software only provided by Cisco) within 30 days of commencement of the Service.
- Customer agrees and acknowledges to maintain Cisco approved Hardware and Hardware support and maintenance contract separate from Services purchased under this Service Description.
- Customer acknowledges and agrees Cisco shall retain full right, title, and interest to the Cisco OnPrem Analytics Software.
- Customer must provide, install, maintain and grant Cisco remote and physical access to Cisco-approved Unified Communication Server (UCS) Hardware that will be used by Cisco to operate the Cisco OnPrem Analytics Tool. Only Cisco personnel will have access to the Cisco OnPrem Analytics Tool software.
- Customer shall remain responsible for any damage to or loss or theft of the Cisco OnPrem Analytics Tool while in Customer's custody.
- Customer shall ensure that such Cisco OnPrem Analytics Tool is under lock and key and with access restricted to those Customer employee(s) or contractor(s) who have a need to access the Cisco OnPrem Analytics Tool and/or a need to know the contents of the output of Cisco OnPrem Analytics Tool.
- Initial Set-up (One Time) Cisco OnPrem Analytics Tool located at Customer's site, an initial set-up is required and the following must be performed:
  - Complete the Cisco OnPrem Analytics Tool installation and system configuration

questionnaire(s) (i.e. IP address, netmask, hostname, etc.) and return to the Advanced Services Engineer.

- Install the Cisco OnPrem Analytics Tool hardware in a secure area with controlled physical access.
- Connect the Cisco OnPrem Analytics Tool hardware to the Network.
- Secure the Cisco OnPrem Analytics Tool behind Customer's corporate firewall.
- Provide access to Cisco OnPrem Analytics Tool for use by Cisco to install, troubleshoot, maintain and produce deliverables described within the Services description; for remote access, SSH, Telnet, and/or dial are options, but virtual private network (VPN) access to the Cisco OnPrem Analytics Tool is preferred and recommended.
- When applicable, provide Cisco OnPrem Analytics Tool access to support the transfer of Cisco OnPrem Analytics software patches, security patches, and Rules Based Markup Language (RBML) update packages.
- Provide Cisco OnPrem Analytics Tool with SNMP and Command Line Interface (CLI) access to all Product(s) in the Network (necessary to facilitate collection and analysis of inventory, software and configuration information).

#### **Automated Fault Detection and Service Request Notification**

Automated Fault Detection and Service Request Notification analyzes device syslog using rules and algorithms to detect software, hardware and configuration faults in the network and deliver remediation automatically to the customer. Syslogs are monitored in near real-time to detect sequences indicating a fault has happened or is eminent. When detection occurs, the system collects device data that is required for problem resolution and uses it to open a case with Cisco support. This speeds resolution and help customer focus on what is critical.

#### **Deliverable**

Quarterly Fault Detection and Service Request Report listing the number and type of faults detected, support cases opened and support case status.

#### **Cisco Responsibilities**

- Cisco shall explain system deployment and operational requirements to the customer in a meeting with customer-designated personnel.
- Cisco shall configure and deploy Automated Fault Detection and Service Request Notification Virtual Machine in customer's network to process syslogs and open support cases.
- Cisco shall inform customer of faults found and support cases opened using automated email sent to customer designated address (es).
- Cisco shall update managed device information on the Automated Fault Detection and Service Request

Notification server, based on customer supplied information as often as once per week.

Cisco shall deliver a Fault Detection and Service Request Report quarterly, listing the number and type of faults detected; support cases opened and support case status. The report will be delivered electronically and may include up one hour of remote consultation with a Cisco network engineer.

#### **Customer Responsibilities**

- Customer will provide Cisco with device list and access credentials for all network devices under service. Customer will update said list promptly when network changes occur. This may be done via API to Cisco Network Collections device, if present, or by formatted electronic record provided to Cisco personnel.
- Customer shall allow collection of device serial numbers and product IDs by Cisco Network Collections device.
- Customer shall allow the use of aforementioned data to configure the Automated Fault Detection and Service Request Notification server.
- Customer will provide specified deployment and runtime environment for Cisco Automated Fault Detection and Service Request Notification Server virtual machine.
- Customer shall provide Cisco Automated Fault Detection and Service Request Notification Server with communications access to devices under service for collection of configuration and status data.
- Customer will provide Cisco Automated Fault Detection and Service Request Notification Server with encrypted communications access to Cisco hosted servers for the purpose of support case management and software updates to Automated Fault Detection and Service Request Notification software.
- Customer shall configure devices under service to send syslog messages to a syslog server and configure syslog server to forward the syslog events to Automated Fault Detection and Service Request Notification virtual machine.
- Provide access to email server for Automated Fault Detection and Service Request Notification Server and email addresses to send notification mails to.
- Customer may integrate Alarm management system with Cisco Automated Fault Detection and Service Request Notification using Rest API, if desired. Cisco will not perform this work  
Customer shall provide access to Cisco Network Collector APIs, if deployed

#### **Annual Assessments**

##### **Operational Assessment**

- Designate a program manager to act as the single point of contact to which all Cisco communications may be addressed, having an appropriate level of Network experience. Such person shall act as Customer's host for onsite assessment activity to coordinate facility access, conference rooms, phone access and staff scheduling.

- Ensure key engineering, networking and operational personnel are available to participate in interview sessions as required by Cisco in support of an assessment. Review assessment report and suggestions provided by Cisco.
- Assessment data collection support.
  - Customer agrees to make its production, and if applicable, test Network environment available for installation of Data Collection Tools. Customer shall ensure that Cisco has all relevant Product information needed for an assessment.
  - Customer shall advise Cisco immediately of all adds, moves and changes of the Product within Customer's Network.
  - Assemble all necessary Network availability data to enable Cisco to calculate quarterly Network availability. The type of data required to perform the calculations includes the following:
    - Outage Start Time (date/time)
    - Service Restore Time (date/time)
    - Problem Description
    - Root Cause
    - Resolution
    - Number of end users impacted
    - Equipment Model
    - Component/Part
    - Planned maintenance activity/unplanned activity
    - Total end user/ports on network