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Service Description: Network Optimization Service

This document describes the Network Optimization Service.

Related Documents: This document should be read in conjunction with the following documents also posted at www.cisco.com/go/servicedescriptions/ : (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.. 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.

Sale via Cisco Authorized Reseller. If you have purchased these Services through a Cisco Authorized Reseller, this document is for description purposes only; is not a contract between you and Cisco. The contract, if any, governing the provision of this Service will be the one between you and your Cisco Authorized Reseller. Your Cisco Authorized Reseller should provide this document to you, or you can obtain a copy of this and other Cisco service descriptions at www.cisco.com/go/servicedescriptions/.

This 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 SMARTnet, Limited Lifetime Warranty, Software Application Services, or the Partner Support Service offering from within the Cisco Services Partner Program. Where available, Cisco shall provide the 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.

Network Optimization Service

Services Summary
Network Optimization Service includes service areas of Route/Switch, Architecture, Security, and Wireless. Network Optimization Services provide annual, ongoing support for Customer, addressing the following:

- Route/switch – any Cisco Products and technologies which forward and/or process routed IP and switched Ethernet traffic.
- Security - all Cisco Security products including firewall, intrusion prevention, VPN, content security, identity and security management.
- Wireless - all Cisco Wireless products including wireless LAN access point, wireless controllers and wireless network management.
- Supported Products exclude any Products declared to be "End of Support"

Network Optimization – Route/Switch
Design Strategy:
Design Review
Network Topology Modeling Analysis
Test Cycle and Review
Testing and Lab Strategy Review
Ongoing Design Support
Topology Diagram Report

Software Strategy:
Software Management Strategy Review
Ongoing Software Support
Configuration Best Practices Report
Custom Configuration Report
Software Deployment Analytics
Software Feature Deployment Analytics
Software Infrastructure Analysis Report
Software Recommendation Report
Software Security Alert

Hardware Strategy:
Network Resiliency Assessment
Ongoing Hardware Support
Engineering Recommendation Report
Hardware Deployment Analytics
Hardware End of X (milestones) Report
Hardware Field Notice Report
Technology or Protocol Audit
Unidentified Inventory Report

Change Management Strategy:
Medianet Readiness Assessment
Network Maturity Benchmarking Analytics
Operations Risk Management Assessment
Unified Communications Operations Support Planning Workshop
Ongoing Flexible Support

Availability and Operations Gap Resolution Support.
Ongoing Escalation Engineering Support
Onsite Network Consulting Support
Onsite Network Optimization Support
Scheduled Change Support
Network Performance Analytics
Network Incident Trending Analytics
Network Improvement Plan
Network Infrastructure Modular Knowledge Service
Remote Knowledge Transfer Session(s)
Technical Knowledge Library
Topology Diagram Report
Virtual Training Sessions

Architecture Specialization
Network Architecture Development - Consult
Network Architecture Development - Assist
Network Architecture Development - Drive
Availability Impact Analysis
Converged Architecture Strategy Assessment
Design Availability Assessment
IPv6 Architecture Strategy Assessment
IPv6 Device Readiness Assessment
Migration Planning and Implementation Support
Multicast Design Development Support
Network Architecture Design Review
Persistent Testing Validation
QoS Design Development Support

Operations Support Systems Specialization
Ongoing Network Management Support (ONMS)
Network Management Architecture Roadmap Review (NMARR)
Application Programming Interface Support (AIS)
Network Management Instrumentation Support (NMIS)
Knowledge Transfer and Mentoring (KTM)

Security Specialization
Network Device Security Assessment (NDSA)
Security Posture Assessment (SPA)
Security Design Assessment
Security Technology Readiness Assessment
Security Design Review
Design Development Support
Validation & Testing Support
Performance Tuning Support
Network Consulting Support
IntelliShield Alert Manager
Security Strategy and Planning Support
Security Modular Knowledge Service

Wireless Specialization
WLAN Network Assessment
WLAN Operations Risk Management Assessment
WLAN RF Assessment
Mobility Services Readiness Assessment
RF Verification Assessment
Design Development
Design Consulting
Wireless Design Review

Performance Tuning Support
WLAN Performance Analysis
Onsite Educational Workshop
Wireless Modular Knowledge Service

EnergyWise Specialization
Discovery and Information Gathering
Energy Management Assessment
Energy Management Support and Knowledge Transfer

Cisco Network Operations Automation Services

Workshop
Upgrade Assessment and Support
Site and Systems Administration Support
Ongoing Support
Custom Design Day 2 Reactive Support
Prepare & Present QBR
Ongoing Service and Project Management Support
Remote Knowledge Transfer Sessions

Cisco Responsibilities

Cisco's Network Optimization Service consists of the provision of Services described below, where available which Cisco shall provide for the Customer's Network during Normal Business Hours (unless stated otherwise). Services provided by Cisco are remotely delivered unless otherwise noted. 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 Deliverables and Activities and plan for the next quarter. Additional visits will be mutually agreed upon at Cisco's then-current travel and labor rates.
- Schedule periodic (typically weekly) conference calls 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 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 Service Description have been paid. Data Collection Tools may or may not include hardware or software. Customer acknowledges and agrees 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.

The quantity of any reporting and efforts for ongoing activities described herein will vary depending on Customer requirements and what Customer and Cisco mutually agree upon when Services are purchased as identified in the Quote provided by Cisco.

Cisco shall provide services during Standard Business Hours (unless stated otherwise). Cisco shall provide the following General Support provisions for all Services selected by Customer:

Routing & Switching

Design Strategy
Design Review. Cisco will consult with Customer via a series of meetings to develop a thorough understanding of Customer Network design requirements, typically focusing on technical and business requirements for incremental growth such as adding or migrating new features, Hardware, topologies, or solutions to the existing architecture or design. A Design Review may include, among other information, the following:
- Review of Customer's design requirements, priorities, and goals
- Analysis of impact of new requirements on the existing Network
- Review of Network architecture and topology
- Review of protocol selection and configuration
- Review of feature selection and configuration
- Review of device security considerations (i.e. authentication, VLANs, subnet isolations, etc.)
- Report describing the new or current design with recommendations

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

Test Cycle and Review. Cisco will consult with Customer via a series of meetings to develop a thorough understanding of Customer's solution-oriented testing goals and requirements. Cisco will execute networking tests to prove or disprove theories and report findings to Customer. A Test Cycle and Review may include, among other information, the following:
- Review of Customer's testing goals and business objectives
- Collaborate on a Test Plan
- Analysis of requirements such as platforms, topology, protocols, and configurations
- Report describing test findings and recommendations

Testing and Lab Strategy Review. Cisco will consult with Customer via a series of meetings to develop a thorough understanding of Customer's networking device testing capabilities, lab strategy, practices, and business goals. A Testing and Lab Strategy Review will contain overall strategy recommendations and may include, among other information, the following:
- Review of Customer's test environment, resources, concerns, and challenges
- Analysis of Customer's current testing practices and lab strategy
- Report describing the analysis comparing Customer's current practices to Cisco's recommended best practices and Cisco's recommendations

Ongoing Design Support. Provide informal, support for incremental changes to the Network or architecture

Topology Diagram Report. These reports typically analyze Customer's production configurations (per device) to graphically depict connectivity and spatial relationships.

Software Strategy
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

Ongoing Software Support. Provide informal, ongoing Software Support for incremental changes to the Network or architecture.

Configuration Best Practices Report. These reports typically examine Customer's production configurations (per device) and compare them to Cisco's best practice recommendations. The focus of the best practices is typically within the following areas:
- Technology and Software features
- Routing or routed protocols
- Device security management
- Device network management

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.

Software Deployment Analytics
- Interactive report provided will include analysis of Customer-specific information related to the consistency and complexity of Software release deployment. This analysis can also feature performance and deployment data including comparisons of the functional roles of devices in Network, exceptions to established policies and configurations, factors affecting Network performance, effects of changes in Network, and benchmarking
- Interactive report provided to Customer based upon Customer infrastructure equipment data uploaded to the Cisco back-end system
- Report format will be delivered at Cisco discretion via either Adobe Air standalone application delivered on encrypted CD/DVD or via Customer access to private Customer-specific portal interface on which the interactive report resides.
- Cisco will contact Customer to review provided content via remote collaboration session.

Software Feature Deployment Analytics. Interactive report provided will include analysis of Customer-specific information related to the consistency and complexity of Software features deployed. This analysis can also feature performance and deployment data including comparisons of the functional roles of devices in Network, exceptions to established policies and configurations, factors affecting Network performance, effects of changes in Network, and benchmarking
- Interactive report provided to Customer based upon Customer infrastructure equipment data uploaded to the Cisco back-end system
- Report format will be delivered at Cisco discretion via either Adobe Air standalone application delivered on encrypted CD/DVD or via Customer access to private Customer-specific portal interface on which the interactive report resides.
- Cisco will contact Customer to review provided content via remote collaboration session.

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 Recommendation Report. Each report covers a single Software Track and may include, among other information, 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 workarounds
- Periodically updated follow-up reports, at a rate of no more than once per month, for up to 120 days from the original Software recommendation date

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

Hardware Strategy

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

Ongoing Hardware Support. Provide informal, Ongoing Hardware Support for incremental changes to the Network or architecture.

Engineering Recommendation Report. These reports typically provide recommendations or best practices about a subset of Networking devices. These reports typically include information regarding:
- Stability, performance, or tuning recommendations
- Engineering recommendations for platforms, topology, protocols, configurations, Network services, power, or environment

Hardware Deployment Analytics. Interactive report provided will include analysis of Customer-specific information related to the consistency and complexity of deployed hardware platforms. This analysis also can feature performance and deployment data including comparisons of the functional roles of devices in Network, exceptions to established policies and configurations, factors affecting network performance, effects of changes in Network, and benchmarking,
- Interactive report provided to Customer based upon Customer infrastructure equipment data uploaded to the Cisco back-end system
- Report format will be delivered at Cisco discretion via either Adobe Air standalone application delivered on encrypted CD/DVD or via Customer access to private Customer-specific portal interface on which the interactive report resides.

- Cisco will contact Customer to review provided content via remote collaboration session.

Hardware End of X (milestones) 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

Technology or Protocol Audit. Audits are usually limited to no more than 500 devices polled from a single network collector. Audits typically include information and analysis such as the following:
- Analysis of performance, fault, or capacity information
- Hardware inventory information
- Exception based reporting
- Device, feature, or protocol recommendations

Unidentified Inventory Report. These reports typically include:
- List of networking devices believed to be attached to Customer's network, but missing from managed inventory
- Information about the devices such as recent status, reporting source, and trends

Change Management Strategy

Medianet Readiness Assessment. Cisco will consult with Customer via a series of meetings to understand and assess Customer's Unified Medianet readiness. A Medianet Readiness Assessment is comprised of the following:
- Review of Customer's Network design and services
- Review of Customer's Network documentation
- Analysis of information collected examining Network topology, protocols, configurations, and environment
- Report describing the analysis comparing Customer's current practices to Cisco's recommended best practices and recommendations to prepare for Unified Medianet readiness

Network Maturity Benchmarking Analytics. Cisco will consult with Customer via a series of meetings to assess a defined set of Network parameters that shows current operational and technology maturity levels and provide comparisons against other similar peers to help focus attention on areas of improvement. Network Maturity Benchmark Analytics may include, among other related information, the following:
- Review Customer Hardware End of Life Report (EOX)
- Review Customer Software Infrastructure Analysis Report (SIAR) conformance
- Review Customer Configuration Best Practices Report (CBPR)

- Review Customer Network architecture, Network Infrastructure, and technology plans
- Analysis of Customer Network operational maturity that measures how well peer groups manage their similar environment
- Analysis of Customer Network technology maturity that measures how prepared the Network is to adopt new technologies
- Report describing the analysis comparing Customer's peer groups as well as individual breakdowns into operational and technology maturity metrics
- Report describing trending of operational and technology maturity metrics over time to track Customer's Network improvements against similar industry peers. Trending can only be performed if Cisco performed previous Network Maturity Benchmarking Analytics.

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

Unified Communications Operations Support Planning Workshop. Cisco will consult with Customer via a series of meetings to understand Customer's Unified Communications Network readiness. A Unified Communications Operations Support Planning Workshop may include, among other information, the following:
- Review Customer's proposed Unified Communications high-level design and solution requirements
- Review Customer's Network documentation
- Analysis of current Network infrastructure and the Network's readiness to support the proposed Unified Communication design
- Analysis of current voice infrastructure and configurations to support proposed Unified Communications design
- Report describing the analysis comparing Customer's current practices and capabilities to Cisco's recommended best practices, and Cisco's recommendations to meet Customer's Network management business requirements

Ongoing Flexible Support. Provide informal, Ongoing Flexible Support for incremental changes to the Network or architecture.

Availability and Operations Gap Resolution Support. Cisco will help remediate operational problems discovered via a series of meetings with Customer. Availability and Operations

Gap Resolution Support may include, among other information, the following:
- Review a gap resolution plan to address operational gaps
- Assist with gap remediation

Ongoing Escalation Engineering Support. Provide an Ongoing Escalation Engineering Support remote resource to join Cisco's Technical Assistance Center's (TAC) restoration of service activities for unplanned or unscheduled device or Network failures. Customer must open a Service Request the Cisco TAC prior to contacting the Advanced Services Engineer. Ongoing Escalation Engineering Support is only available to certain geographic locations and will be specified in the Quote if provided. Where available, Ongoing Escalation Engineering Support typically includes:
- Technical evaluation of initial TAC problem diagnosis based on knowledge of Customer's Network
- Help the Cisco TAC restore service

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 a Scheduled Change Support remote resource for critical scheduled changes. 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 person who will be available to consult with Customer in major Network service changes (i.e. major Hardware upgrade(s), major site installation(s) or major configuration changes). Customer agrees to submit a detailed request and schedule to Cisco prior to any such activity, which may include:
- Collaboration with Customer to evaluate the potential impact of the proposed changes
- Review the implementation procedures
- Remote assistance for Customer to resolve problems with Network changes during a major activity to the production Network

Network Performance Analytics
- 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
  - Syslog Analysis
  - Technology or Protocol
  - 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 met**r**ics
  - Index showing progress against established Customer-specific improvement initiatives
  - Optional Network Maturity Benchmarking Analytics (if purchased)
- On-line access to automated network Improvement plan details

Network Incident Trending Analytics
- Interactive report provided will include analysis of Customer-specific information related to Network incident trending and comparisons to anonymous vertical industry peers within the Customer's identified vertical industry
- Interactive report provided to Customer based upon Customer infrastructure equipment data uploaded to the Cisco back-end system
- Report format will be delivered at Cisco discretion via either Adobe Air standalone application delivered on encrypted CD/DVD or via Customer access to private Customer-specific portal interface on which the interactive report resides.
- Cisco will contact Customer to review provided content via remote collaboration session.

Network Improvement Plan (Only relevant for standalone when Network Performance Analytics 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 Infrastructure Modular Knowledge Service. The Network Infrastructure Modular Knowledge Service is made available through a secure web-based portal ("Portal"). The Network Infrastructure Modular Service is only available to certain geographic locations and will be specified in the Quote if provided. Where available, the following is provided:
- Assistance with user account creation to access the Portal
- Initial assistance in getting the Portal 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 Portal 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

Remote Knowledge Transfer Session(s). Cisco will consult with Customer to identify requirements and topics for informal training sessions. Remote Knowledge Transfer Sessions are:
- Delivered in English, with other languages subject to availability
- Delivered remotely up to four (4) hours in length, with no labs and no printed course materials
- Relevant to the Cisco products and technologies deployed in Customer's production Network

Technical Knowledge Library. The Technical Knowledge Library is made available through a secure web-based portal ("Portal"). 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:
- Assistance with user account creation to access the Portal
- Initial assistance in getting the Portal 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 Portal 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

Topology Diagram Report. These reports typically analyze Customer's production configurations (per device) to graphically depict connectivity and spatial relationships.

Virtual Training Sessions. Cisco will consult with Customer to identify requirements and topics on Advanced Technologies for virtual training sessions. Virtual Training Sessions are:
- Delivered in English, with other languages subject to availability
- Delivered to up to 12 students in each session.
- Delivered remotely and up to twelve (12) hours in length (covered in two contiguous, 6 hour day maximum). Can include lab access, lab exercises, session materials.
- 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 and select 'Virtual Training Services.

Architecture Specialization

Network Architecture Development - Consult. Cisco will provide leadership through the process of developing architecture frameworks for the foundational network infrastructure. Cisco will guide the Customer through the network architecture lifecycle process and associated architecture development methodology. Cisco shall provide the Service selected by Customer during Standard Business Hours, unless stated otherwise.
- Provide architecture leadership to guide the Customer through architecture development phases based on Cisco architecture methodology, which may include the following:
  - Requirements analysis
  - Architecture Strategy and Initiative Roadmap
  - Architecture Assessment
- Designate an architect to act as the technical lead to the Customer for overall guidance in network architecture process development and management activities, which may include the following:
  - objective setting

- o interviews with Customer to establish performance metrics
- o Architecture project set up, management and oversight
- o Regular communications and reporting
- o Creation of central repository for all materials
- o Final reporting and transition plan at end of the Service
- Designate a Cisco contact to act as the primary interface to the Customer.
  - Participate in regular visits to meet with the Customer in-person as required to review project status.
  - Participate in periodic conference calls with Customer representatives and Cisco personnel.
  - Create and monitor a Customer-specific Cisco email alias, to facilitate communication with all Customer designated contacts under the Service

Network Architecture Development - Assist. Cisco will provide leadership through the process of developing architecture frameworks for the foundational network infrastructure. Cisco will guide the Customer through the network architecture lifecycle process and associated architecture development methodology. Cisco shall provide the Service selected by Customer during Standard Business Hours, unless stated otherwise.

- Provide architecture leadership to guide the Customer through architecture development phases based on Cisco architecture methodology, which may include the following:
  - o Requirements analysis
  - o Architecture Strategy and Initiative Roadmap
  - o Architecture Assessment
  - o Design Guidance
- Designate an architect to act as the technical lead to the Customer for overall guidance in network architecture process development and management activities, which may include the following:
  - o objective setting
  - o interviews with Customer to establish performance metrics
  - o Architecture project set up, management and oversight
  - o Regular communications and reporting
  - o Creation of central repository for all materials
  - o Final reporting and transition plan at end of the Service
- Designate a Cisco contact to act as the primary interface to the Customer.
  - Participate in regular visits to meet with the Customer in-person as required to review project status.
  - Participate in periodic conference calls with Customer representatives and Cisco personnel.
  - Create and monitor a Customer-specific Cisco email alias, to facilitate communication with all Customer designated contacts under the Service

Network Architecture Development - Drive. Cisco will provide leadership through the process of developing architecture frameworks for the foundational network infrastructure. Cisco will guide the Customer through the network architecture lifecycle process and associated architecture development methodology. Cisco shall provide the Service selected by Customer during Standard Business Hours, unless stated otherwise.

- Provide architecture leadership to guide the Customer through architecture development phases based on Cisco architecture methodology, which may include the following:
  - o Requirements analysis
  - o Architecture Strategy and Initiative Roadmap
  - o Architecture Assessment
  - o Design Development
  - o Validating Testing
  - o Implementation Planning
- Designate an architect to act as the technical lead to the Customer for overall guidance in network architecture process development and management activities, which may include the following:
  - o objective setting
  - o interviews with Customer to establish performance metrics
  - o Architecture project set up, management and oversight
  - o Regular communications and reporting
  - o Creation of central repository for all materials
  - o Final reporting and transition plan at end of the Service
- Designate a Cisco contact to act as the primary interface to the Customer.
  - Participate in regular visits to meet with the Customer in-person as required to review project status.
  - Participate in periodic conference calls with Customer representatives and Cisco personnel.
  - Create and monitor a Customer-specific Cisco email alias, to facilitate communication with all Customer designated contacts under the Service

Availability Impact Analysis. Availability Impact Analysis (AIA) establishes the difference between the projected availability of current and proposed routing and switching network environments; based upon network hardware elements, topological arrangements, and method of connectivity. An AIA may include, among other information, the following:

- collecting current and proposed routing and switching design information
- analyzing data in order to project availability of each design scenario
- providing report based on analysis findings

Converged Architecture Strategy Assessment. Converged Architecture Strategy Assessment (CASA) evaluates the Customer's network infrastructure and its ability to support collaborative applications. This service helps to determine the network's readiness to deploy a converged architecture that enables end-to-end network services. The Converged Architecture Strategy Assessment work item will assess no

more than thirty-five (35) network devices total. For full service CASA, refer to Network Architecture Development deliverable.

A CASA may include, among other information, the following:

- Identify gaps using representative configurations from in-scope network areas, using Cisco reference architectures, best practices, and key performance indicators (KPIs) which may indicate the network is not ready to support Customer requirements and goals for the applications and services the Customer is planning to adopt.
- Provide recommendations to address identified gaps that would prepare the network for application and service readiness.
- Provide high level directional strategy that describes how the assessed network areas should evolve given the future service requirements.
- The Converged Architecture and Strategy Assessment (CASA) will provide:
    o Objective network benchmark analysis against converged architecture principles
    o Short/medium/long term remediation recommendations
    o Architecture Strategy Roadmap based on industry trends

Design Availability Assessment. Design Availability Assessment procedure (DAAP) projects end-to-end availability of a network infrastructure topology, based upon network hardware elements, topological arrangements, and method of connectivity; and provides future solutions and alternatives based on analysis findings. A Design Availability Assessment may consider, among other information, the following:

- Network infrastructure platform availability
- current availability and project end-end availability across multiple nodes.
- ROI availability projections that compare differing network infrastructure topologies' projected availability vs. costs providing downtime avoidance cost/benefit analysis.

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
    o Customer IPv6 requirements and goals
    o Analysis of findings
    o IPv6 architecture strategy proposal with recommendations

IPv6 Device Readiness Assessment. IPv6 Device Readiness assessment evaluates Cisco network devices on the Customer's network to determine their IPv6 capability. The

Design Readiness Assessment may consider, among other information, the following:

- Consult with Customer to define scope of assessment
- Collect Cisco network device information that are in scope
- Analyze information collected examining platform, hardware, software, features, and configurations for IPv6 capabilities
- Develop IPv6 Device Readiness Assessment Report describing the Cisco network devices that can support IPv6 currently in the network, devices that need to upgrade to support IPv6, and devices that cannot support IPv6

Migration Planning and Implementation Support.
Provide migration-consulting services that support network refresh and product migration activities and may include, among other information, the following:

- Develop a requisite list of high level events, phased changes and activities in order to introduce new hardware and protocols into the network
- Identify network dependencies and impact and provide risk mitigation steps for the migration.
- Align plan to organizational implementation policies and change management goals
- Gather information from Customer for organizational change management processes and recurring time periods that prohibit implementation activities
- Create Method Of Procedure documentation for pre and post cut-over connectivity and testing
- Create Master configuration templates for representative device or site types
- Provide reusable templates and standardized methods of procedures for up to 5 representative sites
- Site Specific Configurations based on Master Template for up to 5 hardware platform types and no more than 5 devices per site
- Create Site specific test procedures for the network-ready-for-use (NRFU)
- Provide migration cut-over support for up to 2 sites and additional remote issue resolution

Multicast Design Development Support. Cisco will perform a multicast comparative gap analysis between current and desired design benchmarked against identified Customer requirements as well as Cisco and industry leading practices. A Multicast Design Review may include, among other information, the following:

- Review business, technical and operational multicast requirements
- Review of multicast application requirements
- Review PIM (protocol independent multicast)-mode, RP (rendezvous placement) placement, IGMP (independent group multicast protocol) design
- Review WAN mVPN, mldp (multicast label distribution protocol), msdp (multicast source discovery protocol) design
- Multicast Report describing summary of strengths and weaknesses of Customer's multicast design; description

of specific gaps in multicast design; recommendations to remediate multicast design gaps

Network Architecture Design Review. Design Review provides network design expertise to the Customer to review the Customer's design and make recommendations and may include, among other information, the following:

- Consult with Customer to develop a thorough understanding of Customer's network design requirements
- Review of Customer's design requirements, priorities, and goals
- Analysis of impact of new requirements on existing network
- Review of network architecture and topology
- Address design related questions
- Review protocol and feature design, selection and configuration
- Informal recommendations or advice about a network design

Persistent Testing Validation. Provide Lab consulting services in Cisco lab that support and align with Customer's technology roadmaps and may include, among other information, the following:

- Develop test plan strategy to align with technology roadmap
- Execute Test cycles which may include:
  - Review Customer network design, if applicable;
  - Review Customer test plans, if applicable;
  - Update Customer test plans, as applicable;
  - Set up lab and test tools;
  - Execute Customer test plans
  - Recommend modifications to the Customer design during test execution, if applicable
  - Document and review test results from Test Plan execution with Customer

QoS Design Development Support. Cisco will perform a Quality of Service (QoS) comparative gap analysis between current and desired design benchmarked against identified Customer requirements as well as Cisco and industry leading practices. A QoS Design Review may include, among other information, the following:

- Review business, technical and operational QoS requirements
- Review of applications requiring specific QoS treatment and corresponding network performance requirements for non-Cisco applications
- Review QoS class structure; network traffic identification and trust boundaries scheme; network traffic marking rules; and network traffic queuing strategy.
- QoS Report describing summary of strengths and weaknesses of Customer's QoS design; description of specific gaps in QoS design; recommendations to remediate QoS design gaps

OSS/NMS Specialization

Ongoing Network Management Support. Provide informal, Ongoing Network Management Support for instrumentation. Assistance is limited to Simple Network Management Protocol (SNMP) Management Information Base (MIB) polling or Trap collection information.

Network Management Architecture Roadmap Review. Cisco will consult with Customer via a series of meetings to understand Customer's Network management architecture practices, focusing on capabilities and scalability. A Network Management Architecture Roadmap Review may include, among other information, the following:

- Review Customer's Network architecture and design
- Review Customer's Network management instrumentation architecture and design
- Review Customer's Network management goals and business requirements
- Analysis of Customer's fault management, performance management, configuration management, and security management practices and capabilities
- Report describing the analysis comparing Customer's current practices and capabilities to Cisco's recommended best practices, and recommendations to meet Customer's Network management business requirements

Application Programming Interface Support. Provide remote OSS application support on how to use or integration with the application in question, which may include:

- Addressing issues concerning the operation of the application programming interface
- Support on how the API should be used within the context of an overall workflow

Network Management Instrumentation Support.

- Automation of troubleshooting techniques, being able to automatically collect log information, optimizing time to resolution and minimizing network engineering manual intervention
- Automation of repetitive network management tasks and configuration management
- Automation of Data Collection and Reporting, optimizing Performance and Capacity capabilities

Knowledge Transfer and Mentoring. Provide a customized knowledge transfer ("How to") for the OSS and NMS solution with emphasis on providing guidance on basic troubleshooting, maintenance, and functionality.

Security Specialization

Network Device Security Assessment (NDSA). Cisco will consult with Customer via a series of meetings to understand and analyze aspects of Customer's Network device security. A Network Device Security Assessment will be performed on up to 350 security devices and may include, among other information, the following:

- Review of Customer's Network device security goals and requirements;

- Analysis of network device configurations focused on security hardening of the individual devices;
- Analysis of firewall rules for common configuration issues;
- Report describing the analysis comparing Customer's current practices to Cisco's recommended best practices and Cisco's recommendations (sampled based on size and configuration of network);
- Report describing prioritized list of discovered vulnerabilities and most critical findings; and,
- Interactive presentation of findings, analysis, and recommendations.

Security Posture Assessment (SPA). Cisco will consult with Customer via a series of meetings to understand and analyze aspects of internal and perimeter security posture of the Customer's Network. A Security Posture Assessment (SPA) provides a point-in-time assessment of the risk posed to an organization by vulnerabilities present in the organization's IP-networked systems and security controls. The service measures the extent to which identified vulnerabilities can be utilized to achieve unexpected or unauthorized access to the OS or applications on IP-connected endpoints (UNIX / Windows / network and security devices). The SPA will include the following:
- Internal Security Posture Assessment
  - Critical Network and Asset Identification Workshop,
  - Discovery and Vulnerability Identification,
  - Vulnerability Confirmation and Target Analysis,
  - Results Analysis and Presentation, and,
  - Assessment Report.
- Perimeter Security Posture Assessment
  - Discovery and Vulnerability Identification,
  - Vulnerability Confirmation and Target Analysis,
  - Targeted Phishing Vulnerability Analysis,
  - Results Analysis and Presentation, and,
  - Assessment Report.

Further details on the Security Posture Assessment are described in the SPA specific Service Description at **www.cisco.com/go/servicedescriptions/,** incorporated herein by reference.

Security Design Assessment. The Security Design Assessment evaluates the capabilities of the network infrastructure to protect an identified business critical asset and provide a set of recommendations to remediate the identified security gaps for that business critical asset. The recommendations include improvements to topology, protocols, device configurations and security controls. The Security Design Assessment includes one business critical asset and sampling of devices from one each of the following network areas: data center, internal network, perimeter network.

Further details on the Security Design Assessment are described in the Security Design Assessment specific Service Description at **www.cisco.com/go/servicedescriptions/,** incorporated herein by reference.

Security Technology Readiness Assessment. Cisco will analyze implementation requirements for a new security solution and assess the readiness of Customer's Network devices, operations, security policies, and architecture to support the solution.
- Conduct design workshop to gather business, technical, and operational requirements including current network design documents and future security technology plans to support the readiness assessment.
- Develop Security Readiness Assessment Report to document findings and recommendations including recommendations for modifications to the network infrastructure and to configuration parameters for application performance and availability.

Security Design Review. Cisco will consult with Customer via a series of meetings to develop a thorough understanding of Customer's security design requirements and provide support for incremental changes to the security architecture. The Security Design Review and Support may include:
- Review of Customer's design requirements, priorities, and goals;
- Analysis of impact of new requirements on existing network;
- Review of security architecture and topology;
- Address design related questions;
- Review and support of protocol design, selection and configuration;
- Review and support of feature design, selection and configuration;
- Review of device security considerations;
- Informal recommendations or advice about a security design; and,
- Helping a Customer resolve minor design-related issues.

Design Development Support. Cisco will help the Customer gain a thorough understanding of the Customer's security design requirements and assist in developing a high-level security design to meet these requirements. The Security Design Development Support is a 4 week engagement and may include:
- Assist with Customer Requirements document creation
- Review Customer's requirements documentation and re-validate the requirements with Customer,
- Review Customer's information for some or all of the following:
  - Existing network infrastructure design;
  - Existing security infrastructure designs;
  - Planned designs if exist; and,
  - Future growth requirements, strategy and network build out time frames,
- Assist with High-Level Design Document creation including:
  - Technical objectives and requirement fulfilment;
  - High level design requirements;
  - Key risks in the Customer's proposed high level design, if applicable;
  - Design recommendations; and,

o Proposed network and security topology and architecture

Validation & Testing Support. Cisco will consult with Customer via a series of meetings to develop a thorough understanding of Customer's solution-oriented testing goals and requirements. Cisco will execute networking tests 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;
- 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 and Testing Support is only available to certain geographic locations and will be specified in the Quote for Services.

Performance Tuning Support. Cisco will provide periodic, ongoing system analysis to maintain, tune and optimize a secure, high-performance network. Performance Tuning Support includes:

- Analyze configuration and policy implementations and align them with corporate security policies and procedures, and Cisco best practices,
- Analyze up to one (1) security device type,
- Analyze up to two (2) individual security devices,
- Recommend tuning changes to policy and device configurations to optimize system performance and fully leverage security features of Cisco devices, and,
- Conduct one (1) interactive tuning session with Customer to implement recommendations.

Network Consulting Support. Cisco will provide Network Consulting Support in the form of a designated engineer ("Advanced Services Engineer") to act as the primary interface with Customer, providing general advice and guidance related to Customer's Network, assessment recommendations, and remediation plans, up to five days per week (pending local work restrictions) during Standard Business Hours excluding Cisco holidays, locally recognized country holidays, vacation, and training days. Customer directed tasks to be performed by the Advanced Services Engineer are subject to Cisco approval, which shall not be unreasonably withheld.

- Network Consulting Support is only available to certain geographic locations and will be specified in the Quote for Services.

IntelliShield Alert Manager. The Cisco Security IntelliShield Alert Manager Service is a web-based, security alerting service that proactively notifies Customers about emerging information security-related threats and vulnerabilities. The Service also includes features that help Customers securely manage risks and vulnerabilities within the Customer's organization, such as the ability to manage workflow and track remediation efforts.

The IntelliShield Alert Manager service will include the following:

- Vulnerability Alerts
- Malicious Code Alerts
- Activity Reports
- Threat Outbreak Alert
- Applied Mitigation Bulletins
- Cyber Risk Reports
- Enterprise Task Management
- One hour training session

The following subscriptions are available under this Service:

Seat License – entitlement for use of Service is limited to combinations of Registered Users and Virtual Users as specified when ordering. By default, a Registered User (or Virtual User) cannot be an e- mail "alias" and the Service is limited to internal use by Customer.

Redistribution - Redistribution grants Customer the right for any or all Seat License users to be directed to an email alias (i.e. email mailer list). A Redistribution license supports internal Customer's employees or contractors as well as Affiliates.

Further details on the IntelliShield Alert Manager service are described in the IntelliSheild specific Service Description at **www.cisco.com/go/servicedescriptions/,** incorporated herein by reference.

Security Strategy and Planning Support. Cisco will provide strategic and tactical guidance via a series of meetings or workshop around a Customer selected security topic. Topics may include but are not limited to security technologies, cloud, TrustSec and identity, IT GRC (Governance, Risk Management and Compliance), TeleWorking, management, data center and collaboration security.

- Participate in Security Strategy and Planning Support meetings.
- Provide collateral / technical reference material (white papers, technical specifications) as requested for specific technologies or for security architectural approaches.
- Develop a Security Technology Planning Meeting Report, providing a synopsis of the meeting and documenting significant recommendations.

Security Modular Knowledge Service. Cisco will provide Security Knowledge Service, through a secure web-based portal ("Portal"), which includes the following:

- Customer user account creation for the Portal:
  o Initial assistance in getting the Security Knowledge Service operational with appropriate authentication and authorizations for user community,
  o Security content available to the registered number of authorized viewers, and,
  o Multimedia clips in the form of video on demand or audio on demand security content.
- Security content such as white papers, case studies, design guides, configuration guides, troubleshooting

guides, training documents, deployment guides, or online books and/or manuals.:
- o Access to Cisco's IntelliShield security alert database,
- o Customer-specific deliverables archive when delivered as part of an Advanced Services subscription engagement, and,
- o Updated Security content as Cisco may revise, update, and/or remove previously-released multimedia clips and/or content.

Wireless Specialization

WLAN Network Assessment. Work with Customer to understand their Wireless LAN network environment and to qualify Cisco's understanding of their requirements for this project.
- Conduct one (1) project kickoff conference call to discuss the Wireless Local Area Network (WLAN) Network Assessment goals, process, and requirements.
- Provide the Wireless LAN Network Assessment questionnaire to be completed by Customer, and/or conduct interviews with Customer to collect the information, as mutually agreed.
- Collect technical documentation, network diagrams topologies, and network device configurations from Customer.
- Collect information from the existing wireless LAN infrastructure using Cisco Wireless LAN Network Assessment tools and techniques.
- Perform a remote Wireless LAN Network Assessment to include assessment of the architecture, operational status, and security of the existing wireless infrastructure focusing on the following areas:
  - o review wireless infrastructure device configurations based on Cisco leading practice recommendations;
  - o analyze the security vulnerabilities of the Wireless LAN infrastructure ;
  - o identify potential radio frequency (RF) coverage, interference or contention issues based on information collected from the Cisco WLAN Controllers;
  - o assess the Cisco Wireless LAN Controller deployment for redundancy.
- Develop and provide a Wireless LAN Network Assessment Report to include:
  - o Executive Summary;
  - o assessment findings;
  - o comparison of the Customer's wireless network design and configuration against industry and Cisco leading practices;
  - o recommendations for network design and configuration changes, as applicable.
- Review with Customer the Wireless LAN Network Assessment Report.
- Remotely present the Executive Summary of the Wireless LAN Network Assessment Report (including the analysis and recommendations) to the Customer key stakeholders and project sponsor.

WLAN Operations Risk Management Assessment. Cisco will consult with Customer via a series of meetings to understand Customer's Wireless LAN operational practices. A Wireless LAN Operations Risk Management Assessment may include, among other information, the following:
- Review Customer's operational processes regarding problem management, wireless network configuration management, change management, release management, capacity and performance management, and Wireless LAN event (fault) management.
- Review Customer's operational processes of Wireless Network management systems tools and instrumentation.
- Executive Summary identifying and prioritizing gaps in operations processes and wireless network management.
- Create a resolution recommendation plan to address operational gaps based on industry leading practices.

WLAN RF Assessment. Collaborate with the Customer to coordinate and perform an onsite site survey that captures the site details including physical, environmental considerations, electrical – AC/DC supplies, cabling, Network synchronization, peripheral equipment and remote access.
- Perform critical radio frequency survey to determine the optimal access point placement.
- Analyze the information obtained from the site survey and develop recommendations for site modification and improvements.
- Provide a site survey report detailing the results of the site survey, radio frequency assessment, environmental requirements and optimized placement of wireless access point.

Mobility Services Readiness Assessment. Collaborate with Customer to assess gaps between the Customer's current wireless network infrastructure design and its business requirements in support of Mobility Services; Voice over WLAN, or Context Aware or Adaptive Wireless IPS. Cisco may assist Customer to address the following as part of the collaboration:
- Provide the Cisco WLAN Customer requirements questionnaire to Customer contacts prior to project kick off.
- Conduct project kick-off conference call with the Customer to discuss the Wireless Network architecture, Mobility Services goals, processes and requirements
- Conduct interviews with key members of Customer's organization involved with the wireless network infrastructure.
- Review and verify Customer wireless network information and business requirements.
- Provide On Site and/or Remote review of the Customer provided wireless RF site survey report including the wireless RF infrastructure assessment for an area of up to 50,000 square feet that may include:
  - o RF coverage analysis, including the review of site survey results, AP locations, antenna types, frequency plan, and power levels
  - o Interference analysis, including the measurement of

internal and external interference sources present at the time of the analysis.
- o Evaluation of overall wireless RF network performance, including review of readiness to support Mobility Services.
- Analyze the Customer existing wireless network infrastructure, architecture, and configurations for readiness to support wireless network Mobility services.
- Provide Cisco Wireless LAN Mobility Services Readiness Assessment Results and Findings presentation with up to two (2) hours of remote or onsite knowledge transfer.

RF Verification Assessment. Validate the performance and coverage of the WLAN against the documented WLAN design.
- Perform a survey of the RF environment for coverage, interference and general performance and network configuration using appropriate WLAN data collection and analysis tools to determine;
  - o RF Coverage Analysis (review site survey results, AP locations, antenna types, frequency plan, power levels versus the documented design)
  - o Interference Analysis (measure internal/external interference at one moment in time)
  - o Evaluation/review of overall WLAN network performance and capacity
- Provide a RF Verification Document which includes analysis and recommendations to align the current state of the network including RF coverage and RF interference to the documented design.

Design Development. Collaborate with Customer to perform design development activities which may include:
- Customer Requirements Analysis:
  - o Collect and re-validate Customers business, technical and operational requirements
  - o Review Customer requirements for WLAN technology and mobility applications
- High Level Design
  - o Review with the Customer, relevant technical documentation, including any existing high level design, network infrastructure design, existing WLAN infrastructure design, planned designs if exist, network topology diagrams, network device configurations, software releases, floor maps, provisioning policies, future growth requirements, strategy, and any relevant documents, as required.
  - o Create and provide High Level Design Document, which may include technical objectives, high level design requirements, key risks in the Customer's proposed high level design, if applicable, design recommendations, proposed network and wireless topology and architecture
- Wireless LAN Detailed Design
  - o Review Customer network documentation, and existing network designs.
  - o Verify that the chosen platforms, features, and functionality will meet the Customer communicated design objectives.

- o Create WLAN detailed design to meet Customer's business and technical requirements, which may include network logical and physical topology, wireless design, configurations templates for Cisco infrastructure devices, software release recommendations based on features and/or functionality, and hardware platform recommendations.

Design Consulting. Cisco will provide Design Consulting and guidance which may include the following:
- Assist Customer with WLAN design related activities
- Analyze impact of adding new features or making configuration changes to the existing network.
- Consult on Wireless LAN related projects.

Wireless Design Review. Cisco will consult with Customer to develop a thorough understanding of Customer's wireless design requirements and provide support for incremental changes to the wireless architecture. The Design Review may include:
- Review of the Customer's Wireless LAN and Network design.
- Analysis of documented feature and functionality requirements as well as business direction compared against current design and needs.
- Review of existing and planned Wireless LAN platform.
- Provide comments and recommendations on proposed design changes.

Performance Tuning Support. Cisco will provide periodic, ongoing system analysis to maintain, tune and optimize a high-performance wireless LAN network. Performance Tuning Support may include:
- Analyze WLAN configurations and align them with corporate policies and procedures, and Cisco best practices,
- Recommend tuning changes to optimize system performance and fully leverage wireless LAN features of Cisco devices,
- Conduct one (1) interactive tuning session with Customer to implement recommendations.

WLAN Performance Analysis. Cisco performs in-depth performance troubleshooting and analysis on a specific portion of Wireless LAN network.
- Contact the Customer to discuss the Wireless LAN Performance Analysis goals, process, and requirements.
- Perform an onsite Performance Analysis of the Customer's Wireless LAN environment limited to a maximum of ten (10) Access Points (APs) or 25,000 sq. ft. The analysis may include a detailed performance analysis of the wireless network infrastructure using Cisco Wireless LAN Performance Analysis tools and techniques. The Wireless LAN Performance Analysis may include, among other information:
  - o Measuring the actual signal coverage of the wireless network;

- o Identifying the overall level of interference and specific sources which may adversely impact wireless network performance;
- o Analyzing the network utilization, network radio frequency (RF) signal tracking accuracy and efficiency metrics of the wireless network;
- o Performing wireless LAN troubleshooting or packet capture and analysis for specific wireless LAN issues as needed.
- o Review with Customer the summary of the findings of the Wireless LAN Performance Analysis

Onsite Educational Workshop. Cisco will provide knowledge transfer and education on wireless technology topics via a workshop based on a Customer selected wireless topic.

Wireless Modular Knowledge Service. Cisco will provide Wireless Knowledge Service, through a secure web-based portal ("Portal"), which includes the following:
- Customer user account creation for the Portal:
  - o Initial assistance in getting the Wireless Knowledge Service operational with appropriate authentication and authorizations for user community,
  - o Wireless content available to the registered number of authorized viewers, and,
  - o Multimedia clips in the form of video on demand or audio on demand wireless content.
- Wireless content such as white papers, case studies, design guides, configuration guides, troubleshooting guides, training documents, deployment guides, or online books and/or manuals:
  - o Access to Cisco's IntelliShield security alert database,
  - o Customer-specific deliverables archive when delivered as part of an Advanced Services subscription engagement, and,
  - o Updated wireless content as Cisco may revise, update, and/or remove previously-released multimedia clips and/or content.

EnergyWise Specialization

Customer Requirements Document ("CRD") Development.

- Collaborate with the Customer to remotely collect and document Customer's communicated business requirements to be used by the high-level network design. The Customer requirements may include:

  - o Energy Management features and functionality are required to meet business objective.
  - o Review and analyze the existing Network, Compute and Storage architectures for performance, IT and building load analysis, Hardware and Software, energy reporting and management.

- Provide and maintain a Customer Requirements Document ("CRD") that contains Customer requirements, collected data, information, observations, and the results of the high level analysis during the duration of the EnergyWise Specialization service.

Discovery and Information Gathering. The remote energy discovery process is a low cost way for a Cisco field team and Customer uncover a high level ROI for implementing a new energy management system. This financial analysis can be presented remotely or on day 1 of on-site workshop. This is a high-level energy discovery typically for a subset of the larger IT architecture.

- Discovery and Information Gathering / Remote Access Required
- Requirements Gathering and Discovery / Remote
- Asset Inventory Transfer / Remote
- Qualification and Evaluation / Remote
- Mechanical, Electrical, Floor Plans Transfer / Remote
- Presales Coordination / Remote
- Discovery and Information Gathering / Remote Access Required
- Provide a site survey report detailing the results of the energy discovery tool.

The on-site energy discovery process provides for a detailed ROI for implementing a new energy management system. This financial analysis is presented remotely during the assessment period. This is a low-level energy discovery typically for the larger IT architecture.

- Discovery and Information Gathering / On-site
- Site Inventory Discovery / On-site
- Requirements gathering & analysis / On-site
- Detailed IT and Facilities Components Assessments / On-site
- Collaborate with Customer to determine Future State Design / On-site
- Assist the Customer in the creation of its high level Energy Management System design and as part of the collaboration:

  1. Review and assist Customer the high-level Network architecture and topology design.

  2. Identify integration and aggregation points for energy domains across Building Management Systems, Network, Compute and Storage.

  3. Review Customer designs for IT System application environment, access requirements, efficiency metrics, reporting capabilities, hardware tiering, hardware compliance and configuration provide recommendations.

4. Financial modeling and analysis across facilities and IT operations showing ROI and projected savings by business unit. / onsite

Energy Management Assessment. The Energy Management tools and processes involve the installation and integration of a new energy management application.   This application provides the Customer with an active tool to manage the energy usage of IT assets.   Furthermore, the reporting and tracking of energy use is supported.   The final deliverable document includes the cost justification for the system, initial findings and user guide for the energy management system.

- Data Aggregation, Domain Building, Reporting Templates
- Planning (Requirements, Assessment, Architecture)
- Design & Build (Solution Design, Integration, Implementation)
- Expense Assessment (Operational & Architectural Assessment)
- Run & Optimize (Deployment Planning, Operational Assessment, Optimization)
- IT assets utilization mapping
- Efficiency Metrics Calculations
- Energy Management Strategy
- Energy Management Report Compilation
- Provide Customer Report - Executive Presentation

Energy Management Support and Knowledge Transfer. Once the energy assessment is complete, Cisco will work with the Customer to develop a new energy management program. This program focuses on providing Energy as a Service (Eaas) for energy managers and IT operators.   This program and training that is provided by Cisco have the following attributes:

- User training workshops
- Recommendations of organizational structure
- Recommendations on programmatic structure
- Reporting templates for compute, network and storage assets
- Data feed for data center digital signage
- Report showing projections on energy savings over 3 year period for single data center
- Report showing projected savings for additional sites as provided by client

Cisco Network Operations Automation Services (CNOAS)

The Cisco Network Operations Automation Service is intended to automate proactive and reactive network operations tasks, integrating Cisco best practices with the Customer's operational process and tool environment. This service is intended to supplement a current maintenance agreement for Cisco products and is only available where all Product(s) in Customer's Network is supported with a minimum of core

services (such as SMARTnet and/or Software Application Services) as applicable.

Upgrade Assessment/Support

The Cisco Network Operation Automation Service (CNOAS) will provide assessment and support services to determine the impact and effort associated with upgrading Customer's existing CNOAS solution to appropriate new version. Cisco will consult with Customer via a series of meetings to understand and analyze aspects of Customer's current CNOAS Environment. Cisco will provide assessment services to:

- o Review Customer's existing production functionalities, including standard product configurations, integrations and customizations to determine the actions needed to maintain the existing functionality.
- o Review current platform and hardware components to understand any sizing and product compatibility issues with third party applications
- o Review new product features, product changes, benefits with Customer describing differences between existing and new application software versions and assess impact on existing configurations including potential fitness for use with Customer's existing implementation
- o Review customizations, integrations and assess needed changes to ensure continued performance.
- o Determine the feasibility, effort and risk associated with utilizing new features and functions that are part of the upgraded CNOAS software.
- o Complete review sessions with Customer's project team on their steps taken to date and current status, resulting in an assessment of recommended next steps and upgrade plans.
- o Devise a plan documenting findings and recommendation that include:
- o Detailed impact, recommended strategy and estimate the level of effort required to complete the upgrade.
- o Review of Customer's project staffing capabilities and available resources/skill sets.
- o Plan and effort to remedy any issues uncovered during review process.
- o Contingency and rollback plans to restore the software to its original version
- o Plan and effort to utilize new desired product features.
- o Interactive presentation of findings, analysis, and recommendations.
- o Recommend a plan and effort to remedy any issues uncovered during review process.

- Once per year, Cisco may provide Customer with following upgrade service(s) on site for up to a maximum of five (5) business days to upgrade non-production CNOAS environment(s):
- o Provide one (1) upgrade for each non-production CNOAS element(s)
- o Provide testing of upgraded environment by executing one (1) of each software element and one (1) of each

agent/adapter to be used in the CNOAS solution. Support Customer during the test execution
- o Provide fix of any corruptions found during the validation
- o Provide one (1) knowledge transfer session for up to a maximum of twelve (12) Customer participants at Customer facility, for up to one (1) day
- o Test upgrade and the differences between the prior CNOAS version and the upgraded CNOAS version
- o Reach agreement on the actual location and the commencement date for the knowledge transfer session within five (5) business days prior to the start of the upgrade engagement
- o Once per year, Cisco may provide Customer with an provide the following upgrade service(s) on site for up to a maximum of five (5) business days to upgrade production CNOAS environment(s):
- Provide one (1) upgrade for each production CNOAS element(s)
- Provide testing of all Production CNOAS Fault tolerant environment elements (Primary Master, Backup Master and Fault Monitor)
- Provide fix of any corruptions found during the validation
- Provide upgrade of up to five (5) desktop client(s) in production environment
- Provide cut over support for each upgraded production environment(s)
- Provide post go live support for up to 10 business days and assist in resolving any upgrade related issues during go live.
- o Once per year, Cisco may provide workflow customization for mutually agreeable Customer pain points identified for up to 5 workflows within up to a maximum of five (5) business days per workflow
- o Once per year, Cisco may provide the following upgrade service(s) on site for both production and non-production CNOAS environment(s) mentioned above for up to a maximum of five (5) business days:
- For each environment that is candidate for upgrade, provide health and risk assessment of Customer environment for the current CNOAS configuration, architecture, operating system (OS), database (DB), and workflows in CPO
- Review and provide recommendation on Customer developed contingency plan
- Provide fix of any corruptions found during the validation
- Provide testing of upgraded component connectivity (CPO, database, adapters, targets)

The quantity of any reporting and efforts for upgrade and assessment activities described herein will vary depending on Customer requirements and what Customer and Cisco mutually agree upon when Services are purchased as identified in the Quote provided by Cisco.

Site and Systems Administration Support

- Cisco will consult with Customer to support Site and System administration that is process of maintaining and operating computer systems and networks as part of CNOAS solution (CPO, database, adapters, targets).

Cisco will provide support for the following responsibilities that are generally performed:
- Perform routine audits of CNOAS solution
- Perform backups of CNOAS solution
- User management and user security administration such as add, remove, or update user account information, reset passwords, etc.
- Tune system performance
- Routine tasks to operate the CNOAS solution
- Provide architecture blueprint for CNOAS solution
- Participate in system build and document the configuration of the system
- Implementation of approved operating system updates, patches, and configuration changes
- Provide knowledge transfer of CNOAS Best Practices
- Provide periodic status report to management on tasks delivered and recommendations

The quantity of any reporting and efforts for site and system administration activities described herein will vary depending on Customer requirements and what Customer and Cisco mutually agree upon when Services are purchased as identified in the Quote provided by Cisco.

Ongoing Support

This service will provide support to assist Customer with general advice and guidance on Cisco recommendations around CNOAS solution. A maximum of twenty (20) custom workflows support will be provided.

- Designate an engineer ("Advanced Services Engineer") to act as the primary interface with Customer for its CNOAS solution. This engineer would be available for five (5) days per week (pending local work restrictions) during Normal Business Hours excluding Cisco holidays, locally recognized country holidays, vacation, and training days.
- Participate in regular visits to the Customer either via phone, email or in-person to review proactive deliverables and activities and to plan for next quarter. In-person visits not to exceed five (5) days in aggregate. Additional visits will be mutually agreed at Cisco's then-current travel and labor rates.
- Ongoing support service's scope focuses on content and Cisco recommendations around CNOAS solution
- Participate in periodic conference calls (usually Bi-weekly or Monthly) at mutually agreeable time for an hour to review Customer's CNOAS solution status, address questions, planning and the services being provided.
- Monitor a Customer-specific Cisco email alias to facilitate communication with primary Advanced Services Engineer as well as the engineers on the Cisco's CNOAS team. Respond to Customer emails within 24-48 hours with acknowledgement and start working with Customer on the plan to address the topic of the email.
- Advanced Services Engineer will provide general advice and guidance to lead the delivery of the CNOAS solution ordered by Customer.

- Make collaboration tools available for the purposes of (including but not limited to): hosting meetings, managing documentation, instant messaging, desktop sharing, and collaborative spaces.

The quantity of any reporting and efforts for ongoing activities described herein will vary depending on Customer requirements and what Customer and Cisco mutually agree upon when Services are purchased as identified in the Quote provided by Cisco.

Custom Solution Support - Day 2 Reactive

Upon identification of a problem related to Customer solution and receipt of an error report from Customer containing a detailed description of the nature of the defect or error in the solution, the conditions under which it occurs and other relevant information sufficient to enable Cisco to reproduce the error in order to verify its existence and diagnose its cause, Cisco will use reasonable commercial efforts to furnish Customer an avoidance procedure, bypass, work-around or patch to correct or alleviate the condition reported

Prepare & Present QBR

o   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 Deliverables and activities and plan for the next quarter. Additional visits will be mutually agreed upon at Cisco's then-current travel and labor rates.

Workshop

o   Conduct a workshop for up to two (2) working days with business and IT stakeholders to identify pain points in Customer's network environment.
o   Review with Customer their network's current capabilities and discuss possible capabilities with help of CNOAS solution that allows the team to identify the desired automation goals and objectives. The workshop plays a vital tool for generating recommendations that optimize the value gained from the automation process and provides a technical blueprint.
o   Document findings including any gaps and recommended actions for the CNOAS solution workflow development for automation process.

Ongoing Service and Project Management Support

o   Provide ongoing support and project management to assist with the overall delivery of the Data Center Optimization Service for incremental changes to the CNOAS environment.

Remote Knowledge Transfer Sessions

o   Cisco will consult with Customer to identify requirements and topics for informal training sessions related to CNOAS solution. Remote Knowledge Transfer Sessions are:

- Delivered in English (other languages subject to availability)
- Informal technical updates such as a "chalk talk" on a topic that is mutually agreed upon and relevant to the technologies in the data center.
- Service to be provided by an Advanced Services Engineer or another senior Cisco engineer.
- Delivered remotely for up to four (4) hours in length, with no labs and no printed course materials
- Relevant to the CNOAS solution - products and technologies deployed in Customer's production Network

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Customer Responsibilities

General Responsibilities

- Designate at least two (2) but not more than six (6) technical representatives to act as the primary technical interface to the Advanced Services Engineer. Representatives must be Customer's employees in a centralized location. Customer will designate as contacts senior engineers, stakeholders, and decision-makers to participate 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). Provide its designated person(s) with instructions on process and procedure to engage the Advanced Services Engineer.
- 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.
- 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 has achieved, in Cisco's sole determination, an equal standard through training and experience as designated contacts.
- Provide reasonable electronic access to Customer's Network to allow the Advanced Services Engineer to provide support.
- Provide periodic information about changes planned for the Network regarding new technology, applications, or major design changes (short term and long term).
- Provide Customer internal incident escalation process and contact information.
- Provide information about Customer device and Network lab testing and certification process(es).
- Provide Network topology map(s).
- Provide information about any service level agreements or Network performance requirements.
- Provide information about critical applications supported by the Network.

- Provide information about expected Network growth and application mix changes.
- Notify Advanced Services Engineer of any major Network changes (e.g., topology, configuration, new Software releases).
- Create and manage an internal email alias for communication with Advances Services Engineer & delivery team.
- Utilize communication and collaboration tool(s) provided by Cisco. If Customer uses non-Cisco provided collaboration tools for hosting meetings, managing documentation, instant messaging, desktop sharing, and collaborative spaces, provide Cisco with access.
  o Customer will provide names of users who will have authorization to access these tools.
  o Customer will support the implementation of software required to use tools in their environment.
- Retain overall responsibility for any business process impact and any process change implementations.
- Provide list of Cisco.com Customer userids to be entitled as required to enable access by Customer to any Customer-accessible portal or online component throughout service contract duration.
- 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.
  o Initial Set-up (One Time). If Cisco provides Data Collection Tools or scripts located at Customer's site, an initial set-up is required and the following must be performed:
    ▪ Complete the Data Collection Tools installation and system configuration questionnaire(s) (i.e. IP address, netmask, hostname, etc.) and return to the Advanced Services Engineer
    ▪ Install the Data Collection Tools hardware in a secure area with controlled physical access
    ▪ Connect the Data Collection Tools hardware to the Network
    ▪ Secure the Data Collection Tools behind Customer's corporate firewall
    ▪ Provide access to Data Collection Tools for use by Cisco to install, troubleshoot, and maintain; for remote access, SSH, Telnet, and/or dial are options, but virtual private network (VPN) access to the Graphical User Interface (GUI) is preferred and recommended
    ▪ When applicable, provide Data Collection Tools with HTTPS (SSL) access back to Cisco CCO/CCX servers located at nettools-upload.cisco.com; HTTP/FTP/PFTP may be used but Cisco strongly recommends HTTPS (SSL)

- ▪ When applicable, provide Data Collection Tools with SSH to the nettools-upload.cisco.com server to support the transfer of Data Collection Tools patches, security patches, and Rules Based Markup Language (RBML) update packages; FTP may be used but Cisco strongly recommends SSH
- ▪ Provide Data Collection Tools with SNMP and Command Line Interface (CLI) access to all Product(s) in the Network (necessary 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 user-id / password) for access to all Product(s) in the Network (necessary to create the Data Collection Tools seedfile)
- ▪ Provide Syslog server and upload information
  o Data Collection Tools Management (Ongoing). In the event Data Collection Tools are installed on Customer's Network, the following items must be performed on a regular or as needed basis 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.) which may periodically occur between Data Collection Tools and the Product(s) in the Network
  - ▪ When applicable, fix data communication problems which prevent Data Collection Tools from uploading data to Cisco or prevent the remote maintenance of the Data Collection Tools
  - ▪ Notify the Advanced Services Engineer when changes are made to Syslog, DNS, proxy and gateway servers IP address(es)

Design Strategy
In addition to the General Responsibilities, Customer shall:
- Provide information about new requirements for the existing Network such as design requirements, priorities, and goals
- Ensure key detailed design stakeholders and decision-makers are available to participate during the course of Design Reviews
- Provide information required for any design efforts (e.g., current and planned traffic characteristics)
- Provide information required for any design efforts (e.g., current and planned traffic characteristics)

Software Strategy
In addition to the General Responsibilities, Customer shall:
- Provide information about Customer business and technical requirements for new Software releases
- Review recommended Software releases with the Advanced Services Engineer

- Provide information about current Software releases operating on the Network
- Provide information about current configuration templates
- Provide information about current Software releases operating on the Network
- Provide information about current configuration templates

Hardware Strategy
In addition to the General Responsibilities, Customer shall:
- Provide information about strategic locations and details about the IP infrastructure such as topology, protocols, configurations, Network services, power, and environment
- Provide information about architecture and design resiliency requirements
- During Network audits, minimize changes made to the product(s) audited through the period of audit collection (typically a one (1) day or seven (7) day period). If feasible, no configuration changes should be made in order to avoid erroneous Network audit results.

Change Management Strategy
In addition to the General Responsibilities, Customer shall:
- Provide information about operational and change management processes
- Provide information about maintenance windows and any other constraints
- Provide information about Customer's standard operating procedures related to business practices, its internal operational nomenclature, to allow Cisco to effectively communicate and discuss changes with Customer in the context of Customer's business environment

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

Virtual Training
Provide appropriate computers and other dedicated facilities as required for usage by students for instructional purposes.
- Provide remote access to instructional lab facilities as required, to enable access to the Internet, including static IP addresses when required.
- 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.
- Upon desiring to cancel a scheduled class, should do so in writing to the designated Cisco point of contact prior to 30 days from the start of scheduled session to avoid forfeiture of class delivery at Cisco discretion.
- 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

Remote Knowledge Transfer Sessions
Collaborate with Cisco Advanced Services to determine appropriate and relevant topics.
- Provide a single point of contact to be used for all communication and coordination of requested sessions.
- Provide details in advance about the background and skill sets of each Remote Knowledge Transfer session audience.

Technical Knowledge Library
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. In addition to the General Responsibilities, Customer shall:
- 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:
  o HTTPS/SSL (TCP 443); SSH (TCP 22); HTTP (TCP 80)-possibly required; DNS (UDP 53)-possibly required
- Install and removal of the Content Engine or testing of the Portal interface, depending on which method for delivery is selected by Cisco.
- Notify Cisco of any technical support requests or troubleshooting issues related to the Services

Network Incident Trending Analytics
- Customer will provide all requested Cisco Customer Care (C3) SmartNet/SPBase contract number(s) and any related information as requested to be used as the mandatory input for this Deliverable.
- Content provided is limited in scope to the provided C3 data and cannot be provided without the mandatory C3 data as requested

Architecture Strategy

Network Architecture Development
- Designate a contact to act as the primary interface to Cisco.
- Participate in regular meetings with Cisco as required to review project status.
- Participate in periodic conference calls.

Availability Impact Analysis
- Provide current and proposed routing and switching design information

Converged Architecture Strategy Assessment
- Provide list of devices to be included in the assessment.
- Provide representative configurations from in-scope network areas

Design Availability Assessment
- Provide Network infrastructure platform information

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.

IPv6 Device Readiness Assessment
- Consult with Cisco to define scope of assessment and IPv6 feature requirements
- Provide Cisco network device information that are in scope

Migration Planning and Implementation Support
- Provide organizational implementation policies and change management goals
- Provide information for organizational change management processes and recurring time periods that prohibit implementation activities
- Identify representative device, platform or site types

Multicast Design Development Support
- Provide business, technical and operational multicast requirements
- Provide multicast application requirements
- Provide PIM (protocol independent multicast)-mode, RP (rendezvous placement) placement, IGMP (independent group multicast protocol) design
- Provide WAN mVPN, mldp (multicast label distribution protocol), msdp (multicast source discovery protocol) design

Network Architecture Design Review
- Provide documentation of any business requirements and technical requirements for the new design.
- Provide information on any current and planned traffic characteristics or constraints.
- Provide network architecture and topology

- Provide protocol and feature design, selection and configuration
- Ensure key detailed design stakeholders and decision-makers are available to participate during the design review.

Persistent Testing Validation
- Provide technology roadmap
- Provide documentation which may include:
  o Network design, if applicable
  o Test plans, if applicable

QoS Design Development Support
- Provide business, technical and operational QoS requirements
- Provide list of applications requiring specific QoS treatment and corresponding network performance requirements for non-Cisco applications
- Provide QoS class structure; network traffic identification and trust boundaries scheme; network traffic marking rules; and network traffic queuing strategy.

Security Strategy

Network Device Security Assessment (NDSA)
- Provide list of up to 350 devices to be included in assessment
- Supply device configurations and versions, and,
- Supply relevant network topology diagrams.

Security Posture Assessment (SPA)
Internal Security Posture Assessment
- Supply Cisco with a work location with network connectivity to the internal network, and,
- Supply list of internal IP ranges to include in Assessment.

Perimeter Security Posture Assessment
- Supply list of externally accessible IP addresses to be included in Assessment, and,
- Support data collection activities as required to support specific Cisco analyses.

Security Design Assessment
- Provide access to the appropriate resources with knowledge and authority to provide Cisco with the following information:
  o Key business critical assets,
  o Assess specific threats to identified business critical assets,
  o Physical and logical network topology diagrams, including the location of the devices included in assessment,
  o Network architecture description,
  o Security policies, standards and procedures,
  o Services that traverse the perimeter network,
  o Applications and services running over the network (VoIP, video streaming, terminal emulation, http, ftp, etc.),

- High-level architecture of data center, internal servers, user host connectivity and Internet connectivity,
- Network Management System architecture, and,
- Empirical data necessary to develop Cisco Security Control Framework metrics.

Security Technology Readiness Assessment
- Meet with Cisco to discuss requirements,
- Support Cisco in collecting data for the Assessment, data can include, but is not limited to:
  - List of devices including their software version,
  - Network topology diagrams,
  - Active Directory (AD) information,
  - PKI infrastructure information,
  - Software deployment information, and,
  - Maintenance window information.

Design Review
- Provide the low level design document describing the specific set of technical requirements and design goals and specifying the resulting Customer Network architecture and build-out plans to meet those requirements. The level of details must be sufficient to be used as input to an 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).
- Provide documentation of any business requirements and technical requirements for the new design.
- Provide information on any current and planned traffic characteristics or constraints.

Design Development Support
- Provide the low level design document describing the specific set of technical requirements and design goals and specifying the resulting Customer Network architecture and build-out plans to meet those requirements. The level of details must be sufficient to be used as input to an 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).
- Provide documentation of any business requirements and technical requirements for the new design.

Validation & Testing Support
- Lab setup and test plans.
- Supply Cisco with success criteria for the testing

Performance Tuning Support

- Provide corporate security policies and procedures that apply to the portion of the Network and devices within the scope of the Service.
- Identify the devices to be included in the Service.

Network Consulting Support
- Provide Cisco with direction of activities and projects on which the Customer needs the Cisco engineer to engage.

IntelliShield Alert Manager
- Upon request, Customer will provide Cisco with a list of all personnel that Customer has authorized to contact Cisco or to access Cisco.com for the Service. Customer is responsible for reviewing the list on an annual basis and adding or removing personnel as necessary.
- **Customer's Registered Users.** At the commencement of the Service, Customer will designate its Registered Users, per the terms of the applicable license, who will be entitled to perform the following functions in Cisco Security IntelliShield Alert Manager:
  - Access Cisco Security IntelliShield Alert Manager database: Registered Users can search for alerts based on technology, date, vendor, or urgency, credibility and severity rating.
  - Use Workflow: Registered Users can assign remediation tasks and track completion progress.
- Each Registered User will receive via email from Cisco a login User ID and Password (separate from his or her Cisco.com User ID and password). Customer will designate one Registered User with administrative responsibility for setting up preferences (such as product sets and alerts) for all of such Customer's other Registered Users (and Virtual Users, if applicable).

Security Strategy and Planning Support
- Establish and inform Cisco of dates at least sixty (60) days in advance of strategic planning meetings.
- Provide technology roadmaps necessary to support the planning sessions.
- Provide information on any current and planned traffic characteristics or constraints.

Security Modular Knowledge Service
- Designate person(s) to be responsible for management of portal accounts within user community.
- Provide list of initial set of users to be authorized on the portal.

<u>Wireless Strategy</u>

WLAN Network Assessment
- Attend one (1) project kickoff conference call to discuss the Wireless Local Area Network (WLAN) Network Assessment goals, process, and requirements.
- Complete the Wireless LAN Network Assessment questionnaire provided by Cisco, and/or participate in interviews with Cisco to provide the information, as mutually agreed.
- Provide technical documentation, network diagrams

topologies, and network device configurations.
- Review with Cisco the Wireless LAN Network Assessment Report.
- Key stakeholders and project sponsors attend a session for Cisco to remotely present the Executive Summary of the Wireless LAN Network Assessment Report (including the analysis and recommendations)

WLAN Operations Risk Management Assessment
- Consult with Cisco via a series of meetings to educate Cisco about Customer's Wireless LAN operational practices
- Review with Cisco the Executive Summary identifying and prioritizing gaps in operations processes and wireless network management, and resolution recommendation plan to address operational gaps.

WLAN RF Assessment
- Coordinate physical access to the site to allow Cisco to conduct an onsite site survey, which may include collecting coverage interference and performance data. If an escort or special site access is required, Customer provides escort or access.

Mobility Services Readiness Assessment
- Complete the Cisco WLAN Customer requirements questionnaire prior to project kick off.
- Attend project kick-off conference call to discuss the Wireless Network architecture, Mobility Services goals, processes and requirements
- Review Cisco Wireless LAN Mobility Services Readiness Assessment Results and Findings presentation.

RF Verification Assessment
- Coordinate physical access to the site to allow Cisco to conduct an onsite site survey, which may include collecting coverage interference and performance data. If an escort or special site access is required, Customer provides escort or access.
- Review the RF Verification Document which includes analysis and recommendations to align the current state of the network including RF coverage and RF interference to the documented design.

Design Development
- Customer Requirements Analysis:
  - Provide business, technical and operational requirements
  - Provide requirements for WLAN technology and mobility applications
- High Level Design
  - Review with the Cisco, relevant technical documentation, including any existing high level design, network infrastructure design, existing WLAN infrastructure design, planned designs if exist, network topology diagrams, network device configurations, software releases, floor maps, provisioning policies, future growth requirements, strategy, and any relevant documents, as required.

  - Review High Level Design Document
- Wireless LAN Detailed Design
  - Review WLAN detailed design

Design Consulting
- Provide Cisco with direction of activities and projects on which the Customer needs to Cisco engineer to provide design guidance for.

Wireless Design Review
- Provide the design document describing the specific set of technical requirements and design goals and specifying the resulting Customer Network architecture and build-out plans to meet those requirements.

Performance Tuning Support
- Identify the devices to be included.

WLAN Performance Analysis
- Review with Cisco the Wireless LAN Performance Analysis goals, process, and requirements.
- Provide physical access to site, if required.
- Provide configurations, performance information, client devices, and other information necessary to effectively troubleshoot or analyze the wireless network.
- Review with Cisco the summary of the findings of the Wireless LAN Performance Analysis

Onsite Educational Workshop
- Establish and inform Cisco of dates at least sixty (60) days in advance of workshop.
- Provide Customer facilities and equipment (such as conference rooms, white boards, projectors) and make them available to host the informal technical update sessions.
- Provide technology topics and requirements for workshop.

Wireless Knowledge Service
- Designate person(s) to be responsible for management of portal accounts within user community.
- Provide list of initial set of users to be authorized on the portal.

Cisco Network Operations Automation Service (CNOAS)
- 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.

- Ensure key detailed design stakeholders and decision-makers are available to participate during the course of the service.

- Provide reasonable electronic access (onsite and remote) to Customer's Network to allow the Advanced Services Engineer to provide support.

- o Provide a Network topology map, configuration information, and information of new features being implemented as needed.

- o Notify Advanced Services Engineer of any major Network changes (e.g., topology, configuration, new IOS releases.).

- o Customer shall advise Cisco immediately of all adds, moves and changes of the CNOAS solution within Customer's environment.

- o Provide necessary hardware, software and third party tools in the environment as specified in the CNOAS installation pre-requisite documentation.

- o Provide documented information on Customer's existing CNOAS Infrastructure design including items such as: inventory of servers, network and configuration data.

- o Provide documented information on all non-Cisco applications integrated through the Automation Software Tools including interface specifications as required.