Service Description: Advanced Services Configurable (AS-C) Services for Deployment

This document describes Advanced Services Configurable Services for Deployment activities and deliverables.

1.1 Service Summary

Deployment Services help you effectively deploy new IT and network solutions or applications as you look to:

- Reduce delays, rework, and other problems during implementation
- Decrease disruption to your production network during deployment.
- Realize business and technical goals of the new solution.

For further Cisco Portfolio information; http://www.cisco.com/web/services/portfolio/index.html.

1.2 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. All capitalized terms in this description have the meaning ascribed to them in the Glossary of Terms.

1.3 Direct Sale from Cisco

If you have purchased these Services directly from Cisco for your own internal use, this document is incorporated into your Master Services Agreement, Advanced Services Agreement, or other services agreement covering the purchase of Advanced Services-based services with Cisco ("Master Agreement") If no such Master Agreement exists, then this Service Description will be governed by the terms and conditions set forth in the SOW Terms & Conditions Agreement (Direct Sale Only) posted at: http://www.cisco.com/web/about/doing_business/legal/terms_conditions.html, which is incorporated into this Service Description by this reference. In either case, this Service Description shall be treated as a "SOW" or a "Statement of Work" under the most recent agreement between the parties or by the SOW Terms & Conditions Agreement referenced above.

Cisco shall provide the AS-C Deployment activities and deliverable described below as selected and detailed on the Purchase Order for which Cisco has been paid the appropriate fee. Cisco shall provide a Service Bill of Material ("SBOM"), identifying Cisco's quote for performance of Services, which details the extent of the Services and duration that Cisco shall provide such Services. Customer's issuance of Purchase Order, referencing the Configuration ID associated with the SBOM, will constitute its acknowledgement and agreement to the terms of this SBOM. Availability of Services described herein and service delivery may vary by geographical region.

1.4 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/.

1.5 Location of Services

Services are provided remotely and onsite, as required and quoted.

2.0 Table of Contents

3.0 General Service Activities

3.1 Project Management

Project management will be provided for the duration of the Service, including a Project Manager (PM) who will have the primary responsibilities to conduct the project kick off meeting, develop a project plan, schedule resources, and provide change management. Project management services will be provided for the duration of the project.

3.1.1 General Responsibilities

Cisco Responsibilities

3.1.1.1 Provide Customer with a list of designated Cisco personnel roles and responsibilities under this AS-C Deployment Services offer.

3.1.1.2 Provide a Project Management Plan ("PMP"). PMP is a baseline document from which the Cisco PM can manage deliverables, assess progress, and manage change management issues and any on-going questions.

3.1.1.3 Work with Customer to identify and document dependencies, risks and issues associated with the successful completion of the project.

3.1.1.4 Provide a Project Schedule highlighting deliverables, corresponding milestones, planned project events, resource(s) and timescales.

3.1.1.5 Participate in scheduled project review meetings or conference calls, if required.

3.1.1.6 Provide Customer with the identity of personnel requiring access to Customer premises, at least ten (10) Business Days prior to the scheduled date such personnel requires access.

3.1.1.7 Deliver a weekly project status report to the Customer.

3.1.1.8 Provide a handover, follow on actions, lessons learned, and exception reports (if necessary) upon project completion.

Customer Responsibilities

3.1.1.9 Provide the Cisco PM with a list of designated Customer personnel roles and responsibilities under this AS-C Deployment Services offer.

3.1.1.10 Ensure that key Customer personnel (such as architecture design and planning, network engineering, network operations personnel) are available to provide information and to participate in review sessions, workshops and other information gathering activities. The Customer PM will also ensure that Cisco is provided with all information, data and documentation as Cisco reasonably requires to provide Services and comply with Cisco's responsibilities in this AS-C Deployment Services offer. This information includes, but is not limited to: (i) information relating to Customer's network, design, business and other applicable requirements; (ii) functional and/or technical documentation relating to such requirements; and (iii) topology maps, configuration information and existing and proposed network infrastructure.

3.1.1.11 Identify primary and backup Customer authorized site contacts who shall provide necessary information, obtain access clearances and coordinate with other organizations/third parties with respect to Services at that site.

3.1.1.12 Participate in scheduled project review meetings or conference calls, if required.

3.1.1.13 Coordinate with any external third parties, such as in country Carrier/Telco activities, deliverables and schedules.

3.1.1.14 Ensure that Cisco's request for information or documentation needed for the project is provided within three (3) Business Days of Cisco's request, unless the parties agree to another time period for response.

Deliverables

3.1.1.15 Project Management Plan

4.0 Infrastructure Supporting Services

Infrastructure Deployment includes implementation plan, test plan, implementation, test, post production and knowledge transfer services in the following areas: network, storage and compute systems and technologies that support business applications.

4.1 Infrastructure Implementation Plan Development

Cisco will create Infrastructure implementation plan for Customer which will include detailed step by step implementation procedures, device configurations, cutover tasks and detailed rollback plan for each phase of the implementation where applicable

4.1.1 General Responsibilities

Cisco Responsibilities

4.1.1.1 Refer to the architecture/technology-specific sections in section 4.1.2 below in addition to the activities defined here

4.1.1.2 Cisco will create and provide the Infrastructure Implementation Plan

4.1.1.3 Conduct a remote work session(s) to discuss with Customer the high level implementation strategy.

4.1.1.4 Review and finalize all implementation scenarios based on the input from the Customer's Networking, Security, Operations and Application teams, as applicable

4.1.1.5 Working with Customer stakeholders, Cisco will develop an Infrastructure Implementation Plan based on the Cisco-Approved Customer-provided Infrastructure Low Level Design. The Cisco-developed Infrastructure Network Implementation Plan will include: a) detailed step-by-step procedures for network infrastructure implementation; b)recommended implementation sequence and scheduling as per the timeline for the proposed Implementation; c) rollback procedures (if any); and d) device configurations for the network infrastructure devices.

4.1.1.6 Provide the Infrastructure Network Implementation Plan to Customer for review and approval in accordance with "Document Deliverable Review and Approval Process"

Customer Responsibilities

4.1.1.7 Refer to the architecture/technology-specific sections in section 4.1.2 below in addition to the activities defined here

4.1.1.8 Designate Customer networking, security, operations and applications personnel to work with Cisco to develop and review the Implementation Plan.

4.1.1.9 Provide Cisco with existing network diagrams, configuration, company and/or industry specific standards.

4.1.1.10 Provide the following information within five (5) Business Days following Cisco's request: a). verified interface specifications and requirements. For example, cabling standards and specifications for interconnect of Cisco and Customer equipment; b) information on distance and interference limitations of interface cables to be used at installation; and c) test plan and interconnect process required by any third parties including but not limited to in country carrier/telco.

4.1.1.11 Review and approve the Infrastructure Network Implementation Plan with Cisco in accordance with "Document Deliverable Review and Approval Process."

4.1.1.12 Customer acknowledges and agrees that by sign-off of the final Infrastructure Network Implementation Plan, Customer and Cisco have agreed on the following: a). implementation details; b). implementation timelines; c). implementation topologies; and d). roles and responsibilities for each implementation case.

Deliverables

4.1.1.13 Infrastructure Network Implementation Plan

4.1.2 Additional Infrastructure Implementation Plan Development Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

4.1.3 Data Center/Networking-Nexus

Cisco Responsibilities

4.1.3.1 No responsibilities defined in addition to section 4.1.1 above

Customer Responsibilities

4.1.3.2 Provide the network LLD and a draft implementation plan for use in Cisco's development of the final implementation and test plan. The Customer-provided draft implementation plan should include operation procedures for both network and application, as well as an integration schedule

4.1.4 Data Center/Storage-SAN

Cisco Responsibilities

4.1.4.1 Infrastructure Implementation plan for Networking-SAN will include configuration for: a). switch names, VSAN, cables and labels, zoning and aliasing, and cable locations; b). management, security, port configuration, and VSAN; c). Fabric Manager Server;

Customer Responsibilities

4.1.4.2 Provide the network LLD and a draft implementation plan for use in Cisco's development of the final implementation and test plan. The Customer-provided draft implementation plan should include operation procedures for both network and application, as well as an integration schedule

4.1.4.3 Customer will be responsible for the execution of the Implementation and Migration Plan, including: a). providing all equipment, cabling, racking, stacking, and installation of hardware, facilities, applications, server, testing tools (unless specified) for the execution of the test case scenarios; b) co-ordinating Customer personnel responsible for the execution of the implementation and migration plan; c) fulfilling implementation roles and responsibilities for each migration test case scenario; and d). provide support for the integration of any third party software and devices

4.1.5 Borderless Networks/Wireless-LAN

Cisco Responsibilities

4.1.5.1 Create and provide a WLAN Implementation Plan per Customer location at least five (5) Business Days before the scheduled commencement of the implementation services. WLAN Network Implementation Plan refers to a document that provides the information necessary to carry out the implementation of the equipment at the Customer location and to verify basic operation and ready for service configuration. Ready for service configuration means that the network, or a sub-set of it, is functioning as per the specifications documented in the WLAN Network Implementation Plan. It is a guide for the implementation engineer to follow, containing node and site specific information and records the basic tests and actions to be carried out

Customer Responsibilities

4.1.5.2 Provide Customer's building layout, including the floor plan, cabling and power location for applicable site, ten (10) Business Days prior to Cisco finalizing the WLAN Network Implementation Plan

4.1.6 Next generation Networks/Optical-DWDM

Cisco Responsibilities

4.1.6.1 No responsibilities defined in addition to section 4.1.1 above

Customer Responsibilities

4.1.6.2 Provide Cisco Transport Planner (CTP) file reviewed and approved by Cisco.

4.1.6.3 Provide necessary network information for node configuration e.g. node naming convention, IP, subnet and gateway information as applicable

4.2 Provide information on any specialized training requirements for site work..Infrastructure Test Plan Development

Based upon the Cisco approved assessment and/or design documents, Cisco will work with Customer on the development of a Test Plan. Cisco shall review Customer's preliminary test plan and propose content and amendments to the test plan based on Cisco's understanding of the Customer's objectives. Cisco will then document the Test Plan to be used during the lab test execution

4.2.1 General Responsibilities

Cisco Responsibilities

4.2.1.1 Refer to the architecture/technology-specific sections in section 4.2.2 below in addition to the activities defined here.

4.2.1.2 Conduct a remote work session(s) to discuss with Customer the high level implementation test plan, test cases, execution process and test tools to be used.

4.2.1.3 Develop a test plan using the Cisco approved Customer-provided LLD and implementation plan, including Customer inputs for the implementation of Network Infrastructure.

4.2.1.4 Document all information and details of the draft implementation and test plan, including success and fail criteria, in the Network Test Plan.

4.2.1.5 Provide the Infrastructure Test Plan to Customer for review and approval in accordance with "Document Deliverable Review and Approval Process"

Customer Responsibilities

4.2.1.6 Refer to the architecture/technology-specific sections in section 4.2.2 below in addition to the activities defined here

4.2.1.7 Provide the Cisco approved Infrastructure LLD for use in Cisco's development of the final test plan.

4.2.1.8 Review and approve the Infrastructure Test Plan with Cisco in accordance with "Document Deliverable Review and Approval Process."

Deliverables

4.2.1.9 Infrastructure Test Plan

4.2.2 Additional Infrastructure Test Plan Development Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

4.2.3 Data Center/Networking-Nexus

Cisco Responsibilities

4.2.3.1 No responsibilities defined in addition to section 4.2.1 above

Customer Responsibilities

4.2.3.2 No responsibilities defined in addition to section 4.2.1 above

4.2.4 Data Center/Storage-SAN

Cisco Responsibilities

4.2.4.1 No responsibilities defined in addition to section 4.2.1 above

Customer Responsibilities

4.2.4.2 No responsibilities defined in addition to section 4.2.1 above

4.2.5 Borderless Networks/Wireless-LAN

Cisco Responsibilities

4.2.5.1 Develop the WLAN Implementation Test Plan document. The WLAN Implementation Test Plan document defines and records the specific set of procedures and/or tests developed by Cisco and agreed to by the Customer that are necessary to test the Cisco product and to declare that it is ready for use.

Customer Responsibilities

4.2.5.2 No responsibilities defined in addition to section 4.2.1 above

4.2.6 Next generation Networks/Optical-DWDM

Cisco Responsibilities

4.2.6.1 No responsibilities defined in addition to section 4.2.1 above

Customer Responsibilities

4.2.6.2 Bit Error rate Testing must be of 1 hour duration or less

4.3 Infrastructure Implementation Execution

Cisco will install, configure, test and verify a Infrastructure implementation to ensure the implementation meets Cisco approved Customer's Infrastructure Detailed Design, Infrastructure Network Implementation Plan and Infrastructure Test Plan specifications

4.3.1 General Responsibilities

Cisco Responsibilities

4.3.1.1 Refer to the architecture/technology-specific sections in section 4.3.2 below in addition to the activities defined here.

4.3.1.2 Gather information on existing infrastructure and validate all implementation prerequisites for successful implementation.

4.3.1.3 Provide Customer with implementation activities, either on site or remote, which may include: a) verify all hardware/software versions and upgrade, as appropriate; and b) configure hardware and software.

4.3.1.4 Work with Customer to perform the execution of the infrastructure implementation tests as per the Cisco approved Customer's Infrastructure Implementation Test Plan document, if applicable

4.3.1.5 Document results of the execution of the Test Plan, if applicable

4.3.1.6 Recommend modifications to the Test Plan, test methodology and/or test execution based on the information gathered during this test execution phase, if applicable

4.3.1.7 Update Cisco approved Customer's Detailed Design to document implemented components, devices and applications to reflect the final "as-built" design, if applicable

Customer Responsibilities

4.3.1.8 Refer to the architecture/technology-specific sections in section 4.3.2 below in addition to the activities defined here.

4.3.1.9 Provide Customer stakeholders responsible for performing implementation planning tasks, which may include: a) assisting Cisco engineers in updating the Infrastructure Detailed Design; b) assisting Cisco engineers in updating any needed detailed implementation procedures and device-specific configurations; c) assisting Cisco engineers in updating test procedures as needed based on changes to the infrastructure Implementation Test Plan test cases; and d) defining and documenting failure recovery procedures.

4.3.1.10 Coordinate and develop with Cisco's input an implementation schedule that meets the Customer's change and release management processes and Cisco consultants' availability

4.3.1.11 Install the Cisco products in accordance with the Cisco product specification.

4.3.1.12 Provide all necessary specialist test equipment, unless otherwise agreed with Cisco.

4.3.1.13 Manage the delivery, installation, and configuration of equipment not provided by Cisco, that is required to work with, or act as, part of the Cisco-provided equipment.

4.3.1.14 Make available any personnel and/or access to End Customer site as necessary for Cisco to perform the infrastructure Implementation Test Plan test cases.

4.3.1.15 Manage any Customer internal change management procedures.

4.3.1.16 Provide access to network devices.

4.3.1.17 Provide physical access to facilities, remote network access (e.g., via IPSec VPN), relevant network documentation and device configurations.

4.3.1.18 Provide Customer stakeholders responsible for performing Implementation tasks, to include: a) assemble system components in staging area, if required; b) install hardware and software, if required; c) complete cabling and other physical connectivity, if required; d) implementing and configuring the detailed design with the assistance of Cisco engineers; e) executing the Implementation Plan Use test cases with the assistance of Cisco engineers; and f) evaluating the test results against acceptance criteria with the assistance of Cisco engineers.

4.3.1.19 Make any corrections to Customer-provided and/or installed equipment, as required.

4.3.1.20 If applicable, provide input and assist in updating the Cisco approved Infrastructure Detailed Design document with final, "as-deployed" information.

Deliverables

4.3.1.21 Infrastructure Test Execution Results

4.3.2 Additional Infrastructure Implementation Execution Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

4.3.3 Borderless Networks/Wireless-LAN Controller

Cisco will perform configuration, testing and verification of a Cisco WLAN Controller to ensure the implementation meets the Customer's Detailed Design and Implementation Plan specifications

Cisco Responsibilities

4.3.3.1 Provide a WLAN specialist on site for Cisco wireless LAN controller implementation support.

4.3.3.2 Recommend and configure the recommend wireless LAN controller and access point software release.

4.3.3.3 Assign access points to the required wireless LAN controller according to the design.

4.3.3.4 Configure security policy including IEEE 802.1x (or VPN) authentication to the RADIUS server and external database.

4.3.3.5 Configure radio management settings including RF interference detection, transmit power, and channel selection.

4.3.3.6 Configure security monitoring, including rogue AP detection, and intrusion detection.

4.3.3.7 Configure policy provisioning fault settings.

4.3.3.8 Provide support for the test and turn-up of wireless LAN controllers and access points.

4.3.3.9 Develop the following documentation: Cisco Wireless LAN Controller Configuration Record that includes the as built configuration.

Customer Responsibilities

4.3.3.10 Provide the wireless LAN controller hardware and software.

4.3.3.11 Rack, power, and physically install WLAN controller hardware.

4.3.3.12 Provide IP addressing information for the NCS and all Controllers.

4.3.3.13 Provide radio and Ethernet MAC addresses and IP address for each access point.

4.3.3.14 Provide read and read-write SNMP community strings.

4.3.3.15 Ensure that the access points are properly installed on the network with access to the controllers.

4.3.3.16 Provide Telnet/SSH/console or HTTPS access to the wireless LAN controllers.

4.3.3.17 Provide information on the required authentication, security, QoS, mobility, optimization, fault and configuration provisioning policies to be applied to each wireless LAN controller and access point.

4.3.3.18 Ensure any wireless test clients are upgraded to current/recommended driver revisions.

Deliverables

4.3.3.19 Wireless LAN Controller Configuration Record

4.3.4 Borderless Networks/Wireless-LAN NCS

If applicable, Cisco will perform configuration, testing and verification of a new Cisco Network Control System to ensure the implementation meets the Customer's WLAN Low Level Design and WLAN Implementation Plan specifications.

Cisco Responsibilities

4.3.4.1 Recommend NCS software release.

4.3.4.2 Recommend access point software release.

4.3.4.3 Add and configure wireless LAN controllers in the NCS.

4.3.4.4 Add and configure up to fifty (50) of APs and ten (10) floor plans in the NCS.

4.3.4.5 Configure NCS scheduled tasks, user accounts, and logging to match Cisco leading practice recommendations and the Customer environment.

4.3.4.6 Configure security monitoring, including rogue AP detection, and intrusion detection.

4.3.4.7 Configure policy fault monitoring settings.

4.3.4.8 Provide support for the test and turn-up of wireless LAN controllers and Access Points.

4.3.4.9 Demonstrate to Customer operations staff (or provide up to two hours of a knowledge transfer), how to use the key features of NCS and WLAN management including: a) Adding and configuring APs to NCS; b) Importing maps into the NCS; c) Monitoring of managed devices; d) Configuring wireless LAN controllers and access points; e) Administration

of scheduled tasks, user accounts and logging; and f) Using the NCS Map Editor to add building information (i.e., "walls")

4.3.4.10 Provide NCS Implementation Summary Checklist of Cisco NCS configuration activities.

Customer Responsibilities

4.3.4.11 Procure and provide the NCS software and licenses.

4.3.4.12 Provide a host server which meets all documented NCS installation requirements with operating system software installed.

4.3.4.13 Provide current, high-resolution softcopy drawings of Customer building layout for each floor (or area) requiring coverage in DWG, GIF, BMP, JPG, or PNG format. All drawings require accurate dimension markings.

4.3.4.14 Rack, power, and physically install NCS hardware.

4.3.4.15 Provide read and read-write SNMP community strings.

4.3.4.16 Add and configure all APs to NCS that have not be added by Cisco Advanced Services

4.3.4.17 Provide information on the required authentication, security, QoS, mobility, fault and configuration policies to be applied to each wireless LAN controller and access point.

4.3.4.18 Provide a verified list of the following information for each access point and each wireless LAN controller: a) IP address, subnet mask, and default gateway; b) Hostname; c) specific physical location description; d) Radio and Ethernet MAC addresses; e) SNMP community strings; and f) Username and password for Telnet (or SSH) access.

Deliverables

4.3.4.19 NCS Implementation Summary Checklist

4.3.5 Borderless Networks/Wireless-LAN 802.1x

If applicable, scope includes configuration, testing, and verification of authentication and encryption for a secure WLAN, including configuration of Cisco Secure Identity Services Engine (ISE) and a sample client device using WPA/WPA2-based client security will be provided

Cisco Responsibilities

4.3.5.1 Provide a WLAN security specialist on site for ISE implementation support.

4.3.5.2 Recommend the ISE software release.

4.3.5.3 Configure the ISE appliance for the Customer Network, if required.

4.3.5.4 Configure ISE to authenticate WLAN users to one of the following existing external directory services, if required: a) MS Active Directory; and b) LDAP

4.3.5.5 Integrate wireless LAN controllers or autonomous access points into the ISE as AAA Clients acting as IEEE 802.1x authenticators. Instruct Customer technical staff how to integrate additional APs, if required.

4.3.5.6 Configure ISE to authenticate WLAN clients using one of the following EAP types: a) EAP-PEAP (MSChapV2); b) EAP-FAST; c) EAP-PEAP (GTC); and d) EAP-TLS

4.3.5.7 Test and verify successful client authentication on a test AP and test WLAN client device for the one configured EAP type.

4.3.5.8 Configure test client by setting the radio and security parameters according the agreed upon design, including: Client name, SSID, authentication settings, data encryption, transmit power, data rates, and related settings.

Customer Responsibilities

4.3.5.9 If ISE appliance is used, provide the ISE appliance hardware and software.

4.3.5.10 If ISE software is used, provide a host server which meets all documented ISE installation requirements with operating system software installed.

4.3.5.11 Rack, power, and physically install ISE.

4.3.5.12 Provide an IP address, subnet mask, default gateway and SNMP community strings for the ISE.

4.3.5.13 Provide information on an external database such as Active Directory, NT, or LDAP (if a directory is used for user profile information) including, IP address and authentication credentials.

4.3.5.14 Provide ISE network connectivity to an existing external database, if required.

4.3.5.15 If required, provide a Certificate Authority (CA) and generate any and all server-side and client-side certificates needed for implementation.

4.3.5.16 Specify which EAP authentication type should be supported.

4.3.5.17 Provide the IP address and hostname of each wireless LAN controller or access point.

4.3.5.18 Configure the following on each wireless LAN controller or access point (unless access point implementation will be done by Cisco): a) RADIUS settings (including RADIUS shared secret); and b) IEEE 802.1x authentication and either TKIP or AES encryption.

4.3.5.19 Provide Telnet/SSH/console or HTTP access to each wireless LAN controller or access point.

4.3.5.20 Provide a test access point and a manufacturer supported test client device and test account to verify IEEE 802.1x authentication.

4.3.5.21 Provide the hardware and software for the test Client device, which must be capable of EAP authentication and limited to the following operating systems: a) Windows XP; b) Windows 7; and c) Mac OS X

4.3.5.22 For all client devices other than the test client device being installed by Cisco, perform the installation, configuration and support of all WLAN client cards and/or software supplicants.

Deliverables

4.3.5.23 Wireless Client Configuration Template

4.3.6 Borderless Networks/Wireless-LAN MSE

If applicable, Cisco will perform configuration, testing and verification of a Cisco Mobility Service Engine to ensure the implementation meets the Cisco approved Customer's WLAN Detailed Design and WLAN Implementation & Test Plan specifications.

Cisco Responsibilities

4.3.6.1 Recommend the MSE software release.

4.3.6.2 May include one or more of the following:

- Configure one Mobility Services Engine for Context Aware location including: a) Import the Mobility Services Engine into NCS; b) Enable and configure device tracking; c) Determine and configure polling intervals to optimize MSE and network resources; and e) Determine and configure basic and advanced server history parameters
- Configure one Adaptive Wireless Intrusion Prevention service including: a) Installation and configuration of Mobility Services engine to support wIPS; b) import the MSE into NCS ; c) enable the wIPS service and synchronize with Wireless LAN controllers; d) configure and enable designated access points for wIPS-optimized monitor mode; e) create a wIPS profile for adaptive intrusion prevention and optimize policy rules to improve performance based on environmental characteristics; and f) Apply profile and activate wIPS on participating Wireless LAN controllers .

4.3.6.3 Support the test and turn-up of the Mobility Services Engine.

4.3.6.4 Provide Mobility Services Engine Implementation Summary Checklist of Cisco MSE configuration activities.

Customer Responsibilities

4.3.6.5 Provide NCS with appropriate software licenses (either Windows or Linux) which must be installed and fully operational.

4.3.6.6 Upgrade software releases for the NCS and WLAN controllers to recommended releases for MSE support.

4.3.6.7 Provide the Cisco Mobility Services Engine.

4.3.6.8 Rack, power, and physically install Mobility Services Engine hardware.

4.3.6.9 Ensure that the Mobility Services Engine and NCS are physically co-located with high-speed network connection.

4.3.6.10 Ensure that the Mobility Services Engine is properly installed on the network with access to the NCS.

4.3.6.11 Provide current, high-resolution floor plans of each floor in DWG, GIF, BMP, JPG, or PNG format. Identify the location of existing APs on the floor plans.

4.3.6.12 Provide a verified list of the following information for each access point and each wireless LAN controller: a) IP address, subnet mask, and default gateway; b) Hostname; c) specific physical location description; d) Radio and Ethernet MAC addresses; e) SNMP community strings; and f) Username and password for Telnet (or SSH) access.

Deliverables

4.3.6.13 Mobility Services Implementation Summary Checklist

4.3.7 Borderless Networks/Wireless-LAN Guest Access

If applicable, Cisco will perform Implementation of a ISE Server to ensure the implementation meets the Customer's Detailed Design and Implementation Plan specifications for guest services.

Cisco Responsibilities

4.3.7.1 Provide Detailed Design and Configuration Assistance for a overall WLAN guest access solution.

4.3.7.2 Support the configuration and setup of the ISE Server to communicate with an existing WLAN controller or an existing ISE Server.

4.3.7.3 Basic configuration & customization of the ISE Server guest registration portal to allow an authorized internal user to register a guest user, including authentication against an employee directory.

4.3.7.4 Provide basic configuration of the user welcome page of the guest access gateway (WLC or ISE) including logo and acceptable use policy.

4.3.7.5 Provide system level testing and verification of the guest access solution.

Customer Responsibilities

4.3.7.6 Provide a single point of contact (such as a project manager) for all Guest Access and WLAN implementation related issues.

4.3.7.7 Customer is responsible for managing any internal change management procedures, providing access to network devices, and providing qualified engineers to assist with any configuration changes to production network devices required to enable guest access (including configuration changes to wired network infrastructure devices, wireless LAN controllers or access points).

4.3.7.8 Provide physical access to facilities, remote network access (e.g., via IPSec VPN), relevant network documentation and device configurations.

4.3.7.9 Customer is responsible for purchase and physical installation of all required networking elements.

4.3.7.10 Customer is responsible for providing any necessary software licenses.

4.3.7.11 Customer is responsible to manage and perform the installation, configuration and support of all WLAN client devices.

4.3.8 Borderless Networks/Wireless-LAN Guest Access with BYOD

If applicable, Cisco will perform configuration of an ISE for BYOD on wireless LAN guest access services.

Cisco Responsibilities

4.3.8.1 Provide Configuration Assistance for WLAN BYOD on guest access solution.

4.3.8.2 Support the configuration and setup of the ISE to communicate with an existing WLAN controller or an existing ISE Server.

4.3.8.3 Basic configuration & customization of the ISE guest registration portal to allow an authorized internal user to register a guest user, including authentication against an employee directory.

4.3.8.4 Provide basic configuration of the user welcome page of the guest access gateway (WLC or ISE) including logo and acceptable use policy.

4.3.8.5 Definition and configuration of necessary ISE profiles (not including Posturing) for Customer-specified user groups and endpoints for Bring-Your-Own-Device (BYOD) functionality.

4.3.8.6 Provide system level testing and verification of the guest access solution.

Customer Responsibilities

4.3.8.7 Provide a single point of contact (such as a project manager) for all BYOD, Guest Access and WLAN implementation related issues.

4.3.8.8 Customer is responsible for managing any internal change management procedures, providing access to network devices, and providing qualified engineers to assist with any configuration changes to production network devices required to enable guest access (including configuration changes to wired network infrastructure devices, wireless LAN controllers or access points).

4.3.8.9 Provide physical access to facilities, remote network access (e.g., via IPSec VPN), relevant network documentation and device configurations.

4.3.8.10 Customer is responsible for purchase and physical installation of all required networking elements.

4.3.8.11 Customer is responsible for providing any necessary software licenses.

4.3.8.12 Customer is responsible to manage and perform the installation, configuration and support of all WLAN client devices.

4.3.9 Next generation Networks – Optical- DWDM Fiber Characterization

If applicable, Cisco will perform Optical Time Domain Reflectometer (OTDR), Optical Return Loss (ORL), Polarized Mode Dispersion (PMD) and Chromatic Dispersion (CD) fiber characterization measurements on fiber spans for this network in a maintenance window.

Cisco Responsibilities

4.3.9.1 Conduct fiber characterization to include:

- (i) Testing of two physical fibers per span
- (ii) Bi-directional OTDR measurements at the following wavelengths: 1550nm and 1625nm
- (iii) Bi-directional loss readings at the following wavelengths: 1550nm and 1625nm
- (iv) Bi-directional ORL measurements 1550nm
- (v) PMD measurements at 1550nm
- (vi) CD measurements from 1520nm to 1620nm in 10nm increments

4.3.9.2 Provide real time feedback on any measurements taken that do not meet the criteria for hundred (100) gigabit networks. Provide to Customer in writing any discrepancies or deficiencies in the fiber span(s) that may have an adverse effect on the DWDM network. Provide suggested fix action and if measurement will be required post resolution and track resolution progress. Change management procedures will apply.

4.3.9.3 Document fiber test results in final report to include executive summary overview of the network.

4.3.9.4 Report differences in distance, loss and ORL measurements in comparison to the current design file for this network, make the appropriate changes to the design and report required or recommended changes in equipment configuration that need to be made as a result of the final measurements for optimal network performance

4.3.9.5 Dispose of unwanted equipment packaging in Customer supplied receptacles

Customer Responsibilities

For all spans, Customer will provide the following;

4.3.9.6 Ensure all termination points on the fiber span have been properly cleaned and scoped to ensure excessive loss has been eliminated from the fiber path. Customer is responsible for any intra facility and mid span connections

4.3.9.7 Provide on site access to OGX facilities when requested

4.3.9.8 Provide for quick remediation of any fiber deficiencies reported by Cisco so as not to delay or impede Cisco's ability to perform its duties. Delays due to remediation of the fibers or return trips are not covered.

4.3.9.9 Coordinate and direct efforts of 3rd party vendors who have authority to act and remediate fiber issues as applicable

4.3.9.10 Provide facility fiber bay assignments designated for providing connectivity from the backbone fiber plant to the 15454 equipment bay.

4.3.9.11 Provide backbone fiber topology map, to include termination FTP assignments, cable numbering plan and fiber ID for fibers to be used on this network (2 fibers) and desired fiber number to be used for transmit and receive direction. Information will include all end facility termination points and intermediate terminations (fiber pass-through) along the backbone fiber path. All intermediate mechanical terminations are to be identified. Customer is responsible to secure and provide to Cisco documentation from the facility owner no later than 10 days prior to the scheduled on site activities. Failure to provide the documents may result in a delay in the fiber characterization activity and implementation schedule, Change Management procedures may apply.

4.3.9.12 Provide labeling conventions used on Customer run fibers and cables to enable Cisco to determine far end connection location.

4.3.9.13 Provide for personnel on site to facilitate database backups and hand off of traffic carrying fiber to Cisco representatives to facilitate the characterization of the fiber. Customer to restore network upon completion of fiber characterization suite of tests.

4.3.10 Next generation Networks – Optical - DWDM

If applicable, Cisco will provide for turn-up and provisioning of each of the nodes to include the site .xml configuration file (Cisco Transport Planner design file site extract file) for this network

Cisco Responsibilities

4.3.10.1 Verify that system bays have been properly installed and power has been properly run to the systems.

4.3.10.2 Verify power at shelf level.

4.3.10.3 Unpack and slot all system cards into the shelves per the Customer approved site configuration drawings.

4.3.10.4 Verify/load the Software to be consistent with ordered optical products.

4.3.10.5 Fiber and cable up node and all ancillary devices.

4.3.10.6 Configure system according to the Cisco Transport Planner (CTP) design tool based on the network design and required specifications for this network.

4.3.10.7 Perform local loop through-node test to verify PCB functionality and through node loss.

4.3.10.8 Verify all components PCB's are operating in expected ranges.

4.3.10.9 Verify all added shelves are visible through the OSC and/or GCC channel and through Customer network surveillance portals as available and required by the test plan

4.3.10.10 Run Automatic Node Setup (ANS) program for power settings for mid-amplifier loss, amplifiers output send and receive levels for each node in the network as available

4.3.10.11 Cisco shall provide for best practices methodology per the Cisco Optical Installation and Test Manual and per the agreed on test plan. Turn up and Test. Customer shall be notified 48 hours in advance of intention to begin end-to-end test

4.3.10.12 Set up test analyzer(s) to test the individual low speed channel interface according to the test plan.

4.3.10.13 Provide test pattern and/or packet stream through low speed interface over the high-speed network through all Network Element (NE) on the ring for each add/drop site per the wavelength plan. Assumes end-to-end fiber connectivity and availability of transponders at all sites on the route based on the wavelength plan.

4.3.10.14 Does not include individual site to site tests for full ROADM functionality of Add, drop or express

4.3.10.15 Circuit tests will be performed on all equipped client interfaces for a period of one hour.

4.3.10.16 Bit Error Rate (BER) test will be inclusive of physical patch cord loops and daisy-chains throughout the network per the test plan. All loops and daisy-chain fibers will be connected at the transponder client side interface.

4.3.10.17 Record Site Inventory for all nodes in project scope

4.3.10.18 Record all site and system level alarm and conditions at the time of route test completion

4.3.10.19 Verify Customer Network Operations Control Center has visibility to Cisco Optical equipment via the Customer DCN network (if network connectivity is available at time of final test).

4.3.10.20 BER test results will be made available in soft copy format

4.3.10.21 Cisco will assist in developing the action plan for correcting deficiencies found during the Implementation.

Customer Responsibilities

4.3.10.22 Provide for available spares as required in case of failed hardware.

4.3.10.23 Make available dedicated personnel and/or access to Customer site as necessary for Cisco to perform the Implementation Test as required by the project plan.

4.3.10.24 Develop and implement action plan for correcting deficiencies, if any, as identified by Cisco related to the physical fiber network, which may degrade the 15454 network performance.

4.4 Infrastructure Post Implementation Support

Cisco will provide Infrastructure Post Implementation Support as part of the Infrastructure Implementation.

4.4.1 General Responsibilities

Cisco Responsibilities

4.4.1.1 Refer to the architecture/technology-specific sections in section 4.4.2 below in addition to the activities defined here.

4.4.1.2 Review of outstanding technical issues related to the Infrastructure implementation

4.4.1.3 Participate with Customer on post implementation status conference calls.

4.4.1.4 Collaborate with Cisco TAC to assist in escalated issues.

4.4.1.5 Provide proactive notification of any identified technical issues that could impact the Infrastructure implementation.

Customer Responsibilities

4.4.1.6 Refer to the architecture/technology-specific sections in section 4.4.2 below in addition to the activities defined here.

4.4.1.7 Provide Cisco with remote or on site access to network devices.

4.4.1.8 Provide all required password access to network devices.

4.4.1.9 Provide appropriate contacts as required during diagnostic activity.

4.4.1.10 Customer is responsible for opening Cisco TAC cases as required.

4.4.1.11 Provide on-site Customer personnel as required to participate in diagnostic activities.

4.4.1.12 Provide diagnostic tools, such as data collection tools ("Data Collection Tools") to diagnose any problems discovered during post production.

4.4.2 Additional Infrastructure Post Implementation Support Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

4.4.3 Data Center/Networking-Nexus

Cisco Responsibilities

4.4.3.1 No responsibilities defined in addition to section 4.4.1 above

Customer Responsibilities

4.4.3.2 No responsibilities defined in addition to section 4.4.1 above

4.4.4 Data Center/Storage-SAN

Cisco Responsibilities

4.4.4.1 No responsibilities defined in addition to section 4.4.1 above

Customer Responsibilities

4.4.4.2 No responsibilities defined in addition to section 4.4.1 above

4.4.5 Borderless Networks/Wireless-LAN

Cisco Responsibilities

4.4.5.1 No responsibilities defined in addition to section 4.4.1 above

Customer Responsibilities

4.4.5.2 No responsibilities defined in addition to section 4.4.1 above

4.5 Infrastructure Knowledge Transfer

Cisco will provide post production support as part of the Infrastructure Implementation.

4.5.1 General Responsibilities

Cisco Responsibilities

4.5.1.1 Refer to the architecture/technology-specific sections in section 4.5.2 below in addition to the activities defined here.

4.5.1.2 Provide information to Customer regarding any course pre-requisites for Customer personnel nominated to attend the Knowledge Transfer workshop.

4.5.1.3 Within five (5) business days following completion of the implementation/migration, reach agreement on the location and the commencement date of the Knowledge Transfer workshop(s).

4.5.1.4 Provide a knowledge transfer session on-site / remotely for the implementation, limited to one (1) business day of knowledge transfer within the scope of Services, for up to a maximum of twelve (12) participants.

4.5.1.5 Provide related knowledge transfer material, if any.

Customer Responsibilities

4.5.1.6 Refer to the architecture/technology-specific sections in section 4.5.2 below in addition to the activities defined here.

4.5.1.7 Provide a single, designated point of contact (such as a project manager or engineering team lead) for all Infrastructure knowledge transfer related issues

4.5.1.8 Provide further information about Customer's requirements to enable Cisco to deliver a more focused and tailored knowledge transfer workshop.

4.5.1.9 Provide Cisco with the names and basic profiles of personnel attending the Knowledge Transfer Workshop at least five (5) Business Days before the Knowledge Transfer workshop commence.

4.5.1.10 Within five (5) business days following completion of the implementation/migration, reach agreement with Cisco on the format, location and commencement date of the Knowledge Transfer workshop.

4.5.1.11 In the event that the Knowledge Transfer workshop(s) are held at the Customer facility, ensure that the facility is capable and has all the resources of supporting the Knowledge Transfer workshop, in Cisco's determination.

4.5.1.12 Ensure that Customer's personnel attending the Knowledge Transfer workshop meet all course pre-requisites identified by Cisco.

Deliverables

4.5.1.13 Related Knowledge Transfer in electronic or paper format if needed.

4.5.2 Additional Infrastructure Knowledge Transfer Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

4.5.3 Data Center/Networking-Nexus

Cisco Responsibilities

4.5.3.1 No responsibilities defined in addition to section 4.5.1 above

Customer Responsibilities

4.5.3.2 No responsibilities defined in addition to section 4.5.1 above

4.5.4 Data Center/Storage-SAN

Cisco Responsibilities

4.5.4.1 The Knowledge Transfer Workshop Session will cover topics on the operation of the Cisco MDS platform including hardware, software, security, disaster recovery, business continuity and management components

Customer Responsibilities

4.5.4.2 No responsibilities defined in addition to section 4.5.1 above

4.5.5 Borderless Networks/Wireless-LAN

Cisco will provide up to four (4) half-day knowledge transfer workshops

Cisco Responsibilities

4.5.5.1 Cisco will cover following knowledge transfer topics:

- Administration and Operation of the Wireless LAN Controller – Cisco Advanced Services can provide a knowledge transfer workshop on the operation and configuration of Cisco Wireless LAN Controllers including operation of WLAN's, security and client management, and maintenance.
- Basic Management and Troubleshooting of the Wireless Network – Cisco Advanced Services can provide a knowledge transfer workshop on the general management of the wireless network and understanding typical troubleshooting steps and methodologies for wireless LAN support.
- Network Control System (NCS) Session – Cisco Advanced Services can provide a knowledge transfer workshop on the operation and configuration of the Network Control System (NCS).
- Wireless LAN Guest Access – Cisco Advanced Services can provide a knowledge transfer workshop on the design, configuration and ongoing support of the Cisco Wireless LAN Controller Guest Access features and components.

4.5.5.2 Knowledge transfer will be exclusively lecture and equipment demonstration format for an audience of no more than 10 attendees

4.5.5.3 Cisco will determine Knowledge transfer format and delivery method.

4.5.5.4 Agree with Customer on Knowledge Transfer session location, audience and date.

Customer Responsibilities

4.5.5.5 No responsibilities defined in addition to section 4.5.1 above

4.5.6 Borderless Networks/Security

Cisco Responsibilities

4.5.6.1 No responsibilities defined in addition to section 4.1.1 above

Customer Responsibilities

4.5.6.2 No responsibilities defined in addition to section 4.1.1 above

4.5.7 Next Generation Networks – Optical- DWDM

Cisco Responsibilities

4.5.7.1 No responsibilities defined in addition to section 4.1.1 above

Customer Responsibilities

4.5.7.2 No responsibilities defined in addition to section 4.1.1 above

4.6 Infrastructure Implementation Plan Review

Cisco will review an existing Infrastructure implementation plan including implementation procedures, acceptance test criteria and use cases, device configurations, and implementation schedule and provide recommendations for improvement.

4.6.1 General Responsibilities

Cisco Responsibilities

4.6.1.1 Review Customer's existing Implementation Plan including acceptance test plan documentation.

4.6.1.2 Analyze the proposed Infrastructure Implementation Plan, test plan documentation, and Customer objectives. Areas to be evaluated may include: a) success criteria to validate the infrastructure implementation; b) implementation procedures; c) functional use cases to be tested; d) use of test tools and network or test equipment; e) device specific templates or configurations; f) acceptance test criteria, test cases, and test procedures; g) hardware and software components required for testing; h) failure recovery procedures; and i) implementation schedule.

4.6.1.3 Identify gaps between the Customer's Infrastructure Implementation Plan and the Customer's objectives in order to recommend targeted tests to meet the Customer's objectives.

4.6.1.4 Work with Customer to identify acceptance test cases needed to validate successful implementation.

4.6.1.5 Propose changes to the acceptance test cases and the required network or test equipment so that the test may be executed.

4.6.1.6 Provide direction and feedback regarding the detailed acceptance test plan and availability and use of test tools and network or test equipment.

4.6.1.7 Create the Infrastructure Implementation Plan Review Report which: a). assesses and document gaps between the Customer requirements, the existing Infrastructure implementation plan, and the existing Infrastructure Detailed Design; and b). makes recommendations for changes to Infrastructure implementation plan to allow for optimal Infrastructure implementation and performance.

4.6.1.8 Remotely present a summary of the analysis and recommendations of the Infrastructure Implementation Plan Review Report to the Customer key stakeholders and project sponsor.

4.6.1.9 Provide the Infrastructure Network Implementation Plan Review Report to Customer for review and approval in accordance with "Document Deliverable Review and Approval Process"

Customer Responsibilities

4.6.1.10 Provide Customer stakeholders responsible for performing infrastructure implementation planning tasks.

4.6.1.11 Provide a preliminary infrastructure implementation plan and test objectives.

4.6.1.12 Work with Cisco to define the scope for the infrastructure implementation plan.

4.6.1.13 Work with Cisco to select available scheduling for the use of acceptance test resources.

4.6.1.14 Work with Cisco to identify success criteria for the implementation including requirements for stability, availability, and performance.

4.6.1.15 Work with Cisco to develop detailed implementation procedures and device specific configurations that will be used to validate a successful implementation.

4.6.1.16 Work with Cisco to develop appropriate acceptance test criteria, test cases and test procedures that will be used to validate the implementation.

4.6.1.17 Work with Cisco to develop failure recovery procedures.

4.6.1.18 Work with Cisco to develop an implementation schedule that meets the Customer's change and release management processes.

4.6.1.19 Work with Cisco to analyze and develop detailed design and configuration recommendations.

4.6.1.20 Ensure that key Customer stakeholders and project sponsors are available to attend Cisco presentation of the infrastructure Implementation Plan Review Report.

4.6.1.21 Review and approve the Infrastructure Network Implementation Plan Review Report with Cisco in accordance with "Document Deliverable Review and Approval Process."

Deliverables

4.6.1.22 Infrastructure Network Implementation Plan Review Report

4.6.2 Additional Infrastructure Implementation Plan Review Activities and Deliverables by Architecture/Technologies

4.6.3 Borderless Networks/Wireless-LAN

Cisco Responsibilities

4.6.3.1 No responsibilities defined in addition to section 4.6.1 above

Customer Responsibilities

4.6.3.2 No responsibilities defined in addition to section 4.6.1 above

4.7 Infrastructure Implementation Support

Cisco will provide consulting support to Customer to implement Network Infrastructure in the Customer's environment and will provide review and validation of Implementation to be performed by the Customer

4.7.1 General Responsibilities

Cisco Responsibilities

4.7.1.1 Review and validate the activities and tasks associated with execution of the Infrastructure Implementation Plan.

4.7.1.2 Assist Customer to execute the implementation activities, which may include: a). implementation and configuration as specified in Cisco approved Infrastructure High Level Design, Infrastructure Low Level Design and Network Implementation Plan; b). executing the test cases identified in the Cisco approved Infrastructure Test Plan Document; c). documenting test results; d). evaluating the test results against success criteria; and e) Incident management for Cisco devices

4.7.1.3 Provide ad hock question and answer session during the proposed period of engagement.

4.7.1.4 Review documentation to ensure continuity of support.

Customer Responsibilities

4.7.1.5 Designate and ensure key Customer networking contacts are available for ongoing information gathering and feedback with Cisco.

4.7.1.6 Provide any documentation as requested by Cisco for review.

4.7.1.7 Provide reasonable access to Customer site(s) and facilities including, where applicable, computer equipment, applications, Internet, testing tools (unless specified), telecom equipment, and workspace. Customer shall provide proper security clearances and/or escorts as required to access the site for implementation support.

4.7.1.8 Ensure that all personnel responsible for the execution of the implementation activities are available to operate the Infrastructure during implementation support provided by Cisco

4.7.1.9 Customer is responsible for the execution of the Implementation and Migration Plan of Infrastructure including any physical cabling and racking and stacking related to the implementation.

Deliverables

4.7.1.10 No document deliverable for this 0 activity.

4.7.2 Additional Infrastructure Implementation Support Activities and Deliverables by Architecture/Technologies

4.7.3 Data Center/Networking-Nexus

Cisco Responsibilities

4.7.3.1 Provide support for implementation of Nexus platform in the scope.

4.7.3.2 Provide over-sight and review for execution of the implementation to assist Customer to follow the correct steps and sequence

4.7.3.3 Supervision of racking for optimal cooling of Cisco switches

4.7.3.4 Test Customer-specified network addresses (where allowed by Customer's security policies)

Customer Responsibilities

4.7.3.5 Customer is responsible for the integration of any third party software and devices, including any servers and applications

4.7.4 Data Center/Storage-SAN

Cisco Responsibilities

4.7.4.1 Provide support for implementation of Cisco MDS SAN platform in the scope

4.7.4.2 Provide over-sight and review for execution of the implementation to assist Customer to follow the correct steps and sequence

4.7.4.3 Supervision of racking for optimal cooling of Cisco switches

4.7.4.4 Test Customer-specified network addresses (where allowed by Customer's security policies)

Customer Responsibilities

4.7.4.5 Customer is responsible for the integration of any third party software and devices, including any servers and applications

4.7.5 Borderless Networks/Wireless-LAN

Cisco Responsibilities

4.7.5.1 Assesses gaps between technical design requirements and configuration specifications.

4.7.5.2 Provide recommend changes to WLAN configurations to allow for optimal WLAN implementation and performance.

4.7.5.3 Evaluate Customer network documentation and existing WLAN configuration information against Cisco leading practices and the Customer requirements and existing network infrastructure.

4.7.5.4 Provide remote WLAN configuration guidance

Customer Responsibilities

4.7.5.5 Integrate WLAN controllers into the security appliance as AAA clients acting as IEEE 802.1x authenticators.

4.7.5.6 Configure ISE to authenticate WLAN clients using one of these EAP types: a) EAP-PEAP (MSChapV2); b) EAP-FAST; c) EAP-Cisco (LEAP); d) EAP-PEAP (GTC); or e) EAP-TLS;

4.7.5.7 Test and verify successful client authentication on a test AP and test two WLAN client devices for the one configured EAP type.

4.7.5.8 Configure test client by setting the radio and security parameters according the agreed upon design, including: Client name, SSID, authentication settings, data encryption, transmit power, data rates, and related settings.

4.7.5.9 Provide knowledge transfer to Customer staff on software functionality and client adaptor settings.

4.7.5.10 Customer is responsible for managing any internal change management procedures, providing access to network devices, and providing qualified engineers to assist with any configuration changes to production network devices required to perform the wireless security implementation (including configuration changes to ISE, external database servers, LAN switches, routers, and other wired infrastructure components.)

4.7.5.11 If ISE appliance is used, provide the ISE appliance hardware and software. If ISE software is used, provide a host server which meets all documented ISE installation requirements. With operating system software installed.

4.7.5.12 Rack, power, and physically install ISE.

4.7.5.13 Provide an IP address, subnet mask, default gateway and SNMP community strings for the ISE.

4.7.5.14 Provide information on an external database such as Active Directory, NT, or LDAP (if a directory is used for user profile information) including, IP address and authentication credentials.

4.7.5.15 Provide ISE network connectivity to an existing external database (if required).

4.7.5.16 If required, provide a Certificate Authority (CA) and generate any and all server-side and client-side certificates needed for implementation.

4.7.5.17 Specify which EAP authentication type should be supported.

4.7.5.18 Provide the IP address and hostname of each wireless LAN controller or access point

4.7.5.19 Configure the following on each wireless LAN controller or access point a) RADIUS settings (including RADIUS shared secret); and b) IEEE 802.1x authentication and either TKIP or AES encryption

4.7.5.20 Provide Telnet/SSH/console or HTTP access to each wireless LAN controller or access point.

4.7.5.21 Add and configure wireless LAN controllers and Access Points in the NCS.

4.7.5.22 Configure NCS scheduled tasks, user accounts, and logging to match Cisco leading practice recommendations and the Customer environment.

4.7.5.23 Provide a host server which meets all documented NCS installation requirements, with operating system software installed.

4.7.5.24 Provide read and read-write SNMP community strings.

4.7.5.25 Provide a verified list of the following information for each access point and each wireless LAN controller: a) IP address, subnet mask, and default gateway; b) Hostname; c) specific physical location description; d) Radio and Ethernet MAC addresses; e) SNMP community strings; and f) Username and password for Telnet (or SSH) access.

4.7.5.26 Assign access points to the required wireless LAN controller according to the design.

4.7.5.27 Configure security policy including IEEE 802.1x (or VPN) authentication to the RADIUS server and external database.

4.7.5.28 Configure radio management settings including RF interference detection, transmit power, and channel selection.

4.7.5.29 Configure security monitoring, including rogue AP detection, and intrusion detection.

4.7.5.30 Configure policy provisioning fault settings.

4.7.5.31 Provide the wireless LAN controller hardware and software.

4.7.5.32 Rack, power, and physically install WLAN controller hardware.

4.7.5.33 Ensure that the access points are properly installed on the network with access to the controllers.

4.8 Infrastructure Site Survey

Cisco will conduct a physical site survey of the Customer location(s) in order to identify site readiness for Infrastructure to be deployed.

4.8.1 General Responsibilities

Cisco Responsibilities

4.8.1.1 If applicable, review Site Requirements Specification (SRS) document. SRS provides a detailed specification of the physical, electrical and environmental requirements that have to be met by Customer to enable the Cisco products to be installed.

4.8.1.2 If applicable, Create and provide Site Survey Report (SSR) document. SSR provides a check-list of all items that need to be considered prior to an installation taking place at the Customer location.

4.8.1.3 Perform site survey(s) at Customer site(s) in accordance with the Cisco provided Site Requirements Specification (SRS) document and the Cisco provided Site Survey Report (SSR). Cisco will dispatch a field engineer on-site to ensure all aspects of the Customer site are prepared for installation as per the specifications set forth by Cisco for the installation of the Infrastructure.

4.8.1.4 Provide recommendations for suitable environmental conditions (e.g. racking, floor space, and power supplies, air conditioning and site access) within fifteen (15) Business Days of completion of the site survey.

4.8.1.5 Provide a list of any Customer equipment that must be provisioned prior to implementation within ten (10) Business Days of the site survey completion and provide any recommendations, if applicable. Implementation means the physical installation plus logical activities that are required to place products into a Customer site, configure commission and connect them together to produce a working network

Customer Responsibilities

4.8.1.6 Designate and ensure key Customer networking contacts are available for information gathering and feedback with Cisco.

4.8.1.7 Provide any documentation as requested by Cisco for review within three (3) business days.

4.8.1.8 If applicable, ensure that any new telecommunication circuits are installed, soak tested and a test window scheduled to coincide with the completion of the implementation.

4.8.1.9 Provide reasonable access to Customer site(s) and facilities including, where applicable, computer equipment, applications, Internet, testing tools (unless specified), telecom equipment, and workspace.

4.8.1.10 Provide proper security clearances and/or escorts as required to access a site to provide Services.

Deliverables

4.8.1.11 Site Survey Report

4.8.2 Additional Infrastructure Site Survey Activities and Deliverables by Architecture/Technologies

4.8.3 Next generation Networks - Optical

Cisco Responsibilities

4.8.3.1 A comprehensive Site Survey will assess and provide the following information:

(i) Verification of equipment and office drawings furnished to Cisco.

(ii) Verification of space for new equipment installation in existing Customer supplied cabinets

(iii) Validation of work scope for both parties

(iv) Check list of deliverables for both parties verified and updated.

(v) Site readiness or status to begin installation of new equipment, discrepancy reporting

(vi) Site access verification for key or code locks

(vii) Product delivery requirements

(viii) Environmental conditions

(ix) Reporting of issues/constraints which may impede the installation the new 15454 MSTP equipment

(x) Validation of secured area

(xi) Provide a by site gap analysis report of items that do not meet requirements for site readiness and site deficiencies which may impede Cisco's ability to provide the Services.

Customer Responsibilities

4.8.3.2 Provide Cisco access to the equipment locations on the day of Site Survey.

4.8.3.3 Provide site/facility Access requirements procedures and notifications by site for general access into the facility and into the co-locate area. i.e. escorts, advance notice, (written, verbal), badge requirements, scan ID, access notification, etc). Identify locations were badges and or card access keys are issued.

4.8.3.4 Provide dimensional Floor plans with dimensions depicting the cabinet location w/bay numbering scheme information where applicable.

4.8.3.5 Provide configuration, equipment locations, e.g. AC power breaker assignments, FTP panels and/or connection list w/assignments for fiber connectivity to facility interfaces and backbone fiber network as part of site survey. Customer is responsible to secure and provide to Cisco documentation from the facility owner no later than 10 days prior to the scheduled site survey.

4.8.3.6 Provide front elevation drawings for desired equipment placement in cabinet to include front to back orientation

4.8.3.7 Provide shelf configurations showing desired placement of 15454 equipment modules within each 15454 shelf to be installed or confirm placement in CTP file is acceptable for deployment. Drawings are to be made available to Cisco prior to the scheduled on site node install activities for any desired changes to CTP file configuration layout

4.8.3.8 Provide IP, subnet mask, gateway address plan, TID (Telephone Equipment Id) and node name for each 15454 node in the network.

4.8.4 Next generation Networks / Routing & Switching

Cisco Responsibilities

4.8.4.1 No responsibilities defined in addition to section 4.8.1 above

Customer Responsibilities

4.8.4.2 Customer is responsible for existing cabling and tracing.

4.9 Infrastructure Staging

Cisco will inspect Cisco Infrastructure Products delivered to the staging location at Customer's site to ensure the Cisco products match the list of equipment ordered ("Bill of Materials" or "BOM").

4.9.1 General Responsibilities

Cisco Responsibilities

4.9.1.1 Create and provide Network Staging Plan (NSP) for the Cisco products if applicable.

4.9.1.2 Provide the NSP to Customer for review and approval

4.9.1.3 Inspect Cisco products delivered to the staging location to ensure the Cisco products match the BOM, Product Summary and conduct an inventory listing.

4.9.1.4 Build and test Cisco products, in accordance with the agreed NSP.

4.9.1.5 Provide the Staging Confirmation Certificate to the Customer to be reviewed and executed by the Customer PM or designated representative, upon completion of the staging.

4.9.1.6 If applicable, package and ship the staged Products to the Customer location(s).

Customer Responsibilities

4.9.1.7 At least five (5) Business Days prior to commencement of the staging services, provide Cisco with a suitable staging location and ensure that the location is available and ready for Cisco to perform the staging services.

4.9.1.8 Review and approve the NSP within five (5) Business Days.

4.9.1.9 Accept staged Products by signing the Staging Confirmation Certificate prior to dispatch of Products to Customer location(s).

4.9.1.10 Be responsible for any additional warehousing costs associated with delays caused by the Customer.

4.9.1.11 Be responsible for shipping and insurance charges, if any, to transport Products from the staging facility to the Customer installation sites.

Deliverables

4.9.1.12 Network Staging Plan (NSP) and Staging Confirmation Certificate

4.9.2 Additional Infrastructure Staging Activities and Deliverables by Architecture/Technologies

4.9.3 Next generation Networks - Optical

Cisco Responsibilities

4.9.3.1 At the Staging location, separate equipment into the appropriate site configuration bundles according to the agreed NSP

4.9.3.2 Receive Product shipments, inventory, provide inventory reporting for received, damaged and missing equipment

4.9.3.3 Review Packing Slip and inventory upon receipt

Customer Responsibilities

4.9.3.4 Provide per Customer site contact information for each site receiving the shipped Product

4.9.3.5 Coordinate with Cisco and arrange for receipt of delivery at Customer site on pre-scheduled days

4.9.3.6 Store Product in a secure and controlled area (until installation)

4.9.4 Next generation Networks / Routing & Switching

Cisco Responsibilities

4.9.4.1 At the Staging location at Customer site, separate equipment into the appropriate site configuration bundles according to the agreed NSP.

4.9.4.2 Receive Product shipments, inventory, provide inventory reporting for received, damaged and missing equipment

4.9.4.3 Review Packing Slip and inventory upon receipt

Customer Responsibilities

4.9.4.4 Customer is responsible for providing lift at staging location, if applicable

4.9.4.5 Customer is responsible for providing adequate power to support the equipment being staged

4.9.4.6 Provide per Customer site contact information for each site receiving the shipped Product

4.9.4.7 Coordinate with Cisco and arrange for receipt of delivery at Customer site on pre-scheduled days

4.9.4.8 Store Product in a secure and controlled area (until installation)

4.10 Infrastructure Installation

Cisco will rack, stack and install the Cisco products at the Customer Site(s) as per agreed Infrastructure Network Implementation Plan.

4.10.1 General Responsibilities

Cisco Responsibilities

4.10.1.1 Confirm Cisco products delivered to Customer locations related to this Service match the BOM, Product Summary, if applicable, and conduct an inventory listing

4.10.1.2 Install the Cisco products in accordance with the Cisco provided product specification.

4.10.1.3 Dispose of unwanted equipment packaging in Customer supplied receptacles

Customer Responsibilities

4.10.1.4 Manage delivery, installation, and configuration of equipment not provided by Cisco that is required to work with, or act as, part of the equipment that Cisco is providing.

4.10.1.5 Verify that all necessary cabling is available at least ten (10) Business Days prior to the installation.

4.10.1.6 Install and verify the operation of all necessary external communications equipment not provided by Cisco, at least ten (10) Business Days prior to the installation.

4.10.1.7 Prepare Customer site in accordance with the SRS and SSR, in particular, ensuring that suitable environmental conditions are met and adequate power is available and tested, at least ten (10) days prior to the installation.

4.10.1.8 Provide voice telephone line and number (near the Cisco products) for the installer to use if needed.

4.10.1.9 Ensure that correct physical cables are accessible to the cabinet, assume responsibility for the installation, labeling and testing of all cabling that Customer supplies.

4.10.1.10 Make any necessary corrections to Customer-provided and/or installed equipment.

Deliverables

4.10.1.11 No document deliverable for this 4.10 activity

4.10.2 Additional Infrastructure Installation Activities and Deliverables by Architecture/Technologies

4.10.3 Next generation Networks - Optical

Cisco Responsibilities

4.10.3.1 Unpack and check Product for visible signs of damage. Remove and discard all packing material.

4.10.3.2 Inventory the actual Product received at the Customer Site referencing the packing list generated by Cisco. An Inventory Checklist, highlighting any exceptions, will be signed by Cisco and a copy to be provided to Customer.

4.10.3.3 Mount Optical Networking equipment and ancillary shelves into existing cabinet/rack per site BOM.

4.10.3.4 Furnish and install AC Power cables to AC power receptacles within the same equipment rack where applicable.

4.10.3.5 Furnish and install DC Power cables to DC power top of the rack power distribution panel (PDP) within the same equipment rack where applicable.

4.10.3.6 Furnish and install #6 gauge wire to bond all shelves to the cabinet for frame ground

4.10.3.7 Dress, lace and label all Cisco installed intra-system fibers and cables, and equipment for this installation.

4.10.3.8 Install dress, secure, label and connect all Customer provided intra shelf MSTP fibers

4.10.3.9 Provide MOPs as required for any critical work to be accomplished by Cisco

4.10.3.10 Clean up work area and remove trash.

Customer Responsibilities

4.10.3.11 Customer shall have completed all site build-out and conditioning prior to the scheduled on site arrival of Cisco personnel to include placement and activation of AC receptacles

4.10.3.12 Install equipment pertinent to this network to be ready for use (including telecommunication services, third party equipment, etc.).

4.10.3.13 Provide pre-installed 7', 9' or 11' cabinet assembly at each site. Cabinets to be grounded to a CO ground source or equivalent. (Note: Installation in earthquake zones, high-risk areas, defined as Zones 3 and 4 require added support such as bracing and anchor bolts.).

4.10.3.14 Provide and install AC receptacles, main distribution panel breakers to supply power to the AC filter systems Receptacles are to be mounted within four (4) ft of the designated space for the rectifier shelf and labeled with the main breaker panel location, panel and breaker position. Supply one for each rectifier per the site BOM.

4.10.3.15 Provide and install DC Power Distribution Panel (PDP) at top of these racks and DC fuses as applicable.

4.10.3.16 Provide for front to back protected raceway for all cable classes as necessary to accommodate back to back installation of Cisco Product requiring inter-node connectivity

4.10.3.17 Provide Fiber management Panels for storage of excess fiber lengths.

4.10.3.18 Customer will run install dress and label all client side external fibers so that fibers are hanging and ready for attachment to MSTP equipment.

4.10.3.19 Furnish and install vertical Flex tube to connect to the horizontal raceway to provide for protected fiber runs external to the cabinet. Sufficient room must be allowed between bays or within cabinet space to allow for either straight slotted duct or flex duct to be mounted so as not impede on the space required for intra-node fiber or cabling.

4.10.4 Next generation Networks / Routing & Switching

Cisco Responsibilities

4.10.4.1 Cisco will install line-cards, if applicable.

4.10.4.2 Perform the implementation tests, including the verification of physical connectivity, hardware availability,

4.10.4.3 If the results of the implementation tests fail to meet Cisco expectations, Cisco shall develop an action plan that outlines any agreed deficiencies and sets a timeline for deficiency resolution and retest.

Deliverables

4.10.4.4 Implementation Verification Report

Customer Responsibilities

4.10.4.5 Customer is responsible for providing lift onsite, if applicable.

4.10.4.6 Customer is responsible for providing adequate power to support the equipment being installed.

4.10.4.7 Customer is responsible for cabling of line-cards.

4.10.4.8 Provide input necessary for Cisco to develop the criteria to be used in the implementation test.

4.10.4.9 Make available any personnel and/or access to Customer site as necessary to perform the implementation testing.

4.10.4.10 Assist in developing the action plan for correcting any agreed deficiencies in the expected results.

4.10.4.11 Make all corrections to Customer provided and/or installed equipment and services as required in the mutually agreed upon action plan

5.0 Application Supporting Services

Application Deployment includes the following supporting services for Remote Expert: site survey, implementation design development, implementation and test plan development, staging, implementation, post implementation support, and knowledge transfer.

5.1 Application Site Survey – Remote Expert

Cisco will conduct a site survey of the Customer location(s) in order to identify site readiness for the application to be deployed.

5.1.1 General Responsibilities

Cisco Responsibilities

5.1.1.1 If applicable, review Site Requirements Specification (SRS) document. SRS provides a detailed specification of the physical, electrical and environmental requirements that have to be met by Customer to enable the Cisco products to be installed.

5.1.1.2 If applicable, Create and provide Site Survey Report (SSR) document. SSR provides a check-list of all items that need to be considered prior to an installation taking place at the Customer location.

5.1.1.3 Perform site survey(s) at Customer site(s) in accordance with the Cisco provided Site Requirements Specification (SRS) document and the Cisco provided Site Survey Report (SSR). Cisco will dispatch a field engineer on-site to determine if all aspects of the Customer site are prepared for installation as per the specifications set forth by Cisco for the installation of the application.

5.1.1.4 Provide recommendations for suitable environmental conditions (e.g. racking, floor space, and power supplies, air conditioning and site access) within fifteen (15) Business Days of completion of the site survey.

5.1.1.5 Provide a list of any Customer equipment that must be provisioned prior to implementation within ten (10) Business Days of the site survey completion and provide any recommendations, if applicable. Implementation means the physical installation plus logical activities that are required to place products into a Customer site, configure commission and connect them together to produce a working network.

Customer Responsibilities

5.1.1.6 Designate and ensure key Customer networking contacts are available for information gathering and feedback with Cisco.

5.1.1.7 Provide any documentation as requested by Cisco for review within three (3) business days.

5.1.1.8 If applicable, ensure that any new telecommunication circuits are installed, soak tested and a test window scheduled to coincide with the completion of the implementation.

5.1.1.9 Provide reasonable access to Customer site(s) and facilities including, where applicable, computer equipment, applications, Internet, testing tools (unless specified), telecom equipment, and workspace.

5.1.1.10 Provide proper security clearances and/or escorts as required to access a site to provide Services.

Deliverable

5.1.1.11 Site Survey Report

5.1.2 Additional Application Site Survey Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

5.1.3 Collaboration/Business Video – Remote Expert

Cisco Responsibilities

5.1.3.1 Perform site survey(s) at each Customer Data Center site and two (2) branch sites in accordance with the Cisco provided Site Requirements Specification (SRS) document and the Cisco provided Site Survey Report (SSR).

Customer Responsibilities

5.1.3.2 No responsibilities defined in addition to section 5.1.1 above.

5.2 Application Implementation Design Development – Remote Expert

Cisco will create a Solution Design Document that outlines the architecture of the solution.

5.2.1 General Responsibilities

Cisco Responsibilities

5.2.1.1 Work with the Customer to understand their requirements and current environment, draft a Solution Design Document consisting of a High Level Design (HLD) and Low Level Design (LLD) of the implemented application.

5.2.1.2 Provide the Solution Design Document for review and approval in accordance with "Document Deliverable Review and Approval Process."

Customer Responsibilities

5.2.1.3 Provide IP addressing and subnet masks, network physical and logical schematics, required security policies and any other necessary data to Cisco prior to, or during the design workshop.If requested by Cisco, provide physical and logical network schematics for other network elements not included in the scope of this project.

5.2.1.4 Review and approve the Solution Design Document with Cisco in accordance with "Document Deliverable Review and Approval Process."

Deliverable

5.2.1.5 Solution Design Document

5.2.2 Additional Application Implementation Design Development Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

5.2.3 Collaboration/Business Video – Remote Expert

Cisco Responsibilities

5.2.3.1 No responsibilities defined in addition to section 5.2.1 above.

Customer Responsibilities

5.2.3.2 Provide Microsoft Active Directory integration information if required by Unified Contact Center Enterprise (UCCE), including Domain Controller address.

5.2.3.3 Creation of a UCCE Active Directory object and providing Cisco with admin rights to that object.

5.3 Application Implementation and Test Plan Development – Remote Expert

Cisco will create the Solution Implementation and Test Plan for the Customer, which will include detailed step by step implementation procedures, device configurations, test cases, and testing procedures for verifying implementation.

5.3.1 General Responsibilities

Cisco Responsibilities

5.3.1.1 Identify tools required for executing test cases.

5.3.1.2 Work with Customer stakeholders, Cisco will develop a Solution Implementation and Test Plan based on the Solution Design Document. The Solution Implementation and Test Plan will include: a) detailed step-by-step procedures for the solution implementation; b) recommended implementation and testing sequence and scheduling as per the timeline for the proposed Implementation; c) rollback procedures (if any); d) device configurations; and e) test cases for each testable solution requirement which include test case objectives, procedures, expected results, and pass/fail criteria.

5.3.1.3 Review and approve the Solution Implementation and Test Plan with Cisco in accordance with "Document Deliverable Review and Approval Process."

Customer Responsibilities

5.3.1.4 Designate Customer networking, security, operations and applications personnel to work with Cisco to develop and review the Solution Implementation and Test Plan.

5.3.1.5 Provide Cisco with existing network diagrams, configuration, company and/or industry specific standards.

5.3.1.6 Provide the following information within five (5) Business Days following Cisco's request: a). verified interface specifications and requirements. For example, cabling standards and specifications for interconnect of Cisco and Customer equipment; b) information on distance and interference limitations of interface cables to be used at installation; and c) test plan and interconnect process required by any third parties including but not limited to in country carrier/telco.

5.3.1.7 Provide the Customer's building layout, including the floor plan, cabling and power location for applicable site within five (5) business days following Cisco's request.

5.3.1.8 Review and approve the Solution Implementation and Test Plan with Cisco in accordance with "Document Deliverable Review and Approval Process."

Deliverable

5.3.1.9 Solution Implementation and Test Plan

5.3.2 Additional Application Implementation and Test Plan Development Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

5.3.3 Collaboration/Business Video – Remote Expert

Cisco Responsibilities

5.3.3.1 No responsibilities defined in addition to section 5.3.1 above.

Customer Responsibilities

5.3.3.2 No responsibilities defined in addition to section 5.3.1 above.

5.4 Application Implementation Execution – Remote Expert

Cisco will install, configure, test and verify an implementation to ensure the implementation meets the Cisco and Customer approved Solution Design Document and the Solution Implementation and Test Plan specifications.

5.4.1 General Responsibilities

Cisco Responsibilities

5.4.1.1 Gather information on existing infrastructure and validate all implementation prerequisites for implementation.

5.4.1.2 Provide Customer with implementation activities, either on site or remote, which may include: a) verify all hardware/software versions and upgrade, as appropriate; and b) configure hardware and software.

5.4.1.3 Work with Customer to perform the execution of the implementation tests as per the Cisco and Customer approved Solution Implementation and Test Plan.

5.4.1.4 Document results of the execution of the Solution Implementation and Test Plan.

5.4.1.5 Recommend modifications to the Solution Implementation and Test Plan, test methodology and/or test execution based on the information gathered during this test execution phase, if applicable.

5.4.1.6 Update the Solution Design Document to document implemented components, devices and applications to reflect the final "as-built" design, if applicable.

Customer Responsibilities

5.4.1.7 Provide Customer stakeholders responsible for performing implementation planning tasks, which may include: a) assisting Cisco engineers in updating the Solution Design Document; b) assisting Cisco engineers in updating any needed detailed implementation procedures and device-specific configurations; c) assisting

Cisco engineers in updating test procedures as needed based on changes to the Implementation and Test Plan test cases; and d) defining and documenting failure recovery procedures.

5.4.1.8 Coordinate and develop with Cisco's input an implementation schedule that meets the Customer's change and release management processes and Cisco consultants' availability.

5.4.1.9 Install the Cisco products in accordance with the Cisco product specification if Customer elects not to have Cisco install.

5.4.1.10 Provide all necessary specialist test equipment, unless otherwise agreed with Cisco.

5.4.1.11 Manage the delivery, installation, and configuration of equipment not provided by Cisco that is required to work with, or act as, part of the Cisco-provided equipment.

5.4.1.12 Make available any personnel and/or access to End Customer site as necessary for Cisco to perform the Solution Implementation and Test Plan test cases.

5.4.1.13 Manage any Customer internal change management procedures.

5.4.1.14 Provide access to network devices.

5.4.1.15 Provide physical access to facilities, remote network access (e.g., via IPSec VPN), relevant network documentation and device configurations.

5.4.1.16 Provide Customer stakeholders responsible for performing Implementation tasks, to include: a) install hardware and software, if required; b) complete cabling and other physical connectivity, if required; c) implementing and configuring the detailed design with the assistance of Cisco engineers; d) executing the Implementation Plan Use test cases with the assistance of Cisco engineers; and e) evaluating the test results against acceptance criteria with the assistance of Cisco engineers.

5.4.1.17 Make any corrections to Customer-provided and/or installed equipment, as required.

5.4.1.18 If applicable, provide input and assist in updating the Cisco approved Infrastructure Detailed Design document with final, "as-deployed" information.

Deliverable

5.4.1.19 Infrastructure Test Execution Results

5.4.2 Additional Application Implementation Execution Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

5.4.3 Collaboration/Business Video – Remote Expert

Cisco Responsibilities

5.4.3.1 Validate site readiness for data center, branch sites, and expert site.

5.4.3.2 Install and configure Data Center equipment, including but not limited to: custom Cisco VMware image on virtualized servers and VMware licenses, Cisco Unified Communications Manager and Unified Contact Center, Cisco Unified Intelligence Center, Cisco MediaSense, and Cisco Unified Border Element in accordance with the Solution Design Document and the Solution Implementation and Test Plan.

5.4.3.3 Design, if applicable, and install the graphics for the Remote Expert pod.

5.4.3.4 Install and configure expert site equipment, including: video endpoints, Cisco Agent Desktop/Finesse client, and DirectConnect software.

5.4.3.5 Install and configure branch kiosk equipment, including: video endpoints, Cisco IEC 4603, Collaboration Panel, Printer, and accessories in accordance with the Solution Design Document and Solution Implementation and Test Plan.

Customer Responsibilities

5.4.3.6 Furnish third-party branch kiosk solution components that meet Cisco Remote Expert requirements.

5.4.3.7 Furnish, install, and provision third-party expert/agent components that meet Cisco Remote Expert requirements, including but not limited to: desktop computers with Windows 7 Professional, Enterprise, or Ultimate 32-bit or Windows 7 64-bit running Windows 32-bit on the WoW64 emulation layer.

5.5 Application Post Implementation Support – Remote Expert

Cisco will provide up to four (4) business hours of Application Post Implementation Support per branch as part of the Application Implementation.

5.5.1 General Responsibilities

Cisco Responsibilities

5.5.1.1 Review of outstanding technical issues related to the application implementation

5.5.1.2 Participate with Customer on post implementation status conference calls.

5.5.1.3 Collaborate with Cisco TAC to assist in escalated issues.

5.5.1.4 Provide proactive notification of any identified technical issues that could impact the Infrastructure implementation.

Customer Responsibilities

5.5.1.5 Provide Cisco with remote or on site access to network devices.

5.5.1.6 Provide all required password access to network devices.

5.5.1.7 Provide appropriate contacts as required during diagnostic activity.

5.5.1.8 Customer is responsible for opening Cisco TAC cases as required.

5.5.1.9 Provide on-site Customer personnel as required to participate in diagnostic activities.

5.5.1.10 Provide diagnostic tools, such as data collection tools to diagnose any problems discovered during post production.

5.5.2 Additional Application Post Implementation Support Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

5.5.3 Collaboration/Business Video – Remote Expert

Cisco Responsibilities

5.5.3.1 No responsibilities defined in addition to section 5.5.1 above.

Customer Responsibilities

5.5.3.2 No responsibilities defined in addition to section 5.5.1 above.

5.6 Application Knowledge Transfer – Remote Expert

Cisco will provide post production support as part of the Application Implementation.

5.6.1 General Responsibilities

Cisco Responsibilities

5.6.1.1 Refer to the architecture/technology-specific sections in section 4.5.2 below in addition to the activities defined here.

5.6.1.2 Provide information to Customer regarding any course pre-requisites for Customer personnel nominated to attend the Knowledge Transfer workshop.

5.6.1.3 Within five (5) business days following completion of the implementation/migration, reach agreement on the location and the commencement date of the Knowledge Transfer workshop(s).

5.6.1.4 Provide a knowledge transfer session on-site / remotely for the implementation, limited to one (1) business day of knowledge transfer within the scope of Services, for up to a maximum of twelve (12) participants.

5.6.1.5 Provide related knowledge transfer material, if any.

Customer Responsibilities

5.6.1.6 Refer to the architecture/technology-specific sections in section 4.5.2 below in addition to the activities defined here.

5.6.1.7 Provide a single, designated point of contact (such as a project manager or engineering team lead) for all Infrastructure knowledge transfer related issues

5.6.1.8 Provide further information about Customer's requirements to enable Cisco to deliver a more focused and tailored knowledge transfer workshop.

5.6.1.9 Provide Cisco with the names and basic profiles of personnel attending the Knowledge Transfer Workshop at least five (5) Business Days before the Knowledge Transfer workshop commence.

5.6.1.10 Within five (5) business days following completion of the implementation/migration, reach agreement with Cisco on the format, location and commencement date of the Knowledge Transfer workshop.

5.6.1.11 In the event that the Knowledge Transfer workshop(s) are held at the Customer facility, ensure that the facility is capable and has all the resources of supporting the Knowledge Transfer workshop, in Cisco's determination.

5.6.1.12 Ensure that Customer's personnel attending the Knowledge Transfer workshop meet all course pre-requisites identified by Cisco.

Deliverable

5.6.1.13 Related Knowledge Transfer in electronic or paper format if needed.

5.6.2 Additional Application Knowledge Transfer Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

5.6.3 Collaboration/Business Video – Remote Expert

Cisco Responsibilities

5.6.3.1 No responsibilities defined in addition to section 5.6.1 above.

Customer Responsibilities

5.6.3.2 No responsibilities defined in addition to section 5.6.1 above.

5.7 Application Staging – Remote Expert

Cisco will inspect the Cisco products delivered to the staging location at the Customer's site to ensure the Cisco products match the equipment BOM.

5.7.1 General Responsibilities

Cisco Responsibilities

5.7.1.1 Inspect Cisco products delivered to the staging location at the Customer's site to ensure the Cisco products match the BOM, Product Summary and conduct an inventory listing.

Customer Responsibilities

5.7.1.2 At least five (5) Business Days prior to commencement of the staging services, provide Cisco with a suitable staging location and ensure that the location is available and ready for Cisco to perform the staging services.

5.7.2 Additional Application Staging Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

5.7.3 Collaboration/Business Video – Remote Expert

Cisco Responsibilities

5.7.3.1 Inspect and re-package staged branch kiosk equipment, including but not limited to: branch video endpoint, Cisco IEC6400 series control point, Collaboration Panel, and applicable branch accessories in accordance with the Solution Design Document and Solution Implementation and Test Plan.

5.7.3.2 Inspect and re-package expert equipment, including but not limited to: expert video endpoint, Cisco Agent Desktop or Finesse, Cisco Remote Expert Agent Desktop (READ), and DirectConnect.

5.7.3.3 Inspect and re-package data center equipment, including but not limited to: Cisco C-Series Servers, Cisco Customized VMware images, Cisco Unified Communications Manager, Cisco Unified Contact Center, Cisco Remote Expert Manager, Cisco Interactive Experience Manager, Cisco Unified Intelligence Center, Cisco MediaSense, and Cisco Unified Border Element.

Customer Responsibilities

5.7.3.4 Ship staged branch, expert, and data center equipment to the appropriate location(s).

5.8 Application MediaNet Readiness Assessment

The MediaNet Readiness Assessment is performed for Customer who is planning to deploy video or rich media applications over the enterprise IP network. Service validates the network is prepared to address the challenges posed by media rich applications. Each video application has unique requirements and characteristics and requires a network wide strategy to help ensure a high quality user experience. The MediaNet Readiness provides an assessment for the network infrastructure and its ability to transport the media rich applications to be deployed.

5.8.1 General Responsibilities

Cisco Responsibilities

5.8.1.1 Provide Data Collection Tools for the duration of engagement, including: Business Video Collector (installed on the Customer's laptop) and Video SLA Assessment Agent (installed on Customer's provided laptop).

5.8.1.2 As mutually agreed, between parties, Cisco may also utilize Customer provided scripts or tools for harvesting Network data.

5.8.1.3 Information gathering, during the information gather task Cisco will request from the Customer pertinent information such as service descriptions, channel counts, service scaling projects, networks, diagrams, network design information, and loop length.

5.8.1.4 Conduct project reviews as deemed appropriate by Cisco or as mutually-agreed to between Cisco and Customer.

5.8.1.5 Conduct on-site interviews will be conducted during a single, three day maximum visit to a single Customer site. Additional interviews and or/clarification which may be required wand will be conducted through telephone calls and email.

5.8.1.6 Assessment and Report preparation based on the information gathered, Cisco will assess the network with respect to its suitability for carrying video traffic. The assessment will consider:

i. Network capacity and performance
ii. Network availability
iii. Quality of Service
iv. Multicast protocols
v. Cisco will then write a report which includes;
vi. Executive summary
vii. Summary of the Network architecture
viii. Summary of the Representative Network
ix. Summary of the gathered information
x. Assumptions made by Cisco in performing the assessment
xi. Assessment results and recommendations

5.8.1.7 The assessment and the contents of the Report will be based on Cisco's current leading practices pertaining to the transport of video traffic across IP networks, and dependent on the completeness, clarity and accuracy of the information provided by the Customer. The Report is not a network design document, and therefore will not specify Bills of Material, network designs or IOS configuration files.

5.8.1.8 Report Delivery: Cisco will provide the report to the Customer as a soft-copy in Adobe PDF format, and will provide one on-site presentation and discussion of the report and its findings.

5.8.1.9 Deliver Cisco's Customer Satisfaction Survey documentation.

Customer Responsibilities

5.8.1.10 Customer shall designate a person to whom all Cisco communications may be addressed and who has the authority to act on all aspects of the Services.

5.8.1.11 Customer shall provide reasonable access to computer equipment, facilities, work space and telephone for Cisco's use during the on-site Services.

5.8.1.12 Unless otherwise agreed to by the parties, Customer shall respond within two (2) business days of Cisco's request for documentation or information needed for the project.

5.8.1.13 Customer will work with Cisco to finalize a mutually-agreeable plan and schedule for delivery of the Services.

5.8.1.14 Customer will provide in a timely, complete and accurate manner any information requested by Cisco which is pertinent to the delivery of the Services. Customer will assign engineers knowledgeable about the Network design and operation to participate in on-site interviews and to respond to Cisco's requests for additional information or clarification.

5.8.1.15 If the Services include the collection of Network Data by Cisco using Data Collection Tools, then Data Collection Tool set-up must be performed by the Customer with remote support provided by Cisco. Cisco will provide an installation questionnaire which must be filled out accurately and returned in a timely manner. Cisco will then provide, for the duration of the data collection task, the Data Collection Tools along with installation instructions. The collection of Network Data cannot commence until the Data Collection Tools have been installed and are operating correctly.

5.8.1.16 Customer shall ensure that Data Collection Tools 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.

5.8.1.17 At the end of the data collection period, Customer will uninstall Data Collection Tools and return them to Cisco as directed by the Cisco's primary contact. Customer acknowledges and agrees that Cisco shall retain full right, title and interest to the Data Collection Tools.

Deliverable

5.8.1.18 MediaNet Readiness Assessment Report

5.8.2 Additional Application MediaNet Readiness Assessment Activities and Deliverables by Architecture/Technologies

Refer to the applicable architecture/technology supported below.

5.8.3 Collaboration/Business Video – Remote Expert

Cisco Responsibilities

5.8.3.1 No responsibilities defined in addition to section 5.8.1 above.

Customer Responsibilities

5.8.3.2 No responsibilities defined in addition to section 5.8.1 above.

6.0 General Customer Responsibilities

6.1.1.1 All information (such as but not limited to: designs, topologies, requirements) provided by Customer is assumed to be up-to-date and valid for the Customer's current environment. Cisco Services are based upon information provided to Cisco by Customer at the time of the Services.

6.1.1.2 Customer shall ensure that contracts with its own vendors and third parties are fully executed and reflect the correct terms to enable Customer's business requirements to be met in full. In addition, Customer shall be responsible for all pay to and the work performance of, all non-Cisco entities assigned to, or working on this Service under this Service Description.

6.1.1.3 Customer acknowledges that the completion of Services is dependent upon Customer meeting its responsibilities as indicated herein.

6.1.1.4 Identify Customer's personnel and define their roles in the participation of the Services. Such personnel may include but is not limited to: architecture design and planning engineers, and network engineers.

6.1.1.5 Ensure Customer's personnel are available to participate during the course of the Services to provide information and to participate in scheduled information gathering sessions, interviews, meetings and conference calls.

6.1.1.6 Customer shall provide reasonable access to computer equipment, facilities, workspace and telephone for Cisco's use during onsite Service.

6.1.1.7 Unless otherwise agreed to by the parties, Customer shall respond within five (5) Business days of Cisco requesting documentation and/or information needed for the Service.

7.0 Project Assumptions and Exclusions

7.1.1.1 Services and service pricing are based upon the following assumptions and exclusions ("Assumptions"). Any additional costs identified as a result of deviations from these Assumptions will be managed through the Change Management Procedures specified below. The parties agree that any changes in the Assumptions may result in an adjustment in the pricing stated below.

7.1.1.2 Customer is responsible for determination and implementation of Customer design requirements and implementation of any recommendations provided by Cisco. Cisco recommendations are based upon information provided to Cisco at the time of the services. In no event shall Cisco be liable for the accuracy or completeness of the information contained in the Cisco recommendations.

7.1.1.3 Service Description should be read in conjunction with the Advanced Services General Assumptions and Exclusions document posted at: www.cisco.com/go/servicedescriptions which is hereby incorporated for reference. To the extent there is a conflict between the terms of this Service Description and such document, the terms of this Service Description shall control.

7.1.1.4 All services will be provided in the English language unless otherwise agreed to by Customer and Cisco.

7.1.1.5 Customer expressly acknowledges and agrees that Customer is solely responsible for determination and implementation of Customer's architecture solution requirements and implementation of any recommendations provided by Cisco. In no event shall Cisco be liable for the accuracy or completeness of the information contained in any report.

7.1.1.6 Services do not include software upgrade planning or execution. If needed, these can be quoted separately.

7.1.1.7 Services do not include the migration of existing endpoints to new infrastructure. This remains the responsibility of the Customer.

7.1.1.8 Services quote assume work is performed during Standard Business Hours.

7.1.1.9 Services do not include any additional applications not mentioned in Service Description. Assumes Customer's LAN/WAN meets or exceeds Cisco's published specifications for architecture solution.

7.1.1.10 Services may be performed at Cisco's discretion by Cisco or individuals, contractors, agent's suppliers or organizations employed or hired under contract with Cisco.

8.0 Document Deliverable Review and Approval Process

For Document Deliverables that are subject to review and approval from Customer, the parties will adhere to the following review and approval process:

8.1.1.1 Cisco will present the draft Document Deliverable to Customer when the document is ready for review and approval.

8.1.1.2 Customer shall review the draft Document Deliverable with Cisco, providing written comment or approval of the Document Deliverable within two (2) business days immediately after completion of such review.

8.1.1.3 If no comment or approval is received by Cisco within said time period, the Document Deliverable as provided by Cisco is deemed to accepted by the Customer.

8.1.1.4 If Customer provides comments, then Cisco shall address such comments in a timely manner and this process for review and approval will be repeated.

8.1.1.5 No further Services will be performed until the Customer's acceptance of Document Deliverables is received by Cisco.

8.1.1.6 If Customer nevertheless insists on Cisco performing any further Services, the relevant Document Deliverable as presented by Cisco will be deemed accepted.