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Service Description: Advanced Services – Fixed Price

Cisco ACI Advise and Implement Service - Standard
(ASF-DCV1-ACI-PDV-D)

This document must be read in conjunction with the <u>How Cisco Provides Services</u> document, which is incorporated into this document by reference.

Cisco ACI Advise and Implement Service - Standard

Service Summary
The Cisco ACI Advise and Implement Service - Standard covers the following areas of Application Centric Infrastructure ("ACI"):

- Project Management
- Data Center Assessment Services for ACI
    - ACI Adoption Assessment
- Design Services for ACI
    - ACI Design
    - Application Policy Template Design
    - Application Policy Creation
    - Design for up to one of the four following ACI features:
        - Multi-Pod
        - Multi-Site/MSO
        - Virtual Pod
        - Remote Leaf
- Data Center ACI Deployment Service
- Data Center Eco-System Integration Services
    - Virtualized Integration: Customer Environment Review
    - Layer 4-7 Integration Service
- ACI Infrastructure Migration

The scope of this service is limited to:
- 2 user created tenants within the ACI fabric. Each tenant will be limited to up to:
    - Six (6) bridge domains (BD's) (total deployment will not exceed six (6) BD's),
    - Two (2) contexts per tenant,
    - Twenty (20) End Point Groups (EPGs),
    - Thirty (30) contracts,
    - Ten (10) service graphs instances, within one (1) service graph template.
- Support of two applications
- 1 MSO created tenant pushed to no more than 2 sites.
    - Stretched BD with vMotion when MSO is deployed across 2 sites

Deliverables
1) Project Management Plan ("PMP")
2) Integration Pre-Requisite Checklist
3) ACI Requirements Document ("ARD") including ACI Adoption Strategy
4) ACI Design Document ("ADD") including
    (a) ACI Policy Proposal Report
    (b) ACI Deployment – AS-BUILT Document
    (c) Eco-System Integration Test Plan
    (d) MSO Deployment - AS-BUILT Document

Location of Services

Services shall be performed as a combination of remote from Cisco Site(s) and onsite at customer premises.

Project Management

Project management will be provided in conjunction with and is limited to the management of the Services and Deliverables as described herein.

Cisco Responsibilities

- Provide a Project Management Plan ("PMP"). PMP is a baseline document from which the Cisco Project Manager (PM) can manage deliverables, assess progress, and manage change management issues and any on-going questions.
- Deliver a weekly project status report to the Customer.

Data Center Assessment Services for ACI

ACI Adoption Assessment

Cisco Responsibilities:

- Conduct interviews and/or meetings with Customer in order to gather Customer's existing Data Center Infrastructure design information, such as:
  - Existing DC Network and wide area network (WAN) topology diagrams;
  - Functional requirements
  - Feature recommendations
  - Scalability design considerations
- Gather Customer's detailed service description, network design and engineering plan, and service test plan.
- Conduct one (1) Knowledge Transfer Session ("ACI Adoption Strategy Workshop") on site for a maximum of ten (10) Customer stakeholders to review business and technical requirements, over a period of up to two (2) Business Days
- Review the Customer's proposed adoption strategy in order to better understand their adoption requirements and assist them with identifying potential limitations.
- Adoption assessment will be limited to 6 VLAN's within the Customer network.
- Work with Customer to understand their application, server and network environment and to qualify the Customer's requirements for adoption.
- Create and document all the requirements information collected during this assessment in the ACI Requirements Document ("ARD").
- Provide the ARD to the Customer for their review and approval.

Customer Responsibilities:

- Provide all information and documentation on Customer's current design or design plans for the ACI infrastructure, as requested by Cisco.
- Provide the current change management and incident management practices for the applicable Data Center.

ACI Adoption Strategy Development

Cisco Responsibilities:

- Develop a high level ACI adoption strategy and document it in the ACI Adoption Strategy Report section within the ARD.
- Analyze the adoption requirements using the information gathered from the ACI Adoption Strategy Workshop.
- The analysis includes, but is not limited to, the following areas:
  - Hardware, Software and Feature analysis
  - Analyze information provided in ARD to discover any Hardware and Software features that are not supported in the ACI, such as MPLS, 10baseT ports etc.

- Evaluate the benefit and risks associated with integrating current infrastructure with the new ACI infrastructure that will be implemented. Analyze and recommended ACI integration options that include the following:
  - Current infrastructure
  - Intranet, Extranet, DMZ
  - Load balancer, Firewall
  - ACI policy modeling and adoption strategy:
  - Analyze the information gathered during the ARD phase and propose the available options as well as how those ACI policy model(s) could be adopted to meet customer needs.
  - Determine the necessity for swing kits (temporary infrastructure) to facilitate adoption within the constraints listed in the ARD.
  - Analysis of risks that would impede in executing adoption strategy (e.g. ability to meet deadline, ability to migrate within available downtime, timely readiness of target ACI, etc.);
  - Multipod and IPN requirements
  - Multisite and ISN requirements
  - Remote Leaf and/or Virtual POD
- MSO and the ISN including ISP and 3rd party requirements
- Document the findings of the analysis in the adoption strategy within the ARD.

Customer Responsibilities:

- Participate in the ACI Adoption Strategy Workshop, providing business and technical requirements for the Network.
- Provide current high-level design information, including: existing DC Network LAN/WAN topology diagrams, functional and feature requirements, and scalability design considerations.

Data Center Design Services for ACI

Infrastructure Design

Cisco Responsibilities:

- Work with the Customer to understand their current state of Data Center environment, including current network topology, intra-data-center connectivity, network sizing, virtualization, IT services, applications and systems hosted in the Data Center, including firewall, load balancing, clustering, availability etc.
- Gather and review the Customer information and requirements through both of the following: a) interviews (with a maximum of five (5) Customer key stakeholders; and b) a review of the completed Infrastructure Design Questionnaire Template(s).
- Work with Customer to define a list of Data Center(s) networks, and specific set of subnets, applications, systems and services that are in the scope of the service and document this information in the ARD.
- Create the ACI Design Document ("ADD"), which may include the following:
  - Design recommendations based on Cisco best practices.
  - Network logical and physical topology; documented IP addressing and VLAN scheme.
  - Other ACI configurations L2/L3 configurations, WAN/DCI integration. DCI Integration is limited to a single L3 out on a border leaf connecting to a Customer's DCI connectivity device.
  - Design recommendations and details such as Services, L2 and L3 connectivity to rest of the Data Center infrastructure.
  - Any Hardware and software recommendations for the design.
  - Operational recommendations based on Cisco best practices for logging, SNMP and other device alarms and traps for critical events such as redundancy and failover.
  - Determine requirements within the fabric for management. Options will be In-band or out of band management.
  - Multipod and IPN requirements
  - Multisite and ISN requirements
  - Remote Leaf and/or Virtual POD

- Determine any risks in the design and provide options for and against making changes to the detailed design to mitigate risks.
- Cisco will design the customer IPN/ISN network.
- Create and provide the Customer with the ADD.

Customer Responsibilities:

- Participate in the requirements workshop and/or interviews, as applicable.
- Complete and return the Infrastructure Design Questionnaire Template(s).
- Provide necessary information to Cisco such as design requirements, including the current IT services, applications and systems hosted in the Data Center, network sizing, intra-Data Center connectivity, virtualization, key application requirements and services including firewall, load balancing, clustering, availability etc.
- Provide information to Cisco including: existing LAN/WAN topology diagrams, functional and feature requirements, and scalability design considerations.
- Review the ADD with Cisco providing comments and approval.
- Customer must provide details of their current core routing design and how IPN/ISN connectivity will be possible over their core routed network.

Application Policy Template Design

Cisco Responsibilities:

- Work with the Customer to understand the current state of their Data Center environment, including business applications and corresponding infrastructure dependencies.
- Gather and review Customer information and requirements through both of the following: a) interviews (no more than five (5)) with Customer key stakeholders; and b) review of completed Application Policy Questionnaire
- Work with Customer to identify application components, and corresponding Data Center(s) networks, and specific set of subnets that were defined in the ARD.
- Review the application architecture and network topology details with the Customer to confirm known application and corresponding network components.
- Create the Application Policy requirements within the ARD and clearly document the overall scope.
- Review and approve the Application Policy requirements within the ARD.

Customer Responsibilities:

- Provide necessary information to Cisco such as current state of Data Center network environment, including business applications and corresponding infrastructure dependencies.
- Participate in the requirements workshop and/or interviews, as applicable.
- Work with Cisco to identify application components, and corresponding Data Center(s) networks, and specific set of subnets for this engagement.
- Work with Cisco to review network and server topology and strategy to identify touch points to efficiently collect network and server data.
- Work with Cisco to prioritize and define a list of critical applications for the new ACI fabric Proof of Delivery module (POD).
- Provide network and physical access to the Data Center as needed for Cisco to gather information pertinent to Service.
- Provide documented requirements (business and technical) and high-level Application, network architecture and Security specifications.
- Work with Cisco to identify network and server components for Cisco by providing the appropriate level of access to the network and server components to Cisco.
- Work with Cisco to identify standard or custom application characteristics in order to facilitate the grouping of application component interdependencies.

Application Policy Creation

Cisco Responsibilities:

- Conduct an analysis of the state of the Customer's existing business applications and their corresponding infrastructure dependencies.
- Review the IT Infrastructure Components and all other Customer supplied documentation in order to map the servers included within the Customer's network to which the servers are connected, or those that are to be moved to the new ACI Fabric.
- Review the IT Infrastructure Components Report and network topology information with Customer to validate known network components.
- Create and document the application profiles for applicable applications for the ACI Application Policy Proposal. This proposal will be documented in the ADD.

Customer Responsibilities:

- Provide Cisco with all Customer owned documentation as it applies to the infrastructure, servers, storage, and application environment.
- Make the necessary key personnel available to Cisco as needed to provide background information on components within the network.
- Identify standard or custom application characteristics in order to facilitate the grouping of application component interdependencies.

Data Center Deployment Services for ACI

Cisco Responsibilities:

- Provide Customer with the Integration Pre-Requisite Checklist. The Integration Pre-Requisite Checklist is a Cisco provided document that provides a detailed specification of the physical, electrical and environmental requirements that have to be met at the installation Site(s) to enable the Cisco Products to be installed.
- Install and configure the Application Policy Infrastructure Controllers ("APIC").
- Draft an As-Built Diagram for the ACI Design Document (ADD) The As-Built Diagram 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 ACI fabric connectivity and to declare that the Product is ready for use. Successful test execution will signify completion of the implementation of the product.
- Test connectivity in accordance with the As-Built Diagram from the ACI Design Document.
- Test all fabric devices and determine functionality in accordance with the Infrastructure section of the ACI Design Document.
- Cisco will provide guidance on how to implement IPN and ISN into the core routing network.

Customer Responsibilities:

- Complete the Integration Pre-Requisites Checklist, including any pre-requisite activities and provide to Cisco.
- Validate that all facilities, racking, cabling requirements are complete before Cisco personnel come on-site to start deployment activities.
- Customer is responsible for the implementation of the IPN and ISN networks into their core routing network.
- Customer must provide ESXI or MSO appliances with appropriate installed licenses for Cisco to configure as part of the deployment.
- vPod requires that Cisco have administration access to Customer's licensed ESXI instances and vCenter installations.

Data Center Migration Service for ACI

Infrastructure Migration Implementation: Plan Development

Cisco Responsibilities:

- Conduct one (1) Business Day session(s) to discuss with Customer the high level implementation strategy including any mutually agreed Customer specific requirements related to Fabric hardware and Software strategy on Switch and APIC Software recommendations.
- Working with Customer stakeholders, Cisco will analyze the current architecture design, Cisco created ACI Design Document, and develop a migration plan. The draft Implementation Plan shall contain:
  - Detailed step-by-step procedures for implementation.
  - Basic fabric configuration and connectivity readiness for workload migration.

- Review with Customer the Implementation Plan for comment and approval before it is formally completed and released.

Customer Responsibilities:

- Discuss High-level implementation strategy and provide any specific integration requirements for review with Cisco.
- Review the Implementation Plan with Cisco providing comment and approval before they are formally completed and released.

Infrastructure Migration Implementation: Setup and Configuration

Cisco Responsibilities:

- Verify physical connections and cable connections between fabric switches.
- Verify basic fabric configuration and connectivity by registering fabric switches to APIC and validating fabric setup.
- Verify fabric connectivity to the existing customer infrastructure, L4-7 devices, etc., as applicable.
- Verify implementation practices are aligned with Cisco best practices.

Customer Responsibilities:

- Schedule access for Cisco staff to the server and related equipment.
- Provide relevant passwords and authentication credentials to Cisco for provision of Services.
- Coordinate and manage internal resources across Customer network and application groups to support the installation of fabric switches and APIC in the lab as well as for integration with current DC infrastructure and L4-7 devices.
- Provide at least one (1) suitably skilled and trained resource to assist Cisco during the verification phases.

Infrastructure Migration Implementation: Testing Support

Cisco Responsibilities:

- Cisco to provide an appropriate test plan for use in integration activities performed under this Service.
- Provide up to a maximum of eight (8) hours of onsite support services.
- Provide up to a maximum of eight (8) hours remote support services ("Testing Support Services") spread over three (3) consecutive Business Days. The Testing Support Services will commence on the next Business Day following completion by Cisco of the software configuration.
- The Onsite / Remote Testing Support Services will be provided by a Cisco resource as consultative support, to resolve testing issues and provide troubleshooting assistance, which shall be limited to supporting test activities defined in the Cisco-supplied Test Plan in the Customer's lab environment.
- The Testing Support Services will only cover the standard product features as set out in the Test Plan.

Customer Responsibilities:

- Customer is responsible for the overall execution of the Test Plan, including scheduling, staffing, and coordination across all Customer network and application groups.
- Ensure an appropriate and timely testing window is available for provision of Testing Support Services.
- Provide remote access to the Customer's network as requested by Cisco
- Customer understands and agrees that it is responsible for the selected server installation and any server issues that arise during testing
- Customer must provide the following in order for Cisco to provide support services:
    - Access to the server and related third party software;
    - Relevant user accounts, passwords and authentication credentials;
    - Access to user account Active Directory data as required by the application.

Data Center Ecosystem Solution Integration Service for ACI

Virtualized Integration: Customer Environment Review

Cisco Responsibilities:

- As part of the ACI Adoption Strategy Workshop, Cisco will gather application requirements including any mutually agreed Customer specific requirements related to APIC Integration within the Customer's existing Layer 4-7 environment.
- As part of the workshop, Cisco will review the features of the target equipment, which require integration.
- Cisco will add their findings to the ARD, that shall contain:
    - Any mutually agreed Customer specific requirements.
    - Requirements for configuration and/or development.
- Identify connection methods the APIC will utilize in order to communicate with the hypervisor management platform

Customer Responsibilities:

- Ensure appropriate Subject Matter Experts attend the ACI Adoption Strategy workshop and provide input to the ARD
- Customer to advise Cisco of VLAN Pool numbers to be used by APIC for configuration
- Provide to Cisco the requested documentation prior to or during the discovery workshop which may include, but is not limited to:
    - Business & IT strategy and vision
    - Network Architecture
    - Systems management design documentation
    - Application services requirements.
    - Hypervisor Design (existing VMware design if any)
- Provide Customer's final requirements to Cisco five (5) Business Days prior to or during the discovery workshop. Customer and Cisco shall mutually agree on these requirements that shall be documented in the ARD.

Integration Activities

Cisco Responsibilities:

- Ensure that all required EPGs are configured for the required Virtual Machine Manager (VMM) domain in order to be assigned appropriately
- Configure APIC VMM environment to be able to communicate with the VMware's ESX vServer in the desired manner, and associate vCenter with the APIC in order to receive the appropriate configurations from regarding the virtual environment set up.
- Work with the Customer Server Administrators to request an appropriate change window in order to make necessary changes to the VMware ESX host environments (such as adding ESX hosts to the created Distributed Virtual Switch / Application Virtual Switch)

Customer Responsibilities:

- Provide Cisco with all required passwords and administrator level access to hypervisor platforms to allow for integration to the APIC

Test Plan Development Support

Cisco Responsibilities:

- Create a test plan document to define criteria to assess the environment
- Work with the Customer to determine that the correct inventory is being pulled from the configured VMM domain controllers
- Verify that all appropriate port-groups have been applied to the necessary DVS's
- Work with the Customer to migrate the designated workloads to the newly created network devices within the ESX hosts.

Customer Responsibilities:

- Work with Cisco to ensure that the correct inventory is being pulled from the configured VMM domain controllers

Layer 4–7 Integration

Integration Activities

Cisco Responsibilities:

- Responsible for Cisco supported and validated ecosystem connectivity based solutions only with eco-system vendors that have created a device package for integration into the APIC.
- Responsible for classical design option that entails connecting non-managed L4 devices to the fabric and is limited to 1 physical device pair for load-balancing & Security.
- Cisco will not be responsible for any programmability & scripting requirements (no SW development & customization effort).
- Provide requirements for the device/solution integration.
- Based on gathered requirements, provide required configuration to deploy services in a fashion consistent with the gathered requirements and application needs.
- Configuration of Cisco supported third party device integration packages. Configuration specifications for related features.
- Verify that traffic flows between application tiers flows according to defined requirements / application needs.
- Testing scope will be only applicable to the direct integration components – Example: Cisco will only test the scope of integration.
- ACI Design Document will include the following:
  - Requirements for the device integration
  - How to configure the integration
  - Configuration specification for related features
  - Validation of a working model

Customer Responsibilities:

- Define any application specific configuration required on the third party device.
- Ensure that appropriate licensing on the third party device is acquired and the third party device is capable of receiving configuration from APIC. This will include the following information:
  - Third party device reachability information.
  - Necessary credentials for configuring the third party device.
- Identify a third party device will be configured according to the requirements defined by APIC service integration guidelines, including, the device configuration that will be managed by APIC.
- Software upgrades to any 3rd party device.
- ACI Fabric must be ready and already deployed with APIC cluster configured in a steady state.
- Customer must provide the application profile for each supported application when the deployment is in Application Centric mode, otherwise the implementation will be in Network Centric Mode.
- Customer ACI solution is in a functioning state to support Ecosystem solution.
- All associated facilities requirements for 3rd party solution integration are completed.
- Cisco will only be responsible for the 3rd party solution that has been pre-validated by Cisco – any other dependencies with the 3rd party product will be Customer responsibility.
- Customer will be responsible for any dependencies outside of the solution in scope – example: staging compute, patching, etc.

MSO Basic Integration

Integration Activities

Cisco Responsibilities:

- Responsible for Cisco supported and validated ecosystem connectivity-based solutions only with eco-system vendors that have created a device package for integration into the APIC.

- Responsible for classical design option that entails connecting ISN devices to ACI Spines, or connecting Spine B2B.
- Cisco will <u>not be responsible</u> for any programmability & scripting requirements (no SW development & customization effort).
- Provide requirements for the device/solution integration.
- Based on gathered requirements, provide required configuration to deploy services in a fashion consistent with the gathered requirements and application needs.
  - Configuration specifications for related features
- Verify that traffic flows between application tiers flows according to defined requirements / application needs
- Testing scope will be only applicable to the direct integration components – Example: Cisco will only test the scope of integration.
- ACI Design Document will include the following:
  - Requirements for the device integration
  - How to configure the integration
  - Configuration specification for related features
  - Validation of a working model

Customer Responsibilities:

Customer is responsible for configuration of all inter-site connectivity in order to support MSO

Knowledge Transfer

Cisco Responsibilities

- Provide information to Customer regarding any course pre-requisites for all Customer personnel nominated to attend the remote knowledge transfer session. Cisco will determine an appropriate format and delivery method of the knowledge transfer remote session.
- Provide one (1) knowledge transfer session for up to 4 hours one of the following topics which may include ACI constructs, VMM, MSO Design Guidelines and the operations guide book delivered as part of this service for up to fifteen (15) participants.
- Reach agreement on the commencement date and topics for the Knowledge Transfer remote session within five (5) Business Days following completion of the Migration Plan Development.
- Provide related knowledge transfer material, if any.

Customer Responsibilities

- Provide specific discussion topics for the knowledge transfer session five (5) Business Days prior to the agreed date of the session.
- Provide names and profiles of up to three Customer participants for the knowledge transfer session at least five (5) Business Days before the knowledge transfer session commences.
- Agree with Cisco on the commencement date for the knowledge transfer session within five (5) Business Days following completion of the Configuration Migration Plan.
- Ensure that Customer's personnel attending the knowledge transfer session meet all course pre-requisites notified by Cisco to Customer.
- Ensure that Customer's facility contains all the resources required for supporting the knowledge transfer session per Cisco's determination.

General Customer Responsibilities

- Customer must provide sftp or scp server credentials and IP addresses.

General Customer Responsibilities

- Support services provided by Cisco comprise technical advice, assistance and guidance only.
- Use of Cisco's pre-packaged software scripts provided under this Service is governed by the software license terms in the Master Agreement between the parties.

- Customer understands and acknowledges that support of Cisco's pre-packaged software scripts is out of scope of this effort. Customer will need to purchase such support separately, either directly from the third party or resold by Cisco.