# Service Description: Cisco Optimization Service for Network Function Virtualization and Virtual Managed Services

This document describes Cisco Optimization Service for Network Function Virtualization (NFV). This includes NFV Infrastructure (NFVI) and Virtual Managed Services (VMS).

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

**Direct Sale from Cisco.** If you have purchased these Services directly from Cisco, this document is incorporated into your Master Services Agreement (MSA) or equivalent services agreement executed between you and Cisco. In the event of a conflict between this Service Description and your MSA or equivalent services agreement, this Service Description shall govern. All capitalized terms not defined in the Supplemental Glossary of Terms for Cisco Optimization Service for NFV at the end of this document have the meaning ascribed in the MSA or equivalent services agreement executed between you and Cisco.

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

This Cisco Optimization Service for NFV is intended to supplement a current support agreement for Cisco products and is only available where all Products in Customer's Network are supported by the necessary maintenance contracts for Cisco products or third party products. Cisco shall provide the Optimization Services described below as selected and detailed on the Purchase Order for which Cisco has been paid the appropriate fee. Availability of Services described herein and service delivery may vary by geographical region.

Please note that, unless specified otherwise, all of the Services below apply to NFV, NFVI and VMS. In some cases, Services are specifically intended for Cisco NFVI, Cisco VMS or Cisco VIM (Virtual Infrastructure Manager) only and are identified as such. Services applicable to all NFV/NFVI/VMS solutions are identified by "NFV" in the services below.

**Cisco Optimization Service for NFV**

**Service Summary**

Cisco Optimization Service for NFV has been structured to address the following post implementation Service programs:

**NFV Operations Transformation**

- Operations Strategy
- Management Solution Architecture Review
- Instrumentation Audit
- Operational Process or Runbook Update
- Enablement support for Operations Management

**NFV Adoption**

- On-site support
- Design Collaboration
- Support (advice only) for on-boarding Virtual Network Functions (VNFs) onto NFV platform
- Solution Customization (VMS only)
- Service Extension Configuration (VMS only)
- Periodic Knowledge Transfer sessions

**NFV Health Check**

- Software Recommendations for NFV/VMS
- Health Check
- Configuration Best Practices and Security Alerts
- Proactive Recommendation Implementation

**NFV OpenStack Lifecycle Management**

- Support for one update of OpenStack, Linux and CEPH software

**NFV Capacity and Performance Management**

- Audits for current capacity and performance
- Provide recommendations for capacity planning

- Support for Addition, Removal and Replacement of compute nodes

**NFV Security**

- Security Health Check
- Solution-related PSIRT Alerts
- Proactive PSIRT Alerts Mitigation Implementation

**Network Support**

- Setup support for CI/CD
- Software customization and support
- Test Automation Support
- Ongoing Network Support
- Unscheduled change support
- Scheduled Change Support
- Migration Planning & Implementation Support

**Program Management**

- Customer Kick Off Meeting
- 90 Day Planning
- Quarterly Business Review - QBR
- Weekly Meetings

**NFV & VNF Testing**

- Solution Test Strategy Review
- Solution Test Support
- VNF Test Strategy Review
- VNF Test Plan Development
- VNF Testing Support

**Cisco Responsibilities**

Cisco Optimization Service for NFV consists of the Services described below, which Cisco shall provide for the Customer's NFV Infrastructure during Standard Business Hours (unless stated otherwise). Cisco shall provide the following General Support provisions for all Services selected by Customer under the Cisco Optimization Service for NFV:

**General Support**

o Designate an engineer ("NFV Network Consulting Engineer") to act as the primary interface with the Cisco project manager appointed for the Customer.

o Participate in regular meetings with the Customer as required by the Cisco project manager either via phone or in-person to review proactive deliverables, activities and to plan for next quarter. In-person visits not to exceed eight (8) days in aggregate. Additional visits will be mutually agreed at Cisco's then-current travel and labor rates.

o Designate additional engineer(s) to work with the Cisco project management and the primary NFV Solution Integration Architect.

o Monitor a Customer-specific Cisco email alias to facilitate communication with primary NFV Solution Integration Architect as well as the engineers on the Cisco's NFV team.

o Engineer may utilize Customer provided data, scripts or internal tools to assist in collecting data from the Customer operations environment.

**NFV Operations Transformation**

**Operations Strategy**

o A review of current operations processes to provide recommendations to optimize operation of Cisco technology (network, storage and compute) to maximize IT Service availability.
- Kick off meeting to review service deliverable and methodology with key Customer stakeholders.
- Schedule and conduct onsite interviews.
- Review and analyze Customer provided documentation.
- Presentation and review describing findings, together with recommendations for changes to operations processes that will optimize the operation of Cisco technology to maximize IT service availability.

**Management Solution Architecture**

o Review current toolset to provide recommendations to optimize visibility and control of a virtualized data center environment. Takes a holistic view across all management tools used across the data center architecture. Areas of focus may include Event, Incident, Problem, Knowledge, Service Asset & Configuration, Change, IT Service Catalog, Performance and Capacity Management, Automation / Orchestration and Billing & Chargeback.
- Create a holistic view of the current IT services management toolset, and operational requirements.
- Analyze existing toolset's capability to meet operational requirements.
- Presentation and review describing findings, together with a roadmap for recommended changes to the toolset that will optimize the visibility and control of the data center environment.

**Instrumentation Audit**

- o Increase operations visibility of Cisco devices in the data center infrastructure by reviewing instrumentation related configuration and how instrumentation features are being used. Provide recommendations and leading practices to maximize operations visibility into the environment.
- Analyze device management feature configurations.
- Ascertain via meetings / interviews / documentation the instrumentation collection options deployed in the environment.
- Presentation and review describing findings, together with recommendations to further improve operational visibility into the environment.

**Operational Process or Runbook Update**

- o Assist in development / documenting operational run-book(s) or standard operating procedure(s) that addresses a specific operational or technical procedure for a given device / technology / IT service.

- Define operational function(s) and technology(ies) for which run-book(s) or standard operating procedure(s) will be produced.
- Document procedure(s) and/or process(es) for use in Customer environment.
- Deliver and review run-book(s) or standard operating procedure(s) with Customer.

**Enablement support for Operations Management**

These services provides remote and onsite technical assistance to aid a Customer with ongoing support for operations management processes and procedures, including:

- Define operational function(s) and technology(ies) for which run-book(s) or standard operating procedure(s) will be produced.
- Staff augmentation – onsite and remote (via Cisco WebEx)
- Review with Customer any findings or recommendations gathered or discovered during the support period.
- Cisco will provide technical advice and guidance to the Customer regarding operational aspects of their Cisco NFV solution.

**NFV Adoption**

**On-site support**

Provide support to assist Customer with general advice and guidance on Cisco recommendations around NFV solution.

o Designate an engineer ("NFV Network Consulting Engineer") to act as the primary interface with Customer for its NFV solution. This engineer would be available for five (5) days per week (pending local work restrictions) during Normal Business Hours excluding Cisco holidays, locally recognized country holidays, vacation, and training days.

o Participate in regular visits to the Customer either via phone, email or in-person to review proactive deliverables and activities and to plan for next quarter. In-person visits not to exceed five (5) days in aggregate. Additional visits will be mutually agreed at Cisco's then-current travel and labor rates.

o Ongoing support service's scope focuses on content and Cisco recommendations around NFV solution, including:

- Compute environment change support
- Configuration review
- Configuration implementation support
- Support during scheduled maintenance window to implement a new Virtual Machine (VM) and deploy VNF

o Participate in periodic conference calls (usually Bi-weekly or Monthly) at mutually agreeable time for an hour to review Customer's NFV solution status, address questions, planning and the services being provided.

o Monitor a Customer-specific Cisco email alias to facilitate communication with primary Cisco Engineer as well as any additional engineers on the Cisco NFV services team. Seek to respond to Customer emails within 24-48 hours with acknowledgement and start working with Customer on the plan to address the topic of the email.

o Cisco Engineer will provide general advice and guidance to lead the delivery of the NFV solution ordered by Customer.

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

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

**Design Collaboration**

The activities and deliverables for the Design Collaboration tasks are the following:

- Review of Customer's design requirements, priorities and goals and/or review of Customer's design document.
- Analysis of impact of new requirements on existing NFV infrastructure.
- Engage with Customer during design whiteboards and workshops, and providing NFV expertise.
- Providing design assistance in aligning NFV design with deployment architecture evolution.
- Design interlock sessions with Cisco engineering experts.

**Support (advice only) for on-boarding Virtual Network Functions (VNFs) onto NFV platform**

On-boarding refers to the activities necessary to validate the Customer-selected VNF with respect to Cisco NFV solution compatibility, investigate functional behavior and potential risks, assess implication of the VNF on the Cisco VNF solution, and to understand performance and scale characteristics of the VNF.

The activities and deliverables for VNF On-boarding support are the following:

- Analyze the specification documents related to the selected VNF and advise on potential issues in provisioning it on the NFV infrastructure.
- Review the Test plan for VNF On-boarding and provide troubleshooting support from the NFV perspective. Cisco will pass on information on any defects identified to the Customer.
- Review the design for virtual networking environment that will be used to provision the VNF in production.
- Advise on VNF on-boarding techniques supported by the Cisco VNF solution.

**Knowledge Transfer**

- Periodic Knowledge Transfer sessions.

**Solution Customization (VMS only)**

Note that this activity only applies to solutions that have been previously customized by Cisco Services in a SoW-based Transactional engagement – for example to enable changes to existing Service customizations and Customer-specific Service packs. This Service does *not* apply to the full development of new service packs.

Cisco will consult with Customer via a series of meetings to:

- Review Customer's Cisco VMS customization requirements, priorities and goals.
- Advise on feasibility of Cisco VMS customization based upon their existing solution customizations, together with the existing capabilities of the Cisco VMS SDK (Software Development Kit).
- Hold design interlock sessions with Cisco engineering experts.
- Engaging during design whiteboards and workshops, and providing VMS Customization expertise.
- Perform updates to existing Cisco VMS solution customization where feasible in line with identified customer requirements.

**Service Extension Configuration - to VMS Service Packs**

Note that this activity applies only to changes made to existing Cisco VMS Service Packs (including for example iWAN, SD-WAN or CloudVPN), which the Customer has purchased, which have been deployed previously in a Cisco Services statement of work transactional engagement.

Cisco will consult with Customer via a series of meetings to:

- Review Customer's Cisco VMS Service extension requirements, priorities and goals, based upon the existing Cisco VMS Service Packs deployed in the Customer's VMS solution, and advise on feasibility and complexity levels of the identified extensions.
- Hold design interlock sessions with Cisco engineering experts.
- Engage with Customer during design whiteboard discussions and workshops, and providing VMS Service Extension expertise.
- Perform updates to the supported Services within the existing Cisco VMS solution where feasible in line with identified customer requirements.

**NFV Health Check**

**Software Release Recommendations**

Cisco will consult with Customer via a series of meetings to develop an understanding of Customer's Software management requirements and practices such as standards, migration triggers, and implementation methodologies. The Software Recommendation Report NFV will contain overall strategy recommendations and may include, among other information informal support for incremental changes to device (specific to the Customer's Cisco NFV solution – including for example UCS, Nexus, OpenStack or Cisco VIM (Virtual Infrastructure Manager), or CEPH) configuration or architecture.

- Each report covers a single Software track and may include, among other information, the following:

- Analysis of Customer's current practices related to establishing and managing Software release standards and Software migration triggers.
- Analysis of Customer's current practices related Software selection, testing, staging, implementation, and troubleshooting.
- Assistance establishing Software track methodologies.
- Overall Software recommendation Customer should test and consider.
- Descriptions of new Software features.
- Unresolved Software bugs to which Customer may be exposed and if possible, appropriate workarounds.
- Periodic proactive critical bug analysis for identified Software track(s) or key Network infrastructure Software feature categories.
- Periodically updated follow-up reports, at a rate of no more than once per month, for up to 120 days from the original Software recommendation date.
- Assistance in defining feature requirements and performance/availability objectives as relates to Software strategy.

**Health Check**

Review current configuration of the Customer's NFV solution, as part of a periodic examination of post deployment, or audited, environments, that require additional examination guided by Customer needs and concerns within a single NFV solution environment. Periodic activities may include:

- Review and analysis of virtual machine, server, Network and storage performance and utilization including management switch, chassis and cabling configurations.
- Collect network switch and SDN controller, performance data, identify exception areas, and analyze device configurations and resource utilization parameters.
- Develop Stability Analysis and Recommendations report which typically includes summaries of the following network-level information: Software, Hardware, Memory, Environment, Protocol Analysis and Network Management.
- [Red Hat Linux – Linux, or Cisco VIM (Virtual Infrastructure Manager)] Using Automated tools collect and analyze the output to identify hardware degradation, file system issues, memory leaks of all the Linux systems in the NFV POD.
- [OpenStack – RedHat OpenStack or the Cisco Virtual Infrastructure Manager (VIM)] Run non-disruptive tests to validate OpenStack/VIM functionality; audit the usage of OpenStack/VIM Quotas; and analyze logs to OpenStack logs to identify issues.
- [Storage - CEPH] Analyze the capacity of the CEPH cluster, uneven data distribution, validate the health of all the OSDs/hard disks, network latency.
- Develop report on the environment as evaluated against best practices and expected solution response times, virtualized I/O, and protocol optimization.

**Configuration Best Practices and Security Alerts**

Review current configuration of the Cisco NFV solution components and surrounding infrastructure. Cisco will examine this information to provide recommendations based on leading practice configuration methodology and technical settings as appropriate. Activities may include but are not limited to:

- Review and analysis of virtual machine, server, Network and storage performance and utilization
- Investigate peak utilization trends and identify optimal configuration and architecture to meet these thresholds
- Identify underutilized assets and recommend optimal layout for highest compression ratios for virtual machines.
- Develop report on performance optimization.
- Recommendations such as system tuning, virtualized I/O, protocol optimization, and server response times.
- Review technical environment that may include: unified I/O, management switch, chassis and cabling.
- Configurations for optimum performance.

**Proactive Recommendation Implementation**

These services will provide advice, guidance and implementation support to help the Customer effect the recommendations made in the prior Configuration Best Practices and Security Alerts report.

This service will be provided by a Cisco subject matter expert and be delivered either on-site or remotely (Via Cisco Webex).

The following can be part of the pro-active recommendation implementation

- Baseline the current compute nodes, virtual environment
- Determine the changes to implement based on recommendations from the prior "Configuration Best Practices and Security Alerts" activity.
- Create a Methods and Procedures document where requested
- Implement the changes using Cisco Services tools and scripts, or by manual efforts
- Re-run the reports on as needed basis and compare the results with the previously established baseline.

- **NFV OpenStack Lifecycle Management**

**Support for one update of OpenStack, Linux and CEPH software.**

- Cisco will provide remote support during an appropriate change window to assist the customer in updating one release of OpenStack or Cisco VIM, Red Hat Linux (Linux), and CEPH, the OpenStack storage component.

- **NFV Capacity and Performance Management**

  Cisco will examine the capacity and performance aspects of the Customer's installed NFV solution and provide:

  - Review and analysis of current capacity and any associated performance implications.
  - Provide recommendations for capacity planning.
  - Support for the addition, removal and replacement of compute nodes within the installed Cisco NFV solution.

- **NFV Security**

Review aspects of security surrounding the Cisco NFV solution. Periodic activities performed may include:

- **Security Health Check**

  Review security aspects of the Customers NFV solution, including for example:
  - Develop security baseline based upon market best practices
  - Perform risk assessment and categorisation of the findings
  - Perform periodic review of the segmentation between the infrastructure and tenant space as well as between the tenants.
  - Review new NFV solution requirements and report on potential security implications.
  - Note that this will be performed only for Cisco-provided components of the Cisco NFV solution.

- Solution-related **PSIRT Alerts**

  - Analysis of how a Cisco Security Advisory (PSIRT Alert) may or may not affect Customer's NFV solution. Note that this will be performed only for Cisco-provided components of the Cisco NFV solution.
  - Recommendations to mitigate risk
  - List of affected or potentially affected Networking devices

- **Proactive PSIRT Alerts Mitigation Implementation**

  - Advice, guidance and implementation support to help the Customer implement PSIRT Alert Recommendations.
  - Note that this will be performed only for Cisco-provided components of the Cisco NFV solution.

**Network Support**

- Setup support for CI/CD
  - Setup guidance for document and image repository in support of CI/CD.
  - Provide advice, guidance and ongoing support for an existing CI/CD delivery mechanism, supporting Cisco software updates for the Customer's Cisco NFV Solution.
- Software customization support

- Provide support and troubleshooting assistance for Cisco customized software components in the Customer's NFV solution. Note this only applies to customization performed previously by Cisco Services.

- Test Automation Support:
  - Provide advice, guidance, and ongoing support to collaborate with the customer to develop test automation scripting for their Cisco NFV solution.

- Ongoing Network Support
  - Provide consulting expertise to address questions from the Customer on operational problems encountered during their Cisco NFV solution operation.

- Scheduled Change Support
  - Provide a Scheduled Change Support remote resource for critical scheduled changes. Cisco will make available, upon receipt of not less than twenty-one (21) days prior written request by Customer to Cisco, a designated support contact person who will be available to consult with Customer in major Cisco NFV solution changes (i.e. major Hardware upgrade(s), major site installation(s) or major configuration changes).
  - Customer must submit a detailed request and schedule to Cisco prior to any such activity, which may include:
    - Collaboration with Customer to evaluate the potential impact of the proposed changes.
    - Review the implementation procedures.
    - Remote assistance for Customer to help resolve problem related specifically to the change being made.
    - Assist with network and NFV solution changes during a major change to the production solution.

- Unscheduled Change Support
  - Provide a remote resource to join Cisco's Technical Assistance Center's (TAC) restoration of service activities for unplanned or unscheduled NFV or VMS solution failures. Customer must open a Service Request the Cisco TAC prior to contacting the Advanced Services Engineer. The support typically includes:
    - Technical evaluation of initial TAC problem diagnosis based on knowledge of Customer's environment
    - Help the Cisco TAC restore service

- Migration Planning Support
  - Provide migration-consulting services that support the migration to and/or implementation of a new NFV solution functional package. Cisco engineers do the following:
    - Review the requisite list of high level events, phased changes and activities in order to introduce new solution.
    - Identify solution dependencies and impact and recommend risk mitigation steps for the migration.
    - Review Methods and Procedure documentation for pre and post cut-over connectivity and testing.
    - Review master configuration templates for representative device or site types.
    - Review solution test procedures for the ready-for-use (RFU) solution testing.
    - Assist with migration change windows

- The Migration Planning Implementation and Support should be delivered when the Customer has designed and is ready to implement a new NFV solution functional package, and would like Cisco to consult on their existing migration plan.

- Migration Planning & Implementation Support – Provide advice and guidance to support the Customer with planning and subsequent implementation of a software upgrade to the Cisco NFV solution.

**Program Management**

- Customer Kick-Off
    - Conduct a kick-off Workshop to identify key stakeholders, review and agree on service scope and activities and discuss governance & communication process.
- 90 Day Planning
    - Develop and Update 90 day plan in consultation with customer on a quarterly basis
    - The 90 Day Plan will define and track quarterly delivery activities and plan for the Day 2 engagement
- Quarterly Business Review – QBR
    - Schedule with Customer up to four (4) quarterly visits per year (not to exceed eight (8) days in aggregate) to Customer's site to review Deliverables and activities and plan for the next quarter. Additional visits will be mutually agreed upon at Cisco's then-current travel and labor rates.
- Weekly Meetings – provide program management support for weekly project meetings, each up to four (4) hours in duration. These can be either on-site or remote (via Cisco Webex).

**NFV & VNF Testing**

This section includes services for both NFV solution as well as Virtual Network Function (VNF) testing. Note that the following Testing Services are only available to Customers who have previously engaged Cisco Services in a Transactional engagement that includes NFV solution testing and/or VNF testing.

- Solution Test Strategy Review – Review with the Customer their Test Strategy Plan and provide advice, guidance and recommendations on best practices for Test Strategy for Cisco NFV solutions.
- Solution Test Support – provide advice, guidance and testing support for ongoing testing of the Cisco NFV solution.
- VNF (Virtual Network Function) Test Strategy Review - Review with the Customer their VNF Test Strategy Plan and provide advice, guidance and recommendations on best practices for Test Strategy for Cisco NFV solutions.
- VNF Test Plan Development - Provide advice and guidance to help the Customer develop their VNF Test Plan for their Cisco NFV solution – including creation of appropriate test cases.
- VNF Testing Support – provide advice, guidance and testing support to assist the Customer in testing their chosen VNF on a Cisco NFV solution. This includes investigation of any deviations from expected testing results.

**Customer Responsibilities**

- **General Responsibilities**
    - Designate at least two (2) but not more than six (6) technical representatives in each area covered under NFV, who must be Customer's employees in a centralized operations support center (Customer's technical assistance center), to act as the primary technical interface to the NFV Network Consulting Engineer(s). Customer will designate as contacts senior engineers with the authority to make any necessary changes to the NFV solution configuration. One individual, who is a senior member of management or technical staff, will be designated as Customer's primary point of contact to manage the implementation of services selected under this Service Description (e.g., chair the weekly conference calls, assist with prioritization of projects and activities).
    - Ensure that facilities and equipment are available to host the meetings and update sessions, as required.
    - Ensure that relevant Customer subject matter experts attend meetings and reviews as and when required by Cisco.
    - Ensure key detailed design stakeholders and decision-makers are available to participate during the course of the service(s).
    - Provide reasonable remote electronic access to Customer's NFV solution to allow the NFV Network Consulting Engineer to provide support from outside of the Customer's premises (usually from Cisco premises).
    - If Cisco provides Data Collection Tools or scripts located at Customer's site, Customer shall ensure that such Data Collection Tools or scripts are located in a secure area, within a Network environment protected within a firewall and on a secure LAN, 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.

- In the event that Cisco provides Customer with Cisco scripts to assist with the implementation, problem diagnosis and/or resolution, Customer shall return the Cisco scripts upon request by Cisco or within five (5) days from termination of the Service.
- Provide the appropriate information about the NFV systems, configuration, and information of any new features being implemented as requested by Cisco.
- Provide information about operational and change management processes.
- Provide information about maintenance windows and any other constraints.
- Provide information about Customer's standard operating procedures related to business practices, its internal operational nomenclature, to allow Cisco to effectively communicate and discuss changes with Customer in the context of Customer's business environment.
- In the event the numbers of NFV systems within scope are altered after the Services selected under this Service Description have become effective, Customer is responsible to notify Cisco in writing within ten (10) days of the change. Cisco may require modifications to the fee if the NFV composition has increased beyond the original pricing quote for Services.
- Create and manage an internal email alias for communication with NFV Network Consulting Engineer.
- Retain overall responsibility for any business process impact and any process change implementations.

**NFV Operations Transformation**

**NFV Adoption**

- **Design Collaboration**

In addition to the General Responsibilities, Customer shall provide the following:

- Provide the design and process documents describing how the Customer NFV solutions are built and engineered to meet a specific set of technical requirements and design goals. The level of details must be sufficient to be used as input to review any of the services being delivered to the Customer.
- Provide or extract additional information required in the design effort (e.g. current and planned operational framework).

- **Periodic Knowledge Transfer sessions**

In addition to the General Responsibilities, Customer shall:

- Provide Details of Customer requirements on the NFV related topics that the Customer wants to see covered through transfer and mentoring together with background information on the skill sets of the audience.

- Solution Customization (VMS only)
- Service Extension Configuration (VMS only)
- Periodic Knowledge Transfer sessions

**NFV Health Check**

- Software Recommendations for NFV/VMS
- Health Check
- Configuration Best Practices and Security Alerts
- Proactive Recommendation Implementation

**NFV Health Check**

In addition to the General Responsibilities, Customer shall:

- Provide access to relevant networks, software systems and devices in order to allow Cisco to perform the health checks.
- Decide which Cisco recommendations they will act upon, and
- Execute upon these recommendations.

**NFV OpenStack Lifecycle Management**

- **Support for one update of Cisco OpenStack, Linux and CEPH software**

In addition to the General Responsibilities, Customer shall provide:

- Information on current operating system and application levels of the NFV solution components in scope of these services.
- Information on Customer business and technical requirements for new Software releases.
- Review details of planned changes with NFV Network Consulting Engineer.
- Information on Customer lab testing process.
- Information on Customer change control process.
- Perform any software installations.
- Install only Cisco recommended software versions on the Cisco NFV solution.
- Provide relevant and valid software licenses.

**NFV Capacity and Performance Management**

- **Support for Addition/Removal and Replacement of compute nodes**

In addition to the General Responsibilities, Customer shall:

- Perform all physical installation activities prior to commencement of the services.
- Perform any required software installations.

**NFV Security**

- Security Health Check
- NFV Solution-related PSIRT Alerts
- Proactive PSIRT Alerts Mitigation Implementation

In addition to the General Responsibilities, the following specific responsibilities apply:

- Supply Cisco with a work location with network connectivity to the internal network.
- Supply Cisco with a list of internal IP ranges to include in Assessment.
- Supply Cisco with a list of externally accessible IP addresses to be included in Assessment.
- Support Cisco's data collection activities as required to support specific Cisco analyses.

**Network Support**

- Setup support for CI/CD
- Software customization and support
- Test Automation Support
- Ongoing Network Support
- Unscheduled change support
- Scheduled Change Support
- Migration Planning & Implementation Support

In addition to the General Responsibilities, Customer shall:

- Provide access to relevant networks, software systems and devices in order to allow Cisco to perform any required analysis.
- Decide which Cisco recommendations they will act upon, and
- Execute upon these recommendations, including, for example:
  - Perform all physical installation activities prior to commencement of the services.
  - Perform any required software installations.
  - Perform any changes and implementation work agreed upon

**Program Management**

- Customer Kick Off Meeting
- 90 Day Planning
- Quarterly Business Review - QBR
- Weekly Meetings

In addition to the General Responsibilities, Customer shall:

- Appoint an overall program manager for the engagement
- Ensure relevant Customer subject matter experts, management, project and design leads participate in the meetings

**NFV & VNF Testing**

- Solution Test Strategy Review
- Solution Test Support

In addition to the General Responsibilities, Customer shall:

- Where necessary and previously agreed, provide appropriate test environment and relevant hardware and software.
- Ensure correct setup of the testing environment, including installation and configuration of supported and recommended NFV software.
- Document tests and test results in appropriate documents.
- Perform relevant software testing.
- VNF Test Strategy Review
- VNF Test Plan Development
- VNF Testing Support

In addition to the General Responsibilities, Customer shall:

- Provide information, specifications (including API guides) and other documentation concerning the Customer's chosen VNF(s).
- Perform any required demonstrations of the functional and non-functional features of the chosen VNF.
- Pass on any third-party software issues to those vendors.
- Perform relevant software testing.
- Perform relevant software installations onto the NFV infrastructure.
- Provide relevant valid software licenses for the VNFs.