

Service Description for Storage Implementation

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1 Service Overview

1.1 Service Product Definition

As specified in the service product portfolio, the Storage Implementation service covers low-complexity storage equipments (OceanStor S6900、OceanStor S5900、OceanStor S3900、OceanStor S2600).

1.2 Service Architecture

Huawei has a solid track record in delivering high-quality Storage Implementation service to customers. The following figure shows the architecture of the storage Implementation service.

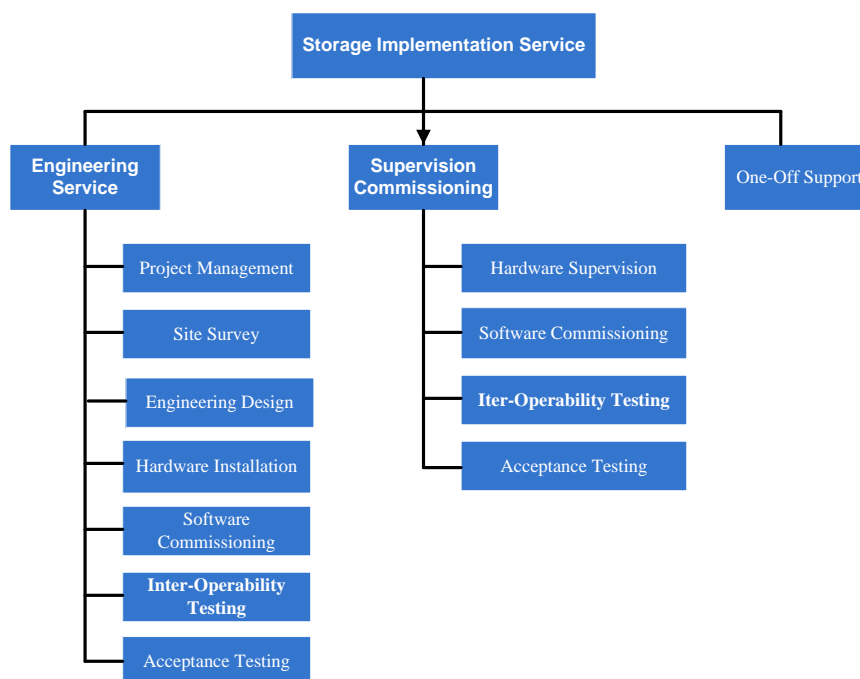


Figure 1-1: Architecture of the Implementation Service

2 Service Description

The Storage Implementation Service primarily consists of three parts: engineering service, supervision commissioning service, and one-off support service.

2.1 Engineering Service

Engineering service covers hardware installation, software commissioning, and project management. The engineering service is delivered quickly and securely by Huawei based on Huawei's corporate platforms and rich experience in engineering.

Specifically, the engineering service consists of seven parts: project management, site survey, engineering design, hardware installation, software commissioning, storage function testing, and acceptance testing.

2.2 Supervision Commissioning Service

Supervision commissioning service provides technical guidance for hardware installation and facilitates software commissioning. Huawei gives answers to product technology issues that may be raised during hardware installation, guides the installation personnel through hardware installation, verifies the installation, and helps the installation personnel correctly and quickly complete installation and commissioning tasks.

2.3 One-Off Support Service

When the customer encounters a problem and urgently needs to resolve it, Huawei can appoint experienced engineers to the customer's site, helping the customer quickly resolve the problem. This service is called one-off support service.

2.4 Service Details

2.4.1 Project Management

Definition

Project management is to monitor and manage all engineering implementation activities by following PMP and EPC processes and complying with standards in order to ensure that projects are completed as planned and required by the customer, without compromising project quality.

Content

Service Product	Service Module	Description	
Project management	Quality management	Project engineering quality management	
	Progress management	Project timetable management	
	Communication management	Supplier Communication	
		Subcontractor Communication	
		Customer communication	
	Cost management	Purchase cost	
		Labor cost	
	Scope management	Scope management	
	Technology management	Technology management	
	Risk management	Risk management	
Customer satisfaction management	Project service satisfaction management		

- **Quality management:** Manages the project implementation quality to ensure that the project is controllable and is implemented efficiently.
- **Progress management:** Estimates the project period, prioritizes activities, produces a progress plan and updates it, and controls the implementation of the plan.
- **Communication management:** Manages suppliers and subcontractors, communicates with the customer about project implementation, and summarizes experience.
- **Cost management:** Properly estimates the purchase and labor costs and monitors the project cost accounting to ensure that the implementation service cost remains at an appropriate level.
- **Scope management:** Manages the project scope based on Huawei's rich experience in engineering.
- **Technology management:** Manages technologies used in projects based on Huawei's technology platform and through Huawei experts who provide remote support.

- **Risk management:** Manages risks in projects, for example, giving early warnings.
- **Customer satisfaction management:** Regularly communicates with the customer about various affairs during the project implementation process to improve customer satisfaction.

Deliverables

Service Activities	Deliverables
Project management	Project quality assessment report
	Project experience summary

Responsibility Matrix

R: Responsibility

S: Support

Service Activities	Engineering Service		Supervision Commissioning Service	
	Huawei	Customer	Huawei	Customer
Project management				
Quality management	R	S	-	R
Progress management	R	S	-	R
Communication management	R	S	-	R
Cost management	R	S	-	R
Scope management	R	S	-	R
Technology management	R	S	-	R
Risk management	R	S	-	R
Customer satisfaction management	R	S	-	R

2.4.2 Site Survey

Definition

A site survey is to check the site conditions (including interior layout, power supply and cabling environments) based on the equipment configuration list.

Content

The site survey content varies with products.

Service Product	Service Module	Description
Site survey	Site survey	Survey of equipment layout
		Survey of the power supply to equipment
		Survey of the equipment monitoring system
		Survey of equipment transmission and cable connections

- Survey of equipment layout:** Makes a survey of the interior and exterior environments of the equipment room, the structure and dimensions of the equipment room, and existing equipment and auxiliary facilities (for example, whether the power supply, ground bar, air conditioner, cable tray, and elevated floor are available) to ensure that equipment can be successfully installed in the equipment room.
- Survey of the power supply to equipment:** Makes a survey of the power system in the equipment room to ensure that the power supply supports the equipment to be installed.
- Survey of the equipment monitoring system:** Makes a survey of the temperature sensor, humidity sensor, smoke sensor, door access system, water sensor, and mains cut-off protection system to ensure that the equipment to be installed can operate at a monitored environment.
- Survey of equipment transmission and cable connections:** Makes a survey of cable connections, trunk cable and interface types, cascading cables between irregularly deployed cabinets, and external network cables, as well as cable tray and Ethernet distribution frame or optical distribution frame provided by Huawei.

Deliverables

Service Activities	Deliverables
Site survey	Site survey report

Responsibility Matrix

Service Activities	Engineering Service		Supervision Commissioning Service	
	Huawei	Customer	Huawei	Customer
Site survey				
Coordination for site survey	S	R	-	R
Preparations for site survey conditions and coordination for site entry	S	R	-	R
Confirmation on the installation environment	S	R	-	R
Collection of data about the	R	S	-	R

Service Activities	Engineering Service		Supervision Commissioning Service	
	Huawei	Customer	Huawei	Customer
installation environment				
Site survey result and memorandum of understanding (MOU)	R	S	-	R

2.4.3 Engineering Design

Definition

Engineering design is to develop interior layout design plans and related regulations and produce design drawings based on the site survey report to provide guidance for equipment installation.

Content

The engineering design content varies with products.

Service Product	Service Module	Description
Engineering design	Engineering design	Design on equipment installation layout
		Design on equipment cable connections
		Calculation of the equipment's power consumption

- **Design on equipment installation layout:** Works out an equipment room layout diagram, a power port usage diagram, and a distribution frame port usage diagram to ensure that the project is implemented according to the design.
- **Design on equipment cable connections:** Works out a cable connection diagram for the equipment room, a ground bar usage diagram, an internal cable connection table for equipment, and an external cable connection table for equipment to ensure that the project is implemented according to the design.
- **Calculation of the equipment's power consumption:** Provides an equipment power consumption table to ensure that the power supply system in the equipment room supports the equipment to be installed.

Deliverables

Service Activities	Deliverables
Engineering design	Equipment room layout design report
	Equipment room cable connections design report

Responsibility Matrix

Service Activities	Engineering Service		Supervision Commissioning Service	
	Huawei	Customer	Huawei	Customer
Engineering design				
Power supply access	S	R	-	R
Ground system	S	R	-	R
Installation materials	S	R	-	R
Cable design and installation	R	S	-	R

2.4.4 Hardware Installation

Definition

Hardware installation is to install the equipment and auxiliary materials and power on them. The equipment includes the main equipment and other equipment delivered with the main equipment.

Content

The following table lists details of the hardware installation service.

Service Product	Service Module	Description
Hardware installation	Equipment installation	Subrack installation
		Board installation or adjustment
		Installation of optional modules
	Cable installation	Cable installation
		Cable adjustment
	Hardware self-check and power-on	Hardware self-check and power-on

- **Subrack installation:** Installs the subrack based on Huawei's engineering installation regulations and the customer's requirements.
- **Board installation or adjustment:** Installs or adjusts the board according to the planned board layout.
- **Installation of optional modules:** Installs optional modules such as SFP and XFP modules.
- **Cable installation:** Installs interconnection cables (only include the power cable, ground cable, not include the business cables).
- **Cable adjustment:** Adjusts cables that connect to the main equipment and auxiliary equipment.
- **Hardware self-check and power-on:** Completes the quality check on the equipment against the quality checklist and modifies those

unqualified items. After hardware installation is verified, powers on equipment and checks whether the indicators are functional.

Deliverables

Service Activities	Deliverables
Hardware installation	Packing list with the customer's signature
	Engineering quality inspection report
	Engineering MOU
	Hardware installation completion report

Responsibility Matrix

Service Activities	Engineering Service		Supervision Commissioning Service	
	Huawei	Customer	Huawei	Customer
Hardware installation				
Equipment supply	R	S	S	R
Supply of trunk cables and connections	R	S	S	R
Unpacking inspection	R	R	R	R
Confirmation on the packing list with signature	R	R	R	R
Equipment installation	R	-	S	R
Cable installation	R	-	S	R
Hardware self-check and power on	R	-	S	R
Output of hardware-related documents	R	-	S	R

2.4.5 Software Commissioning

Definition

Software commissioning is to perform software adaptation, configuration, and commissioning on the equipment to ensure that the equipment is operational. The software commissioning service primarily covers the following:

- Prepares the Storage planning and design documents.
- Prepares commissioning data, tools, and instruments.
- Applies for and installs the software version and license.
- Loads configuration data.
- Performs software self-check.

Content

Service Product	Service Module	Description
Software commissioning	Local commissioning	Software installation
		Data loading
		License loading
		Software self-check

- Local commissioning:** Commissions a single network element (NE), mainly including the following activities:
 - Prepares the Storage planning and design documents.
 - Prepares equipment commissioning data (Customer), and commissioning instruments.
 - Applies for software version and license.
 - Adapts to software version.
 - Loads data (including license).
 - Performs software self-check.
- Software installation:** Loads or upgrades software version by following related documents.
- Data loading:** Loads and activates the NE configuration file by following related documents.
- License loading:** Loads and activates the license file by following related documents.
- Software self-check:** Performs software self-check by following related software quality check documents (you can download these documents from Huawei's Support website) to ensure that software commissioning is complete and correct. After self-check, provides a completion report if required.

Deliverables

Service Activities	Deliverables
Software commissioning	Software version and license file
	Self-check report

Responsibility Matrix

Service Activities	Engineering Service		Supervision Commissioning Service	
	Huawei	Customer	Huawei	Customer
Software commissioning				
Preparations for equipment commissioning and system commissioning data	-	R	-	R

Service Activities	Engineering Service		Supervision Commissioning Service	
	Huawei	Customer	Huawei	Customer
Preparation for commission tools and instruments	R	S	R	S
Request for and verification of software version and license	R	-	R	S
Software version adaptation	R	S	R	S
Data loading (including license)	R	S	R	S
Software self-check	R	S	R	S

2.4.6 Inter-Operability Testing (IOT)

Definition

IOT is to test the connectivity between interfaces of different pieces of equipment. The IOT service covers the following:

- Enables interfaces.
- Performs protocol interoperability.
- Performs service interoperability.
- Performs NMS interoperability.

Description

Service Product	Service Module	Description
Inter-Operability Test (IOT)	Interface interoperability	Interoperability of physical interfaces
		Interoperability of protocol interfaces
	Service interoperability	Policy configuration
		Business Testing
		High availability
NMS interoperability	Network Management System	

- **Interface interoperability:** Performs IOT on various types of interfaces of the equipment to ensure that the functions of the equipment are operational.
 - **Interoperability of physical interfaces:** Interoperates Ethernet interfaces and POS interfaces to ensure that these interfaces are in the UP state.
 - **Interoperability of protocol interfaces:** Ensures that all routing protocols can be properly negotiated.

- **Service interoperability:** After the interface interoperability and preliminary Storage commissioning are complete, interoperates service interfaces of different systems to ensure that services are functional.
- **NMS interoperability:** Interoperates entity management systems and NMSs to ensure that they are functional.

Deliverables

Service Activities	Deliverables
IOT	Test report

Responsibility Matrix

Service Activities	Engineering Service		Supervision Commissioning Service	
	Huawei	Customer	Huawei	Customer
IOT				
Preparations for equipment commissioning and system commissioning data	-	R	-	R
Preparation for transmission resources	-	R	-	R
Customer communication	-	-	-	-
IOT	R	S	R	S

2.4.7 Acceptance Testing

Definition

Acceptance testing is to perform a function test and an acceptance test of equipment hardware and software to ensure that the equipment:

- Meets the customer's most basic requirements for equipment running and maintenance are able to carry the customer's services.
- Runs stably for a long time at the customer's live network.

The acceptance testing service covers:

- Basic acceptance of hardware functions
- Basic acceptance of software functions
- Basic acceptance of services

Description

Service Product	Service Module	Description
Acceptance testing	Basic acceptance of hardware functions	Acceptance of basic hardware functions and redundancy

Service Product	Service Module	Description
		design
	Basic acceptance of software functions	Acceptance of software test cases
	Basic acceptance of services	Acceptance of basic services through test cases
	Output of acceptance documents	Acceptance document archiving

- **Basic acceptance of hardware functions:** Performs an acceptance test of the basic hardware functions based on the test cases agreed with the customer or the customer's designated third party to ensure the following:
 - The quantity and type of the equipment hardware are the same as those stipulated in the contract.
 - The equipment hardware is functional.
 - The protection and redundancy functions of the equipment hardware are functional, and the equipment can operate stably for a long time.
- **Basic acceptance of software functions:** Performs an acceptance test of the basic software functions based on the test cases agreed with the customer or the customer's designated third party to ensure the following:
 - The equipment software, license, and system processes are functional.
 - Basic functions necessary for equipment running and maintenance, such as maintainability, performance statistics, and redundancy protection, are provided normally.
- **Basic acceptance of services:** Performs an acceptance test of the basic services based on the test cases agreed with the customer or the customer's designated third party.
- **Output of acceptance documents:** Produces professional acceptance documents based on test cases so that the customer can easily archive them and further know about the equipment through them. These documents contain details of test cases (such as test purpose, prerequisites, procedures, expected test result, and governing protocols and standards) and signature table.

Deliverables

Service Activities	Deliverables
Acceptance test	Acceptance test guide
	Acceptance test report and acceptance signature table

Responsibility Matrix

Service Activities	Engineering Service		Supervision Commissioning Service	
	Huawei	Customer	Huawei	Customer

Service Activities	Engineering Service		Supervision Commissioning Service	
	Huawei	Customer	Huawei	Customer
Acceptance testing				
Preparation for tools	R	S	R	S
PAC application	R	-	R	-
Defining of acceptance criteria, test items, and fault classification	R	R	R	R
Acceptance test based on the acceptance criteria agreed on by both parties	S	R	S	R
Confirmation on the acceptance result with signature	R	R	R	R
Output of acceptance documents	R	-	R	R

2.4.8 Hardware Supervision

Definition

Hardware supervision is to provide technical guidance during equipment installation. Huawei gives answers to product technology issues that may be raised during hardware installation, guides the installation personnel through hardware installation, and helps them correctly and quickly complete installation tasks.

Description

Service Product	Service Module	Description
Hardware supervision	Unpacking inspection	Providing guidance on unpacking the goods
		Confirming with the unpacking inspection result
	Technical guidance on hardware installation	Delivering necessary technical support and respond to on-site hardware installation engineer
		Constructing exemplary sites
	Guidance on resolving hardware installation issues	Providing necessary technical support to the hardware personnel and responding to their technical inquiries
		Reporting and resolving

Service Product	Service Module	Description
		shipment and goods issues
		Helping resolve goods damage issues during installation
	Guidance on verifying the quality of hardware installation	Helping resolve other technical issues related to hardware installation
		Providing guidance on verifying the quality of hardware installation and offering quality criteria

- **Unpacking inspection:** Provides guidance to the hardware installation personnel to unpack and inspect the goods, confirms with the customer about the unpacking inspection result, and resolves goods issues.
- **Technical guidance on hardware installation:** Gives answers to technology issues that may be raised during hardware installation through telephone or onsite support. The mode to be used, telephone or onsite support is determined based on project conditions and the customer's requirements.
- **Guidance on resolving hardware installation issues:** Provides guidance on resolving goods issues, for example, poor quality, during hardware installation and gives answers accordingly.
- **Guidance on verifying the quality of hardware installation:** Provides guidance on verifying the quality of hardware installation to ensure that the quality meets the customer's requirements.

**NOTE**

1. The hardware supervision service only provides technical support and does not cover detailed hardware installation operations and activities.
2. The hardware supervision service and the hardware installation service must not be provided simultaneously.
3. The engineering service does not contain any supervision service. The Supervision commissioning service only provides the hardware supervision service.