



# Introduction to Huawei Storage Planning and Design Tool (LLDesigner)



# Foreword

- This course describes how to use LLDesigner, a Huawei storage planning and design tool, to plan and design [enterprise storage](#), [mass data storage](#), and [edge data storage](#)<sup>[Note 1]</sup>.

Note 1: LLDesigner supports the following storage products: OceanStor Dorado series, OceanStor converged storage series, OceanProtect series, OceanStor Pacific series, OceanStor 100D series, FusionStorage series, and FusionCube series.



# Objectives

- Upon completion of this course, you will be able to understand:
  - Enterprise storage planning and design
  - Mass data storage planning and design
  - Edge data storage planning and design

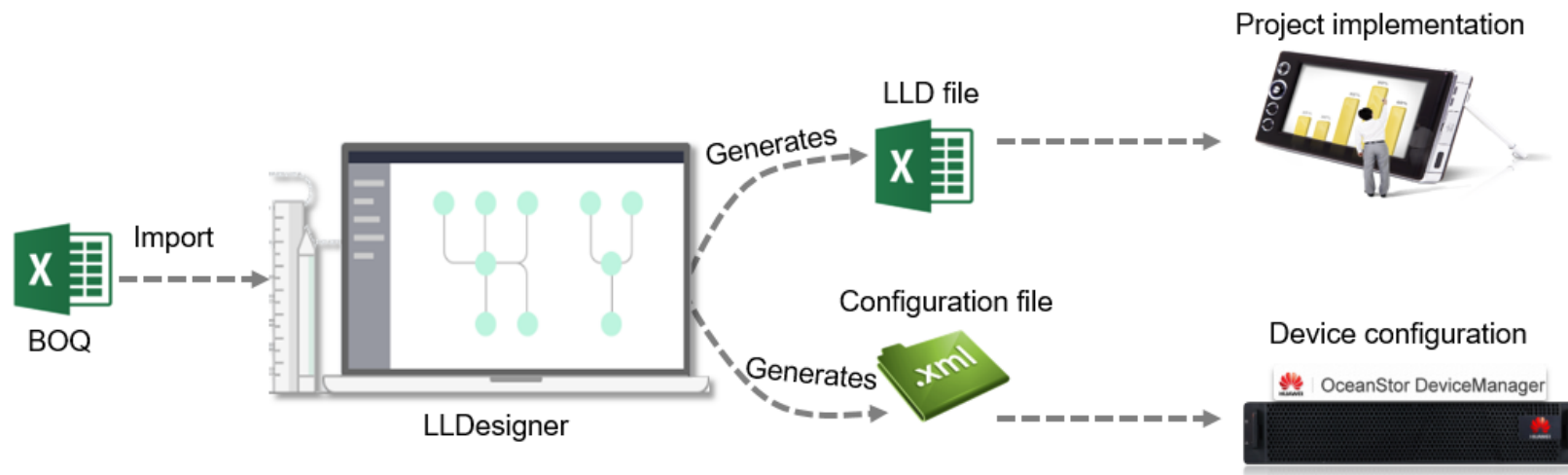


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1. **LLDesigner Overview**
2. Enterprise Storage Planning and Design
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4. Edge Data Storage Planning and Design
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# LLDesigner Overview

LLDesigner provides functions such as hardware configuration, device networking, and resource provisioning to quickly complete product planning and design.



## Wizard-based

Provides guidance for the entire process from networking to service planning.



## Visualized

Provides Web-based hardware configuration, device networking, and resource provisioning.



## Standardized

Provides a unified LLD file, simplifies project parameter configuration, and shortens the project planning and design duration by **90%**.



## Automated

Quickly generates LLD files and offline configuration files. Basic service configuration is completed within **10 minutes**.

# LLDesigner Overview

## ① Three domains

- Enterprise storage
- Mass data storage
- Edge data storage

## ② Four creation modes

- Custom device
- Adding disk enclosures
- BOQ import
- Template

## ③ Use permission

- Huawei engineers (application not required)
- Partner engineers
- Device users
- Partner users

The screenshot displays the LLDesigner interface within the eService portal. The main heading is "Create LLD Without a Template". Below this, there are three tabs: "Enterprise Storage (OceanStor V3/V5 series, Dorado V3/DoradoV6 series)", "Cloud Storage (OceanStor Pacific)", and "Hyper-converged Infrastructure (FusionCube)".

Under "Create LLD Without a Template", there are five cards, each with a "Customize Devices to Create LLD" icon and a "Help Documentation" link. The cards are:

- 1. "Customize Devices to Create LLD. Select hosts, switches, and storage devices to create the LLD." (Video Guides, Help Documentation)
- 2. "Add Disk Enclosure. Import the configuration information of the storage device." (Video Guides, Help Documentation)
- 3. "Import BOQ to Create LLD. Import BOQ to create the LLD automatically." (Video Guides, Help Documentation)
- 4. "Customize Devices to Create LLD. Fill in the template data and complete the project planning and design by one click." (Help Documentation)
- 5. "Customize Devices to Create LLD. Fill in the template data and complete the project planning and design by one click." (Help Documentation)

Below this is the "Create LLD Using a Template" section. It features a "Template Library" with tabs for "Storage Product", "Active-Active Data Center", "Local HA", "Geo-Redundant", "Active-Passive DR", "Backup", and "OceanProtect".

The "Storage Product (161)" section contains several cards, each with a "Custom" or "Hot" tag, a title, a description, and a "Video Guides" link. The cards are:

- Multi-controller Scenario (Custom): Combine devices and versions flexibly to generate networking. (Video Guides)
- 5500 V3 FC (Hot): OceanStor 5500 V3(2\*8Gb FC). 653
- 5500 V5 FC (Hot): OceanStor 5500 V5(2\*8Gb FC). 289
- 18500 V5 FC (Hot): OceanStor 18500 V5(4\*8Gb FC). 175
- 2200 V3 FC: OceanStor 2200 V3(2\*Smart IO). 126
- Dorado5000 V3 IP: OceanStor Dorado5000 V3(NVMe/C00/C01(2\*10GE...)). 120
- 2600 V3 FC: OceanStor 2600 V3(2\*8Gb FC). 95
- 6800 V3 FC: OceanStor 6800 V3(4\*GE+4\*8Gb FC+4\*12Gb SAS). 92
- 5300 V3 FC: OceanStor 5300 V3(2\*8Gb FC). 77
- More Storage Product (with a right arrow icon)

The "Active-Active Data Center (119)" section contains several cards, each with a "Custom" or "Hot" tag, a title, a description, and a "Video Guides Help Documentation" link. The cards are:

- Active-Active Scenario (Custom): Combine devices and networks flexibly to generate networking.
- SAN HyperMetro 5300 V3 (Hot): OceanStor 5300 V3(2\*GE+2\*8Gb FC) OceanStor 5300... 745
- SAN HyperMetro 5500 V3 (Hot): OceanStor 5500 V3(2\*GE+2\*8Gb FC) OceanStor 5500... 210
- SAN HyperMetro Dorado500... (Hot): OceanStor Dorado5000 V3(SAS) (2\*GE+2\*8Gb FC) OceanStor... 193
- SAN HyperMetro 18500 V5: OceanStor 18500 V5(4\*GE+4\*8Gb FC) OceanStor 18500... 182



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# Enterprise Storage Planning and Design

For enterprise storage, LLDesigner covers four scenarios: directly creating LLD, creating LLD by importing a BOQ, creating active-active LLD, and creating multi-controller LLD.

## 1. Directly creating LLD

Features: Users can flexibly select devices, such as hosts, switches, and storage devices, to create LLD.

Suitable for: common scenarios

## 2. Creating LLD by importing a BOQ

Features: A BOQ is imported, achieving automatic device selection, automatic card insertion, loop configuration, and cable connection.

Suitable for: BOQ device networking

## 3. Creating active-active LLD

Feature: Users can flexibly specify device and network parameters and networking diagrams are automatically generated.

Suitable for: active-active networking

## 4. Creating multi-controller LLD

Feature: Users can flexibly select devices and versions and networking diagrams are automatically generated.

Suitable for: multi-controller networking

The screenshot displays the LLDesigner interface with the following elements:

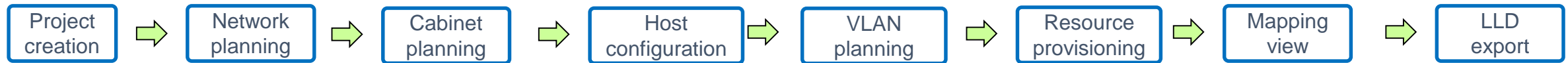
- Top Bar:** eService logo, LLDesigner title, and user ID (s30010402).
- Main Header:** "Create LLD Without a Template".
- Scenario 1 (Red dashed box):** "Enterprise Storage (OceanStor V3/V5 series, Dorado V3/DoradoV6 series)". Step 1: "Customize Devices to Create LLD". Step 2: "Import BOQ to Create LLD".
- Scenario 2 (Red dashed box):** "Cloud Storage (OceanStor Pacific)". Step 2: "Import BOQ to Create LLD".
- Scenario 3 (Red dashed box):** "Hyper-converged Infrastructure (FusionCube)". Step 2: "Import BOQ to Create LLD".
- Scenario 4 (Red dashed box):** "Active-Active Data Center (119)". Step 3: "Active-Active Scenario".
- Scenario 5 (Red dashed box):** "Multi-controller Scenario (161)". Step 4: "Multi-controller Scenario".
- Product Grid:** A grid of storage products with details like "5500 V3 FC", "5500 V5 FC", "18500 V5 FC", "2200 V3 FC", "Dorado5000 V3 IP", "2600 V3 FC", "6800 V3 FC", "5300 V3 FC", "SAN HyperMetro 5300 V3", "SAN HyperMetro 5500 V3", "SAN HyperMetro Dorado500...", and "SAN HyperMetro 18500 V5".



# Enterprise Storage Planning and Design > Directly Creating LLD

Users can flexibly select devices, such as hosts, switches, and storage devices, to create LLD.

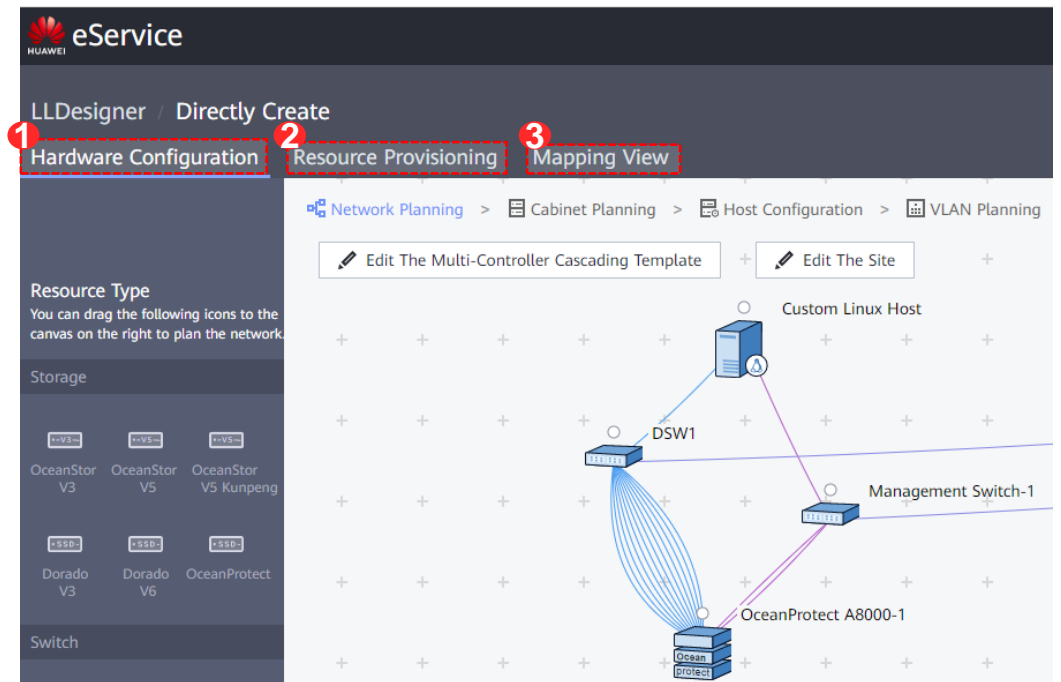
## Procedure



Type	Supported Models
Storage	OceanStor Dorado: V3 and V6 series OceanStor converged storage: V3 and V5 series OceanProtect: A and X series
Switch	FC, IP, and PCIe
Host	Linux, Windows, Solaris, HP-UX, AIX, XenServer, Mac OS, VMware ESX, and Windows Server 2012

### Key functions:

1. Hardware configuration: networking planning, cabinet planning, host configuration, and VLAN planning
2. Resource provisioning: creating storage pools and resource pools
3. Mapping view: creating mapping views



# Enterprise Storage Planning and Design > Creating LLD by Importing a BOQ

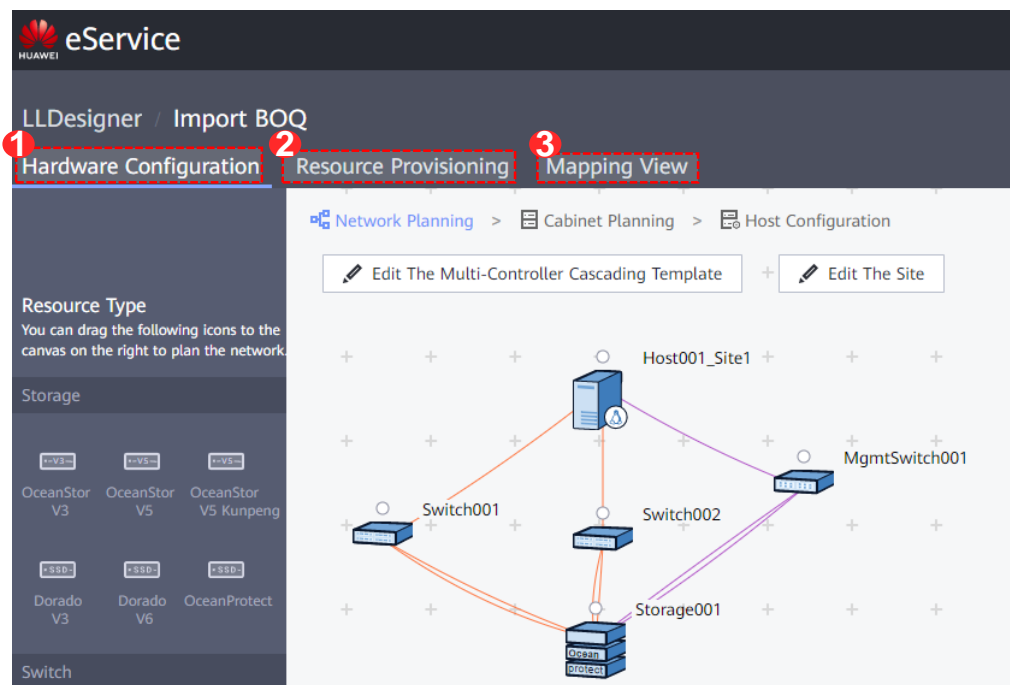
A BOQ is imported to automatically create LLD.

## Procedure



## Key functions:

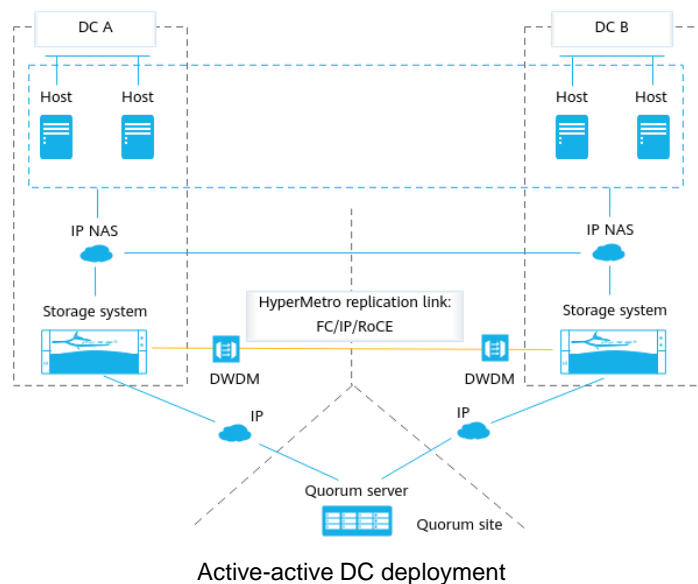
1. Hardware configuration: networking planning, cabinet planning, and host configuration
2. Resource provisioning: creating storage pools and resource pools
3. Mapping view: creating mapping views



# Enterprise Storage Planning and Design > Creating Active-Active LLD Using a Template

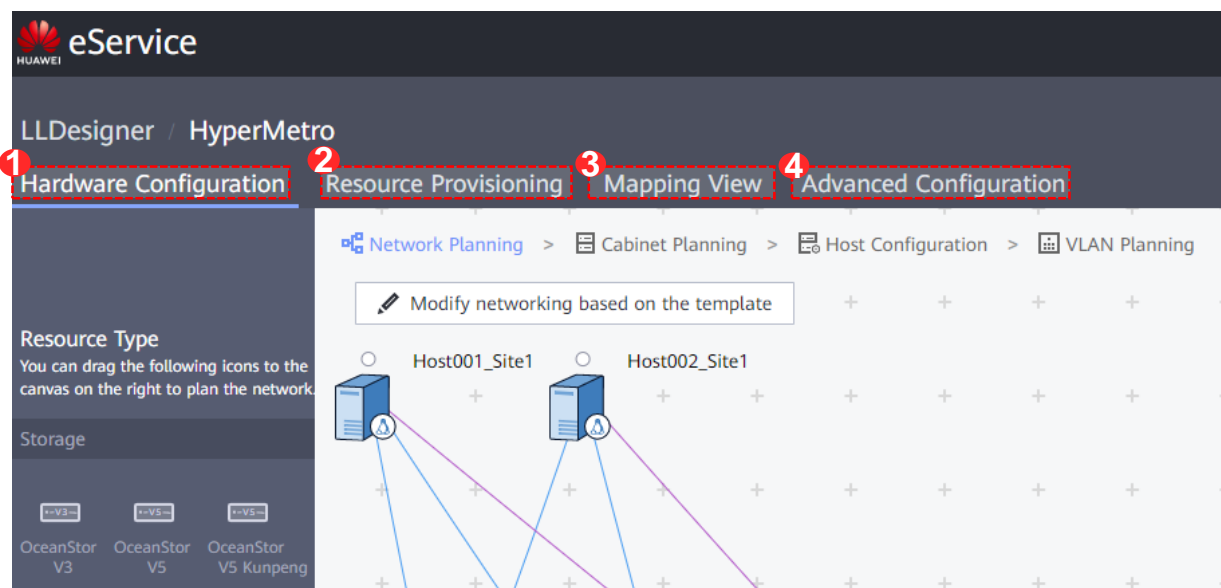
Users can flexibly specify device and network parameters and networking diagrams are automatically generated.

## Procedure



## Key functions:

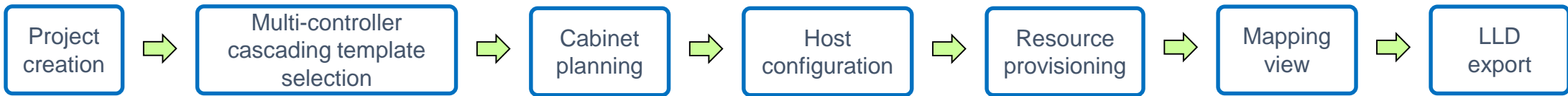
1. Hardware configuration: networking planning, cabinet planning, host configuration, and VLAN planning
2. Resource provisioning: creating storage pools and resource pools
3. Mapping view: creating mapping views
4. Advanced configuration: HyperMetro domain configuration



# Enterprise Storage Planning and Design > Creating Multi-Controller LLD Using a Template

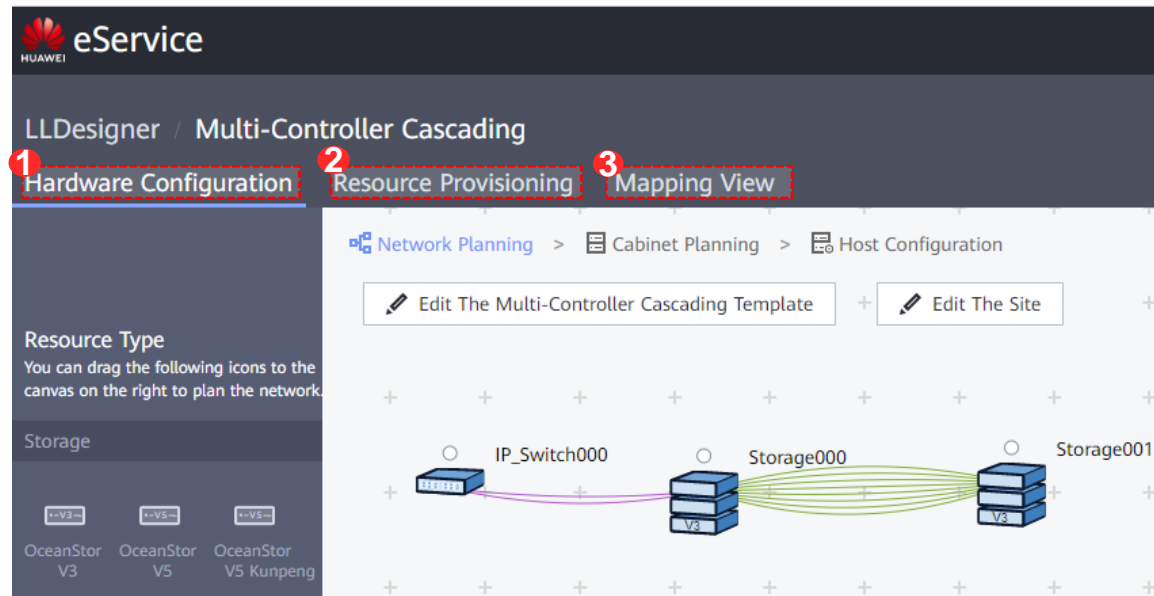
Users can flexibly select devices and versions and networking diagrams are automatically generated.

## Procedure



## Key functions:

1. Hardware configuration: networking planning, cabinet planning, and host configuration
2. Resource provisioning: creating storage pools and resource pools
3. Mapping view: creating mapping views





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# Mass Data Storage Planning and Design

After setting template parameters, you can quickly complete project planning and design. You do not need to manually add devices, insert cards, or connect cables.

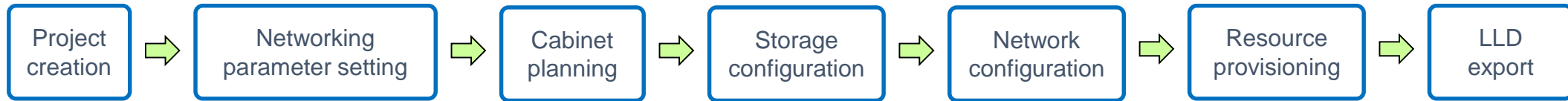
Mass data storage product versions and functions supported by LLDesigner

Function	Product Version	FusionStorage 8.0.0	OceanStor 100D 8.0.3	OceanStor Pacific Series 8.1.0	OceanStor Pacific Series 8.1.1
Hardware configuration	Network planning	√	√	√	√
	Cabinet planning	√	√	√	√
	Host configuration	√	√		
	Storage configuration			√	√
	Domain name planning		√		
Network configuration	Port bonding/VLAN planning			√	√
	Control cluster creation			√	√
	Routing policy planning			√	√
	Data cluster creation			√	√
Resource provisioning	Storage pool creation			√	√
	Disk pool creation			√	√

# Mass Data Storage Planning and Design

OceanStor Pacific series 8.1.1 is used as an example to describe how to use LLDesigner.

## Procedure



### Supported scenarios:

- File service (DPC scenario)
- File/Object/HDFS service (standard protocol scenario)
- DPC and standard protocol hybrid scenario

eService  
LLDesigner / OceanStor Pacific 8.1.1 (File/Object/HDFS Service)

1 Sub-scenario

File Service (DPC Scenario)  File/Object/HDFS Services (Standard Protocol Scenario)  DPC and Standard Protocol Hybrid Scenario

Network Configuration

Cluster Information

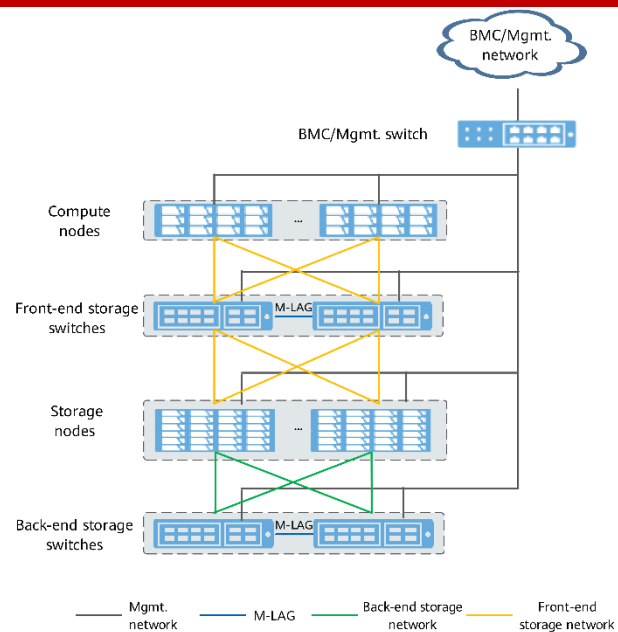
\* Cluster name:

\* Floating IP address of DeviceManager:

\* Whether the management internal and external networks are isolated:  yes  no

# Mass Data Storage Planning and Design

## OceanStor Pacific 8.1.1 series: DPC scenario



Networking diagram

### Storage/Management node:

1. Front-end storage network: Two ports are used. If the IB protocol is used and the ports are bonded, configure **one front-end storage network IP address**.
2. Back-end storage network: Two ports are used. Configure two back-end storage network IP addresses.

### Data cluster module (only for OceanStor Pacific 9950):

3. Each OceanStor Pacific 9950 device has two data cluster modules. Each data cluster module provides one management network port to connect to the BMC network.

**Sub-scenario**  
 File Service (DPC Scenario)  File/Object/HDFS Services (Standard Protocol or HCSO Scenario)  DPC and Standard Protocol Hybrid Scenario

**Network Configuration**

**Cluster Information**  
 \* Cluster name:  \* Floating IP address of DeviceManager:   
 \* Whether the management internal and external networks are isolated:  yes  no

**Subnet Information**

Subnet 1  
 Example  
 \* Whether the management and BMC are independent switches:  yes  no  
 \* Node Type:  OceanStor Pacific 9950 \* Number of Nodes(2-24):  4  
 \* Main Storage Type:  6TB 7.2K RPM SATA (...) \* Number of main storage devices(30-60):  36  
 \* Cache Type:  800GB SSD NVMe \* Cache quantity:  4

\* Network planes support IPv4 (172.16.8.1 for example) and IPv6 (fc00:1234 for example) addresses. A network plane must be configured with the same type of IP addresses. If you specify Mask, IPv4 addresses must be configured. If you specify Prefix, IPv6 addresses must be configured.

Network Plane	VLAN ID	Gateway	Mask/Prefix	Start IP Address
BMC Plane			255.255.0.0	
Management Plane			255.255.0.0	
Storage Front-End Plane			255.255.0.0	
Back-end storage plane			255.255.0.0	

**Networking information**  
 \* Whether the front-end and back-end planes of storage are separated:  yes  no  
 \* Multi-ip backend:  2 IP  
 \* Back-end Network Type:  25GE \* Transmission protocol for the back-end plane of storage:  RDMA over Converge... \* Back-end switch model:  CE6865-48S8CQ-EI  
 \* Front-end Network Type:  100Gb IB \* Transmission protocol for the front-end plane of storage:  InfiniBand \* Front-end switch model:  SE7800

**Hardware Configuration** **Network Configuration** **Resource Provisioning**

1 Bonding port/VLAN planning 2 Control Cluster 3 Policy-Based Route 4 Data cluster

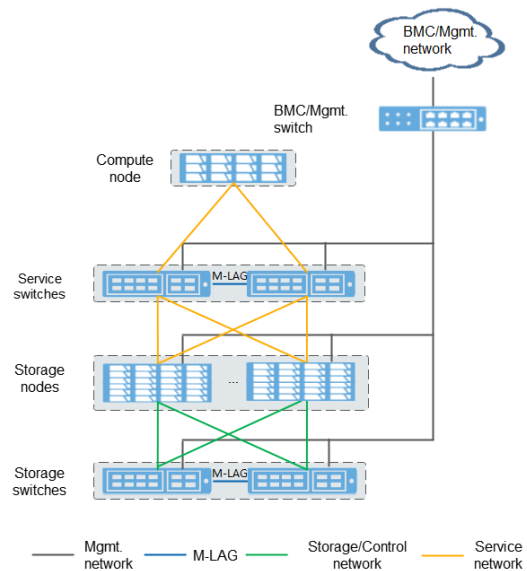
**3 Data cluster module**

Chassis SN	Chassis ID	Site ID	IP type	IP Address	Mask/Prefix	Default gateway	Operation
		A	IPv4				Delete



# Mass Data Storage Planning and Design

## OceanStor Pacific 8.1.1 series: standard protocol scenario



Networking diagram

### Storage/Management node:

1. Storage network: Two ports are used. Configure **two storage network IP addresses**.
2. Control network: Configure **one floating IP address for storage ports for the control network**. The control network and the storage network cannot belong to the same subnet.

### Data cluster module (only for OceanStor Pacific 9950):

3. Each OceanStor Pacific 9950 device has two data cluster modules. Each data cluster module provides one management network port to connect to the BMC network.

Sub-scenario

File Service (DPC Scenario)  File/Object/HDFS Services (Standard Protocol or HCSO Scenario)  DPC and Standard Protocol Hybrid Scenario

Network Configuration

Cluster Information

\* Cluster name:

\* Floating IP address of DeviceManager:

\* Whether the management internal and external networks are isolated:  yes  no

Subnet Information

Subnet 1

Example

\* Whether the management and BMC are independent switches:  yes  no

\* Node Type:

\* Number of Nodes(2-24):

\* Main Storage Type:

\* Number of main storage devices(36-60):

\* Cache Type:

\* Cache quantity:

\* Network planes support IPv4 (172.16.8.1 for example) and IPv6 (f:00:1234 for example) addresses. A network plane must be configured with the same type of IP addresses. If you specify Mask, IPv4 addresses must be configured. If you specify Prefix, IPv6 addresses must be configured.

Network Plane	VLAN ID	Gateway	Mask/Prefix	Start IP Address
BMC Plane			255.255.0.0	
Management Plane			255.255.0.0	
Storage Plane			255.255.0.0	
Control Plane			255.255.0.0	

Networking information

\* Whether the front-end and back-end planes of storage are separated:  yes  no

\* Storage Networking Model:

\* Storage Transfer Protocol:

\* Storage Switch Model:

\* Service Networking Type:

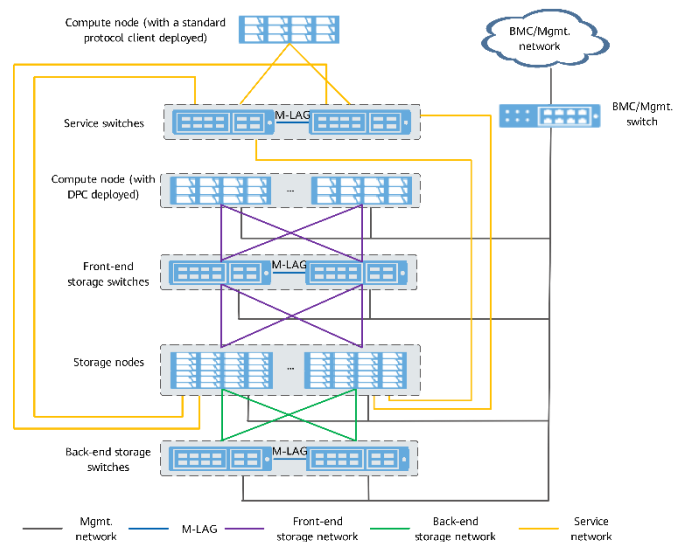
\* Service Transmission Protocol:

\* Service Switch Model:

\* Store multiple ip:

# Mass Data Storage Planning and Design

## OceanStor Pacific 8.1.1 series: DPC and standard protocol hybrid scenario



Networking diagram

### Storage/Management node:

1. Front-end storage network: Two ports are used. Configure one front-end storage network IP address when the ports are bonded.
2. Back-end storage network: Two ports are used. Configure two back-end storage network IP addresses.

### Data cluster module (only for OceanStor Pacific 9950):

3. Each OceanStor Pacific 9950 device has two data cluster modules. Each data cluster module provides one management network port to connect to the BMC network.

**Sub-scenario**

File Service (DPC Scenario)  File/Object/HDFS Services (Standard Protocol or HCSO Scenario)  DPC and Standard Protocol Hybrid Scenario

**Network Configuration**

**Cluster Information**

\* Cluster name:  \* Floating IP address of DeviceManager:

\* Whether the management internal and external networks are isolated:  yes  no

**Subnet Information**

**Subnet 1**

\* Whether the management and BMC are independent switches:  yes  no

\* Node Type:  \* Number of Nodes(2-24):

\* Main Storage Type:  \* Number of main storage devices(36-60):  \* Cache Type:  \* Cache quantity:

\* Network planes support IPv4 (172.16.8.1 for example) and IPv6 (f00:1234 for example) addresses. A network plane must be configured with the same type of IP addresses. If you specify Mask, IPv4 addresses must be configured. If you specify Prefix, IPv6 addresses must be configured.

Network Plane	VLAN ID	Gateway	Mask/Prefix	Start IP Address
BMC Plane			255.255.0.0	
Management Plane			255.255.0.0	
Storage Front-End Plane			255.255.0.0	
Back-end storage plane			255.255.0.0	

**Networking information**

\* Whether the front-end and back-end planes of storage are separated:  yes  no

\* Multi-ip backend:

\* Back-end Network Type:  \* Transmission protocol for the back-end plane of storage:  \* Back-end switch model:

\* Front-end Network Type:  \* Transmission protocol for the front-end plane of storage:  \* Front-end switch model:

\* Service Networking Type:  \* Service Transmission Protocol:  \* Service Switch Model:



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# Edge Data Storage Planning and Design

Users can fill in template data to complete project planning and design in one-click mode.

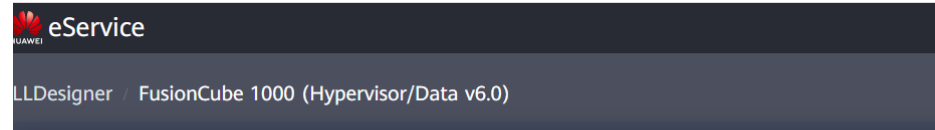
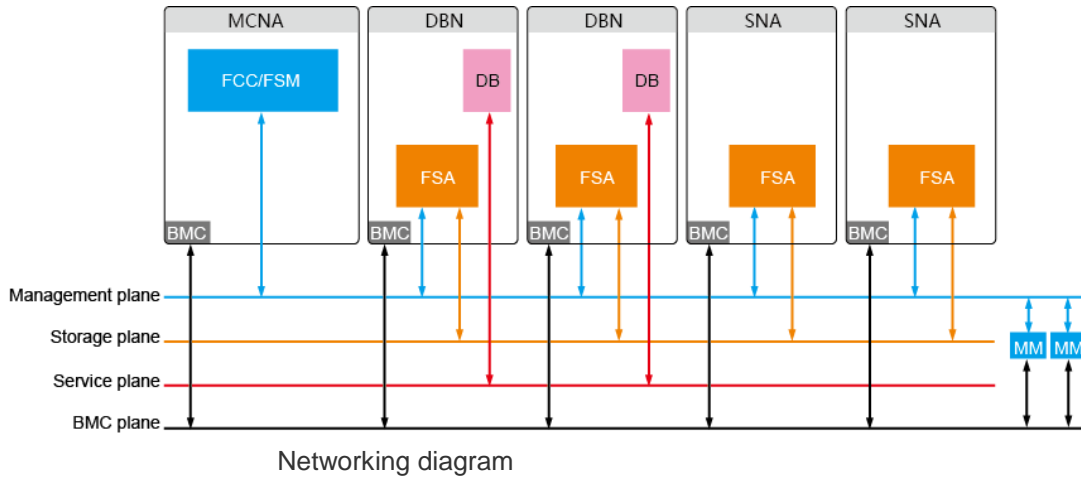
Edge data storage product versions and functions supported by LLDesigner

Function	Product Version	FusionCube 1000 (Hypervisor/Data V6.0)	FusionCube 1000 (Cabinet V6.0)	FusionCube 1000 (Cabinet V8.0)
Hardware configuration/ Engineering design	Network planning	√	√	√
	Cabinet planning	√	√	√
	Host configuration	√		
	Naming rules		√	√
Central site configuration	Central site configuration		√	√
Network resource configuration	IP/VLAN resource provisioning		√	√
	Stack design		√	√
	Static route		√	√
	IPsec configuration		√	√
	Checklist		√	√
Storage resource configuration	Storage resource planning		√	√
	Mapping view planning		√	√
	Datastore configuration		√	√

# Edge Data Storage Planning and Design

FusionCube 1000 (Hypervisor/Data V6.0) is used as an example to describe how to use LLDesigner.

## Procedure



### Select Version

FusionCube 1000 (Hypervisor/Data v6.0)

### Scenarios

Hyper-converged Database Infrastructure

FusionSphere Hyper-converged Virtualization Infrastructure

### Select Switch

Front-end switch model: CE5855-48T4S2Q-EI

### Nodes

Node Type	Server Type	Quantity
1 Management Computing Node Agent	1288H V5	Num
2 Storage Node Agent	2288H V5	Num
3 Database Node	1288H V5	Num

## Node description:

1. MCNA: provides management functions. One or two MCNAs can be deployed.
2. SNA: provides storage functions. Three or more SNAs can be deployed.
3. DBN: provides database functions. One or more DBNs can be deployed.



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# Related Resources

- **LLDesigner URL:**

<http://eservice-llid.huawei.com/#/llid/overview>

- **LLDesigner online help:**

<http://eservice-llid.huawei.com/help/en/index.html>

- **LLDesigner permission application email:**

[eservice@huawei.com](mailto:eservice@huawei.com)





Thank You  
[www.huawei.com](http://www.huawei.com)