

# iMaster NCE-FAN V100R021C10 Getting Started with ODN Visualizer

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- 1. Overview of the ODN Visualizer Solution**
2. Basic Operations for ODN Resource Management

# Challenges for ODN Resource Management

## Hard to Manage ODN Resources

There are a large number of dumb resources (resources that cannot automatically report their own information) on the ODN network, resulting in low accuracy of existing resource information, which seriously affects FTTH network construction and O&M costs.

### Network construction

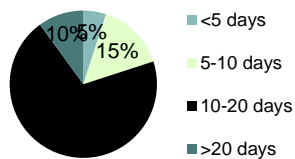
Long time to record resources



New data (such as CAD drawings)  
Manually recorded, prone to errors

### Service provisioning

Low one-time service provisioning success rate



One-time service provisioning success rate of new users: **45%**  
Average service provisioning time: **5 days**

### Network maintenance

Inaccurate ODN resources



Paper/plastic labels **easy to loss or damage**  
User unsubscription: **device removed but cable not removed**

# ODN Project Acceptance Challenges

## Complex and Inefficient Fiber Acceptance Process

- Traditional acceptance uses handheld OTDRs, which are large and difficult to carry, and have high requirements on personnel skills.
- Traditional optical attenuation detection requires two persons to test the optical power at both ends, which is inefficient and costs high.
- Each fiber takes 30 minutes on average for acceptance.

## Difficult to Monitor and Control the Engineering Quality

- Lack of means to monitor the construction quality, and difficult to identify problems in time, which may incur high rework cost.
- Traditional manual acceptance cannot cover all ports, causing high service provisioning risks in the future.
- It is difficult to summarize data and distribute standards.

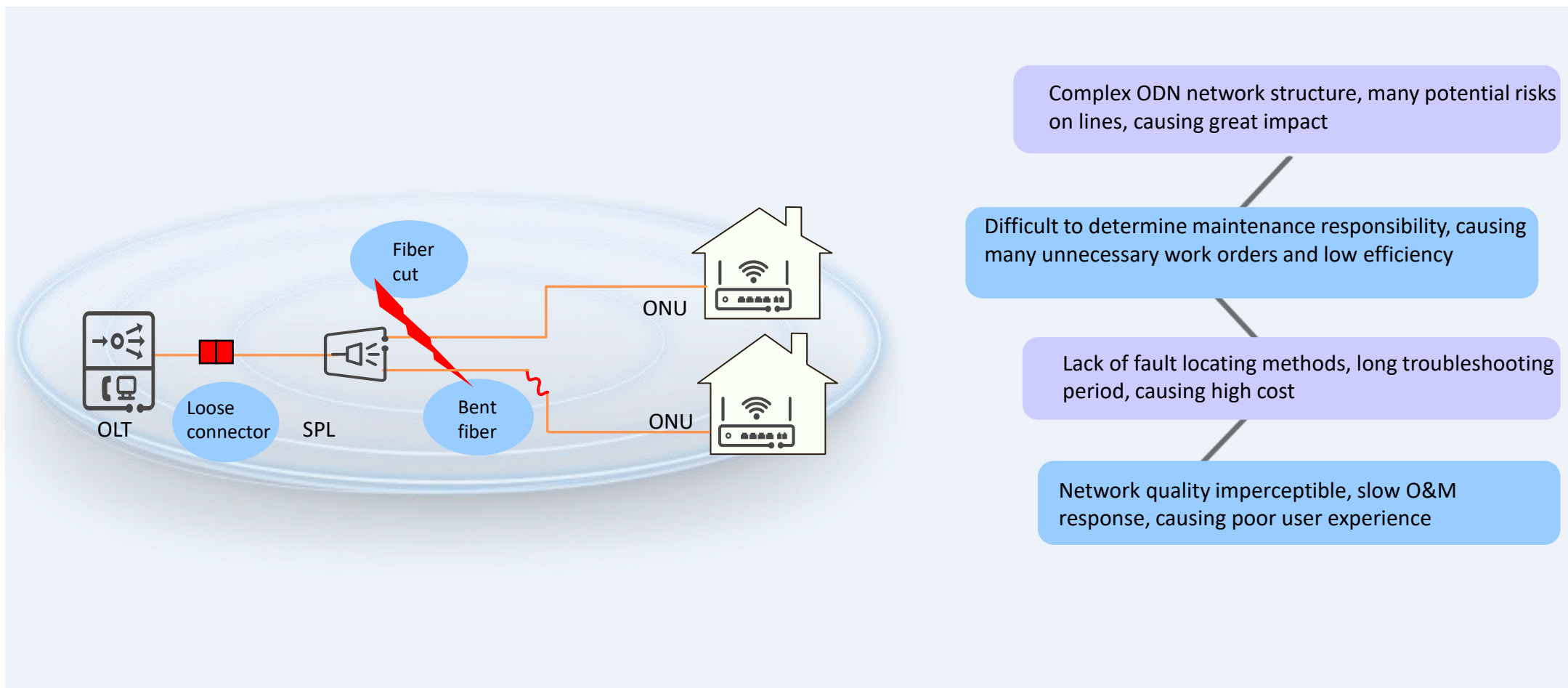
## Difficult to Store and Reuse Engineering Data

- Traditionally, acceptance results are manually transferred in paper or exported using a handheld meter, which is inefficient and error-prone.
- After the acceptance is complete, the data cannot be used for O&M. The cost of data sorting and synchronization is high.

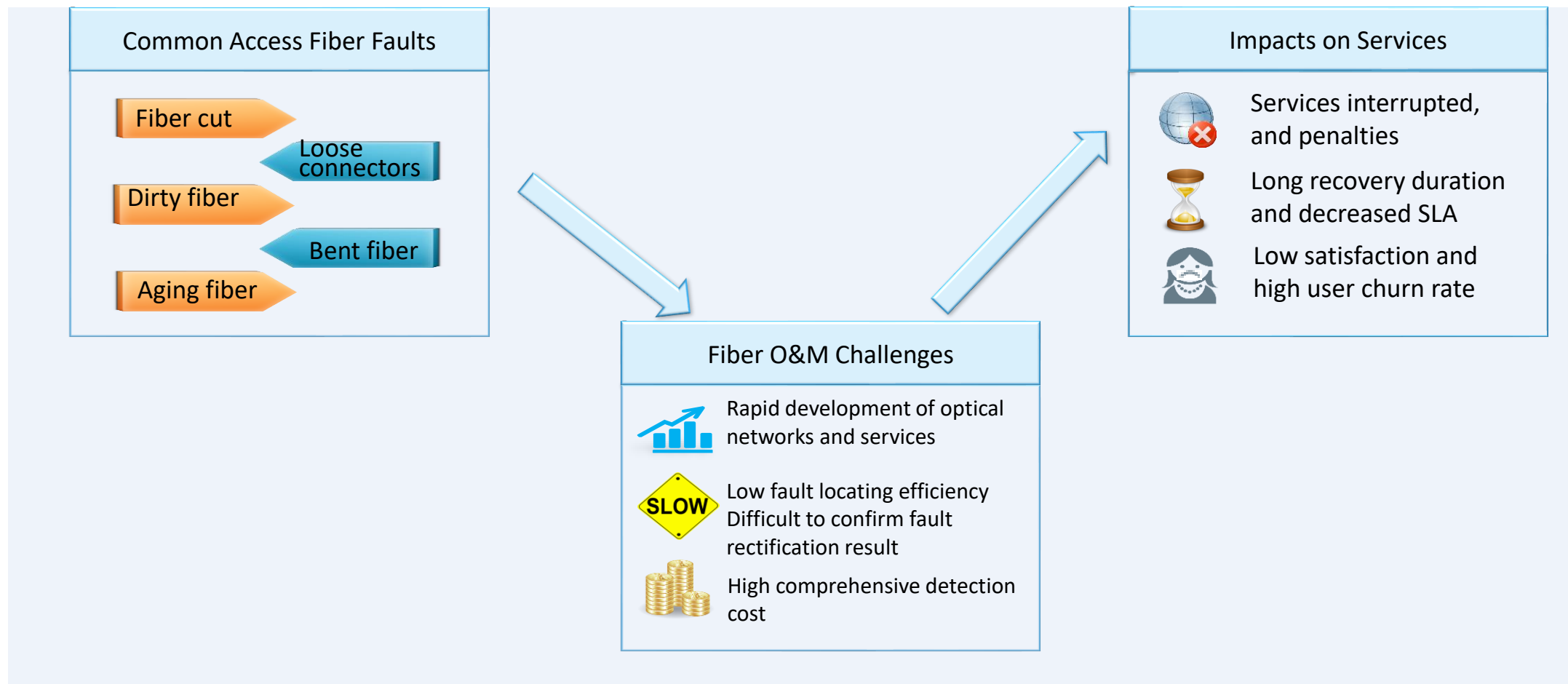
## Lack of Fault Demarcation and Locating Methods

- In the multi-subcontractor co-construction scenario, it is difficult to determine who is responsible for faults and maintenance.
- In the O&M phase, it is difficult to determine whether a fault occurs inside or outside a home, a building, or in front of or behind an optical splitter.
- It is difficult to accurately locate and rectify faults.

# Acceptance and O&M Challenges



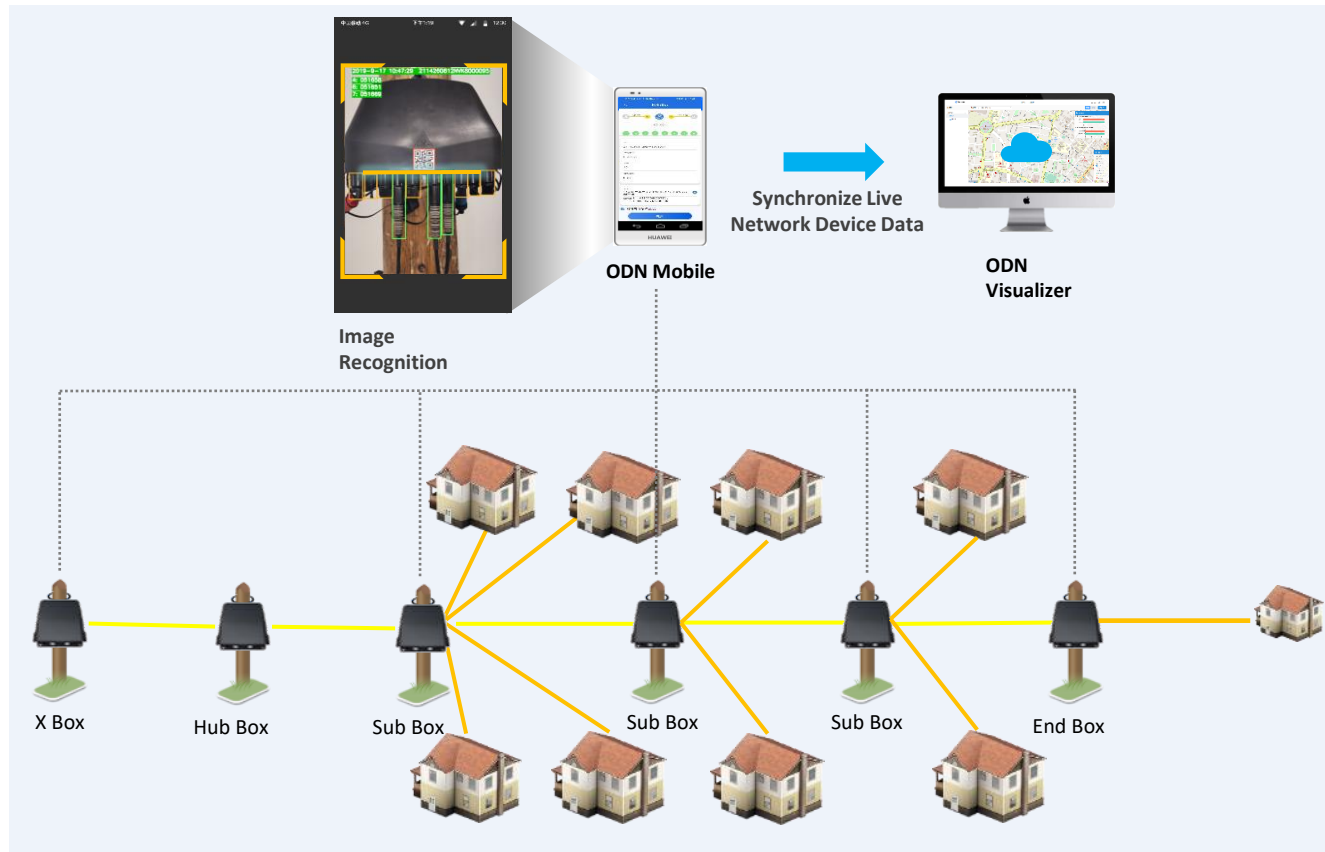
## 1.4 P2P Access Network O&M Challenges



# ODN Resource Management Solution

Huawei Digital QuickODN solution is designed for pre-connected QuickODN products. It quickly collects ODN device information through image recognition over a mobile app, making ODN resources more visible and manageable during network construction and service provisioning, and improving the accuracy of resource data.

## ODN Resource Visualization and Management Solution



Code scanning using mobile app + image recognition, achieving 100% accurate resource recording

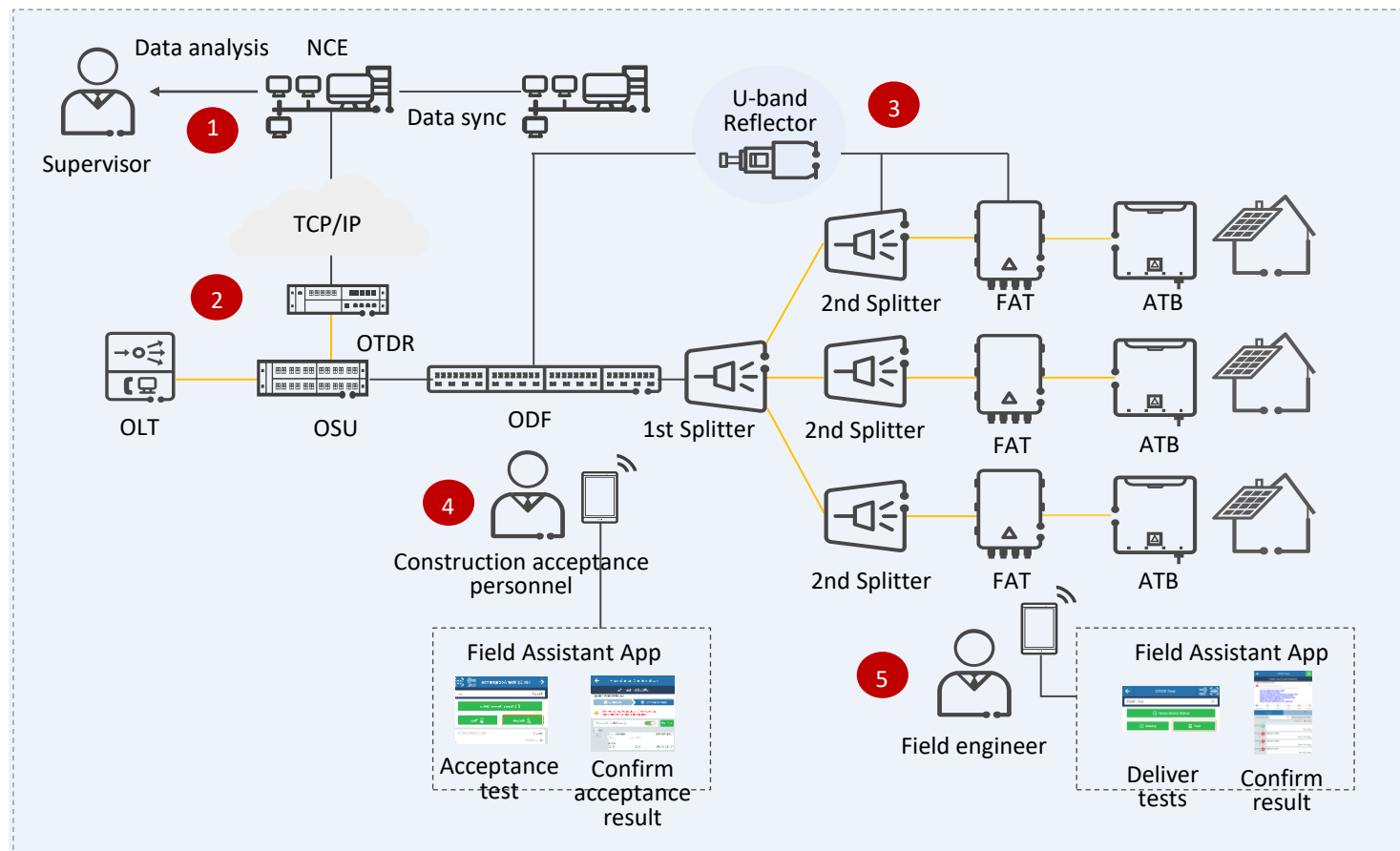
Real-time visualization of the ODN topology, achieving visualization and management of resources

Fast and accurate service provisioning in collaboration with the OSS

# ODN Project Acceptance Solution

The ODN Visualizer app acceptance solution provides one-click quick project acceptance based on the field assistant. The solution features high precision and reliability, and can be directly reused in the data O&M phase. This solution changes the traditional project acceptance mode that features complex operations, low efficiency, easy data loss, and difficult data reuse. This solution also greatly shortens the ODN construction acceptance period, reduces service provisioning risks, and ensures link SLA.

## ODN Acceptance Solution



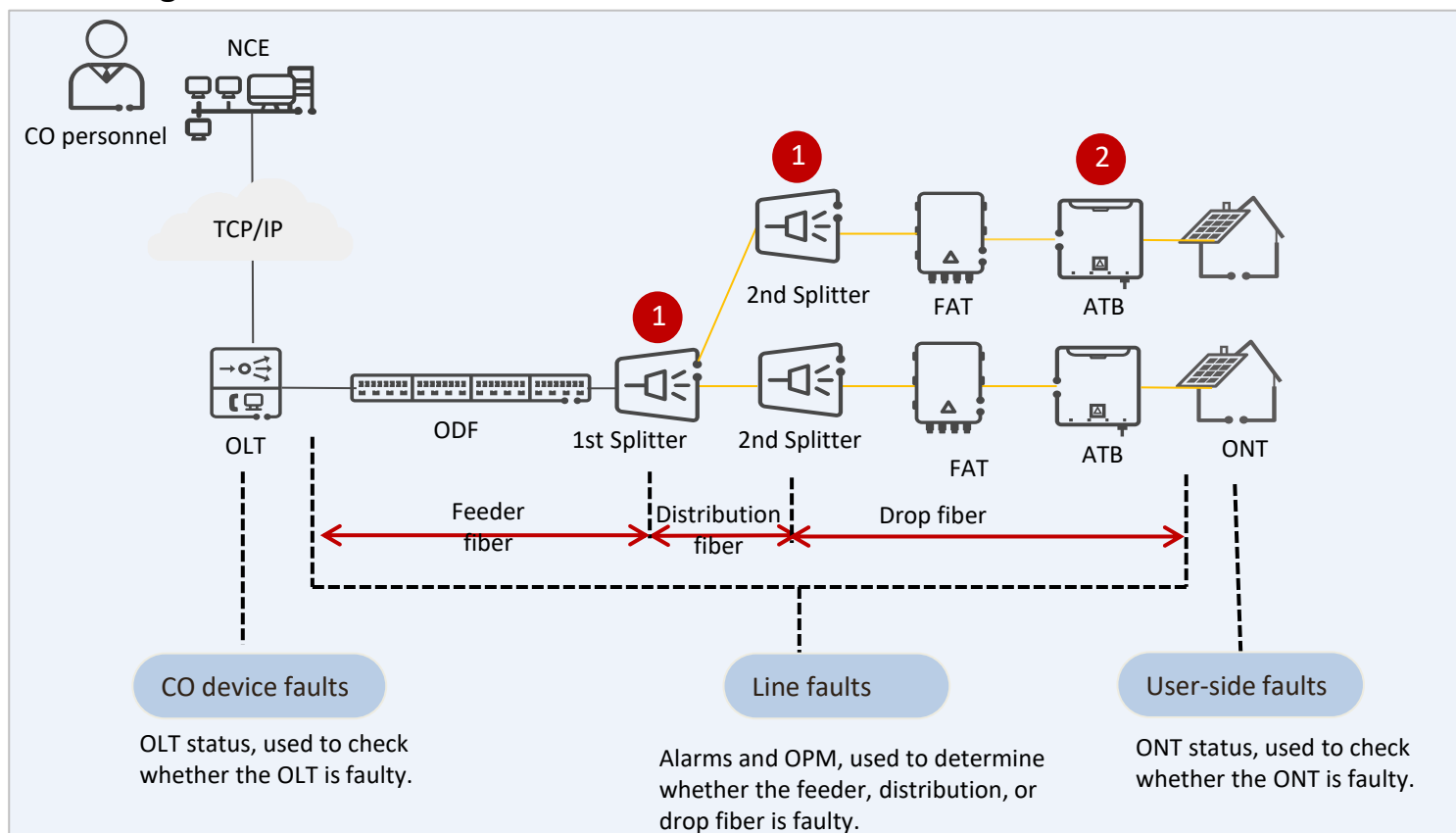
- 1 Keep the engineering quality progress under control.
- 2 The OTDR is fixed at a position, and the acceptance data is automatically uploaded.
- 3 Test loss using a reflector and the E2E loss deviation is less than 0.7 dB, avoiding using the optical power meter for two-person acceptance.
- 4 Single-fiber acceptance by a single person takes only 5 minutes, improving efficiency by 3 times.
- 5 Perform acceptance tests onsite and confirm the acceptance results before ticket closure, avoiding rework.



# ODN Network O&M Solution (1)

After a subscriber reports a fault, it is difficult to determine the responsible party of the fault. As a result, the work order cannot be dispatched accurately. By collecting and analyzing access device KPI data using the ODN Visualizer app, the O&M personnel can quickly locate the region where a fault occurs (on the user side, ONU side, OLT side, or the feeder, distribution, or drop fiber segment of the ODN). Based on the test results, the O&M personnel can dispatch work orders to different maintenance departments for line maintenance. This greatly improves the O&M efficiency, reduces unnecessary work orders, and lowers the maintenance cost.

## PON Diagnosis Solution

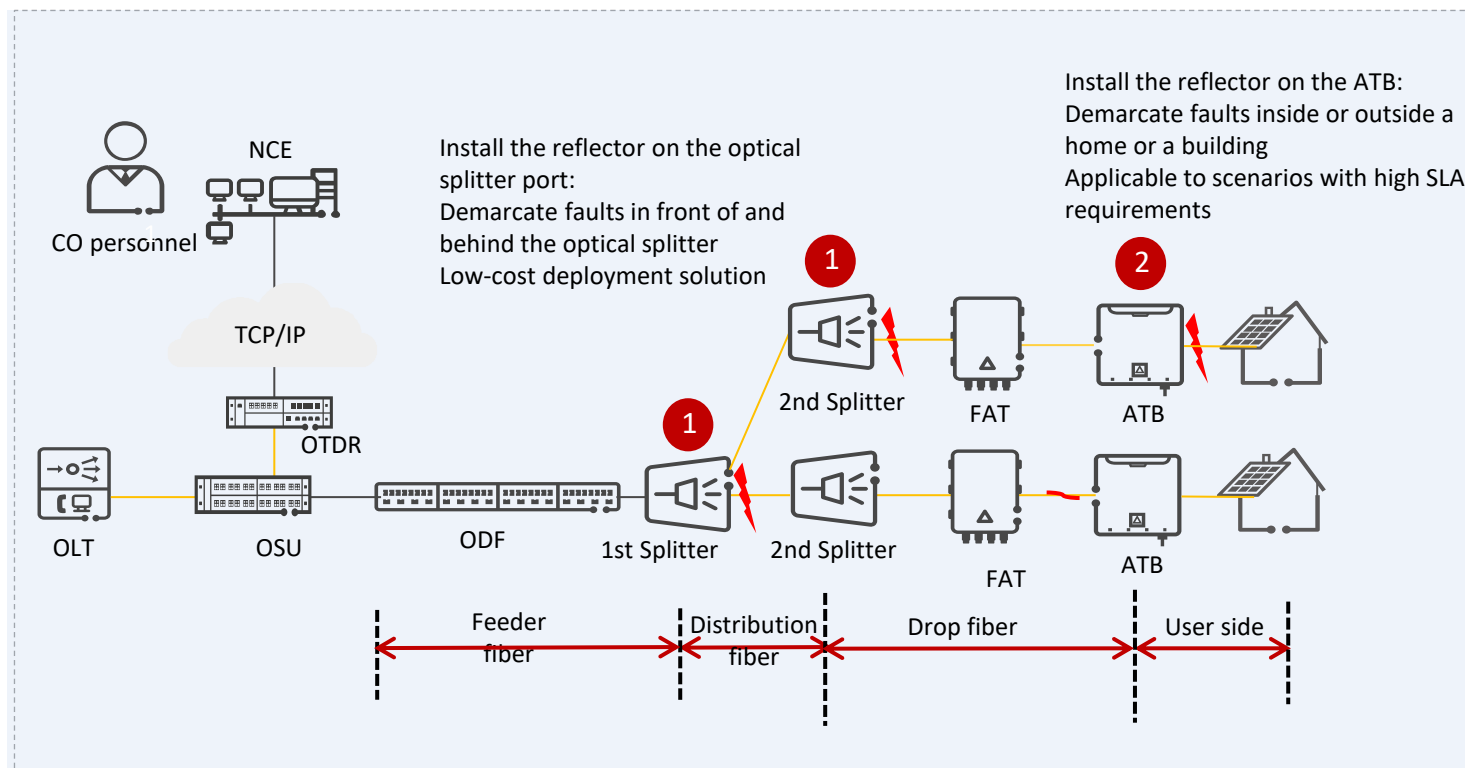


- Accurately demarcate faults on the feeder fiber, distribution fiber, or drop fiber.
- Accurately identify faults such as excessively large insertion loss.
- Greatly improve the troubleshooting efficiency.

## 1.7 ODN Network O&M Solution (2)

The ODN Visualizer app uses the OTDR+reflector technology to proactively or passively detect the optical fiber status, identify faults such as fiber cut, bending, and deterioration, and find the fault positions. Based on the test results, the O&M personnel can accurately dispatch work orders for maintenance, reducing unnecessary work orders and the O&M cost.

### OTDR Test Solution



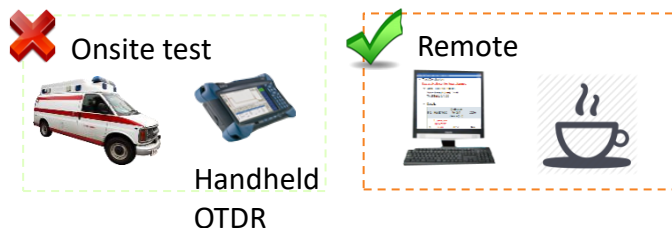
- The central office (CO) test helps accurately locate fiber faults behind the level-2 optical splitter.
- Accurately identify and locate faults such as fiber cuts and large insertion loss.
- Greatly improve the troubleshooting efficiency.

## 1.8 P2P Access Network O&M Solution

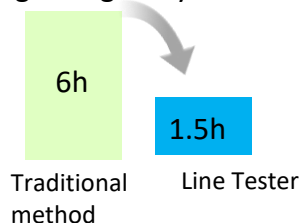
The ODN Visualizer app provides the test function for the point-to-point (P2P) optical network to monitor the quality of the optical line in real time, including the quality of splicing and connection. In the case of long-distance transmission, fiber faults can be precisely located, which greatly shortens the time for locating and rectifying optical fiber faults, reduces penalties caused by service interruption, reduces optical fiber O&M costs, and improves end users' satisfaction.

### Fault Locating

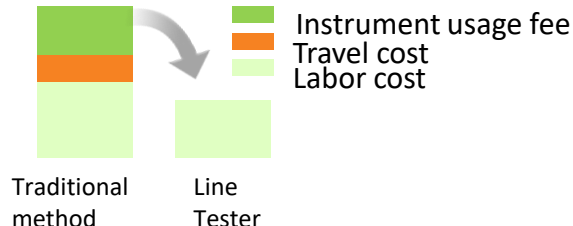
Engineers do not need to carry instruments to the site. The fault distance is accurately displayed on NCE.



Troubleshooting efficiency grows greatly

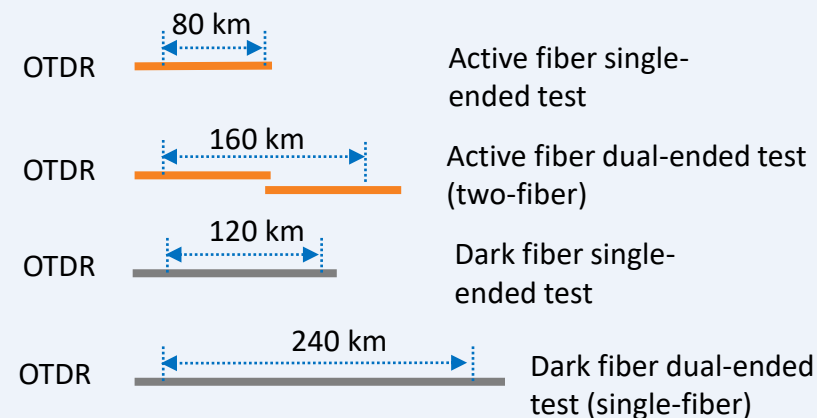


Troubleshooting cost dramatically decreases



### Test Scenarios - All

Multiple test solutions are provided for different scenarios.



Attenuation coefficient: 0.3 dB/km

★ The active fiber test solution does not affect WDM services.




# Contents

1. Overview of the ODN Visualizer Solution
- 2. Basic Operations for ODN Resource Management**

# Basic Operations for ODN Resource Management



# Logging In to the ODN Visualizer App

 iMaster NCE

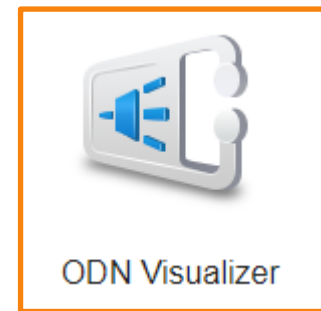
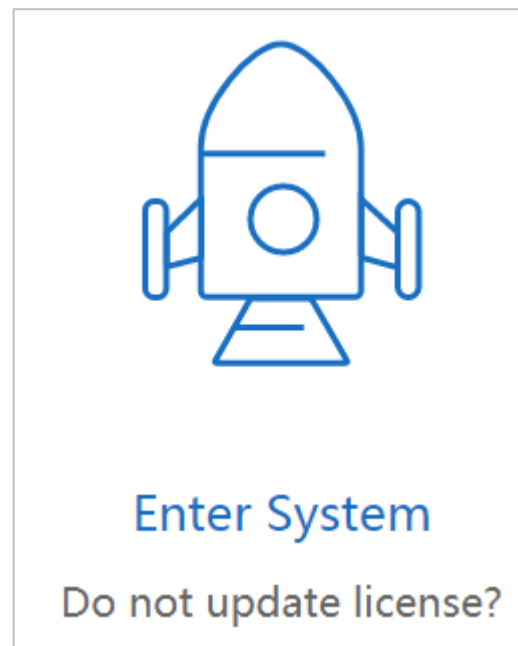
Username

Username

Password

☐ Remember login username

Log In



# Region Management

- Create a region.

Create

\*

Name

BanTian

\*

Parent Region

Region

Alias

Remarks



Cancel

OK

		Create	Delete
<input type="checkbox"/>	Name	Alias	Remarks
<input type="checkbox"/>	BanTian		

# Access Device Management (1)


- Manage OLTs.

OLT   PON Port   ONU											
 Filter											
						Create	Delete	Import	Download Profile	Select SNMP Profile	
<input type="checkbox"/>	OLT Name	OLT IP Address	Device Type	Alias	OLT SN	Region	Landmark	Vendor	SNMP Profile	Create Time	Operation
<input type="checkbox"/>	10.78.206.211	10.78.206.211	MA5600T			ols			SNMPv1161...		



## Access Device Management (2)


- Manage PON ports.

OLT   PON Port   ONU									
 Filter									
							Create	Delete	Export
<input type="checkbox"/>	OLT Name	OLT IP Address	Region	Chassis	Slot	Port	Port Type	Topology	Link Name
<input type="checkbox"/>	10.78.206.211	10.78.206.211	ols	0	16	0	GPON	<a href="#">Topology</a>	10.78.206.211/0/16/0
<input type="checkbox"/>	10.78.206.211	10.78.206.211	ols	0	7	0	GPON	<a href="#">Topology</a>	10.78.206.211/0/7/0

## Access Device Management (3)

- Manage ONUs.

OLT | PON Port | ONU |

 Filter

Create

Delete

Export

<input type="checkbox"/>	ONU Name	Alias	ONU Type	PON Port	ONU ID	ONU SN	IP Address	Region	Landmark
<input type="checkbox"/>	10.78.206.211/0...		ONT	10.78.206.211/0...	4			ols	
<input type="checkbox"/>	10.78.206.211/0...		ONT	10.78.206.211/0...	5			ols	
<input type="checkbox"/>	10.78.206.211/0...		ONT	10.78.206.211/0...	0			ols	
<input type="checkbox"/>	10.78.206.211/0...		ONT	10.78.206.211/0...	1			ols	


# Passive Device Management (1)

- Manage optical splitters.

Splitter   ODF   Closure   FDT   FAT   ATB   XBOX   HUB BOX   SUB BOX   END BOX   WDM								
Filter								
							Create	DeleteExport
<input type="checkbox"/>	Name	Alias	Splitter Type	Splitter Level	In/Out Port	Region	Landmark	Hold Device
<input type="checkbox"/>	site2-2spl-48	site2-2spl-48	Equal Ratio Split	2nd Splitter	1/16	OLT 49		
<input type="checkbox"/>	site2 -1spl-48	site2 -1spl-48	Equal Ratio Split	1st Splitter	1/8	OLT 49		
<input type="checkbox"/>	site2-2spl-47	site2-2spl-47	Equal Ratio Split	2nd Splitter	1/16	OLT 49		
<input type="checkbox"/>	site2 -1spl-47	site2 -1spl-47	Equal Ratio Split	1st Splitter	1/8	OLT 49		


## Passive Device Management (2)

- Manage the ODF, FDT, FAT, ATB, X Box, Hub Box, Sub Box, End Box, Closure, and WDM.

Splitter	ODF	Closure	FDT	FAT	ATB	XBOX	HUB BOX	SUB BOX	END BOX	WDM
 Filter										
										<div>CreateDeleteExport</div>
<input type="checkbox"/>	Name	Alias	Model	Vendor	Barcode	RFID	Region	Landmark	Status	
<input type="checkbox"/>	ODF Port_2797...						ols		Using	
<input type="checkbox"/>	ODF Port_2797...						ols		Using	




# Fiber Resource Management (1)

- Manage landmarks.

Landmark   Optical Cable   Optical Cable Segment   Link Configuration   RFC Resources						
 Filter						
				<div>CreateDeleteExport</div>		
<input type="checkbox"/>	Name	Alias	Type	Region	Address	Coordinates
<input type="checkbox"/>	2		Site	12		
<input type="checkbox"/>	1		Site	12		


## Fiber Resource Management (2)

- Manage optical cables.

Landmark   Optical Cable   Optical Cable Segment   Link Configuration   RFC Resources									
 Filter									
							Create	Delete	Export
<input type="checkbox"/>	Name	Alias	Type	Region	Source Landmark	Destination Land...	Fiber Cores	Status	
> <input type="checkbox"/>	relay02		Backbone Optic...	BanTian	sitee	sitf		 Incomplete	
> <input type="checkbox"/>	relay01		Backbone Optic...	BanTian	sitea	sited		 Incomplete	

## Fiber Resource Management (3)

- Manage optical cable segments.

Landmark   Optical Cable   Optical Cable Segment   Link Configuration   RFC Resources								
 Filter								
						Create	Delete	Export
<input type="checkbox"/>	Name	Alias	Region	Source Landmark	Destination Lan...	Optical Cable	Length (m)	Attenuation (dB)
<input type="checkbox"/>	cable04		BanTian	sited	sitee	relay02		
<input type="checkbox"/>	cable03		BanTian	sitec	sited	relay01		
<input type="checkbox"/>	cable02		BanTian	siteb	sitec	relay01		
<input type="checkbox"/>	cable		BanTian	sitea	siteb	relay01		

## Fiber Resource Management (4)

- Link configuration management: Create a link.

Landmark | Optical Cable | Optical Cable Segment | **Link Configuration** | RFC Resources

Filter

Create Delete Delete Test Route Export

<input type="checkbox"/>	Link Name	Alias	Region Name	Type	Fiber Type	Topology	Test Route
<input type="checkbox"/>	10.185.212.128p2mp1		OLS	P2MP		Configuration	OAI10.185.212.128,0

Create

Link Name

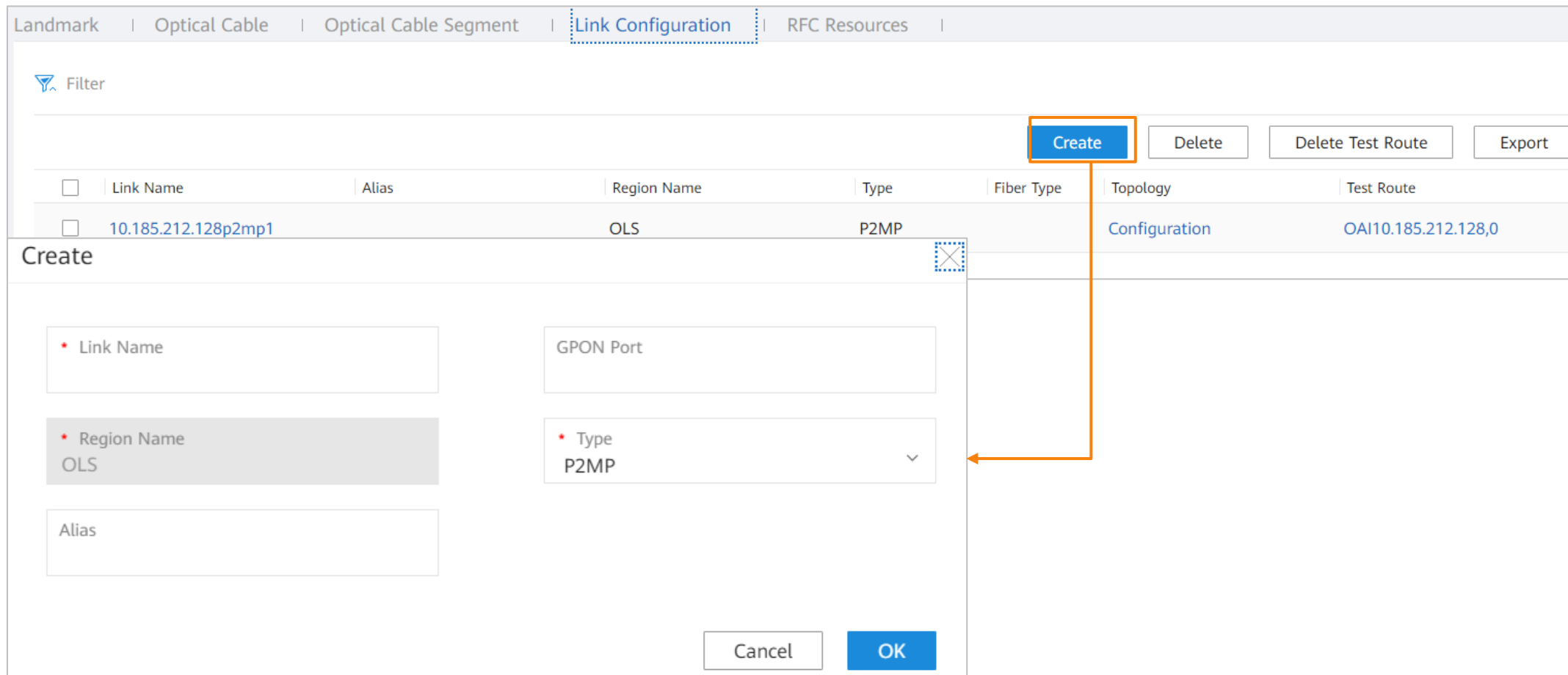
GPON Port

Region Name  
OLS

Type  
P2MP

Alias

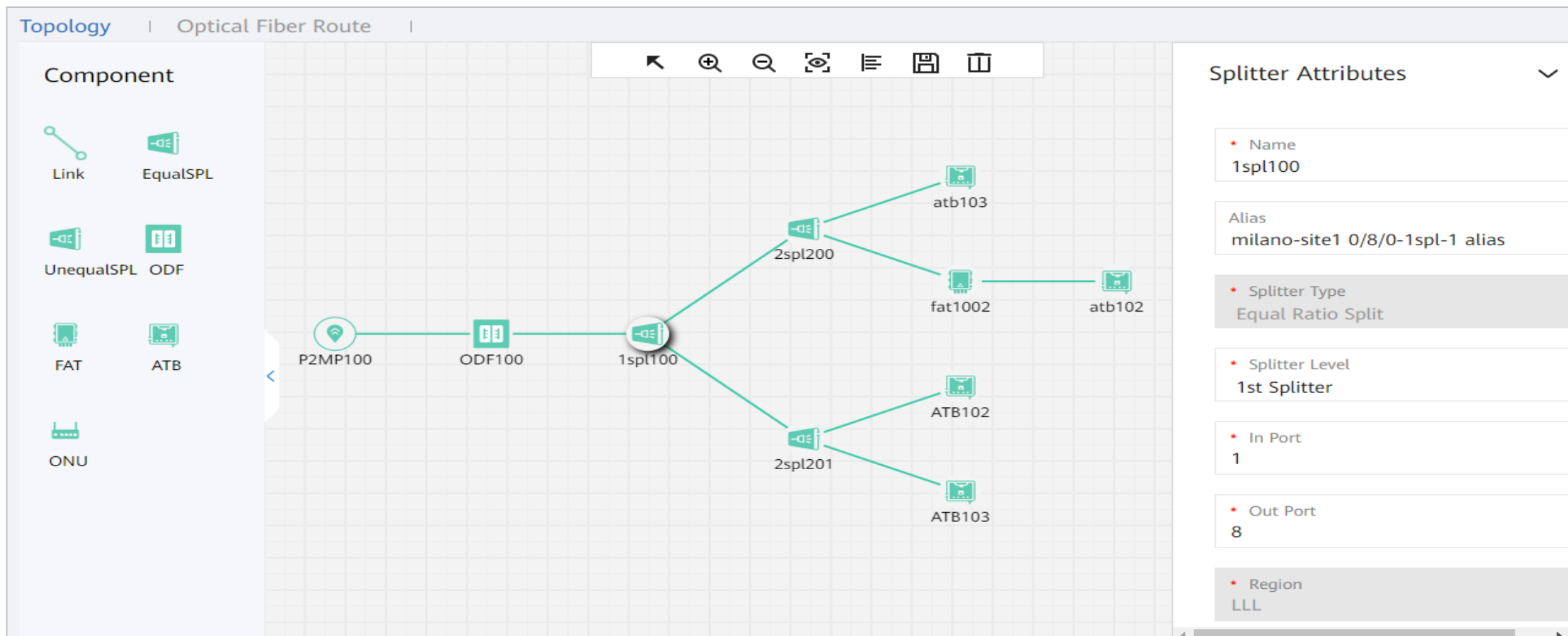
Cancel OK





## Fiber Resource Management (5)

- Link configuration management: View and edit the link topology.



## Fiber Resource Management (6)

- Link configuration management: Configure a link test route.

Configure Test Route

\* Device Type

OSU4810

▼

\* Device Name

OSU4810\_01

▼

\* Port

0

▼

Cancel

OK

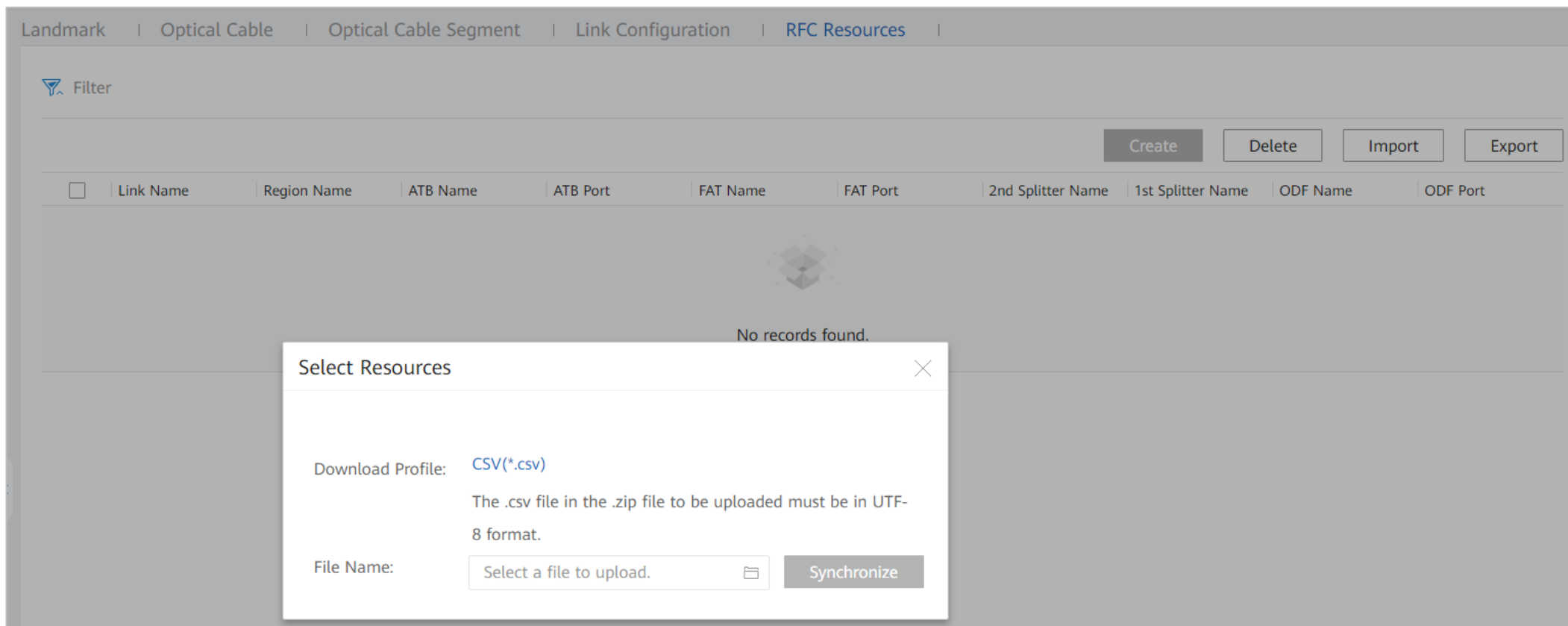
# Fiber Resource Management (7)

- RFC resource management: Create an RFC resource.

Landmark   Optical Cable   Optical Cable Segment   Link Configuration   RFC Resources										
 Filter										
<div>CreateDeleteImportExport</div>										
<input type="checkbox"/>	Link Name	Region Name	ATB Name	ATB Port	FAT Name	FAT Port	2nd Splitter Name	1st Splitter Name	ODF Name	ODF Port
<input type="checkbox"/>	testy1	testy1	1	1						
<input type="checkbox"/>	testy2	testy1	1	1						

## Fiber Resource Management (8)

- RFC resource management: Manually import RFC resources in batches.



# Test Device Management (1)

- Manage test devices.

Filter

Create

Delete

Select SNMP Profile

Maintenance

Restore

Export

<input type="checkbox"/>	Name	Alias	Region Name	Device Type	SNMP Profile	Label	Uplink Device Name	Uplink Device Port	Communication Proxy	Maintenance State
<input type="checkbox"/>	FTU9		testy1	FTU						Running
<input type="checkbox"/>	OSU4810-49-4		testy1	OSU4810		4	MA58-49/1	0	Proxy Through Se...	Running
<input type="checkbox"/>	MA58-49/1		testy1	OLT-Board		1	MA58-49	1		Running
<input type="checkbox"/>	OSU4810-207-6		testy1	OSU4810		6	MA58-27/6	0	Proxy Through Se...	Running
<input type="checkbox"/>	MA58-27/6		testy1	OLT-Board		6	MA58-27	6		Running
<input type="checkbox"/>	FTU110		testy1	FTU		10.190.226.110				Running

## Test Device Management (2)

- Test device management: Create a test device.

Create

• Name

• Maintenance State  
Running

• Region Name  
testy1

• IP Address

• Device Type  
FTU

OSU

OTAU

OSU4810

OLT-Board

OSU4811

2361

• IN1 Port with Reflector  
No

• With OSix  
Yes

• Use SSH  
Yes

• Verify Public Key  
Yes

• Public Key

Vendor

Alias

Remarks

Cancel OK

# Resource Synchronization (1)

- Automatically synchronize resources.

• IP Address  
192.168.1.100

• Protocol  
sftp

• SFTP Port  
22

• Username  
sftpuser

• Password  
\*\*\*\*\*

• Verify public key  
Yes

• Public key  
AAAAB3NzaC1yc2EAAAADAQABAgQCAgIjO/RPDEXT7+...

• File Path  
/opt/oss/share

• Synchronization Mode  
Mode 0

File Format ☒ csv

• Max. ZIP File Size (KB)  
51200

Enable Automatic Synchronization ☒ Yes ☐ No

Period  
1 day

Execution Time  
00:00

Filter

Download Profile Automatic Sync Manual Sync

No.	Running Status	Total Number of Recor...	Number of Successful ...	Number of Failed Reco...	Result	Start Time	End Time	Operator
215	Completed	517	515	2	<a href="#">View</a>	2021-09-07 09:49...	2021-09-07 09:49...	admin
214	Completed	609	184	425	<a href="#">View</a>	2021-09-07 09:48...	2021-09-07 09:48...	admin
213	Completed	5308	4883	425	<a href="#">View</a>	2021-09-07 09:48...	2021-09-07 09:48...	admin

Download Profile

Save as ZIP(\*.zip) Export

Download the resource synchronization file profile.

Configure the resource synchronization service.

## Resource Synchronization (2)

- Manually synchronize resources.

Filter

Download Profile Automatic Sync Manual Sync

No.	Running Status	Total Number of Recor...	Number of Successful ...	Number of Failed Reco...	Result	Start Time	End Time	Operator
215	Completed	517	515	2	<a href="#">View</a>	2021-09-07 09:49...	2021-09-07 09:49...	admin
214	Completed	609	184	425	<a href="#">View</a>	2021-09-07 09:48...	2021-09-07 09:48...	admin
213	Completed	5308	4883	425	<a href="#">View</a>	2021-09-07 09:48...	2021-09-07 09:48...	admin

Download Profile

Save as ZIP(\*.zip) Export

Download the resource synchronization file profile.



## Resource Synchronization (3)

### Synchronizing Inventory Resources

#### Inventory Resource Synchronization

This operation starts the inventory synchronization task to synchronize Manager+Controller resources to ODN Visualizer.

Note: Ensure that inventory synchronization has been configured before the operation.

Synchronize

## Resource Synchronization (4)




- View the synchronization result of resources synchronized in file mode.

Filter								
					Download Profile	Automatic Sync	Manual Sync	
No.	Running Status	Total Number of Recor...	Number of Successful ...	Number of Failed Reco...	Result	Start Time	End Time	Operator
215	Completed	517	515	2	View	2021-09-07 09:49...	2021-09-07 09:49...	admin
214	Completed	609	184	425	View	2021-09-07 09:48...	2021-09-07 09:48...	admin
213	Completed	5308	4883	425	View	2021-09-07 09:48...	2021-09-07 09:48...	admin

Filter							
							Export
No.	Change Type	Object Name	Object Type	Result	Occur Time	Line No.	File Name
10219	Add		OLT	Success.	2021-09-07 09:49:20	3	FTTx_ODN_FULL_template_mo...
10220	Add	/0/4/0	ODN Link	Success.	2021-09-07 09:49:20	6	FTTx_ODN_FULL_template_mo...
10342	Add	/0/4/0	PON Port	Success.	2021-09-07 09:49:20	6	FTTx_ODN_FULL_template_mo...
10221	Add	/0/4/1	ODN Link	Success.	2021-09-07 09:49:20	7	FTTx_ODN_FULL_template_mo...
10343	Add	/0/4/1	PON Port	Success.	2021-09-07 09:49:20	7	FTTx_ODN_FULL_template_mo...
10222	Add	/0/4/2	ODN Link	Success.	2021-09-07 09:49:20	8	FTTx_ODN_FULL_template_mo...
10344	Add	/0/4/2	PON Port	Success.	2021-09-07 09:49:20	8	FTTx_ODN_FULL_template_mo...

## Resource Synchronization (5)

View the synchronization result of Manager+Controller inventory resources.

OLT   PON Port   ONU											
 Filter											
<div>CreateDeleteImportDownload ProfileSelect SNMP Profile</div>											
<input type="checkbox"/>	OLT Name	OLT IP Address	Device Type	Alias	OLT SN	Region	Landmark	Vendor	SNMP Profile	Create Time	Operation
<input type="checkbox"/>	OLT_123		MA5800...			yanta	olt	Huawei	Default		
<input type="checkbox"/>			MA5600T	...		yanta	Site_A	Huawei	Default		



## Summary

Upon completion of this course, you will be able to understand:

- Values for the ODN Visualizer solution
- Basic operations for the ODN Visualizer solution
- Application scenarios for the ODN Visualizer solution

# Thank You

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