EANTC Independent Test Report

Huawei OceanStor Interoperability with ZenOSS

November 2020

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Introduction

Huawei commissioned EANTC in October 2020 to verify a set of SaaS (software as a service) functions on ZenOSS to monitor Huawei OceanStor V5 Storage, including discovery, inventory and alarm collection.

From security compliance to SLA, IT infrastructure monitoring gains strategic significance in growth of hybrid clouds. Enterprises that benefit from the flexibility of hybrid clouds are facing difficulties in seamless management and monitoring across complex cloud architectures. It has become a best practice to use tools to achieve maximum integration between all layers of hybrid cloud monitoring.

Among them, the storage infrastructure maintains an important role in IT infrastructure management. Monitoring its availability and health status ensures that this vital component is accessible and operates efficiently. After all, launching most functions in a cloud depends on storage access.

In this test, we focused on the interoperability of the end-to-end storage monitoring tool ZenOSS with Huawei OceanStor V5 storage. We verified a set of SaaS-based functions on ZenOSS and installed a Huawei-provided plug-in "ZenPacks.community.OceanStor-2.2.8-py2.7.egg" on ZenOSS, which provided access to the SaaS functions under test.

Huawei OceanStor V5 Storage is a new-generation hybrid flash storage system developed by Huawei for core enterprise services. The product models include Huawei OceanStor 5300, 5500, 5600, 5800, 6800, 18500, 18800 V5 and furthers.

ZenOSS is a Zope Application server-based network monitoring software published under the GNU General Public license. ZSD (ZenOSS as a Service "ZaaS") is the fully hosted ZenOSS Service Dynamics "ZSD" option that delivers service-centric hybrid IT monitoring and analytics ensuring service health and uptime, and improving mean time to resolution (MTTR) in cloud and data center resources.

Test Highlights

- → ZSD successfully discovered Huawei OceanStor V5 Storage from the IT infrastructure
- → Display of full list of hardware and software inventory in ZSD
- → Dynamic inventory updates according to configuration changes on the Huawei OceanStor V5 Storage
- → ZSD automatic alarm generation based on OceanStor port down event

Executive Summary

EANTC independently verified a set of SaaS functions on ZenOSS to monitor Huawei OceanStor V5 Storage, including discovery, inventory and alarm collection.

Specifically, we investigated the seamless integration of OceanStor with ZenOSS. We verified that the Huawei storage hardware could be fully displayed initially, and that storage configuration changes resulted in an updated inventory in ZenOSS. Furthermore, we confirm that ZenOSS can create an automatic alarm based on a hardware alarm raised in OceanStor.

Our scope of work was focused on the interoperability testing of OceanStor with ZenOSS. In the future, additional ZenOSS/OceanStor tests in the areas of scalability, resiliency and long-term robustness could be considered to validate large-scale deployments.

Hardware and Software

Hardware Type	Software Version
Huawei OceanStor V5 Storage	V500R007C30
Brocade G620 FC Switch	Fabric OS: v8.0.1b
ZDK Server	6.5.0 Enterprise Version
HP 2510G-48 Ethernet Switch	Y.11.52

Table 1: Hardware and Software Components

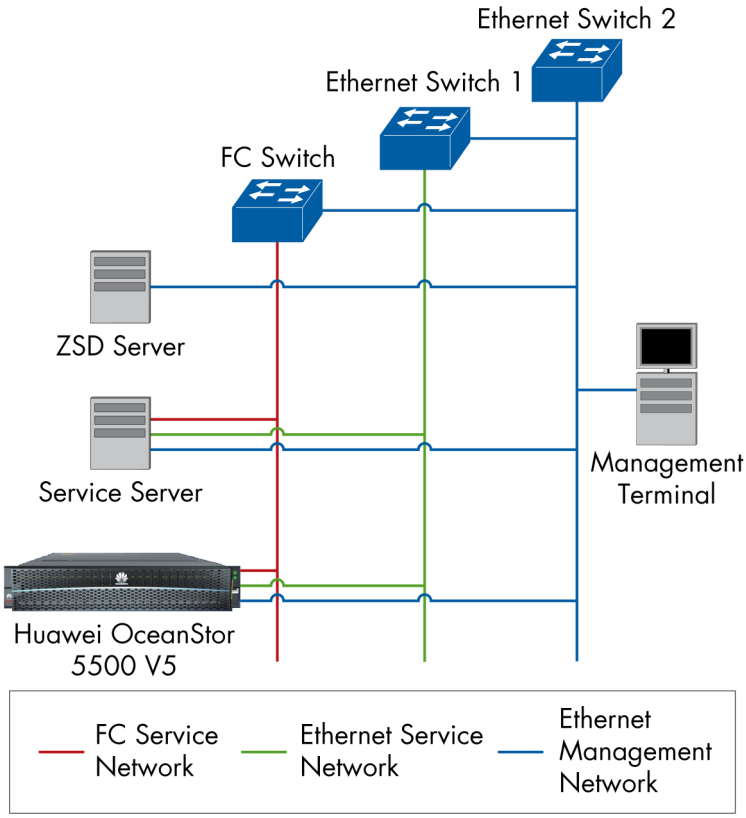


Figure 1: Testbed Setup

Testbed Description

We installed the ZenOSS ZSD software on a server and designated this server as ZSD server. This server was configured to access to the management network, including the data exchange via management interface with Huawei OceanStor V5 Storage in the same LAN. We launched the ZSD management interface which performed SaaS functions. We also launched the Huawei management interface on the service server to compare with the information observed on ZSD.

Test Results

Function under Test	Result
Discovery	Pass
Inventory	Pass
Alarm Monitoring	Pass

Table 2: Test Results Summary

Discovery

We verified the device discovery function on the management interface of the ZSD software. We expected the required device information will appear on the ZSD management interface indicating that the DUT has been successfully discovered.

On the infrastructure tab (https://zenoss5.zsd-master/zport/dmd), the configuration included entering the IP addresses and credential of the DUT. As shown in the Figure below, the Huawei OceanStor V5 Storage information successfully appeared in the device list once the configuration was ready.

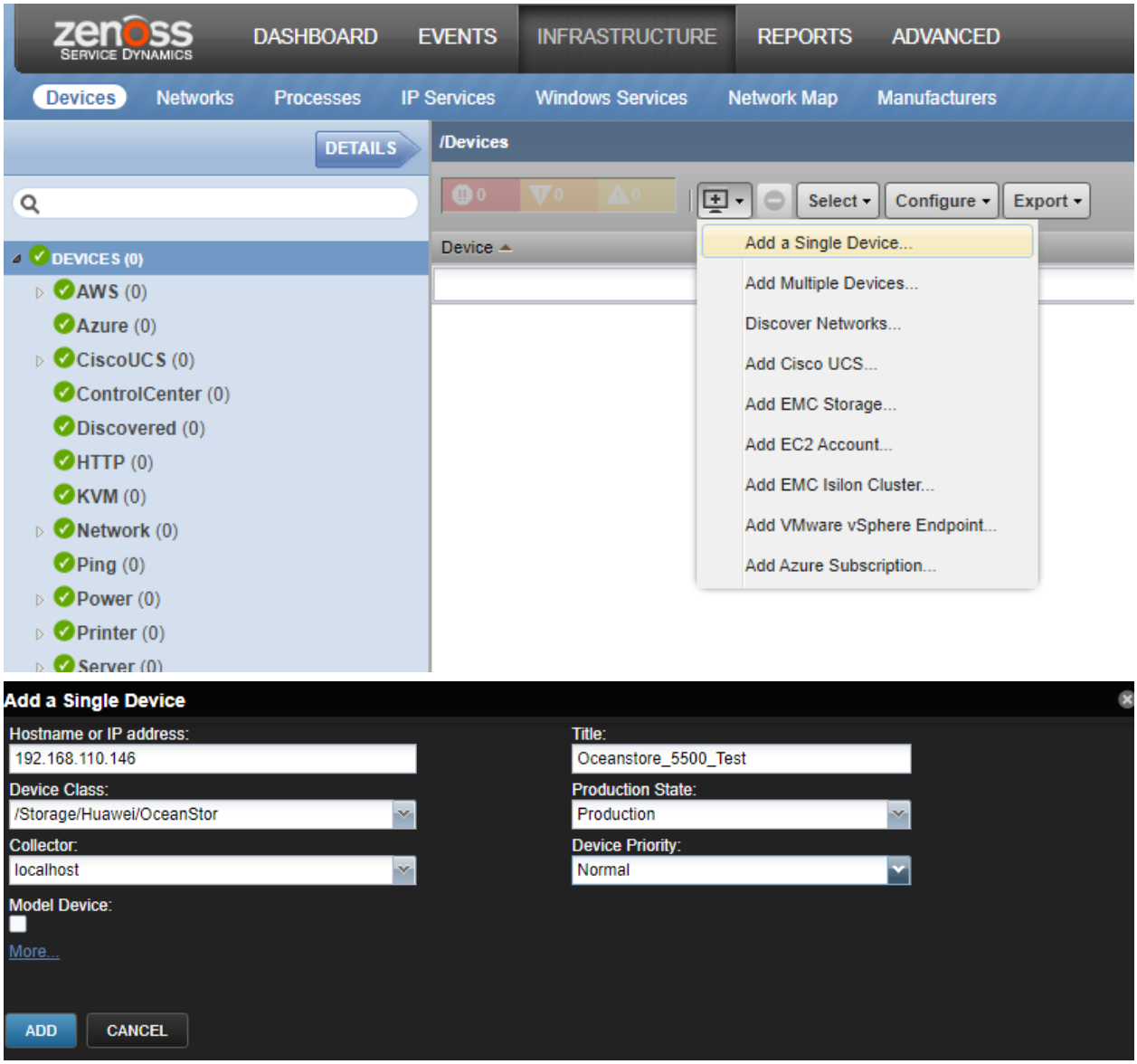


Figure 2: Add Device via ZSD Management Interface

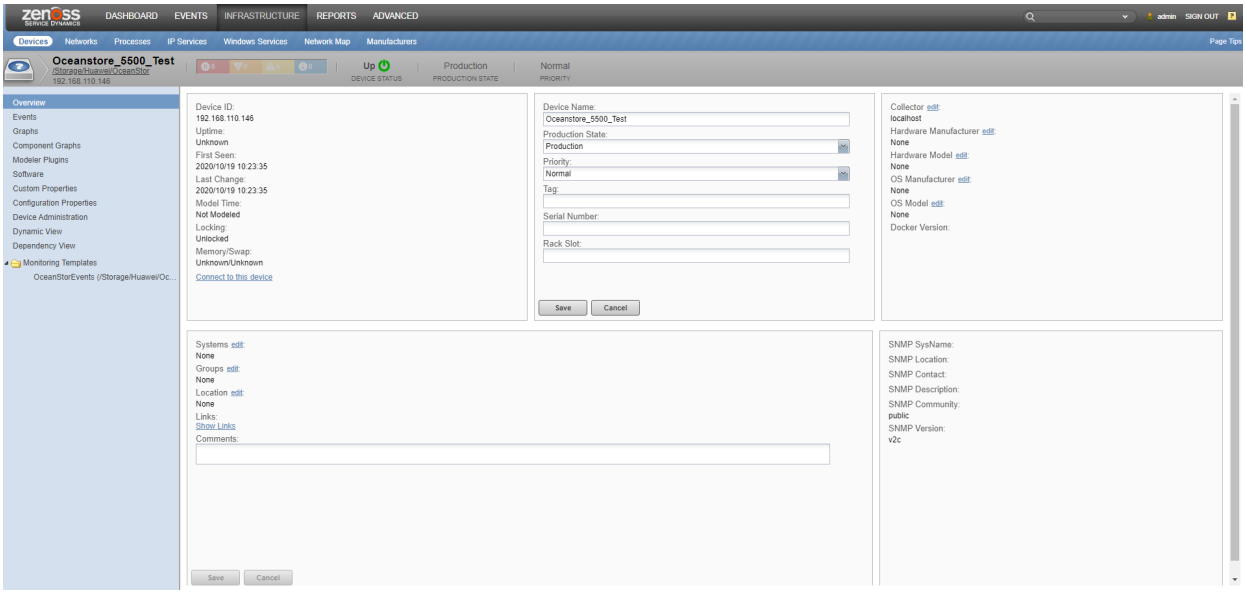


Figure 3: Successful Discovery of Huawei OceanStor V5 Storage

Inventory

We verified the function of ZSD to display the hardware and software inventory of the storage system. We also validated the inventory updates when the configuration has been changed on the DUT. The infrastructure page displayed an inventory list across hardware and software information. We created the following configurations via Huawei management interface on Huawei OceanStor V5 Storage.

We then observed the software inventory list shown on the ZSD management interface. The displayed inventory information was identical to the configured setup.

To verify the inventory updates we deleted a LUN and created a new file system on the storage system. After 1 minute that the configuration has been finished, we observed that the LUN inventory displayed 9 LUNs, and the LUN058007 has been removed from the list. We also observed that the new file system which has been created appeared in the inventory list.

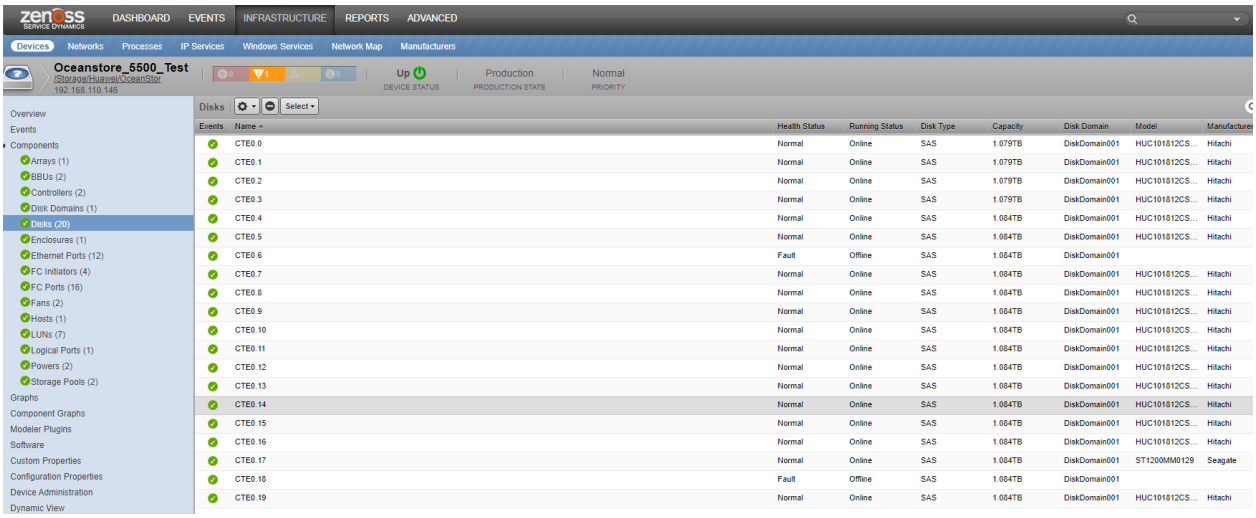


Figure 4: Components of Hardware Inventory for Huawei OceanStor V5 Storage and Disk Inventory Screenshot

Figure 5: Hardware Inventory Screenshot

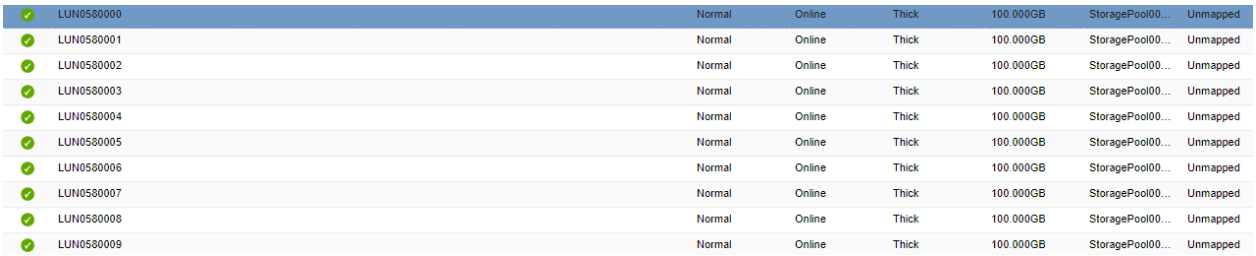


Figure 6: Software Inventory Screenshot

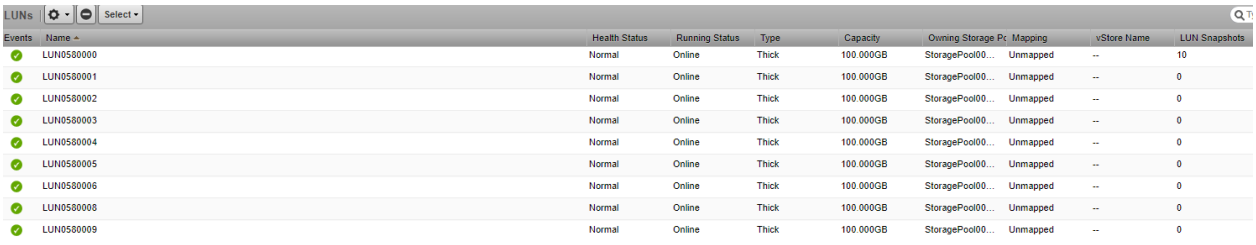


Figure 7: Updated LUN Inventory

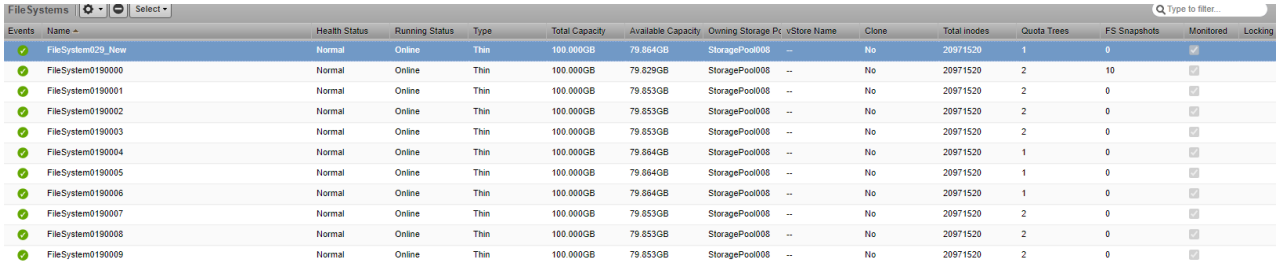


Figure 8: Inventory Update of the Added File System

Hardware Inventory	Value
Array	1 x Huawei Storage ▪ Health status: Normal ▪ Product Model 5500 V5 ▪ Version details V500R007C30 ▪ System and Capacity 21.399 TB ▪ Used capacity 1.255 TB ▪ Storage pools Free 3.256 TB ▪ Storage pools used capacity 2.031TB
BBU (Battery Backup Unit)	2 x PSU
Controller	2 x controllers ▪ CTE0.A ▪ CTEO.B ▪ Healthy Normal Online ▪ Intel 14core 2.2GHz.*1 ▪ 128.000GB Cache
Disk	20 x 1.079 TBytes (TB)
Enclosure	Huawei OceanStor V5 Storage ▪ Healthy status: Normal ▪ Running status: Online ▪ 2U 2 controller 25- slot2.5 -inch 6Gbit/s SAS controller enclosure ▪ 24 °C ▪ SN:2102351LVK9WJ9800016
Fan	2 x PSU
Power	2 x PSU of AC type, one online

Table 3: Hardware Inventory

Software Inventory	Value
Disk Domain	1 x diskdomain001
Block Storage Pool	2 TB storage pools
LUNs	10 x 100 GBytes
Snapshots of LUN	10 x snapshots of the LUN0580000 ▪ Health status: Normal ▪ Running status: Activated ▪ Snapshot capacity:100 GBytes

File Storage Pool	4 x storage pools
	▪ Health status: Normal
	▪ Running status: Online
	▪ Usage: Block storage
	▪ Owning disk domain: diskdomain001
	▪ Total Capacity:
	  ▪ 3x 2 TB and 1x 1.256 TB
	▪ Used capacity:
	  ▪ 242.562 GBytes
	  ▪ 1003.125 GBytes
	  ▪ 10 GBytes
	  ▪ 1011.875 GBytes
	▪ Free Capacity:
	  ▪ 1.019 TB
	  ▪ 1.020 TB
	  ▪ 1.990 TB
	  ▪ 1.011 TB

File Systems	10 x 100GBytes file systems
CIFS shares	5 x sharepath
NFS shares	5 x NFS shares
Snapshots of a File System	10 x snapshots of the file system 190000: ▪ Health status: Normal ▪ Snapshot capacity: 10 KBytes

Table 4: Software Inventory

Alarm Monitoring

We validated that ZSD was able to generate an alarm when a Fibre Channel link was disconnected from the storage system. We checked the alarm on the ZSD software and compared it with the one on the management interface of the storage system. One minute after the port had been disabled, an alarm of FC front port appeared in the monitoring event list. The count of the event increased by one for every minute the alarm condition remained. The count stopped increasing after we recovered the Fibre Channel link. The ZSD generated the alarm successfully.

Conclusion

All of our spot checks of management interoperability between the ZenOSS system and the Huawei OceanStor V5 storage were successfully completed. The ZSD successfully discovered the Huawei OceanStor V5 Storage from the IT infrastructure. The monitoring system also displayed a full list of hardware and software inventory, and provided updates when configuration has been changed on the Huawei OceanStor V5 Storage. Finally, the monitor generated an alarm indicating the port down status on the Huawei OceanStor V5 Storage. With regards to the commissioned scope of work, the ZenOSS and Huawei OceanStor V5 storage were well interoperable.

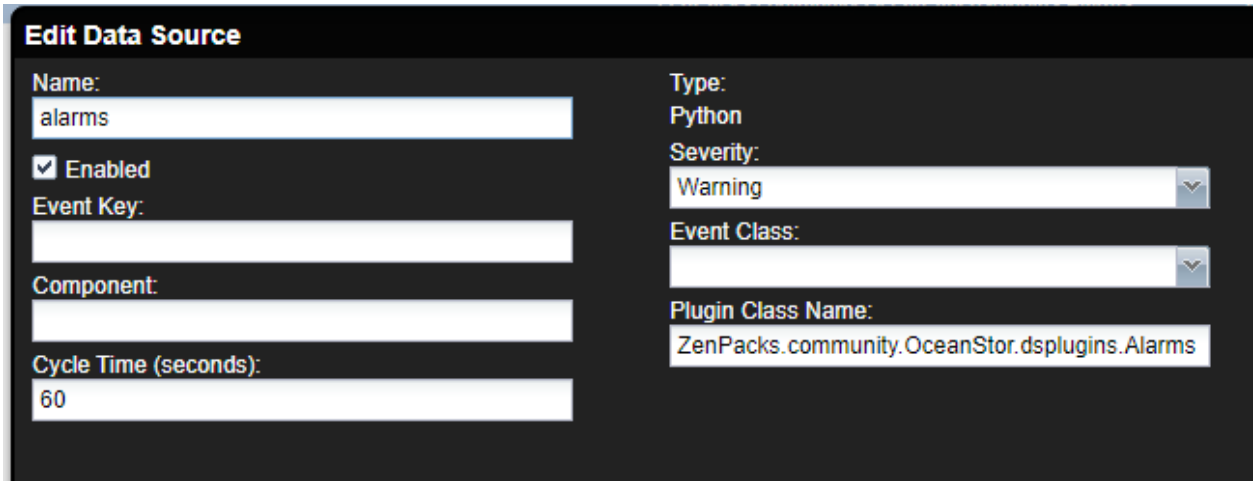


Figure 9: Alarm Template Configuration

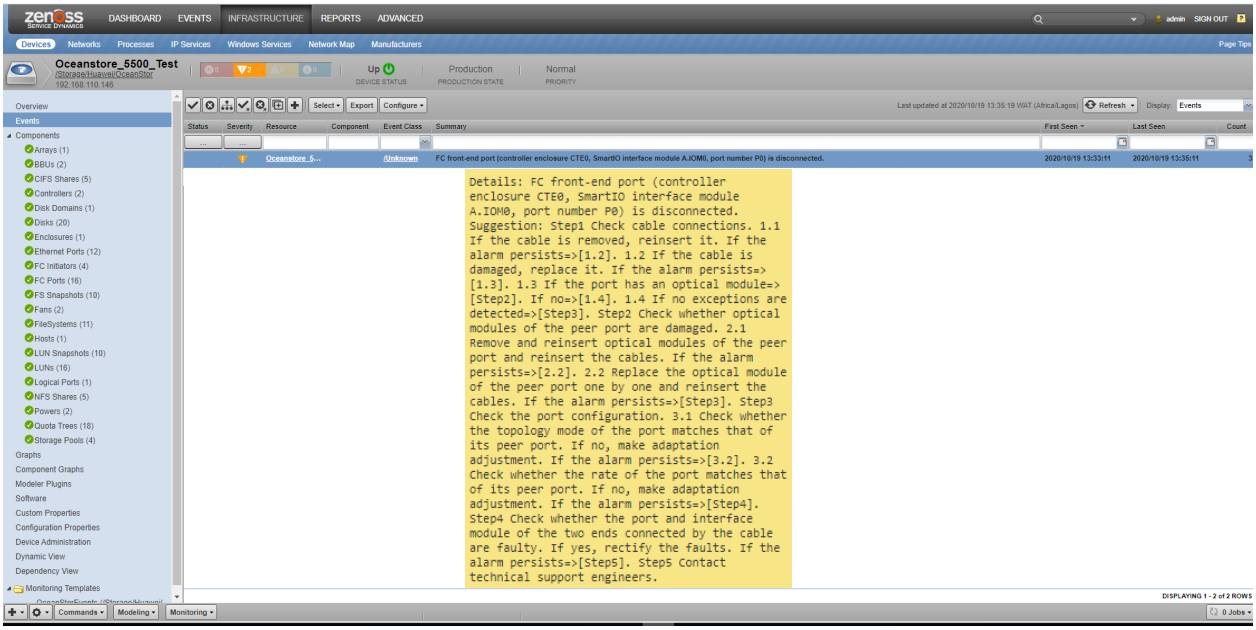
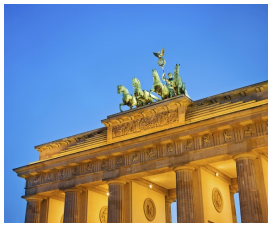


Figure 10: Alarm of Port Event

About EANTC



EANTC (European Advanced Networking Test Center) is internationally recognized as one of the world's leading independent test centers for telecommunication technologies. Based in Berlin, the company offers vendor-neutral consultancy and realistic, reproducible high-quality testing services since 1991. Customers include leading network equipment manufacturers, tier 1 service providers, large enterprises and governments worldwide. EANTC's Proof of Concept, acceptance tests and network audits cover established and next-generation fixed and mobile network technologies.

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