Huawei Storage Common Maintenance Skills

2020/9/2

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Foreword

The routine maintain including proactive alarm monitoring, health check, patch upgrade and software upgrade.

Huawei provides **SmartKit** and **eService** cloud management platform to simplify Deployment, Maintenance, Troubleshooting, etc.

The course introduces how to maintain Huawei storage product by SmartKit, eService, make sure the storage and service running stably.

Contents

Alarm and Event

There're 4 severity levels of alarms, Critical, Major, Warning and Info. Critical alarm need to pay attention and take immediate action. Major alarm need to be handled as soon as possible.

Ways to monitor storage alarm:
- ➢ Check alarm indicators in data center
- ➢ Login Device Manager or CLI command line to check alarm status
- ➢ Configure alarm notification by email, SM, Syslog server, SNMP Trap server, Huawei eService Call home. Third-part management software like Zabbix, UIM are supported.

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Alarm Masking

✓ Mask from CLI command line

admin:/>change alarm_mask alarm_id_list=0xF0C90003 mask_switch=on
WARNING: You are about to enable the alarm masking function. This operation will make the masked alarms are neither reported to the DeviceManager nor sent by email, short message, or syslog. But the alarm masking function does not affect email test alarms and short message test alarms.
Suggestion: Before performing this operation, ensure that the alarms need to be masked.
Have you read warning message carefully?(y/n)y
Are you sure you really want to perform the operation?(y/n)y
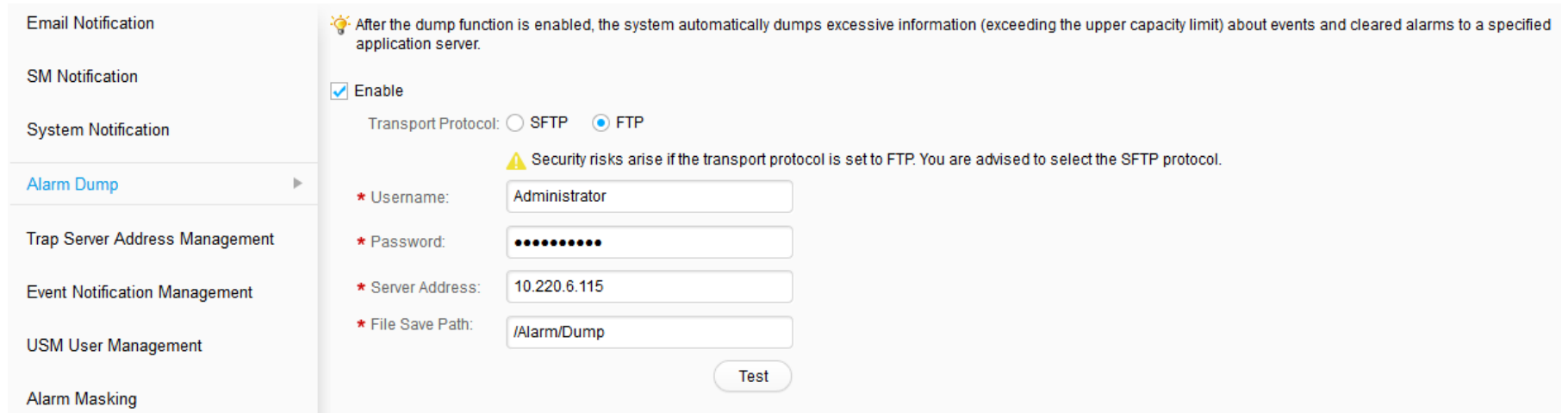Change alarm 0xF0C90003 mask switch successfully.

✓ Mask from Device Manager

Alarm Dump

Recommend to configure alarm dump to archive history alarm for further troubleshooting

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SmartKit Scenario-Based tools

✓ Tools controlled by user privilege

✓ Follow the wizard to complete the operation in various maintenance scenarios.

SmartKit Tool Installation

✓ Different tools have different privilege control policy.

➢ Hot Patch Installation tool applicable for product user，channel engineer，Huawei engineer

➢ Device Upgrade tool applicable only for channel engineer and Huawei engineer

✓ Two ways to install tools in SmartKit

➢ Download tool package from Support website and import to SmartKit

➢ Directly install/upgrade from SmartKit，must authenticate user account and connect to Internet

Health Check

✓Inspect both OS configuration and storage health status

✓Collect storage log if there's failed inspections item

✓Analyze disk health status if needed

Health Check ⑦

Used in the routine maintenance scenario of enterprise storage, OceanStor 9000, and FusionStorage, involving inspection, log collection, and disk health analysis.

🔄 Execute again   📂 View report

Device Selection

Select devices required by the task and a save path for the report.

Inspection

Check the hardware, software, value-added services, and alarms of devices.

Information Collection

Collect information about the operation of devices.

Disk Health Analysis

Analyze the disk information collected by the information collection tool.

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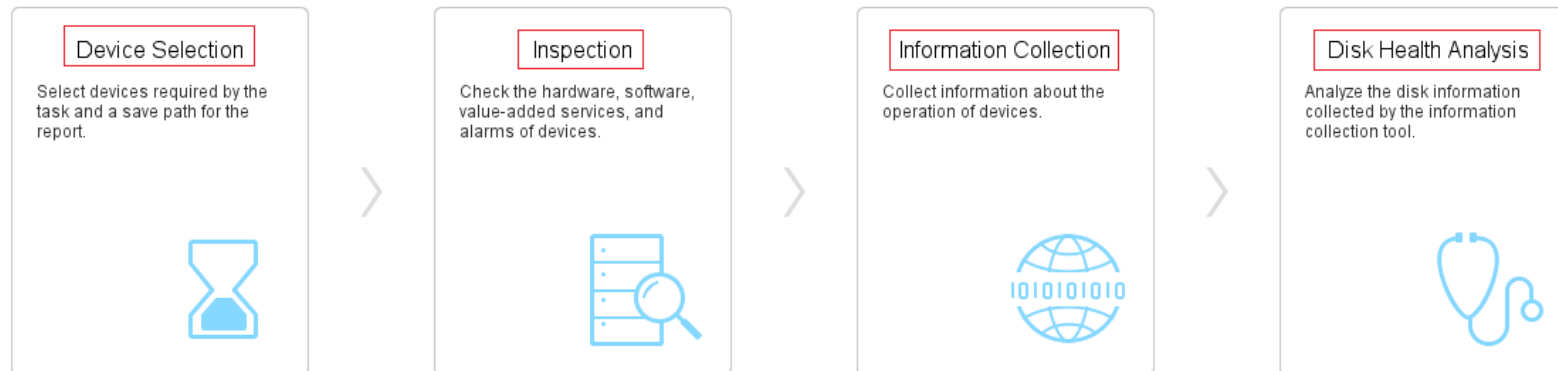
HyperMetro Solution Inspection

Recommended to add both storage and typical hosts to inspect the whole solution together. Otherwise, some of the cross storage related configured can't be inspected
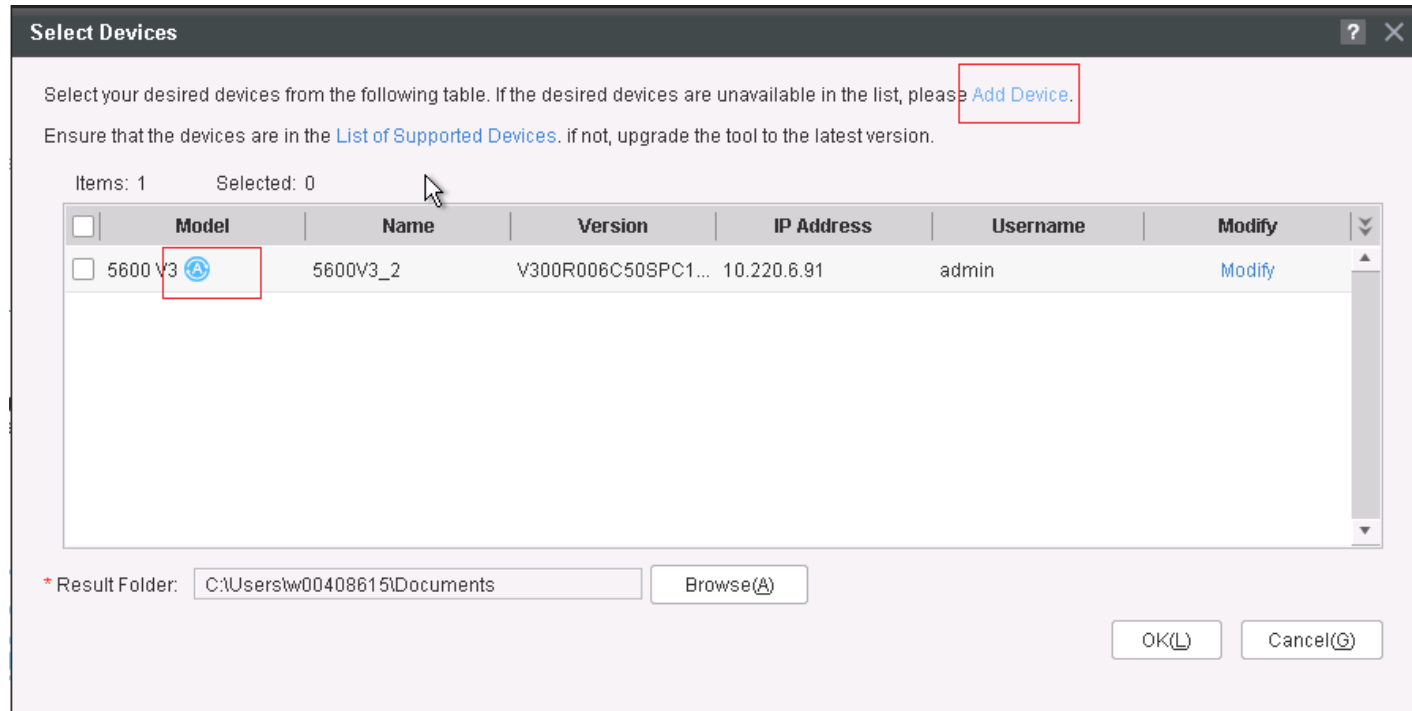
Routine Inspection Plan

Daily:

    Check alarm indicators in datacenter

    Check alarm status

Quarterly:

    Basic inspection and check risky and failed items

Yearly:

    Analyze disk health status (More frequently after 3 years)

    Check Heat Dissipation, Dust, Vibration, Noise, etc.

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Huawei Software Introduction

✓ Old Version Naming Policy: for example V300R006C50SPC100
  ➢ V version means platform version
  ➢ R version means Feature collection release
  ➢ C version means Enhanced function release
  ➢ SPC version means cold patch for bug fix
  ➢ SPH version means hot patch for bug fix

✓ New Version Naming Policy(Start from Dorado V6): 6.0.1.SPH5. Similar like old version naming policy.

✓ Recommended software version and patch has thumb up label.

OceanStor Dorado 3000 V6 6.0.0.SPH7

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Hot Patch Upgrade Principle

◆ Replace the Function/Code in memory

◆ No impact to service, but high workload may impact hot patch installation as the function/code may be frequently invoked/called.

◆ Hot patch can be uninstalled in command line(only delete in emergency situation, recommend to operate with TAC support).

```
developer:/>delete hotpatch
DANGER: You are going to delete the hot patch. This operation fails the existing hot patch.
Suggestion: Before you perform this operation, ensure that the correct patch is selected.
Have you read danger alert message carefully?(y/n)y

Are you sure you really want to perform the operation?(y/n)y
Processing... /
```

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Rolling Upgrade Principle

✓ Upgrade controllers in batches

✓ Upload firmware and software package -> Offline controller -> Upgrade firmware(BIOS, SES, SAS, etc.) -> Install software to system disk -> Reboot controller

✓ Shutdown P1 -> Host HBA report link fault -> Multipath software failover path to alive controller -> Application retries IO within a timeout period.

✓ Risk of rolling upgrade:
  ➢ If the timeout period is shorter than that of the HBA driver, services will be interrupted.
  ➢ Configuration issue cause path can't failover

Rolling upgrade

Application software 1 | Application software 2 | 4

Multipathing software

HBA | P0 | P1 | 2

Switch

3

1 X

P0
Controller A

P1
Controller B | 5
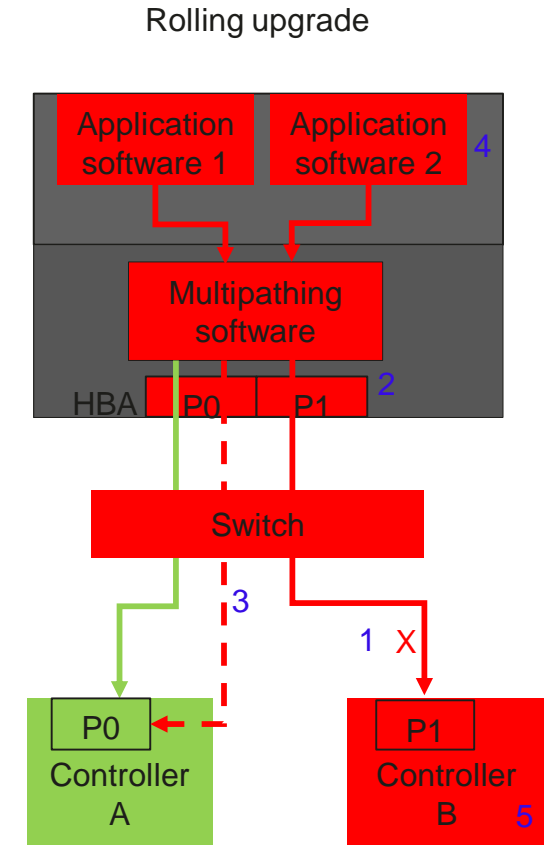
Fast Upgrade Principle(Dorado V6)

- ✓ Upgrade all the controllers at the same time

- ✓ Upload firmware and software package –> Upgrade firmware(SES, SAS, etc.) -> Upgrade component-based software

- ✓ Front-end interface module remain the host sessions -> The upgrade duration of I/O components is less than one second, the software upgrade duration is less than 10 seconds, and I/Os are not interrupted.

- ✓ Not all the software version support fast upgrade, around 2 years' internal
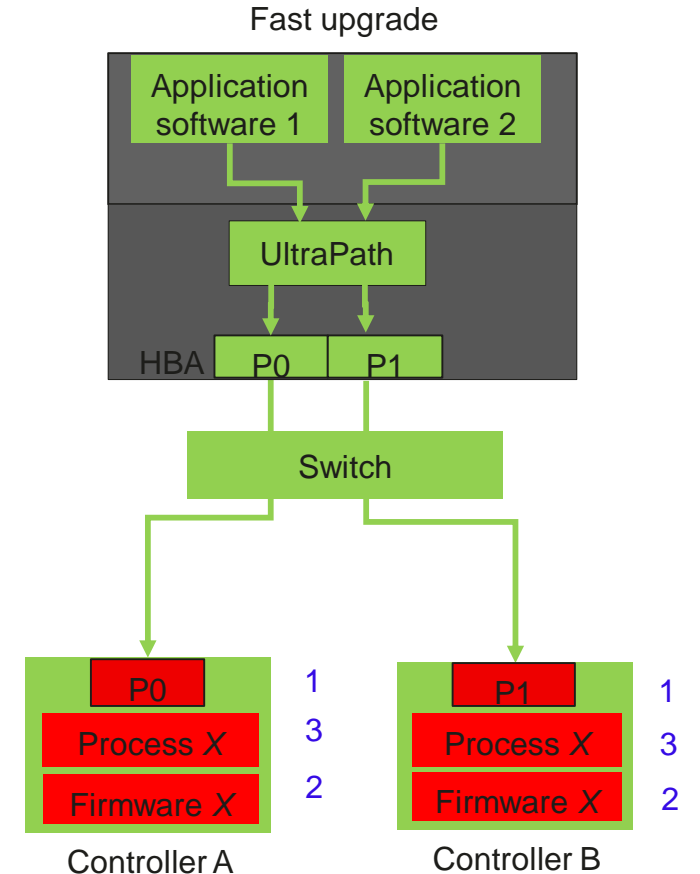
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Software Upgrade Process

Base line version upgrade only applicable for channel engineer and Huawei engineer, which is controlled by the upgrade tool. The recommended process for Baseline Version upgrade:

Collect storage, Evaluation and Inspection report for Upgrade evaluation
1-2 weeks before upgrade

➡

Huawei GTAC evaluate the risk of Online Upgrade
**3-5 working days**

➡

Implement Storage Upgrade
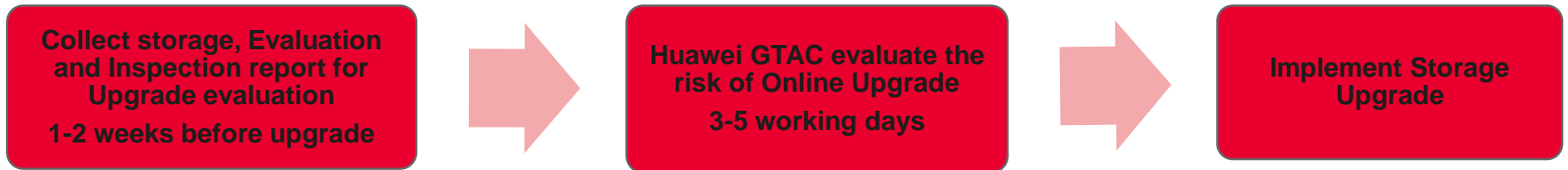
Note:
① If skilled end customer need to do the upgrade by himself, download and import Array Upgrade tool for him, launch the tool without authenticate user account.
② For HyperMetro solution, should add host and both storages to Inspection tool and collect HyperMetro Inspection report.
③ Use the latest SmartKit and Array Upgrade tool

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Upgrade Operation

Strictly follow the upgrade guide released with software version
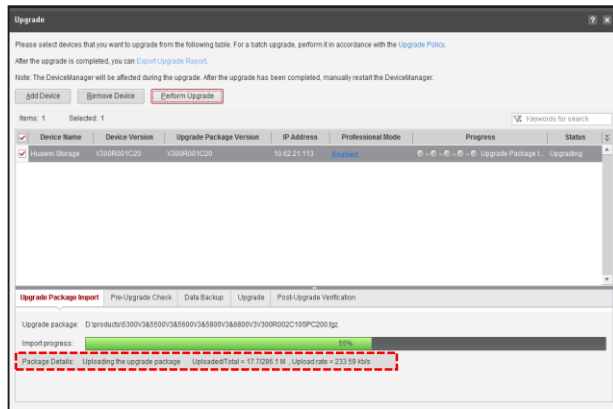
Importing the upgrade package

Click **Perform Upgrade**, and then select and import the upgrade package. The progress bar is visible at bottom of the page.
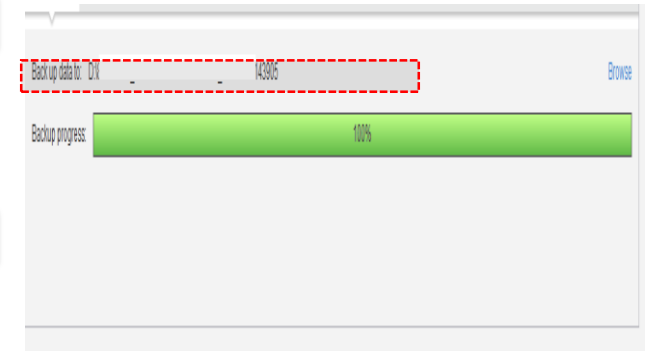
Pre-upgrade check

Check whether upgrade requirements are met. Based on the check results, you can view the errors, rectification suggestions, and handling operations.
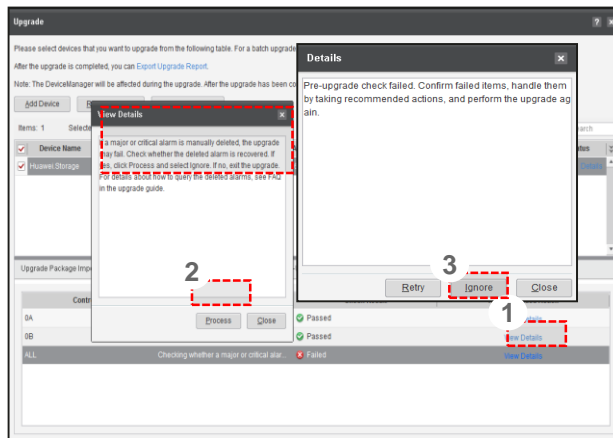
Backup data

Backup the system configuration and license.

Performing upgrade

During the upgrade process, the upgrade progress and process details are displayed on the **Upgrade** page.
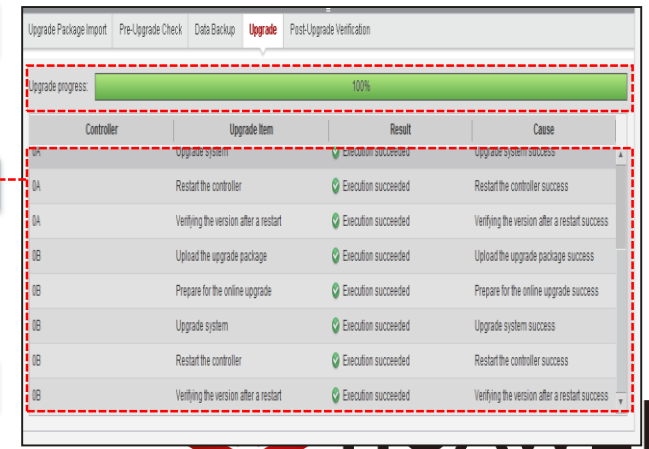
Post-upgrade check

Check the basic status of the device.

Storage Upgrade Plan

☐ Subscribe product notification on Support website
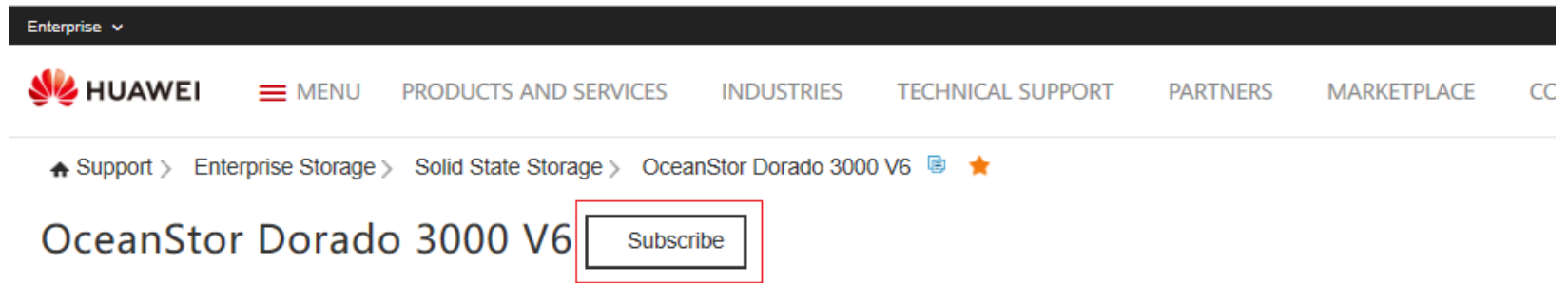
☐ Recommend to install the latest hot patch
☐ Recommend to install baseline version for new feature, big fix, Huawei notification. Normally, once per year

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eService Access

- Two main functions for eService

  Call home service -- Controlled by eService contract

  eService cloud management system   -- Controlled by license

- The main procedures for eService access：
  ① Prepare authorization letter(get template from support website)
  ② https://support.huawei.com/enterprise/en/enterprise-storage/eservice-pid-22379482
  ③ Software installation/configuration
  ④ Contact TAC for authentication
  ⑤ Self-access eService cloud management system

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eService System Architecture

Customer's network

eService portal for customers

Cloud Computing
FusionManager/FusionCompute/FusionAccess/FusionSphere OpenStack OM/Manage One Service Center and Operation Center

eSight

Network device

Server

Storage

Device Manager

eService client & FusoinCare

Email channel (optional)
• Supporting only alarm monitoring

Customer mail server

HTTPS channel
• Fault monitoring
• Remote inspection
• Remote log collection
• Capacity prediction
• Performance anomaly analysis
• Disk failure prediction

Proxy server (optional)

Internet

Huawei's network

Huawei mail server

eService cloud system

HTTPS services

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eService Maintenance Functions

✓Automatic alarm reporting and SR creation for all IT devices
✓Risky Disk Identification
✓Capacity trend predication
✓Performance bottleneck predication
✓Remote log collection and inspection (TAC engineer)
✓Remote patch installation(Dorado V6) (TAC engineer)
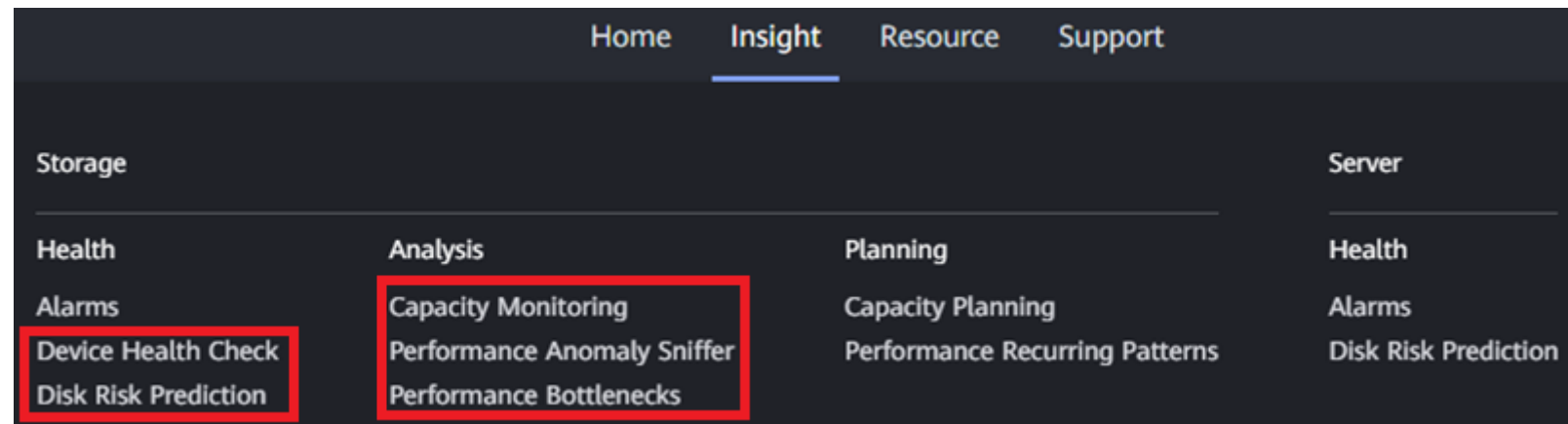
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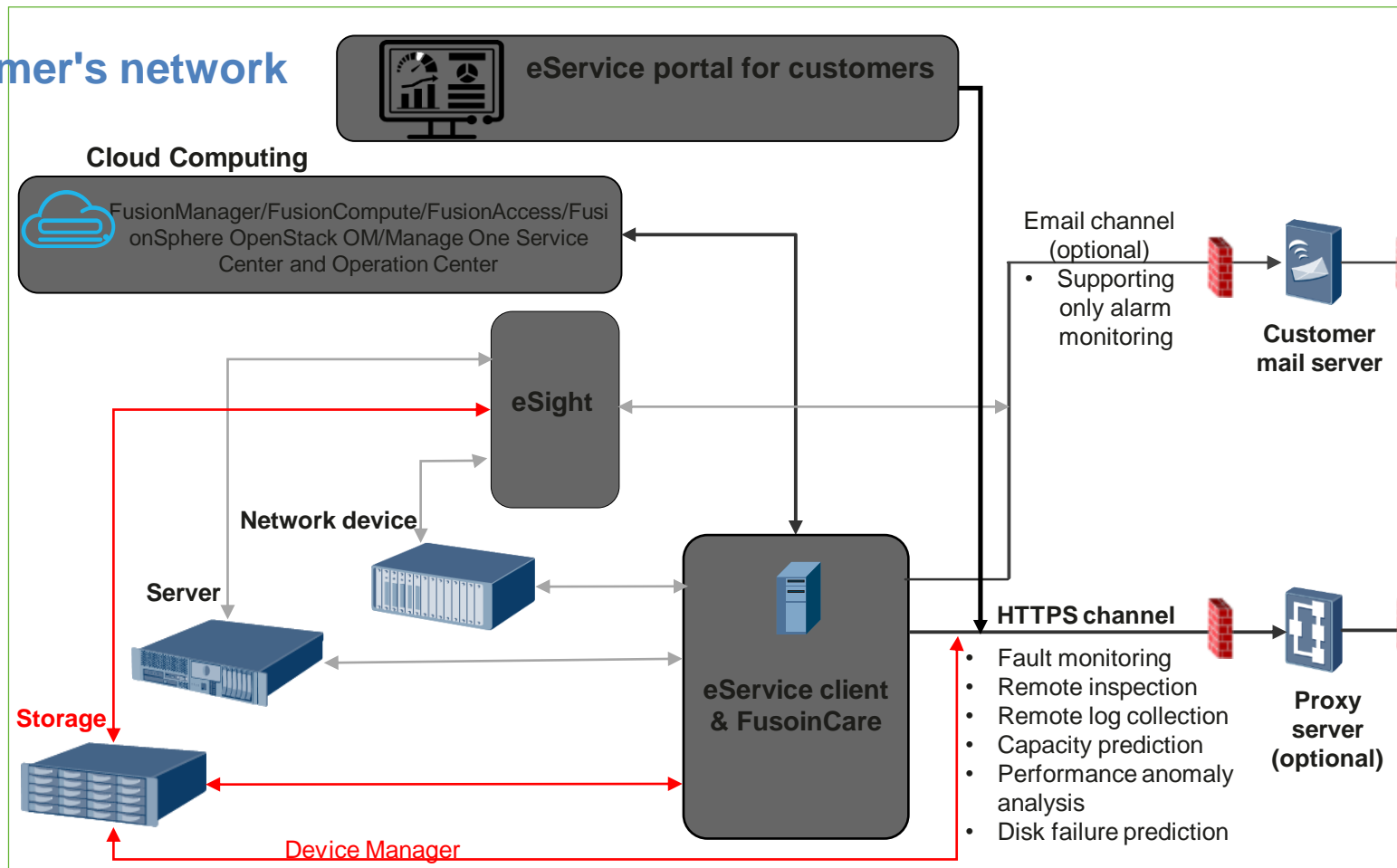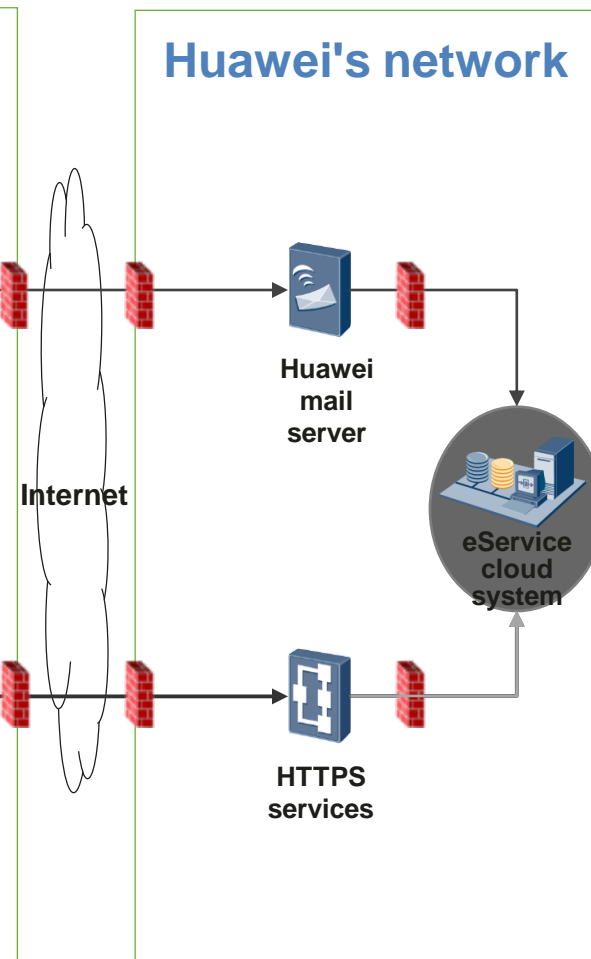4. eService Introduction
5. **More Information**

Useful Resources

➢ Production Documentation(Including KB, Bulletins, Forum): https://support.huawei.com/enterprise/en/category/enterprise-storage-pid-1482606575525?submodel=software

➢ HyperMetro Solution Documentation: https://support.huawei.com/enterprise/en/it-solution/bc-dr-solution-pid-21316944/doc

➢ Storage Demo: https://support.huawei.com/enterprise/en/tool/storage-simulator-TL1000000114

➢ Compatibility Check: http://support-open.huawei.com/ready/pages/user/compatibility/support-matrix.jsf

➢ eDesigner: http://app.huawei.com/unistar/edesigner/solutionAction!showHome.action?CsrfToken=fcf7b0643f8f4b37a35f70c25f9e1ff9

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Performance Log Collection

➢ For dual-controller storage，export performance log files by SFTP tool or SmartKit (Historical Performance Monitoring)
➢ For Quad-controller storage(single engine), export performance log files by SmartKit
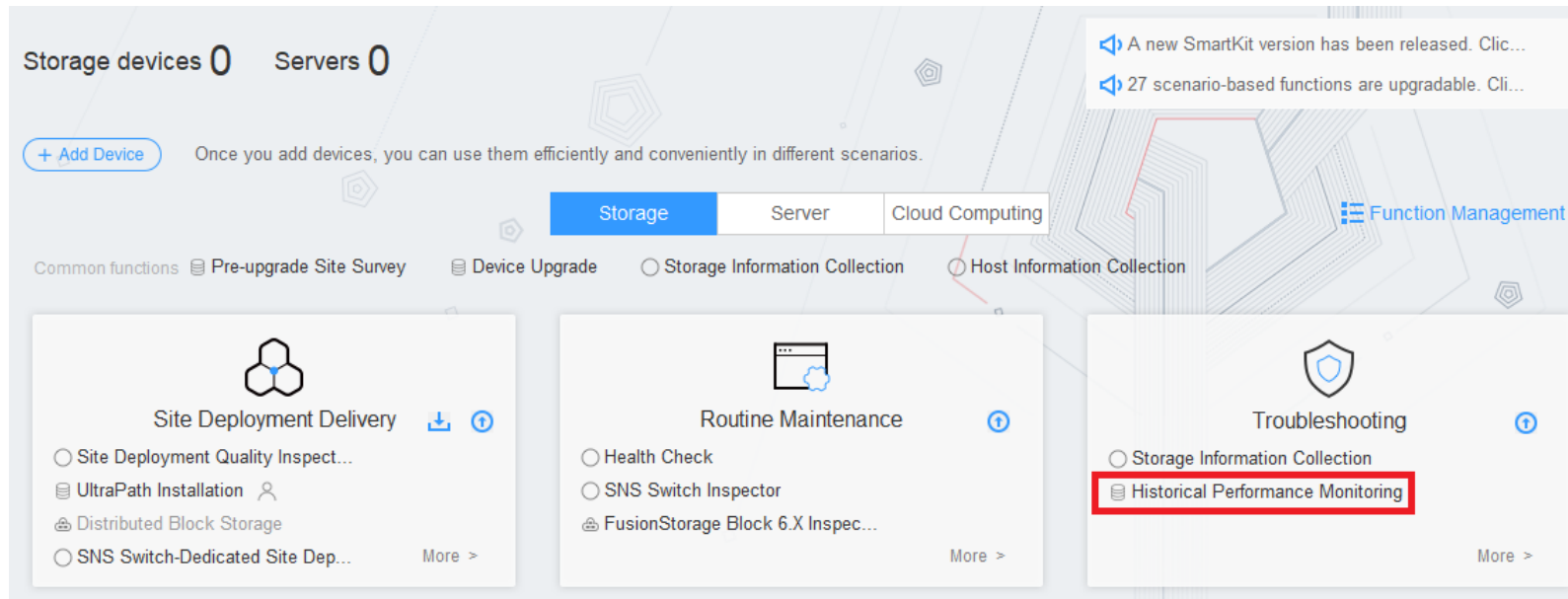
Storage Command Line

➢ CLI: Command-line interface (CLI) views include the developer view, diagnostic view, engineer view, and user view. Users in different views have different operation permissions.

➢ Minisystem Mode: When a storage system fails to be started up or continuously resets, the storage system directly goes to a special mode, the minisystem mode. The minisystem mode is used for IP address change and environment recovery if system startup fails or an IP address is lost. Minisystem mode also can be used to diagnose network, by ping, telnet, tcpdump.sh etc.

➢ Serial Port mode: The serial port mode allows users to log in to a storage system using serial ports. Normally, we can use serial port mode to initialize password, or access BMC to diagnose hardware.

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Thank you.

Bring digital to every person, home and organization for a fully connected, intelligent world.

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