Huawei OceanStor 5600 V5 Storage System Performance Test Report

Huawei Technologies Co., Ltd.

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About This Document

This document is intended for storage system engineers, storage test engineers, and other professionals who need to know Huawei OceanStor 5600 V5.

This document describes how to test Huawei OceanStor 5600 V5 online transaction processing (OLTP) performance and the test result. It also proves that OceanStor 5600 V5 can meet customers' requirements in scenarios where the OLTP technology is used.

This document is written in Microsoft Office 2007.

Contents

Figures

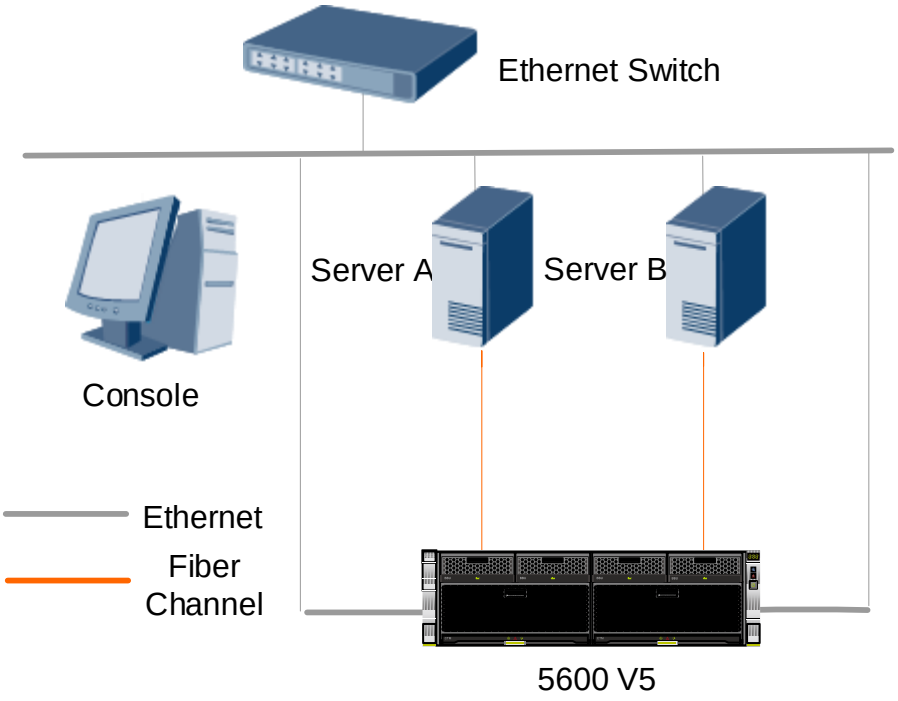
Tables

1 Test Environment Configuration

1.1 Test Network Diagram

1.1.1 Performance Test Network Diagram

Figure 1-1 Performance test network diagram



NOTE

Server A and Server B are test servers that run SUSE 11 SP2. The console is a notebook that runs Windows 7. The Ethernet switch is an L2 switch.

For details about hardware requirements, see section 1.2.2 "Hardware Configuration".

Each server has two FC HBA cards and each server has two direct connections to controller A and two direct connections to controller B. There is no FC switch between storage and server.

1.2 Hardware and Software Configurations

1.2.1 Storage System Configuration

Table 1-1 OceanStor 5600 V5 configuration

Item	Description	Quantity
5600 V5 controller enclosure	Huawei OceanStor 5600 V5 storage controller enclosure with 2 controllers, each controller with 128 GB cache	1
Disk enclosure	2U disk enclosure with 25 2.5" slots	1
SSD disk	960 GB SSD disk	25

1.2.2 Hardware Configuration

Table 1-2 Hardware configuration

Item	Description	Model	Quantity
Test server	x86 server 2 Intel Xeon E5-2690 V3 CPUs 128 GB memory and 2 QLogic 2672 HBA cards	Huawei RH2288 V3	2
Console	Dell laptop	D430	1
Ethernet switch	16-port Ethernet switch	Huawei S5616	1
Fiber Channel cable	5 m SC-connector optical fiber	AMP	8

1.2.3 Test Software and Tools

Table 1-3 Test software and tools

Software	Description
Vdbench	Being developed by SUN, Vdbench is a general benchmark test tool for storage products. It can test performance of both raw disks and file systems.
UltraPath	UltraPath is the host multipathing software of OceanStor 5600 V5.

2 Test Methods

2.1 Test Policies

The test items of 5600 V5 cover the performance of OLTP (Online Transaction Processing) databases.

This test uses Vdbench to run the tests in OLTP scenarios. The workload is as follows:

- I/O size: 8 KB
- Read/Write ratio: 60%:40%
- Service model: random

2.2 Test Cases

Table 2-1 Test cases

Test Item	Case ID	Case Name
System performance test	PF.01	5600 V5 OLTP performance test

3 Test Cases and Results

3.1 System performance test

3.1.1 OLTP Performance Test

Case ID	PF.01
Objective	To test performance of OceanStor 5600 V5 system in OLTP scenarios
Test Network	Figure 1-1 Performance test network diagram
Prerequisites	1. OceanStor 5600 V5 has adopted the performance test network. 2. Vdbench has been installed on each host. All hosts reside on the same LAN.
Test Procedure	1. Create 1 disk domain, containing 25 disks. 2. Create a storage pool that uses RAID 10 in each disk domain and then create 8 1 TB LUN in each storage pool. Half of the 8 LUNs belong to controller A. The other half belongs to controller B. 3. Map the created 8 LUNs equally to 2 servers. 2 LUNs of controller A and 2 LUNs of controller B are mapped to one server. 4 LUNs of controller A and 4 LUNs of controller B are mapped to the other. 4. Scan for LUNs on hosts. Use server A as the primary client to control server B. 5. On server A, configure the Vdbench parameters and conduct an 8 KB random access test (60% reads and 40% writes) for 8 LUNs concurrently.
Test Result	IOPS: 149964 Latency: 1.06ms
Remarks	The parameters of Vdbench are set as follows: xfersize=8KB,rdpct=60,seekpct=100,elapsed=1800,interval=1,warmup=60, thread=20