Big Data Acceleration

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Huawei HPC Momentum

- **170+ Countries**
- **$75B** 2016 Revenue
- **#3 Q1 ’17** WW Server Shipment
- **20 Top 500**
- **79,000 R&D Engineers**
- **36 Joint Innovation Centers**

World Class HPC Systems

- Chip Level Innovations
  - Management chip
  - NC interconnect
  - NIC chip
  - SSD controller chip

Chip Level Innovations

- Peta-scale Supercomputer
- Large Memory Analytics & Deep Learning
- Continuous Momentum with Automotive Manufacturing
- Advancing HPC on Cloud
Huawei FusionInsight Big Data Platform

Reshape Data Processing, Let the Data Speak Intelligently

FusionInsight Big Data platform

- Unified SQL
- Real-time search
- Real-time decision
- Relationship engine
- Multi-tenancy

Data integration → Data analysis → Data services

- hadoop
  - Offline/Near-line computing
- Spark
  - In-memory computing
- STORM
  - Real-time stream computing
- MPPDB
  - Parallel database

Physical / Virtual Servers & Storage ← Hybrid Cloud ← Huawei or Partner Public Cloud

Agile
- Open architecture delivering linear performance improvements
- Efficient O&M supported by various tools
- Powerful Structured Query Language (SQL) capabilities simplify service migration

Smart
- Deep insight facilitated by full modeling
- Efficient and precise algorithms developed by Huawei

Trustworthy
- High availability of all components, remote DR, and financial guarantees
- Trustworthy partners for win-win outcomes

Huawei Confidential
Big Data Acceleration

Data Analysis

Data Storage

Data Source

Structured data, unstructured data

Streaming data

Compression algorithm lib

Compression FPGA

Soft Compression

HDFS

NVMe SSD

RDMA NIC

Structured data, unstructured data

Streaming data
HDFS Compression: Saved 30% of Data Nodes

- **2.5X** compression ratio
- Hardware Gzip compression **30%** faster
- Release CPU resource – reduce CPU requirement
- Native software support
- **100% Transparent** to application software

Data source: Huawei Server Solutions Lab
Spark Acceleration: Real-time Analysis 40% Faster

Memory + SSD hybrid intelligent Cache
- During shuffle to disks, Shuffle Read requires intensive random read of small data block
- NVMe SSD delivers high BW, IOPS & latency

- Analysis time in case study reduced by 40%
- Performance increased by 75%
- Boost performance / $ by replacing HDD with SSD
- 100% transparent to application software
- Huawei SSD supports high reliability, built-in atomic write
Storm Acceleration: RDMA speeds stream processing

RoCE Acceleration
- RoCE v2 based smart NIC
- Reduce CPU utilization, increase NIC throughput by 50%, reduce latency by 20%
Thank You