Panasas Parallel Clustered Storage
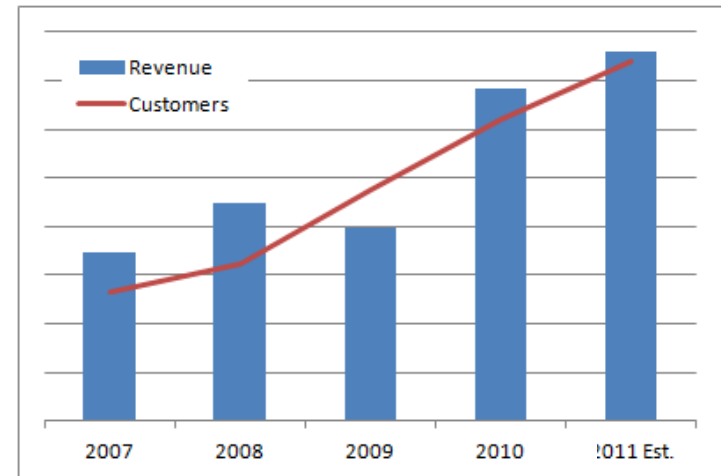
TERATEC FORUM 2012

DEREK BURKE, PARTNER SALES DIRECTOR, PANASAS EUROPE

INTRODUCTION TO PANASAS

Panasas, Inc.
- Founded in 1999 by Dr. Garth Gibson (co-inventor of RAID)
- Shipping solutions since 2003
- Headquartered in Sunnyvale, California

'Parallel' Storage Appliance
- Panasas hardware & PanFS parallel file system
- Modular building block (Panasas shelves)

Strong Financial Position
- Double-digit revenue growth
  in FY10 and FY11
- Hired over 50 additional engineers in 2011

Panasas Europe
- 80% year on year European revenue growth in 2011
- Over 100 active customers in Europe
- >75% of customers are repeat buyers
- Local personnel in France, UK, Germany, Belgium & Spain
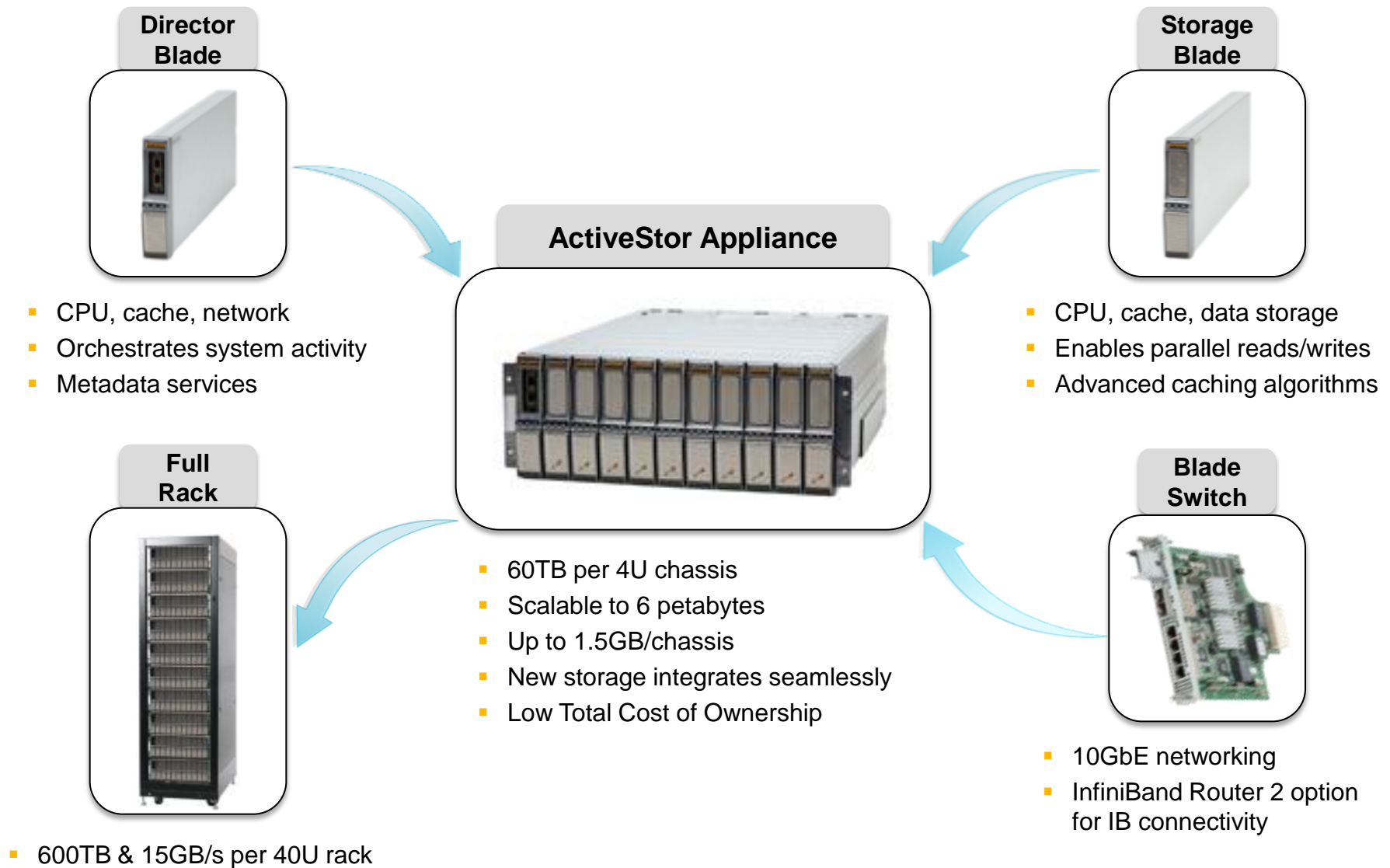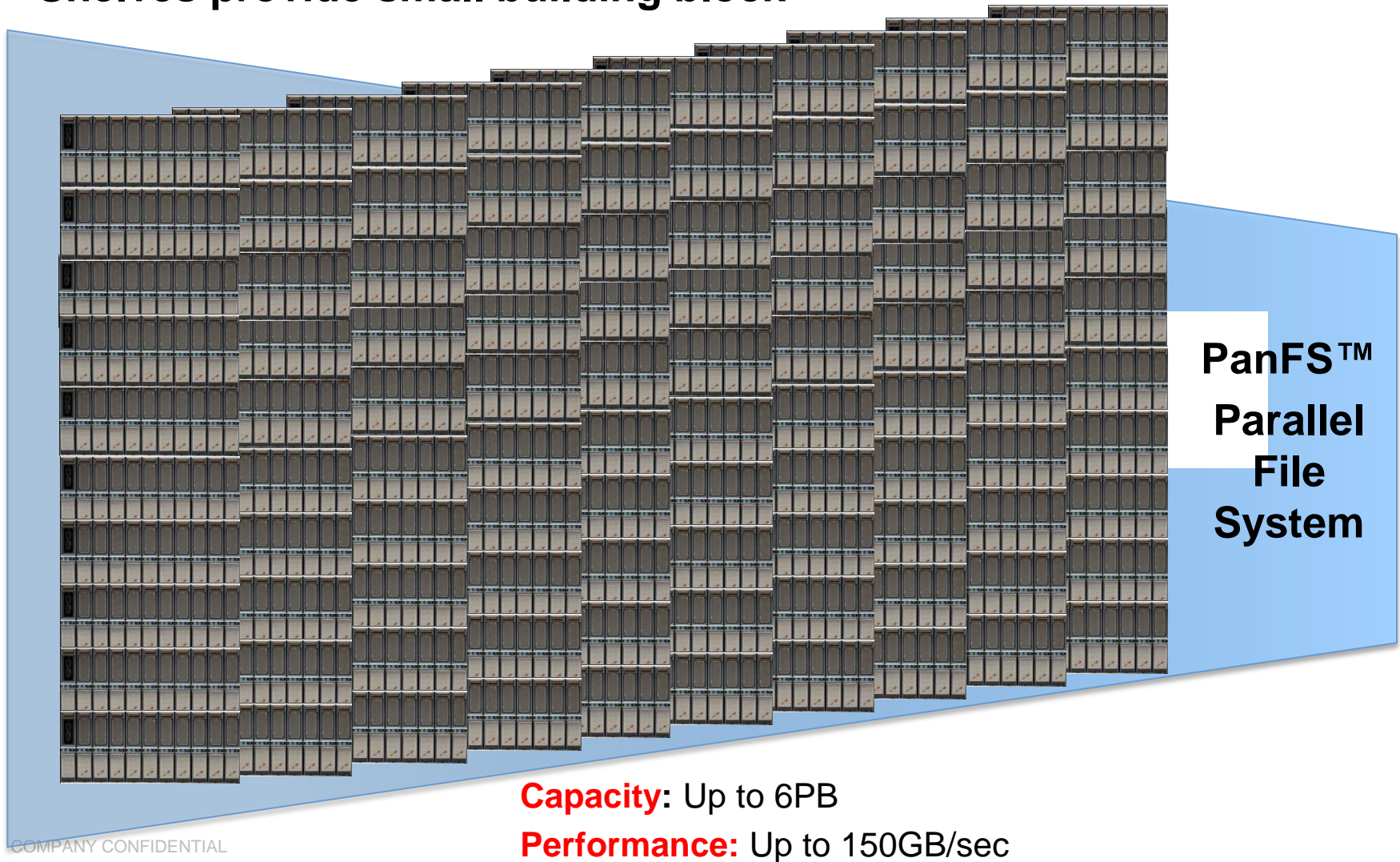- TERATEC member since 2008

Revenue & Customer Growth

Panasas Partners in France

ACTIVESTOR BLADE ARCHITECTURE

panasas

Director Blade

- CPU, cache, network
- Orchestrates system activity
- Metadata services

Storage Blade

- CPU, cache, data storage
- Enables parallel reads/writes
- Advanced caching algorithms

ActiveStor Appliance

- 60TB per 4U chassis
- Scalable to 6 petabytes
- Up to 1.5GB/chassis
- New storage integrates seamlessly
- Low Total Cost of Ownership

Full Rack

- 600TB & 15GB/s per 40U rack

Blade Switch

- 10GbE networking
- InfiniBand Router 2 option for IB connectivity

- **Modular hardware + file system appliance**
- **Shelves provide small building block**

PanFS™ Parallel File System

Capacity: Up to 6PB
Performance: Up to 150GB/sec

PANASAS 'SWEET SPOTS'

- **Pricing Sweet Spot**
  - Available from 36K EUR (street price including support for 3 years)
  - Opportunities from 1 to 50 shelves (40TB to 3PB)

- **Performance Sweet Spot**
  - Aggregate file-system throughput up to 150GB/sec
  - Diverse I/O workloads
    - Large global cache
    - Read ahead, write behind
    - Scalable metadata (associate different director blades to different parts of file-system sub tree)
  - Parallel reconstructions
  - Scale-out NFS & Scale-out CIFS

- **Manageability Sweet Spot**
  - Single GUI
  - User Quotas (without having to take the file system offline)
  - Snapshots
  - Single Support Infrastructure
  - Online Provisioning (add capacity with zero downtime)
  - Panasas Realm Manager (load balancing, SMART attributes, etc.)
  - Blade Drain

PANASAS SWEET SPOTS

- **Reliability Sweet Spot**
  - Automatic Volume & Metadata Failover
  - Storage Network Redundancy
  - LANL reports 99.9% uptime (including scheduled downtime)

- **Data Integrity Sweet Spot**
  - End to End Data Integrity
    - Object RAID
    - Network Parity
    - Disk Sector Parity

panasas

- **Three to Six Months**
  - Increase in number of files/directory and files/volume
  - Increase in metadata & small file performance
  - Massive increase in directory data query commands (e.g. ls, find, du)
  - 4TB drives
  - Up to 50% faster reconstructions

- **Six to Twelve Months**
  - Microsoft certified CIFS support
  - Large increase in clustered NFS & CIFS performance
  - Massive increase in number of files/volume
  - Massive increase in metadata performance
  - Massive increase in RAID reconstruction performance
  - Initial support for pNFS

SUMMARY

- **Strong growth in Europe & worldwide (80% in 2011)**

- **Parallel storage appliance scalable from 1 to 100 shelves**
  - 40TB to 6PB in capacity
  - 1GB/sec to 150GB/sec in aggregate throughput

- **Only Panasas PanFS has unique Object RAID**
  - Fast, parallel RAID reconstructions
  - Multiple RAID levels for enhanced data integrity

- **Sweet spots**
  - Price/performance excels from 40TB to 3PB
  - Diverse I/O workloads
  - Where environment requires manageability, reliability & data integrity

- **What to do next?**
  - See us in the exhibition hall at TERATEC
  - Visit www.panasas.com
  - Contact your local partner to ask about Panasas
  - Or contact your local Panasas sales person Elizabeth Jassaud, ejassaud@panasas.com , 06 29 51 32 14

THANK YOU