

Commercial InfiniBand datacenters

Dmitry Tkachev,
Chief Product Officer
Massive Solutions

A decorative graphic consisting of several horizontal lines of varying lengths and colors (teal, white, and light blue) extending from the right side of the slide towards the center.

Who we are

- Established in 2006
- Focusing on engineering and development of highly scalable distributed software for cluster and datacenter management
- Experts in InfiniBand technology, developing our own EoIB driver
- Clustrx – hierarchical management software for HPC, powering Lomonosov supercomputer



Is there life for IB outside of HPC?

- InfiniBand is established player in HPC
- Lots of storage solutions using IB as backend
- A spike in IB consumption goes from cloud and web 2.0 applications

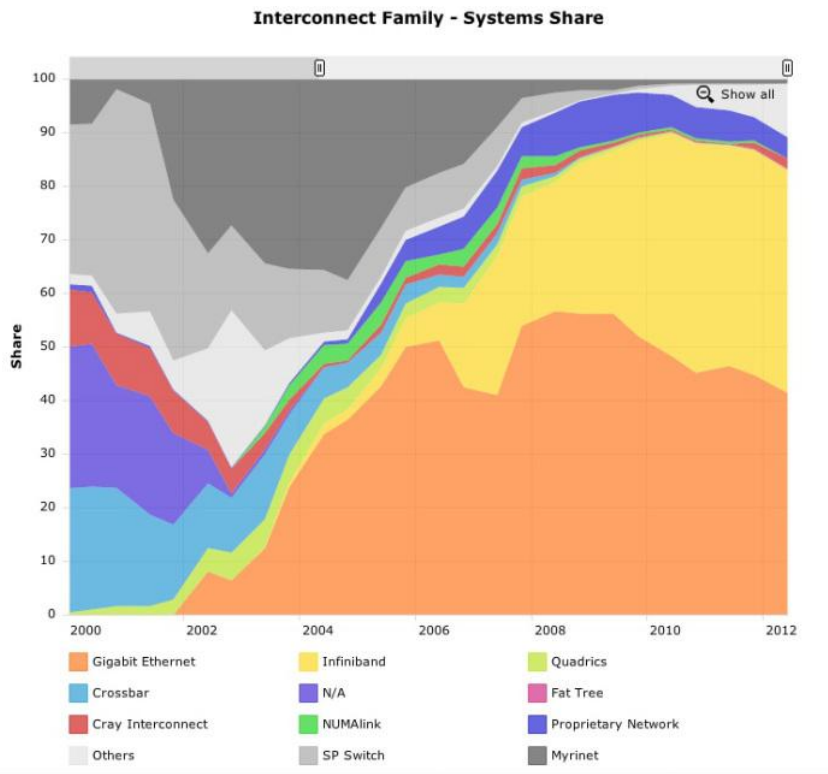


Exhibit 2: InfiniBand Growth Accelerating



Source: Company data, Credit Suisse estimates

Oracle

- **Exadata (database in-memory machine)**
 - Fault-tolerant storage and server I/O network
 - Linear scalability to multiple compute racks and hundreds of storage servers
 - For enterprise database, cloud database and Big Data analytics solutions
- **Exalogic (cloud computing appliance)**
 - Application performance up to 10X (vs. 10GbE), all I/O over one InfiniBand wire
 - SLA oriented Cloud infrastructure, reliable and secure multi-tenant environment
 - Best support for elastic capacity on demand
- **ZFS (storage over InfiniBand)**
 - 4X to 15X higher performance vs. Fibre-Channel
 - Cuts critical application backup windows in half
- **Exalytics (In Memory Compute)**
 - Business Intelligence Appliance, scalable, high-frequency trading
- **SuperCluster (Data Center in a box)**
 - SPARC T4-4 Servers, Exadata and InfiniBand ZFS Storage
 - 11gR2 & middleware acceleration with virtualization



Why is InfiniBand Useful to Oracle?

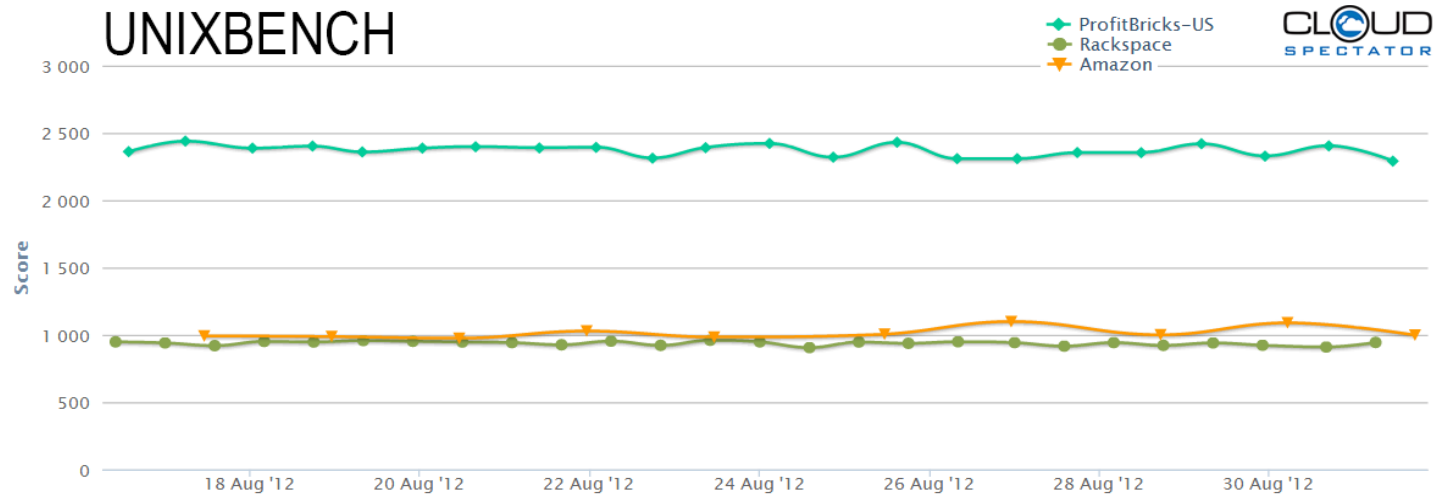
- Extremely low latency
 - 10X better than Ethernet
 - Much higher bandwidth
- At least 4X better than Ethernet
 - Multiple steps ahead of Ethernet on certain features
 - Lossless nature, resiliency, error recovery, RDMA
- Lower cost/bit compared to Ethernet
- Open standard
- Unified wire and network stack optimization
 - Network, Storage, and Inter-processor communication

ProfitBricks

- InfiniBand powered IaaS 2.0
- Flexible Networking
- Flexible Instances
- High Performance
- Minute based billing
- Graphical Data Center Designer

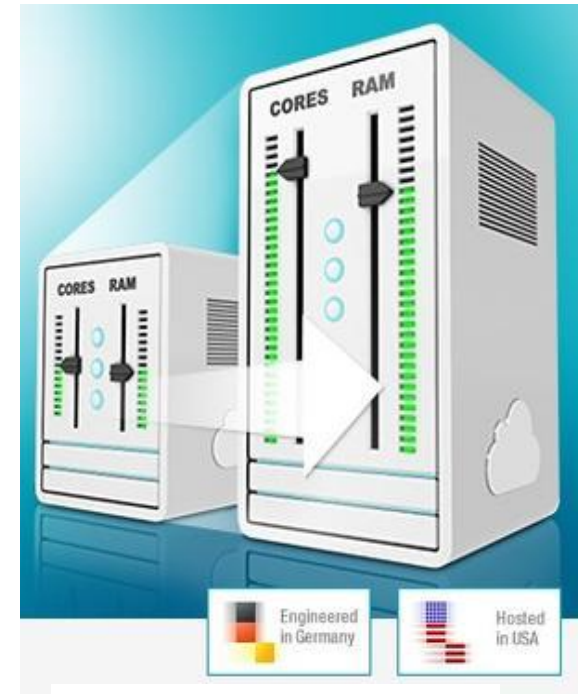


PROFITBRICKS
The IaaS-Company.



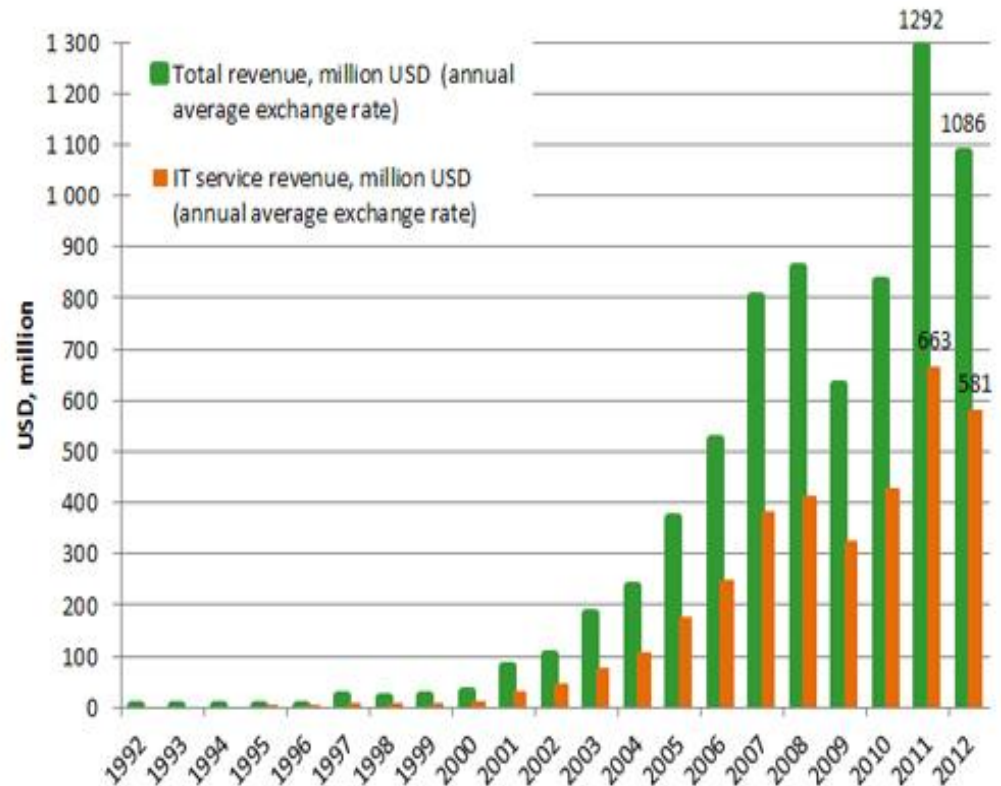
ProfitBricks - the first true virtual datacenter

- Live vertical scaling – ability to add CPU and RAM on the fly
- Meshed, redundant, virtualized Ethernet networks built on top of IB with 80Gbit/s connections
- Big instances configurable with up to 48 cores and 196 GB RAM
- Ease to use interface for designing and deploying clouds
- Simple, transparent billing by the minute

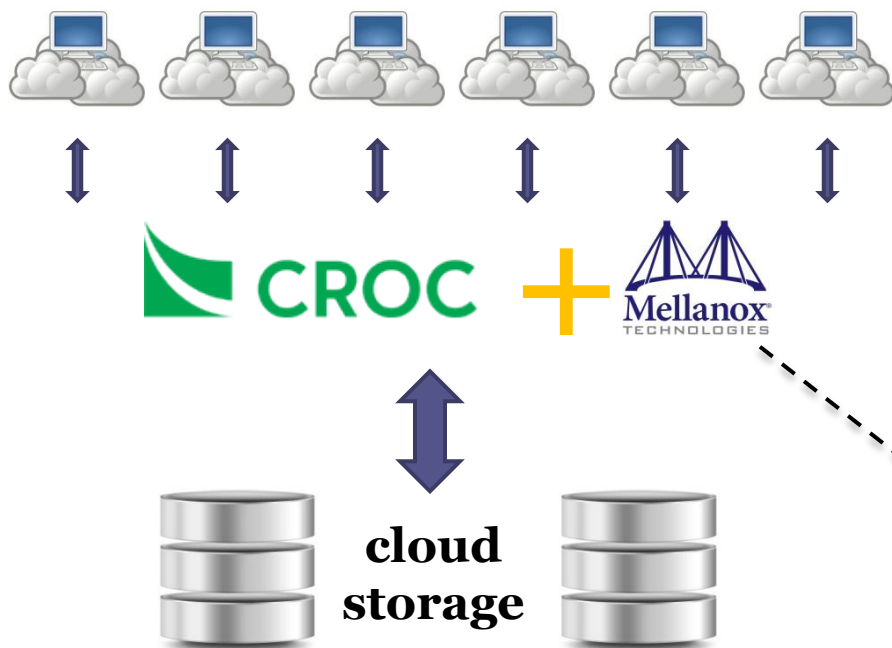


Croc

- Leading Russian company in IT infrastructure creation
- \$1.086B revenue in 2012
- 2000+ specialists
- leading Russian partner of [IBM](#), [HP](#), [EMC](#), [Dell](#), [Fujitsu Technology Solutions](#), [Cisco Systems](#), [Avaya](#), [Polycom](#), [TANDBERG](#), [Microsoft](#), [Oracle](#), [Symantec](#), [VMware](#), [CommScope](#)

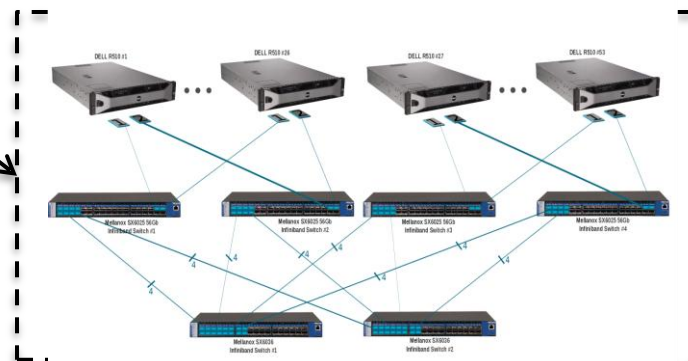


Croc cloud



Benefits of Mellanox

- 10 times faster migration
- Lowest latency
- Easily scalable
- Highly reliable

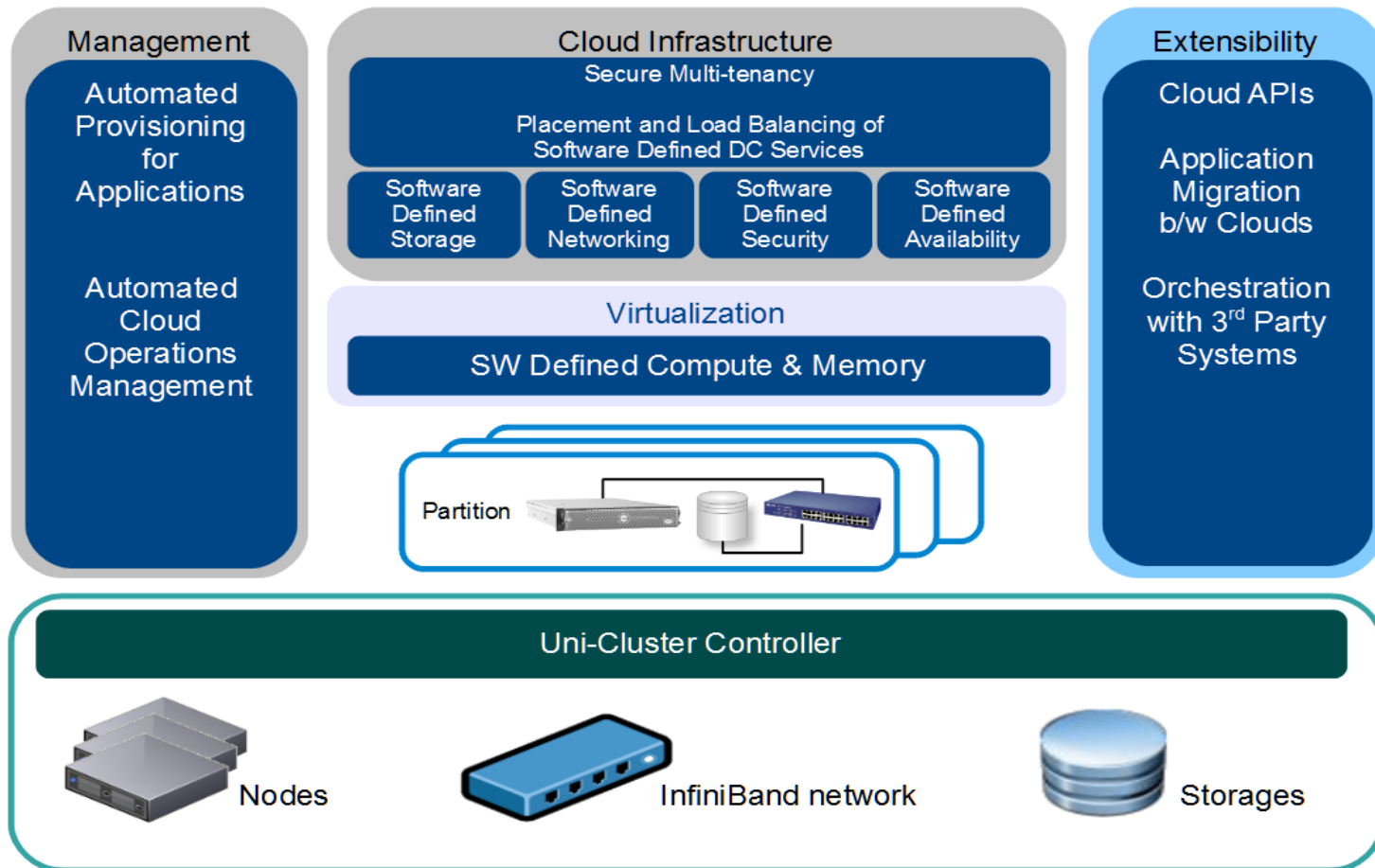


- 10 Gbps Ethernet based SAN at DC «Volochevskaya»
- New **Infiniband** based SAN at DC «Compressor»: **56 Gbps!**
- Up to 300 Mb\s on Tier II at DC «Compressor» VS 50 Mb\s at DC «Volochevskaya»!

Massive Solutions - UniCluster

- UniCluster – building blocks for InfiniBand ultrascale datacenters
- Significant CAPEX and OPEX savings without compromising the data center capabilities
- Dynamical real-time network, computing and storage reconfiguration
- Network, computing and storage resource isolation on-demand
- Multi-purpose data center elasticity (cloud or web 2.0 or HPC oriented segment in any possible proportion)
- Scalable management capabilities (40000+ nodes in a single pool)

Massive Solutions - multipurpose datacenter



IB based solutions for multipurpose datacenter – HPC,
cloud and enterprise on the same infrastructure

Thank you!