Ericsson

› 139 year old Swedish multinational headquartered in Stockholm
› 120,000 people in 187 countries (25,000 in R&D)
› ~$36B in annual revenue
› The group has made many things over the years but has been in the communications space the entire time (from handsets to networks)
  – 1st largest “telecom equipment manufacturer”
  – And the 5th largest services and 5th largest software company by revenue
Our view of the world

Hybrid

Public Cloud

Enterprise DC

Operator DC and CO

Access

Voice, Media, Messaging (Now)

Control Systems Data Collection (Emerging)
Bulk of the business

› Mobile Networks
  – #1 in 1G, 2G, 3G and 4G (LTE).
  – Driving 5G for 2018 and 2020 launches

› Large end user base
  – 3 Billion on our products.
  – 1 Billion on networks that we run.
  – We manage ~40% of all global, mobile traffic.
Radio volumes are large
   – What can we re-use?

Have been or still are part of the entire value chain (depending on country)
   – Component designer
   – Component manufacturer
   – System designer
   – System manufacturer
   – “OEM”

For the datacenter, we’ll be at the “ODM that sometimes puts our logo on it”
About 2 years ago

› Global ICT centers

› Consume a lot of “servers”, “storage”, “networking”

› Design and make “telco” (NEBS) servers and networking but had spent the last 8 years converging those into one platform.
How WE DO THIS: A Winning combination

Interesting Radio Components

Disaggregated Distributed w/ Intel

All the best "Web scale" ideas

Redfish Project Scorpio Open Compute
Ericsson cloud business

Data and Application Platform

Hardware

Datacenter

Integrity

Automation

Governance

Accessibility
ERICSSON HDS 8000

› Ericsson’s next generation data center infrastructure platform.
› Datacenter solution using Intel Rackscale Architecture and fully optical server backplane.
On-board photonics

› LUX22604 100G-PSM4 silicon photonics chipset
› LUX42604 QSFP optical module
› Hybrid network fabric:
  – Packet switched ethernet
  – SAS, PCIe ++
Order for the next few years

› Just getting them on-board
   – Discs
   – NVRAM
   – NICs
   – CPU + Memory
   – CPU
   – Memory

› Pooled

› Shared
Hds fabric numbers so far

Optical Backplane

Compute
- 2 Socket sled
- Broadwell CPUs
- 24 Memory slots. <3 TB
- 4x or 8x10 GbE. 4x25 in 2016
- 2xNVMe Drives
- Unlimited number within 1km radius

Storage.
- 12x3.5” and 20x2.5” drive sleds
- SSD A
- SSD B
- SSD C
- HDD A
- HDD B
- HDD C
- NVMe A
- NVMe B
- NVMe C

Switching
- 48 and 96 (2016) port sleds.
- 10, 25, 40, 100 GbE
- Multiple topologies

Non-blocking cfg:
- Max uplink / fabric: 24x40 GbE (0.96 Tb/s)
- Total compute ports / fabric: 828 x 10GbE (8.2 Tb/s)
- East/West throughput: 2.88 Tb/s
- 4-8x25 GbE server connect and 100 GbE uplinks

Management
- 2017
- Fully redundant
- 100,000+ Nodes
- HDS HW and 3PP HW

Memory
- PCIe:
  - Drives per pool: 80
  - Number of compute sharing common pool 8-16
  - Compute interconnect: 16x8 Gbps

Accelerators
- SAS (GA) Fabric. Multiple HA configs
  - Drives per pool: 1024
  - Number of compute sharing common pool: 128
  - Total volume (8TB drives)/pool: 8 PB
  - Compute interconnect: 4x12 Gb/s

- Drives per pool: 12x3.5” and 20x2.5” drive sleds
- 12x3.5” and 20x2.5” drive sleds
- NVMe A
- NVMe B
- NVMe C

- Management
- Memory
- Accelerators
- 2017

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HDS Control

HDS Command Center

Intel POD Manager

HDS 8000

3PP HW
Dell iDRAC, HP iLO, IPMI

3PP OCP & RSA Platforms
Redfish, DMTF/SPMF
Common control and data lake

› Parts
  – Hardware systems
  – Electrical
  – Mechanical
  – Whitescape

› Common timing

› Common data collection

› Common control
The datacenter as an “IOT” environment

› 40+ devices across systems, electrical, mechanical, whitespace
› Active area of exploration is how we can use LTE, LTE-Advanced and 5G
   – Timing
   – Connectivity (data collection and control)