DATA CENTER INTERCONNECT
SICHERER UND FLEXIBLER DATENWAHL ZWISCHEN RECHENZENTREN
AGENDA

1. Key Feature learning's from ancient Greece?
2. User challenges to be addressed for IT, Data Centre and Cloud
3. Security, Reliability and Key Feature Focus of our Solution
They only had one Troja rely on!

They couldn’t demand for more resources!

They didn’t think about all security threats!

They had no secret route to escape!

BEING INSPIRED BY ANCIENT GREECE

WHY DID THE TROJANS FALL IN THEIR MISSION?
Resources on demand

Primary Troja --- Geo-Distributed --- Troja Replicate

Secret Access
Secret Primary Route
Secret Secondary Route
KEY FEATURE LEARNINGS FROM CHALLENGES IN ANCIENT GREECE?

- SECURITY
- Data Center Interconnect
- RELIABILITY
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USER CHALLENGES TO BE ADDRESSED FOR IT, DATACENTER AND CLOUD MISSION CRITICAL APPLICATIONS

Bandwidth / Security / Availability / Reliability / Scalability / Latency / Adaptability / Lifecycle Network Management

UTILITIES
- DCI, WAN & MAN
  - Legacy to IP Migration
  - Network Convergence
  - Secure Data
  - BC&DR
  - SCADA, Teleprotection
  - Low latency

OIL & GAS
- DCI, WAN & MAN
  - Legacy to IP Migration
  - Network Convergence
  - Secure Data
  - BC&DR
  - SCADA, Teleprotection
  - Low latency

TRANSPORT
- DCI, WAN & MAN
  - Legacy to IP Migration
  - Network Convergence
  - Video Sharing
  - Low Latency
  - Real time data
  - BC&DR

PUBLIC SAFETY
- DCI, WAN & MAN
  - DC Consolidation
  - Cloud Interconnect
  - Collaboration
  - Real time data
  - Secure Data
  - BC&DR

GOVERNMENT
- DCI, WAN & MAN
  - DC Consolidation
  - Cloud Interconnect
  - Collaboration
  - Real time data
  - Secure Data
  - BC&DR

FINANCIAL
- DCI, WAN & MAN
  - Low latency
  - Real time data
  - Historical data
  - Order execution
  - High Frequency Trading
  - Partner connect
  - Secure in-flight data
  - BC&DR

CLOUD & HPC
- DCI, WAN & MAN
  - Time of Day Allocation
  - Collaboration
  - Real time data
  - BC&DR
  - Low latency
  - CERN LHC: Connected to 10 Tier-1 sites for synchronized Databases.

HEALTHCARE
- DCI, WAN & MAN
  - Legacy to IP Migration
  - Collaboration
  - Video Distribution
  - Low Latency
  - Real time data
  - Secure Data
  - BC&DR
NETWORK CHALLENGES TO BUSINESS-MISSION-CRITICAL CUSTOMERS?

**Datacenter Network Investment Priorities**

**Q. What was the main reason you needed to Re-Architect The Network to support Private Cloud?**

- **Security**
- **Bandwidth + Latency**
- **Simple**

**Re-Architect The Optical Network adding SIMPLE, SECURE Performance**

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WHY DO BUSINESS-MISSION-CRITICAL CUSTOMERS TURN TO ALCATEL-LUCENT?

TYPICAL MISSION-CRITICAL APPLICATIONS:

- Teleprotection & SCADA
- Railway signaling
- Communication Based Train Control
- Ground-Train Communications
- Real-time LAN

Simple, Secure and Performant Transport for Business Mission-Critical Applications

Improve Customer Service
Reduce Cost and Increase Agility
Maximize Employee Productivity
Focus on Compliance and Security

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KEY FEATURE FOCUS OF OUR SOLUTIONS
DYNAMIC CONNECTIVITY FOR EVEN GREATER MOBILITY, AVAILABILITY & COLLABORATION

- WHY?
  - Secure, Compliance, Available
- HOW?
  - Secure Data Centre Interconnect and Access to Cloud over Redundant Routes
- WHAT?
  - Multiprotocol, low latency In-Flight Encryption while monitoring any breach
  - Key Management Tool
  - Wide range of transport protection schemes combined with OAM
- WHAT’S NEXT?
“Security still remains the biggest identified barrier to cloud services adoption (63%) ...”

Colt: European CIO Cloud Survey

**ALCATEL-LUCENT ADDRESSING SECURITY**

**IN-FLIGHT ENCRYPTION WHILE MONITORING ANY BREACH**

Cloud Optimized Networking + Optical Intrusion Detection and Low Latency Encryption = Higher Adoption of Cloud Services

- More $$$ Revenues
- Sell and up-sell Keys-aaS

**In-Flight Encryption:**

Low-latency In-flight AES256 encryption combined with intrusion Monitoring and Key Management Tool

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KEY FEATURE FOCUS OF OUR SOLUTIONS
MULTIPROTocol & CERTIFIED TRANSPORT FOR CONTINUOUS AVAILABILITY

• WHY?
  - Data Center connect uses many different protocols
  - «synchronous replication», business continuity, disaster recovery are mission critical applications

• HOW?
  - Flexible use of bandwidth in-between DCs and among Services
  - Optimize (plan) and Measure (on-demand) e2e Latency

• WHAT?
  - Multi-Protocol transport of:
    - Fibre Channel (Storage),
    - Infiniband (HPC Storage)
    - Ethernet (VM) Services
ALCATEL-LUCENT ADDRESSING PERFORMANCE
SCALE, REACH AND ENCRYPT AT MARGINAL INCREMENTAL COST

Scale Bandwidth

Reach the Distance

With Encryption

without sacrificing the Optimized Latency

Fast service activation (whatever is the protocol)

IT IS THE USER-EXPERIENCE, MACHINE-TO-MACHINE AND APPLICATIONS THAT SETS THE REQUIREMENTS OF E2E PERFORMANCE
STORAGE ARRAYS
- eLabs certified
- SRDF/MirrorView replication, VPLEX (future)

GDPS CERTIFICATION
- certified (200km w/ encryption)
- System z/IBM storage interop.

MULTI-MILLION DOLLAR INVESTMENT IN R&D AND LAB INTEROP FACILITIES

CERTIFICATION PROGRAM KEEPS LATEST CARDS AND RELEASES CERTIFIED VS 3rd PARTY VENDORS

1830 PSS

CERTIFIED INTEROP FOR REPLICATION OF MISSION CRITICAL CLOUD APPLICATIONS

1830PSS CERTIFIED TRANSPORT SUPPORT ADDRESSING INTEROPERABILITY CHALLENGE

IBM

STORAGE ARRAYS
- eLabs certified
- SRDF/MirrorView replication, VPLEX (future)

EMC²

SAN FC SWITCHES
- Self & Brocade certified
- Focus on ISL trunking

BROCADE

1830 PSS CERTIFIED TRANSPORT SUPPORT ADDRESSING INTEROPERABILITY CHALLENGE

GDPS CERTIFICATION
- certified (200km w/ encryption)
- System z/IBM storage interop.

Geographically Dispersed Parallel Sysplex => G5/G6 and zSeries

VPLEX

VMAX / Symmetrix

CERTIFIED INTEROP FOR REPLICATION OF MISSION CRITICAL CLOUD APPLICATIONS

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KEY FEATURE FOCUS OF OUR SOLUTIONS
DYNAMIC CONNECTIVITY FOR EVEN GREATER MOBILITY, AVAILABILITY & COLLABORATION

- **WHY?**
  - Fast service activation up-grade
  - Flexible use of bandwidth in-between DCs and among Services

- **HOW**
  - Modular & Software Defined Design
  - Flexibility handled by OAM Tools & Applications

- **WHAT?**
  - Photonic & Service Aware Network Management
  - Wavelength Tracker
Modular & Software Defined Design
- same card many certified
  use cases / chassis for optimal
  utilization

ALCATEL-LUCENT 1830PSS MAKING IT SIMPLE
USING PROVEN HIGHLY INTUITIVE & AUTOMATED OPTICAL SYSTEM

Design Tool verifies architecture & fiber

Actual and guaranteed dark fiber data

Photonic & Service Aware Network Management

“Facilitate Make or Buy”
“Plan once - Deploy Many”
“Deploy Proper Once - Deploy Many at Marginal Cost”
“Avoid costly trips to Field”
WE HELP CUSTOMERS DEFINE AND BUILD PRIVATE OPTICAL NETWORKS
ONE NETWORK SOLUTION RE-ARCHITECTING MANY USECASES

BY ADDING SIMPLE, SECURE PERFORMANCE
• De-risked, using proven Intuitive & Automated Optical system
• In-flight Encryption while monitoring any breach
• Scale, Reach and Encrypt at marginal incremental cost

TO BE IN CONTROL OF BUSINESS-MISSION-CRITICAL CHALLENGES AHEAD

Where do we begin your transformational journey?

Improve Customer Service
Reduce Cost and Increase Agility
Maximize Employee Productivity
Focus on Compliance and Security