

Trends in IT infrastructures

The impact on the IT infrastructure



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Agenda

-
- Current market situation
 - Standards update
 - 40 and 100 Gigabit Ethernet design criteria
 - GPON technology for Enterprise buildings
 - Conclusion



Market situation



Market situation

Biggest driver is the data centre market

Office market is still the majority

Some customer groups have specific demands or a combination of everything

It's obvious, that demands and requirements more fragmented



Market situation

Systems are being chosen by application and environment

Currently Cat.6 UTP and OM3 fibre systems are most common

Cat. 6A and OM3/4 are seen in most recent projects

Cat.7A and STP in principle is gaining (EMC and lifetime)



Market situation

Drivers in the data centre market

New applications

Consolidation

Storage



Virtualization

Expansion

Cloud services



Market situation

Drivers in the office market

IP
convergence

Power over
Ethernet



DAS/wireless

Building automation



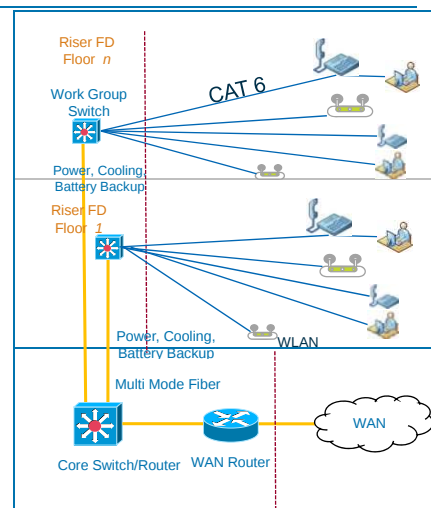
Designs and architectures

Typical
design in
office
buildings

- Structured cabling design ISO/IEC 11801
- Fiber for campus and backbone
- Copper for horizontal

Topologies

- Decentralized design
- Most common design globally



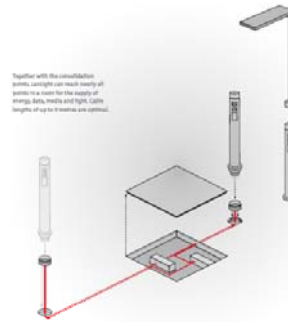
Designs and architectures

Open offices

- People and connection points move
- Regular MAC's

How to leverage requirements such as

- Regular moves, adds and changes
- Aesthetics
- Illumination
- Power



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Designs and architectures

All in one solution

- Floor tank with power, data and light
- Will be installed in the raised floor
- Shall be installed in a matrix design

The insert

- When needed plug and play the pole
- In addition a light when needed
- All items are reusable

Lanlight offers ...

- a network cable system such as flat cable and hot foil
- a floor tank with inserts for many applications (optional module)
- a plugable module energy poles with two circuits and up to eight data connections with self-connecting interface (module panel)
- a plugable energy poles with two circuits and up to eight data connections with connection field for patch cable (patch pole)
- a plugable luminance module, single-sided, with pin-and-tilt luminance head
- a plugable luminance module, double-sided, with pin-and-tilt luminance head



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Standards update



Standards update

ISO/IEC 24764 – Data centre cabling

ISO/IEC 15018 Amdt 1 – Home cabling (incl POF)

ISO/IEC 24702 – Industrial cabling (incl POF)

ISO/IEC 14763-2 Planning & installation (Draft)



Market situation

Example University campus



Applications

40GBASE-SR4 and 100GBASE-SR10

- 10 Gb/s over copper and fibre is ratified
- Fibre is the preferred media for backbones
- Copper is still the first choice for the horizontal cabling
- The environment is more important
- Design rules and conditions apply



Applications

40GBASE-SR4 and 100GBASE-SR10

40 and 100 Gb/s over fibre is ratified

First switches arrived

Main area is currently the DC area

Next area will be the Campus and backbone in buildings



40/100 Gb/s Systems

Impact on the IT Cabling



40/100 Gb/s Systems OM3 or OM4 Multimode Fiber

40 GBASE-SR10



4 Tx and 4 Rx parallel channels



Using 4 + 4 MM parallel fibers with MT technology



No single fiber solution



40/100 Gb/s Systems OM3 or OM4 Multimode Fiber

100GBASE-SR10



10 Tx and 10 Rx parallel channels



Using 10 + 10 MM parallel fibers with MT technology



No single fiber solution



40/100 Gb/s Systems OM3 or OM4 Multimode Fiber

Singlemode

Alternative

- Singlemode as length up to 40km possible
- Pricing for Actives is still high
- Case by case decision



Designs in data centre



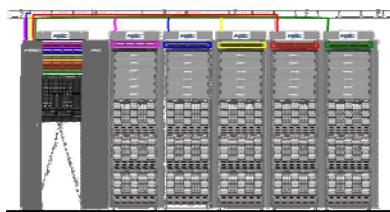
Aligned DC solutions
Agility – Availability - Efficiency

Current trends
 regarding IT
 infrastructures

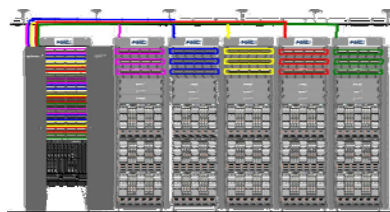
- Many new designs are structured
- Most common designs
 - EoR (End of row)
 - ToR (Top of rack)
 - Centralized DC Design
 - „Direct patching“
- Flexible and updateable fiber systems



Aligned DC solutions
Agility – Availability - Efficiency



Top of Rack (TOR)
 Virtual Top of rack (V-TOR)



End of Row (EOR) Mid of
 Row (MOR)

Design & Architecture Agnostic
 Help To Reduce Complexity



Aligned DC solutions
Agility – Availability - Efficiency



Copper & Fibre Pre-terminated Solutions
 Up to 100GbE



Quick Response To Unpredictable Changes



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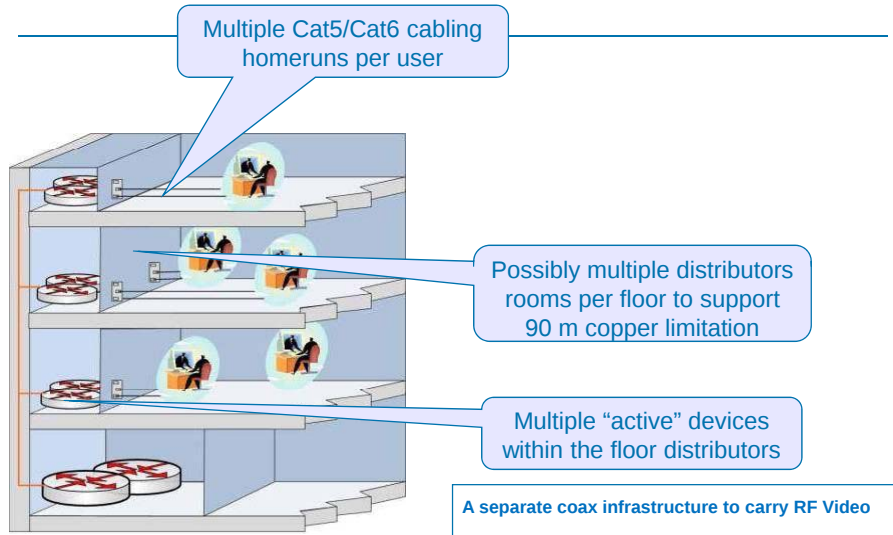
Gigabit Passive Optical Network

GPON Technology

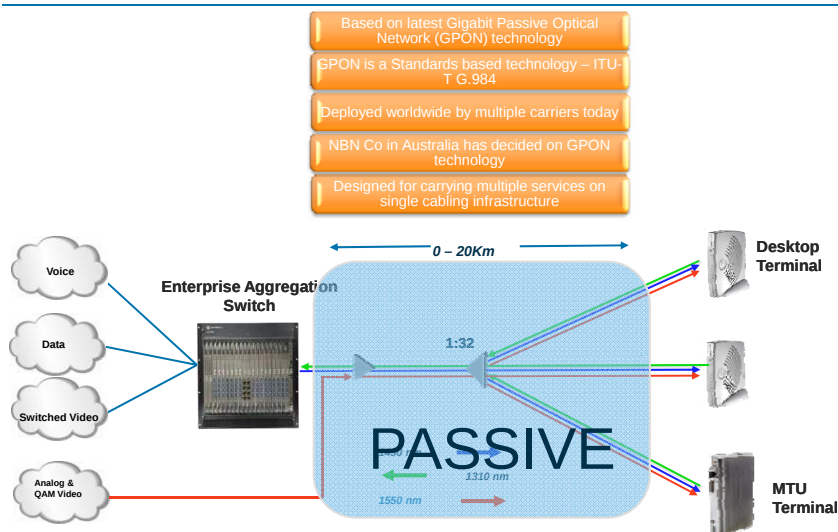


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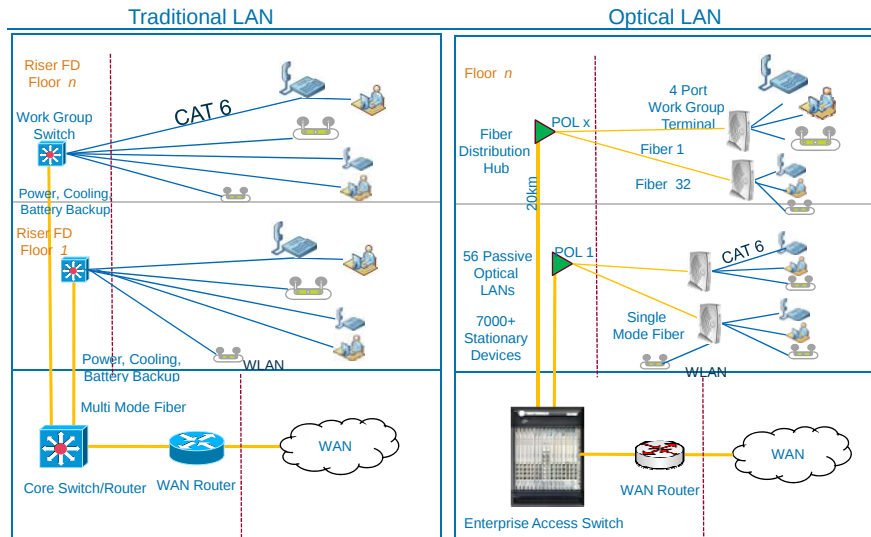
Traditional LAN Solution



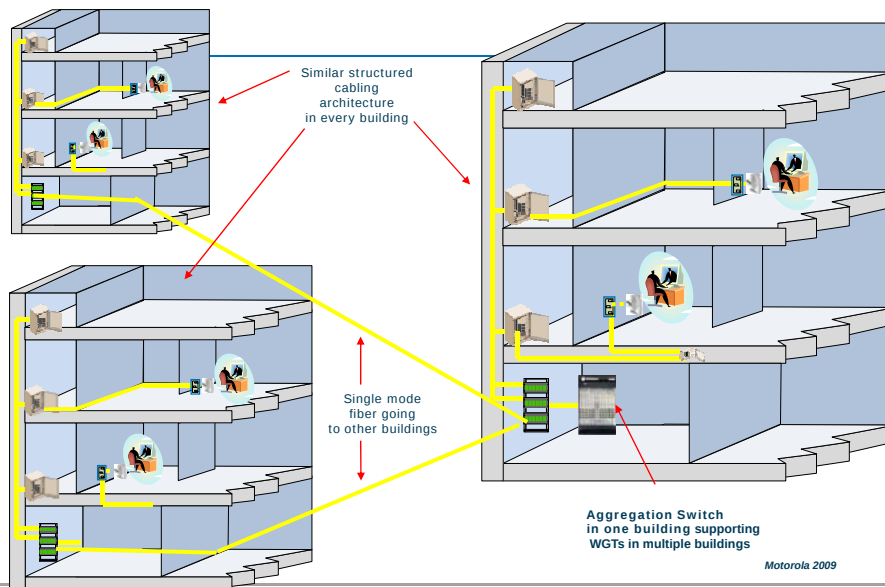
What is Optical LAN Solution



Optical LAN - Architecture



Optical LAN – Campus Design Example



Optical LAN vs. Traditional LAN Architecture

Enviromental benefits

Optical LAN's passive distribution system based on GPON technology is scalable, Green IT solution that eliminates expensive copper, Ethernet and multimode fiber cabling and workgroup switches

Power consumption

A typical 1000 user system utilizing Optical LAN can reduce power consumption by as much as **60%**, capital costs reduced to network elements by as much as **70%** and space requirements by as much as **85%**



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Optical LAN vs. Traditional LAN Architecture

There are several factors that favor a Optical LAN deployment over traditional UTP or MMF/data network.

Reduced installation cost

Fiber cable is easier to install because of its increased pull strength and bend insensitive design.

Reduced life cycle cost

Optical LAN's have a longer usable lifetime, increased data rates can be realized by changing out the electronics.

Reduced maintenance cost

Reduced cost for Electricity

Typical 1000 user system can save as much as \$100,000/yr

NO EMI/EMC issues

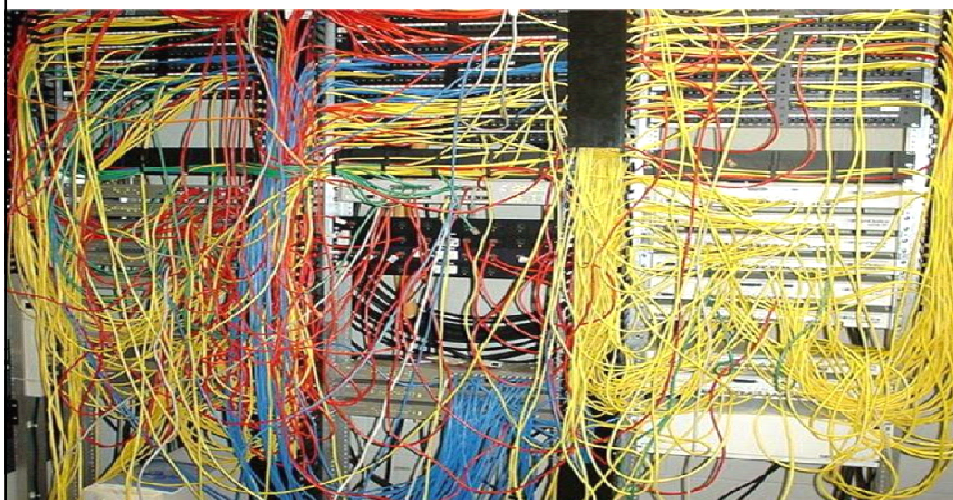


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Infrastructure management



Managing Physical Layer Connectivity



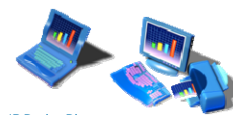
What Is An IIM Solution?

An IIM Solution consists of:

- An infrastructure connectivity database whose data is kept **100% accurate** by self detecting patch panels and device discovery tools
- Configurable user interfaces
- A workflow engine
- SDK/API



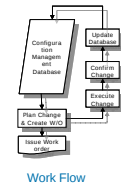
Detectable Patching



IP Device Discovery



Multi User Interface

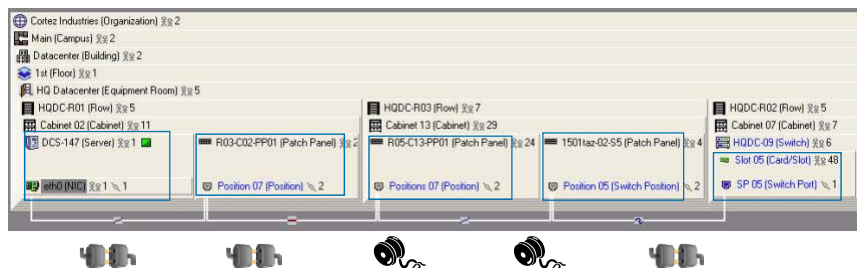


Work Flow



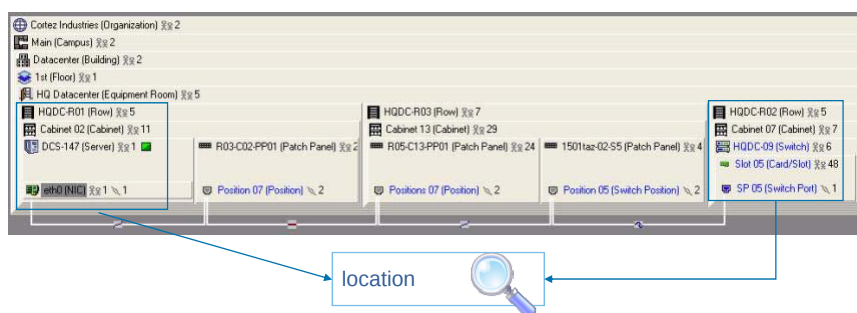
What Does An IIM Solution Do?

- Self discovers network connectivity from **End to End**



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- Real-time IP asset management to the **Physical Location**



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- Triggers events to automatically advance process flow



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An IIM Solution Within An Organisation

Increase Service Availability & Resiliency

Reduce Costs in Capacity and Asset Management

Enhance Productivity inc. Data Centre Provisioning

Improve Process Adoption

Provide the Infrastructure Configuration Management Database



What Does An IIM Solution Do?

Self discovers network connectivity from End to End

Real-time IP asset management to the Physical Location

Provides automation for infrastructure change processes

Generates alarms for unauthorised / unscheduled activity

Triggers events to automatically advance process flow

Configuration Management Database (CMDB) of physical infrastructure with Real-time accuracy



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Gartner: Configuration Management

- **Change, Configuration and Incident management are inextricably linked**



“...an average of 80% of mission-critical downtime is directly caused by people or process failure....the most common cause.....is Change”

Gartner

objects is reco...
success of cha...
implement beca...
of tools.

Enterprises nee...
and that it is...
integration. In fact, it is much easier to justify configuration management improvements as a part of a change management project than on their own, as the real benefits of configuration management come as part of change management implementation, including higher levels of infrastructure and IT service availability.

Implement Configuration Management as Part of Change Management

Effective operational change management needs strong configuration management — an understanding of the relationship of the components that lead to the end IT service. Configuration management is the foundation for change, problem, availability and IT service management, as well as disaster recovery. Specifically, configuration management enables an automated method of understanding the business impact of a change in the infrastructure. Furthermore, an understanding of specific changes to objects is recorded in the configuration management repository and used to analyse the effect and success of changes over time. Yet, configuration management is one of the most difficult disciplines to implement because of the manual effort involved, the constant changes to the IT environment and the lack of tools.

by change management project...
and tool development and...
improvements as a part of a...
configuration management come...
of infrastructure and IT service

ent Together

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with these four components —...
y, using consistent performance

agement, which includes project...
Without these, changes cause...
ge management is required for

and procedures for uninstalling.

through scheduling and sequencing

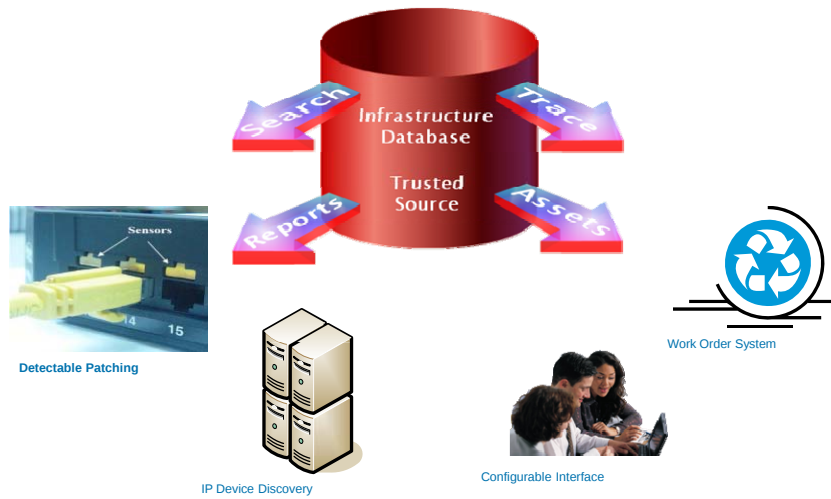
of change managers is to schedule approved changes. They need also to...
system and application availability when downtime would adversely affect

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AMPTRAC System Overview – Building Blocks



Conclusion



Conclusions

IT infrastructure is a vital part of any IT concept

With more IP services it's becoming the critical part of IT services

Agility, Availability, scalability and efficiency are the basics around the world

Fiber designs becoming more important in data Centre and large enterprise areas

A solution needs a holistic view and approach in order to address all kind of needs



Thank You

