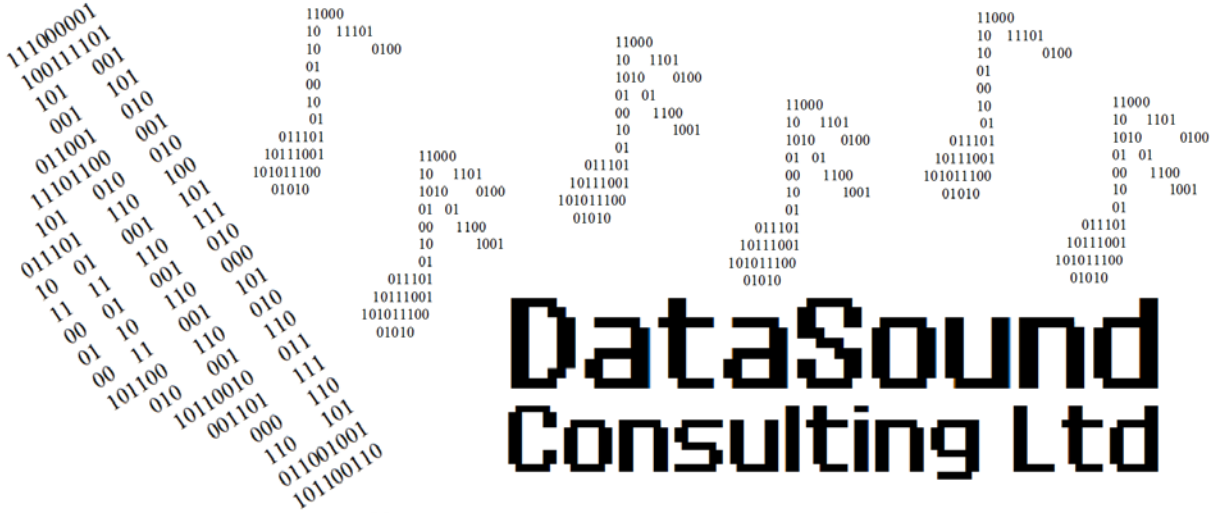


Deploying Dante Networks In Live Events

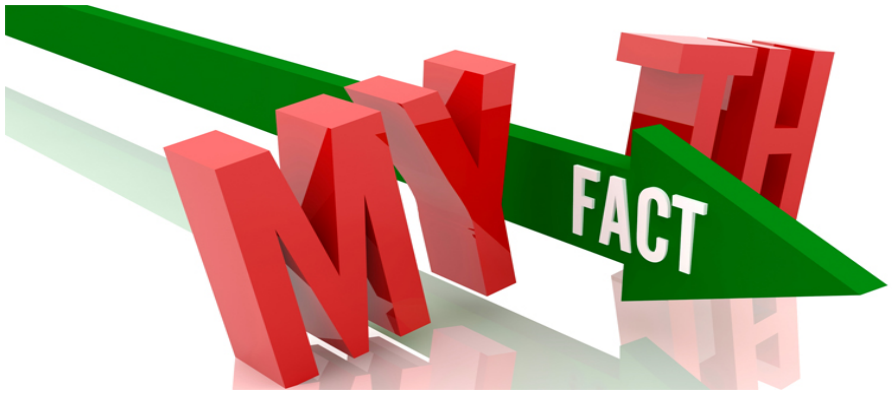
Liam Halpin

Plan for the session

- Dispel some myths
- Dante Distribution for Live Audio Systems
- Network Topologies
- Case study: Capital Sound
- Case Study: Entec Sound & Light

Dante Myths

- “Sometimes works sometimes doesn’t”
- Must use managed switches
- Must keep control data on separate VLAN
- Must have VLAN for WiFi remote control
- Must use complex filters for WiFi
- ‘one size fits all’ guide
- Its difficult



“It sometimes works…”

- 325+ Licensees
- Signed up(and paid for) for an intermittent protocol???
- Large numbers of deployments
  - Live
  - Corporate
  - Broadcast
  - Studio
  - Education
- Issues usually configuration related

Control Data on separate VLAN

- Most devices do not have separate control ports
- This is the main point of IP Networking
- QoS is the tool used to deal with Different traffic
- Segmentation of an IP network is achieved logically not physically

Wifi has to be on a separate VLAN

- Some people recommend filtering via ports linking VLANs
- IGMP Snooping does this for you if correctly configured
- Devices will not subscribe to flows over wifi

One Guide All Networks

- Manufacturer “Guides to switch configuration”:
  - only correct for some situations
  - does not cover all possible networks
  - better to have a system designed to your needs
- Seek advice to ensure the best fit!
- Understand needs = understand method

Advantages of networked audio systems in live events

- Simplified distribution of signal IO
- Reduce analogue/AES multicore
- Improved flexibility over point to point digital transmission
- Multiple control points(when needed)
- Can replace centralised Patch location
- Improved reliability over long distances
- Cost effective implementation
- Ability to lock out other users from specific device
- Complete interoperability between brands using Dante

Different Network Topologies

How should I configure My Network?

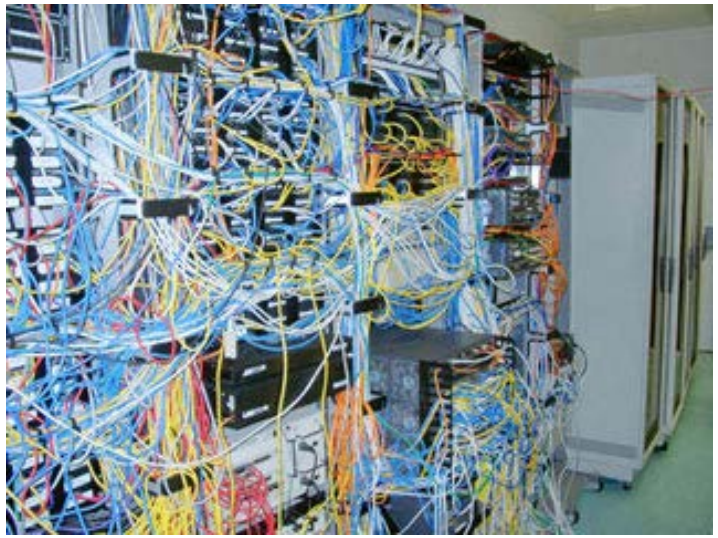
- Daisy Chain
- Loop or Ring
- Star/Hierarchical

Should I have a backup?

- Independent Twin Networks

  (Isolated Primary & Secondary)
- Interlinked Multipath Network

  (multiple failure tolerant)



Daisy Chain

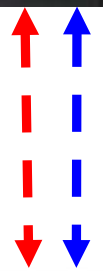
- Simple to setup
- Easy to fault find
- Good for very few devices/no redundant connections
- Often without switches
- Not fault tolerant

As Simple as it gets, Console Daisy chain

1x Cat5e Cable

- No Switch
- No redundancy

Simple Redundant Network



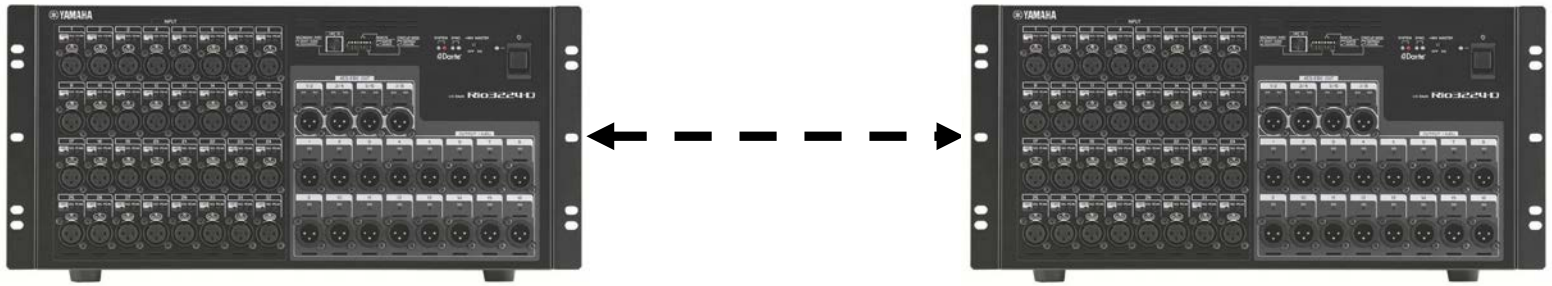
2x Cat5e Cable
Devices in redundant mode

- No Switch
- Redundant cable
- Only possible with 2 devices

3 devices ‘daisy chain’

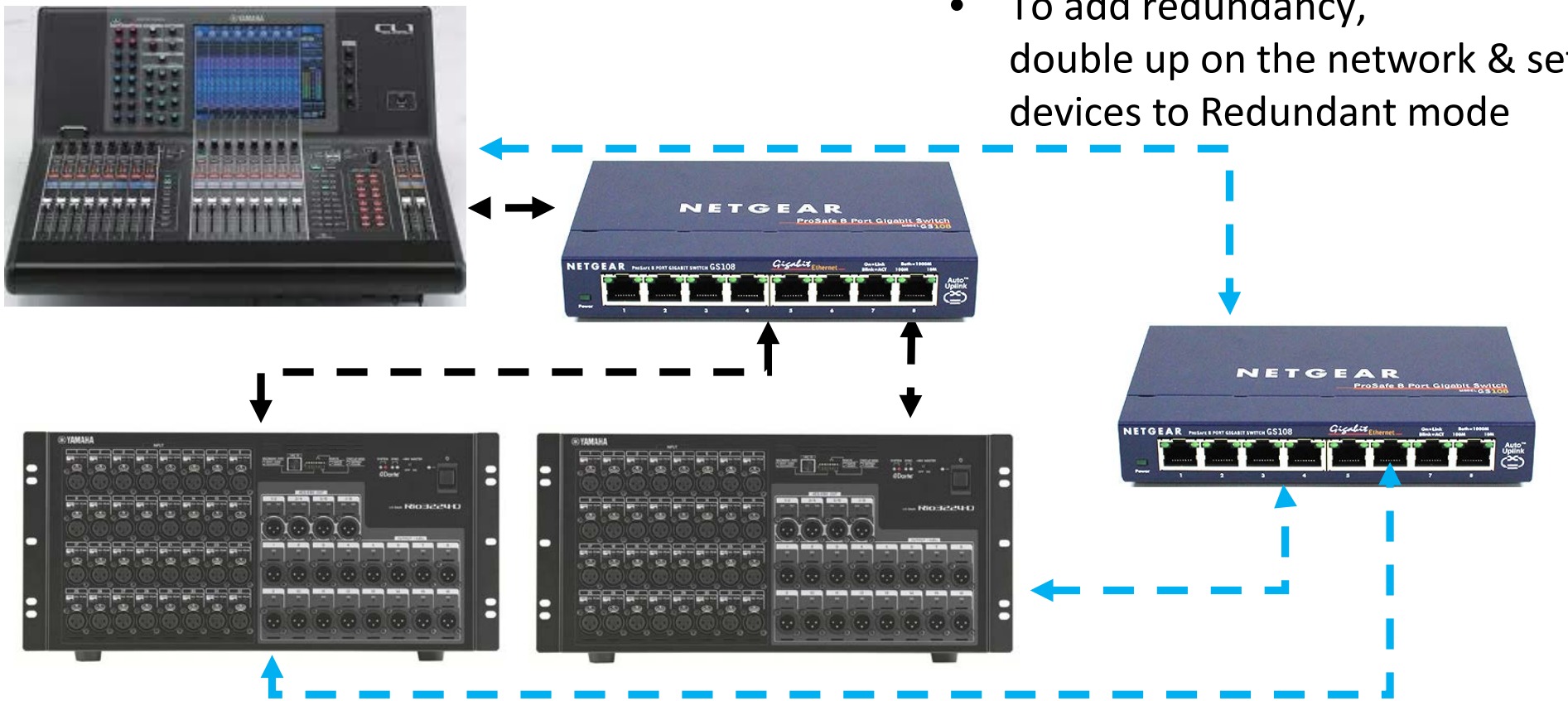
- No Switch
- No redundancy

2x Cat5e Cable
Devices in switch(daisy chain) mode



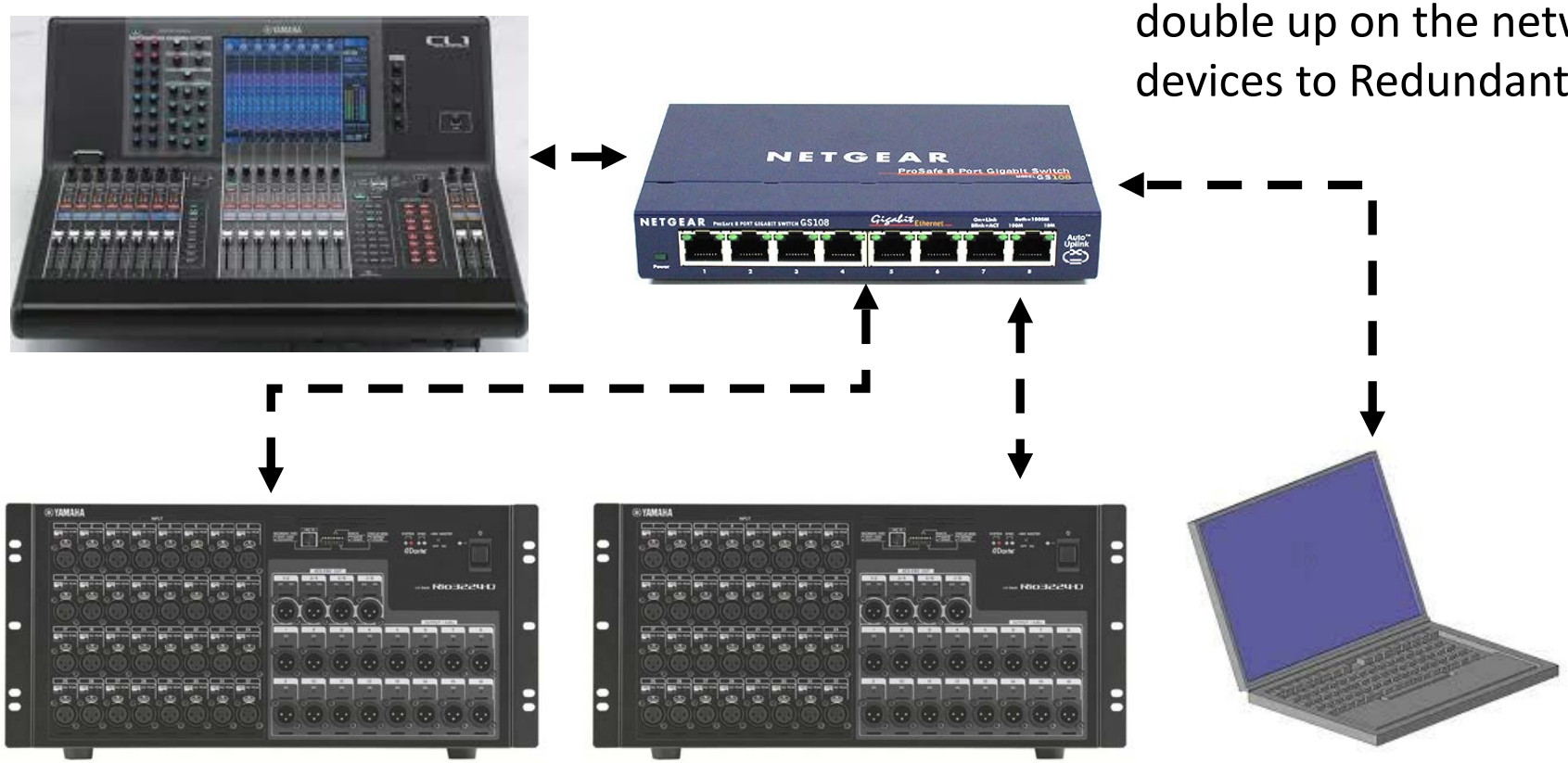
3 devices Switched

- Simple switch
- No redundancy
- To add redundancy, double up on the network & set devices to Redundant mode



Add a multi-track recorder

- Simple switch
- No redundancy
- To add redundancy, double up on the network & set devices to Redundant mode



Scaling the network up

- Adding more devices
  - More switch ports needed
    - More switches?
    - Bigger switches?
    - Longer cables?
    - Different types of cables?
- The point where wiring is considered

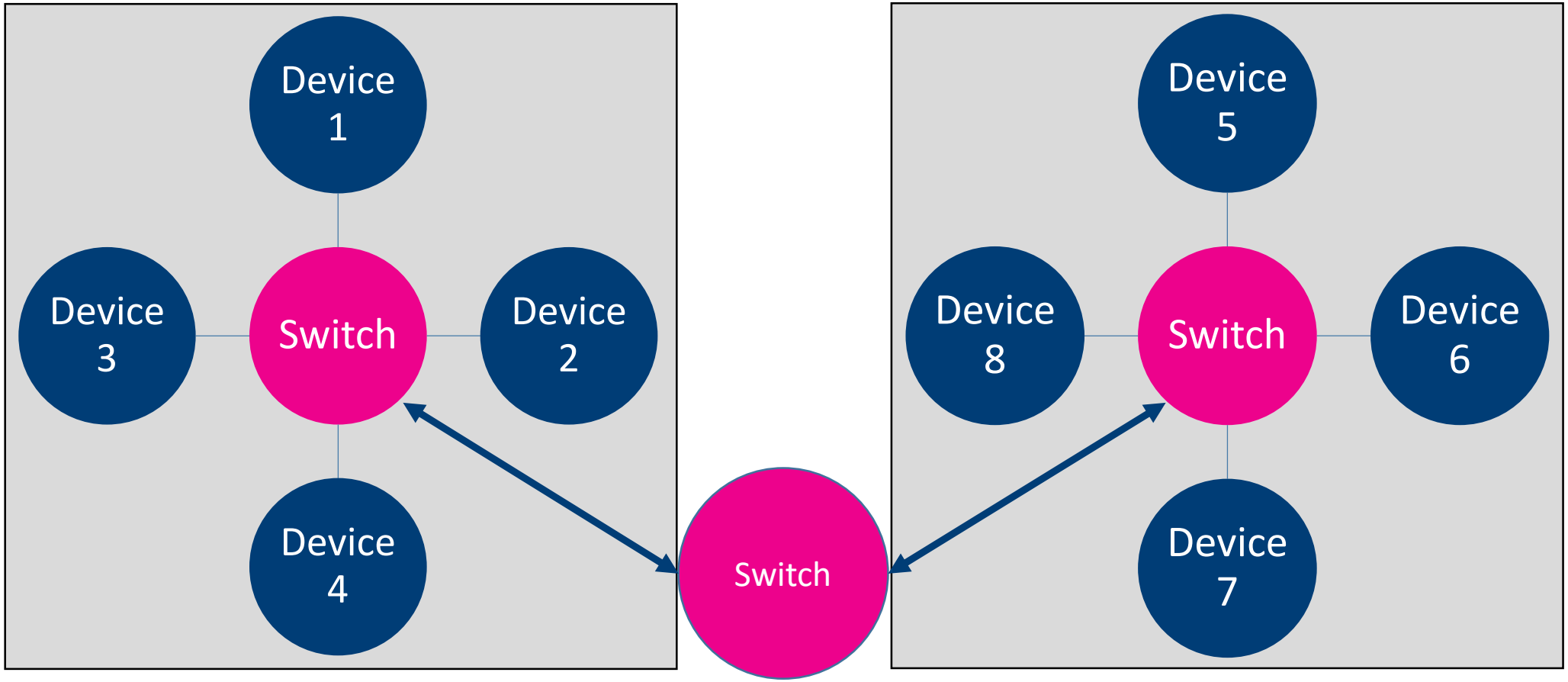
Loop (or Ring) Topology

- Good level of redundancy for low device counts
- Diminishing redundancy levels as network grows
- Requires correct switch config
- Possibility of two failures isolating sections of the network

Star Topology/Hierarchical Networks

- Fewer hops between endpoints on network
- Centralised connection point on star networks
- Hierarchical networks natural expansion of a true star
- Easier to scale redundancy
- Risk of failure of central node/multiple failures could isolate devices

Hierarchical networks



Spoked Wheel or Mesh

- Each leg of the star is a loop
- Benefits of both
- Improved cable fault redundancy
- Increased port requirement and switch config

What is the reality?

How are companies deploying Dante networks in live rental markets?

Twin Independent networks

- Reduces chance of multiple failures
- Improves fault tolerance over single network
- most common deployment in the market
- Failures on both networks could isolate devices

Capital Switch Rack

2x Cisco Switches plus panel-mounted Ethercon and Opticalcon Connectors

Capital Sound

Independent Redundant Networks
Lake LM44, D&B DS10

- Hierarchical network
- DS10 Units can be daisy chained (mode dependent)
- Devices in redundant mode

FoH

Dual Fibre Links

S/R

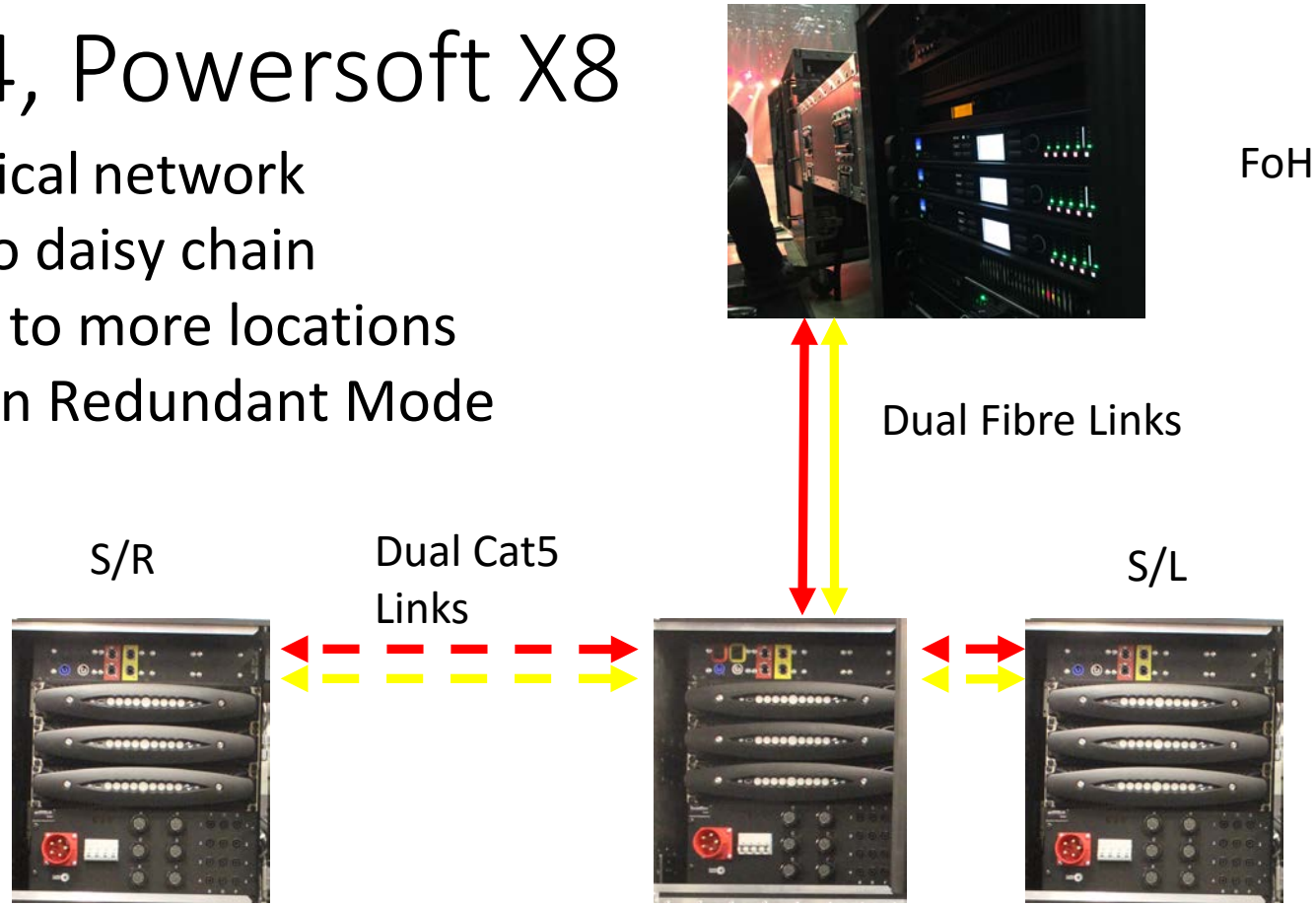
S/L

Dual Cat5 Links

Capital Sound

Independent Redundant Networks
Lake LM44, Powersoft X8

- Hierarchical network
- Option to daisy chain switches to more locations
- Devices in Redundant Mode



Capital Sound

Independent Redundant Networks
Lake LM44, Focusrite D16R

- Hierarchical network
- Option to daisy chain switches to more locations
- Devices in Redundant Mode

FoH

Dual Fibre Links

S/R

Dual Cat5 Links

S/L

Capital Sound

Interlinked multipath network

- Introduces logical redundancy as well as physical redundancy
- Has the benefits of independent networks
- Improves fault tolerance across networks
- Devices unaware of most cabling faults
- More complex to program
- Uses more advanced networking protocols
- Requires a high number of switch ports

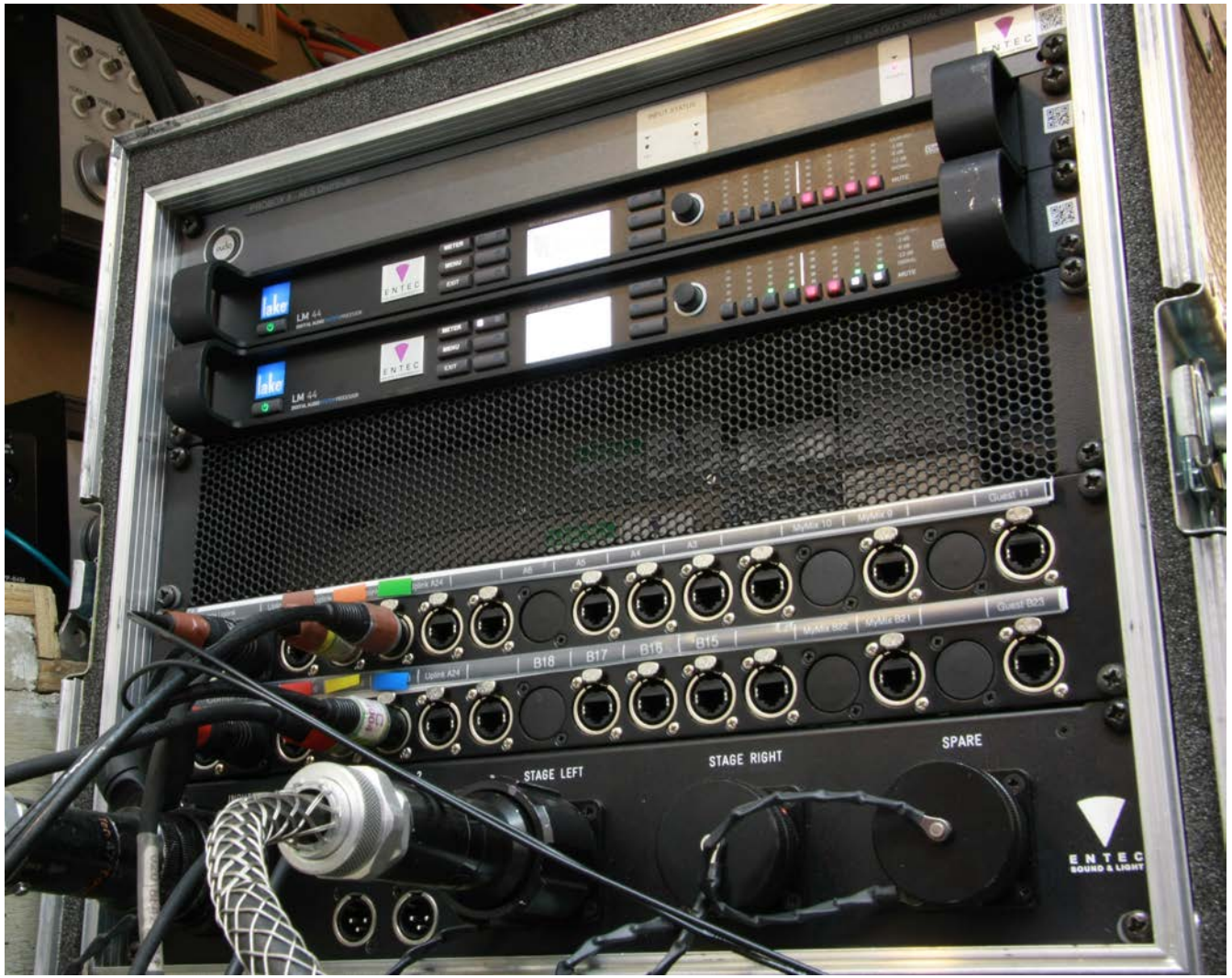
Interlinked multipath network

- Primary/Secondary as VLANs
- All Switches linked together
- Logical separation of VLANs through Trunk Routes
- Automatic re-routing through cable faults
- Recovery of cable redundancy in event of switch failure(after manual re-patch)
- Scalable to very large deployments without manual intervention

“Hub” Rack

ENTEC
SOUND & LIGHT

“Hub” Rack



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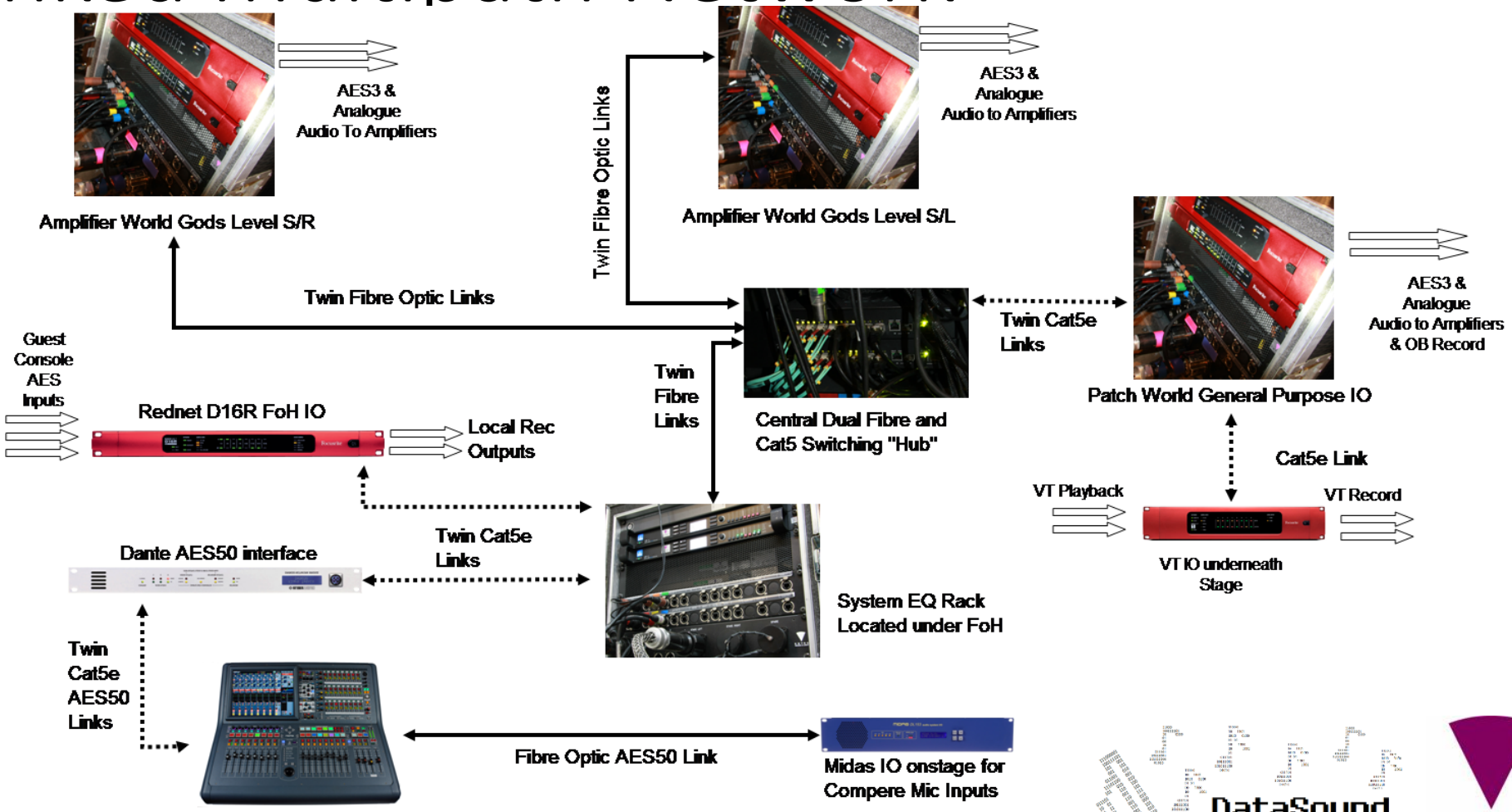
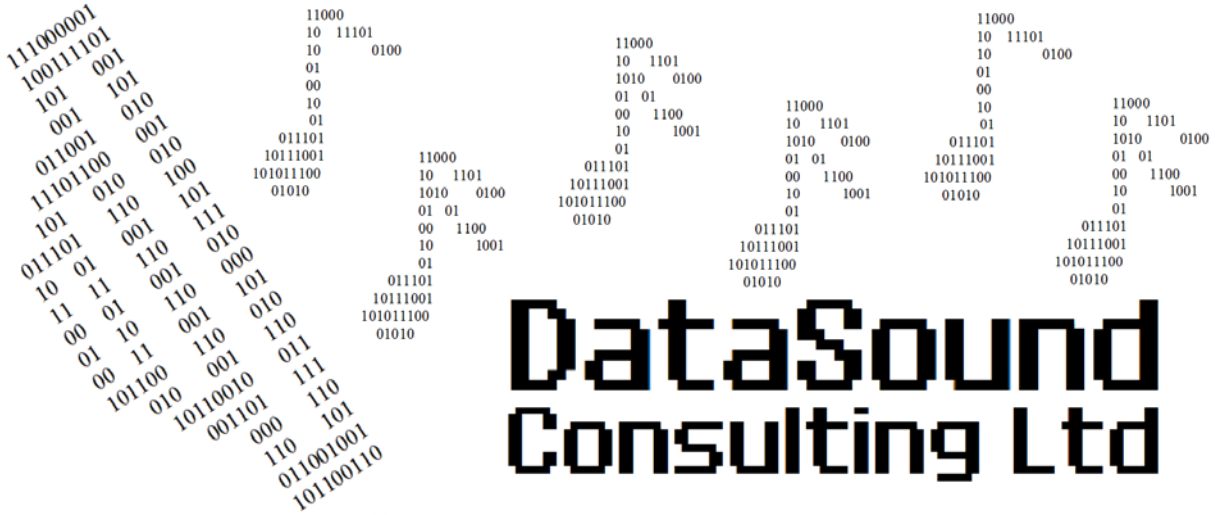
SOUND & LIGHT

Interlinked Multipath Network

TEENAGE CANCER TRUST
AT THE ROYAL ALBERT HALL



DataSound Consulting Ltd
ENTEC SOUND & LIGHT



Technical Support for the Pro Audio Industry

www.DataSoundConsulting.com