

# An Uphill Downhill Battle

Delivering the network for **the** global cycling event.



COMMSWORLD



**UCI**  
CYCLING WORLD  
CHAMPIONSHIPS



2023  
**GLASGOW  
SCOTLAND**



**THE POWER  
OF THE BIKE**

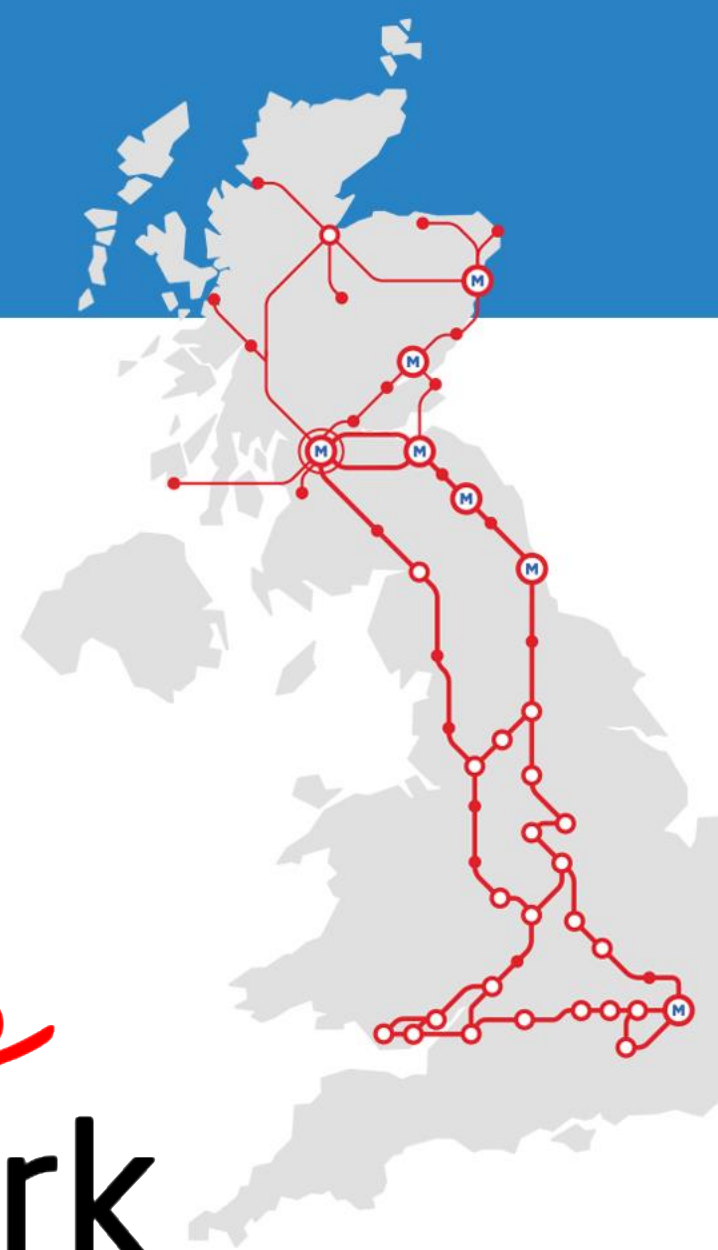


VELO  PARK

Who is Commsworld?



# The *Goldilocks* Network



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# Who is Commsworld

- Network Operator delivering connectivity to:
  - Businesses
  - Public Sector
  - Service Providers
- Headquartered in Edinburgh, Operates UK Wide
- 125 PoPs, 2500km Core Network, 750km owned fibre
- Infenera & Smartoptics DWDM 'Optical Core Network'
- Juniper MPLS Network (AS56595 aka Fluency)
- Maniacal Control Freaks



The  
*Goldilocks*  
Network

Just Right™  
Scale vs Flexibility

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# Why would we bid for this?

- Good question!
- Relationship with ScotGov and Glasgow Council
- We have network near all the venues
- We provide all the right services:
  - Wavelengths
  - P2P
  - DIA
  - Managed LAN & WiFi



# The Ask

## 1. Broadcast Contribution Network

- Waves & Ethernet from each venue to the 'Broadcast Operations Centre' (BOC) at BBC Pacific Quay Glasgow
- Handed off to Host Broadcaster: Eurovision (EBU).

**EUROVISION**  
**B B C**



**COMMSWORLD**

# The Ask

## 2. Venue Internet

- Direct Internet Access to each venue for consumption by:

Press, Operations, Logistics,  
Timing, Anti-Doping, Security,  
Ticketing, VIPs etc.



# The Ask

## 3. Intermediary Timing Points

- Mobile connectivity to locations along the route of the road races.
- For consumption by Swiss Timing (Tissot)

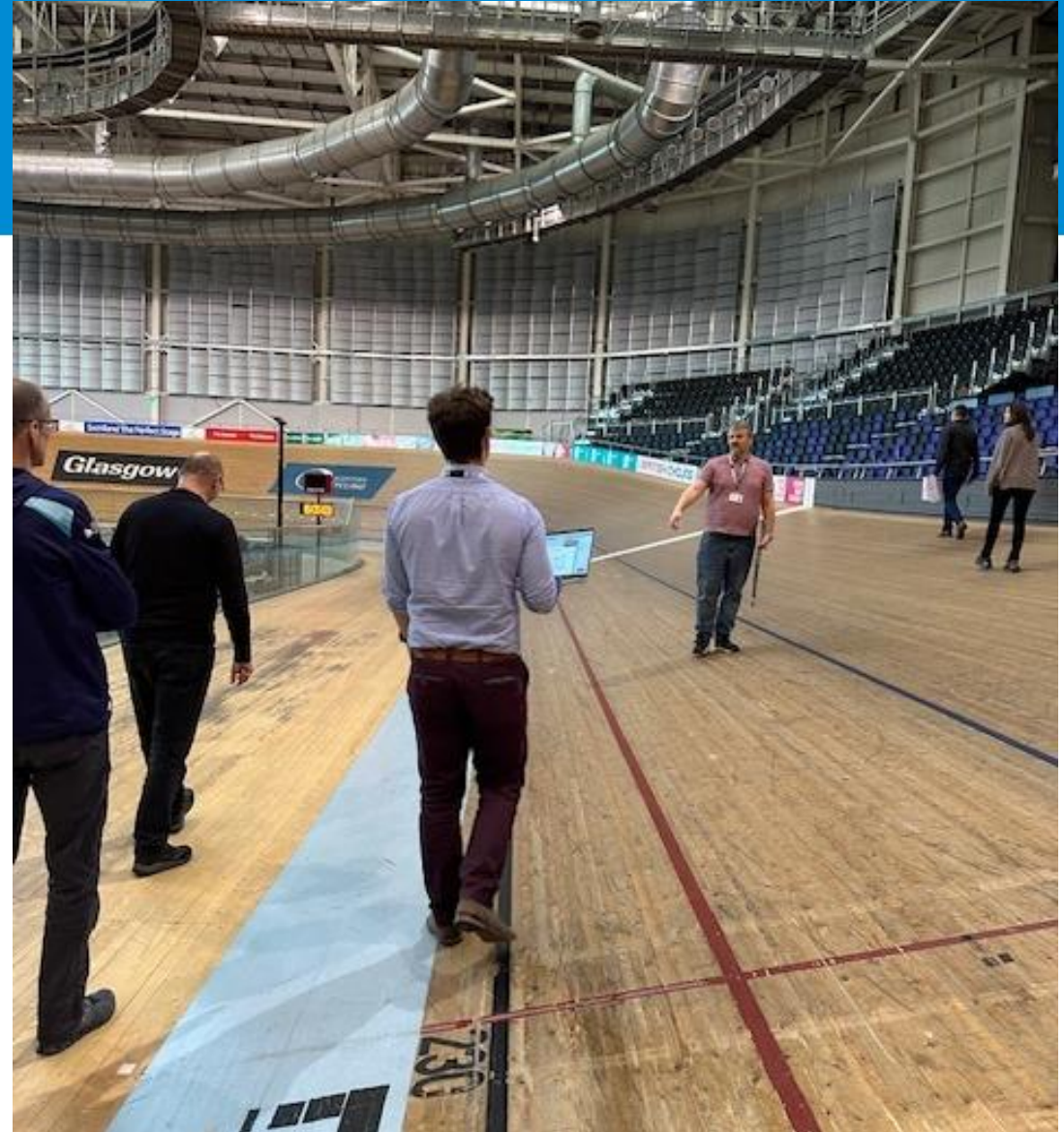




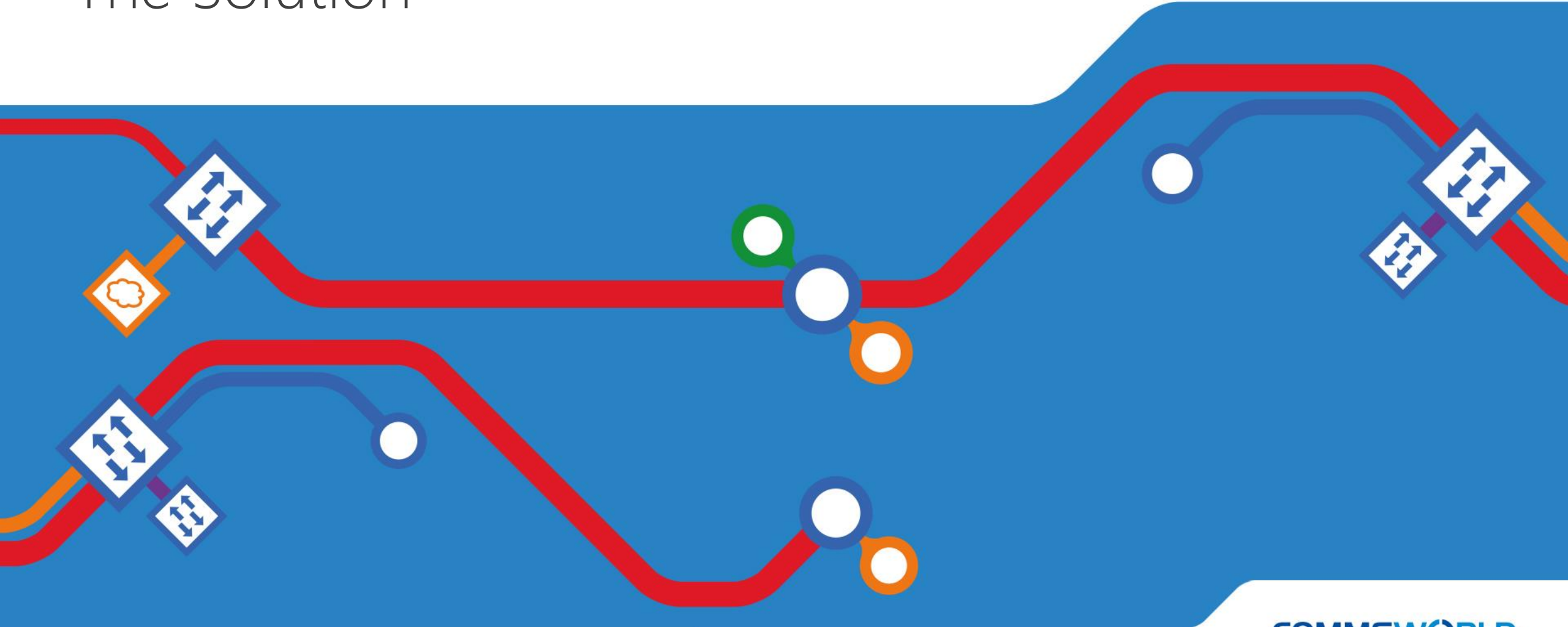
# The Ask

## 4. LAN & WiFi

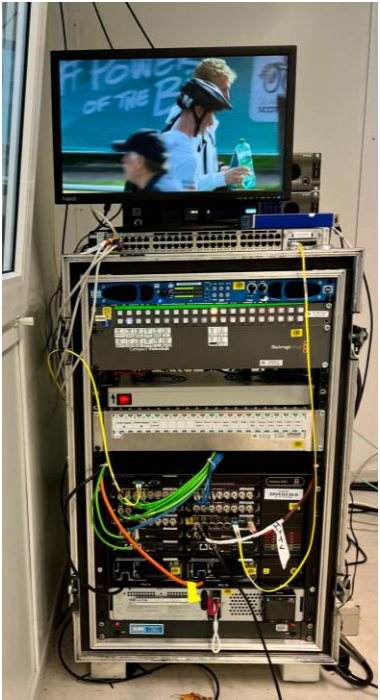
- Surprise last minute addition, but by far the biggest element.
- 36 Switches
- 137 WiFi Access Points
- Multiple Uses



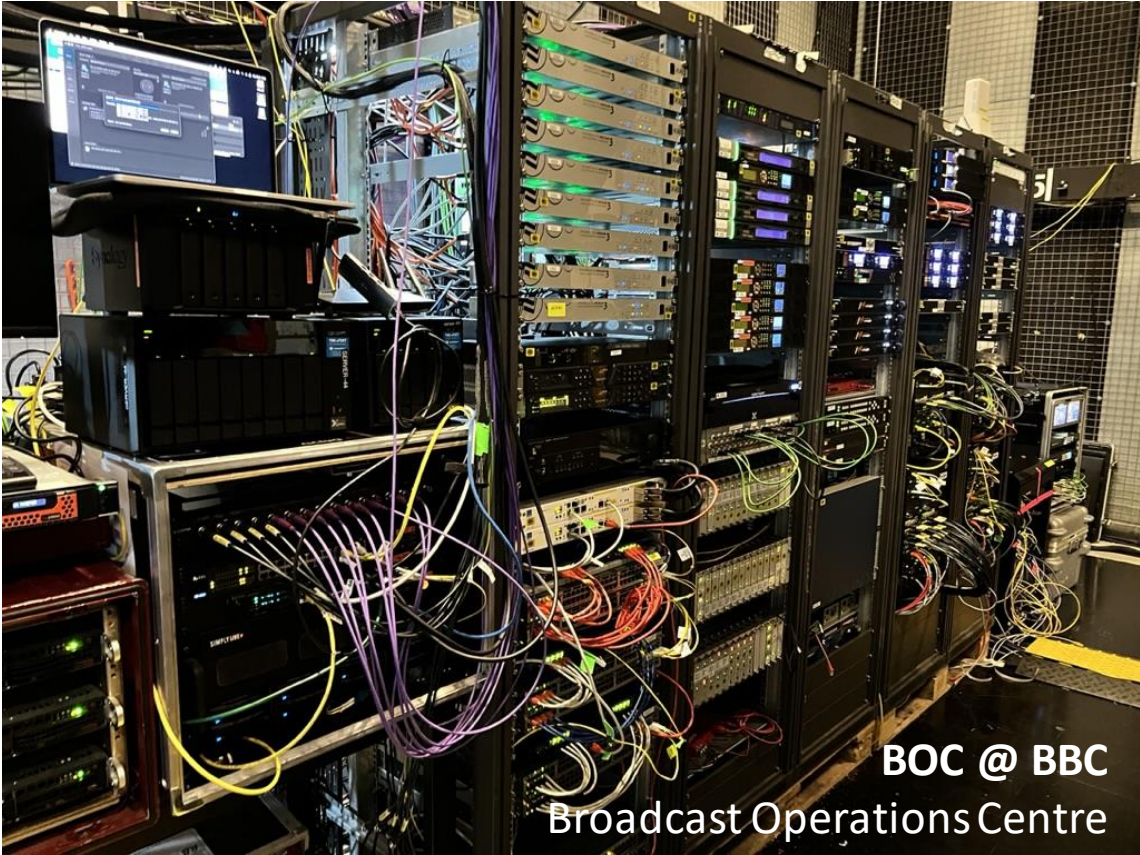
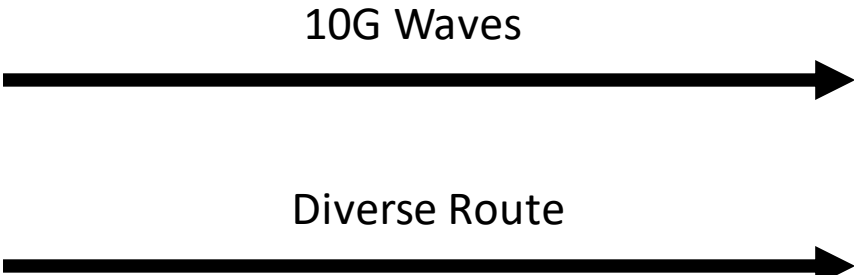
# The Solution



# Broadcast Contribution Network



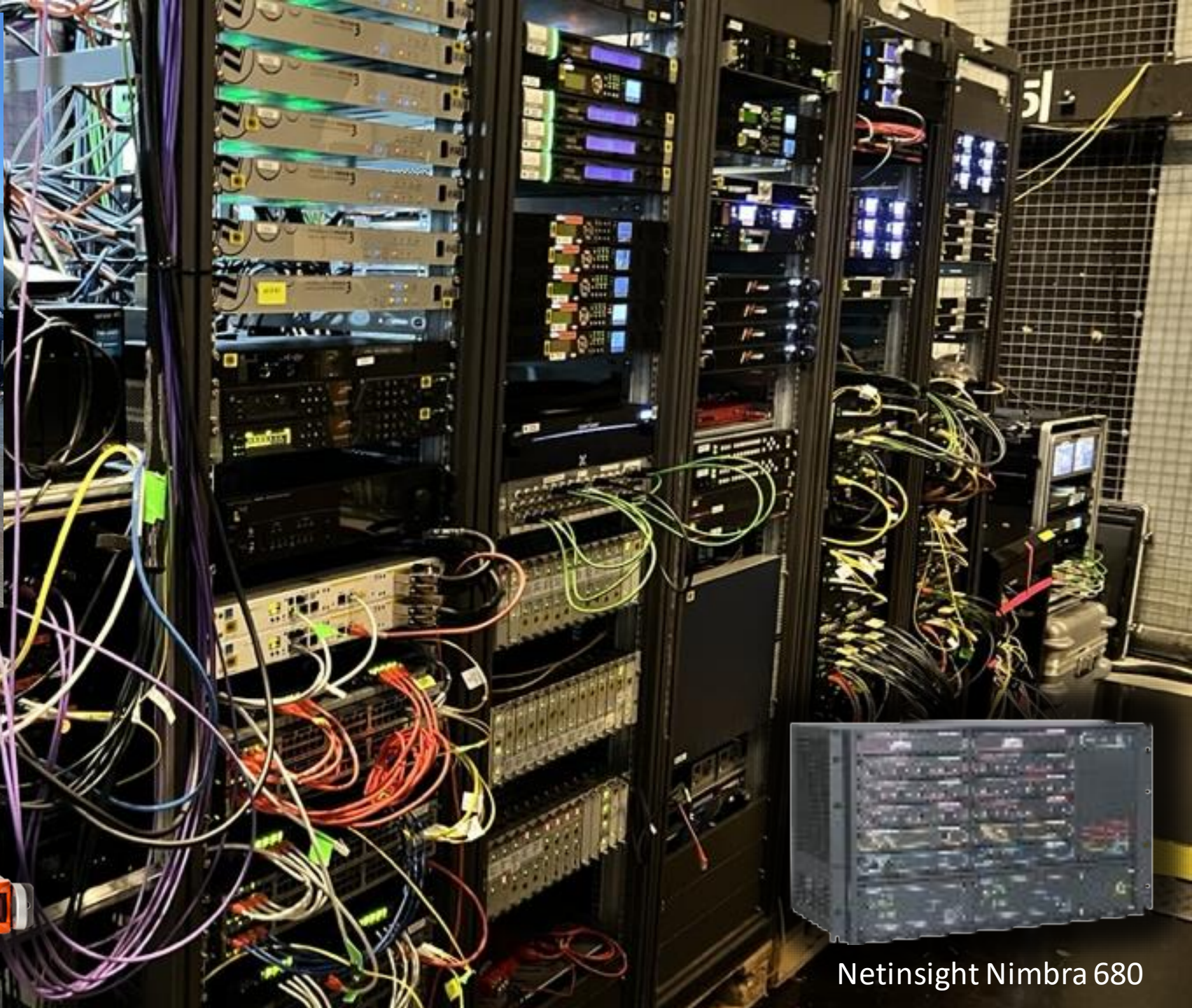
**BTOC @ Venue**  
Broadcast Technology  
Operations Centre



**BOC @ BBC**  
Broadcast Operations Centre



LiveU LU2000



Netinsight Nimbra 680



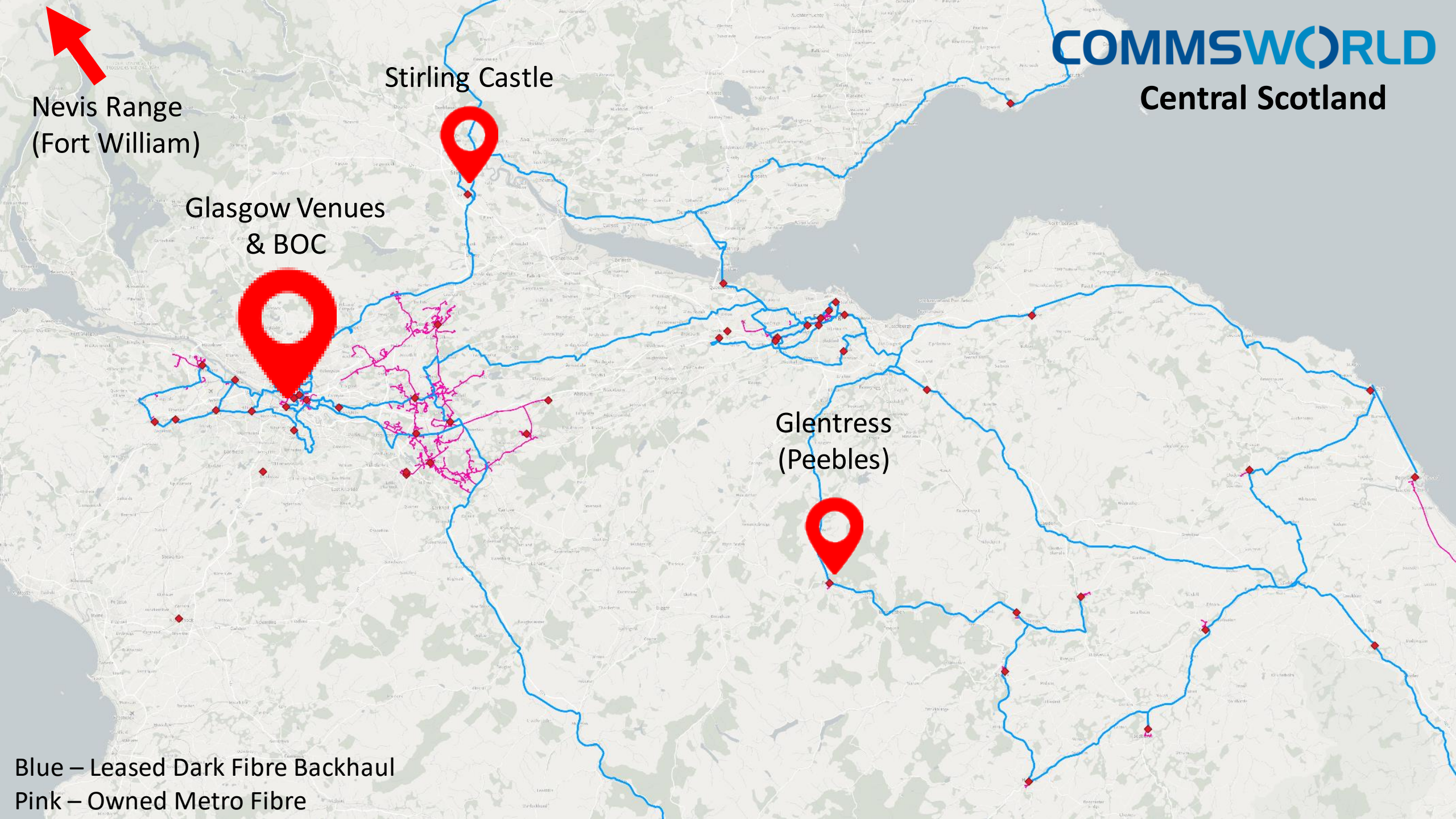
Nevis Range  
(Fort William)

Stirling Castle

Glasgow Venues  
& BOC

Glentress  
(Peebles)

Blue – Leased Dark Fibre Backhaul  
Pink – Owned Metro Fibre



Knightswood  
BMX Centre

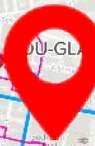


**COMMSWORLD**  
Glasgow City Centre

WES:GLA

George  
Square

BOC: BBC  
Pacific Quay



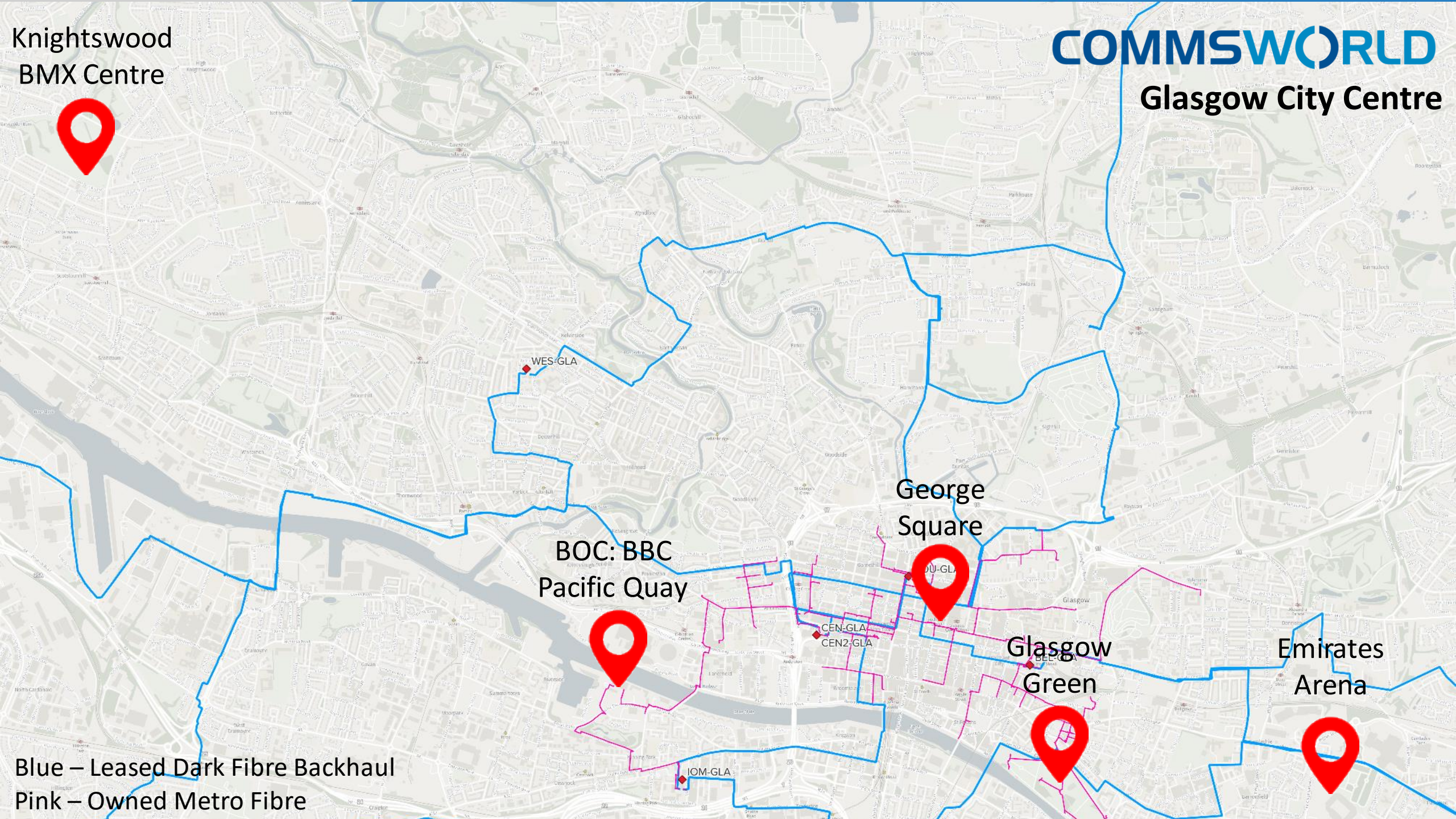
Glasgow  
Green

Emirates  
Arena

CEN:GLA  
CEN2:GLA

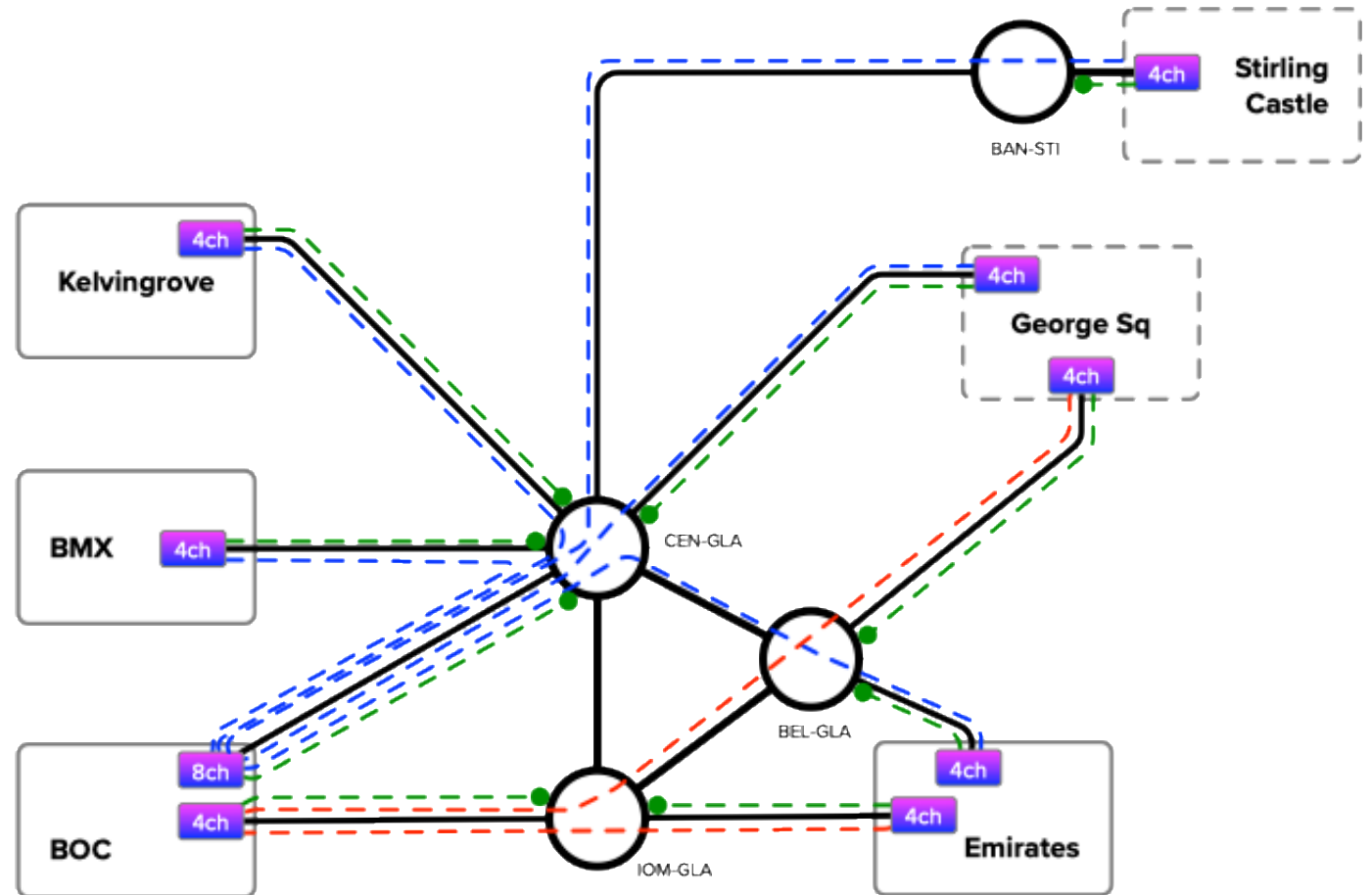
IOM:GLA

Blue – Leased Dark Fibre Backhaul  
Pink – Owned Metro Fibre



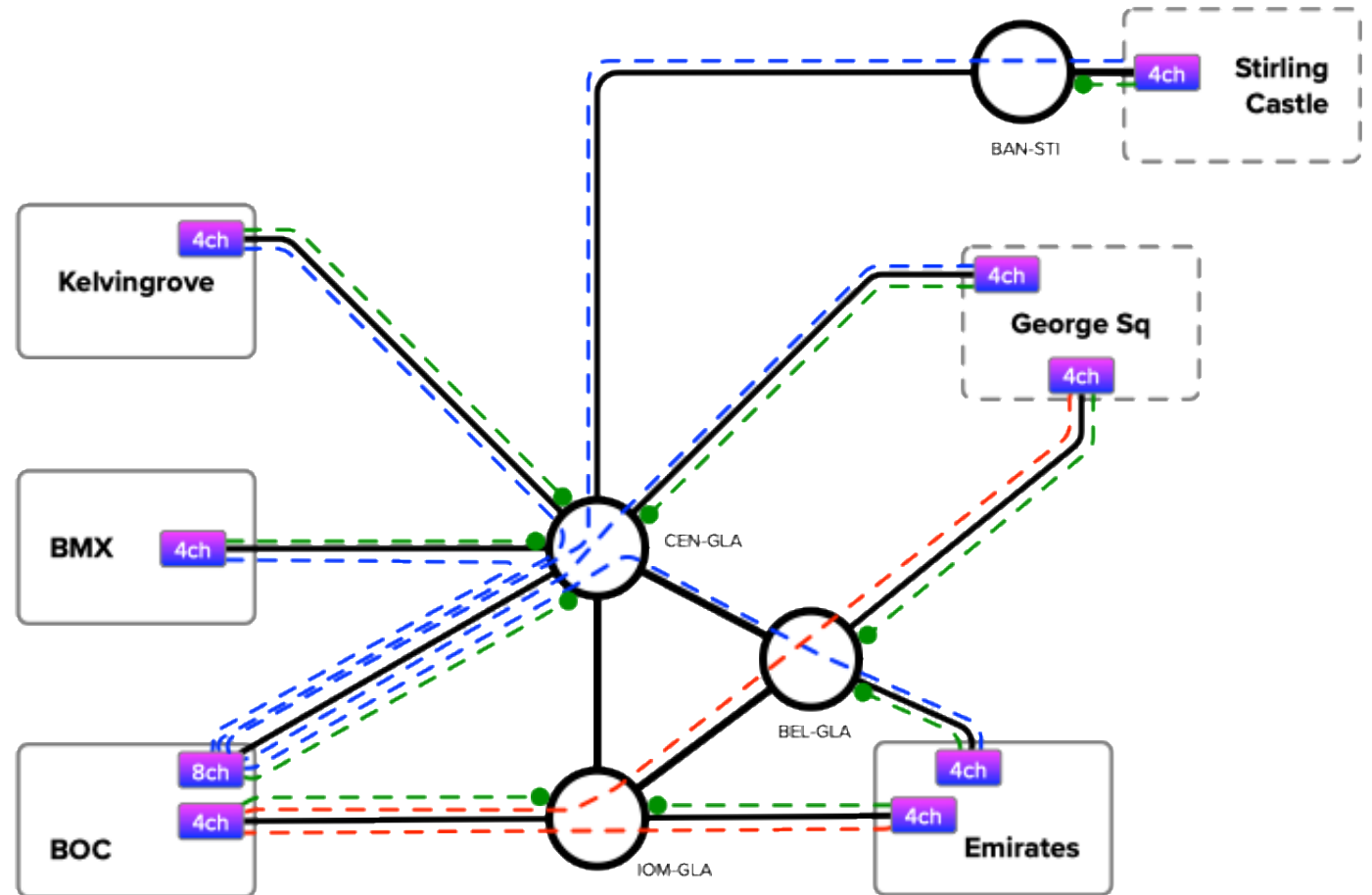
# Broadcast Contribution Network (+ Internet)

- Commsworld 'Wave Bearer' circuit delivered to each site.
- Diverse secondary bearer at BBC, Emirates & George Sq
- P2P Waves passed through metro backhaul and PoPs.
- 'Active' Waves terminated on PE Router at serving PoP for Internet & Pseudowires to non-DWDM sites @ Fort William & Glentress



# Broadcast Contribution Network (+ Internet)

- OSA-FC @ Stirling Castle
- CityFibre DF @ Kelvingrove, BMX & Emirates
- Existing Commsworld fibre @ George Sq
- 4km New Commsworld fibre @ BOC (BBC Pacific Quay)





# Lan & WiFi Solution

- Most complicated part by far
- Rate-card for services offered to hundreds of 'customer' organisations
- 36 switches & over 1000 switchports configured
- 137 WAPs with over 5000 clients connected
- Hundreds of temporary fibre and copper cables run.
- P2P Wireless Bridges



# Lan & WiFi Solution

- A handful of the users:
  - Press & Photographers
  - Venue Operations
  - Logistics
  - Security
  - Anti-Doping
  - VIP
  - Ticketing
  - Swiss Timing - CIS
  - IPTV – Venue Monitors



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**Teams video analysis positions**  
High bandwidth – Coaches & Athletes watching HD footage



Accredited Area  
Sports Analysis

Accredited Area  
Sports Analysis

#SD AGENT MILLER  
SPY GEAR  
#19 Video Lab



**Time Trial Start Position**  
Swiss Timing / Tissot precision timing equipment



**Unilateral Production Suite @ BOC (BBC)**  
Integrated feed production: merging content from each venue



**TV & Graphics Production**  
Providing individual venue feed to BOC







# Challenges

- Cabling contractor at Fort William f\*\*\*\*d off without telling us (or have any tools etc.).
- Didn't ask for Multicast, but was needed when we turned up. Turns out Meraki isn't awesome at multicast.
- Wireless bridges – big coaches!
- Jitter from Glentress to Glasgow – Tactical wavelength turned up in 48h
- Stirling EAD for Broadcast: 100% utilisation at 10G – Solved with LSP pinning.
- Don't bring your CTO to the BOC – things magically break!

