



AMS-IX Inter-IPX Service

EPF6

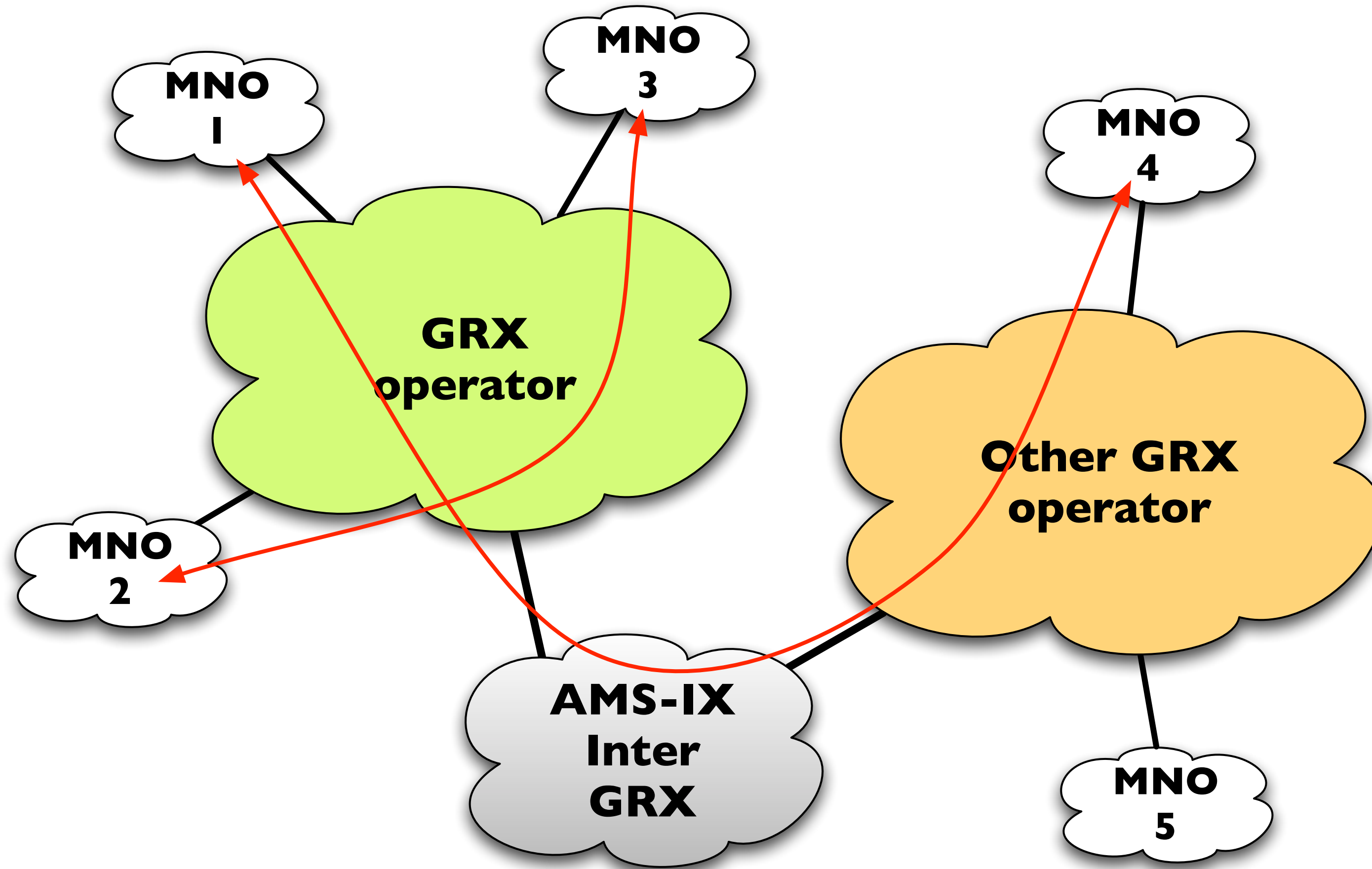
Budapest 21 September 2011

From GRX to IPX



From GRX to IPX

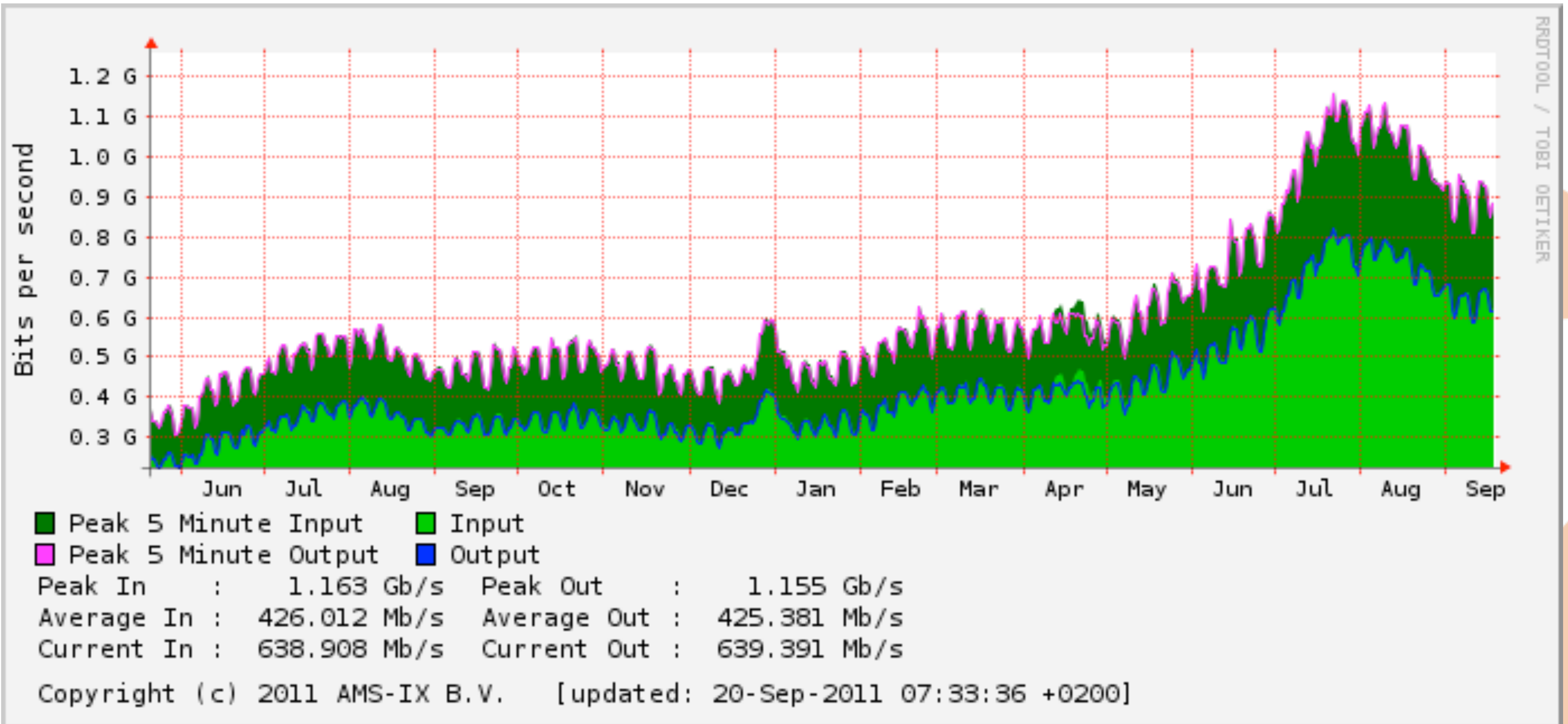
- ▶ Since 2002 AMS-IX offers its GRX platform (CUG) to carriers that interconnect MNO'S for data roaming purposes:
 - ▶ Technical: separate AMS-IX GRX VLAN, GSMA supplied Root DNS and private ASN's, dedicated equipment and connections
 - ▶ Administrative ('accreditation'): Memorandum of Understanding
- ▶ AMS-IX until today is the main GRX peering point globally, currently interconnecting 25 GRX providers
 - ▶ to others exist in Singapore and Ashburn



Interconnecting GRX providers to allow global data roaming

From GRX to IPX

GRX Traffic trends



From GRX to IPX

'Best effort' vs required guaranteed QoS

- ▶ GRX has growth figures twice that of 'regular' internet traffic (100% per annum)
 - ▶ Excellent historic 'best effort' track record AMS-IX: platform performance and availability of service
- ▶ GSMSA: To sustain growth, multi media ip-services need to be accessible to end-users 'securely' and without 'delay', no matter how they connect
 - ▶ Growing demand for guaranteed QoS and SLA's
 - ▶ Not supported by GRX and until June not by AMS-IX either...

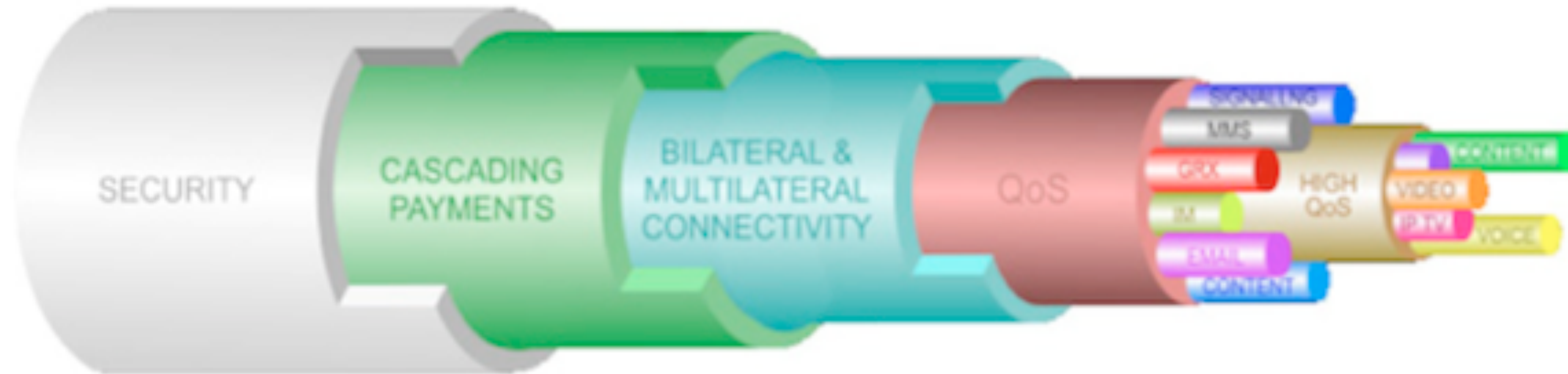
From GRX to IPX

'Broadening the scope'

- ▶ GSMA defined 'IPX' as a follow-up to GRX, a.o. to solve number of limitations:
 - ▶ Industry is evolving to an all-ip environment ('NGN's'):
 - ▶ General IP services need to interconnect to a private and secure IP backbone, not only MNO's but also content providers, ASP's, FNO's etc.
 - ▶ Required 'end to end' guaranteed QoS is introduced: cascading SLA's and billing
 - ▶ Different service classes are defined - GRX is just one of the services within the IPX environment, in a 'lower' service class

From GRX to IPX

- ▶ GSMA defined and standardized IPX



- ▶ Source: http://gsmworld.com/our-work/programmes-and-initiatives/ip-networking/ip_exchange.htm 'The IPX solution is a premium quality solution that promises error free delivery of traffic whilst offering the flexibility to apply an appropriate level of quality as demanded by each different class of service.'

AMS-IX Inter-IPX Service

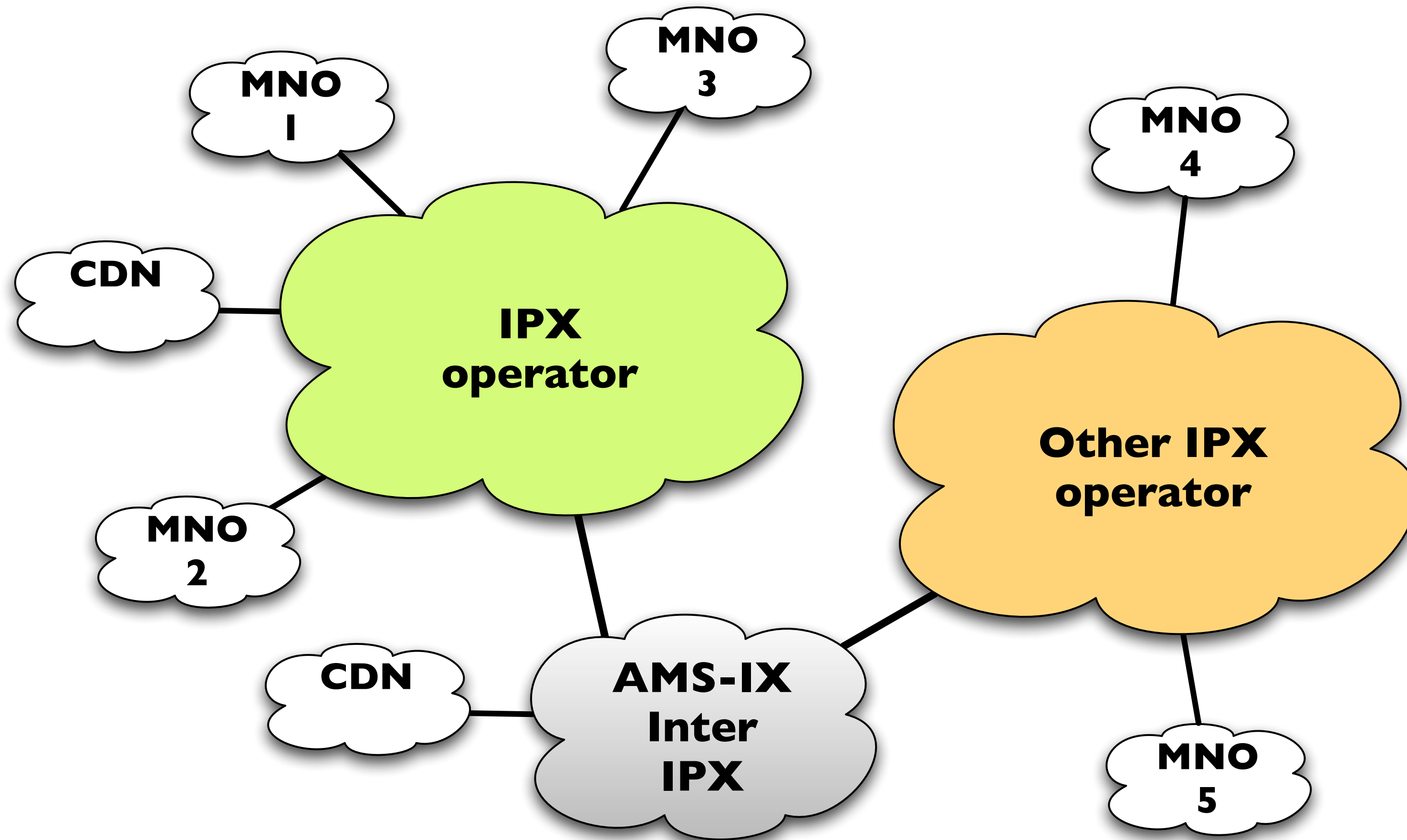
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AMS-IX Inter-IPX Service Proposal

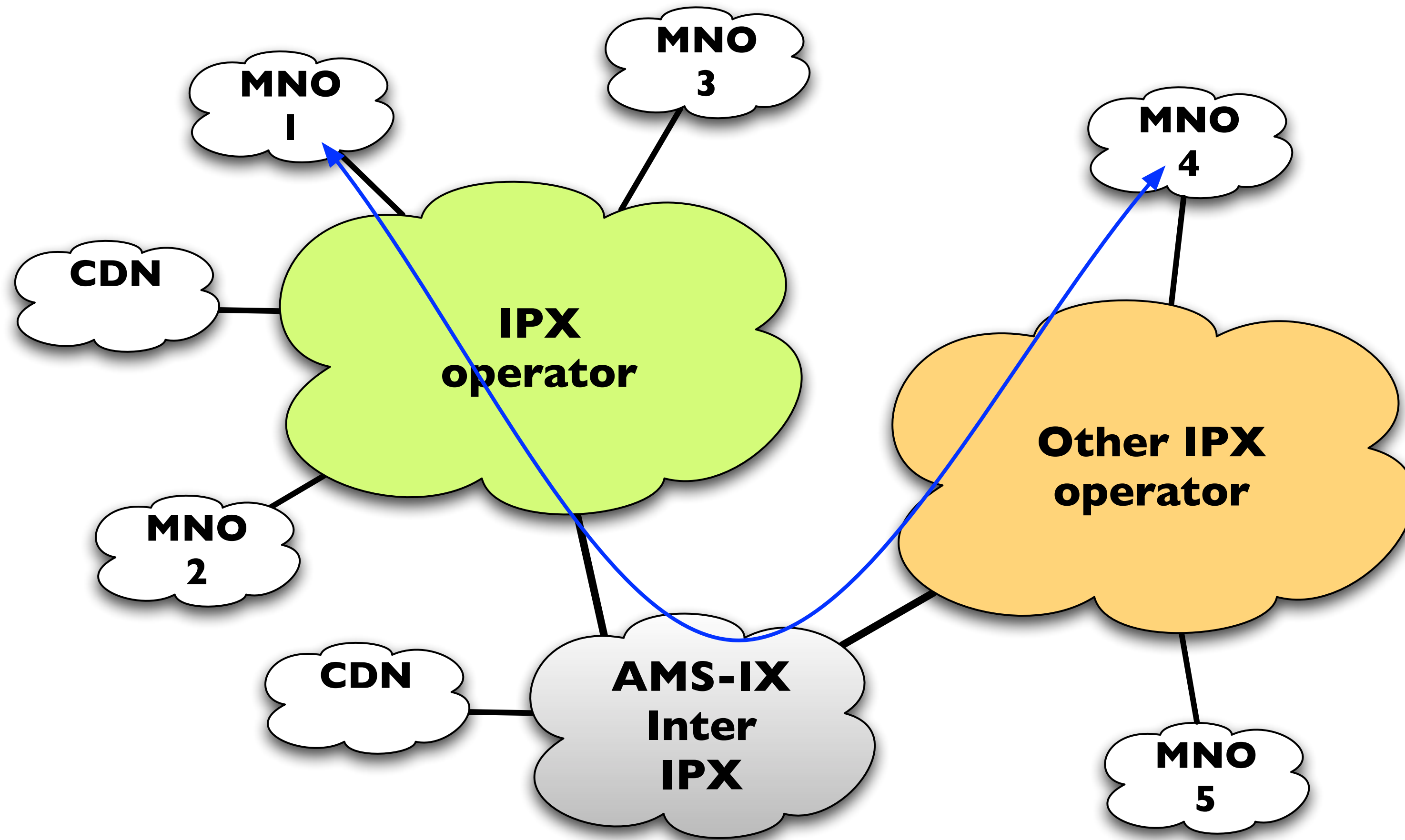
Role of centralized interconnection

Carriers providing next generation IPX services need to connect to each other: AMS-IX as neutral, trusted, and reliable interconnection point takes up the role as an 'Inter-IPX':

- ▶ June 2010 AMS-IX hosted a meeting with 20 representatives of IPX/GRX providers/MNOs to discuss Inter-IPX desirability and requirements
- ▶ Providers indicated the need for an IPX interconnect point including SLA's
- ▶ Extend the GRX Interconnect model - kick off of the AMS-IX Inter-IPX Service project.
- ▶ Approval in November 2010 by AMS-IX GM to go ahead with service launch (SLA approval)

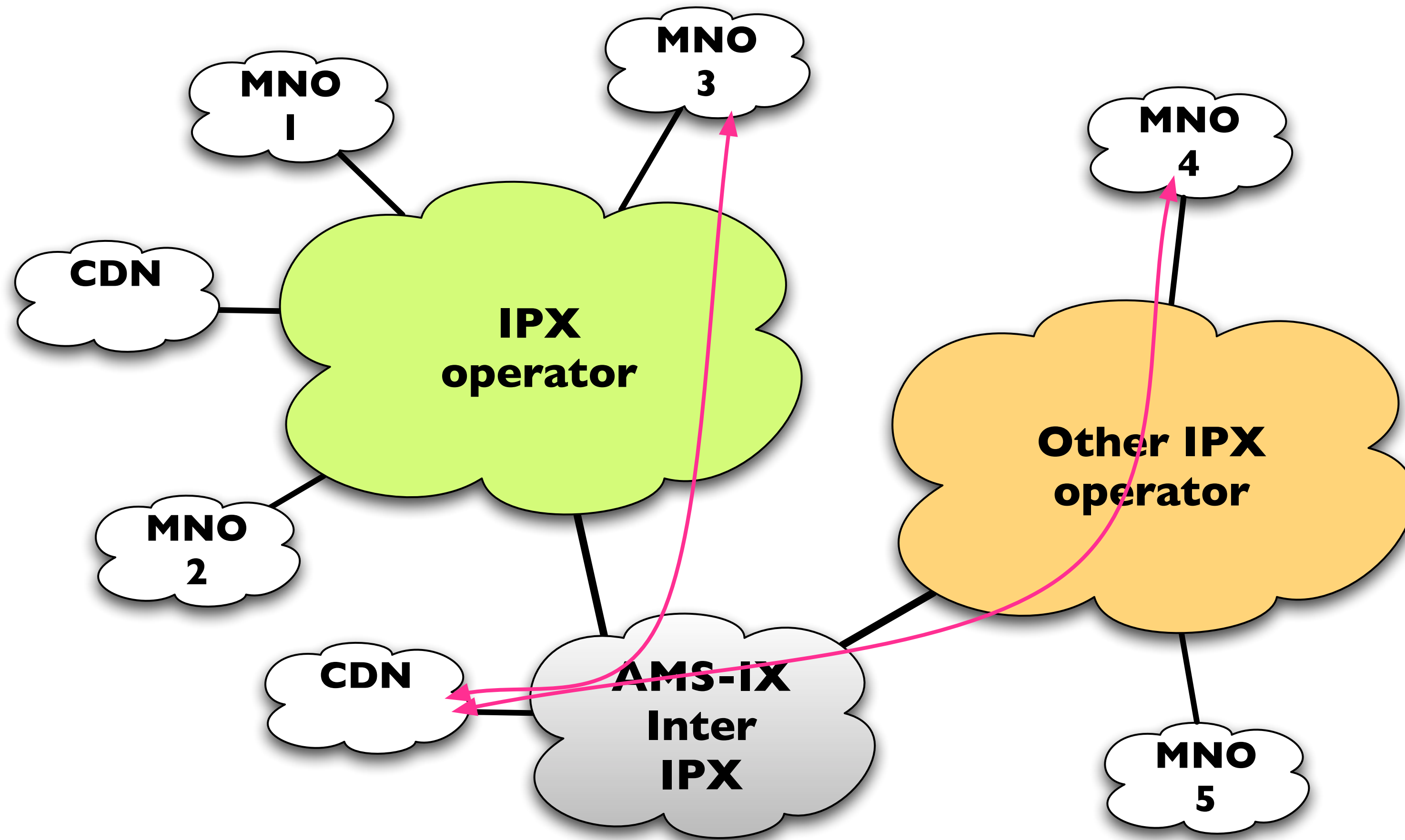


IPX and the Inter-IPX Concept: interconnecting IPX providers



End to end QoS requirement includes Inter-IPX





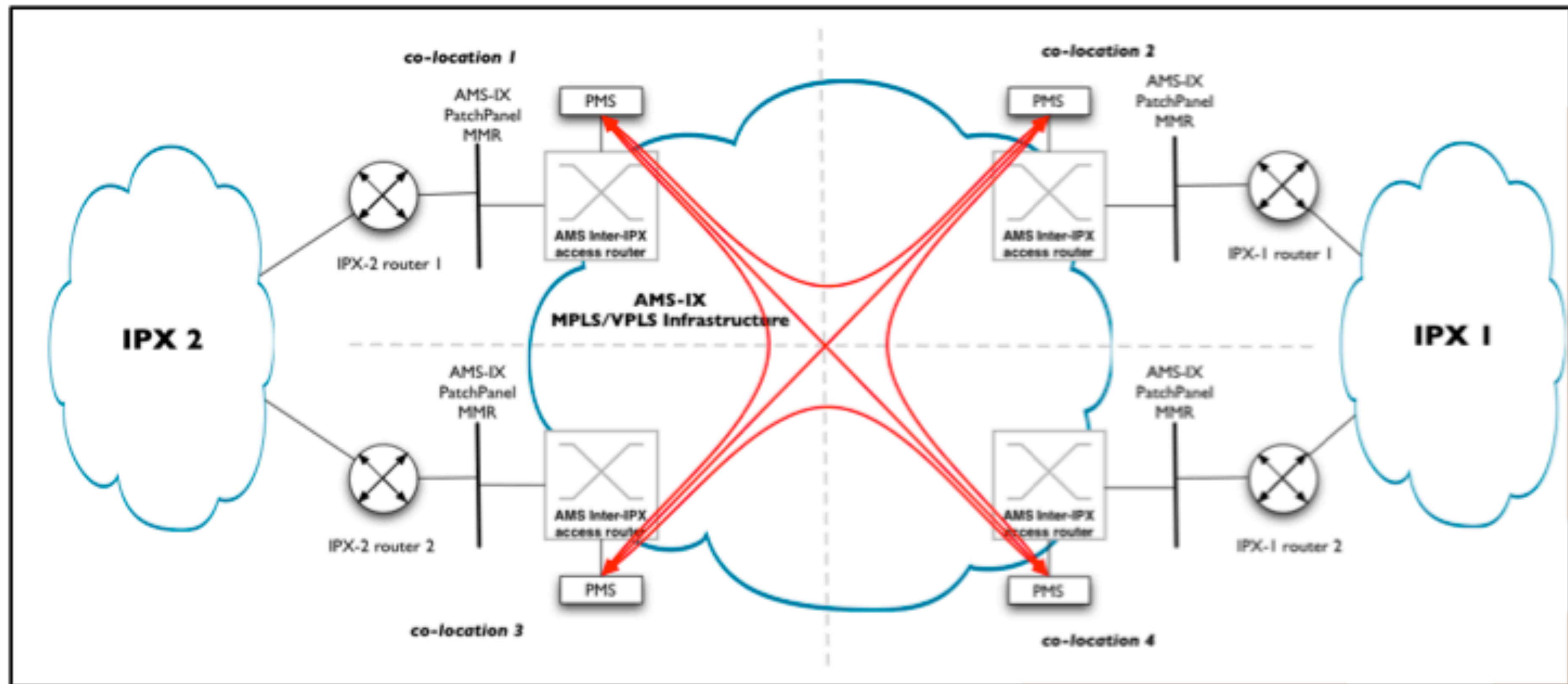
Directly interconnected Content Providers can serve multiple IPX providers? Issue of 'accreditation' would need to be solved

AMS-IX Inter-IPX Service

- ▶ IPX Interconnect peering platform, according to industry requirements:
 - ▶ Separate IPX VLAN, minimum of two (redundant) customer ports per connection, on different ‘certified’ AMS-IX co-locations
 - ▶ AMS-IX commits to KPI’s as mentioned in GSMA IREG.34, based on highest service class: ‘conversational’ requirements
 - ▶ Introduce one AMS-IX IPX Interconnect SLA
 - ▶ Monitoring and reporting to show SLA compliance: probe set-up
- ▶ <http://www.ams-ix.net/inter-ipx/>

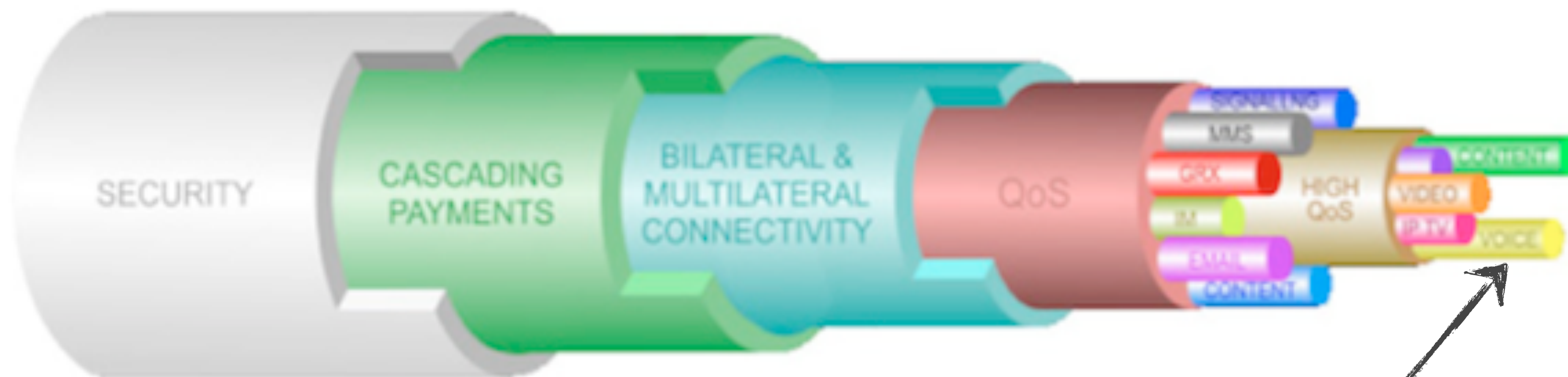
AMS-IX Inter-IPX Service

Inter-IPX customer connection schematically



Accedian MetroNID probes connected to every AMS-IX access router

IPX



All services over mobile, including VoIP

Questions and Comments?

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