INTERNET CONTENT ACCESS

A REGIONAL PERSPECTIVE

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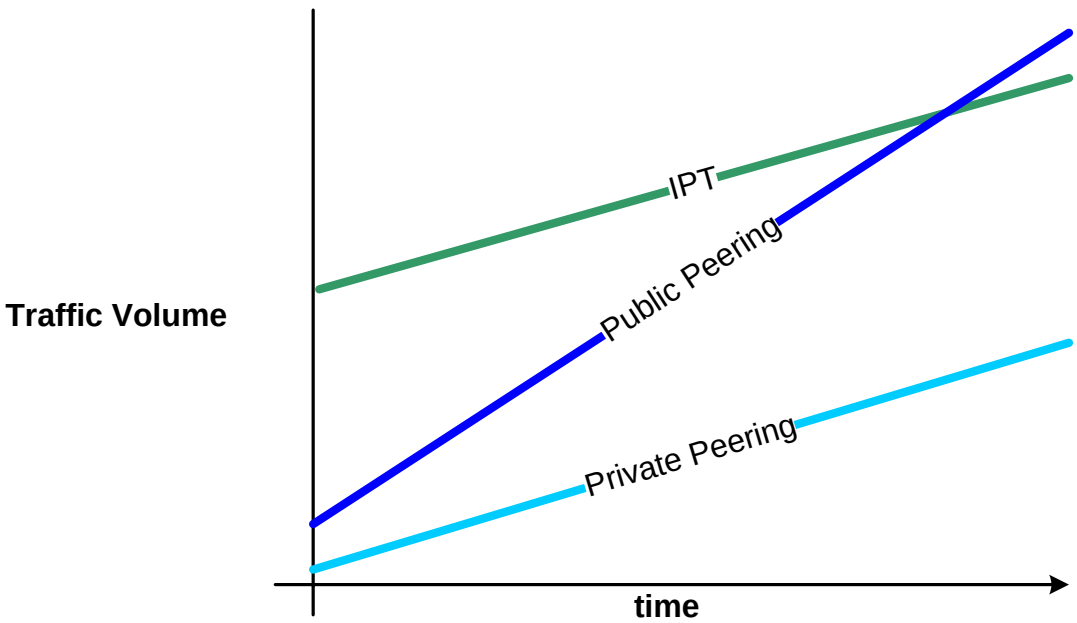
Internet Content Access – Historical overview

- Internet in the mid 90s> Advent of NAP operated by Telcos
- All Content was hosted in the US & backbone operated by an oligopoly
- Internet took off in the late 90s
- Spread of public IX points: LINX, AMSIX, PAIX,HKIX
- Decentralisation of content (e.g. Akamai, CB)

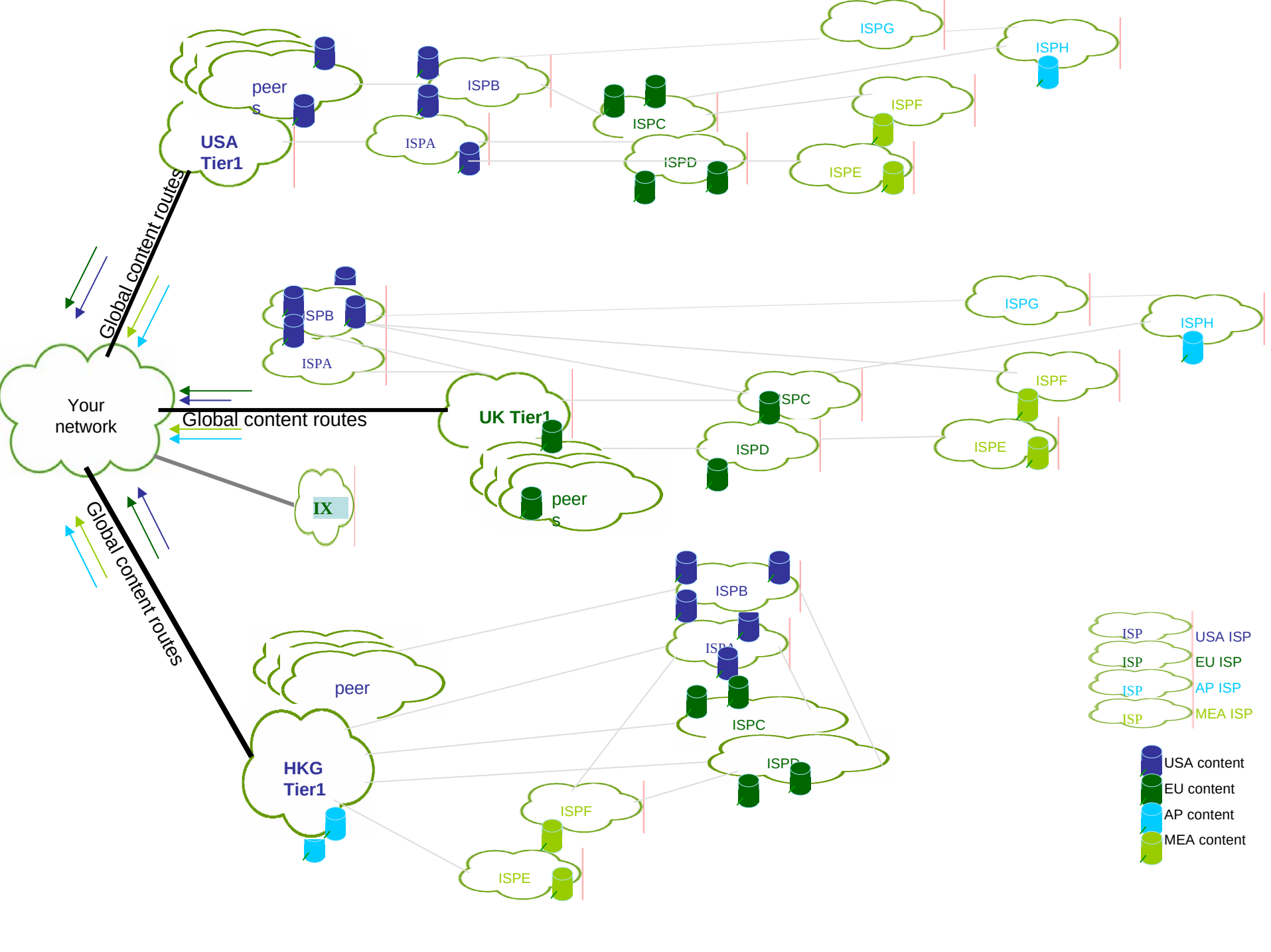
Internet Content Access - Regional Trend

Conceptual



Internet Content Access - Port & Pipe Model

- Port and Pipe solution has been historically popular in the Middle East
- ISPs connect to the US/EU/AP using trans-continental capacities and buy IPT service from multiple Tier-1 providers and may participate in an IX
- This could result in inefficient delivery of content due to little control over the traffic flows, widespread content, peerings and traffic hand-off between Tier2-Tier3 ISPs
- Full global routes are received from each Tier1 provider regardless of the content origin and the number of hops to reach the content
- This complexity is illustrated in the next slide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ISPF
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USA ISP
ISP
EU ISP
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AP ISP
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MEA ISP
USA content
EU content
AP content
MEA content

Internet Content Access - Port & Pipe Model

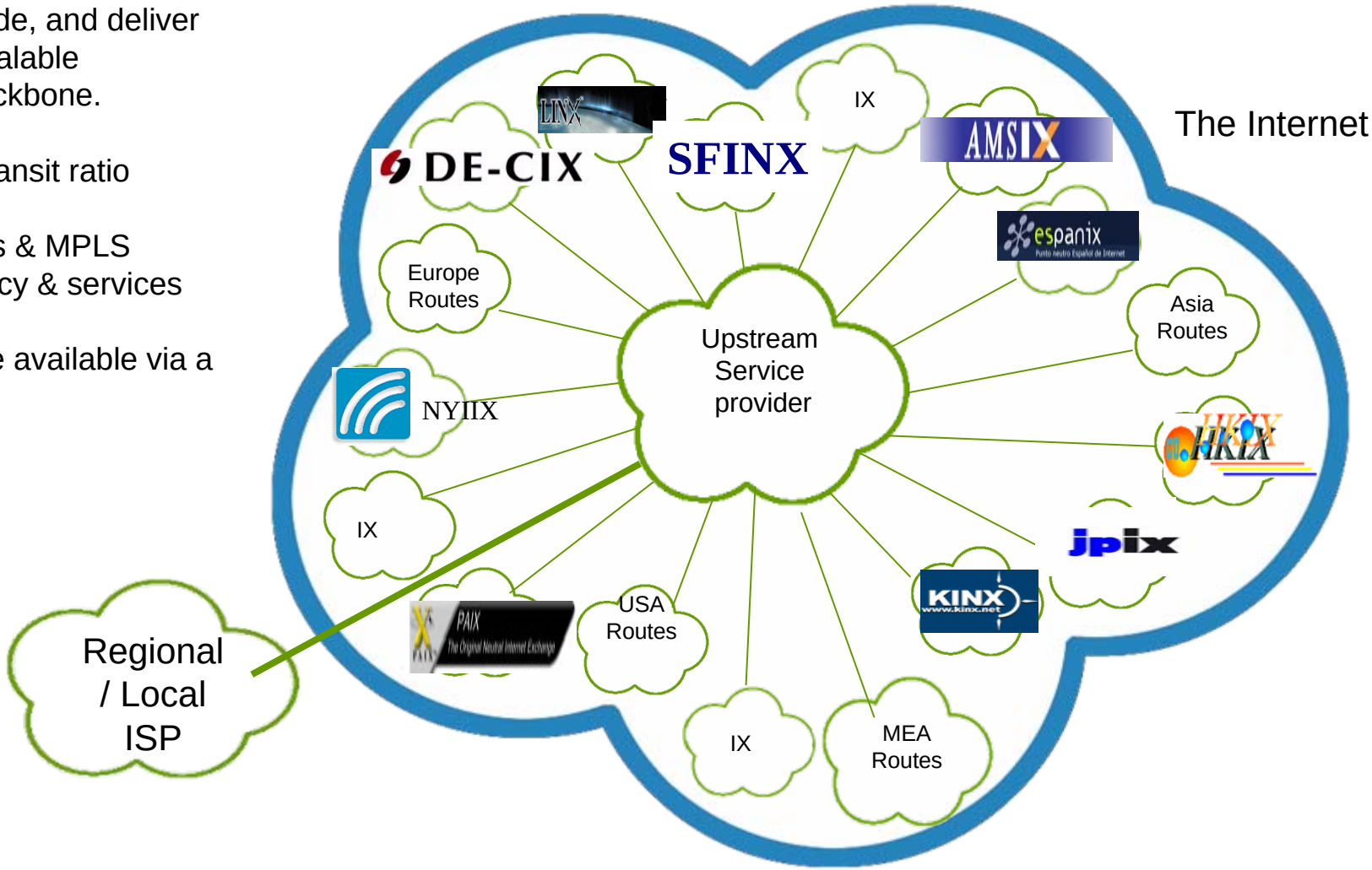
Traffic Engineering is required!

- Upstream provider's routes don’t always reflect the origin of routes. It shows only where the route enter the network.
- Remote peering further obscure the origin of routes making it difficult to map out the origin of all the peers routes.
- Sub-optimal routing could easily happen unless TE is deployed.
- Carriers will need to decide where to send traffic and rely on upstream providers communities to work out origin of routes and set local-preference, AS padding, or do prefix based policies for more granular control

Internet Content Access– One Stop Shop Model

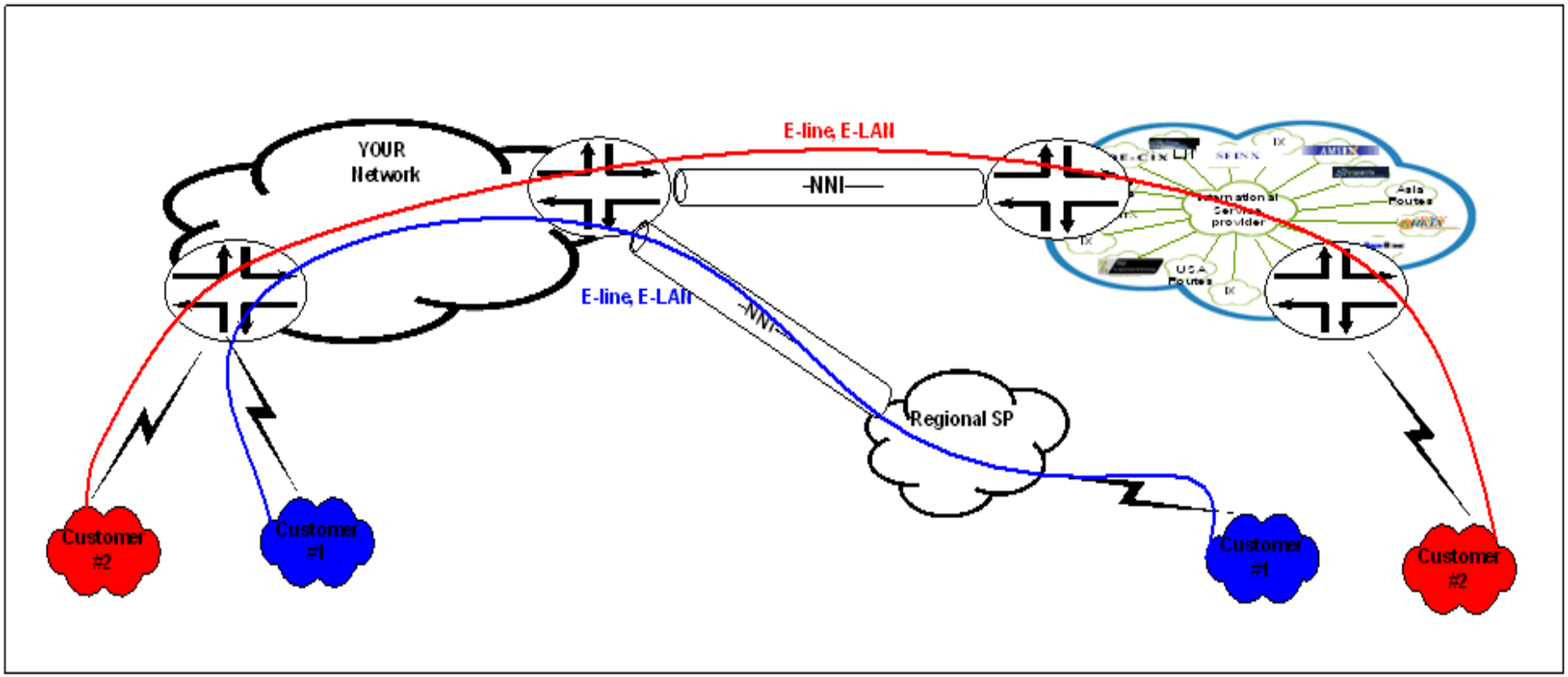
Offload complex Traffic Engineering to not more than 2/3 International SPs!

- The upstream carrier must provide direct access to key regions worldwide, and deliver content via a scalable international backbone.
- High peering/transit ratio
- Stringent SLAs & MPLS enabled resiliency & services
- All of the above available via a nearest POP



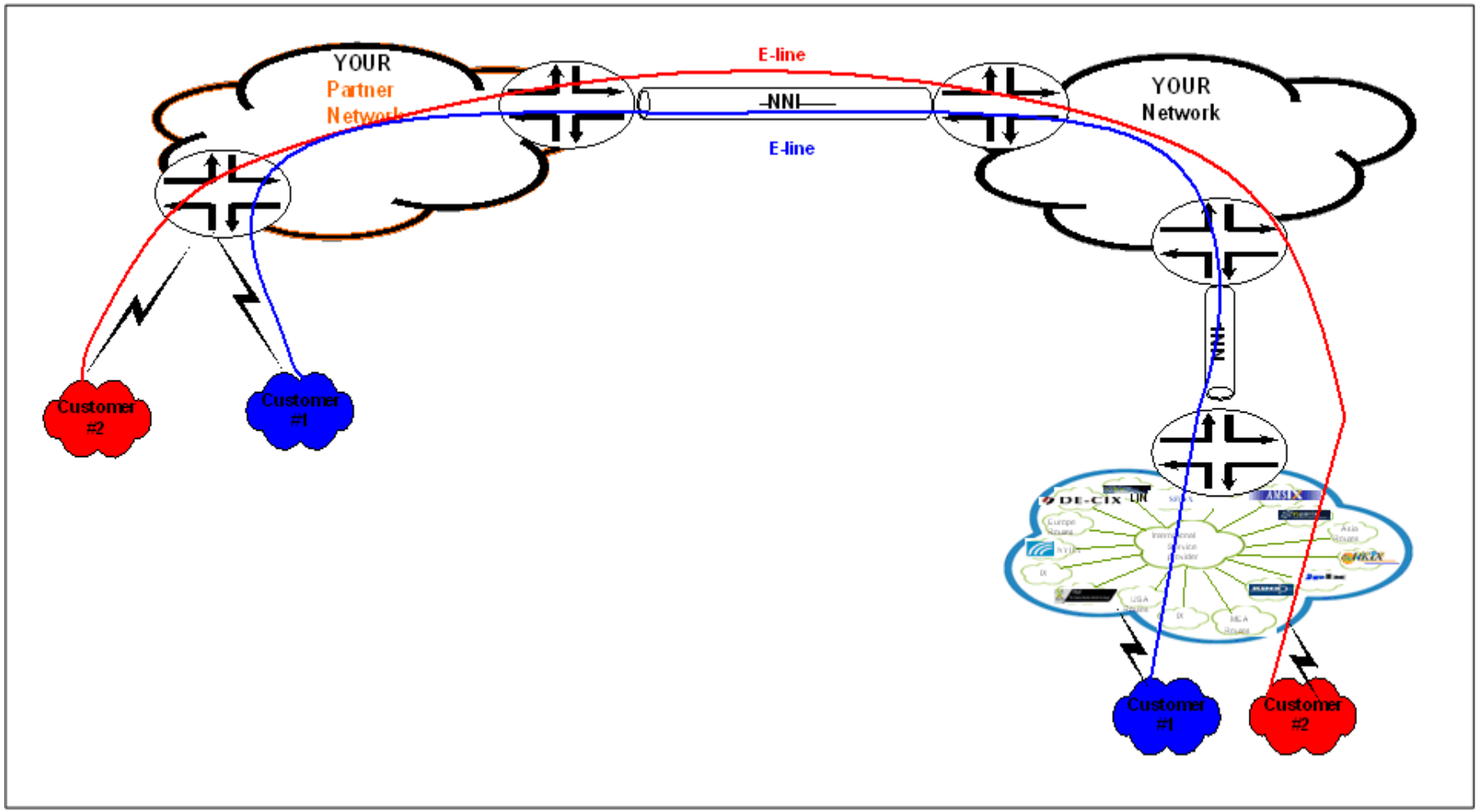
Internet Content Access – Extend Out

Build B2B, P2P models with potential international partners



Content-Access– Extend In

Build B2B, P2P services with potential local partners



Internet Content Access – growth indicators for MEA SPs

- Backbone bandwidth will continue to grow strongly out of the Middle East driven by:
  - Increased internet penetration
  - Economic growth within & outside the region
  - Proliferation of Broadband in the last mile
- New Applications for the new lifestyle
- Local language content will meet the needs of the end user significantly Intra-regional traffic will multiply due to increase in e-commerce & business collaborations

Internet Content Access – looking Towards the Future

- Service providers will need to adopt a Hybrid Approach using port/pipe, one-stop shops and NNIs
- MEA region will require more EMIX, MEIX, BIX type network infrastructures
- Equip the networks to embrace the future
- Today is…. Tomorrow's Yesterday

Thank You