CISCO IP/MPLS SOLUTIONS: NETWORK CONVERGENCE FOR MOBILE OPERATORS

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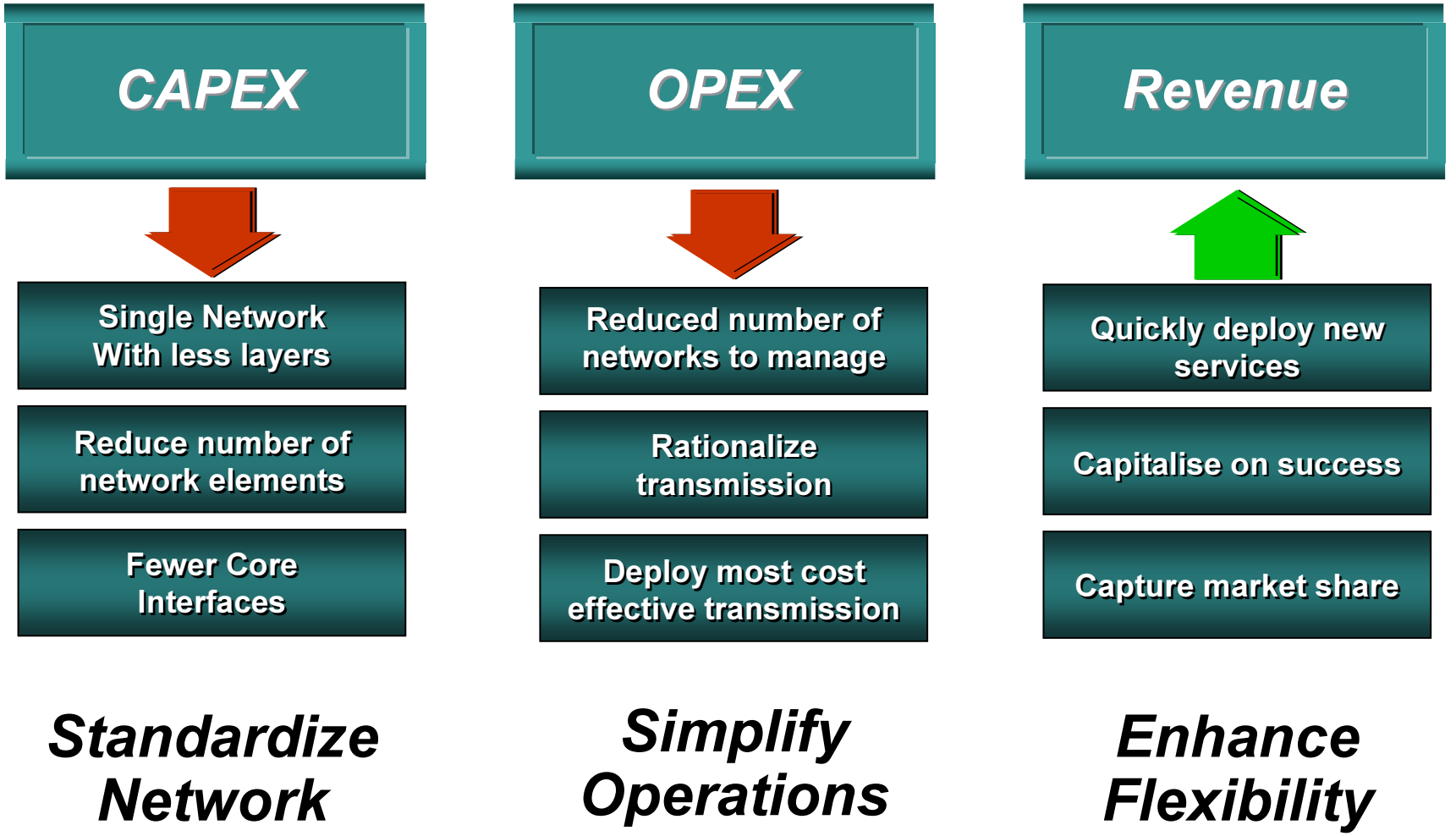
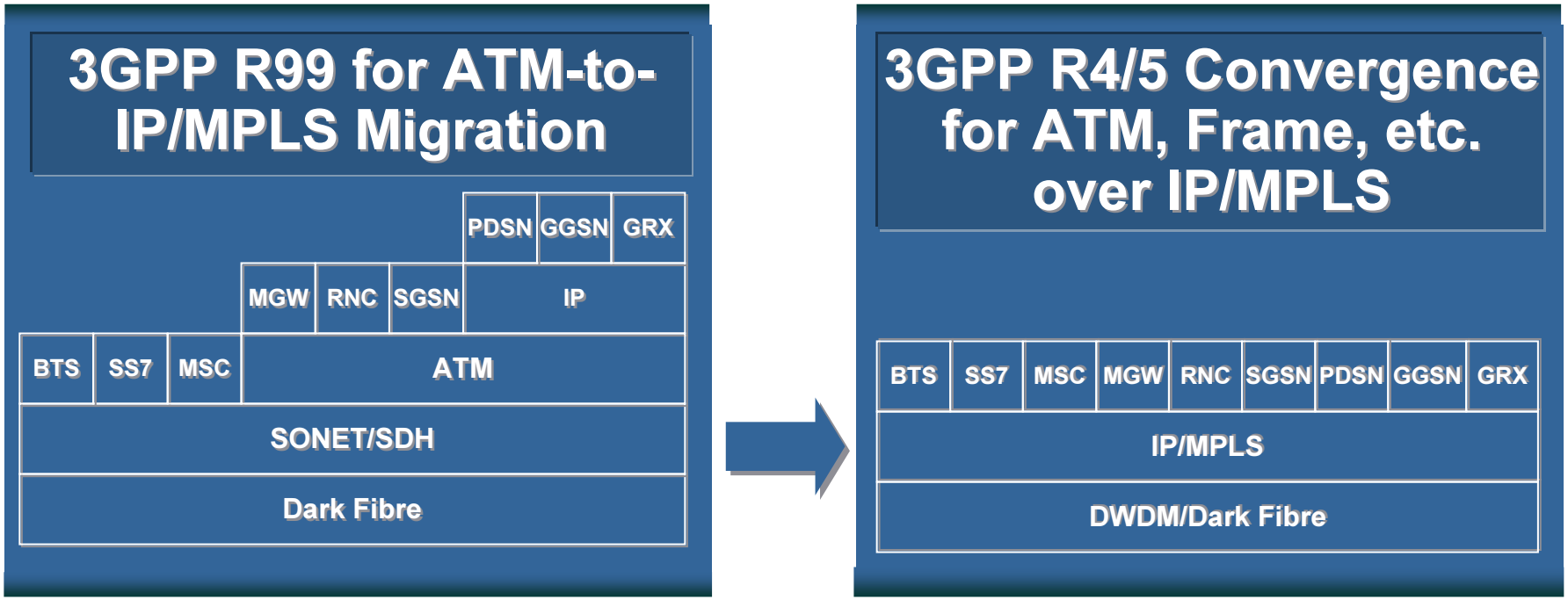
Agenda

- Mobile Network Convergence and Drivers
- Mobile Transport over Pseudowires (MToP)
- Migration Strategy
- Summary

Business Case for a Converged IP/MPLS Network



Converging Network Standards to IP/MPLS



Reasons for Convergence

- ATM does not scale well for IP Applications
- ATM is inefficient in handling IP Traffic
- ATM Requires Virtual Circuits to be explicitly Maintained
- Transport and cost efficiencies for high traffic volumes

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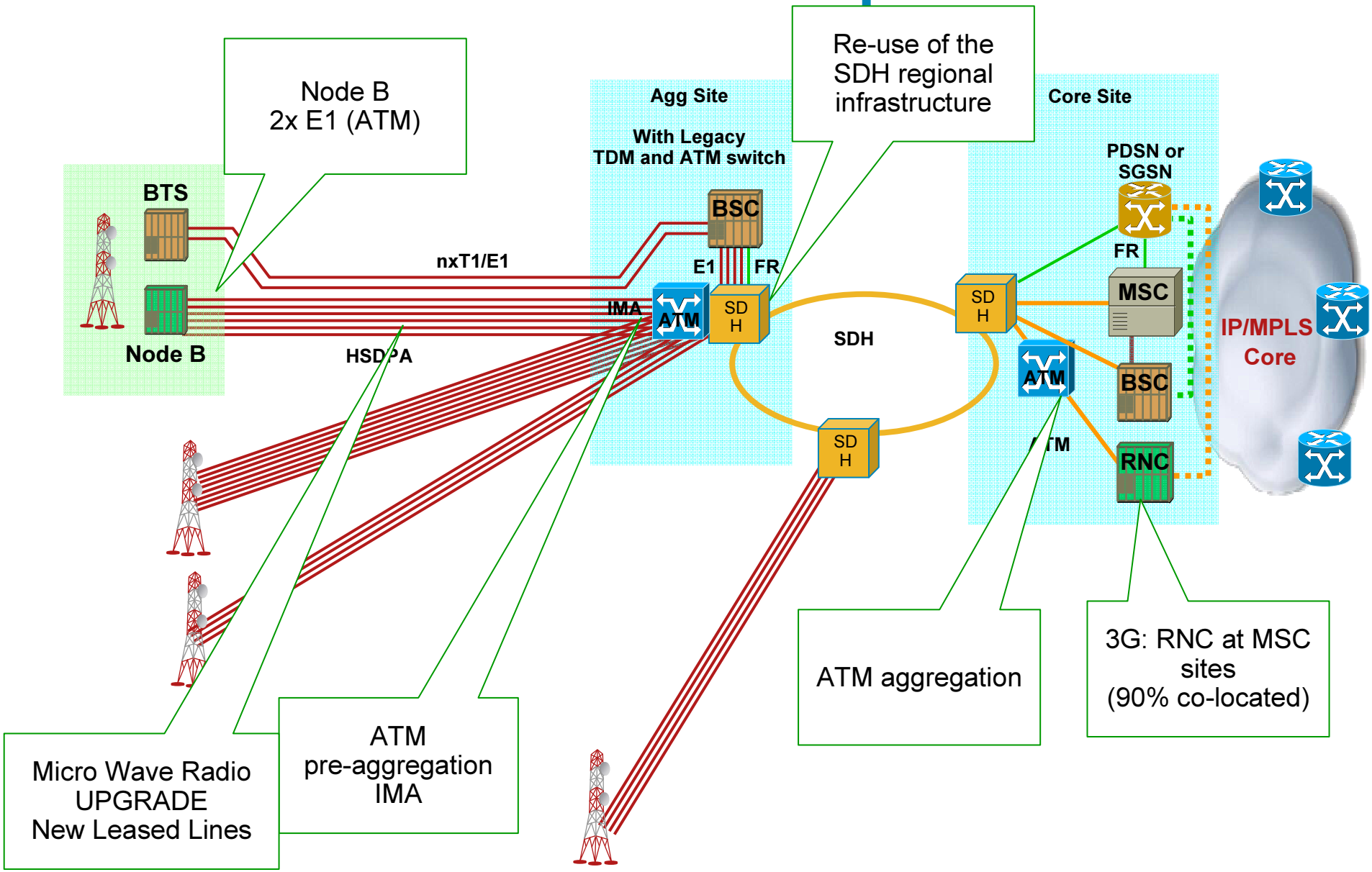
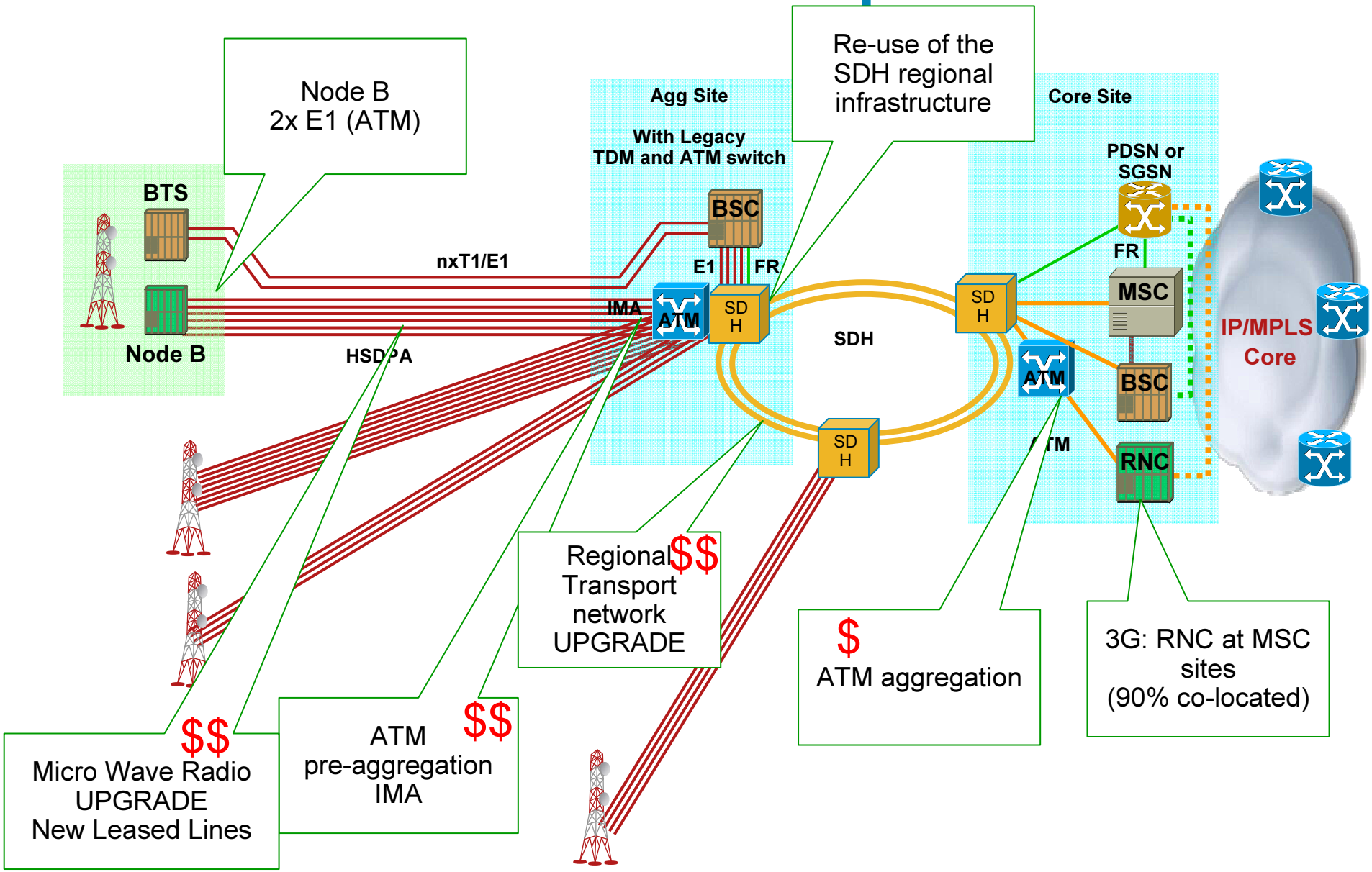
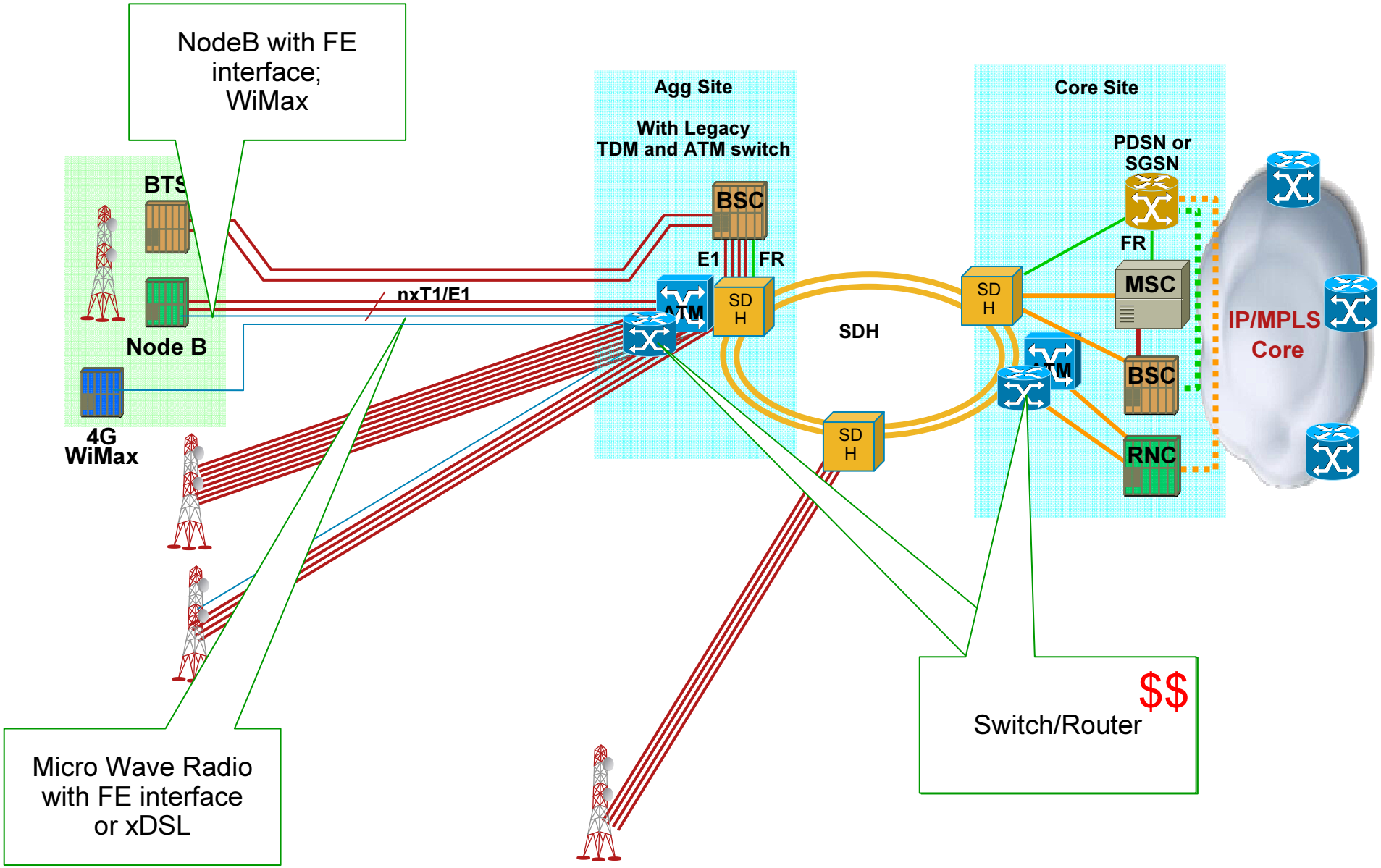
RAN via Traditional Transport



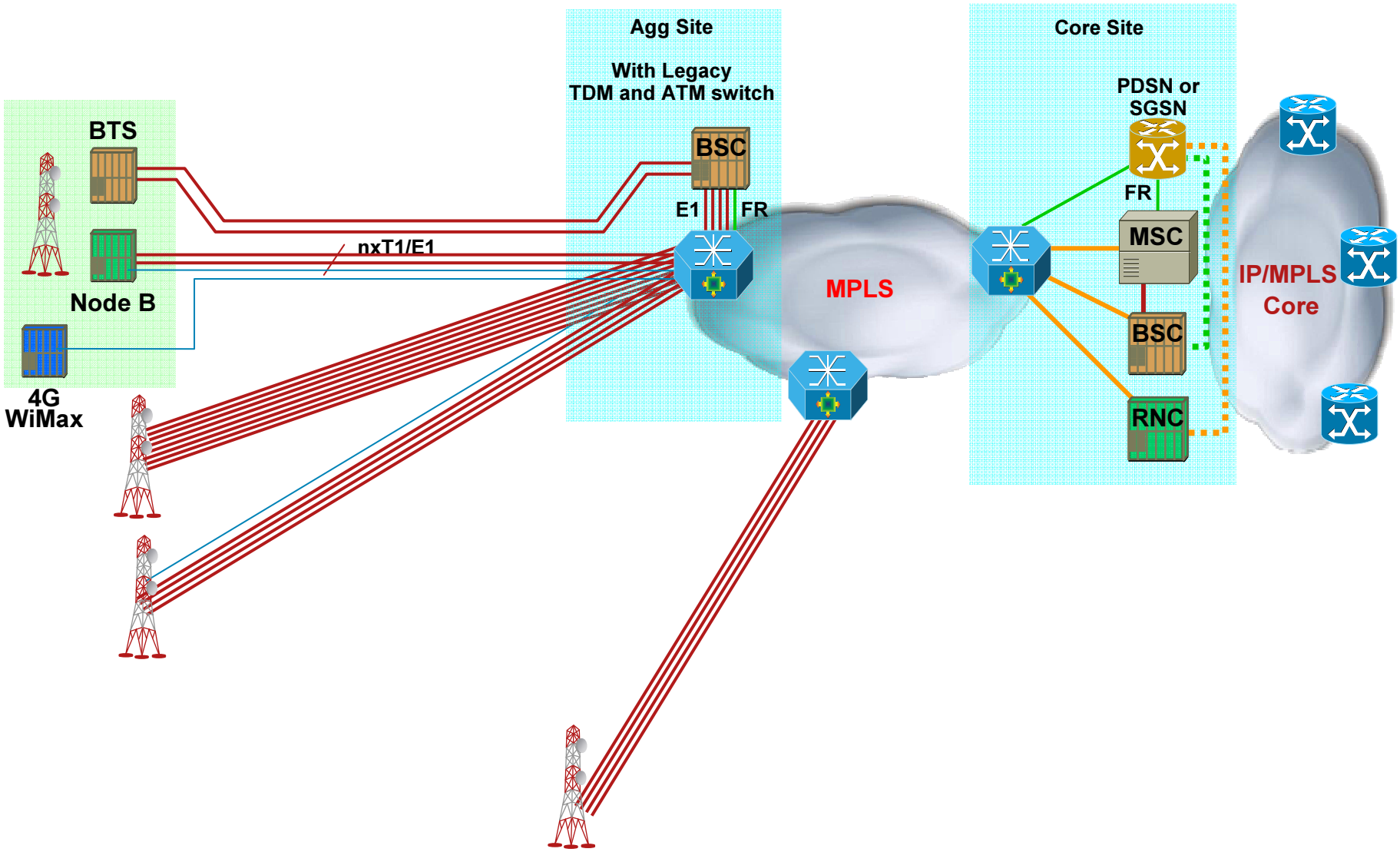
RAN via Traditional Transport



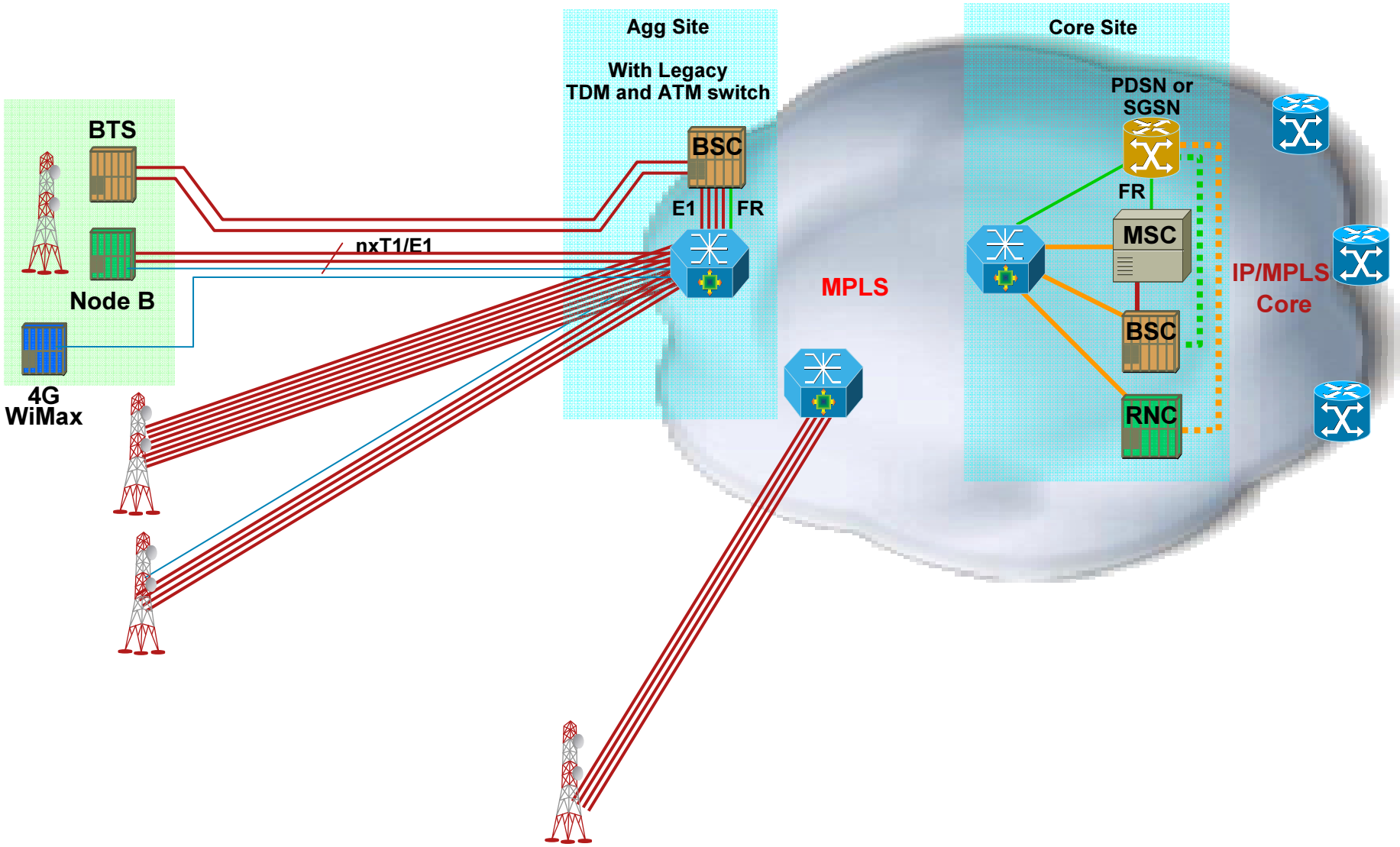
RAN evolution R4-R6 and 4G



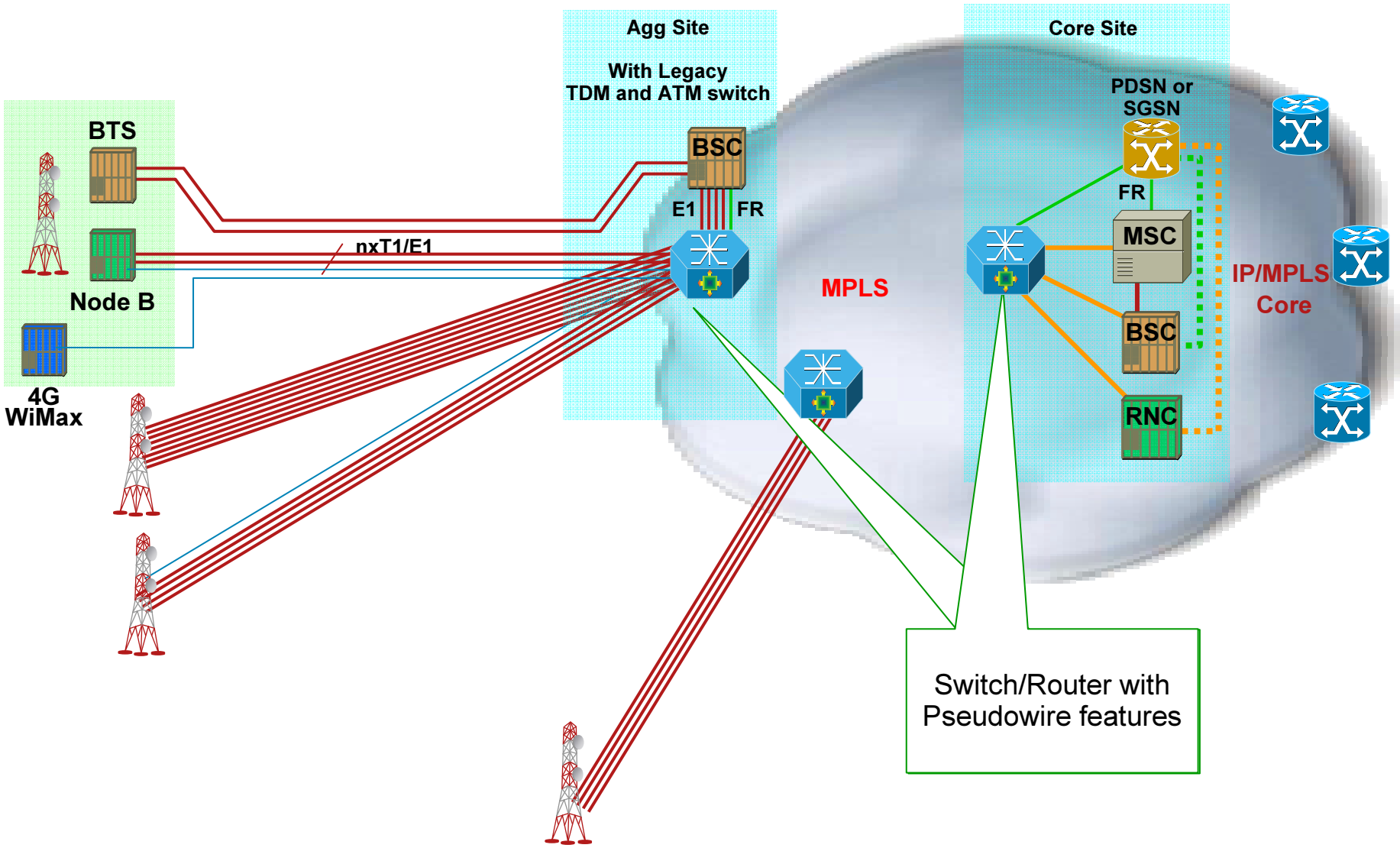
Cisco IP RAN



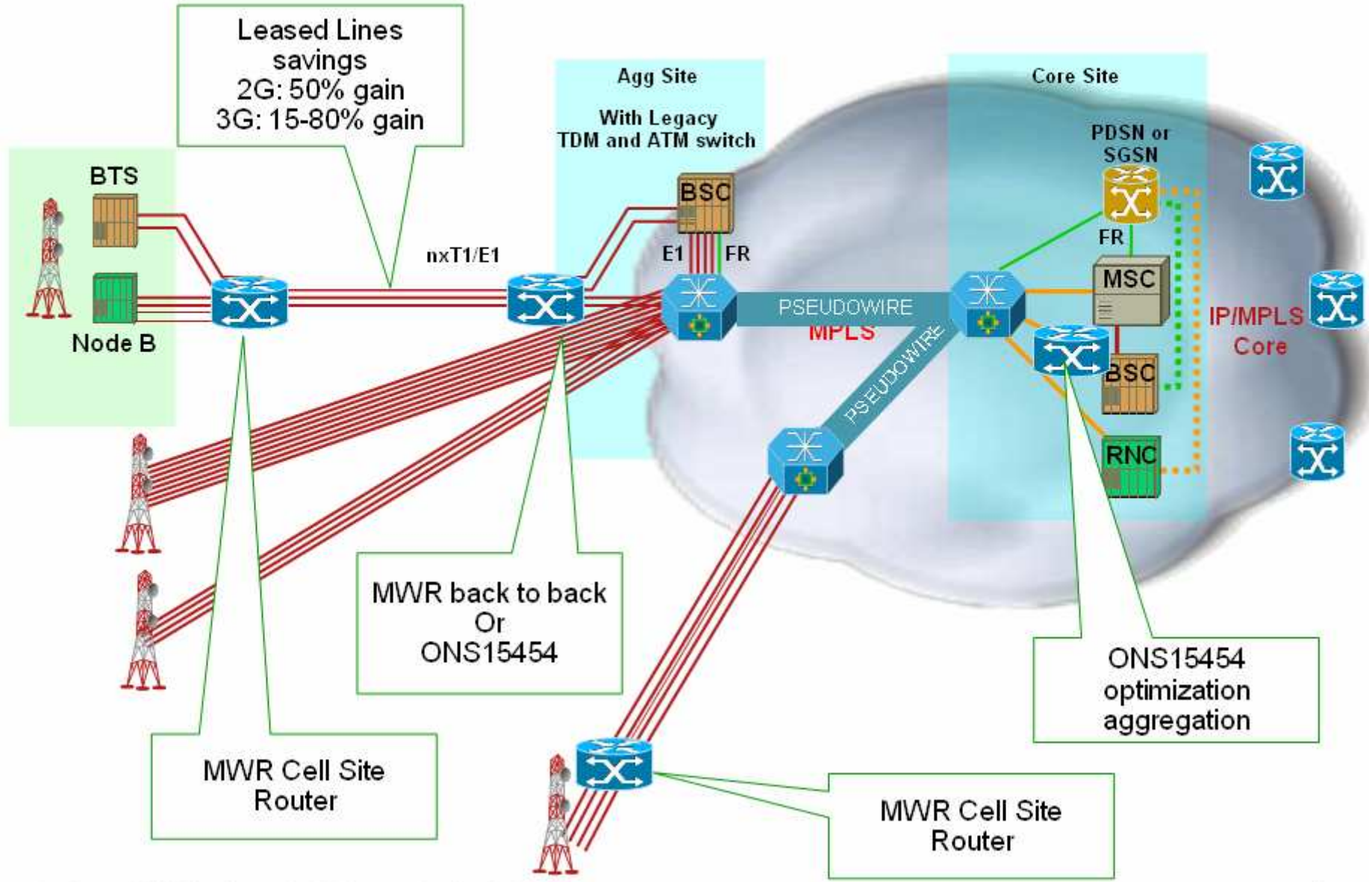
Cisco IP RAN



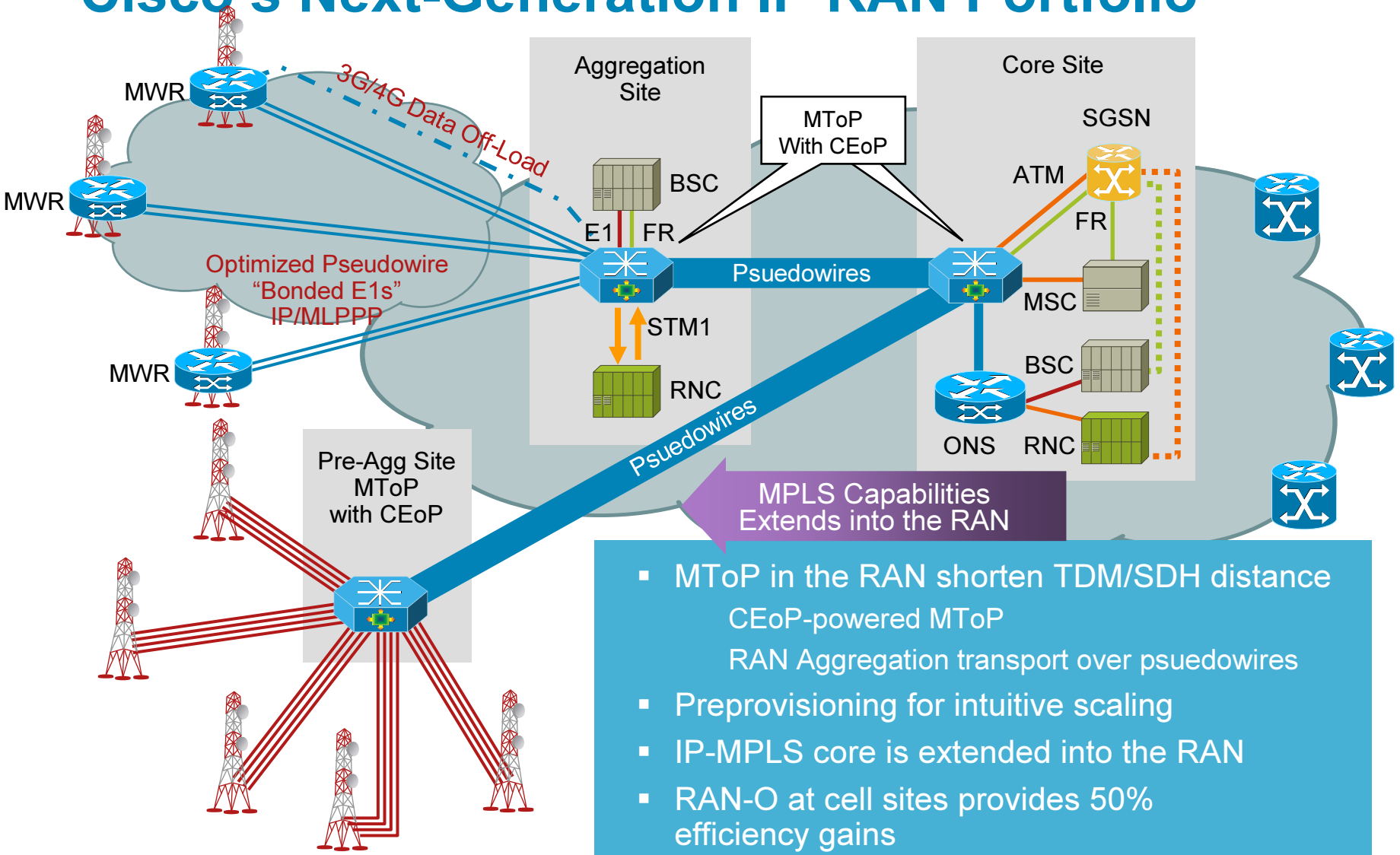
Cisco IP RAN



Cisco RAN optimization with MToP



Cisco in the RAN
Cisco's Next-Generation IP RAN Portfolio



- MToP in the RAN shorten TDM/SDH distance
  - CEoP-powered MToP
  - RAN Aggregation transport over psuedowires
- Preprovisioning for intuitive scaling
- IP-MPLS core is extended into the RAN
- RAN-O at cell sites provides 50% efficiency gains

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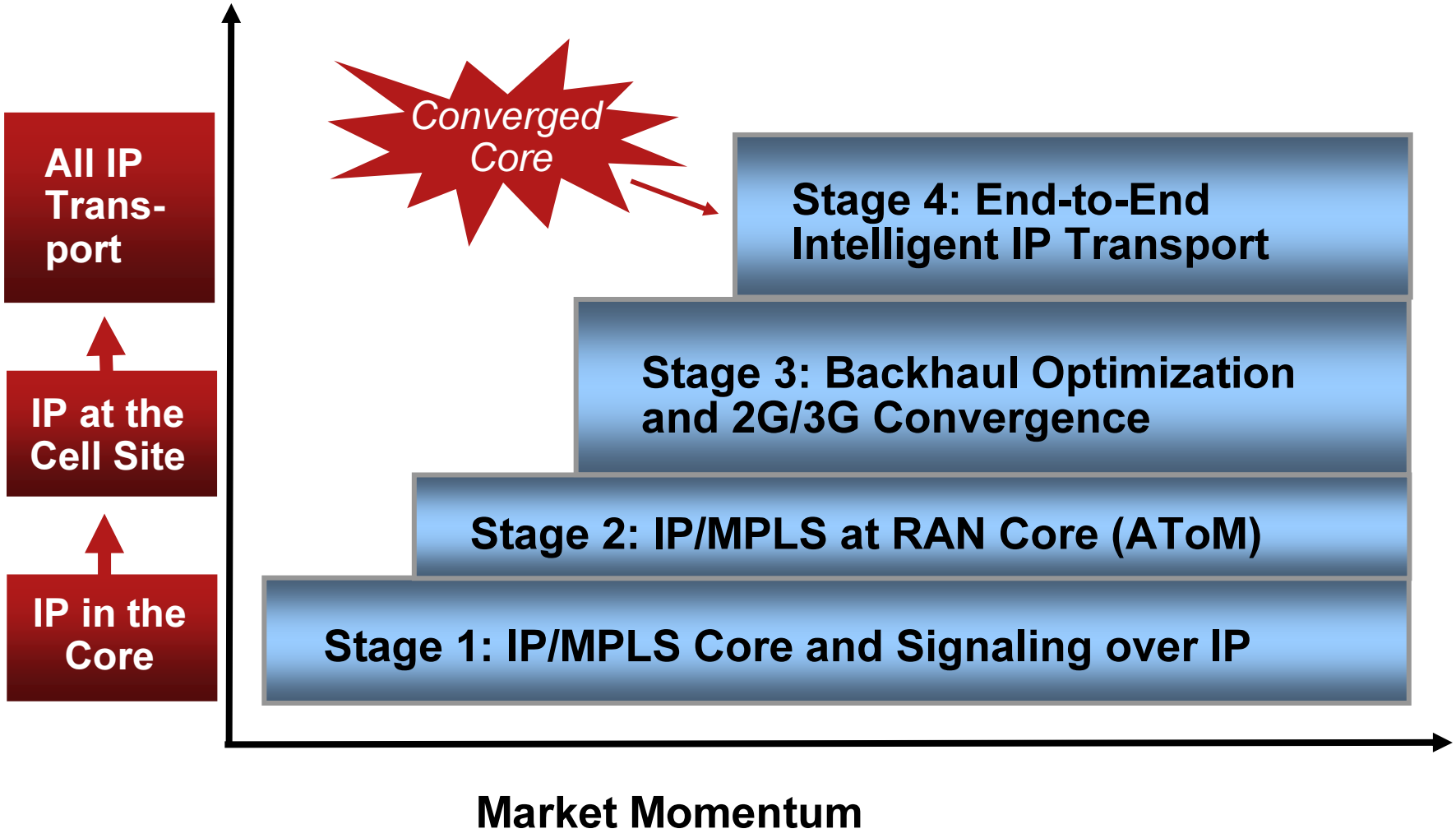
IP Evolution in Mobile Networks – At a Glance



Stage 1: IP/MPLS Core and Signaling over IP

Trends/Challenges

- More traffic
  - Growing voice traffic
  - Success of SMS
  - More data services

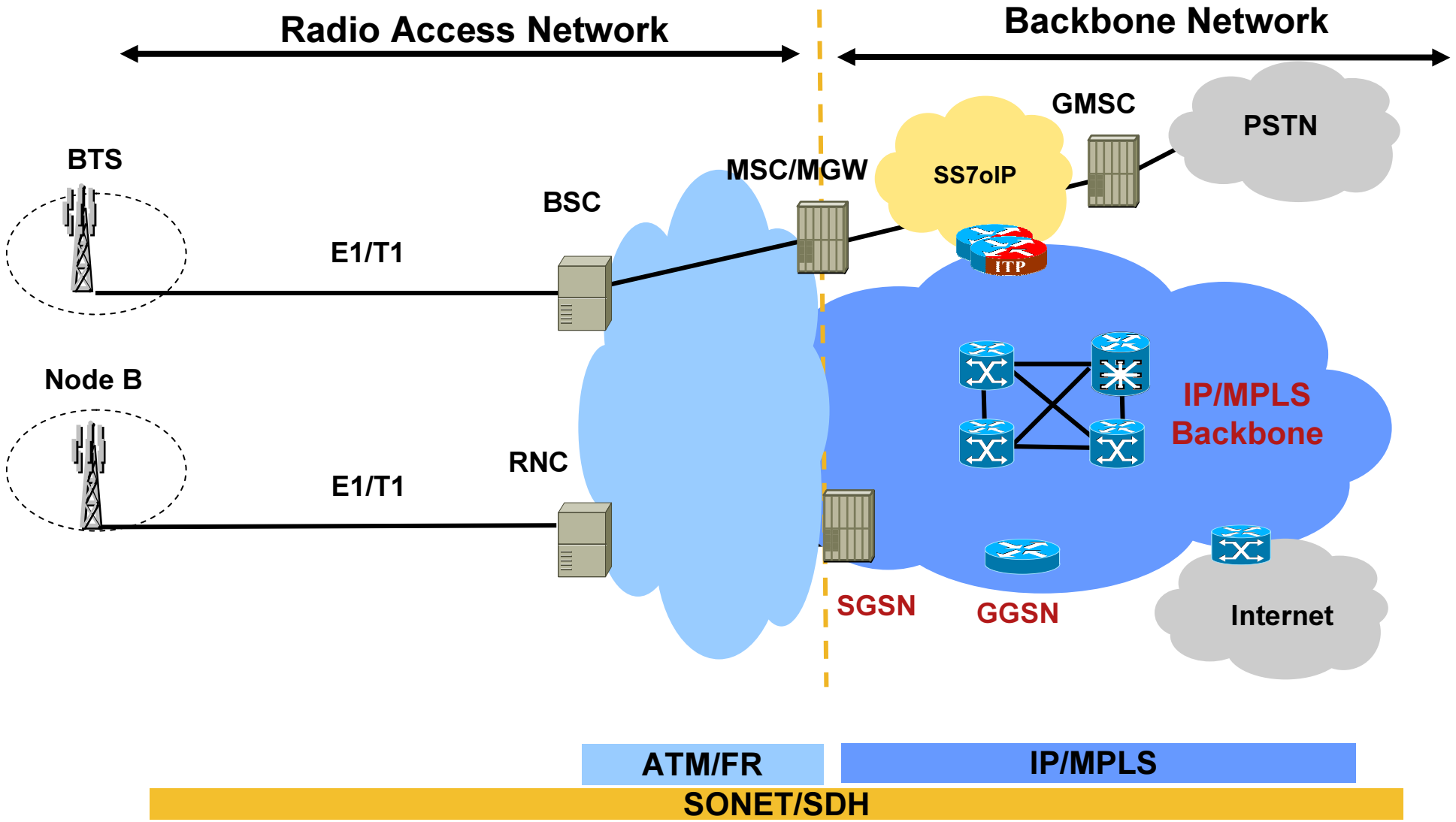
  => Difficult and expensive to scale TDM transport and signaling networks
- More data networks
  - EDGE/GPRS/3G
  - Proliferation of disparate voice, data, and IT networks

  => Costly to manage and cumbersome to deploy new services
- Mounting cost pressure due to increasing competition

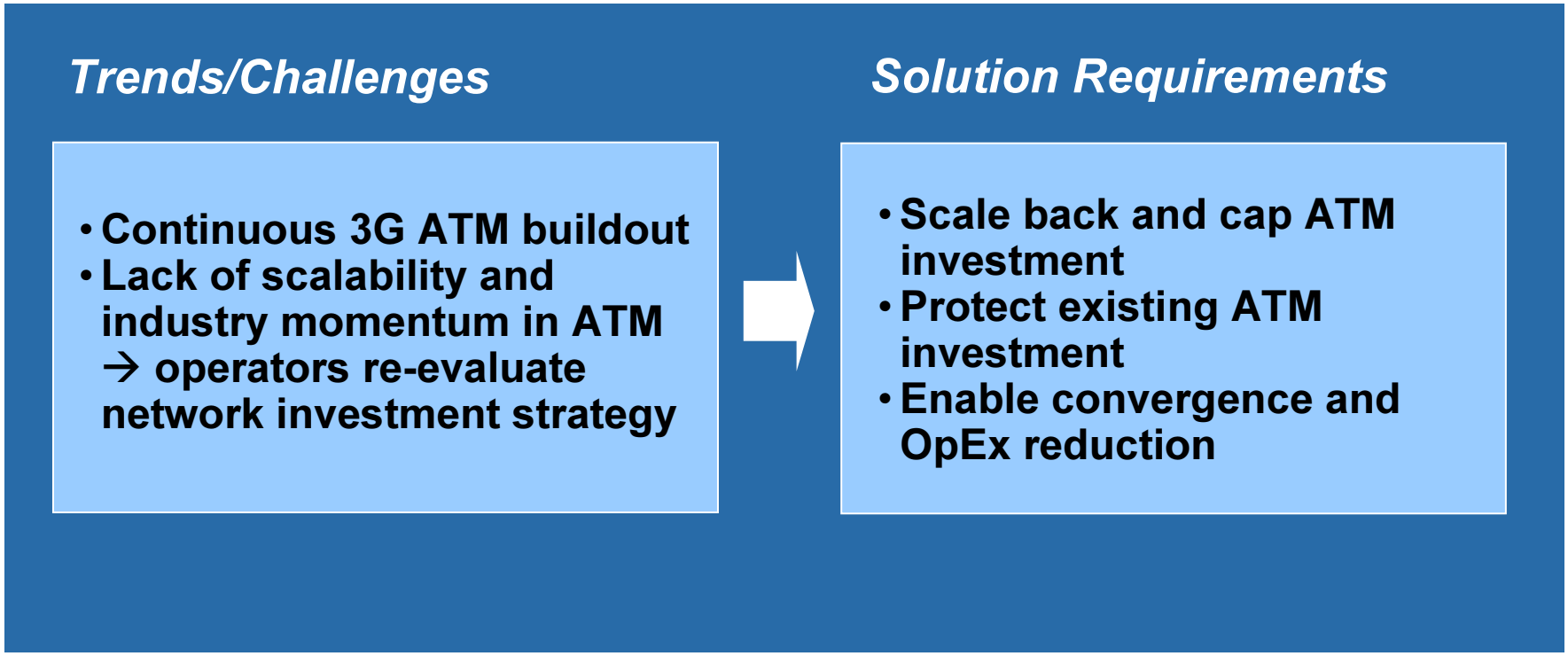
Solution Requirements

- Reduce OpEx
- Simplify network architecture and operation
- Consolidate multiple networks into a highly scalable core
- Find a scalable and cost efficient solution for the signaling network

Stage 1: IP/MPLS Core and Signaling over IP

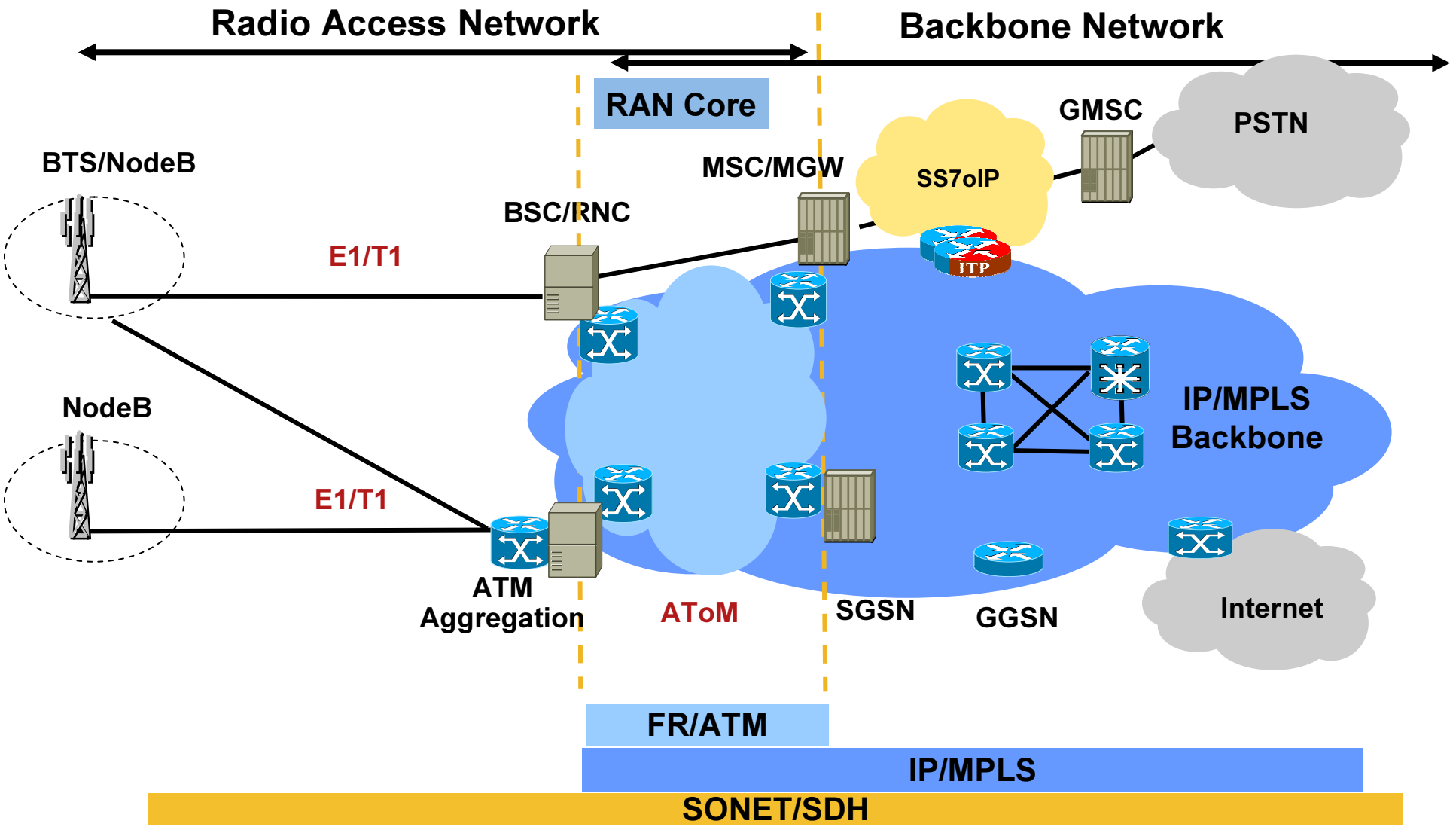


Stage 2: IP/MPLS at RAN Core (AToM)



AToM = Any Transport over MPLS

Stage 2: IP/MPLS at RAN Core (AToM)



Stage 3: Backhaul Optimization and 2G/3G Convergence

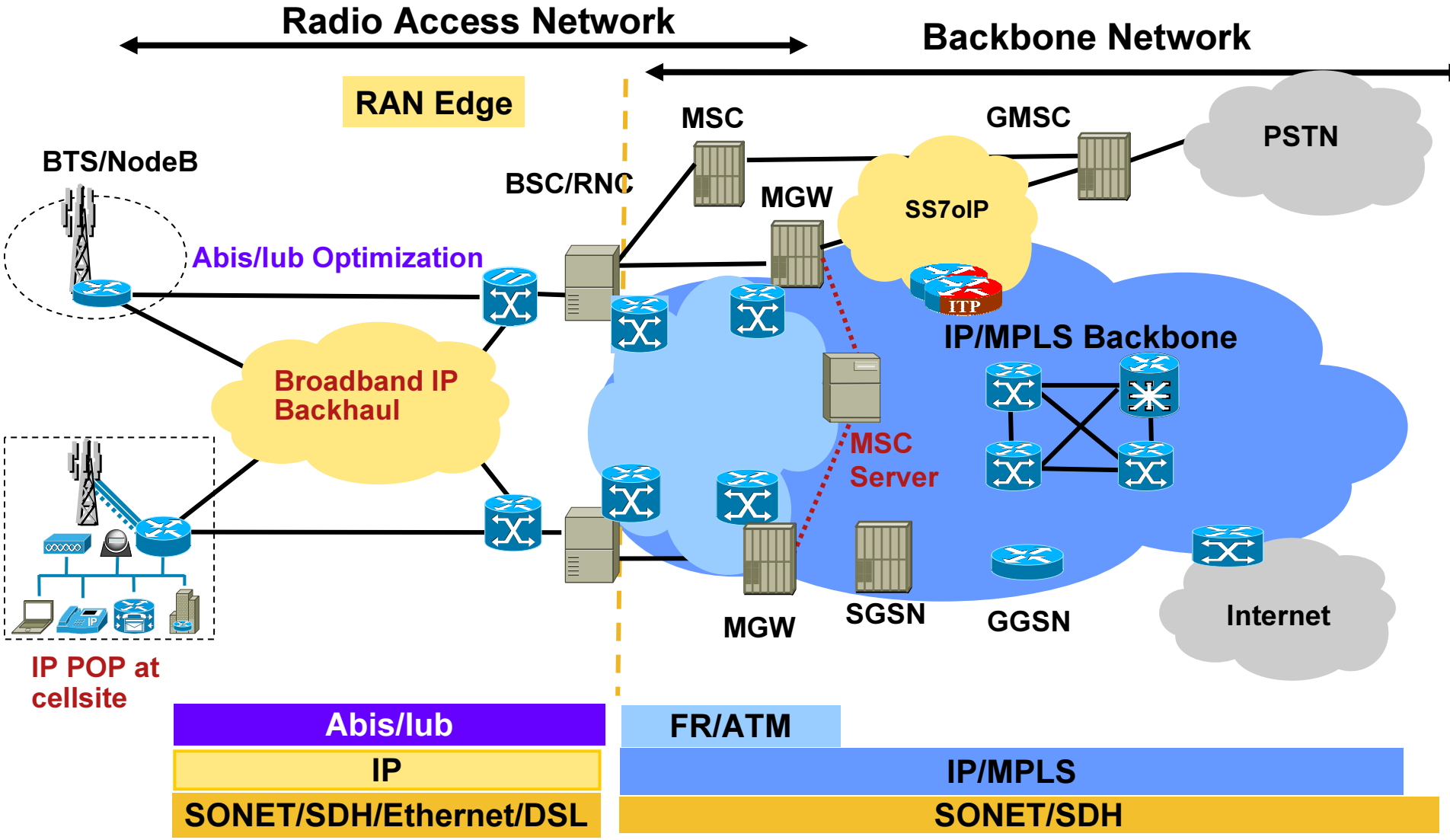
Trends/Challenges

- Proliferation of networks, services and high-speed access increases backhaul traffic
  - GSM/GPRS/EDGE/UMTS
  - HSDPA and WiFi
  - High-speed IP radio overlays
  - IMS/SEF and FMC
- Increasing traffic loads call for additional costly backhaul BW
- Need to reduce E1/T1 backhaul cost while increasing backhaul capacity and availability
- Need to reduce Capex and OpEx associated with 2G MSCs
- Need to expand existing services and introduce new services with same or lower per unit cost

Solution Requirements

- Transition to Next Gen backhaul
  - Access-agnostic
  - Maximize existing backhaul
  - Allow for transition to broadband backhaul
  - Enable 2G/3G/4G convergence
  - Support voice, data, video
- Migrate 3G and 2G voice from the more expensive circuit-switched network

Stage 3: Backhaul Optimization and 2G/3G Convergence



Stage 4: End-to-End Intelligent IP Transport

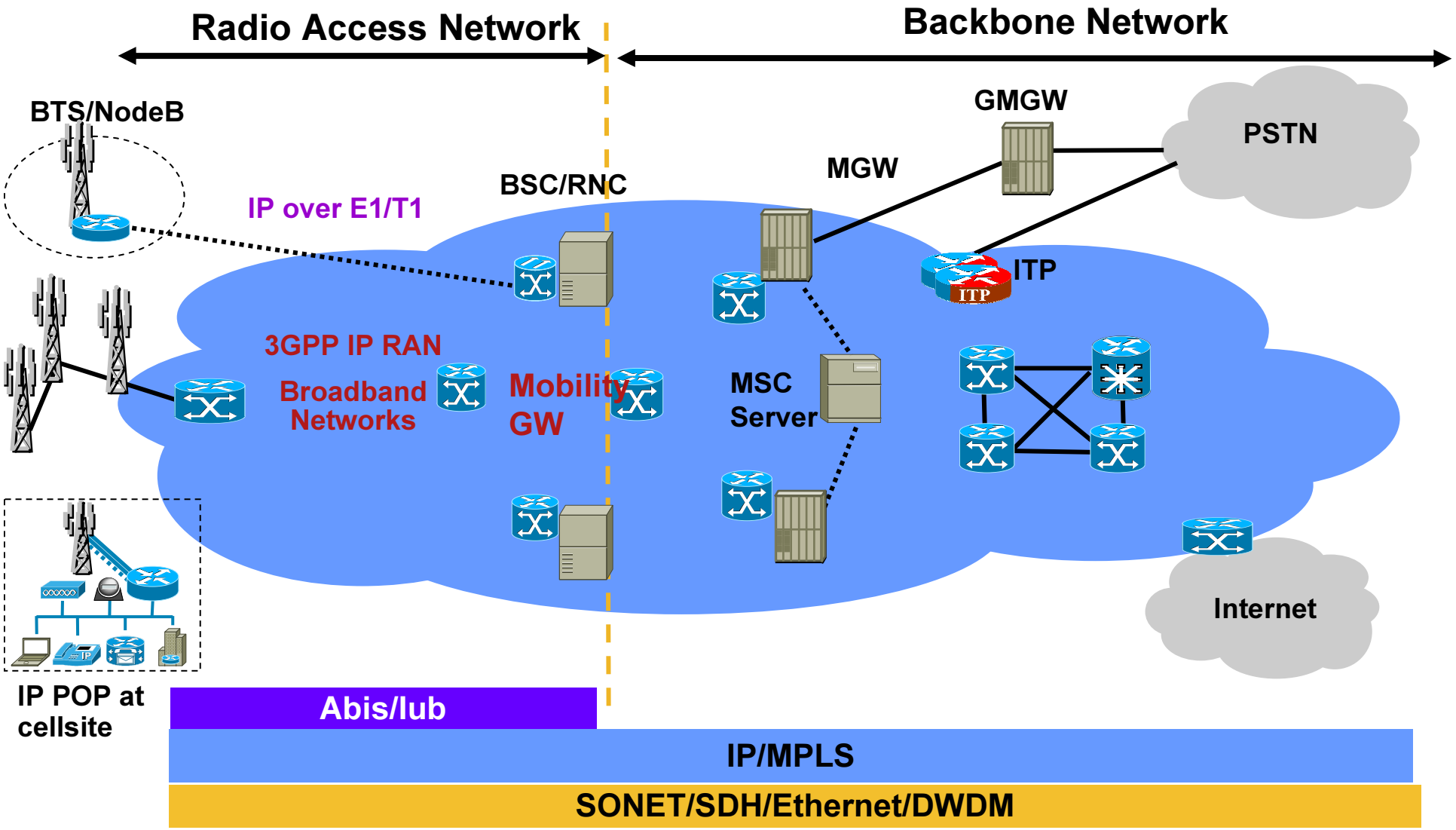
Trends/Challenges

- IP RAN deployment
  - RAN elements talking IP
  - Co-existence with legacy RAN
- Multicast in IP RAN
- IP-based mobile services
- Hierarchical Mobile IP for mobility
- New radio technologies and convergence of access networks
- Voice/data/video any time any where over any access

Solution Requirements

- A high-capacity, scalable and cost efficient network for IP RAN, with support for legacy RAN
- End-to-end network with simplified architecture and management
- Enable Quad-play: Voice, Data, Video, Mobility

Stage 4: End to End Intelligent IP Transport



Bonus Features
IP-PoP and IP-DCN

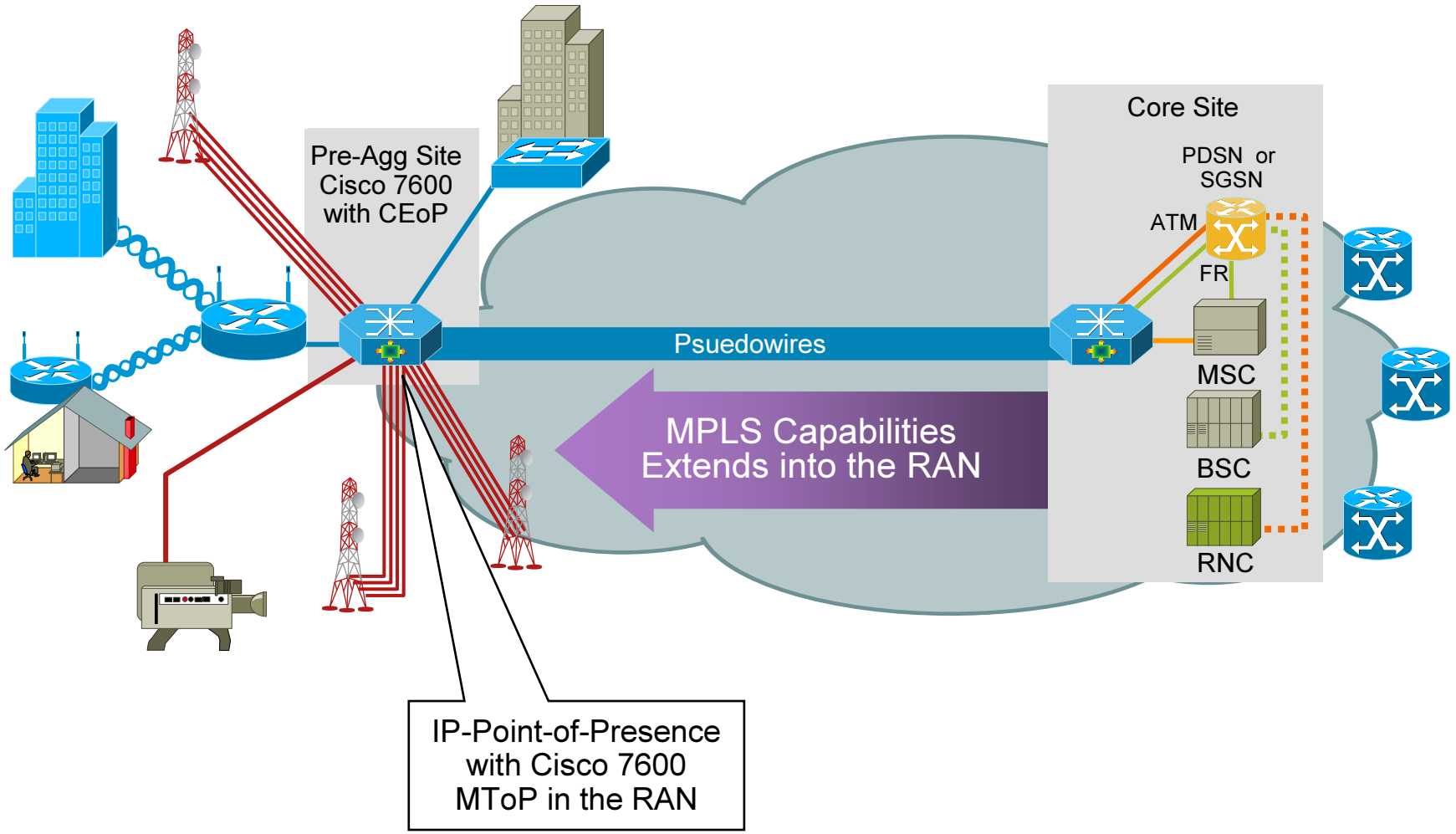
IP Point-of-Presence
Bonus Capabilities

- Extends the capability to reach customers from the core out to the aggregation points or the cell site
- Cisco next-gen RAN solutions push Cisco IOS capabilities and features into the RAN
  - QoS and IP security
- Target enterprise, commercial, SOHO, and residential
- Provide managed services at lower cost of access
  - Managed VPN, private VPN, meshed Wi-Fi, IP PBX services
  - Provide fixed mobile service offerings

IP Point-of-Presence
Bonus Capabilities

- Often aggregation sites or cell sites are located in or near buildings that house businesses
- IP-based services can be easily extended to customers in and near these sites
- Cisco next-gen IP-RAN solutions become platforms of new revenue generating services
  - Increase revenues
  - Gain new customers
  - Add customer “stickiness”

IP Point-of-Presence
Bonus Capabilities



IP Data Control Network
Bonus Capabilities

- Cisco mobility routers enable full DCN capabilities over IP for all colocated equipment
  - Telemetry
  - Software downloads
  - Alarming and premise security
  - Diagnostics
- Reduces number of “truck rolls”
- Cell sites and aggregation sites can be outfitted for VoIP soft phones, NetMeeting, and Wi-Fi
- Greater control at reduced costs

In Conclusion
Summary

Next-Generation RAN Portfolio
Conclusions

- No MSP network is exactly alike
- One size does not fit all
- Cisco brings the intelligence, security, control of the IP-MPLS core into the RAN
- Tangible OpEx reductions
- Flexibility to support new media-rich services
- Enable new revenue generating services
- Improve network reliability
- True convergence of the network

Cisco – IP/MPLS NGN Summary

- Mobile Operator Applications and Services are increasingly IP based applications,
- IP/MPLS Implementations are Tried and True in the SP and Mobile Markets,
- Cisco H/W, and S/W Implementations are Carrier Class (FRR, TE, QoS, L3 and L2VPNs),
- Legacy Mobile Applications and Services which exploit TDM/FR/ATM can be supported over an IP/MPLS Core.
- Cisco's IP/MPLS solution is Secure and Manageable