3GPP TSG SA "All IP" Workshop

"All IP" Networks Vision and Migration

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What is an “All-IP” Network?

- IP transport everywhere
- Common IP based multimedia call model
- Internet’s service provisioning paradigm
- Internet’s distributed architecture

All of the Above!

Keeping Interoperability with existing networks

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Why IP: End User Value Proposition

SUPERIOR END-USER EXPERIENCE

End User Experience

- Customized / Personalized Network
- Easy to Use
- Unified Services
- Speedy Access
- Ubiquitous Access

REDUCED CYCLE TIME TO COMMERCIALIZE APPLICATIONS

End User Experience

- Internet Applications
- Immediate Availability of Services
- Dynamic Personalized Access to Services

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“All-IP” Network: Operator Value Proposition

ORDERLY OPERATOR MIGRATION

Operator’s Experience

- Smooth Migration From Existing to IP
- Superior Network Performance

REDUCED COST OF OWNERSHIP

Operator’s Experience

- Rapid Deployment of Applications/Services
- Reduced Cost of Provisioning of Services
- Leverage Existing Network for Reduced Cost of Migration
- Reduced Cost of distributed architecture

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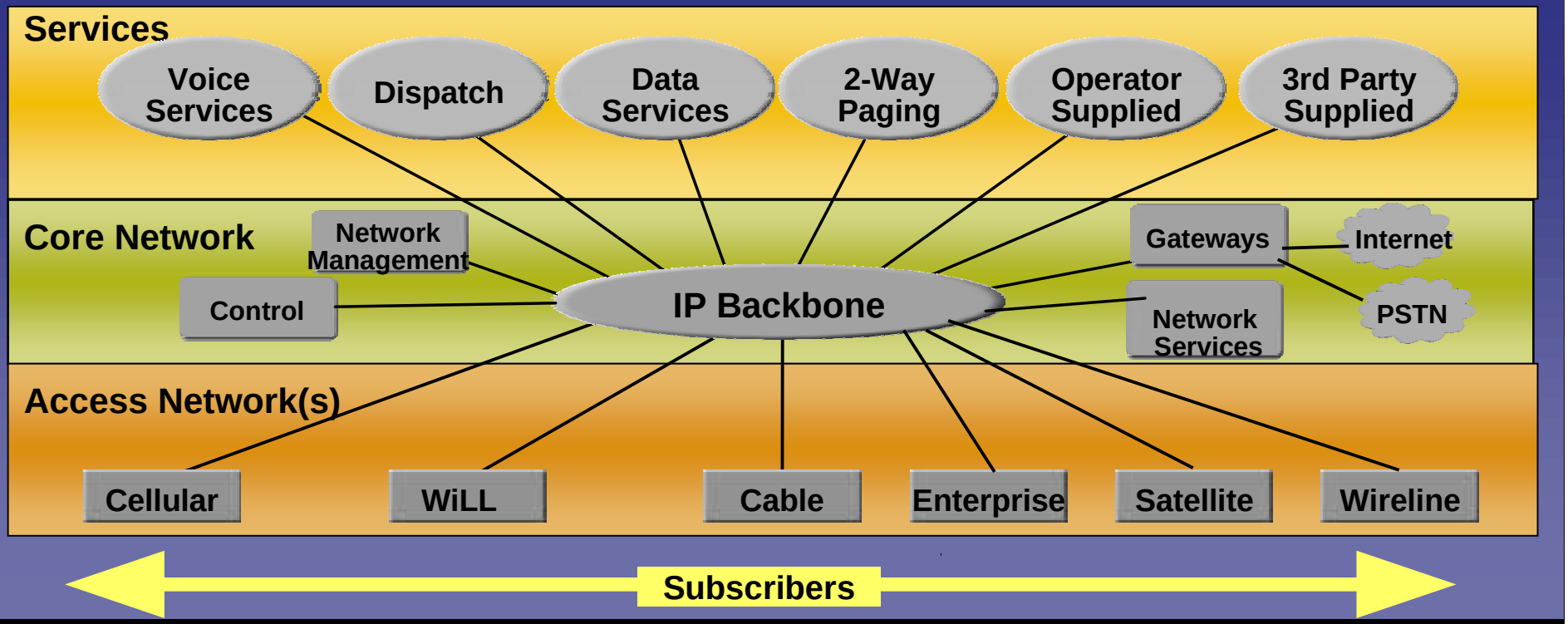
IP Unifies Wireless Architecture



- Unified Network Architecture
- Common Services
- Packet IP Backbone
- Supports all Access Technologies

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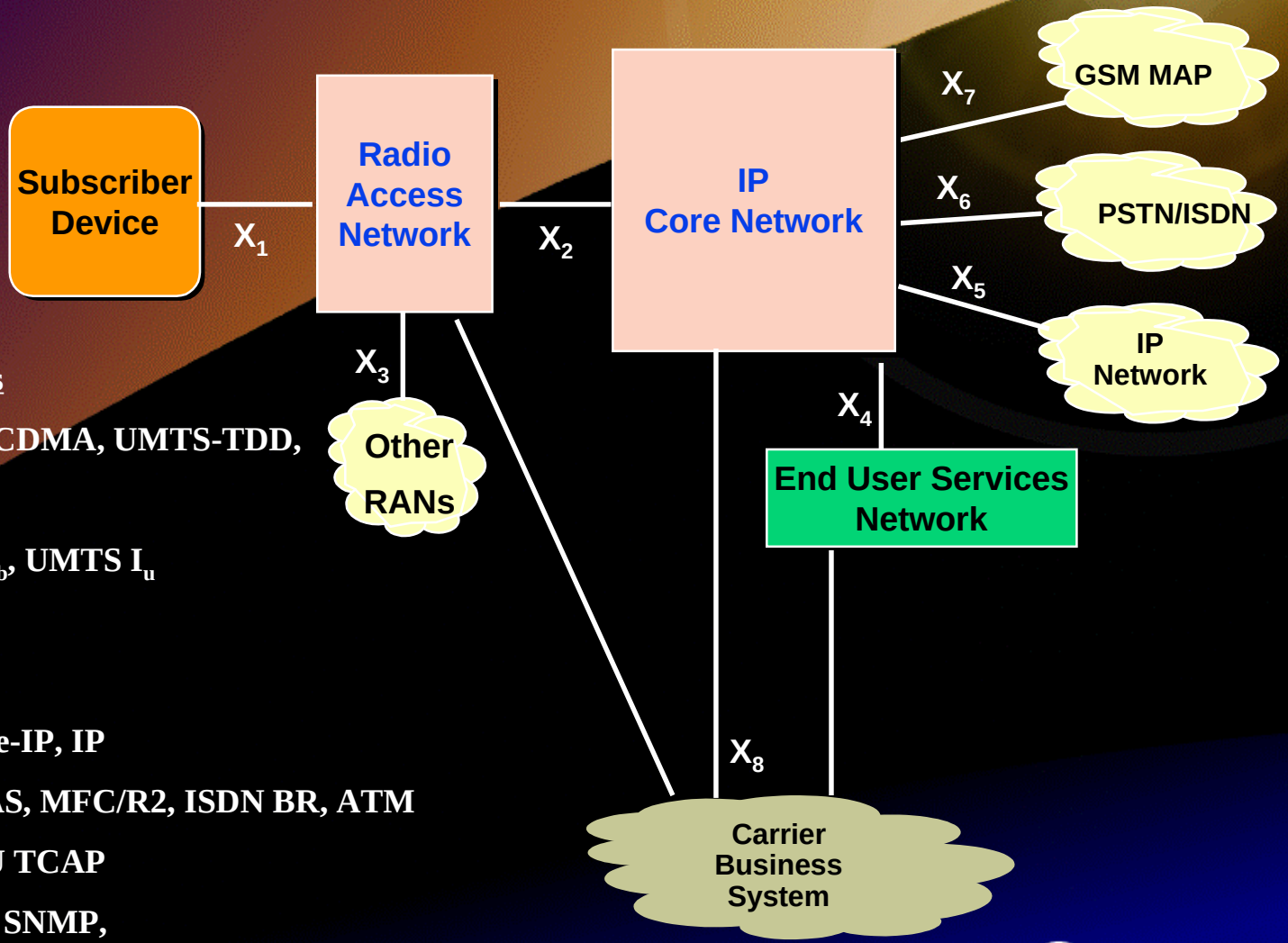
Reference Architecture



Key Reference Points

X_1 - GSM, GPRS, WCDMA, UMTS-TDD, EDGE

X_2 - GSM A, GSM G_b, UMTS I_u

X_3 - UMTS I_{ur},

X_4 - Parlay, JAIN

X_5 - GPRS Gi, Mobile-IP, IP

X_6 - V5.2, TR303, CAS, MFC/R2, ISDN BR, ATM

X_7 -, GSM MAP, ITU TCAP

X_8 - TMN CMIP Q3, SNMP,

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Functional Architecture

- End Users Services Network
  - Subscriber Management
  - Subscriber services
  - Services API
  - Authentication
- Core Network
  - Session Establishment
  - Service Request Processing
  - Network Resource Mgmt.
  - Network Features
  - Gateways to Circuit, Packet, and Legacy networks
  - Services API
  - Billing information
- Radio Access Network
  - Subscriber access to the core network
  - Radio Link Integrity
  - Intra and Inter-RAN mobility
  - Resource management
  - Network management interface
  - Service Request Procedures
  - Location status procedures

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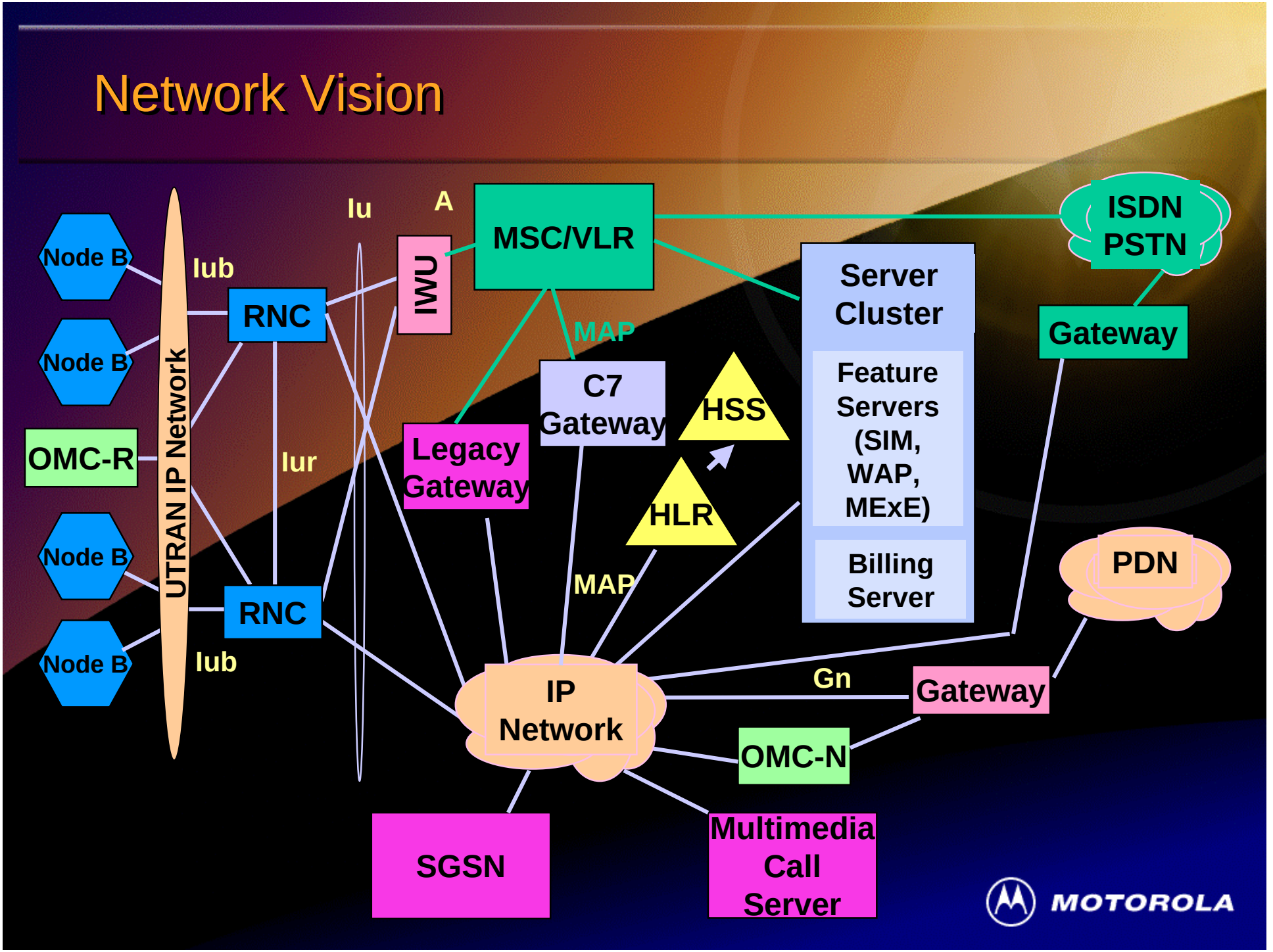
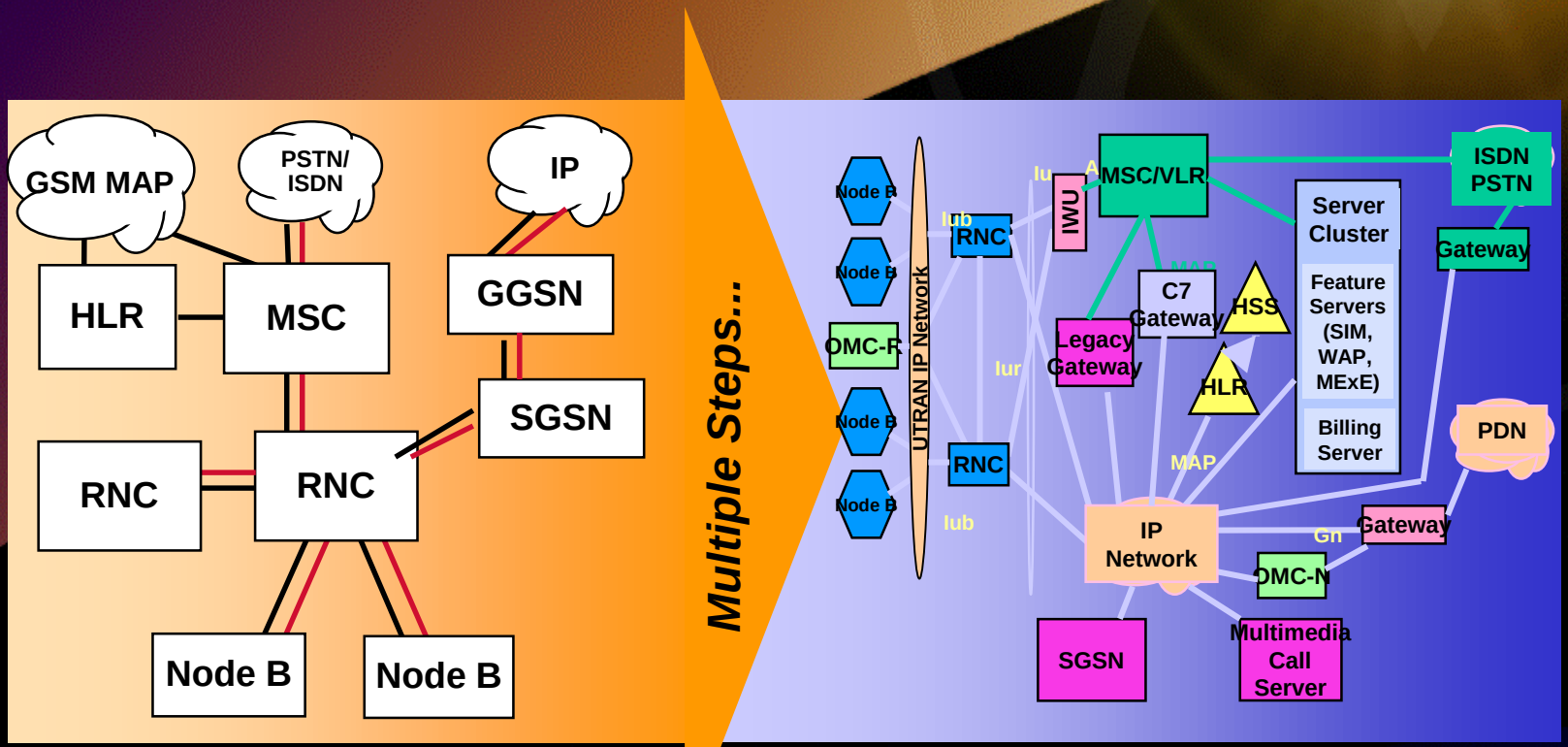
Network Vision



Workplan: Migrating to the All IP Vision



Identify work items which must be done in 3GPP

Leverage work in IETF, ITU and other SDOs

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Work Items: IP Transport

- Network Interfaces
  - Iub, Iur, and Iu_ps interfaces
    - Bearer and Control plane
  - Leveraging of IP QoS and security protocols
- Core Network
  - MAP over IP
    - HLR interface
    - SGSN external communications

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Work Items: Multimedia Call Model

- Architecture to support Multimedia Call Control
- Enhancements to Multimedia Call Control
  - Impact of Roaming and Mobility
    - Internal and external
  - AMR as default voice codec
  - Fast call setup/teardown
- Support of bearers for real time multimedia applications

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Work Items: Real-time Multimedia Bearers

- SRNS Relocation for Real time services
- Efficient transport over the air
  - Header compression
  - Support for unequal error protection
- Separation of Control from Bearer
- Leverage current and future IP specifications

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Applications and Services

- Open Interface to call server
- Open Interface to application servers
- Standardized services
  - Identify which services are to be standardized
  - Identify enablers to build new services
- Define IP based HLR
  - Enhancements for non standardized features
  - Enhancements for IP based services
- Enable roaming and foreign serving network concepts into IP

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Migration

- Requirement:
  - Operator should have flexibility in
    - Deploying the “All IP” network
    - Migrating services and applications
- Enablers for migration
  - Domain Distribution Function
  - Enable 04.08 call server
  - Support Iu from BSC
    - Migration of GSM/EDGE

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