

BSNL's Vision  
of  
Next Generation Network  
- A Macro View

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# The Guiding Principle

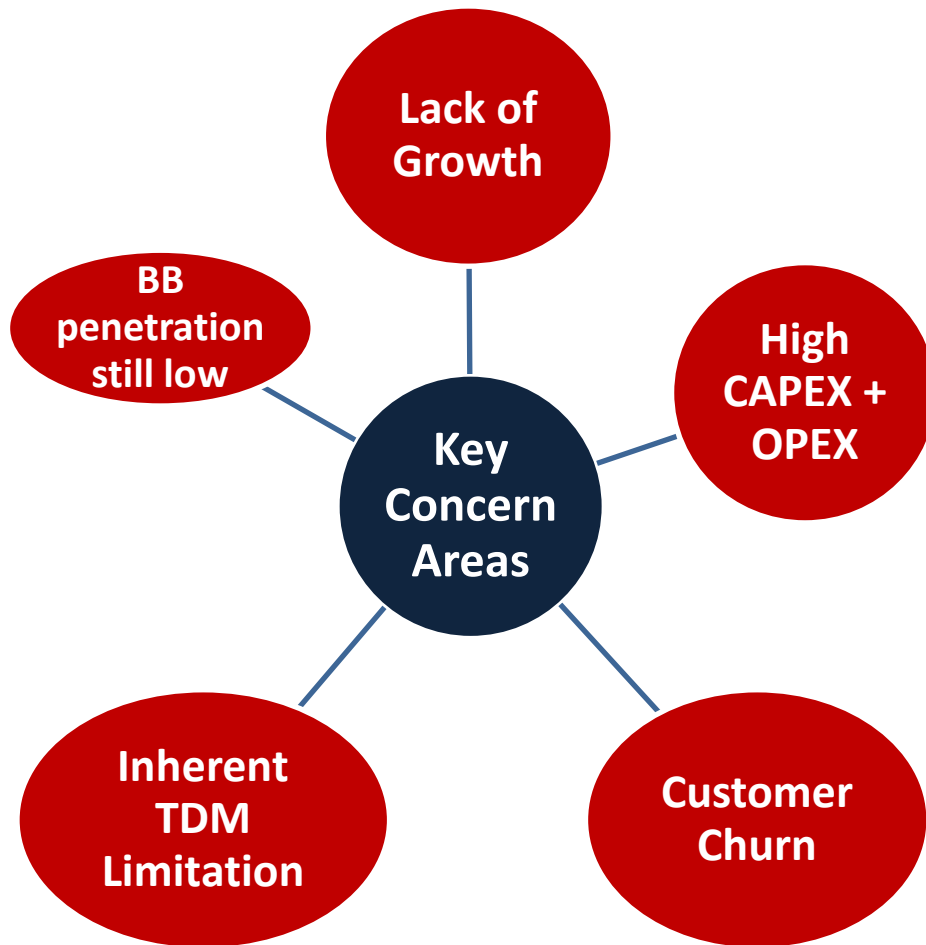
- **Sam Pitroda Committee Recommendation:**
  - “Invest in building a financially remunerative **next generation end-to-end national IP network** of the future to handle ever increasing internet and data traffic”
- **Direction of the Management Committee of BSNL Board** (52<sup>nd</sup> Meeting held on 05/05/2010)
  - “IP Network Strategy be worked out by a committee comprising of GMs (Plg) of three business units and PGM (CP&M)”

# Agenda

- 1 **The Why and What NGN?**
- 2 **Analysis of Current Status**
- 3 **Way Forward**

# NGN: Why, What Generic Framework

# Need for NGN



- BSNL grew 11 % against 38% growth of market
  - Lack of growth putting pressure on top and bottom line
  - Loss of Rs 1823 Cr in Fy 10
- Legacy network contributing to high OPEX – affecting EBIDTA
- Customer Churn
  - From landline to mobile
  - Mobile substitution
- Inherent TDM Limitation
  - Delay in the roll out of service
  - Vanilla offerings. No seamless experience
- BB penetration still Low

**It's time to go in for major Transformation across all verticals**

# Demystifying Facts About NGN

## Myth

## Facts

Anything which is IP / Ethernet is NGN

- While Ethernet / IP is definitely an integral component of migration towards NGN, NGN is much broader and wider in scope

NGN is being implemented a particular Cell

- The thread of NGN encompasses all business units and is not at all confined to a particular unit such as CFA or CM or Enterprise

NGN is long term

- The foundation of different building blocks of NGN has to be laid on immediate, medium and long term basis

NGN is a framework which facilitates 3C's and 4A's

# NGN is All about: 3C's and 4A's

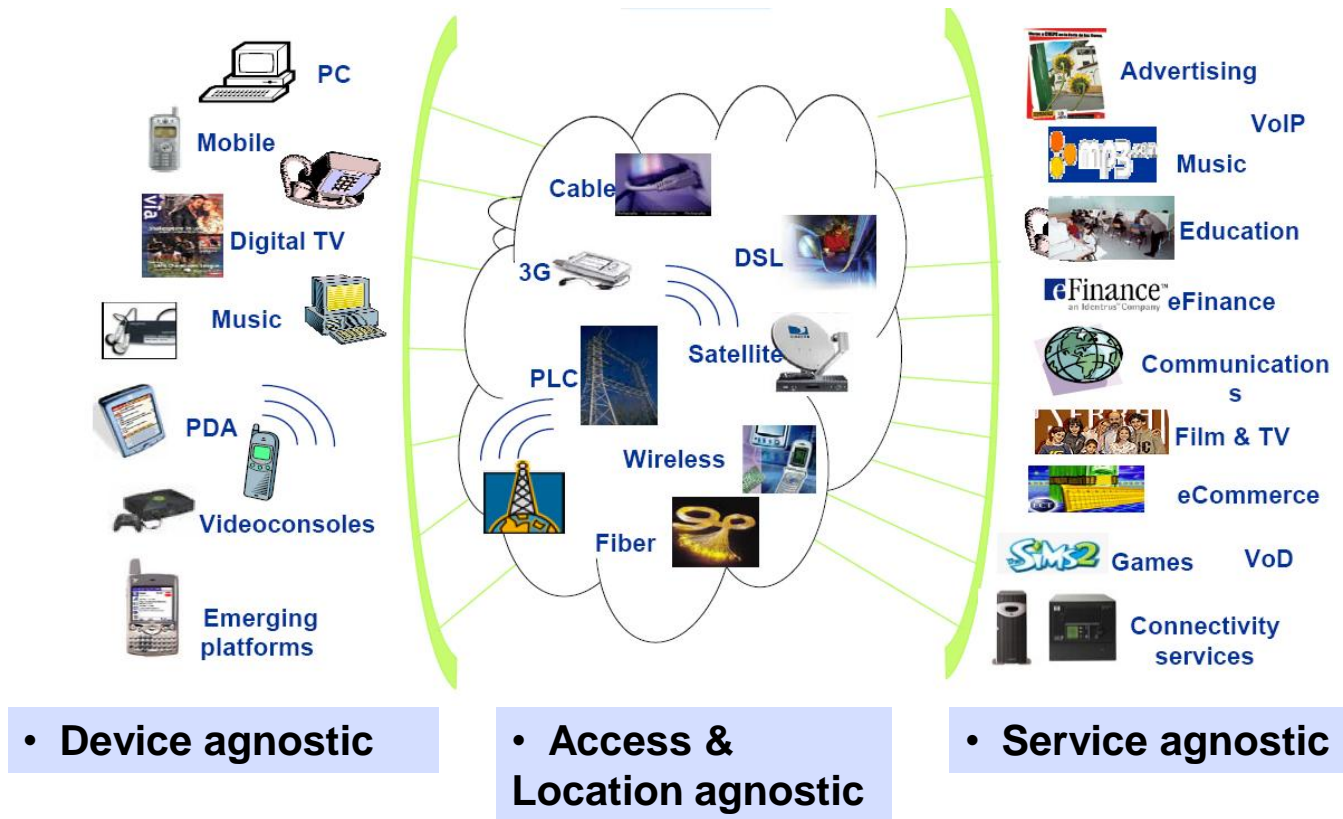
- **The 3C's of NGN:**

- Customer
- Convergence
- Consolidation

- **The 4A's of NGN:**

- Any Service
- Any Place
- Any Time
- Any Device

# Next Generation Network – Simplified Model



**Layered implementation to provide flexibility**



# Objectives of NGN

## Integrated IP based Converged N/w

Optimize CAPEX and OPEX through sharing of Network

Increase in operating margin

## Substitution to Complementary mode

Leverage on strength of each technology.

Deadly combination: Mobility of wireless Network with broadband capability of DSL / FTTH - enhanced experience, spectrum saving

NGN

## Enhancing value of Landline

Leveraging on broadband capability with rich and varied content focussed on targetted segments.

## Faster Roll out of Service

Provide convergent service: voice, video and data in a unified pipe

Independence of service related function From underlying transport technologies.

**Step towards Integrated, Complementary and Value enhancement mode**

# NGN: Current Analysis and Way Foward

# Who are our Customers?

**Broadly, two categories.**

## Residential (80%)

- Committed Speed of up to 6 Mbps
- Will simultaneously provide one broadcast channel, one on demand channel, one high speed internet and VoIP Calls
- The DSL infrastructure upto 2.0 km can meet the requirement + mobility requirement through 2G, 2.5G, 3G
- Offer service at competitive rates
- Volume driven

## Enterprise (20%)

- Committed speed of up to 20 Mbps
- For providing high speed secured VPN connectivity, internet connectivity, high definition TV
- Multiple technologies
  - VDSL2+ for up to 1.2 km
  - FTTH beyond 1.2 km
  - Mobile: 3G, LTE
- Premium customers
- Focus on differentiated offerings, enhanced customer experience and customer delight.
- Add to bottom line (increase in margin)

**Note: This speed may go for upward revision as bandwidth intensive services become more dominant.**

# Broad Components of Network

Note: Read bottom to top !

## Application

- Offering different services to customer
- Eg SIP application server

## Switching and Control

- Predominantly doing Session Management & AAA functionality
- Eg: AAA, LDAP, Soft switch in Class V NGN, MSC / IMS in mobile

## Transport Network

- A Nation wide MPLS based IP network for voice, video and data
- Eg: NIB-II further expanded through MNGT, MPLS network of mobile for voice

## Metro Area Aggregation Network

- For aggregation of traffic from intra city access devices
- Eg: RPR based aggregation network, TDM based network

## Last mile Access Network

- Provides last mile access to customer & terminates on customer gateway
- Eg: DSLAM, OLT, LMG, BTS, MLLN

## Customer Gateway

- Provides interface to customer device with the access device
- Eg: DSL CPE, Set Top Box - Customer device: TV, PC, Mobile, Phone, Pen drive, etc.

# Major Projects in Pipeline

Note: Read bottom to top !

## Application

- Franchisee mode
- Content Delivery Network + Service Delivery Platform

## Switching & Control

- Soft switch (IP TAX+ Class V NGN), MSC (Ph V), AAA + LDAP (For DSL, Wi-Max)

## Transport Network

- NIB-II + MNGT
- MPLS N/w as part of Phase V Mobile

## Metro Area Aggregation Network

- RPR based aggregation network as part of Broadband Multiplay
- TDM based Network: STM-16, STM-1 based systems

## Access Device

- Broadband Multiplay (3 Mn), Wi-Max, Class V NGN (6 Mn), FTTH (5.5 lakh + 1.5 lakh) , MLLN EXpansion

## Customer Gateway

- Broadband Modem (Type I and Type II), ONT (For FTTH), Set top box (From CDN)

**Most of these projects are an important Cog in the NGN Wheel – Let's analyze them**

# Broad Components of Network - Issues

**Note: Read bottom to top !**

## Application

- Applications are intrinsically linked with respective signaling & control systems
- Delay in the roll out of service. Duplication, No seamless experience
- Lack of standardization, inter-operability

## Switching and Control

- Different switching network for mobile, landline (TDM and IP), Broadband
- No convergence. So not able to leverage on each other's strength.
- Network Design is linked with SSA/circle concept – CAPEX / OPEX

## Transport Network

- Two MPLS Networks: One as part of NIB-II and other with mobile
- Increase in CAPEX, OPEX, maintenance issue

## Metro Area Aggregation Network

- Predominant use of TDM based network which is inefficient
- Further leveraging on RPR based Aggregation Network

## Access

- Different Access technologies substitute each other rather than compliment. Guaranteeing QoS as the distance increases
- Eg: DSL effective only upto 2 km. Similiar issues with 3G, Wi-Max, LTE
- MLLN: TDM based network

## Customer Gateway

- Different Gateways for different accesses/ customer devices
- Eg: Broadband modem for DSL / Wi-Fi, Set up box for Ethernet / TV

# Broad Components of Network – Way Forward

Note: Read bottom to top !

## Application

- Have a unified Service Delivery Platform
- Integrated CDN with single source of collaboration with generic contents
- Clear cut road map for services to be offered for different segments
- Content Security and Billing System encompassing content host, customer gateway device, payment gateway and network provider to guard against piracy

## Switching and Control

- Immediately plan for FMC and associated service like VCC
- In the long run, go towards IMS in segmented manner.

## Transport Network

- Position NIB-II + MNGT as a unified MPLS transport

## Metro Area Aggregation Network

- Leverage on Aggregation Network for Enterprise related service
- Deployment of **CCPAN** (Countrywide Converged Packed based Aggregation Network)

## Access

- DSL, VDSL2+ , FTTH, Mobile complement each other
- Also explore DSLAM / ONU at the pillar, to circumvent distance constraint

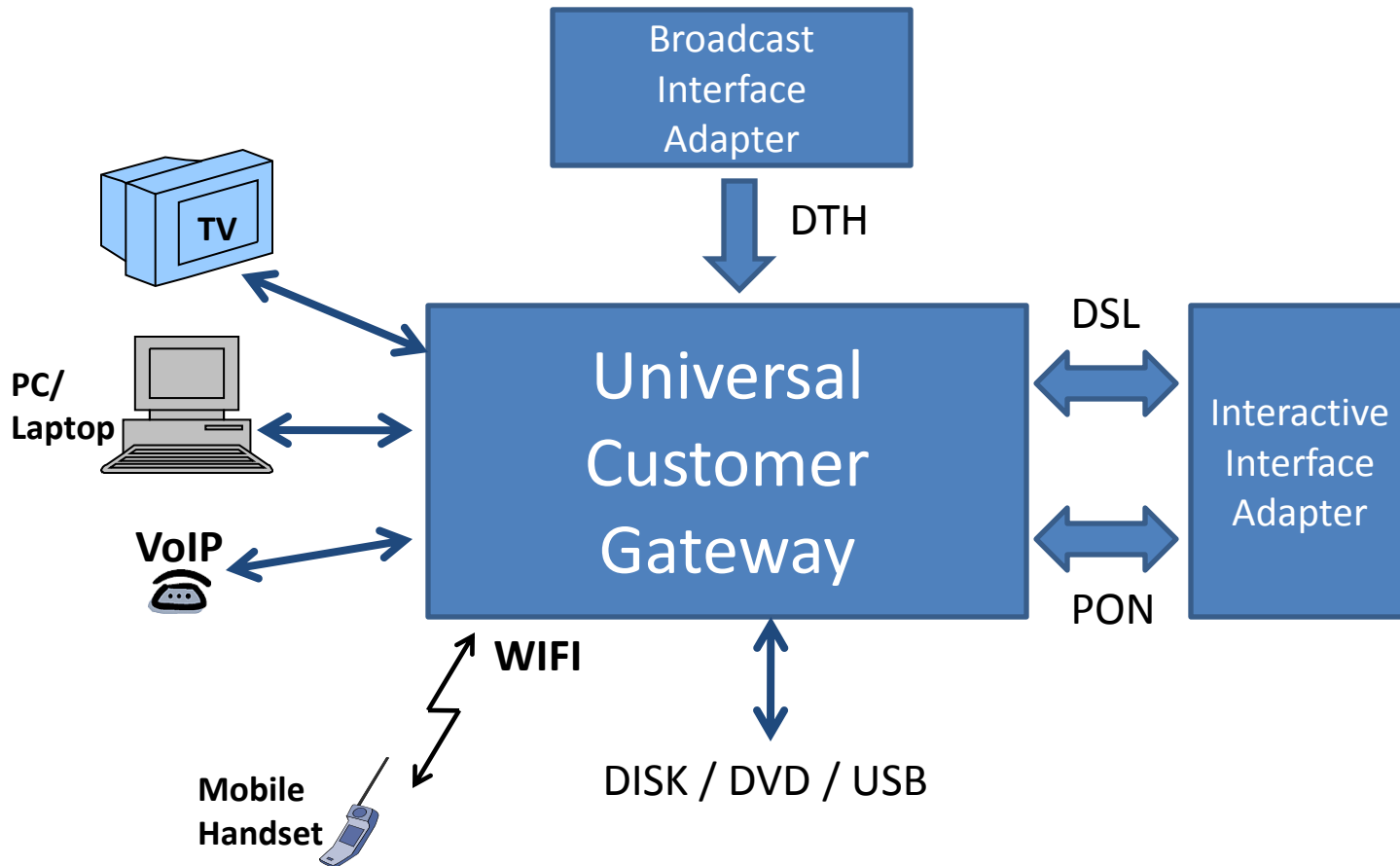
## Customer Gateway

- Frame requirements for universal customer gateway and plan pilot deployments
- Trial to be followed by possible plan for large scale deployment

# Way Forward

## Customer Gateway

- Plan for universal customer gateway
- New Type of device. Trial followed by large scale deployment

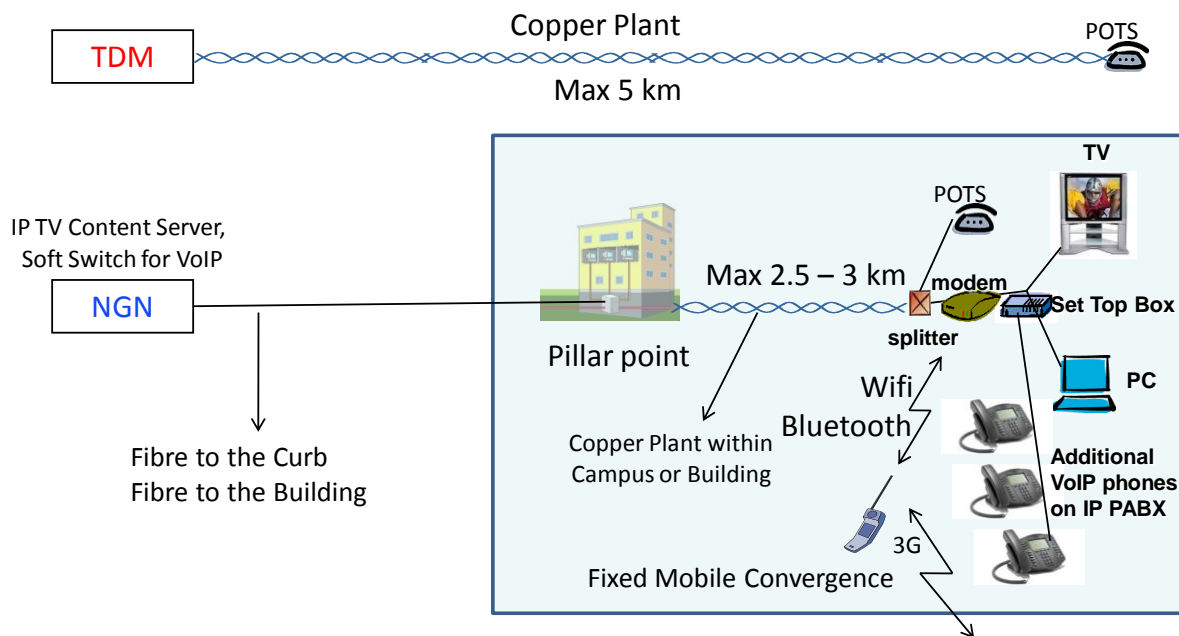




# Way Forward

## Access

- DSL, VDSL2+ , FTTH, Mobile complement each other
- Also explore DSLAM / ONU at the pillar



**Note:** Leverage on FMC to complement different access technologies

# Way Forward (Aggregation)

## CCPAN: Countrywide Converged Packet based Aggregation Network

### Countrywide converged network

- For collating traffic spread across SDCA / blocks to a Gateway Point
- Banks on the Packet based technology for effective utilization

### Complement MPLS Transport Network

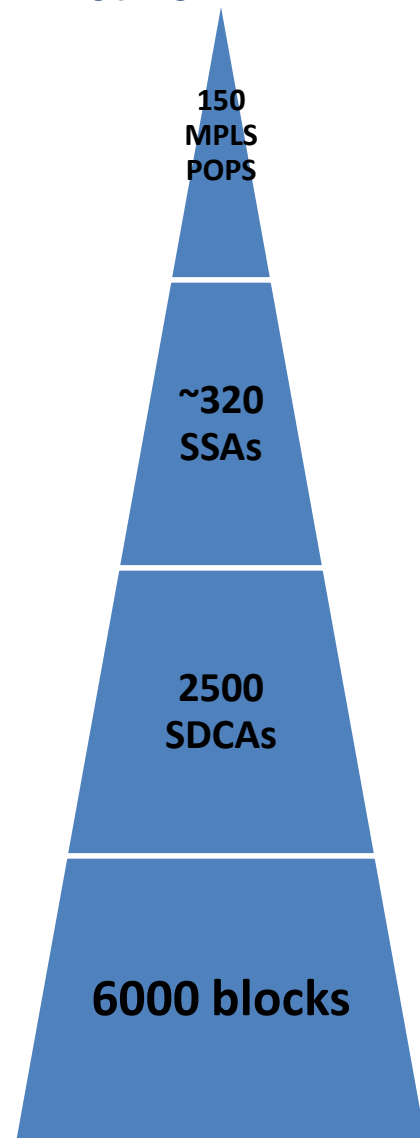
- The Gateway Point is the existing NIB-II MPLS network deployed in 106 cities expandable to 150 cities
- Extends the reach of the NIB-II POPs to around 2000 SDCAs constituting more than 6000 blocks.

### Minimum GE backbone at SDCA level

- Each SDCA will be having minimum a GE as a backbone, with few SDCA even having 10GE.
- All SSAs are connected on 10 GE backbone.
- Uses the existing DWDM network.

### Seamless delivery of various Services

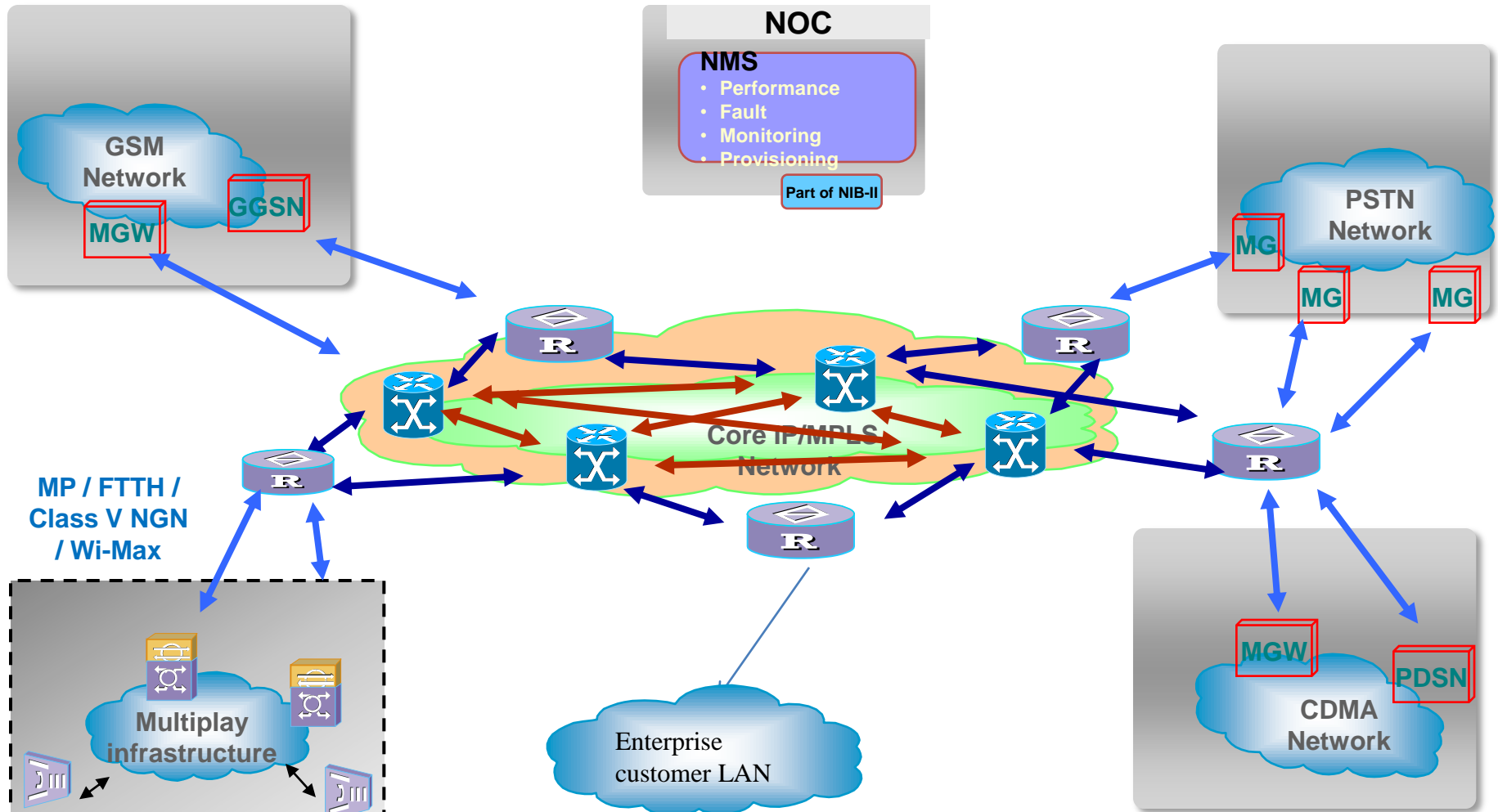
- Provides last mile connectivity to various enterprise data service such as VPN, point-to-point, ILL etc
- Also facilitates aggregation of different access element such as DSLAM, LMG, OLT, BTS (GSM, Wi-Max, CDMA), Node B



# Way Forward

## Transport Network

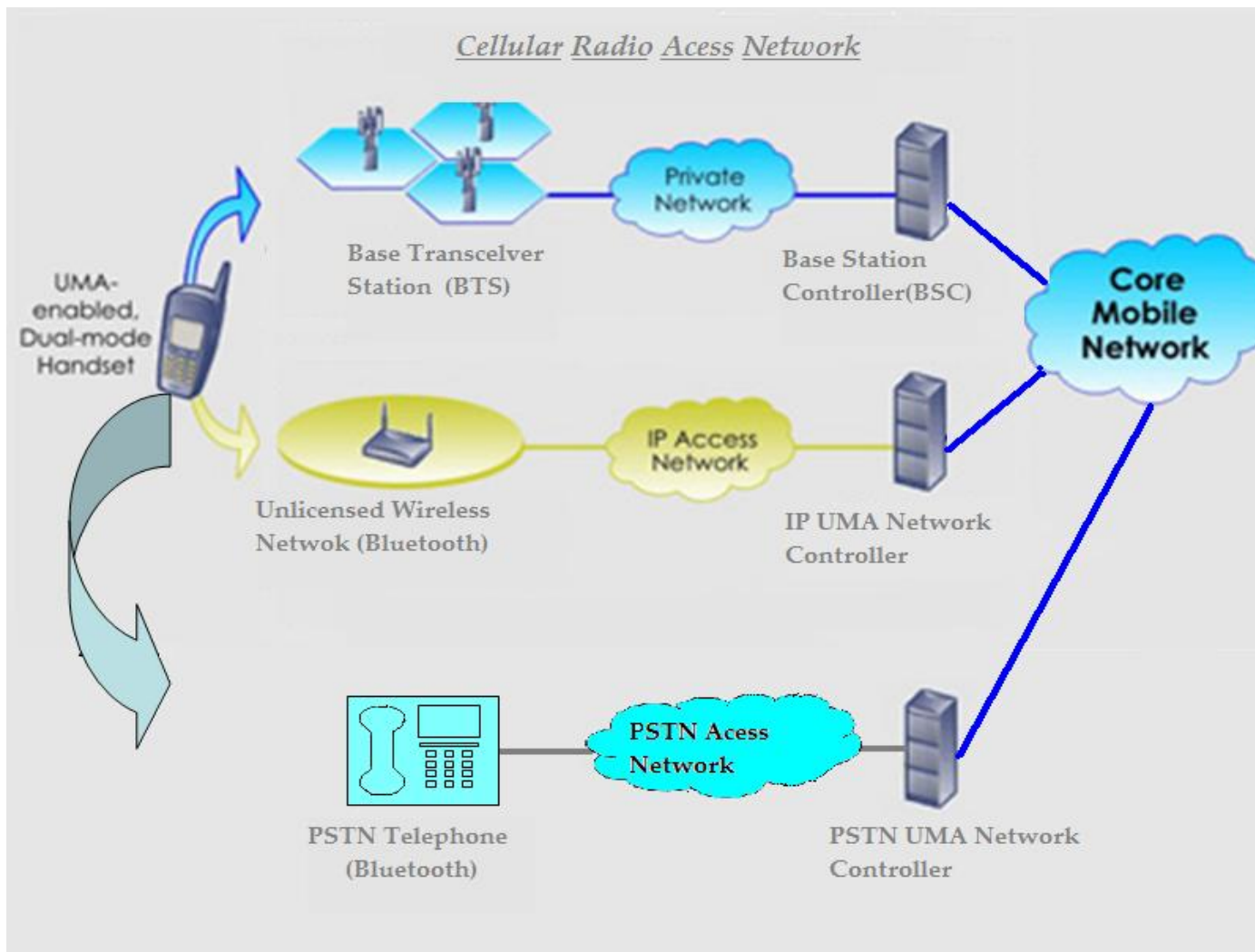
- Position NIB-II + MNGT as a unified MPLS transport
- Also leverage on the Carrier Ethernet for expanding to SSA / SDCA lvl



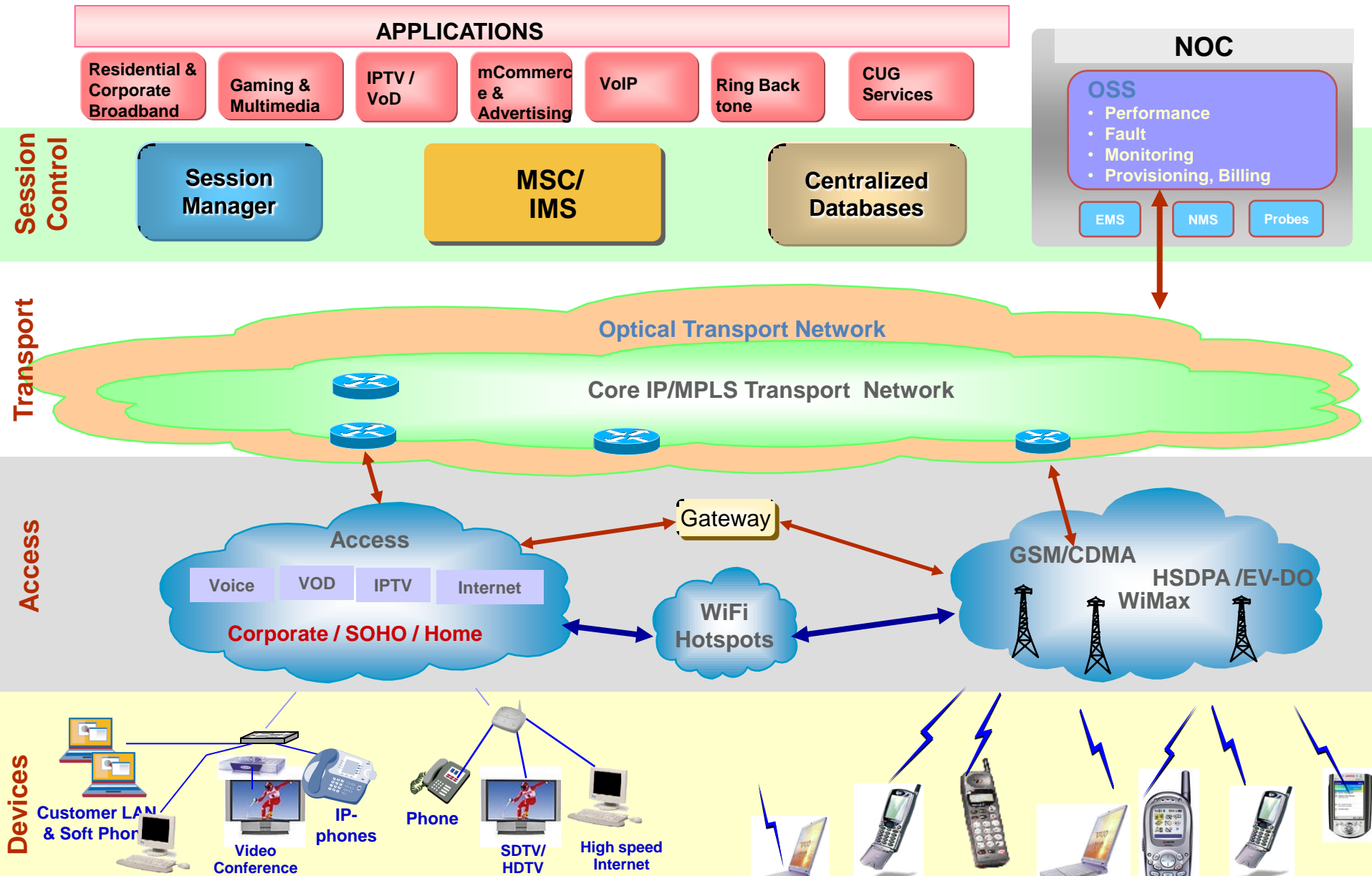
# Way Forward

## Signalling and Control

- Implement FMC pilot and associated service like VCC.
- In the long run, migrate towards common control and repository (IMS)

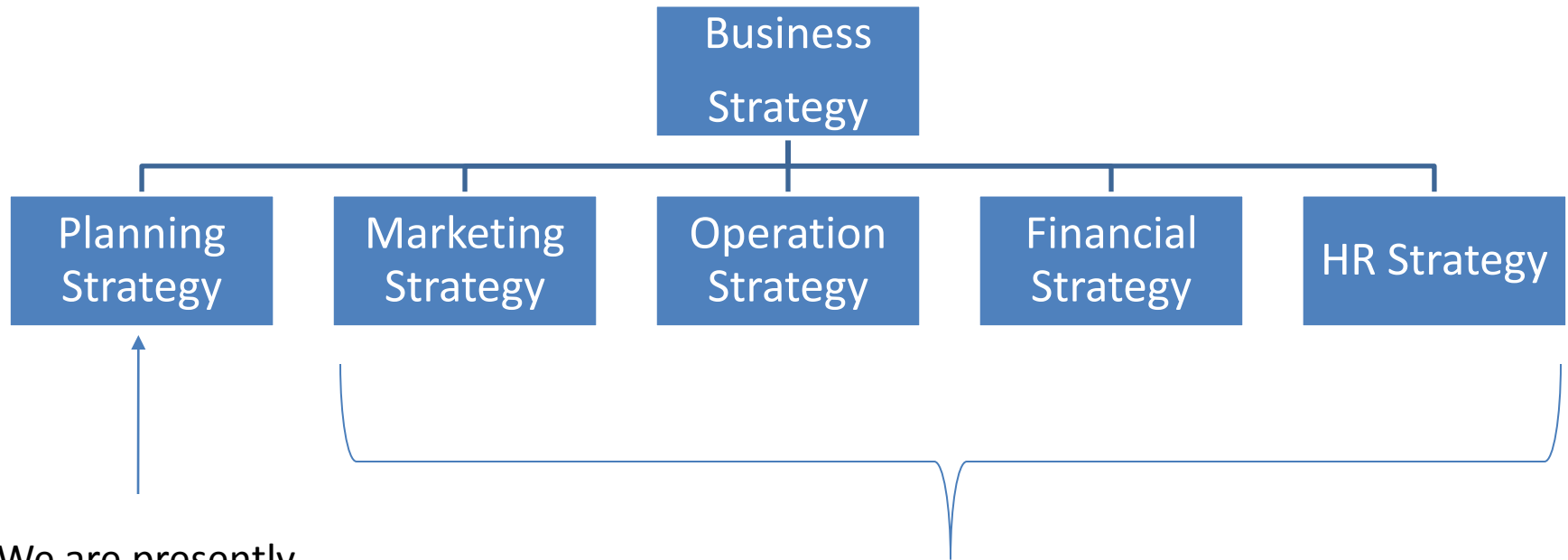


# Next Generation Network – Detailed Model



# Finally, Need for Consistent and integrated Strategy

**Business Strategy:** Based on target segment and how we position ourselves vis-à-vis competitor



We are presently focusing here

**Similar Strategy , consistent with the customer need, is to be drawn And implemented in other domains for end-to-end implementation**

**THANK YOU**