

## 유무선 통합을 위한 차세대 네트워크

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- **Next Generation Network (NGN)**
- **Current Wireless Network**
- **Decomposition of Wireless Components**
- **Integration of Wireless Network with NGN**



# Next Generation Network (NGN)

## What is NGN?

- Open Architecture

- Hierarchical network
- Standard Protocols and API
  - MEGACO/H.248, SIP, BICC etc.

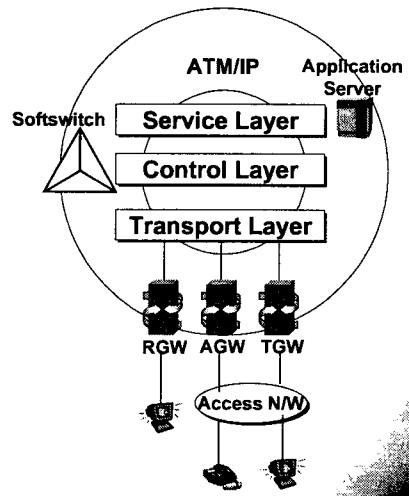
- Single Transport Network

- ATM or IP Network
- Connected to Media Gateways
  - AGW, TGW, RGW

- Network Independent Service

- Easy deployment of new services
- 3rd party programmable service

AGW : Access Media Gateway  
TGW : Trunk Media Gateway  
WGW : Wireless Media Gateway  
RGW : Residential Gateway





## Why is NGN needed?



### Problems due to separate networks

- High maintenance cost due to various networks
  - PSTN, Data Networks (ATM, IP, FR), Mobile Network
- Difficult to provide real-time multimedia services
  - Voice + Data + Video
- High investment to update each separate network

We need...



a Converged Network.

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## Why is NGN needed?



### Problems due to monolithic network architecture

- Difficult to provide new services due to lack of flexibility
  - Transport, Control, and Service functions are embedded in a system
- Difficulty of interoperability among products from different vendors
- High expenses to deploy new services
  - New service deployment highly depends on vendors

We need...



an Open Network Architecture.

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## What are Benefits of NGN?



### ➤ Openness between NGN components

- Make carriers choose network elements from various vendors
- Provide high flexibility in deploying new services
- Provide high scalability from a small-sized network to a very large network.

### ➤ Single Transport Network

- Cost savings due to a unified network.
- Easy to provide new multimedia services.
- Reduction in the number of network equipments

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## Gradual Migration to NGN



### Pre-NGN

- Replacement of analog exchanges using : V5.2
- Integrated access network of Voice and Data
  - Voice and Data : xDSL, Lased Line, POTS, ISDN
  - Integrated Access : DSLAM, FLC, FTTx, ...
- AGW capable of evolution to NGN

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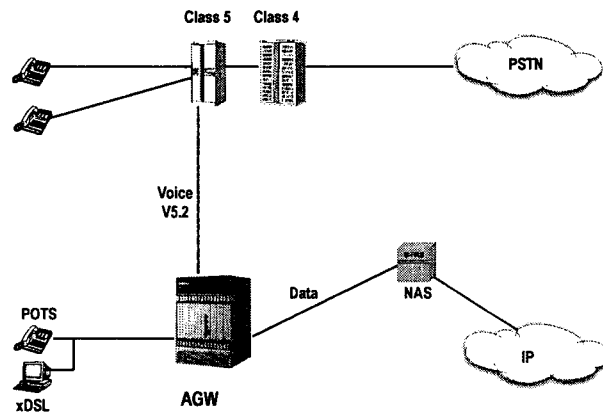




## Gradual Migration to NGN

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### Pre-NGN



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## Gradual Migration to NGN

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### NGN

- Deployment of Softswitch
- Deployment of Trunk Gateway between packet transport network and the PSTN
- Packetized voice in AGW
- New services using Application Server together with Softswitch

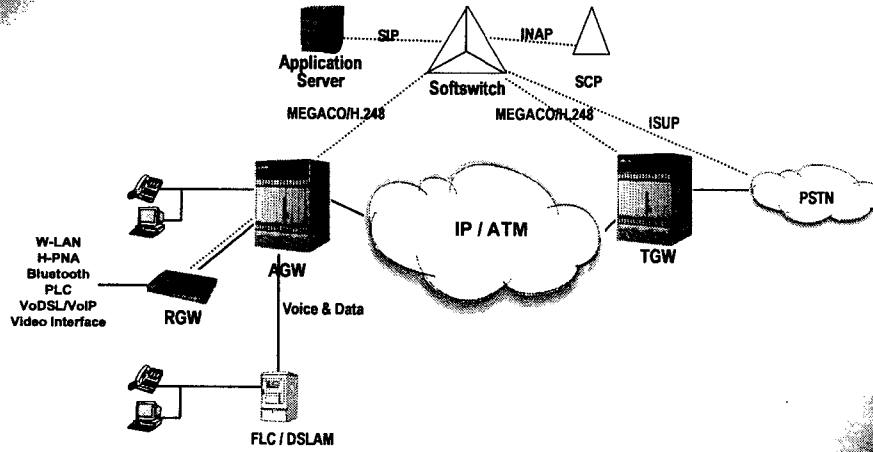
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## Gradual Migration to NGN

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### NGN



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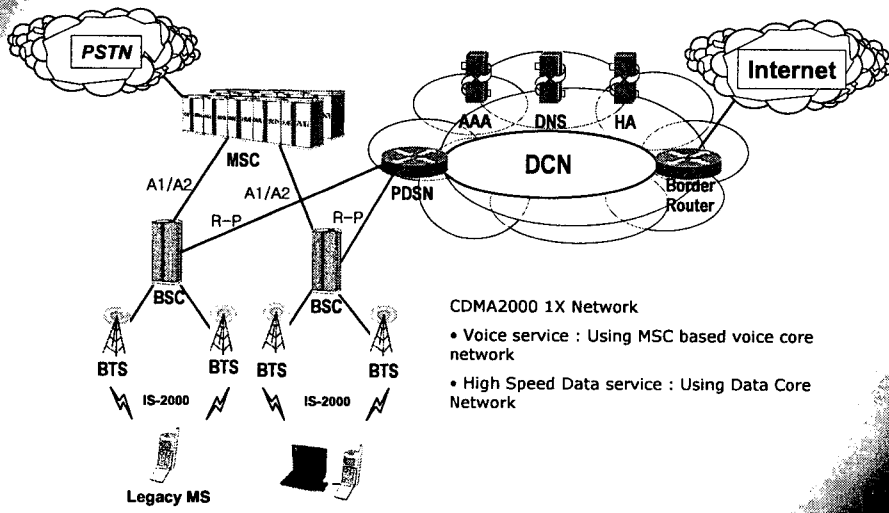
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## Current Wireless Network

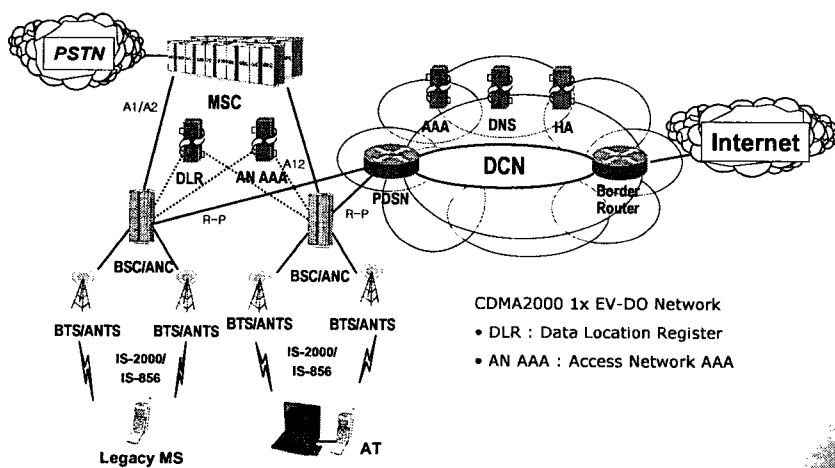
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# CDMA2000 1X



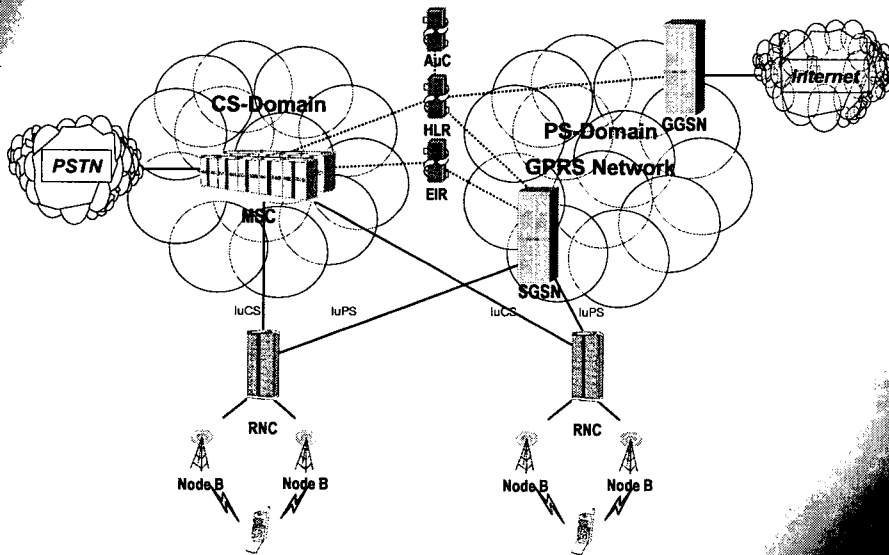
# CDMA2000 1X EV-DO





# UMTS

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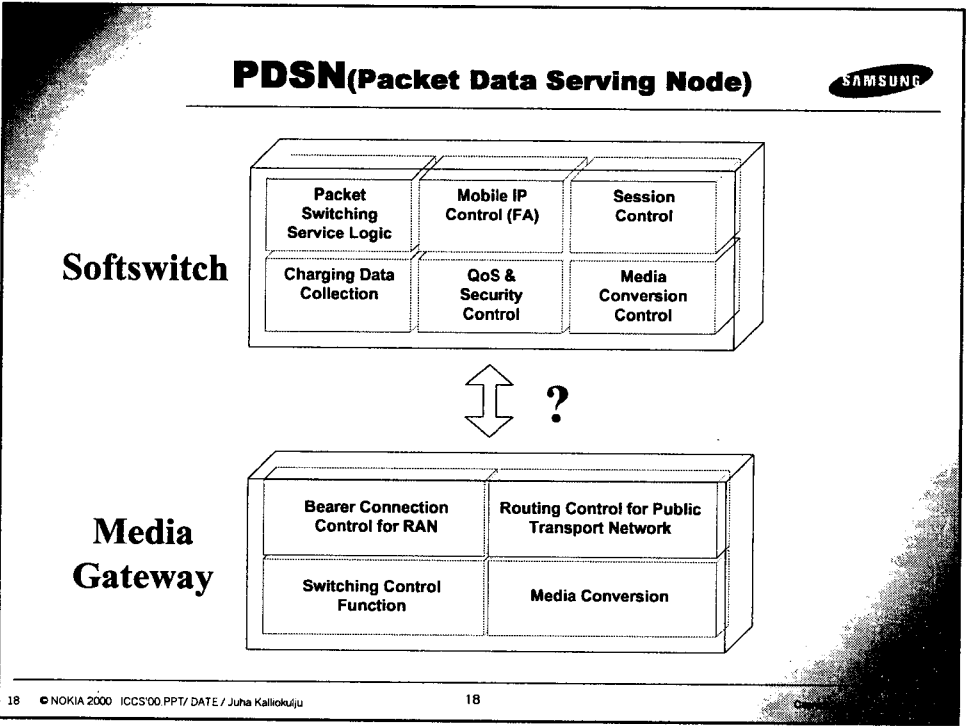
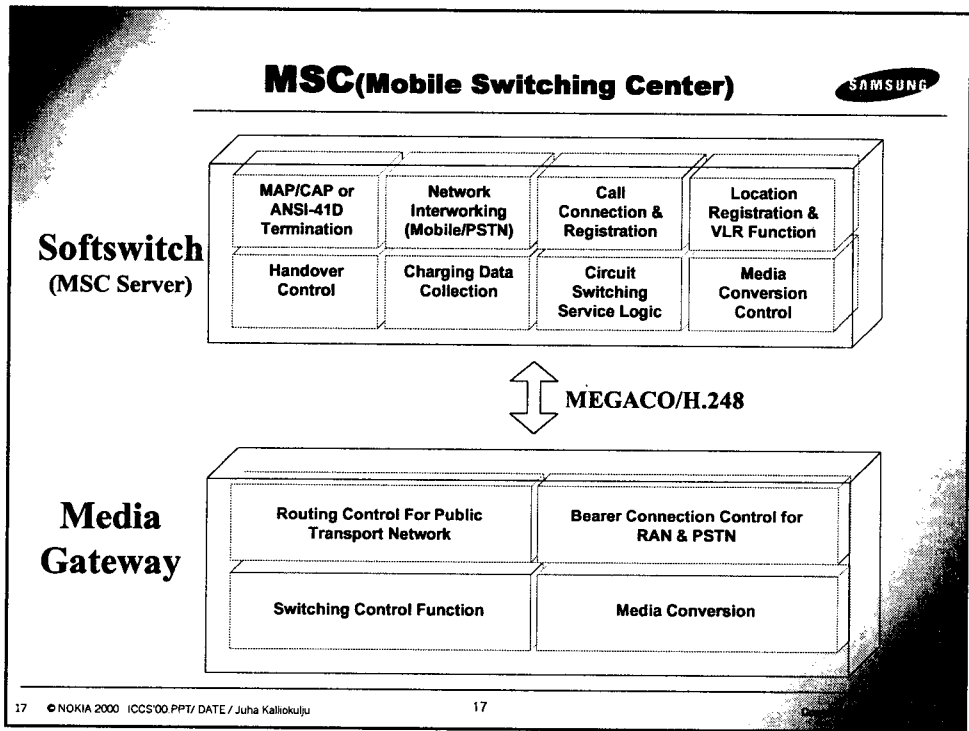


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## ***Decomposition of Wireless Components***





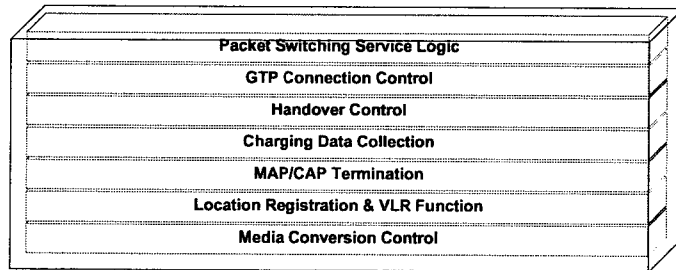




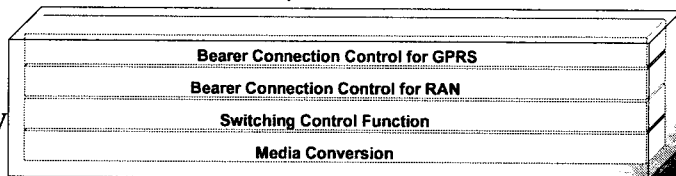
## SGSN(Serving GPRS Support Node)



SGSN  
Server



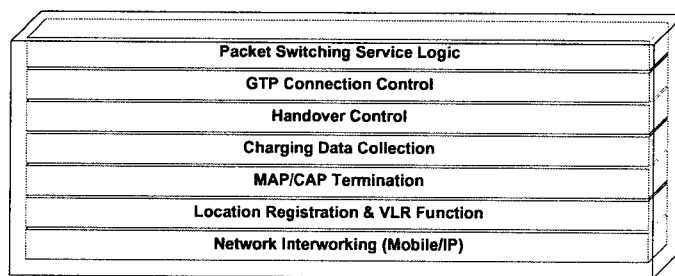
Media  
Gateway



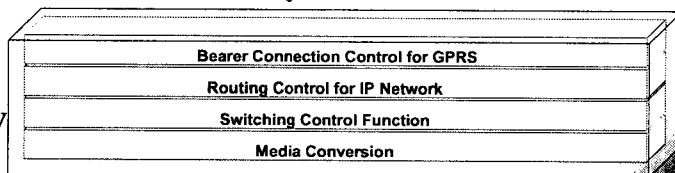
## GGSN(Gateway GPRS Support Node)



GGSN  
Server



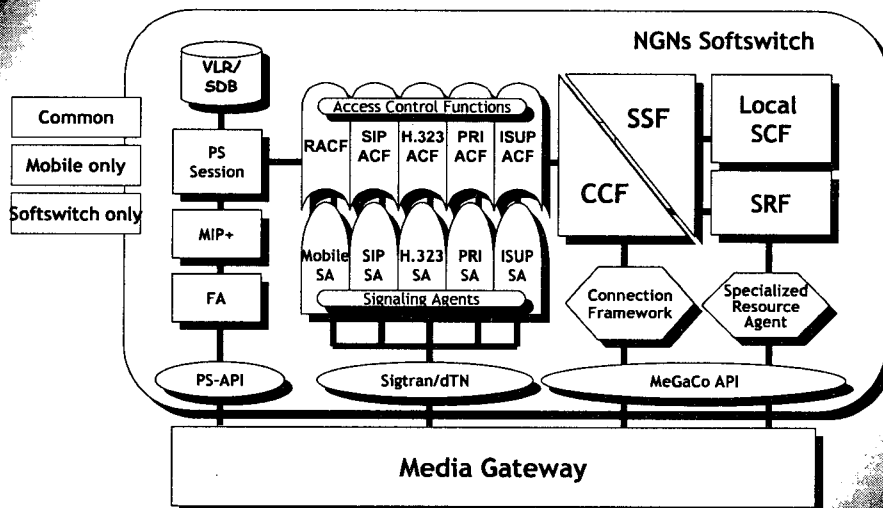
Media  
Gateway





# Integration of Wireless Network with NGN (Samsung's Plan)

## Softswitch





## Wireless Tandem (Phase 1)

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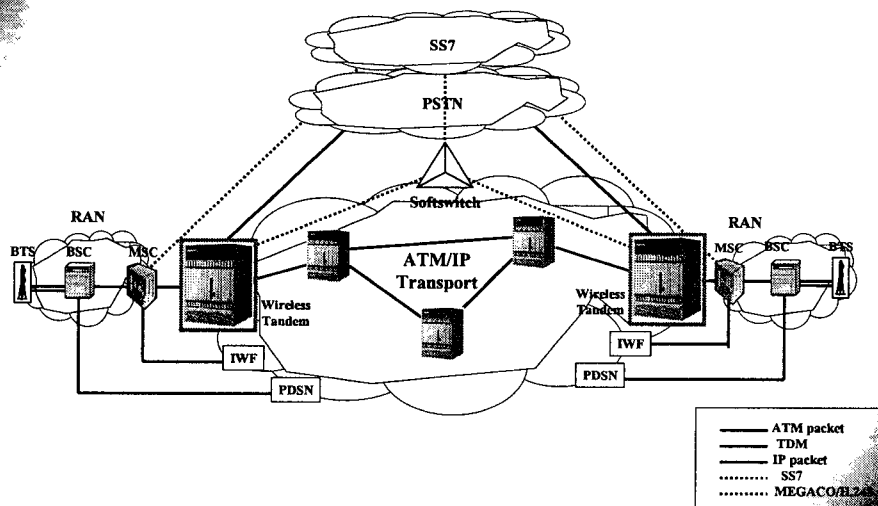
### Feature

- Integrate with an NGN with minimal technological change
- Preserve the investments in wireless networks while allowing wireless network to access to NGN
- MSC continues to manage mobile calls and mobility
- Appropriate for a wireless provider with existing wireless networks

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## Wireless Tandem (Phase 1)

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## NG-MSC (Phase 2)

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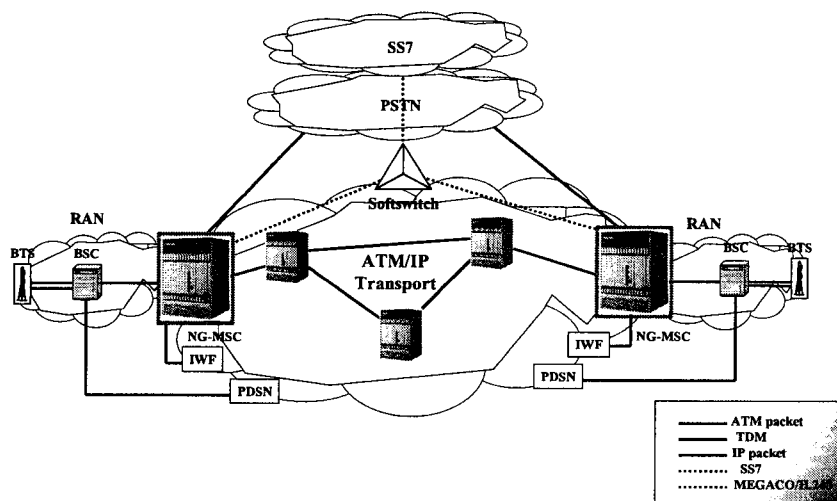
### Feature

- Optimize wireless networks and gateways by eliminate redundant functions and merging functions of the MSC and TGW
- The transport functions of the MSC is replaced by Gateways and the control function is replaced by Softswitch (Call Agent).
- Suited for new wireless providers
- Existing wireless service providers may choose this architecture for their new deployment

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## NG-MSC (Phase 2)

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## Wireless Gateway (Phase 3)

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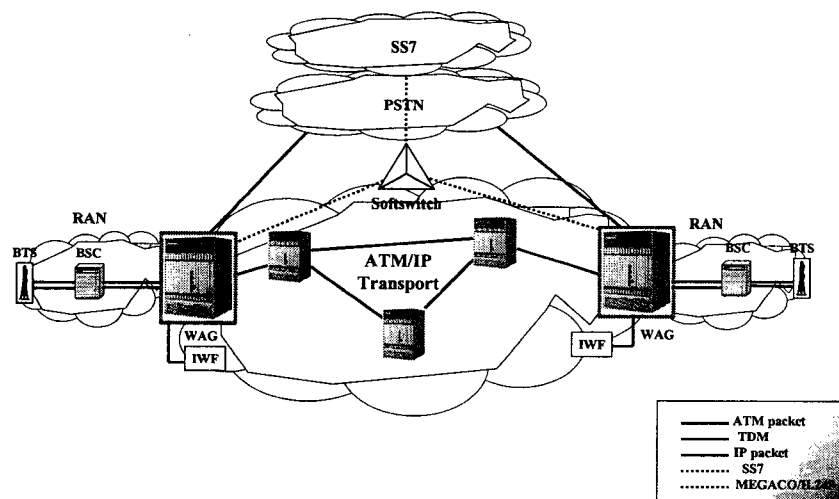
### Feature

- Wireless gateway replaces PDSN
- Packet data from BSC flow into wireless gateway
- Support Mobile IP
  - Wireless gateway performs FA (Foreign Agent) Function to control mobility of packet data terminals.

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## Wireless Gateway (Phase 3)

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## Access Gateway (Phase 4)



### Feature

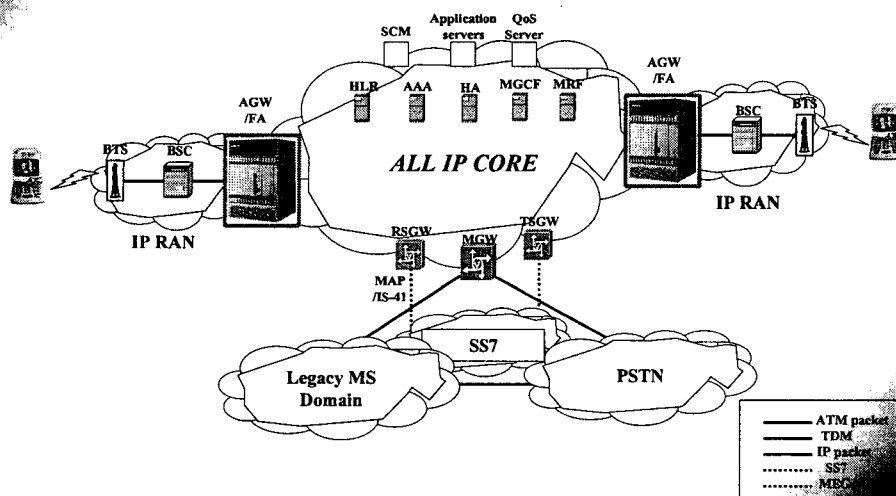
- Complete integration with NGN
- End to end packet architecture
- Access Gateway performs FA (Foreign Agent) Functions to control mobility



# ALL IP !

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## Access Gateway (Phase 4)



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## **Benefits of the Integration**



- NGN will become the de-facto wireline technology.
- NGN offers a fundamentally cheaper core network technology.
- NGN offers a superior feature/service development environment.
- NGN offers an unified network, providing economical way to deploy voice and data services.



***Integration is practical necessity !!***

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***Thank you !***

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