Mobile Packet Gateway Solution

for CDMA2000 and GPRS/UMTS

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Technical Marketing Engineer

Mobile Wireless Group

Agenda

- PDSN Solution for CDMA2000
- GGSN Solution for GPRS/UMTS
- Mobile Multi-service Gateway
- Hardware Overview

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PDSN Solution for CDMA 2000

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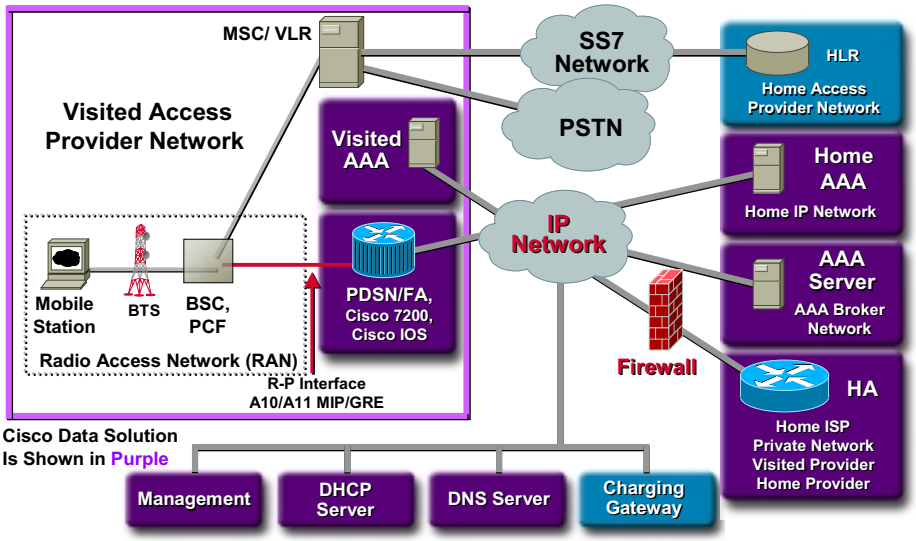
Cisco PDSN Solution for CDMA2000



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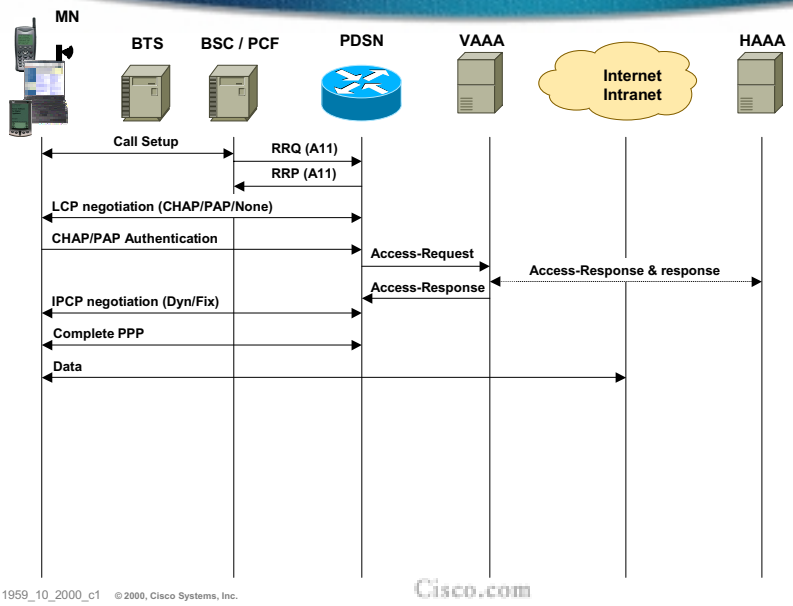
Access Services

- Simple IP Routing
- Simple IP VPN
- Mobile IP
- Proxy Mobile IP

Call Flow for Simple IP with Routing



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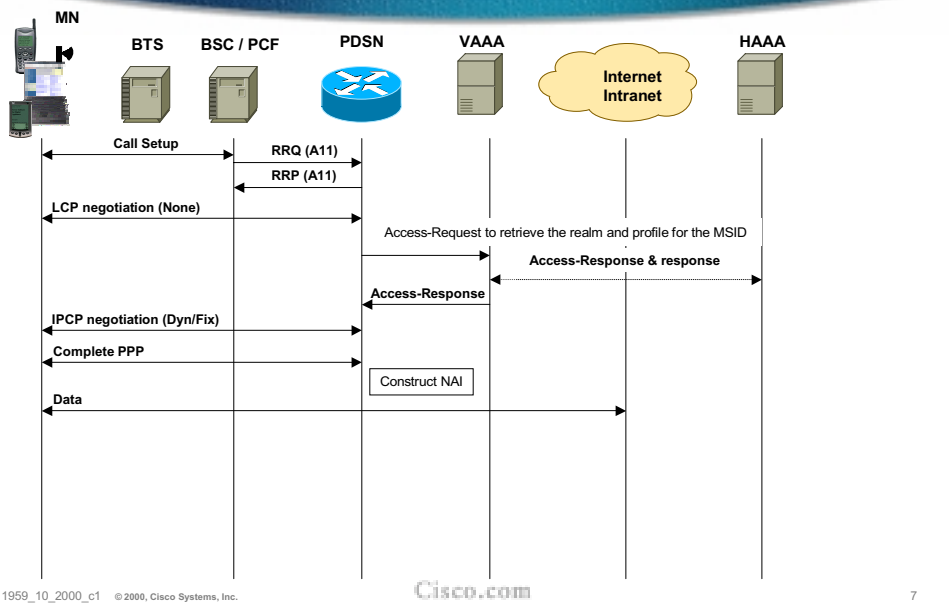
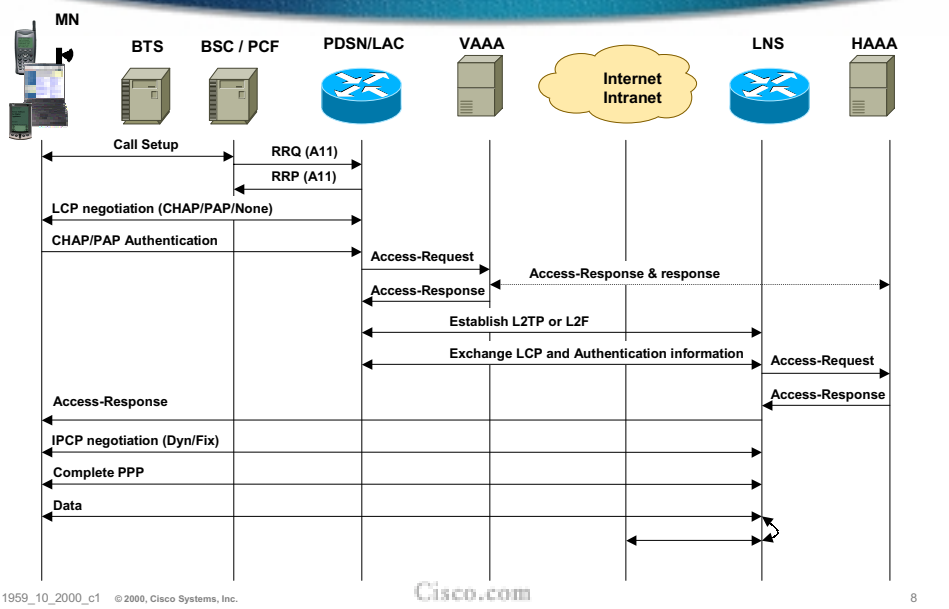
Call Flow for MNID based Access



Call Flow for Simple IP / VPN



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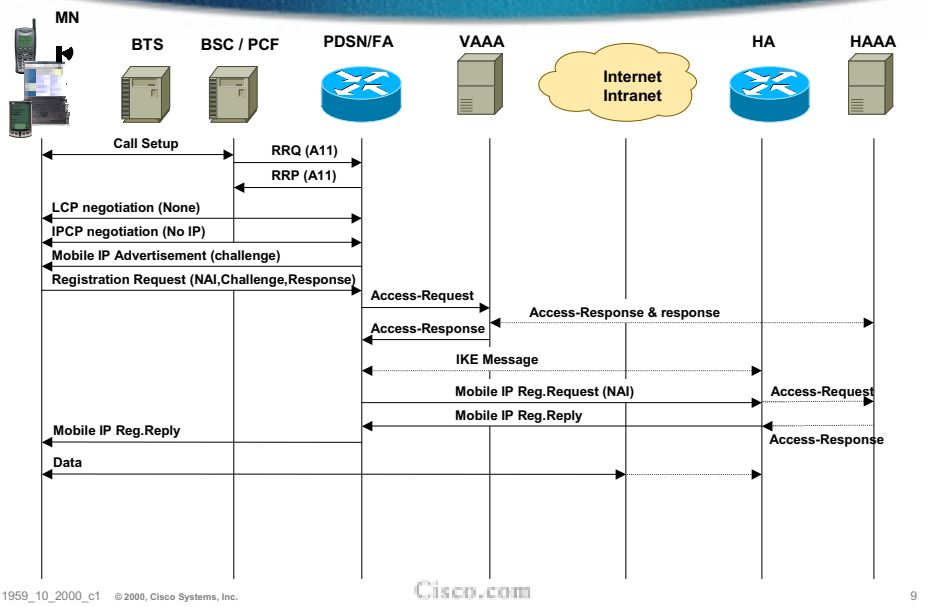
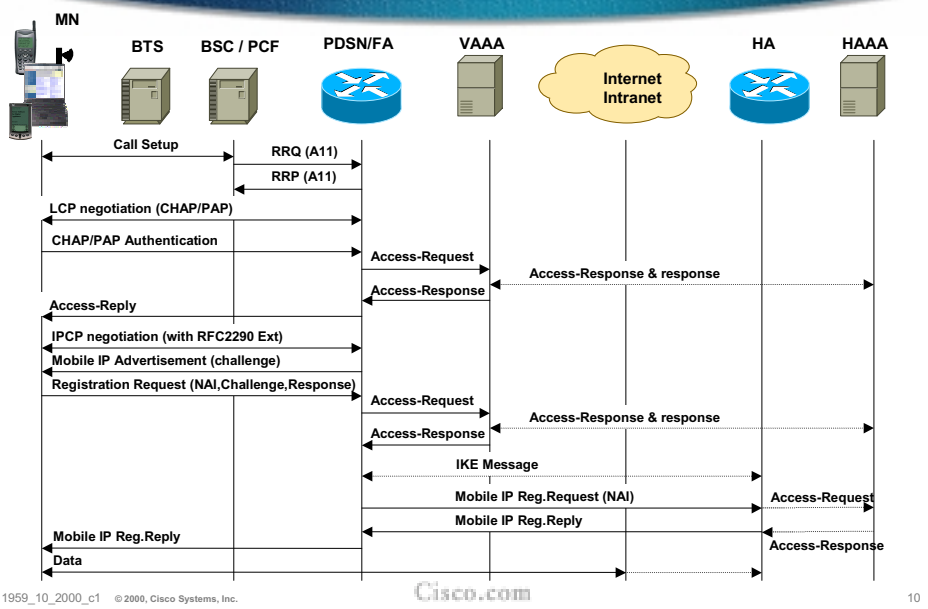
Call Flow for Mobile IP (without Auth)



Call Flow for Mobile IP (with Auth)



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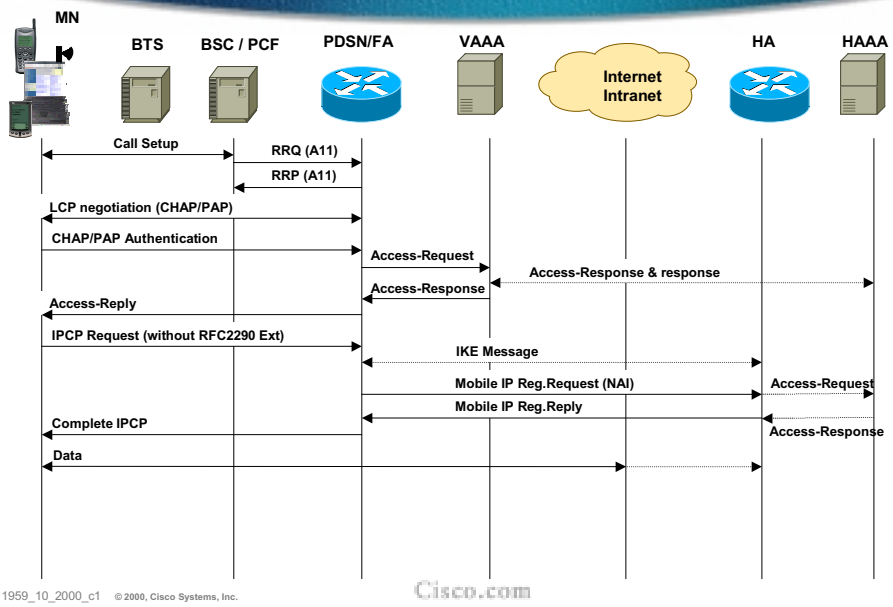
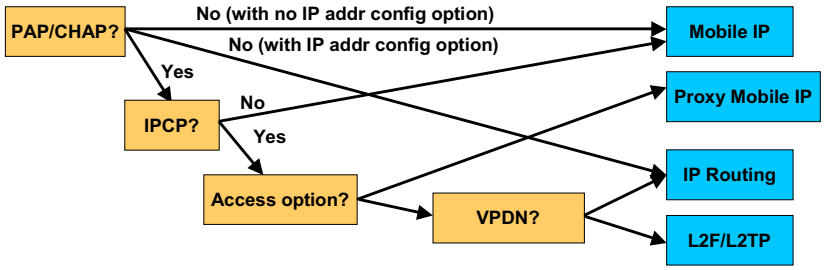
Call Flow for Proxy Mobile IP



Service Selection

- Standards (IS-835) based user services selection
- Cisco value-adds incorporating user service profiles



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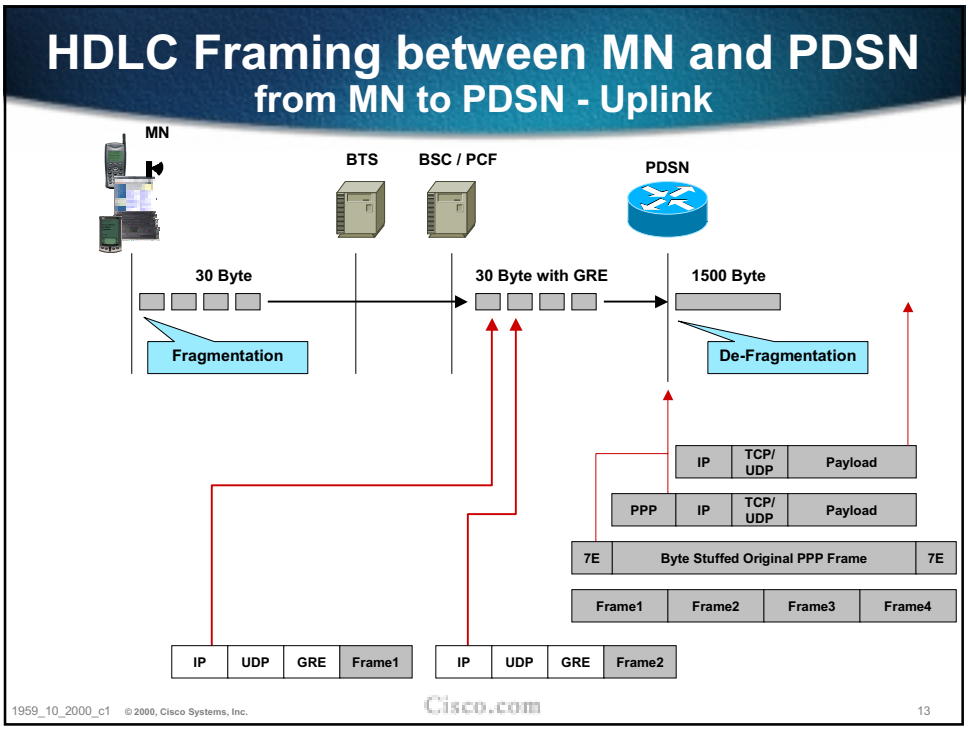

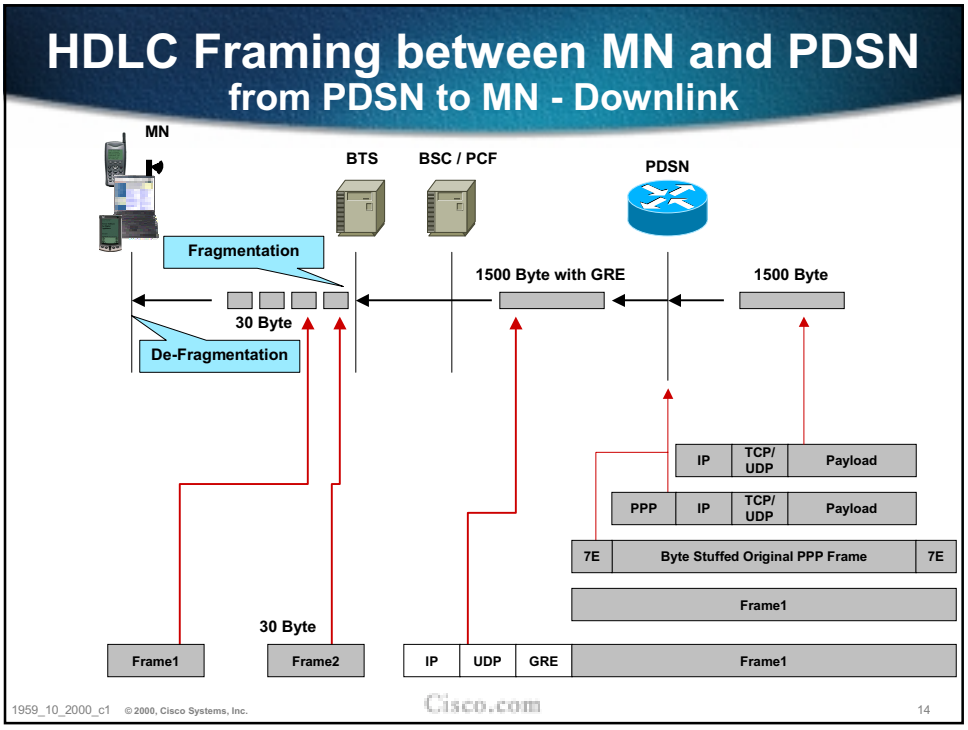

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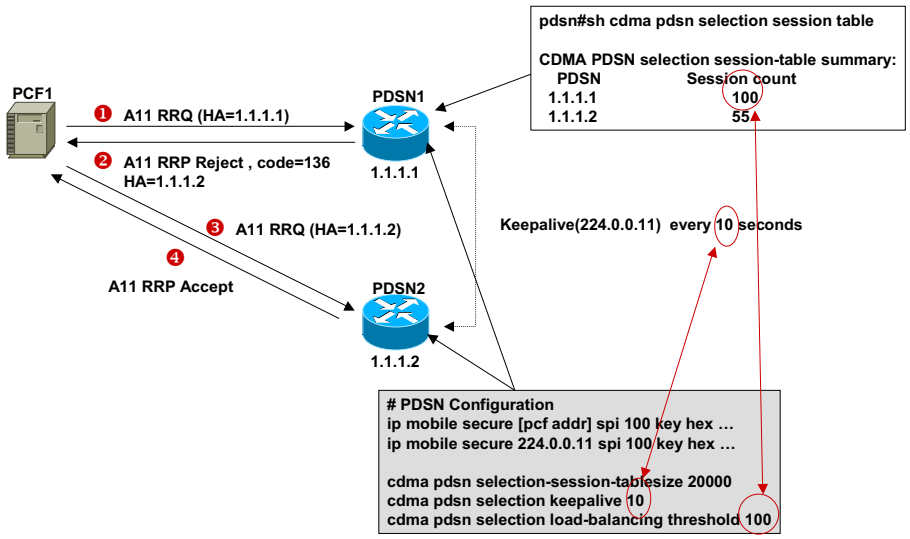
PDSN Feature Highlights

- Industry leading IP Framework
- Intelligent PDSN selection with PDSN clusters
- Proxy mobile IP
- HA redundancy
- Rich QoS features
- Extensive security/VPN features
- IPv6
- 1xEV-DO
- Fast hand-off
- Multicast

PDSN Clustering Architecture



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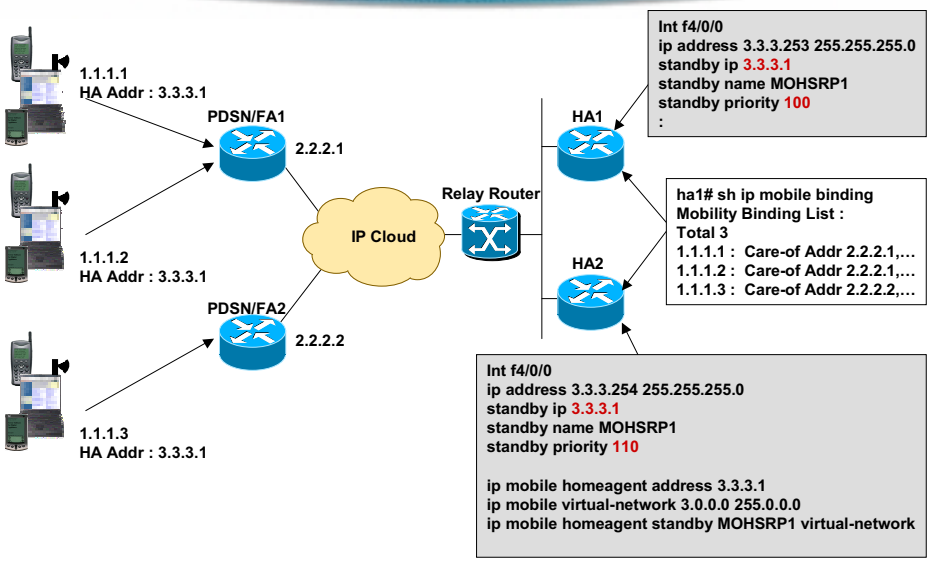
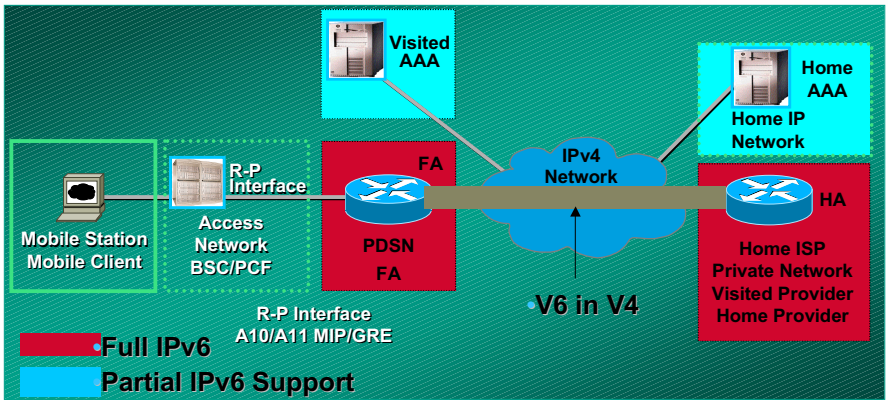
Mobile IP Home Agent Redundancy



IPv6 Early Service Deployment



- IPv6 Host talking to a IPv6 Host/Server over IPv4 network
- Use IPv6 in a IPv4 tunnel
- Can offer Special Controlled IPv6 Services

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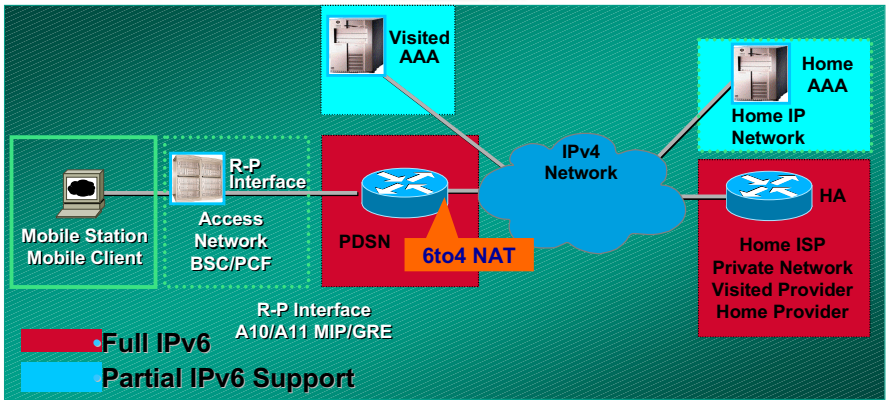
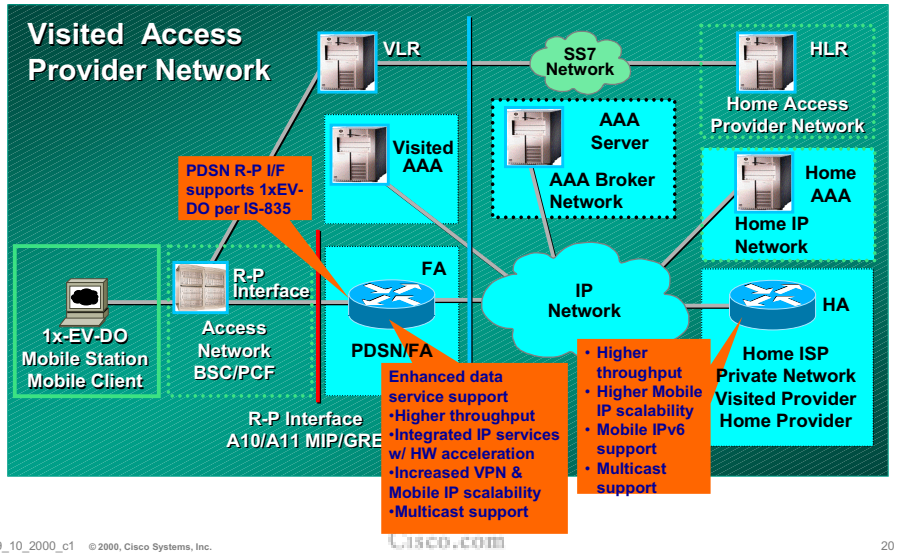
IPv6 deployment with Access to Internet



- Additionally use 6to4 NAT for communicating with IPv4 hosts
- For Simple IP users the NAT is in the Visited Providers network
- For Mobile IP users the NAT is in the Home Network

1xEV-DO Support



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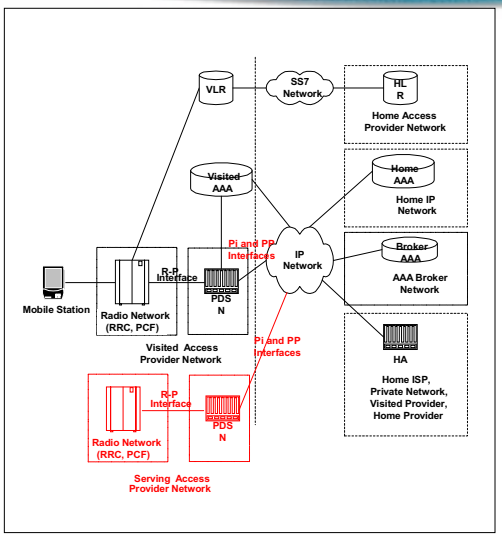
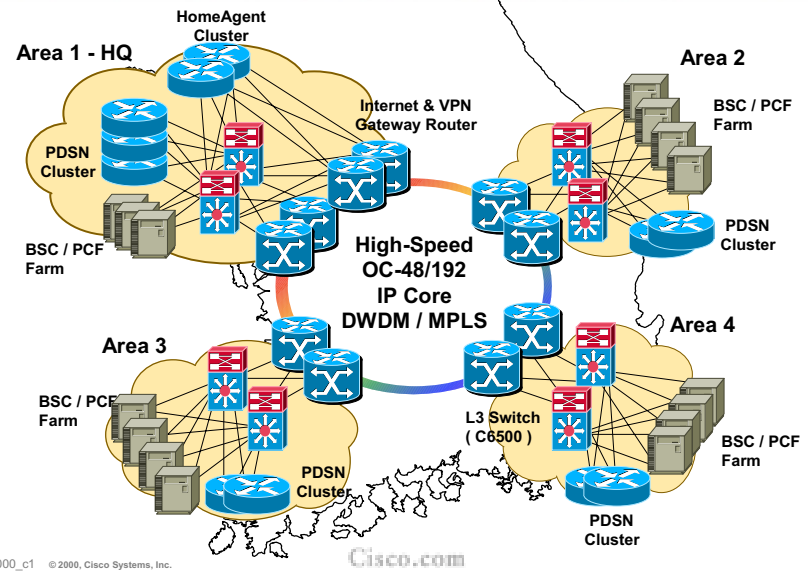
CDMA2000 -PDSN- Fast Handoff
General System Architectural Model



- 3GPP2-P00-20010212-007, draft stage, being included into TSG-P.
- To avoid PPP and MIP registration.
- Serving/Anchor PDSN concept
- New PP interface
- No new registration for active call

CDMA2000 1x Call Traffic Flow
- Sample Configuration



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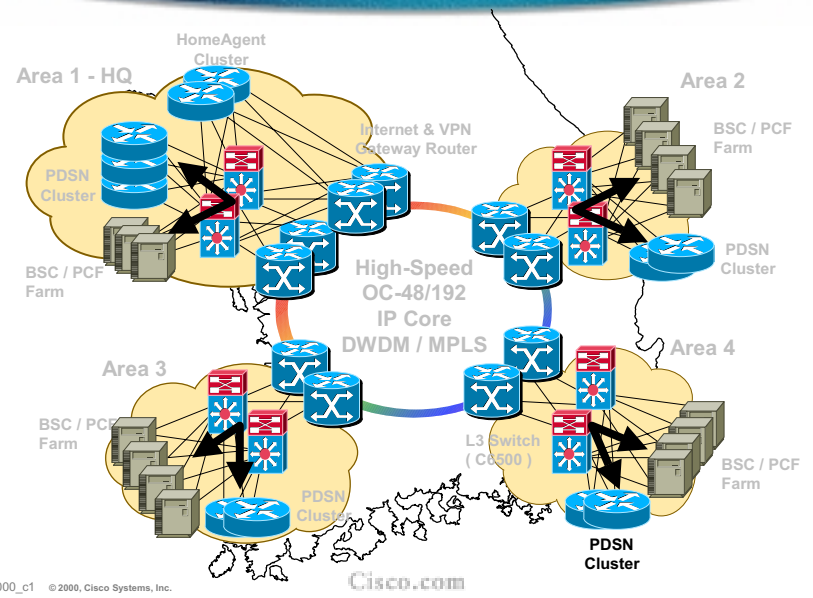
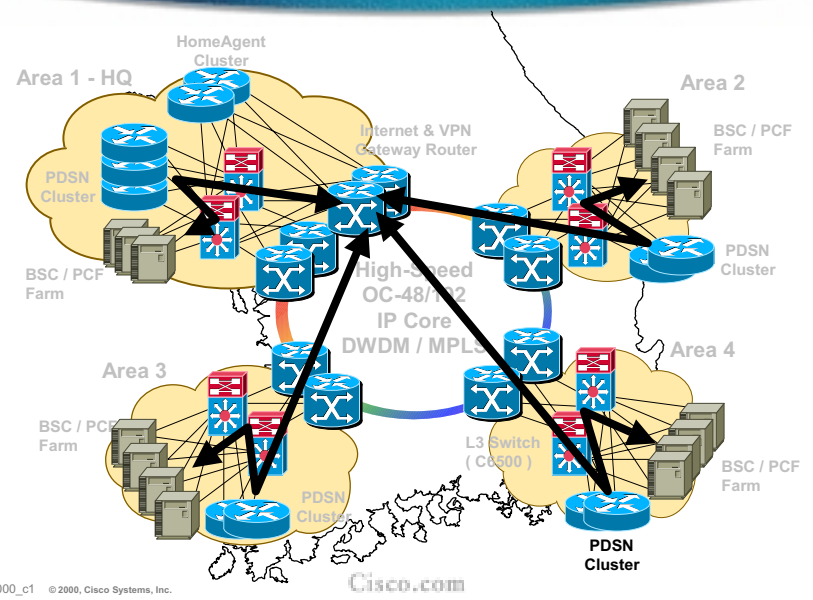
CDMA2000 1x Call Traffic Flow
- A11 MIP and A10 GRE



CDMA2000 1x Call Traffic Flow
- Simple IP Routing / VPN



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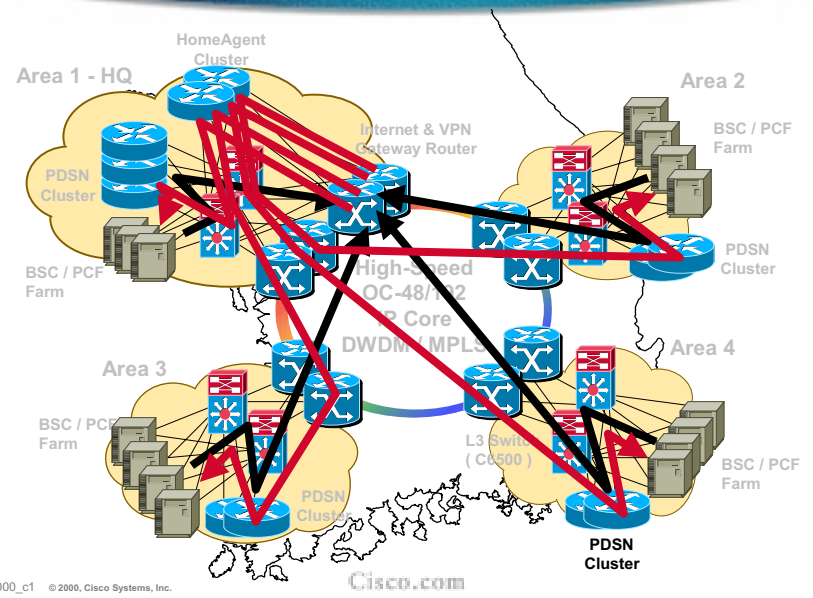
CDMA2000 1x Call Traffic Flow
- Mobile IP with no-Ext (IPv4)



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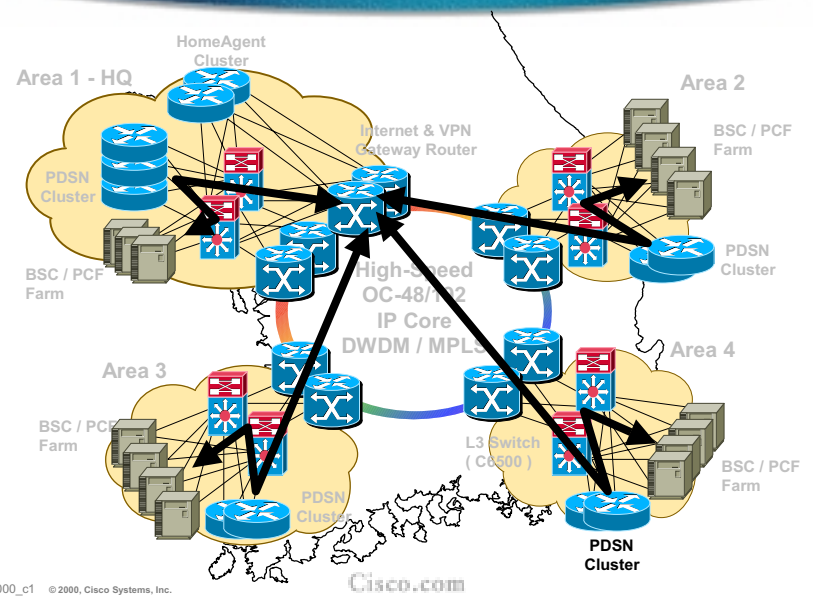
CDMA2000 1x Call Traffic Flow
- Mobile IP with Ext (IPv6)



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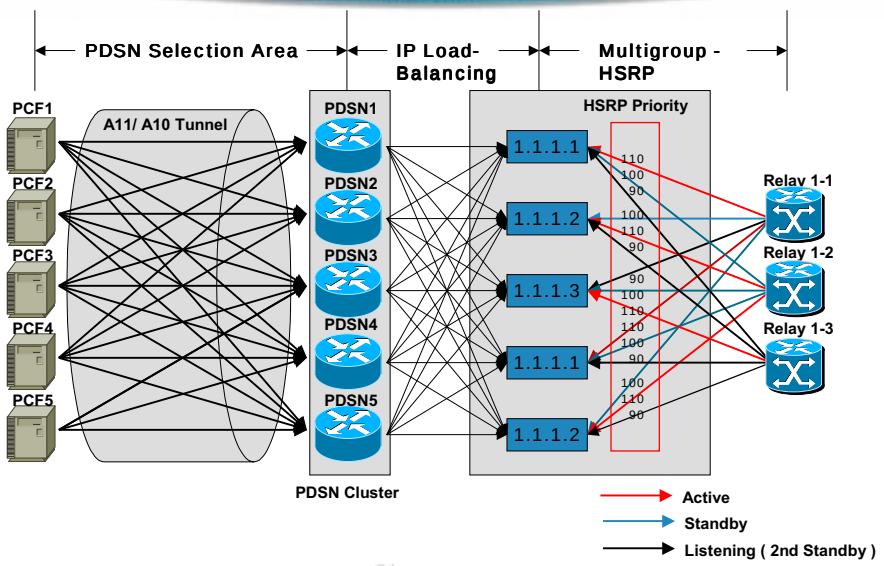
Detailed View of Logical POP Design



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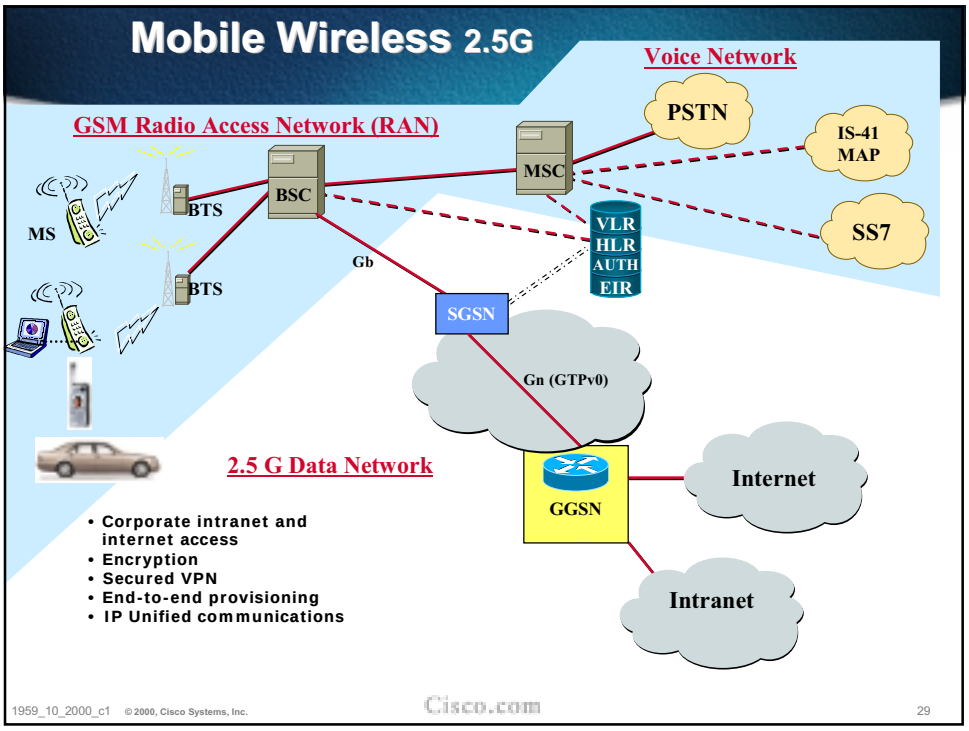

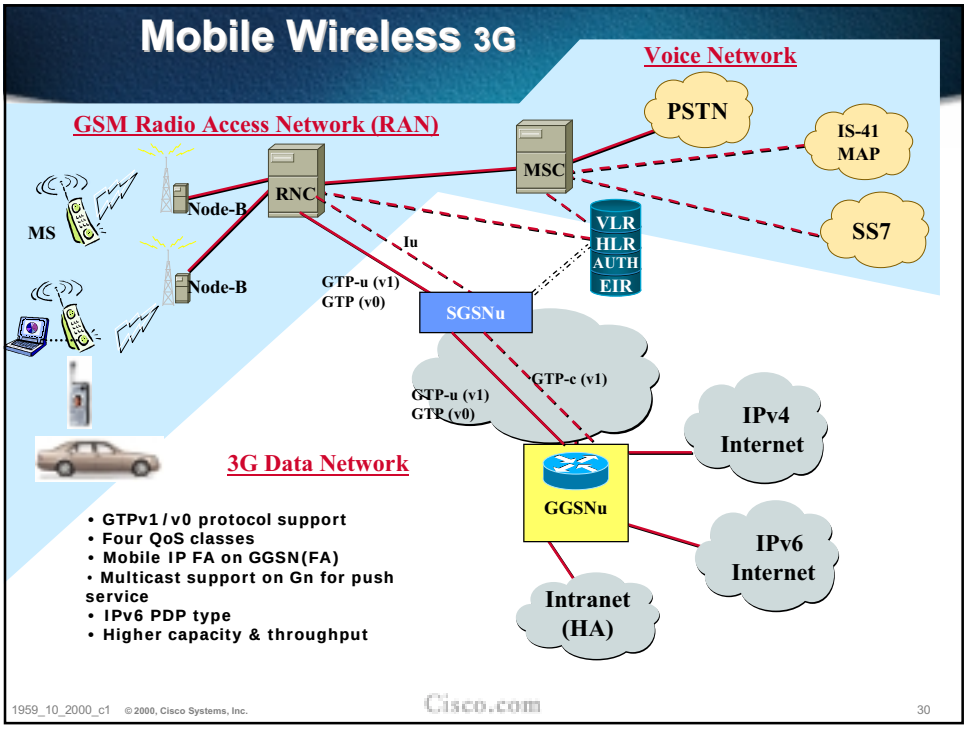

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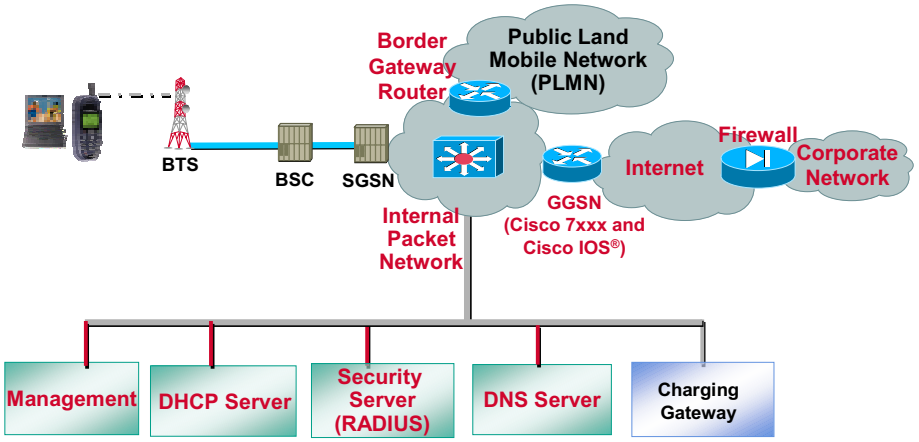
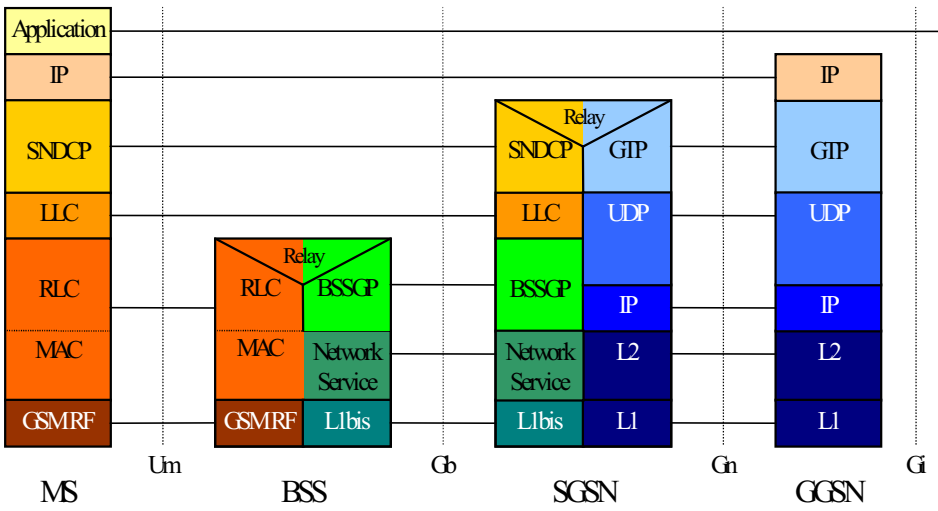
Cisco's GPRS Solution



Cisco Data Solution Is Shown in Red

GPRS GTP Protocol Stack



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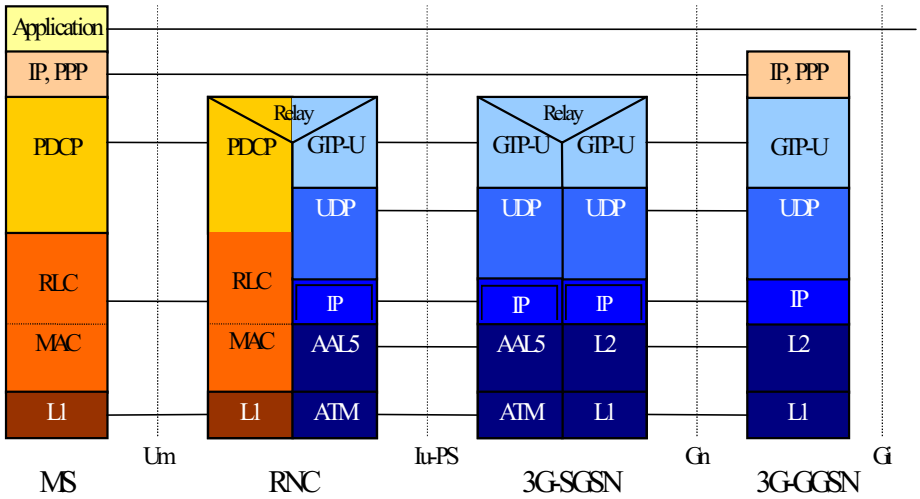
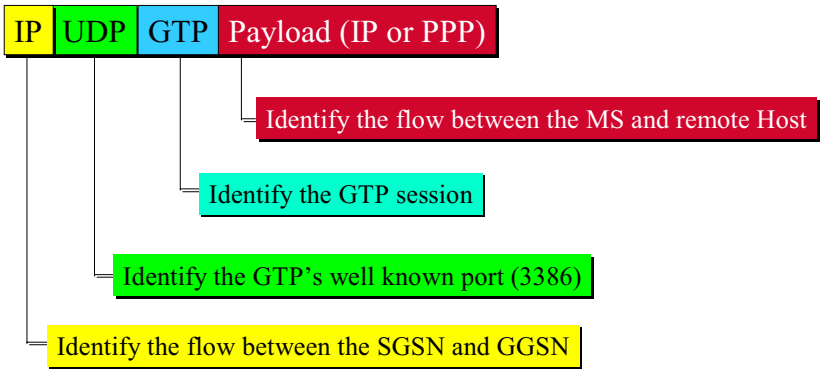
UMTS GTP-U Protocol Stack



GPRS Tunneling Protocol (GTP v0)

- **Layer 3 tunneling Protocol with mobility support**



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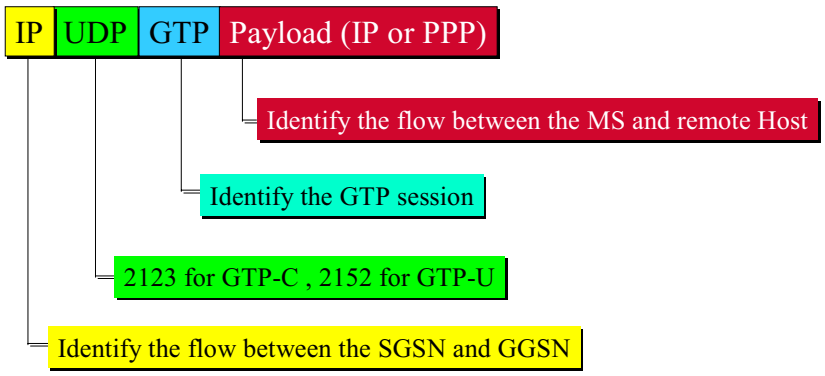
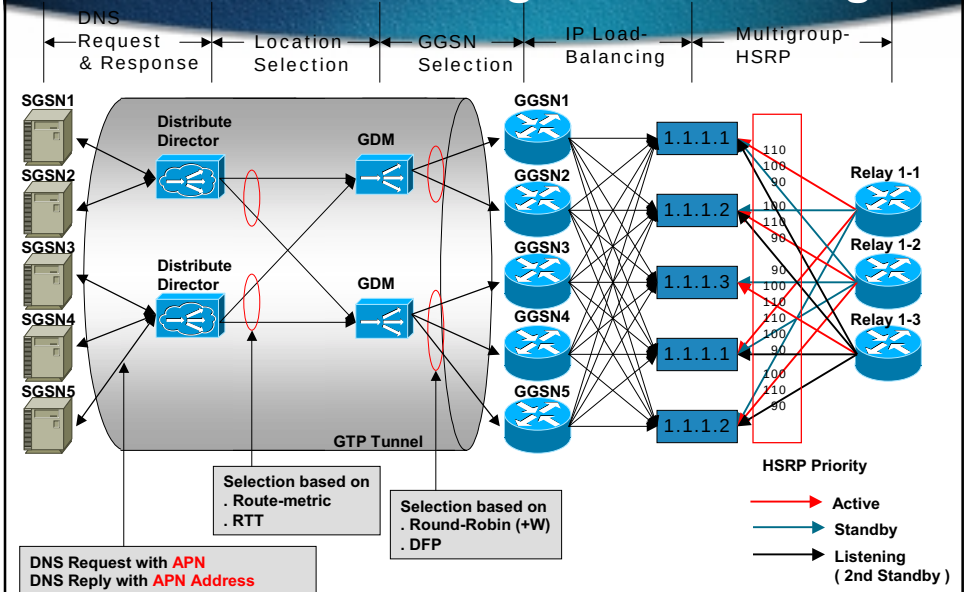
UMTS Tunneling Protocol (GTP v1)

- **Layer 3 tunneling Protocol with mobility support**



Detailed View of Logical POP Design



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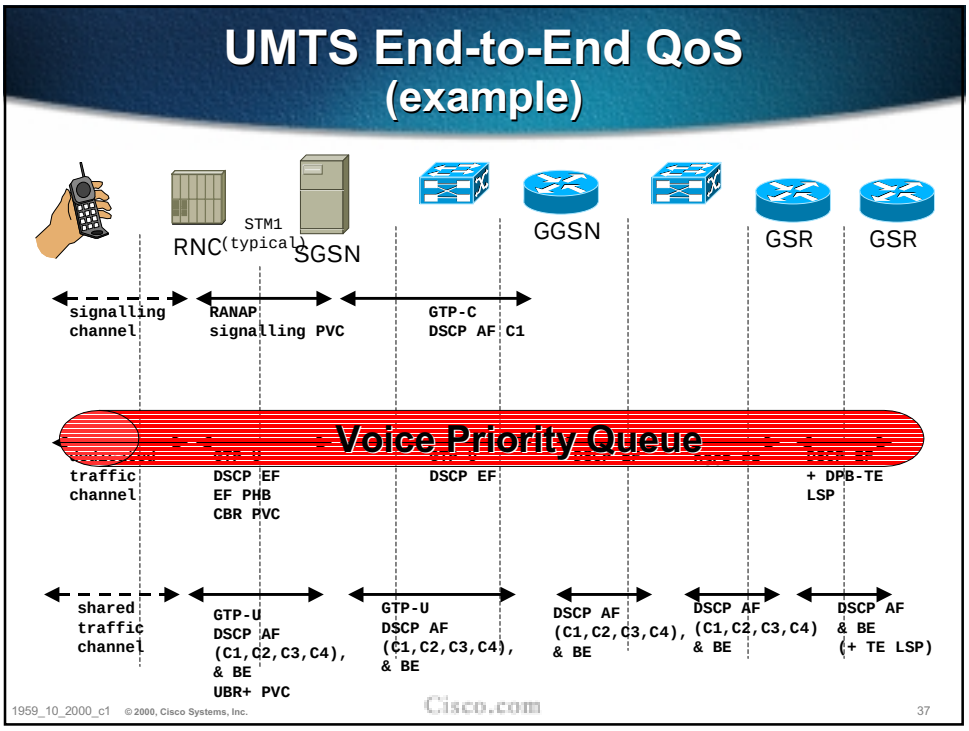

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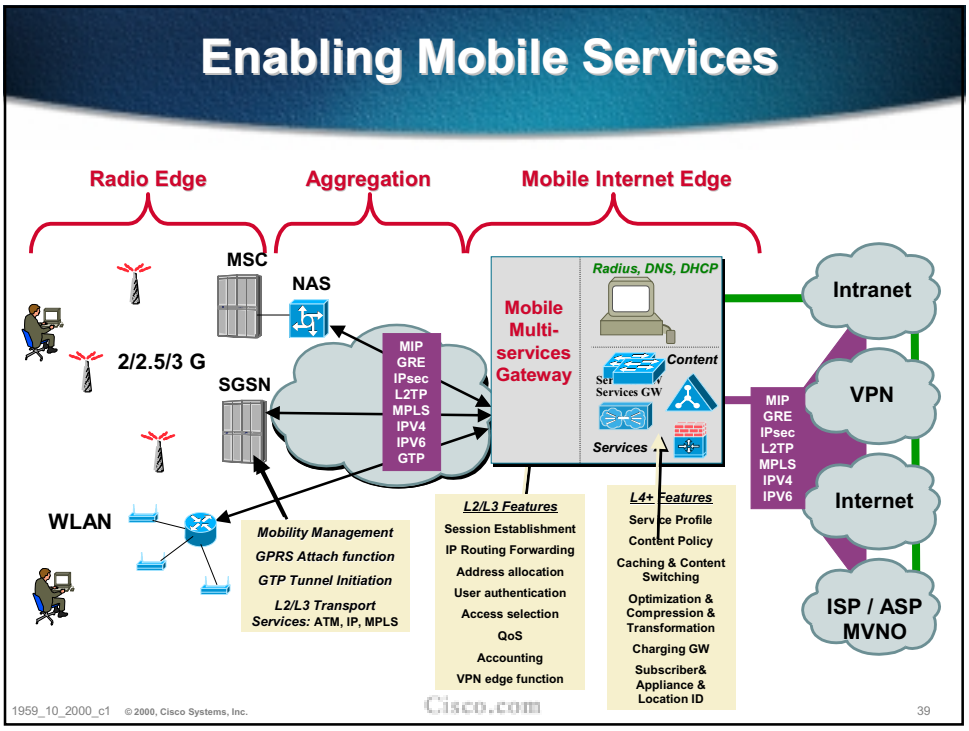

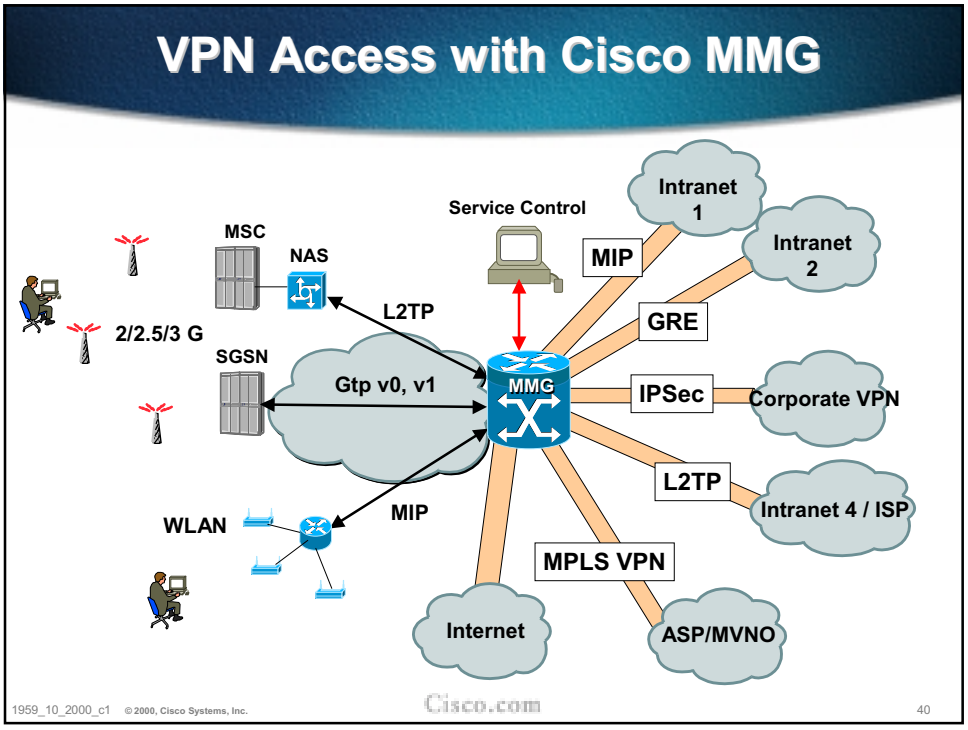

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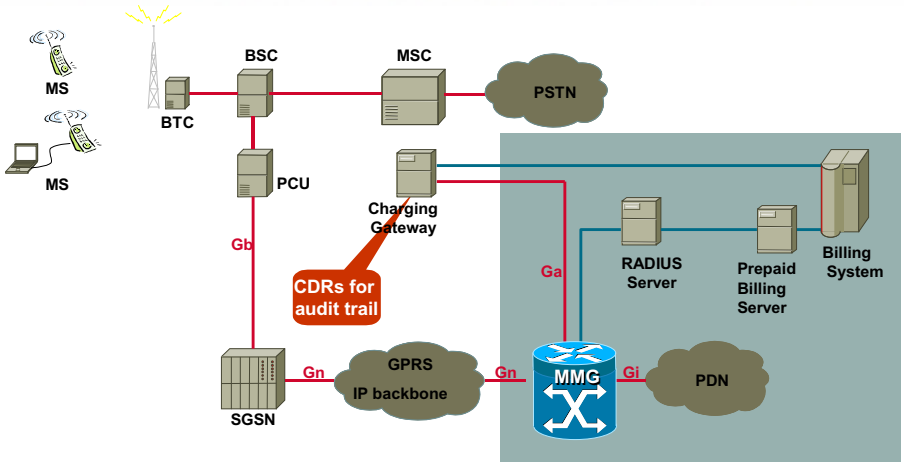
MMG based Prepaid Solution



Distributed Mobile Packet Gateway

MMG-GPM
GGSN Processing Module
7206VXR

MMG-GDM
GTP Director Module
7206VXR

MMG-GLM
GTP Load Balancer Module
7206VXR

MMG-SSG
SSG Module
7206VXR

IOS Software Modules
Optional Modules

MMG-MCE
Mobile Content Engine
CE7320

MMG-MCE
Mobile Content Engine
CE590

MMG-CSG
Content Service Gateway
CSS 11000

GLM : GTP Load Balancer Module
GPM : GGSN Processing Module
GDM : GTP Director Module
SSG : SSG Module
CSG: Content Service Gateway
MCE: Mobile Content Engine

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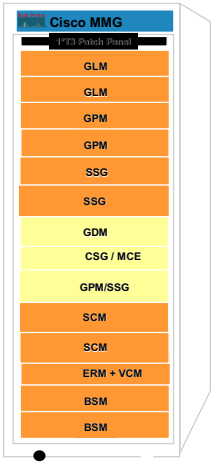
Centralized Mobile Multi-Service Gateway

Cisco MMG Centralized Version



Mandatory Modules

Optional Modules

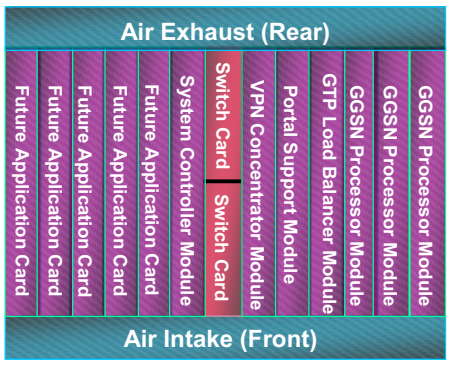
Build as you grow!
3G & IPv6 ready

MMG-GPM/GLM/SSG/GDM
7400

> 1Million sessions

GLM : GTP Load Balancer Module
GPM : GGSN Processing Module
VCM : VPN Concentrator Module
SSM : SSG Module
SCM : System Controller Module
BSM : Backplane Switch Module
ERM : Edge Router Module

Cisco Mobile Multi-Service Gateway Integrated



Single Chassis
Solution
2 Million sessions

Cisco MMG
Integrated Version

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Cisco 7200 Interfaces and Port Adapters

LAN

1 Fast Ethernet (TX/FX)
2 Fast Ethernet (TX/FX)
4 and 8 Ethernet (10BaseT)
5 Ethernet (10BaseFL)
4 Token Ring (HDX/FDX)
1 FDDI (HDX and FDX)
1 ATM OC-3
EtherSwitch (12E/2FE)
1 Gigabit Ethernet

WAN

4 and 8 Serial
4 E1 G.703
1 and 2 HSSI
4 and 8 BRI
1 ATM-CES
1 ATM (DS-3/E3)
DPT-OC12
1 port STM-1
1 Multichannel T3/E3
1 Channelized T3
4 and 8 Multichannel T1/E1
2 PRI/Channelized T1/E1
1 Packet-over-SONET
1 Channel (ESCON, Parallel)
1 and 2 T3/E3 with Integrated CSU/DSU

Multiservice

Digital Voice Port Adapters
ATM IMA

L3 Services

Integrated Service Adapter
Encryption

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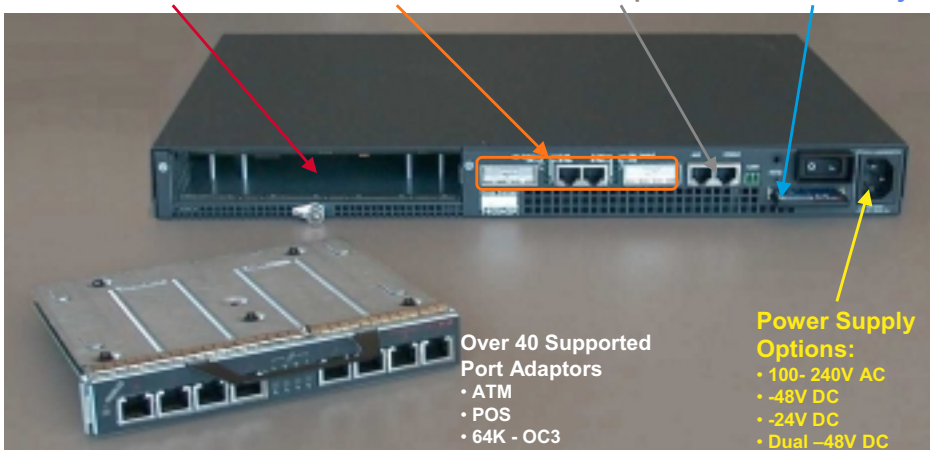
7206VXR PDSN Configuration

What is a Cisco 7400 ASR?



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Are you ready?

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