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VoIP BoF
SANOG8

Syed Khurram

&
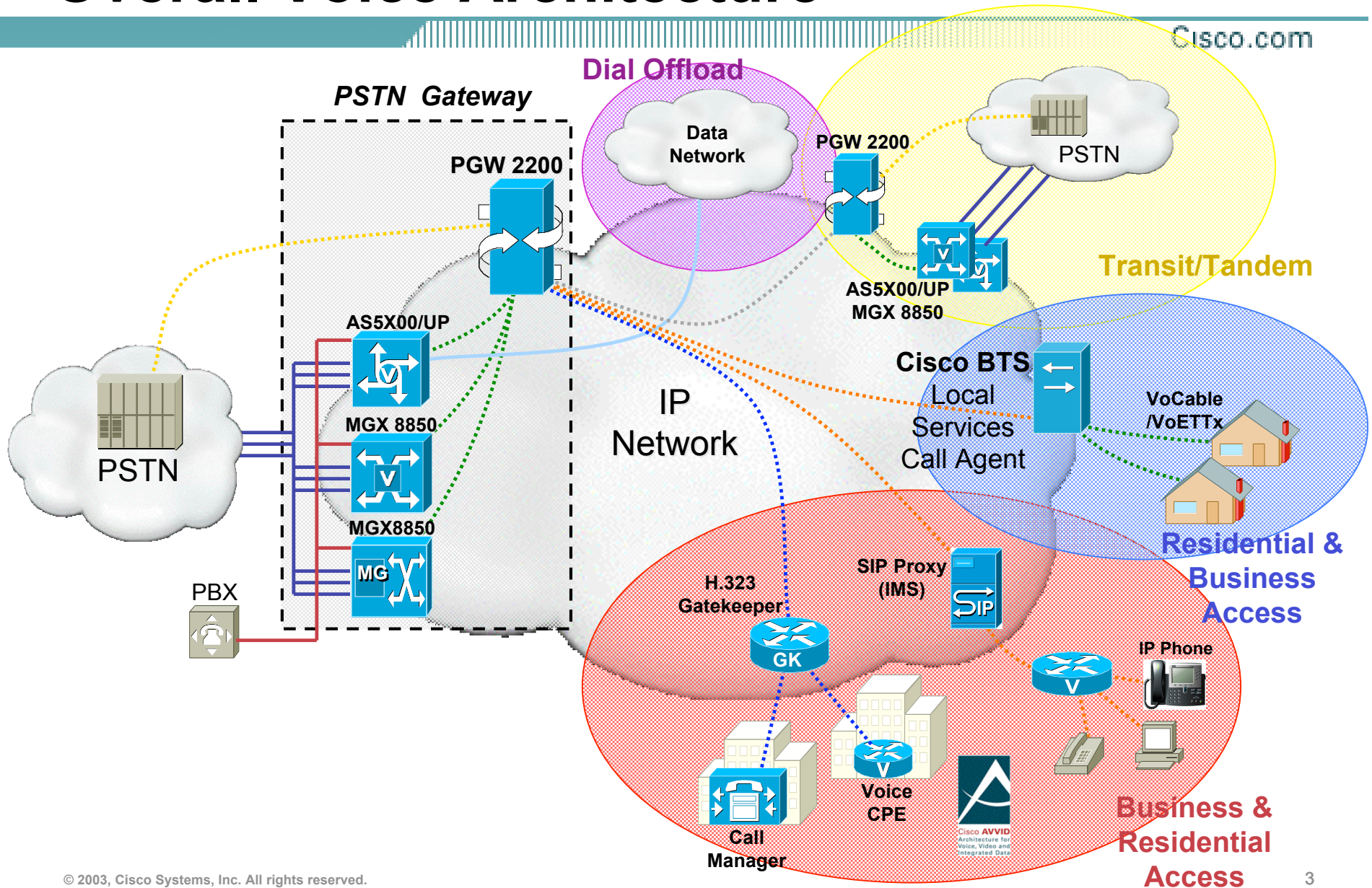
Faisal Chaudhry
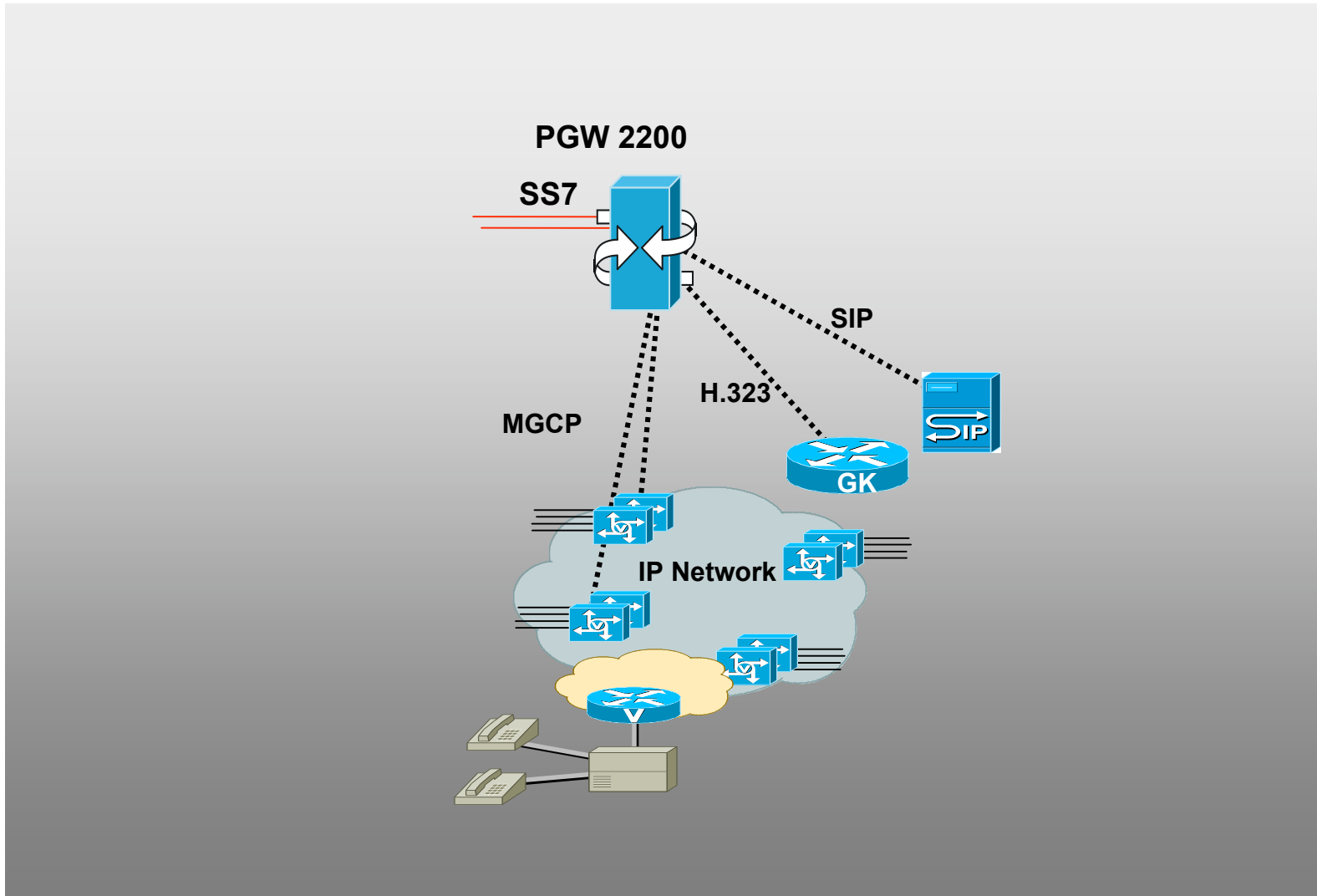
BoF Agenda

- **Introduction**

- **History Voice (H.323, MGCP, SIP, Softswitches IMS …)**

- **SP Architectures**

Overall Voice Architecture

Dial Offload

PSTN Gateway

Data Network

PGW 2200

PGW 2200

PSTN

Transit/Tandem

AS5X00/UP
MGX 8850

AS5X00/UP

MGX 8850

MGX8850

PSTN

IP Network

Cisco BTS
Local Services Call Agent

VoCable /VoETTx

PBX

H.323 Gatekeeper

SIP Proxy (IMS)

IP Phone

GK

SIP

Voice CPE

Cisco AVVID
Architecture for Voice, Video and Integrated Data

Call Manager

Residential & Business Access

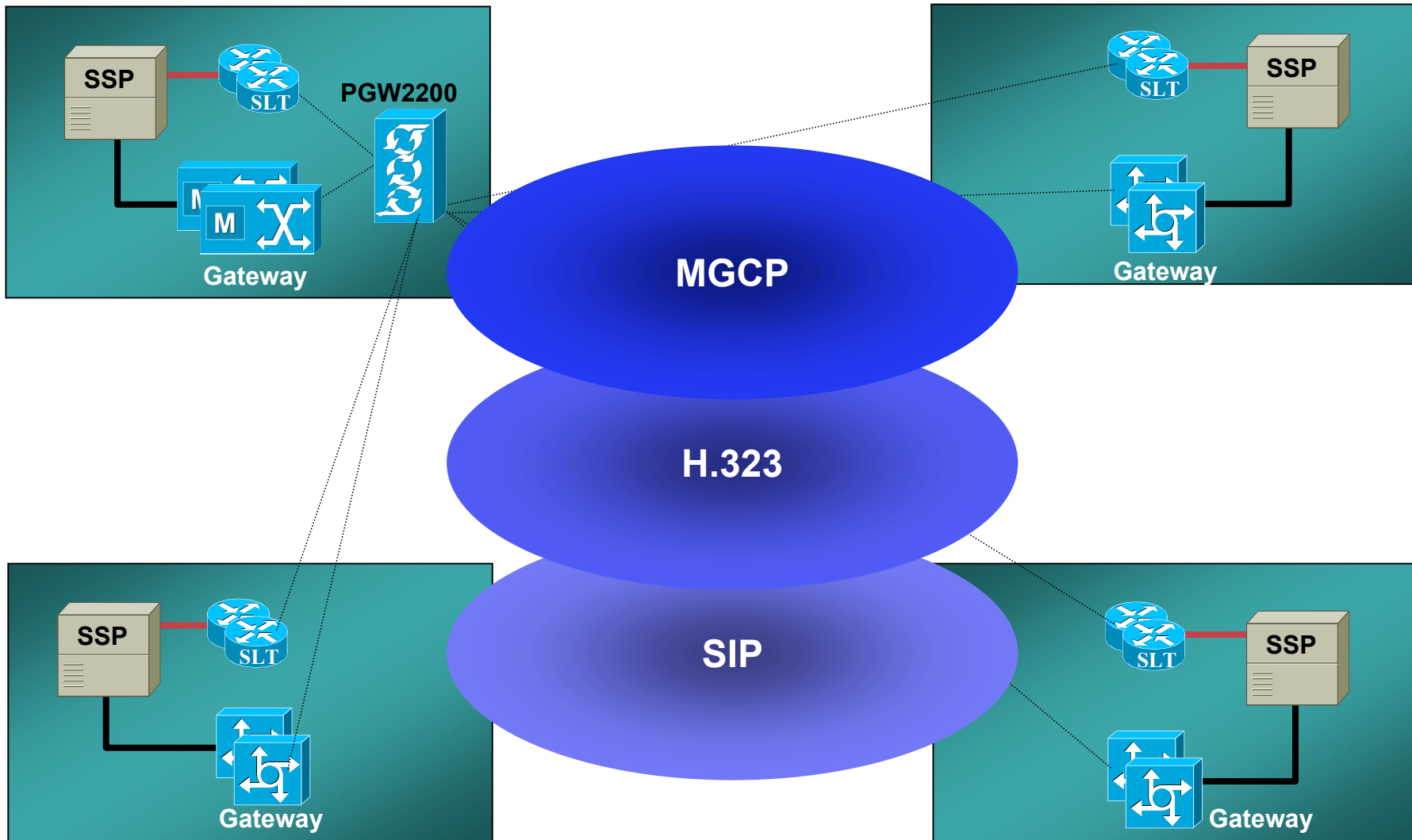**Business & Residential Access**

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LDI High Level Architecture

PGW2200 Protocols

5

Customer Snapshot
China Unicom – World Largest VoIP Network

Cisco.com

- **Services**
  - **Calling Card**
    - **Post-paid**
    - **Pre-paid re-chargeable**
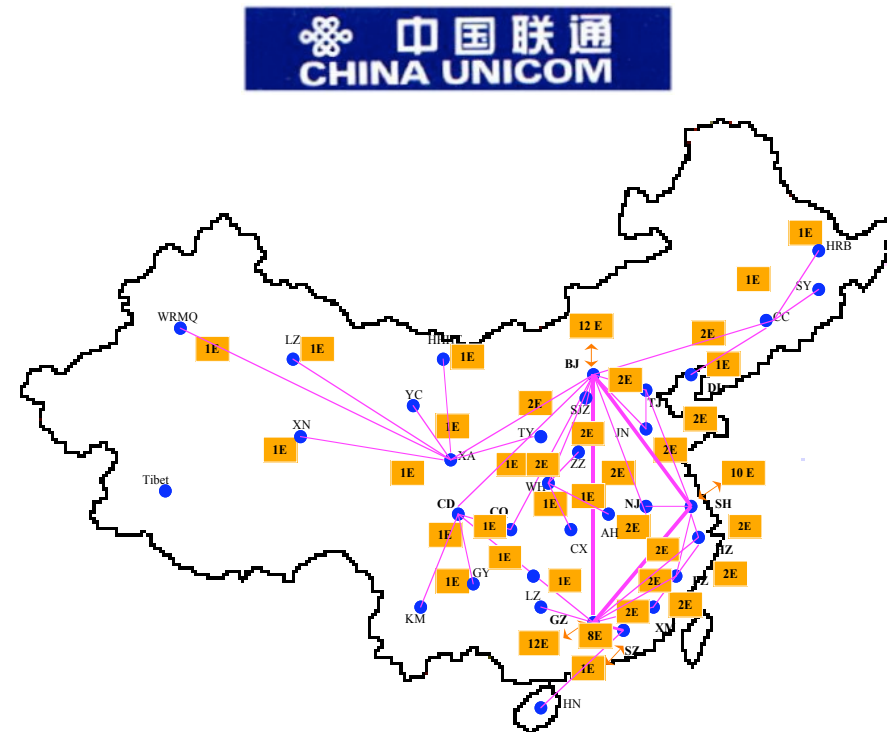   - **Pre-paid non re-chargeable**
  - **Single stage dialing:**
    - **National & International Transit**
- **Scalability**
  - **Directory gatekeeper technology**
- **Extensibility**
  - **Foundation for move into residential broadband telephony**

350 Cities
20,000 E1 Capacity
700M Minutes per Month

Telecom Italia:
FINANCIAL TIMES Wednesday

Rolling out the future

In Italy much of the voice traffic has joined data through the same network. Ben Hunt reports on Telecom Italia's venture

[newspaper article body text, illegible]

'Operating costs will decline by 20 per cent in the next year'

Telecom Italia takes Europe's biggest step in Voice over IP with Cisco Systems and Italtel

(…….)

100% of Telecom Italia's national Rome-Milan voice calls and 50% of its international European voice calls now run over a converged "VoIP/MPLS" network

"*We chose VoIP because we could save two thirds of our transit operating expenses and give our customers and shareholders a better service. By the end of 2003, we estimate that 80% of Telecom Italia's transit voice traffic will travel over the Cisco Systems and Italtel Multiservice solution. We chose Cisco Systems and Italtel because they had the most reliable solution. Cisco Systems has more experience in IP technology and VoIP than any other infrastructure company and the partnership with Italtel provides additional expertise in the switching carrier environment*"

**said Stefano Pileri,
head of Telecom Italia's domestic network**

Additional Services
Business & Residential

Managed & Hosted IP Telephony

- ## What is M-IPT & H-IPT

    Ability to provide "fully managed" Telephony service, and much more, tailored to Business customers by Service Providers

- ## Highly flexible Architecture

    Call Control: On-premises or Centralized Hosted

    PSTN Interconnection: Centralized or On-premises

    …….

Managed & Hosted IP Telephony

- **What are the requirements for for such a service?**

    Line Side Call Control

    Interface to Legacy equipment (such as PBX, Voicemail)

    Dial plan Management

    Interface to the PSTN/PLMN

    Billing

    Customer Premises Equipment e.g. Analog or IP Phones

- **IP Network**

Managed & Hosted IP Telephony

- ## What else do you need to cater for?

  Quality of Service (SLAs) – not just component level, must be end-to-end!

  Resiliency *(Voice products: Remote Site Telephony; IP Network: Dial backup)*

  Security (Enterprise & your network!)

  IP Addressing

Managed & Hosted IP Telephony

- **Ability to add enhanced (Value Add) services**

   Data Services on IP Phones,

   International VoIP,

   VoIP over VPNs (VoVPN),

   IP Contact Centers,

   Unified Messaging,

   Video,

   ……

Managed Hosted IP Telephony configuration

SP Hosted Infrastructure

SP Hosted Service

Access

CPE Sites

Central LDAP

Central Voicemail

PGW-2200

IOS Gatekeepers

Call Manager Cluster

SS7 Signaling

GK

MGCP

TDM Voice

PIX Firewall

AS5XX0 or MGX-8850 w VISM

Cat6X00

MTP and Conf. Bridge

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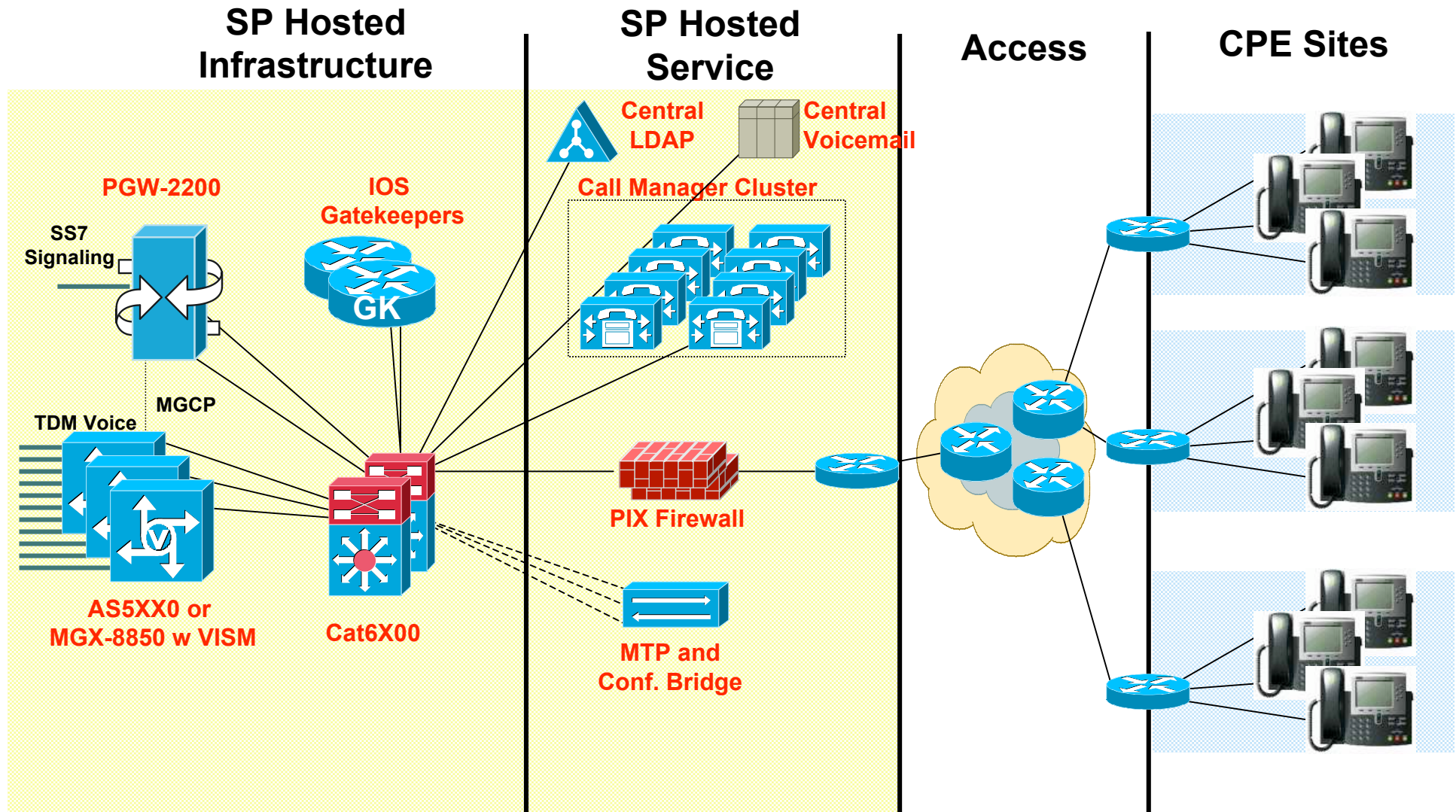
Managed IP Telephony with ITS configuration

SP Hosted Infrastructure

Access

CPE Sites

PGW-2200

SS7 Signaling

Gatekeepers

GK

MGCP

TDM Voice

PIX Firewall

Access Router

AS5XX0 or MGX-8850 w VISM

Cat6X00

(optional) PSTN

ITS

Voicemail

(optional) PSTN

ITS

Voicemail
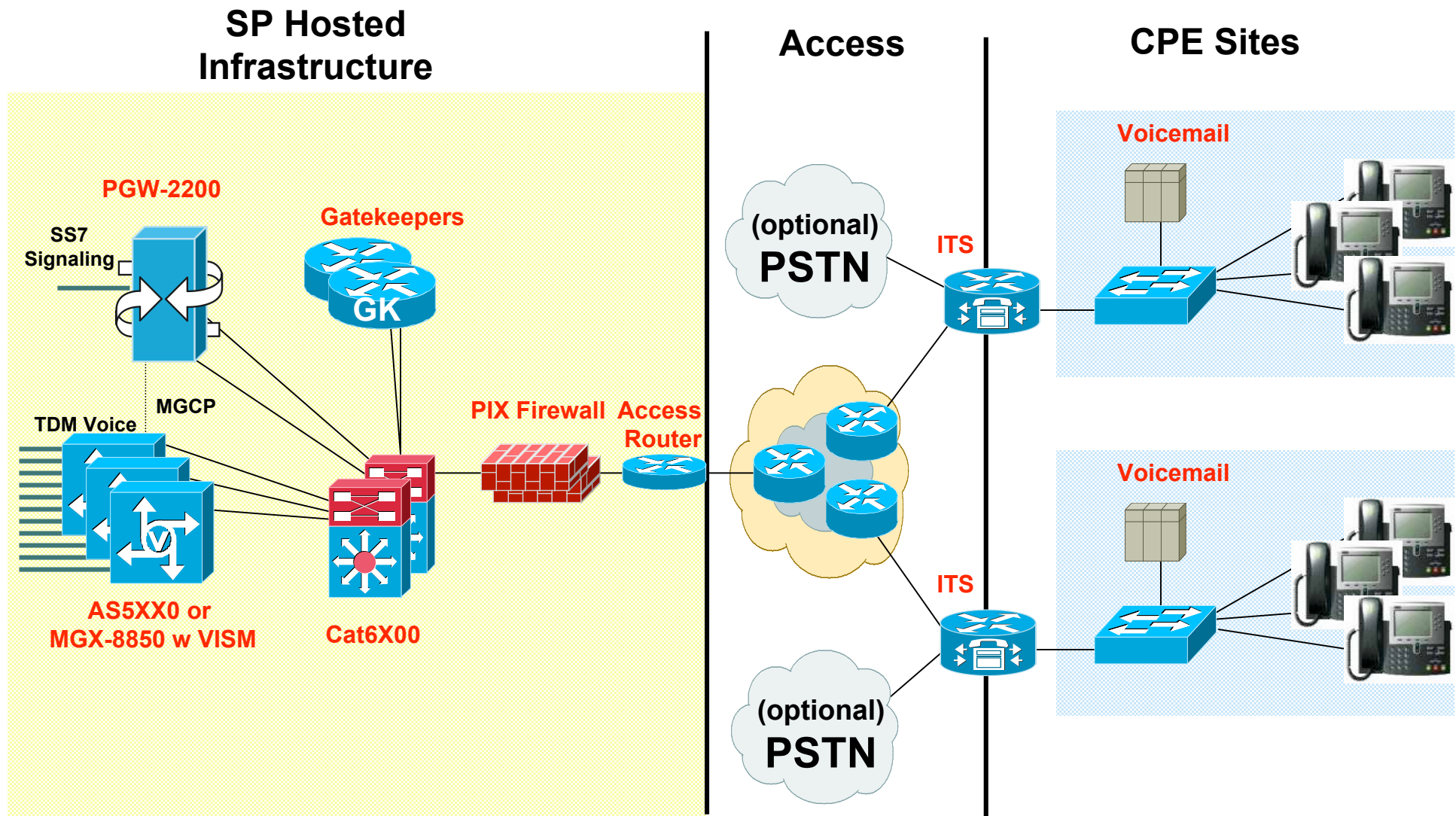
Cable Telephony Solution – Time Warner Cable

- **TWC went in service in March 2003**

- **Supplementary Services (CFx, CW etc) for Analog subscribers**

- **Service is $39.95 per month and includes unlimited calls in US**

CableLabs qualified

Customer **PoP** **Super PoP**

Subscriber A — Cable Modem — **uBR7246**

Subscriber B — Cable Modem — **uBR10012**

HFC Plant — **DS-3, OC-3, OC-12** — **Core Router**

Subscriber C — Cable Modem

Subscriber D — Cable Modem — **uBR7200VXR**

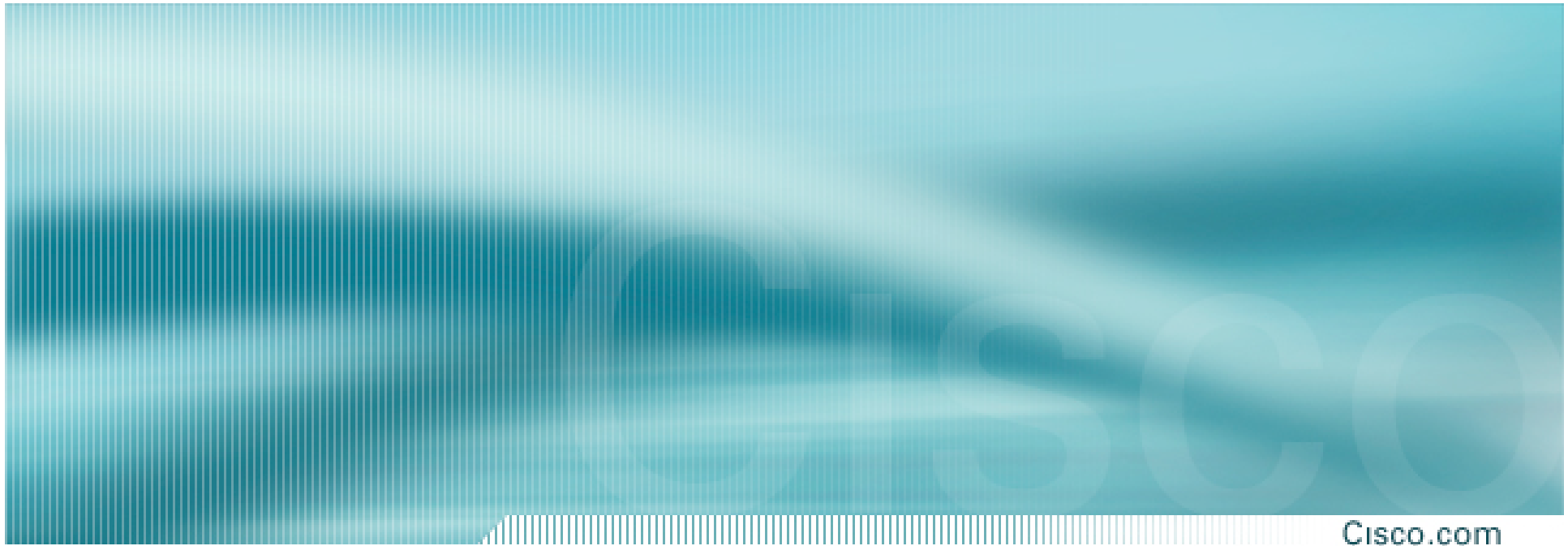**BTS Softswitch**

Other Networks

SS7 A Link Router — **SS7**

Internet

Multi-Layer Switch (MGX)

MGX VSM

IMT — **PSTN**

Switch

3660 — **AS5x00** — **MF, FGD**

Voice Mail/ UM Server   Annc Server   CALEA Server

MF, FGD — **911 AT**

Feature Servers

OPS

http://www.linerunnermaine.com/index.cgi

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IMS

Evolution, not Revolution

- **Various customers have different network strategies**

- **Tomorrow's network is IMS**

- **Graceful evolution from existing networks (e.g. PacketCable) to IMS is essential**

    - Leverage existing investment to reduce equipment costs

    - Subscriber experience

    - Leverage existing expertise to reduce operating costs

- **SP Architectures**

Converged Multimedia IP Communications Services