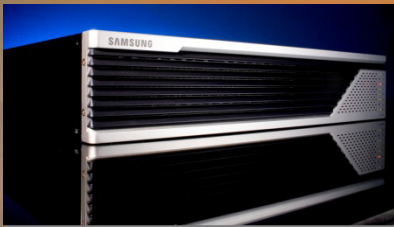


# Samsung Ubigate Solution



# Samsung Ubigate Solution

## Samsung : The Convergence Leader in the Next Generation Network

### Samsung Difference

- Indisputable Financial Status
- Successful Pioneering History
- Leading R&D Investment



### Consumer

- Set-top-box
- Mobile



### Enterprise

- Ubigate
- IP-PBX
- Femto cell



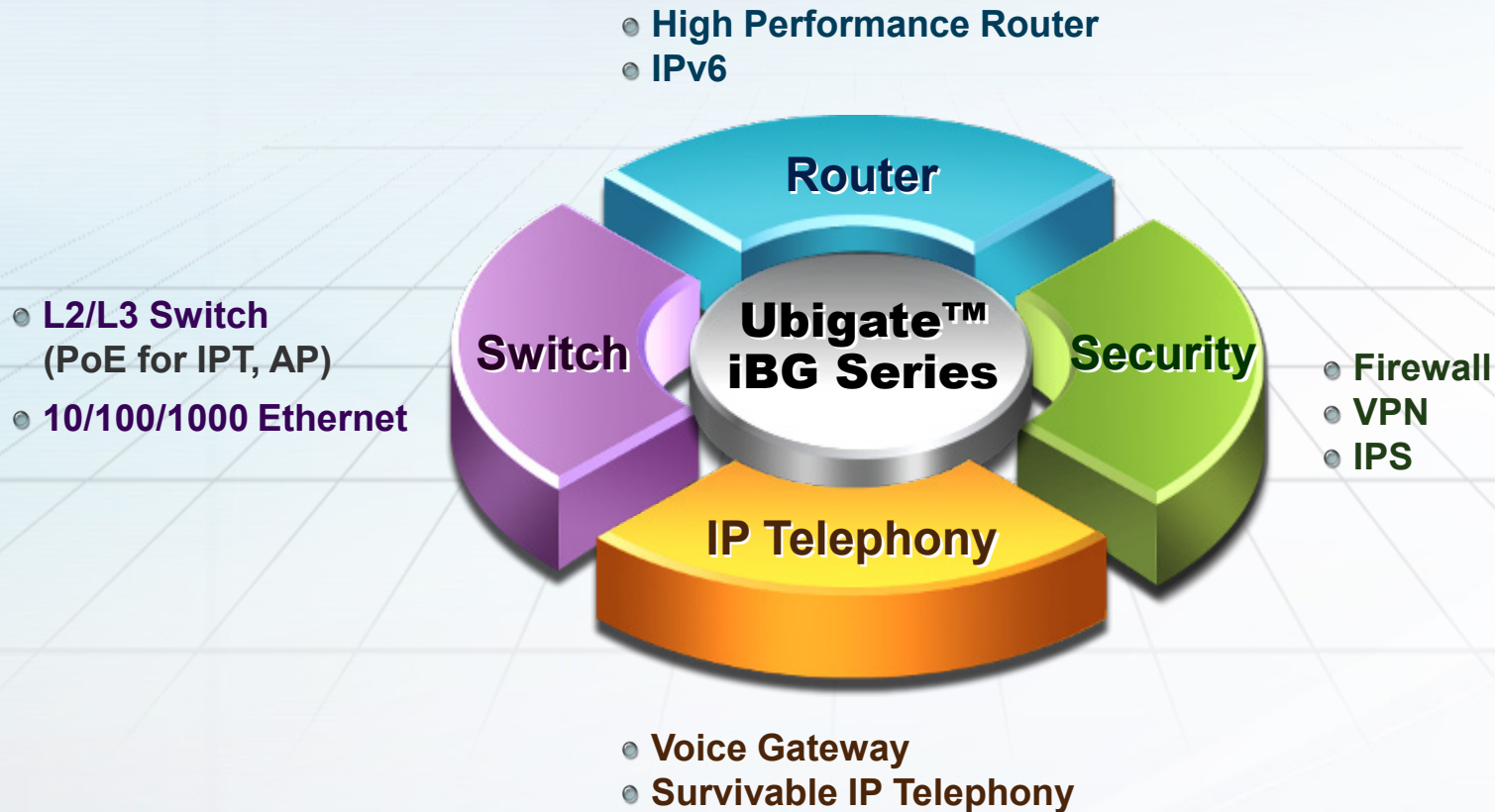
### Service Provider

- Softswitch
- PDSN
- WiMax
- Mobile System



**IP Technology**

# High-Level Architecture



Integrated

Multi-Services

Security

Voice

Switch





Router



# Portfolio & Features Quick Reference

SAMSUNG

Company Product Solutions Service & Support

	iBG1000	iBG1003	iBG2006	iBG2016
Form Factor	Desktop/Wall Mount 	Desktop/Rackmount 	1U 	1U 
Interface Slot	None	1 Mini Module 1 Internal	4 Mini Module, 2 internal	1 Network Module, 4 Mini Module, 2 internal
Performance	150 Kpps	150 Kpps	150 Kpps	300 Kpps
Built-in Ethernet	2 UTP	2 UTP	FE(4 UTP + 1 SFP)	FE(4 UTP + 1 SFP)
WAN ports	4 T1/E1	4 T1/E1	Max 4 T1/E1	Max 10 T1/E1
LAN ports	Built-in only	Built-in only	Max 16 FE	Max 20 GbE or 20 PoE
Analog Voice/PRI/SIP	None	4/8/16 FXS or 2 PRI	Max 16 FXS, 8 PRI	Max 40 FXS, 12 PRI
Security	Stateful FW, IPSec VPN	Stateful FW, IPSec VPN	Stateful FW, IPSec VPN	Stateful FW, IPSec VPN
High Availability	VRRP	VRRP	DDR , VRRP	Fan, Power supply, DDR, VRRP

# iBG1003

# Ubigate iBG1003 Overview

## Product Type

- T1/E1 WAN access router (CPE) with SIP trunk gateway

## Positioning

- WAN access router (CPE) with SIP trunk gateway for enterprise branch offices and remote sites



## Product Description

- Very high performance
  - 150Kpps (cf. Cisco 1841 75Kpps, 2801 90Kpps)
- Scalable Bandwidth
  - Efficient multi-link bonding up to 4 T1(6Mbps) or 4 E1(8Mbps)
- Voice Ready
  - Survivability and PSTN Fallback
  - Up to 16FXS, 2 FXO, 2 T1/E1 PRI stuffing options for SIP Trunking Services
  - VQM (Voice Quality Monitoring) feature
  - Internal IP-PBX option (future) for Managed IP-PBX Service
- Extensive QoS capabilities
  - Auto QoS, FR PVC Priority Queuing, CBQ, Bandwidth Guarantee, etc.
- Robust Security Features
  - TLS, sRTP, Stateful Firewall, DoS Protection, Policy based NAT, H/W accelerated IPSec VPN

## Management

- Cisco like CLI, Web-GUI

# Interface Types – iBG1003

## Ubigate™ iBG1003

### Internal option module (Planned)

- Internal IP-PBX
- VMS/ACD/IVR/Conference

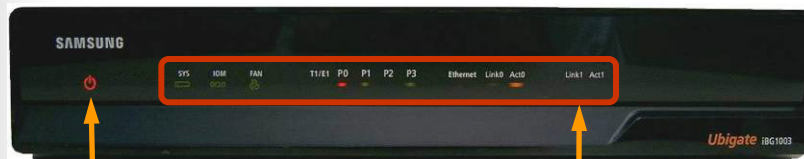
### Mini option module

- ADSL2+ (2009.09)
- 4 port Ethernet (Planned)

### Stuffing module

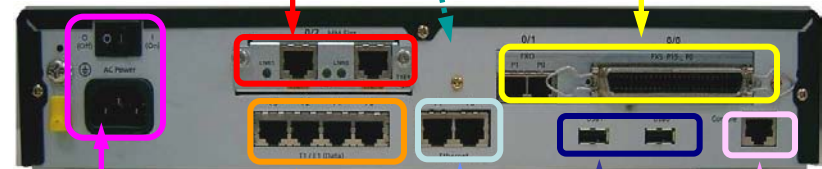
- 4FXS + 2FXO (2009.11)
- 8FXS + 2FXO (Now)
- 16FXS + 2FXO (2009.09)
- 2T1/E1 PRI + 2FXO (Now)
- 2T1/E1 PRI + 4FXS (2009.11)

### Front View



LED  
• Power

LEDs  
• System / Ports Status



Power

4T1/E1

2 FE

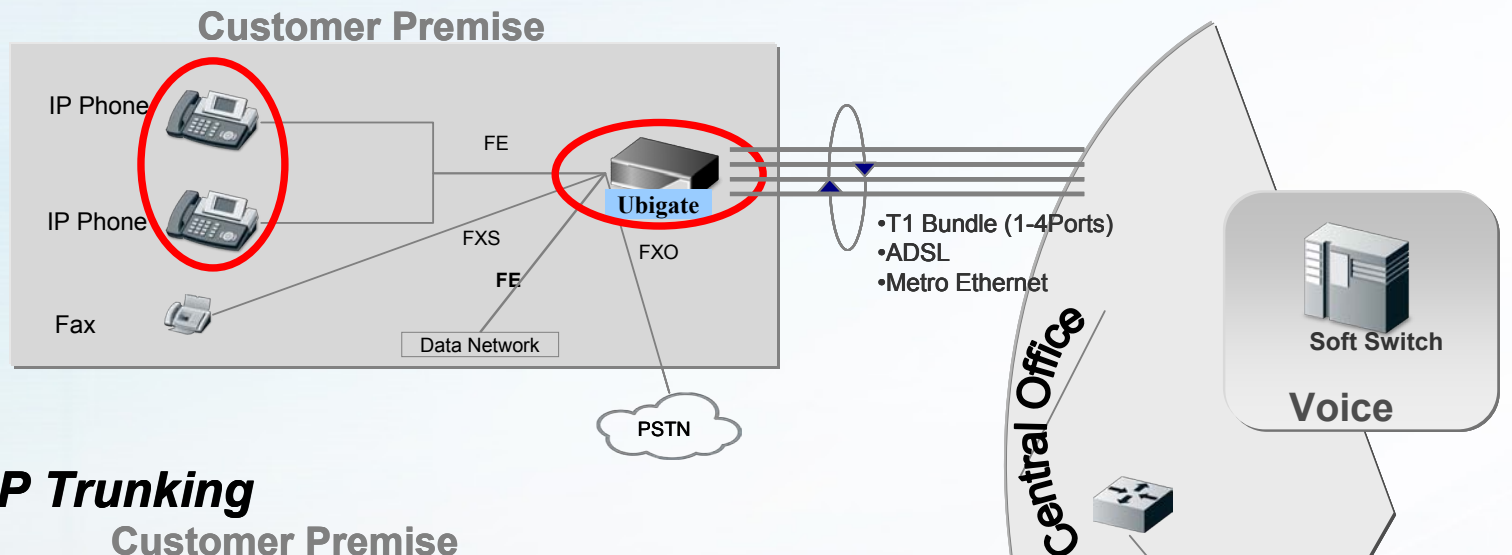
2 USB

Console

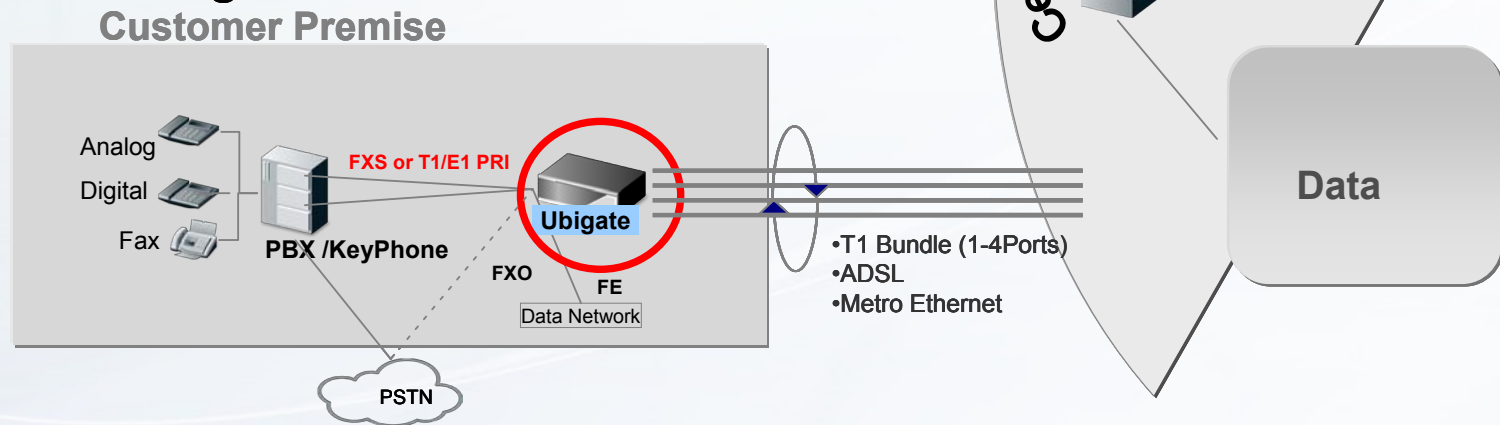


# iBG1003 Deployment Scenarios

## Hosted Voice



## SIP Trunking



# Competitive Comparison

Vendor	Cisco	Adtran	Samsung
Model	IAD 2431	TotalAccess 900E	Ubigate iBG1003
Form Factor	1 RU	1 RU	Desktop
Processor	R527x 225MHz		MPC8360E 400MHz
Memory	64M~128M	128M	512M ~ 1G
Slots	1 slot (WAN, FXS, FXO)	None	1 slot (LAN switch, ADSL2+)
Performance	-		150 Kpps
WAN Interface	Option (ADSL, T1, E1, Serial)	4T1/E1 (2 shared with voice PRI), ADSL2+ (Option)	4 T1/E1 (Standard), ADSL2+ (Option)
Onboard FE port	2 FE	2 FE	2 FE
Routing	RIP, OSPF	RIP, OSPF, BGP	RIP, OSPF, BGP
Voice Interfaces	2431-8FXS : 8FXS 2431-16FXS : 16FXS 2431-T1E1 : 1Digital voice	908E : 8FXS, 1FXO, 2 Digital Voice (shared with data wan) 916E : 16FXS, 1FXO, 2 Digital Voice (shared with data wan)	iBG1003/A4 : 4FXS, 2FXO iBG1003/A8 : 8FXS, 2FXO iBG1003/AG : 16FXS, 2FXO iBG1003/D2 : 2Digital Voice, 2FXO iBG1003/D4 : 2Digital Voice, 4FXS
IP-PBX and Apps.	Option (Call Manager Express, 24User)	No PBX Basic call features (call waiting, call transfer, etc)	Option (ICM)*, VMS/IVR/ACD*, Basic call features (call waiting, call transfer, etc)
Voice Quality Monitoring		Voice Quality Monitoring	Voice Quality Monitoring
DSP channels	24	48	64
Firewall / Performance	Option (FW, NAT Feature License) / -	Standard	Yes 200Mbps
VPN / Performance	Option, / -	Option	Yes 80 Mbps

# SIP Features Supported

SIP features	Description
Dynamic SIP client registration table	Allow hosted SIP phones to reside behind the ALG device without having to configure each user in the device config
Traffic Shaping	QoS
Call Admission Control (CAC)	Limit the number of active calls
SIP Proxy	Basic Proxy mode, Multi-homed Outbound Proxy mode, Transparent Proxy mode
SIP Server Redundancy (via SRV records)	Failover timer adjustment, Fail back timer adjustment, Interpret error code as success
Register Rate Pacing (ability to allow the device to manipulate the endpoints registration rate)	SIP Expires override, SIP server expires override, SIP Register pacing
QoS / Packet marking (IP Prec / DSCP)	
SIP Inactivity Monitor	Monitor RTP activity and tear down calls if there's no RTP traffic in either direction
Ability to change SIP server port	
Stale timer	Delete SIP clients that have not registered within a given time period
Ability to view and download SIP signaling	TCP Dump/Debug ability
VoIP Survivability	ability to make ext to ext calls in event of WAN link failure, PSTN failover option
SIP Keepalive	via OPTIONS pings
Call Quality Statistics	Voice Quality Monitoring
TOS Byte Stripping	Packet header remarking
TOS Based Routing	PBR (Policy Based Routing)

- **Broadworks-Certified**
  - Interoperability usage guide available
- **Interoperability Test with Legacy PBX**

Company	PBX	Protocol
Samsung	IDCS500	PRI(ETSI), E&M
	OfficeServ7200	PRI(ETSI), E&M
	IAP	PRI(ETSI), E&M
	Inforex-M150	PRI(ETSI), E&M
LG	Starex-LDI/ACS/ARIEL/IDS	PRI(ETSI)
IBM	IBM PBX	E1 CAS
Avaya	G650	PRI(ETSI,NI,DMS,5ESS,)
Lucent	Excel	PRI(ETSI)
	5ESS switch	PRI(ETSI)BRI(ETSI),FXO,DID
Siemens	EWSD, Hicom-300E	PRI(ETSI),BRI(ETSI),FXO
Nortel	Meridian	PRI (DMS250)

# Routing Feature Set

		Features
<b>Routing</b>	<b>WAN Protocols</b>	HDLC, FR/MLFR, PPP/MLPPP, FR Congestion Management and Traffic Policing PPP over Ethernet, PPP over FR, MLPPP over FR, PPP over MFR
	<b>Layer 2 Protocols</b>	VLAN(802.1q), 32 VLANs Multiple STP (Support Backward Compatibility with STP & RSTP) VLAN trunking, access and hybrid mode support, SVI support
	<b>Routing Protocols</b>	Static Routing, BGP, OSPF v1/v2, RIP v1/v2, IGMP v1/v2 /v3 Policy-Based Forwarding/Routing, PIM-SM, DVMRP, PIM-SSM, VRRP
	<b>QoS</b>	DiffServ Classification (MF, Flow Label) - Marker/Meter (srTCM/trTCM) - Policing/Shaping - Queuing (CBQ, PQ) - Congestion Avoidance (WRED) Bandwidth Guarantee, Auto QoS LF&I Mapping of IP QoS to Frame Relay Inter PVC QoS
	<b>AAA</b>	RADIUS, TACACS+
	<b>Load Balancing</b>	Per Flow (ECMP) Per Packet
	<b>Management</b>	SNMP v1/v2/v3, CLI, Telnet, SNMP, TFTP, DHCP SSHv2 Web-based Device Manager, MIBs Logging, Diagnostic



		Features
<b>Security</b>	<b>Firewall</b>	<ul style="list-style-type: none"> <li>• Stateful Packet Inspection</li> <li>• NAT (Static, Dynamic, PAT)</li> <li>• SIP ALG</li> <li>• Application Content filtering                             <ul style="list-style-type: none"> <li>– Block Java based on extension</li> <li>– Block URLs based on file extensions</li> <li>– Block ActiveX based on file extensions</li> <li>– FTP's protocol command Filtering</li> <li>– SMTP's protocol command Filtering</li> </ul> </li> <li>• Cyber Defense Engine                             <ul style="list-style-type: none"> <li>– Dos/DDoS, IP Spoofing, IP/TCP fragment attack protection (Protection for 60+ attacks)</li> </ul> </li> <li>▪ Traffic Scheduling</li> <li>▪ URL Filtering</li> <li>• Rate limiting                             <ol style="list-style-type: none"> <li>1.Maximum connections per policy basis</li> <li>2.Connection creation rate per policy basis</li> <li>3.Bandwidth per policy basis</li> </ol> </li> </ul>
	<b>VPN</b>	<ul style="list-style-type: none"> <li>• Hardware Acceleration Engine</li> <li>• IPSec for Site to Site, Remote Access</li> <li>• IPSec                             <ul style="list-style-type: none"> <li>– Protocols : ESP, AH, ESP with AH</li> <li>– Encryption : DES-CBC, 3DES-CBC, AES-CBC(128, 192, 256)</li> <li>– Hashing : HMAC-SHA1, HMAC-MD5</li> <li>– Modes : Tunnel, Transport, Config Mode</li> </ul> </li> <li>• IKE                             <ul style="list-style-type: none"> <li>– Authentication : Preshared, RSA/DSA Signatures, Xauth</li> <li>– Modes : Main, Aggressive, Quick</li> <li>– Diffie-Hellman Group : Group 1(MODP 768), 2(MODP 1024), 5(MODP 1536)</li> <li>– Encryption : DES, 3DES, AES(128,192,256)</li> <li>– Hash : SHA1, MD5</li> </ul> </li> <li>• L2TP, GRE</li> <li>• PKI Support (SCEP, Manual, CRL, OCSP)</li> <li>• IPSec NAT Traversal</li> </ul>

Category	Features	
<b>System Interface and Signaling</b>	<ul style="list-style-type: none"> <li>▪ Analog FXS, FXO, DID</li> <li>▪ T1-CAS E&amp;M, FXO, FXS</li> <li>▪ E1-CAS R2 MFC/DTMF</li> <li>▪ T1/E1 ISDN PRI Q.931</li> <li>▪ T1 R1</li> <li>▪ CAMA Trunk</li> </ul>	
<b>System Features</b>	<ul style="list-style-type: none"> <li>▪ PSTN Fallback, Survivable Telephony (WAN link failure case, SS Redundancy for IP Phones ..)</li> <li>▪ Call Admission Control</li> <li>▪ FAX over IP (T.38, Pass-through)</li> <li>▪ Distinctive dial tone, Distinctive ring</li> <li>▪ Number Analysis and Routing</li> <li>▪ Local Voice Busy Out</li> <li>▪ DTMF Signaling over IP (RFC2833)</li> <li>▪ Early Media Handling</li> </ul>	<ul style="list-style-type: none"> <li>▪ PLAR</li> <li>▪ Audible/Visible MWI for Analog Phone</li> <li>▪ CDR: Generation, Storing for Survivability Telephony</li> <li>▪ Hunt Group (sequential, Round Robin, Random, Longest idle, Parallel)</li> <li>▪ Time-based Service (time-of-day, day-of-week)</li> <li>▪ Station Group</li> <li>▪ Trunk Group</li> </ul>
<b>Supplementary Services/Survivable Telephony</b>	<ul style="list-style-type: none"> <li>▪ Caller ID/Name, , Call Hold/Retrieve, MoH/ToH, Call Forwarding, Call Pickup, Call Transfer, Call Waiting, Incoming Call Blocking, N-way Ad-hoc Conference, Three-way calling, Simple Meet-me Conference, Call Park/retrieve, Follow-me, DND, Last Number Redial, Call Return</li> <li>▪ SIP Survivability controller, <b>SIP Proxy (stateless proxy)</b>, SIP B2BUA, SIP Registrar</li> </ul>	
<b>Protocols</b>	<ul style="list-style-type: none"> <li>▪ SIP, H.323, RTP/RTCP, TLS, sRTP, IPSec</li> <li>▪ VoIP (SIP, H.323, RTP)</li> <li>▪ HTTP Digest Authentication</li> <li>▪ RADIUS (CDR)</li> </ul>	
<b>DSP Features</b>	<ul style="list-style-type: none"> <li>▪ Codec: G.711, G723.1, G.726, G.729 a/b</li> <li>▪ Echo Cancellation (G.168-2002)</li> <li>▪ Comfort Noise Generation</li> <li>▪ Voice Activity Detection</li> <li>▪ Tone – MF/DTMF, Dial, Ringback, Busy, Congestion, Wait, Hold, Progressing, Howling, Programmable, etc.</li> </ul>	

- **Ubigate iBG1003 is a perfect fit for SIP trunking**
  - Customers with existing Keyphones/PBX/Analog Phones
  - Ubigate performs IAD & CPE functions
  - Configurable FXS/FXO/T1-PRI interfaces
- **Ubigate iBG1003 is a perfect fit for Hosted VoIP**
  - SIP server redundancy using SIP proxy
  - Feature-rich Router/Firewall/SIP-ALG
  - FXS for FAX
  - FXO for Emergency Calling and PSTN Fallback
  - Voice Quality Monitoring

## ○ **iBG1000/1003 Specific Documents**

- iBG1000\_InstallationManual, iBG1003\_InstallationManual
- iBG1000\_QuickStartGuide, iBG1003\_QuickStartGuide
- iBG1000\_System\_Description, iBG1003\_System\_Description

## ○ **Common Documents**

- iBG\_CommandReference
- IBG\_MessageReference
- IBG\_TroubleShootingManual
- iBG\_ConfigurationGuide

Latest manuals are available at

<http://manual.network.sec.co.kr:7001/ems/eManual.ez?cmd=product&parentId=0000000000002&productId=000000003803&depth=2>

# Thank You



# iBG1000

# Ubigate iBG1000

SAMSUNG

Company

Product

Solutions

Service & Support



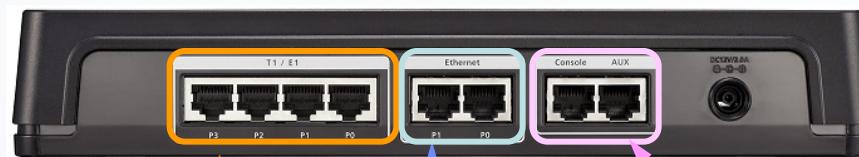
Front View



**LEDs**  
• System / Ports Status

**LED**  
• Power

Rear View



**4 T1/E1**

**2 10/100 Ethernet**

**Console, Aux**

# Ubigate iBG1000 Overview

## Product Name

- Ubigate iBG1000

## Product Type

- T1/E1 Bonded Router (Up to 4 T1/E1)

## Positioning

- WAN access router (CPE) for enterprise branch offices and remote sites

## Product Description

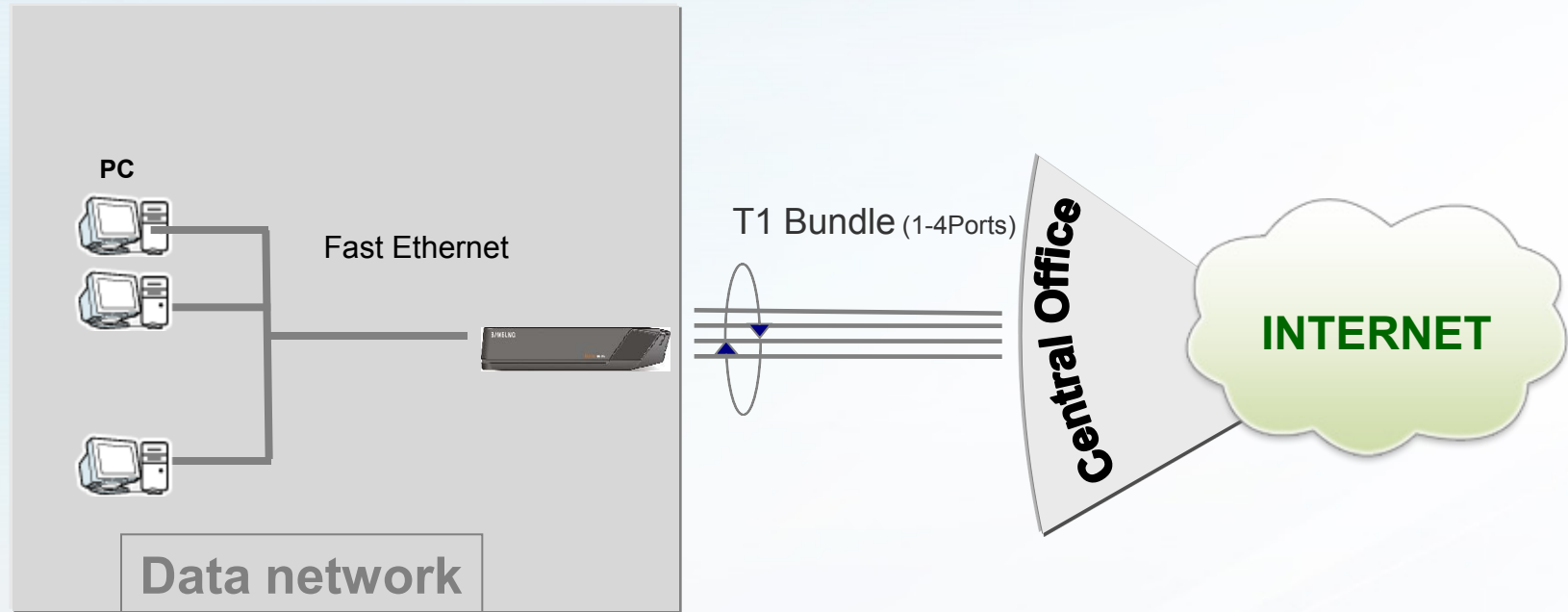
- Very high performance
  - 150Kpps
- Scalable Bandwidth
  - Efficient multi-link bonding up to 4 T1(6Mbps) or 4 E1(8Mbps)
- Extensive QoS capabilities
  - Auto QoS, CBQ, Bandwidth Guarantee, etc.
- Robust Security Features
  - Stateful Firewall, DoS Protection, Policy based NAT, IPSec VPN

## Management

- Cisco like CLI, WEB-GUI

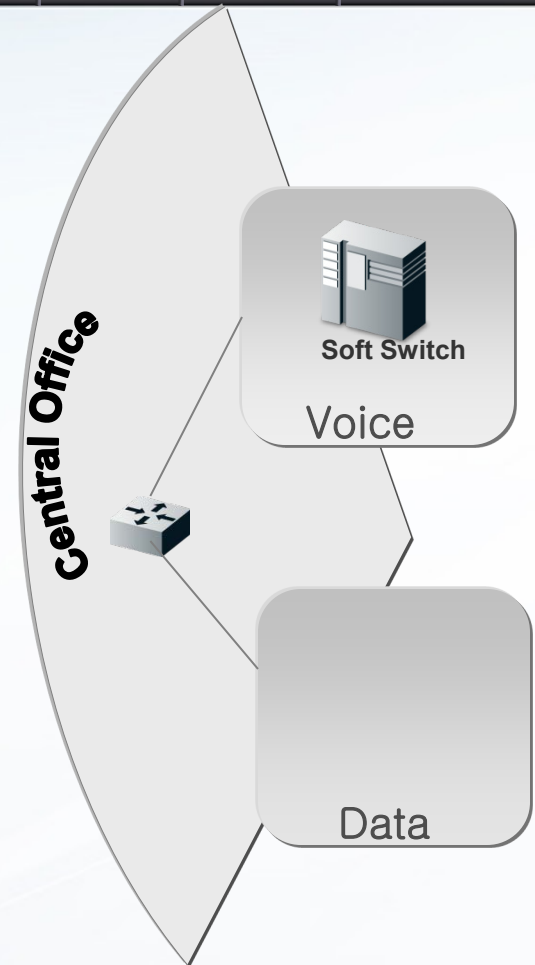
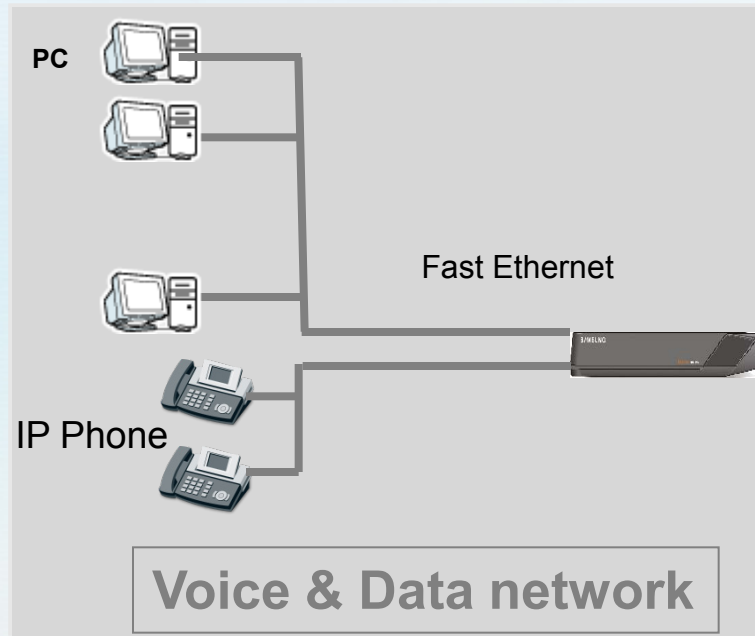


## Customer Premises



# Voice/Data Convergence deployment

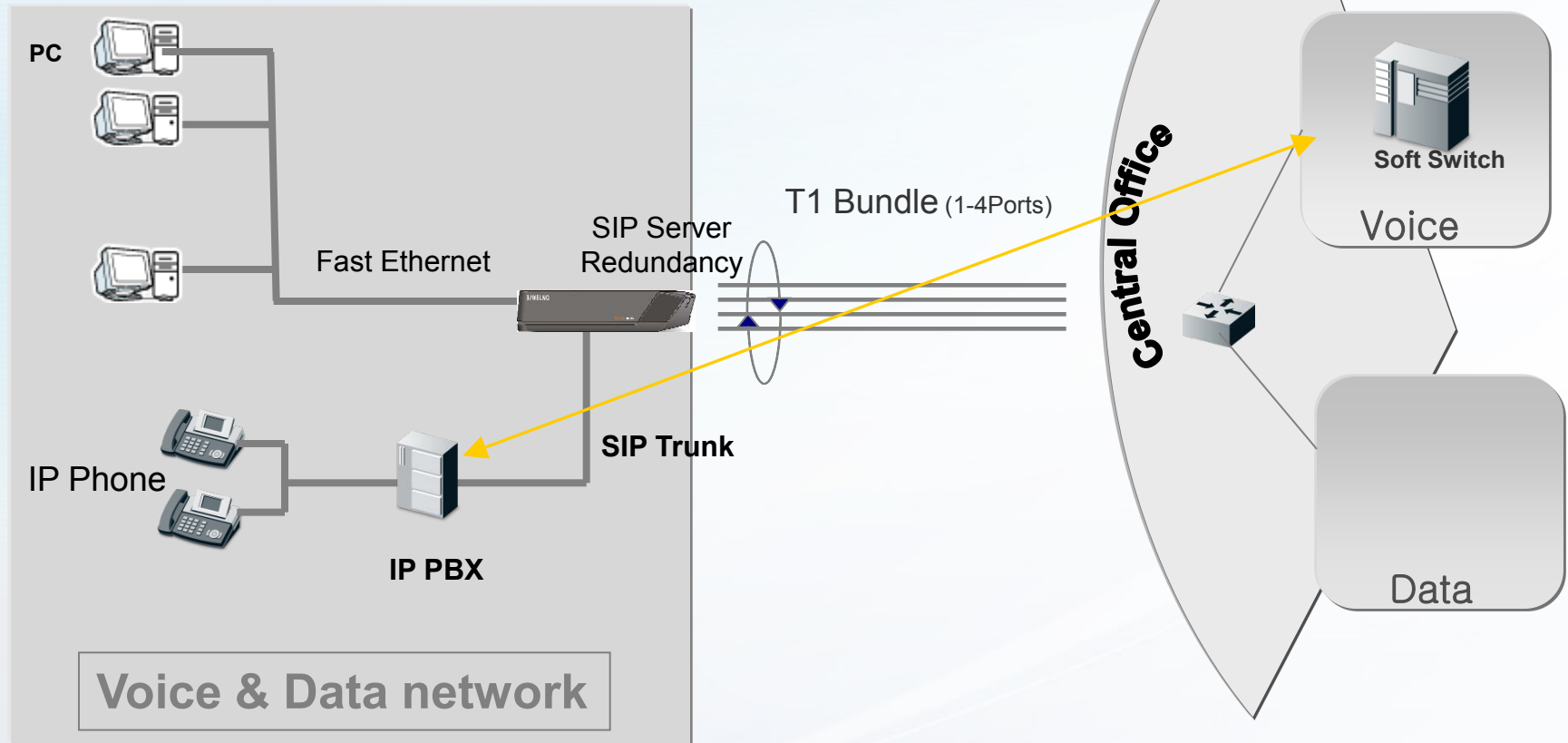
## Customer Premises





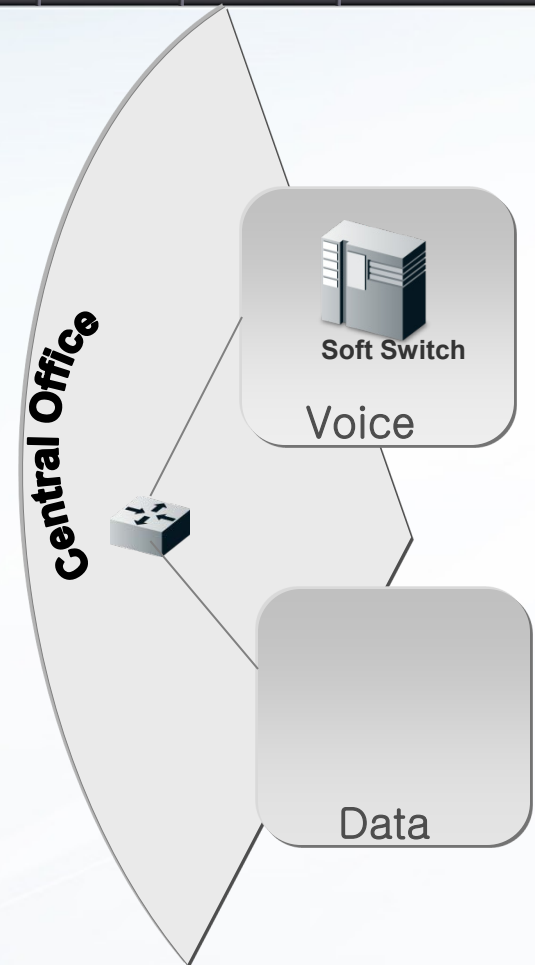
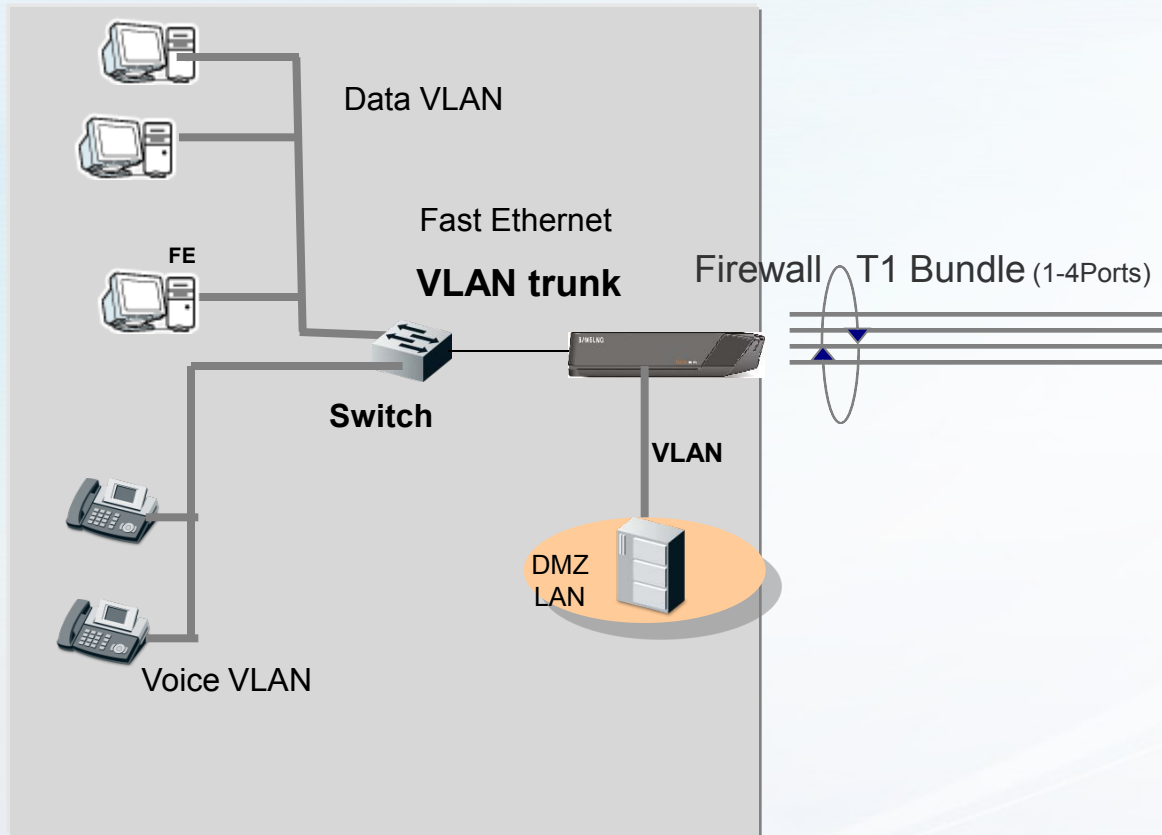
# SIP Trunking

## Customer Premises



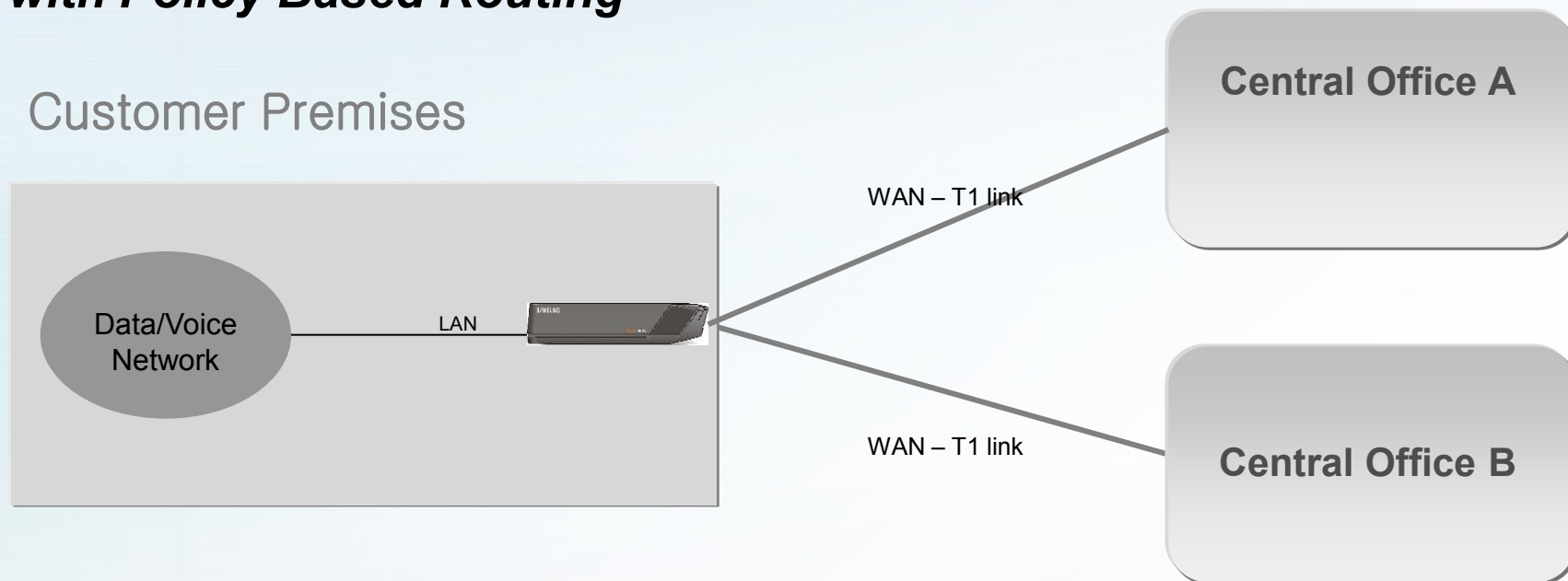
# Firewall & VLAN capabilities

## Customer Premises



## with Policy Based Routing

Customer Premises



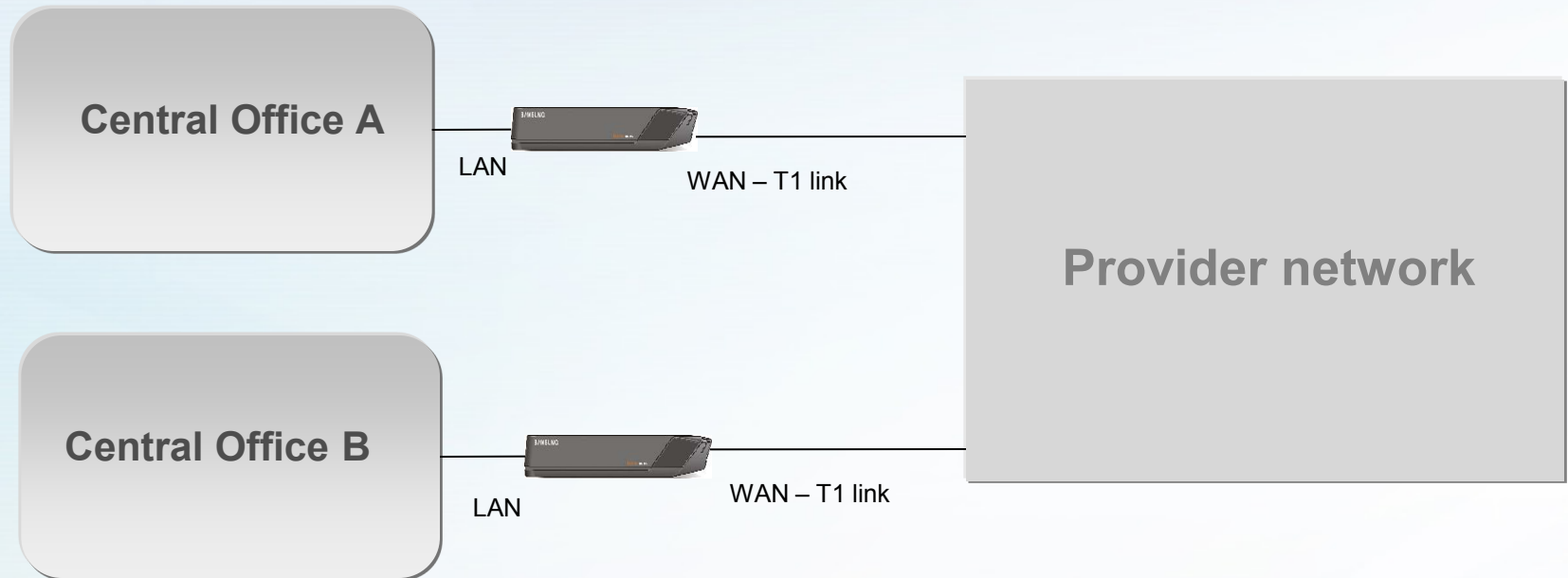
## Policy based routing with load sharing

- Load share traffic on 2 WAN links with fine grained policies
- NAT to avoid routing issues in the provider network

## Automatic failover and recovery

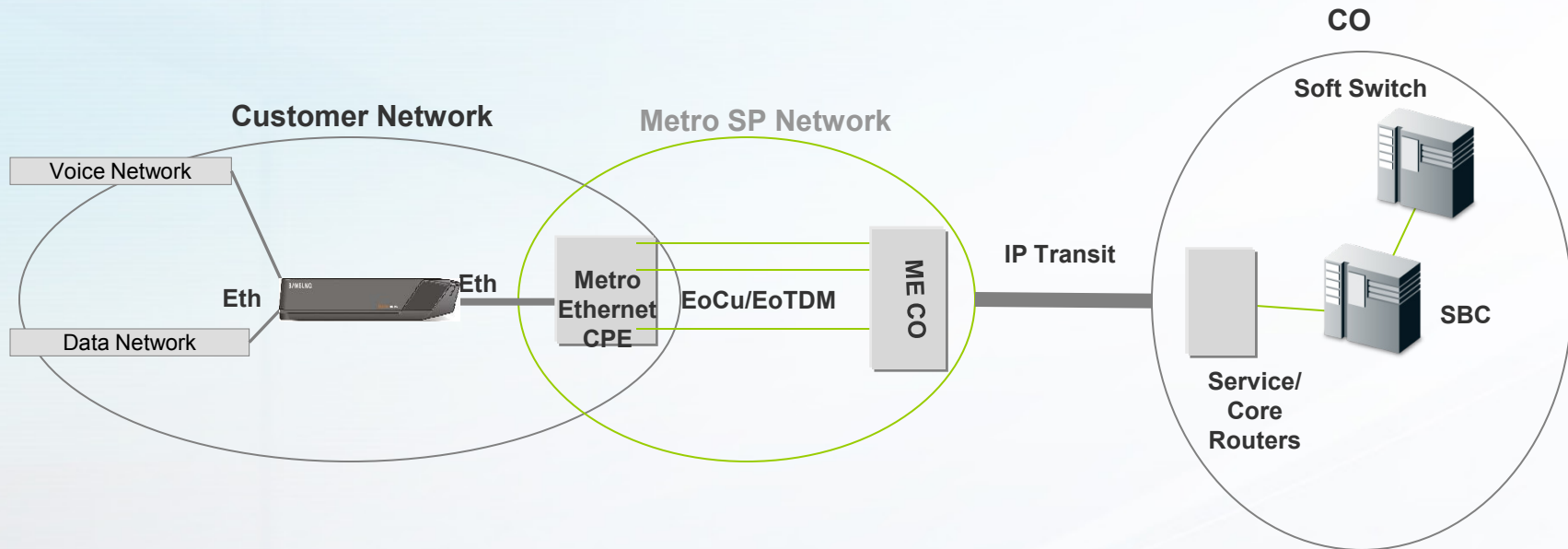
- Automatic rerouting of traffic when link failure happens
- No routing protocols needed

# WAN bridging



- Bridging customer VLANs via WAN

- **Ubigate iBG1000**
  - **Deployed with Metro Ethernet CPE**





## Deployment options

- **Single T1**
  - **PPP over Frame Relay for single T1 deployment**
  - **Frame Relay on single T1**
  
- **T1 Bonding**
  - **ML-PPP over Frame Relay**
  - **Multi-link Frame Relay**
  
- **Voice/Data Convergence**
  - **Inter-PVC Priority Queuing**
  
- **PPP over Multi-link Frame Relay**

# iBG2006/2016



FXO 4 ports



T1/E1 2 Ports



FXS 4 ports



E&M 2 ports



ISDN BRI ST / U 2 ports

## Mini Modules

- **WAN Access** T1/E1(channelized), ISDN BRI/PRI, Serial, ADSL2+
- **IP Telephony** FXS, FXO, E&M, ISDN BRI/PRI
- **LAN** 10/100 Ethernet



## Chassis Fixed

Console/Auxiliary  
USB/Compact Flash  
5 FE(4 UTP + 1 SFP)  
Metro Ethernet

## Internal Card

- **VPN** VPN Accelerator
- **IP Telephony** DSP



DSP 16/32/64/128 Ch



## Chassis Fixed

Console/Auxiliary  
USB/Compact Flash

## Internal Card

- VPN VPN Accelerator
- IP Telephony DSP



Mini Module

Network Module

## WAN Access

T1/E1(fractional)  
ISDN BRI-U, S/T  
Serial

## IP Telephony

FXS, FXO, E&M, DID,  
ISDN BRI-U, S/T

## Switch Option Module

8 GbE UTP +  
2 GbE SFP

## Multi-service Network Modules

### LAN

10/100/1000Mbps Ethernet  
10/100Mbps Ethernet (PoE)

### WAN

T1/E1, T3/E3, HSSI,  
Serial

### IP Telephony

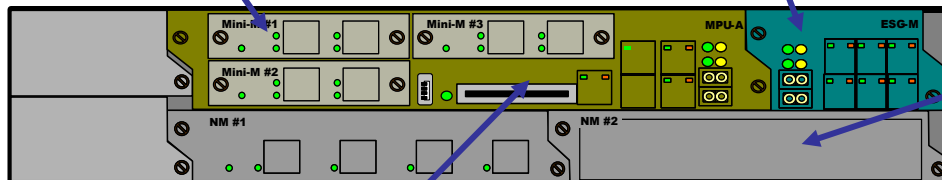
FXS, FXO, E&M, DID,  
ISDN BRI-U, S/T

### Application (Future)

Content Switching (L4~L7)  
Wireless Switching

### Security

VPN, Firewall, Content Filtering



## Chassis Default

Console/Auxiliary  
USB/Compact Flash  
Ethernet Management  
2 GbE UTP and 2 GbE SFP

## Internal Card Slot

### Co-processor

VPN & VoIP G/W