The IP-PBX

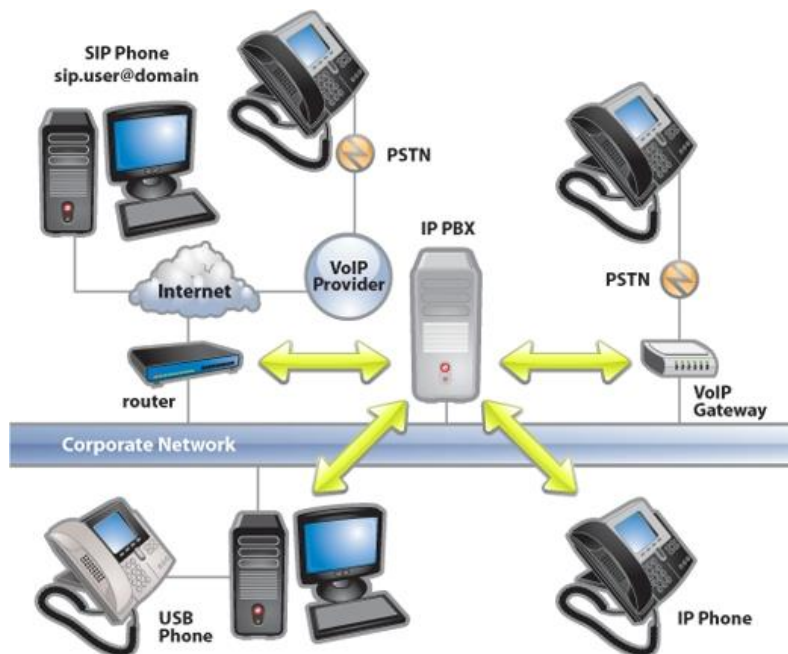**Chris Trittin**
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20%-25%

...of SMBs in the USA use VoIP in 2013

The Analog/Legacy PBX is dying...
Advantages of IP PBXs...

1. **Single Network**
   - Easy installation an setup
   - Traditional PBXs require their own network and it is quite expensive/time consuming to build a separate telephone network spanning the entire business location(s). With IP Telephony, the Computer Network can be used to carry voice, video, data, and mobility features

2. **Multiple Office Peering**
   - IP PBXs transmit voice calls over the WAN IP Network

3. **GIGANTIC Cost Savings**
   - No Long distance with VoIP
   - Sip Trunking

4. **Much easier System Management**
   - Web User Interface
   - Hosted IP PBX (managed by provider)

The Analog/Legacy PBX is dying...
Advantages of IP PBXs...

5. Softswitches
- Some IP PBXs are software that can be run on exisiting computers/servers
  - Asterisk, Tribox, FreePBX

6. Integration of multiple technologies
- Unified Communications (voice, video, data, and mobility
- Mobile – softphone use
- Fax
- CRM software

7. State-of-the-art Security
- Encryption (TLS and SRTP)

8. Scalable
- Add more users/extensions as you need them
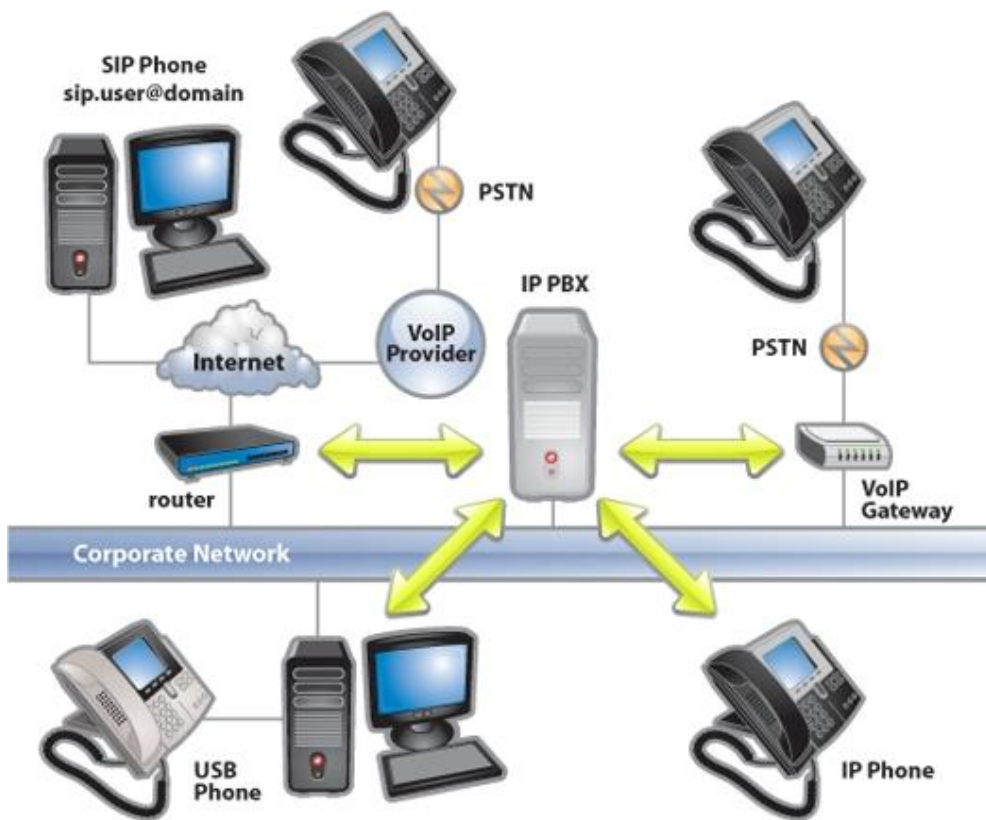- Choose and customize the features you need

9. SIP!!!
- Open source technology eliminates vendor lock-in

10. SIP Endpoints rock!
- Power of the internet and mobile devices in one

What is an IP-PBX

PBX = Private Branch Exchange

The central switching system for phone calls, video calls, email, fax, instant messaging, conferencing solutions, SMS, and mobile telephony within a business. The PBX handles internal traffic between stations and acts as a gatekeeper to the outside world.
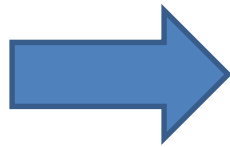
IP-PBX System

1. Wireless/Fiber IP Network
2. IP-PBX (or softswitch/hosted network)
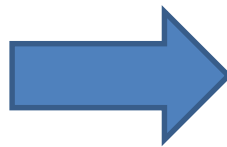3. Endpoint (ex: IP Phone)

Basic IP-PBX Setup

Fax

IP Phone

IP Video Phone

E1

PSTN

PBX

FXO

IP Network

IP Camera

Local PSTN

VoIP Gateway

Analog Telephone

Analog PBX
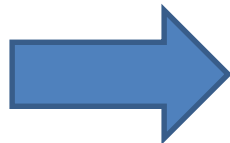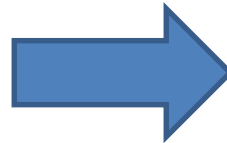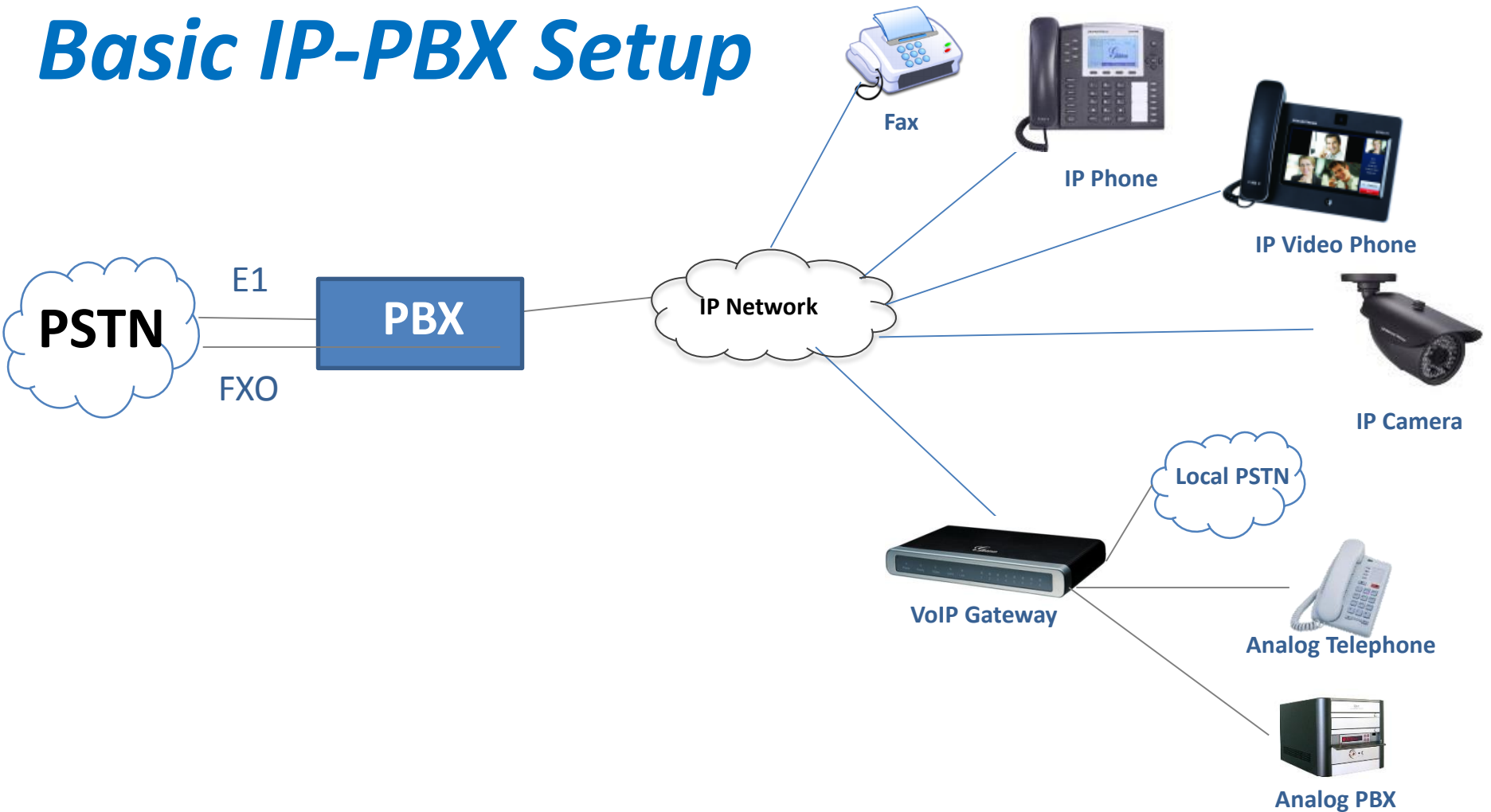
Shared Access to Limited Resources

Rather than having a separate line for each phone, a PBX allows a business to share a smaller pool of lines across the entire business.

The Backbone of Your Business

- Call-routing
- Call Transfer
- Call Block
- Voice Messaging
- Call Queue
- Voice Conferencing
- Call Forwarding
- Call Retrieval
- Music On Hold
- Ring Group/Hunt Group
- Call Recording
- Call Park
- Intercom/Paging
- Call Hold
- Do Not Disturb (DND)

- IVR
- Auto-Attendant
- Click to Dial
- Busy Lamp Field (BLF)
- Codec support
- Fax
- Phonebooks
- Call Detail Reporting (CDR)
- Voicemail/fax forwarding to email
- System Backup
- Mobility applications

IP-PBX Must Have Features

1. Voice Messaging (voicemail to email)
2. Mobility Applications (remote IP extensions, find me/follow me, softphone applications, etc)
3. Conferencing (voice and video)
4. Reporting (CDR, Call-Recording)

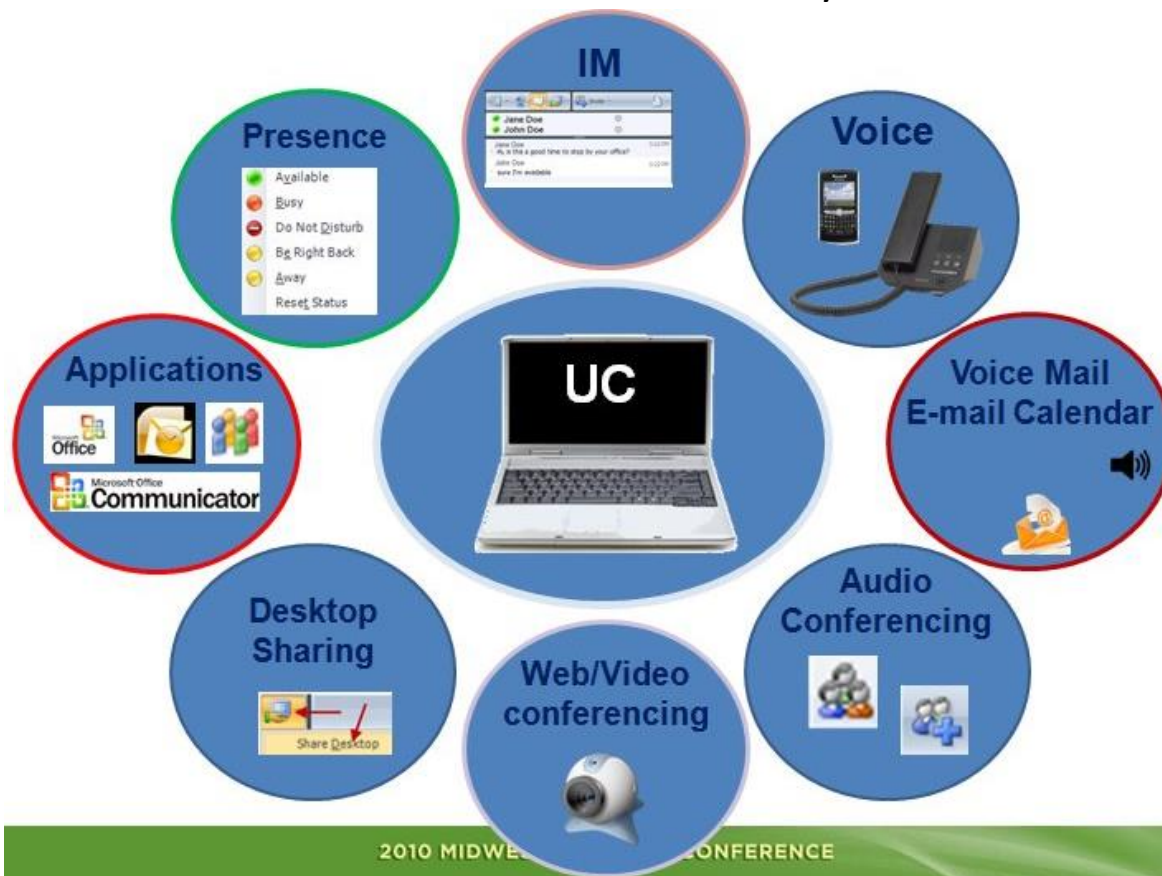# *Basic Advantages of IP-PBX*

1. One-time deployment cost
2. Enormous savings on Service costs
3. Built-In Features (IVR, auto-attendant, etc.)
4. Data capability – CDR, Call Recording, etc.
5. Multiple-office peering

IP-PBX Peering

PSTN

Office 1

Up to 16
FXO lines

Web Admin

UCM61XX
IPPBX Appliance
GUI

HTTP/
HTTPS

FXS 1

FXS 2

PBX

DHCP

TLS/SRTP/SIP/RTP **GXP2124v2**

Auto - detection and
Provisioning

TLS/SRTP/SIP/RTP **GXV3175v2**

TCP/RTSP **GXV3672_HD/FHD**

LAN

TLS/SRTP/SIP/RTP

GXV3140v2

Office 2

GXP2120

LAN

DP715/710

WAN

PBX

**Internet
Network**

WAN

SIP

SIP Trunk Provider 1

SIP

SIP Trunk Provider 2

Grandstream
Innovative IP Voice & Video
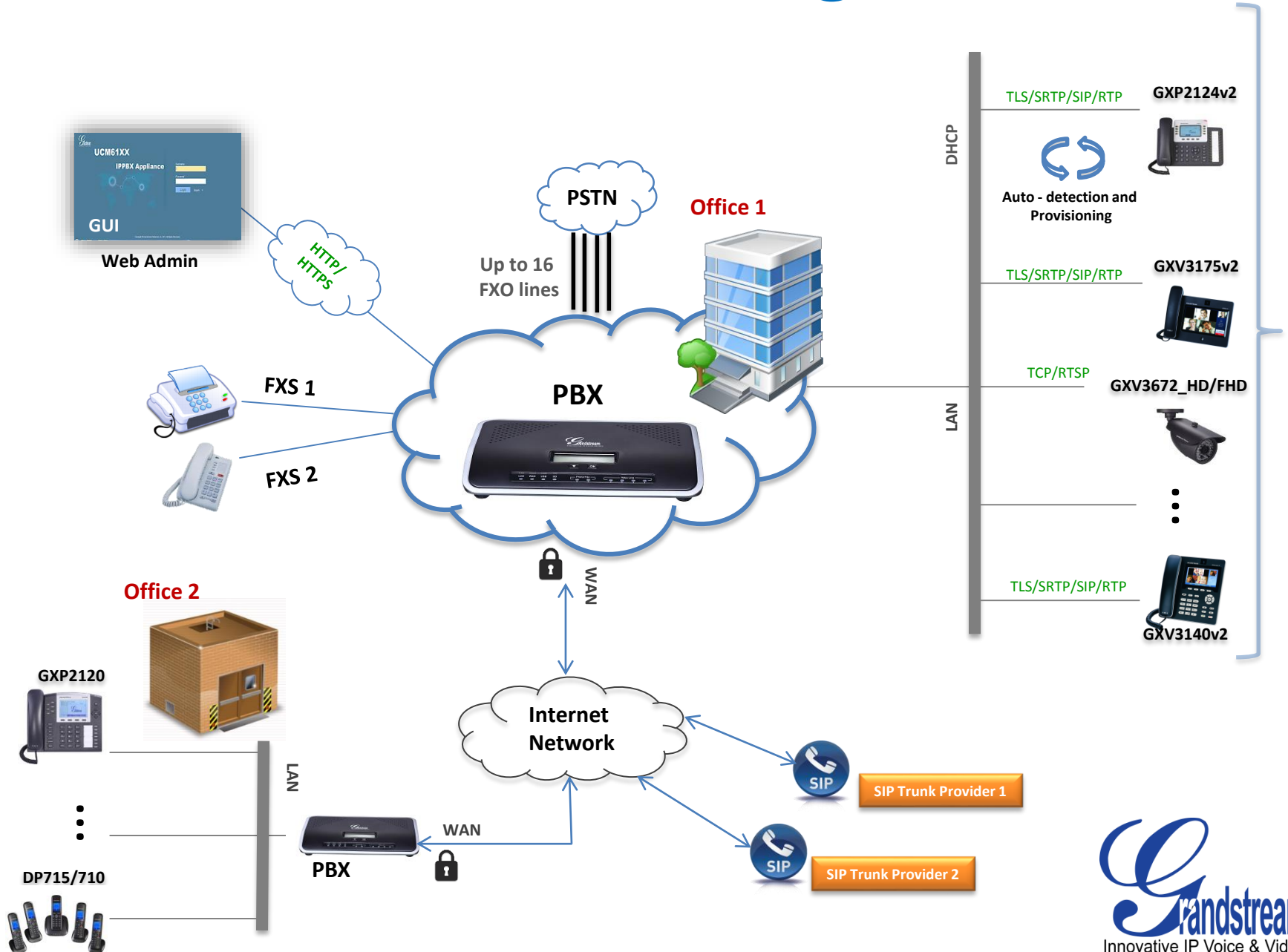
Unified Communications

= Voice, Video, Data, and Mobility features

Unified Communications
Voice

- Traditional voices features
- Integration of voice features with video, data, and mobility applications
  - Door Access cameras
  - Video Surveillance cameras
  - Softphone applications
  - UC desktop clients

Unified Communications
Video

- Video phones
- UC Desktop clients
- SIP Door Cameras
- IP Video Surveillance Cameras
- Video conferencing systems

Unified Communications
Video

Video Surveillance Integration

- ♦ Create a comprehensive solution to view, monitor and receive alerts from IP cameras
- ♦ Register IP cameras to the PBX
- ♦ Make video calls to IP cameras to view live feeds
- ♦ Speak through cameras with 2-way audio & video (door entry)
- ♦ IP cameras can be set to automatically call video phone when alert is triggered
- ♦ Receive alerts from anywhere in the world

Unified Communications
Data

- Integrated data features
  - CRM programs
  - Call Recordings
  - CDR
  - Phonebook files (LDAP)
  - Voicemail/fax forwarding to email
  - Automatic system backup
  - BLF
  - Remote Access BLF

Unified Communications
Mobility

- Desktop UC clients
  - IM, Voice calls, video calls, CRM
- Access everything you need from anywhere
  - Call recordings
  - CDR
  - Fax
  - Voicemail
  - System settings
  - System backup

- Softphone Applications
- Multiple office peering

Advantages of IP-PBX for Employees

1. **Mobility** – access to extension, voicemail, fax, call-routing, video conferencing, SMS, Presence, etc.
2. **More Communication Options = More Productivity** – fax, voice, video conferencing, video surveillance, data, and more
3. **More Voice Options** – Built-in call-routing, call transfer/park/queue/hold, Ring/Hunt Group, IVR, auto-attendance, etc.
4. **Interconnected Business** – one platform for all communications, making it easier then ever to access any phonebook, call, fax, and keep in touch with fellow employees
5. **Keep Closer contact with Clients** – video calls, video conferencing, voice conferencing, etc.

Advantages of IP-PBX for Businesses

1. **Enormous Cost Savings**
2. **More Communication Options = More Productivity**
3. **Future proof** – easily add users/features
4. **Connect Multiple Offices/Locations**
5. **Unified Communications functionality**
6. **Web User Interface Management**
7. **Features built-in**

Hosted IP-PBX vs. On-Premise IP-PBX

Hosted IP PBX

- *PBX hardware is Off-site*
- *Support/Maintenance controlled by Service Provider*
- *Add new users online*
- *Package deals*

On-Premise IP PBX

- *PBX hardware is on-site*
- *Support controlled on-site*
- *Full on-site control of setup, management, additions, etc*
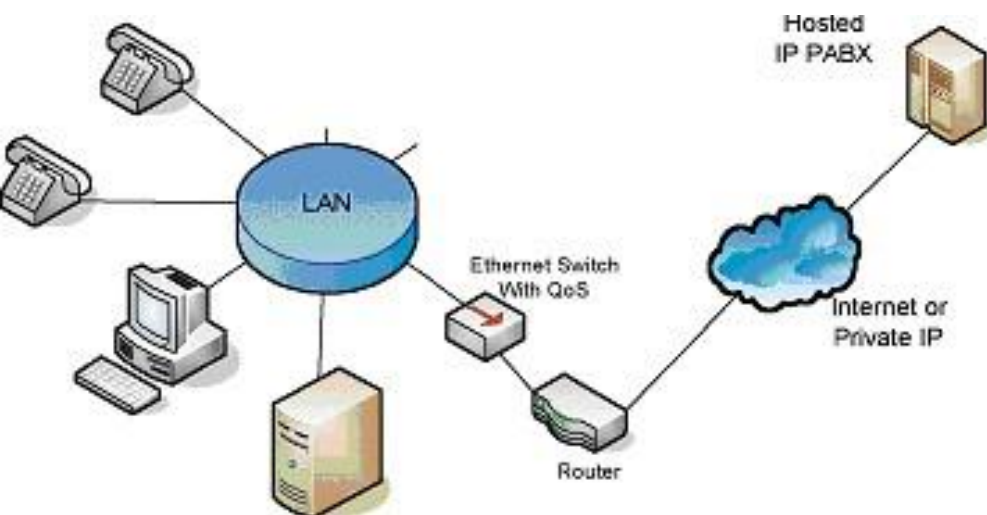- *Web User Interface*

Hosted IP-PBX vs. On-Premise IP-PBX
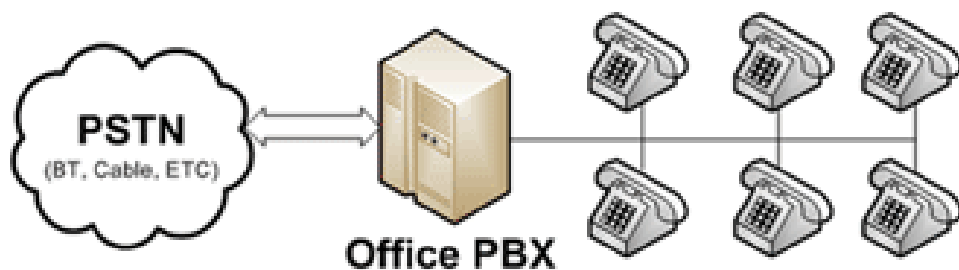
Considerations

1. Total Cost of Ownership
2. Bundled Features
3. Ease of Customization
4. User Experience
5. Cost and Ease of Tech Support

Hosted IP-PBX

- *Also known as "Cloud PBX"*
- *Outsources PBX hardware and control*
- *Often bundles various services*
- *Often requires service contracts/annual contracts*
- *Hosted provider controls maintenance, updates, etc.*
- *On-premise endpoints connected to Hosted PBX through the internet*

On-Premise IP-PBX

- *PBX is at your business location*
- *You choose service provider*
- *Maintinence and additions are done by business (IT Manager, Installer, Reseller, etc.*
- *Ability to pick all features freely*
- *Business has full control of PBX*

Cost Considerations

Hosted IP-PBX vs. On-Premise IP-PBX

1. Setup costs
2. Maintenance Costs
3. Ongoing Costs
4. Service Provider Costs
5. Fees
6. Contracts/Leases

Future Expansion

Hosted IP-PBX vs. On-Premise IP-PBX

1. Control of Expansion?
2. Risk
3. Flexibility of Expansion?

Control Considerations

Hosted IP-PBX vs. On-Premise IP-PBX

1. Internal control or out-sourced control
2. Cost of internal control vs. out-sourced control

Range of Features/Options

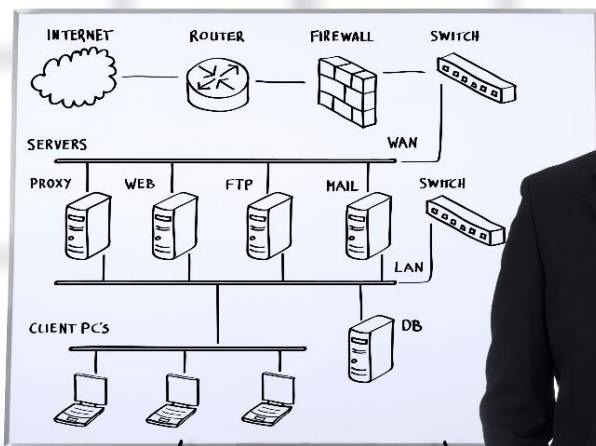## *Hosted IP-PBX vs. On-Premise IP-PBX*

1. Does it have the feature set you want?

2. How easy is it to add features?

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