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Minds in Motion

VoIP Effect: How IP Technology Will Drive the Future of Small and Medium Sized Business Communications

Scope

- Give background about SMB market segment needs
- Articulate the enabling technologies and how they would fulfill the needs of SMB.
- How VoIP would augment other enabling technologies
- Open discussion on how future needs will be created in SMB and be satisfied using evolution of enabling technologies, in 5 to 10 years

SMB: Small and Medium Business

- Key Common Characteristics
  - Smaller than large enterprises
    - Limited cash flow: Smaller IT and telecom budgets
    - No in-house IT expertise: Need easy to install, ease to maintain and easy to use systems
    - Limited man-power with multi-function roles: Productivity and ergonomics are key issues
    - Operate in dynamic environments: need flexibility to expand and enhance systems without loosing existing investment
  - Desire to integrate with enterprise class applications like customer care, inventory, scheduling
  - Human touch points and voice communication are critical to business
    - Reliable and good quality voice systems are must
  - Informal boundaries between personal and work life
- Differences: Diverse market segments
  - Size of organization (10, 100, 1000 employees)
  - Type of business
  - Single/multi-site, geographic distribution
  - Differences in integrated applications

SMB Opportunities

Worldwide (1 to 100 lines)

- **There are *7.7 million* Small Businesses in the US**
- **There are *19 million* Small Businesses in EMEA**
- **There are *8.5 million* Small Businesses in AsiaPac**
- **There are *35 million* Small Businesses Worldwide**
- **There are *150-350 million* Users in this installed base**
- **Small business Telecom spending will grow 70% over the next 5 years**
- **Over 70% of Small (and Medium) Businesses have or are planning to have 1Mb+ connectivity in the next 12 months**

Source: Infonetics 2005

Use Case Scenario – Now

GP's Practice

- Local GP's practice offers online appointment reservation services via web
- If patient needs assistance before the appointment date, he/she can call registered nurse for telephonic consultation.
  - Registered nurse has instant access to patient's necessary records, when a call is received.
- On the day of appointment, the patient gets notification about appointment status via SMS messages
- GP can have instant message based discussion with colleague to seek second opinion, during the face to face consultation with patient
- GP arranges follow up plan for the patient, including appointments with specialists.
  - Patient is notified about the plan and confirms the appointments automatically via online personal calendar

- Lab test reports communicated to the GP and patient, via email
- Automated Instant communication between the pathologist and GP when both parties are *available*.

Cheap calls

Use Case Scenario – Now

Human efficiencies via automation

GP's Practice

Effective human touch points

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Restaurant

Daycare Center

Lawyer's Office

Car Dealership

Insurance Agency

Application integration

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Different communication modes

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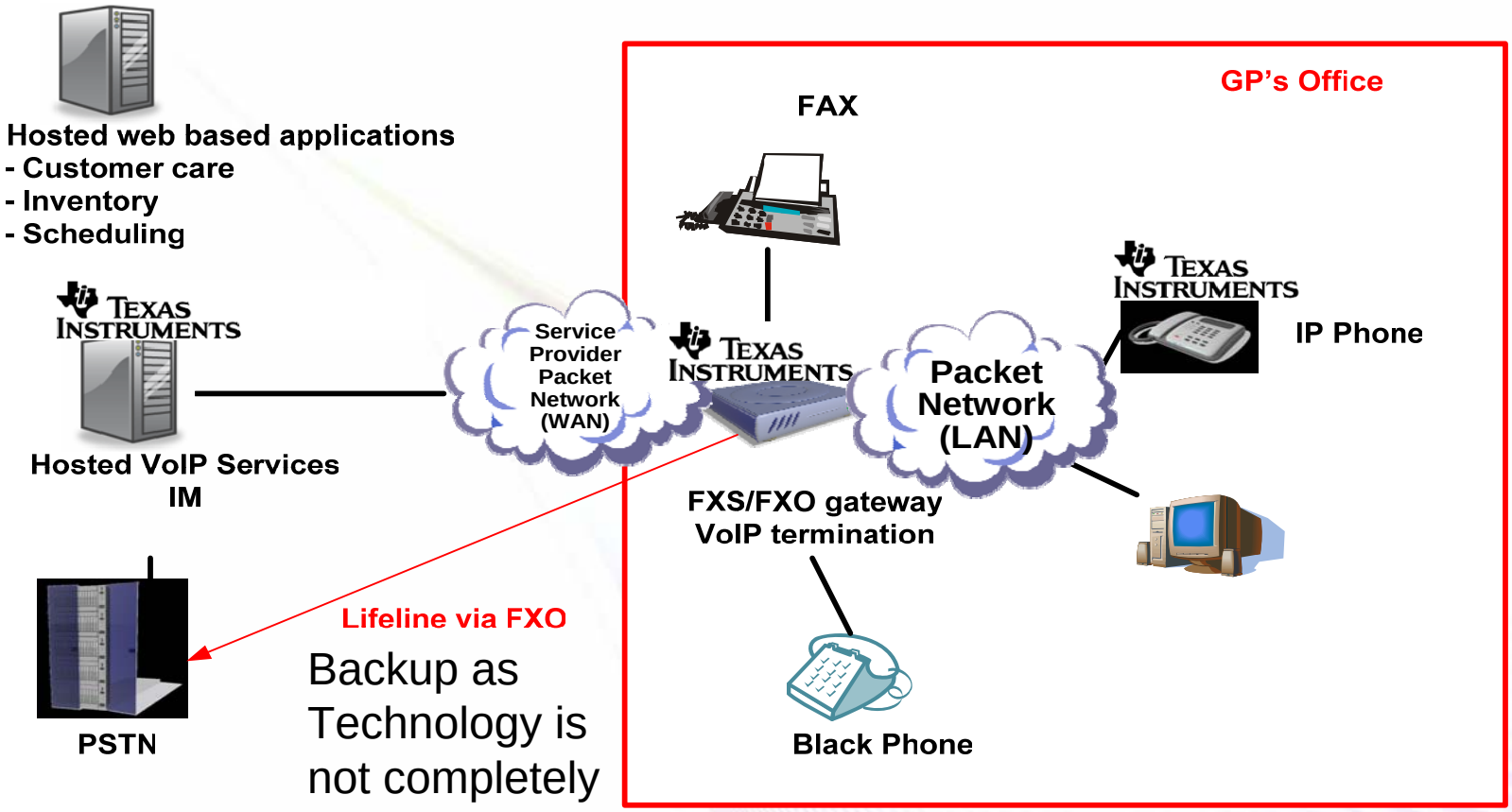

Backup as Technology is not completely matured

Unified Communication Environment

Hosted Solution

No in house expertise required

Incremental migration and expansion

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Incremental evolution

Use Case Scenario – Future

Business opportunities

Dynamic Virtual Organization

Collaboration and employee efficiencies

- Two SMB Entrepreneurs from China and Germany meet at a trade show and discuss business opportunities
- Decide to do business together. Business relationships between two organizations are instantly set-up along with outsourced business functions in order to fill gaps, via Service Oriented Architectures (SoAs)
- Unified communication systems of both organizations instantly federate
  - Thanks to all IP networks and ubiquitous interoperability
- Ad hoc relationships are reliably established via advanced security frameworks built into every device and node in the network

- Employees from both SMBs communicate on regular basis without facing language and geographic barriers – online language translation, video conferencing, impromptu conferencing, and video messaging are standard attributes
- Voice and video quality and high fidelity is guaranteed via intelligent agents

- Additional infrastructures resources are provisioned via on-demand grid computing service

Use Case Scenario – Future

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Multi-function job roles

Personal and work boundaries

Use Case Scenario – Future

Overseas markets

Dynamic Virtual Organization - Continue

Service delivery channel

- Product is offered in Asian markets and offered via local Service provider's IMS platform.
- Customer care front end is also offered by service provider. Both SMB teams from China and Germany appropriately configured to handle escalated customer calls.
- After 6 months the same service is offered in Europe, south America and Australia via respective local IMS partners
- IMS customers download the new application on their phone or any other personal device to use the new service

- There are no dedicated support resources allocated in the German SMB, however every employee including the owner handles the appropriate support call, while doing their normal job role. Thanks to wearable phones.
- After hour calls are diverted to some employees. Phones allow dual mode usage providing personal and work profiles. Customer care application is integrated.
- Phones work practically anywhere without any barriers of single network coverage

- The video surveillance system gives emergency notifications to the employee on after hour duty

Integration with business support applications

Use Case Scenario – Future

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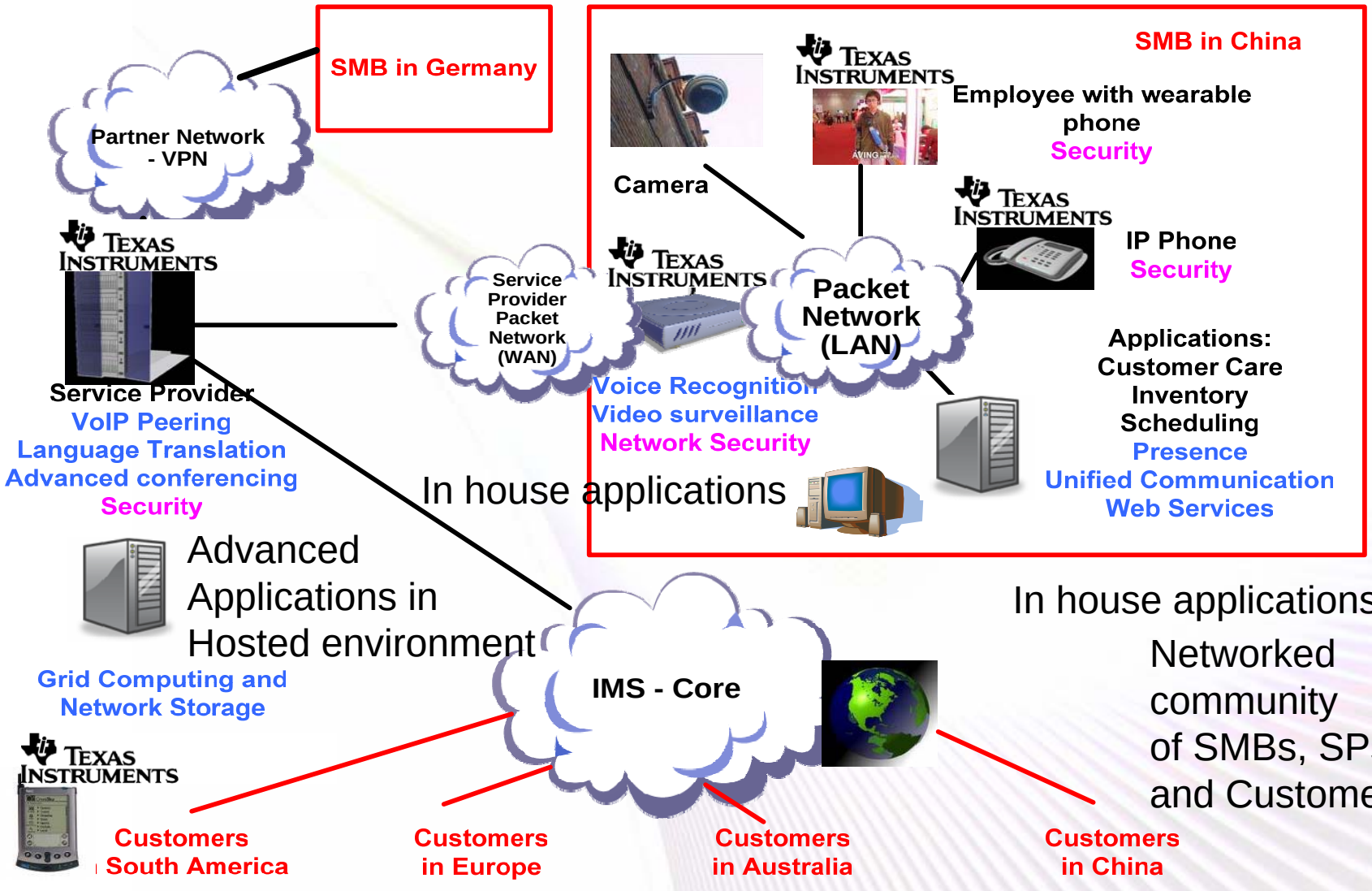
Sophisticated SMB environment



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Functional Evolution

- User interface
  - Form factor: wearable and mobile devices
    - v/s Desktop phones, soft clients, traditional black phones
  - Multi-modal communication – voice, video, text, GUI, voice commands, messaging
    - Distraction free interfaces
  - Job role specific tool
  - Personal and business use
- Application level integration
  - Integration with business processes
  - Integration with business applications
    - Scheduling
  - Premise security and other support applications
    - Integration with other sensors
  - Inter-organization integration, dynamic federation - Contacts management and federated directories
- Voice features – voice quality, fidelity, voice recognition, natural language translation

System Architecture Evolution

- All IP Networks – No PSTN legacy
- Ubiquitous (SIP) signaling interoperability
- Adjunct architectures
  - IMS – Hosted service provider as broker, federation of service providers, Anytime, anywhere on any device services delivery to customers
  - Web services and service oriented architectures – Dynamic collaboration across organizations
  - Intelligent agent technologies – Improve operational efficiencies of infrastructures as well as end users
  - Advanced security/trust architectures - behavior based access control, trusted computing etc. – Maintaining law and order on the online virtual world
  - Grid and utility computing, storage networks – operational efficiencies via reuse and economics of scale

Silicon (SoC) Evolution

- *Combination of general purpose processors, DSPs and specialized IP blocks*
  - *Bleeding edge v/s standards based matured technologies*
- Video and other multimedia engines
- No emphasis on TDM interfacing (no PSTN legacy)
- Power and RF spectrum management - Always Best Connected wireless devices– last mile, last room and last inch connectivity
  - Self powered wearable devices
  - Software Defined Radios v/s mature radios
- Dynamically downloadable software modules along with field programmable silicon (via JVM and XML engines in silicon) – for IMS on-demand services
- Specialized IP blocks for SLA enforcement and manageability, with intelligent agents taking proactive actions
- Ground up security framework – e.g. E*Fuse and Trustzone
- Network accelerators, security accelerators

Empowering the small guys

VoIP augments other enablers like Internet/IP Technologies, Software and Embedded Systems

- Infrastructure/ Service cost
  - Operational costs
  - Investment protection and incremental upgrade
  - Virtualization and reuse
    - Common IP backbone
    - Hosted infrastructure, grids
  - Overcoming geographic boundaries
- Business opportunities
  - Overcoming cross organizational boundaries – collaborative business
  - New marketing channels
  - Improved customer care
- Employee operational efficiencies
  - Ease of use, training, ergonomics, job role specific productivity tools
  - Collaboration

Key Messages

- SMB is important market segment and would adopt technology solutions in the near future
- Issues and care abouts of SMB are peculiar
- SMB consists of diverse segments, with some commonalities and some differences
- VoIP, IP technologies, software and embedded systems are the key enablers
- New SMB market segments like dynamic virtual organizations would evolve as a result of enabling technologies

Comments?

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