Enterprise customers

S-38.041 Networking Business
Market figures of enterprise IT

• The average company
  – Spends about 4% of its gross revenue on IT
  – Spends about 6600 USD per year per employee
  – Has an IT headcount of 5-7% of total headcount

• Highest spending per employee in IT, telecom and financial sectors

• Global enterprise IT market
  – Total market value around 1000 BEUR in 2003
  – Largest part is system integration and outsourcing services
  – Around 50% of global IT spending happens in the US
Enterprise view of IT vendors

Strategic advisors
Microsoft
IBM
Cisco
Accenture

Public Network
- Global
- Regional
- Local

Intranet
- Cisco
- Extreme
- Enterasys

Storage
- EMC
- Brocade
- Hitachi

Computers
- Dell
- Sun
- HP
- IBM

Infra software
- IBM
- Oracle
- Bea
- Microsoft

Apps software
- SAP
- Siebel
- Oracle

Services
- IBM
- Accenture
- Sapient

Point solutions
- Symbol
- NCR
- Nokia

Key category vendors
# Total cost of ownership (TCO)

<table>
<thead>
<tr>
<th>DIRECT</th>
<th>INDIRECT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital</strong></td>
<td><strong>End User IS</strong></td>
</tr>
<tr>
<td>Hardware</td>
<td>Peer/self support</td>
</tr>
<tr>
<td>→ Servers</td>
<td>→ Casual learning</td>
</tr>
<tr>
<td>→ Clients</td>
<td>→ Scripting/development</td>
</tr>
<tr>
<td>→ Peripherals</td>
<td>→ End-user Training</td>
</tr>
<tr>
<td>→ Network</td>
<td>→ Satisfaction</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td><strong>Management &amp; Support</strong></td>
</tr>
<tr>
<td>→ Operating systems</td>
<td>→ Outsourcing</td>
</tr>
<tr>
<td>→ Applications</td>
<td>→ Maintenance contracts</td>
</tr>
<tr>
<td>→ Utilities</td>
<td>→ Support contracts</td>
</tr>
<tr>
<td>→ IS</td>
<td>→ Service levels</td>
</tr>
<tr>
<td><strong>Support</strong></td>
<td>→ Performance and Service level Metrics</td>
</tr>
<tr>
<td>→ Executive and administration</td>
<td></td>
</tr>
<tr>
<td>→ Help desk</td>
<td></td>
</tr>
<tr>
<td>→ Training</td>
<td></td>
</tr>
<tr>
<td>→ Procurement</td>
<td></td>
</tr>
<tr>
<td><strong>Labor</strong></td>
<td><strong>Fees/Other</strong></td>
</tr>
<tr>
<td>Management</td>
<td>Communication</td>
</tr>
<tr>
<td>→ Network</td>
<td>→ WAN</td>
</tr>
<tr>
<td>→ System</td>
<td>→ Service provider</td>
</tr>
<tr>
<td>→ Storage</td>
<td>→ RAS</td>
</tr>
<tr>
<td><strong>Upgrades and Supplies</strong></td>
<td>→ Internet access provider</td>
</tr>
<tr>
<td><strong>Fees/Other</strong></td>
<td>→ Client access</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
</tr>
<tr>
<td>→ WAN</td>
<td></td>
</tr>
<tr>
<td>→ Service provider</td>
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<td>→ Internet access provider</td>
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<tr>
<td>→ Client access</td>
<td></td>
</tr>
<tr>
<td><strong>Development</strong></td>
<td><strong>Management &amp; Support</strong></td>
</tr>
<tr>
<td>→ Infrastructure</td>
<td>→ Outsourcing</td>
</tr>
<tr>
<td>→ Business applications</td>
<td>→ Maintenance contracts</td>
</tr>
<tr>
<td><strong>Fees/Other</strong></td>
<td>→ Support contracts</td>
</tr>
<tr>
<td></td>
<td>→ Service levels</td>
</tr>
<tr>
<td></td>
<td>→ Performance and Service level Metrics</td>
</tr>
</tbody>
</table>

**Acquisition Costs**
- → Depreciation
- → Leasing
- → Expenses

**Downtime**
- → Planned
- → Unplanned

**Upgrades and Supplies**
## Total cost per mobile user

<table>
<thead>
<tr>
<th></th>
<th>Laptop</th>
<th>PDA</th>
<th>Cellphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>$2200</td>
<td>$600</td>
<td>$200</td>
</tr>
<tr>
<td>TCO</td>
<td>$12300</td>
<td>$1946</td>
<td>$1414</td>
</tr>
<tr>
<td>Investment life</td>
<td>3-4 years</td>
<td>24 months</td>
<td>18 months</td>
</tr>
<tr>
<td>Replacements</td>
<td>-</td>
<td>Twice</td>
<td>Twice</td>
</tr>
<tr>
<td>Total</td>
<td>($2K+$37K)x100 = $3.9M</td>
<td>(2x600+3x1,946) x100 = $704K</td>
<td>(2x200+3x1,414) x100 = $464K</td>
</tr>
</tbody>
</table>

Source: Gartner, 2003
Enterprise service usage profile

- Business processes
- Business connectivity
- Personal information mgt
- Electronic mail
- Messaging
- Voice

Number of employees using the service

Person-to-System

Person-to-Person
Role of Telecom Manager

• Telecom services belong to the strategic toolbox of all businesses
• Telecom Manager is the person responsible for defining and implementing the telecom services strategy of a company
• Telecom services strategy is closely related to the overall IT strategy
• Telecom Manager can be a part-time job of a CEO or a full-time job as a leader of telecom experts

Typical mission statement

*Leverage telecommunications technology and services to the greatest possible benefit and competitive advantage of the business – at the lowest cost*
Tasks of Telecom Manager

- Trouble resolution (measurable meters)
  - Trouble ticket system
  - Help desk system
  - Training and end-user education

- Project management (measurable meters)
  - Triggers for change: innovation, system life cycle, growth, financial reasons
  - Identify needs, solicit proposals, select vendors, supervise implementation

- Billing audit and review (measurable meters)
  - Inventory all company telecom services and equipment
  - Exercise audit approval of all telecom bills
  - Identify and target fraud abusers

- Strategic planning
  - Help to see how telecom aids the company strategy
  - Consolidate and centralize services, equipment, and billing wherever possible
  - Remain forward-looking into possibly useful new technology
Telecom purchase process

1. Define your need (must have/nice to have)
2. Request for proposal/quotations (RFP, RFQ)
3. Select a provider (optimize the price-quality ratio)
   • Prospecting (pick up max 5-10 candidates for brief interview)
   • Qualification (pick up the top 3-4 for solution presentation)
   • Presentation (pick up 2 for finals, visit reference customers)
   • Closing (check terms and conditions, with your lawyer…)
4. Manage change successfully
   • Do your part
   • Keep the timeline
   • Be serious about training
   • Know when to cry wolf
   • Tell your customers
Typical RFP content

- Existing environment
- Applications (service level agreements/SLA)
- Cost expectations
- Format guidelines of response
- Contact rules
- Time frames
Portfolio of services

Business telephone system
- Office voice switching (PBX vs Centrex, packet vs circuit)
- Office voice access (wireline vs wireless)
- Long-distance calls
- Value-added services (voice mail, call centers, …)

PC connectivity
- Internet access (fiber, ADSL)
- Intranet (leased lines … managed VPN)
- Value-added services (mailboxes, web hosting, …)

Mobile wireless services
- Cellular (GSM, WCDMA)
- Professional mobile radio (TETRA, iDEN)
- Two-way radio/walkie-talkies
Portfolio of service providers

Local fixed network operator
- Main asset: wireline network, subscriber base
- Trend: joining forces with other players

National cellular network operator
- Main asset: national cellular coverage, subscriber base
- Trend: expanding to full-service, and MVNO

Service operator
- Main asset: server bank, customer service
- Trend: packaging mobile and fixed services, VoIP

System integrator
- Main asset: tailored software, project mode
- Trend: exploiting the VoIP and MVNO opportunities
Business customer segments

Number of employees
- Small => Price list process (cmp. consumer customers)
- Large => RFP process

Location
- Multisite => VPN issues (voice, Intranet)
- International => Multioperator issues

Ownership
- Private => Demand-driven flexible purchase process
- Government => Budget-driven regulated purchase process

Business and service duration
- Continuous => Customer retention focus
- Event (e.g. sports, conferences) => General marketing focus

Specific business domains
Impact of value nets

- IT enables companies moving from value chains to nets
- Adversaries are becoming strategic partners
- Companies increasingly outsource, share, and off-shore ICT solutions
- Extranets
  - From dedicated networks to Internet
  - Centralized directory and brokage servers
- Voice-over-IP
  - Load trading of outsourced VoIP-PABX capacity
  - Integration of business rules with VoIP
Managing market uncertainty

• Assess market uncertainty
• Choose your risk level
• Experiment with parallel projects
  – Cut downside, “eggs in different baskets”
  – Add upside, “buy several lottery tickets”
• Keep learning
  – Use incremental decision milestones for projects
  – Recalculate business cases of projects
Market uncertainty
How to measure it?

• Ability to forecast the market
• Emergence of a dominant design
• Agreement among industry experts
• Feature convergence and commodity nature
• Changes in standards activity
Choice of management structure

Case: email service

Outsource

Yes

Outsourced

Web

ISP

IMAP

POP

No

Mail server

Central server

Distributed servers

Centralized

• Efficient
• Low market uncertainty

Management architecture

Distributed

• Flexible
• High market uncertainty
Choice of management structure
Case: office voice service

- Centralized architecture
  - Efficient
  - Low market uncertainty

- Distributed architecture
  - Flexible
  - High market uncertainty

Outsource
- Yes
  - Centrex

- No
  - PBX
    - Central PBX
    - Distributed PBXs

VoIP

GSM
Choice of management structure
Case: informational service (web)

Outsource
  Yes

- Outsourced web-server
  - Service provider manages content
  - User manages content

Outsource
  No

- Self-managed web-server
  - Central server
  - Distributed servers

Centralized
- Efficient
- Low market uncertainty

Management architecture

Distributed
- Flexible
- High market uncertainty
Value of experimentation

Real options theory

Value of experimentation

1. increases as the market uncertainty increases

2. increases (in a decreasing manner) as the number of parallel experiments increases

3. decreases (in a decreasing manner) as the learning develops over generations of experiments
Value of experimentation

Examples

- Internet
- GPRS content
- NTT DoCoMo i-mode content
- Microsoft Windows applications
- Symbian OS applications

Ecosystems that exploit the value of experimentation are more likely to match market needs
Case: Finnish Universities

Telephony service cost

<table>
<thead>
<tr>
<th></th>
<th>#</th>
<th>Average per employee (€/y)</th>
<th>Deviation (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polytechnic schools</td>
<td>6</td>
<td>472</td>
<td>149</td>
</tr>
<tr>
<td>Universities</td>
<td>8</td>
<td>250</td>
<td>104</td>
</tr>
<tr>
<td>&lt; 1000 employees</td>
<td>8</td>
<td>447</td>
<td>138</td>
</tr>
<tr>
<td>&gt; 1000 employees</td>
<td>6</td>
<td>210</td>
<td>77</td>
</tr>
</tbody>
</table>

How to reduce cost?
- Going GSM-only
- Going VoIP-only

Source: HUT MSc thesis (J Viskari)
Case: Finnish Universities

Telephone service cost

Highest volume

- Internal calls: 23.3%
- Local calls: 27.7%
- Long-distance calls: 8.1%
- International calls: 0.9%
- Calls to mobiles: 9.5%

Source: HUT MSc thesis (J Viskari)

Highest cost

- Local calls: 73.9%
- Long-distance calls: 9.5%
- International calls: 10.1%
- Calls to mobiles: 6.5%

Source: HUT MSc thesis (J Viskari)
Case: Finnish Universities

Reference case: Traffic costs of ”pure VoIP”

Assumptions
- 17% of calls to other universities (no long-distance charge)
- 40% of mobile calls internal (based on study)

Source: HUT MSc thesis (J Viskari)
Case: Finnish Universities

Reference case: Traffic costs of ”Pure GSM”

Assumptions

• No handset cost (employee-owned handsets)
• 40% of mobile calls internal (based on study)

Source: HUT MSc thesis (J Viskari)
Case: Large event
World Championships in Athletics (WCA), Helsinki 2005

• Lots of temporary capacity needed
  – temporary cabling (voice, data, video)
  – additional radio capacity (GSM, WCDMA, TETRA, WLAN)
  – several temporary Intranets
  – temporary servers and terminals
• Operators have established dedicated event units
• Traffic costs small compared to fixed costs
• CAPEX is small compared to OPEX
• Wireless has better cost-benefit ratio than wireline for temporary use, but the high risk of failures favors wireline