Operator’s Enterprise Customers

S-38.041 Networking Business
Enterprise IT in Nutshell

- The average enterprise spends
  - c. 4% of its gross revenue on IT
  - c. 500 EUR per month per employee on IT
  - c. 5-7% of total headcount on IT headcount
  - c. 60 EUR per employee per month on mobile (operator ARPU)
- Highest spending per employee in IT, telecom and financial sectors
- Global enterprise IT market
  - c. 1000 BEUR in 2003
  - largest part is system integration and outsourcing services
  - c. 50% of global IT spending happened in the US in 2003
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
- Software
- Hardware
- Infrastructure
Key Issue Analysis

TCO is a powerful tool that is used to identify opportunities for better managing the IT environment. Some analysis, such as that needed to make an outsourcing decision, is impossible without understanding internal cost structures — including hidden costs. Enterprises that fail to account for all costs will also fail to see IT costs increase beyond sustainable and justifiable levels, and will make poor IT management decisions.

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>Fees/Other</strong></td>
</tr>
<tr>
<td>Hardware - Servers</td>
<td>Communication - WAN</td>
</tr>
<tr>
<td>- Clients</td>
<td>- Service provider</td>
</tr>
<tr>
<td>- Peripherals</td>
<td>- RAS</td>
</tr>
<tr>
<td>- Network</td>
<td>- Internet access provider</td>
</tr>
<tr>
<td>Software - Operating systems</td>
<td>- Client access</td>
</tr>
<tr>
<td>- Applications</td>
<td><strong>Management &amp; Support</strong></td>
</tr>
<tr>
<td>- Utilities</td>
<td>- Outsourcing</td>
</tr>
<tr>
<td>- IS</td>
<td>- Maintenance contracts</td>
</tr>
<tr>
<td><strong>Labor</strong></td>
<td></td>
</tr>
<tr>
<td>Management - Network</td>
<td></td>
</tr>
<tr>
<td>- System</td>
<td></td>
</tr>
<tr>
<td>- Storage</td>
<td></td>
</tr>
<tr>
<td>Support - 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>Development - Infrastructure</td>
<td></td>
</tr>
<tr>
<td>- Business applications</td>
<td></td>
</tr>
<tr>
<td>Upgrades and Supplies</td>
<td></td>
</tr>
</tbody>
</table>

End User IS - Peer/self support
- Casual learning
- Scripting/ development
- End-user Training
- Satisfaction

Downtime - Planned
- Unplanned

Key Issue: How is TCO used most effectively today?

Why measure TCO?

To obtain a better understanding of how IT investments support – or do not support enterprise business goals and processes

To gain objective information on costs and savings opportunities in “right-sizing,” outsourcing and internal resource allocation

To identify and implement strategies for improving IS operations and performance

To gain comparative, competitive data against industry indices, best in class or peer enterprises

To understand key metrics and measurements needed to better run IS operations and provide value back to the enterprise
Strategic Planning Assumption: Through 2007, full support for PDAs’ mobile phones will raise enterprise total cost of ownership (TCO) for client devices by at least 30 percent per user per year (0.7 probability).

### Total cost per mobile employee

**Case: 100 terminals for 3 years**

<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 per year</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>Once</td>
<td>Once</td>
</tr>
<tr>
<td>Total</td>
<td>(2200+3x12300)</td>
<td>(2x600+3x1946)</td>
<td>(2x200+3x1414)</td>
</tr>
<tr>
<td></td>
<td>x100 = $3900K</td>
<td>x100 = $704K</td>
<td>x100 = $464K</td>
</tr>
</tbody>
</table>

Source: Gartner, 2003

### How will mobile, wireless management evolve?

As individuals carry more and more mobile devices — now up to several phones and PDAs in addition to a laptop or notebook — the cost per individual to the enterprise for safeguarding and managing platforms and data will rise. As illustrated above, Gartner provides the analysis for assessing and managing such costs.

Gartner’s analysis of TCO for PDAs or smart phones with personal information manager (PIM) features is based on a review of the Windows and Palm platforms. Capital costs are based on a device with an acquisition cost as low as $150, but growing to $600 or more after accounting for accessories, travel kits, initial asset management and user setup. Provision is included for lost devices. Administration costs are considered equal for both platforms. Technical-support costs are slightly higher for Windows devices due to more-complex user interfaces. End-user operation costs represent about 40 percent of all costs, primarily due to the time investment required to keep PDAs synchronized with user desktops or servers.

Even at a few minutes per day (five minutes was factored into the estimate), this activity is a new diversion of user time that costs enterprises more than they might think.

*Action Item: Enterprises should use TCO models to establish realistic expectations for support costs.*
Employees need a multitude of services – but not everyone needs all services
• Nokia takes a holistic approach to enterprise
• Rather than horizontal
  • RIM – email
  • MSFT – PIM
  • SAP – business processes
• We know we are not the only one looking at this holistically, but our strength in enabling appl
• Understanding the entire ecosystem here is the key
• Email is hot item now, but will likely become a commodity like mobile voice is today, but mob

**Business processes**
Office applications and company specific vertical applications

**Business connectivity**
Access to intranet from PC/laptop/ terminal

**PIM**
Calendar, phonebook, contacts

e-mail
e-mail to PC or mobile

**Messaging**
Voice, SMS, MMS, instant messaging

**Voice**
Calls in office and on the move
Role of Telecom Manager

- Telecom services belong to the strategic toolbox of all enterprises
- 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/quotation (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
Operator’s 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

- ICT moves companies from value chains to value nets
- More dynamic partnerships
- Companies increasingly outsource, share, and off-shore ICT solutions
- Extranets
  - From dedicated networks to Internet
  - Centralized directory and brokerage servers
- Voice-over-IP
  - 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, “put eggs in different baskets”
  – Add upside, “buy several lottery tickets”
• Keep learning
  – Use incremental decision milestones for projects
  – Recalculate business cases of projects

Source: M. Gaynor, 2003
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

Central
- Efficient
- Low market uncertainty

Distributed
- Flexible
- High market uncertainty

Outsourced

Web

ISP

IMAP

POP

Yes

No

Mail server

Central server

Distributed servers
Choice of management structure
Case: office voice service

Central PBX
- Efficient
- Low market uncertainty

Distributed PBXs
- Flexible
- High market uncertainty

Outsource
- No

Centrex

VoIP

GSM

Centralized Management architecture

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

Centralized
- Efficient
- Low market uncertainty

Management architecture

Distributed
- Flexible
- High market uncertainty

Outsource
Yes
Outsourced web-server
Service provider manages content

No
Self-managed web-server
User manages content

Central server

Distributed servers
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 the 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: J. Viskari, 2004
Case: Finnish Universities

Telephone service cost

Highest volume

Source: J Viskari, 2004

Highest cost
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: J Viskari, 2004
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: J. Viskari, 2004

Helsinki University of Technology
Networking Laboratory

S-38.041.0 Helsinki
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