Operator’s Enterprise Customers
Big Picture of Enterprise ICT

• From products to services ("whole products")

• Toward more flexible partnerships
  – From value chains to value nets
  – Toward outsourcing, sharing, and off-shoring

• Toward intranets, extranets, and Internet
  – From dedicated networks to IP-based
  – Toward directory and brokerage servers
  – Toward Voice-over-IP
Enterprise ICT in Figures

• The average enterprise in the US spends
  – c. 4% of its gross revenue on ICT
  – c. 500 EUR per month per employee on ICT
  – c. 5-7% of total headcount on ICT headcount
  – c. 60 EUR per employee per month on mobile (operator ARPU)

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

• Global enterprise ICT market
  – c. 1000 BEUR in 2003
  – largest part is system integration and outsourcing services
  – c. 50% of global ICT spending happened in the US still in 2003
Enterprise View of ICT vendors

Strategic advisors
- Microsoft
- IBM
- Cisco
- Accenture

Key category vendors

Public Network Services
- Global
- Regional
- Local

Intranet
- Cisco
- Juniper
- Extreme
- Enterasys

Storage
- HP
- IBM
- EMC
- Hitachi

Computers
- Dell
- Sun
- HP
- Lenovo

Infra software
- IBM
- Oracle
- (Bea)
- Microsoft
- Google

Apps software
- SAP
- Oracle
- (Siebel)

Services
- IBM
- Accenture
- Sapient

Point solutions
- Nokia
- F-Secure
- …
### Total Cost of Ownership (TCO)

#### DIRECT

<table>
<thead>
<tr>
<th>Capital</th>
<th>Labor</th>
<th>Fees/Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hardware</strong></td>
<td><strong>Management</strong></td>
<td><strong>Communication</strong></td>
</tr>
<tr>
<td>➔ Servers</td>
<td>➔ Network</td>
<td>➔ WAN</td>
</tr>
<tr>
<td>➔ Clients</td>
<td>➔ System</td>
<td>➔ Service provider</td>
</tr>
<tr>
<td>➔ Peripherals</td>
<td>➔ Storage</td>
<td>➔ RAS</td>
</tr>
<tr>
<td>➔ Network</td>
<td></td>
<td>➔ Internet access provider</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td><strong>Support</strong></td>
<td><strong>Management &amp; Support</strong></td>
</tr>
<tr>
<td>➔ Operating systems</td>
<td>➔ Executive and administration</td>
<td>➔ Outsourcing</td>
</tr>
<tr>
<td>➔ Applications</td>
<td>➔ Help desk</td>
<td>➔ Maintenance contracts</td>
</tr>
<tr>
<td>➔ Utilities</td>
<td>➔ Training</td>
<td>➔ Support contracts</td>
</tr>
<tr>
<td>➔ IS</td>
<td>➔ Procurement</td>
<td>➔ Service levels</td>
</tr>
<tr>
<td><strong>Acquisition Costs</strong></td>
<td><strong>Development</strong></td>
<td><strong>Performance and Service level Metrics</strong></td>
</tr>
<tr>
<td>➔ Depreciation</td>
<td>➔ Infrastructure</td>
<td></td>
</tr>
<tr>
<td>➔ Leasing</td>
<td>➔ Business applications</td>
<td></td>
</tr>
<tr>
<td>➔ Expenses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### INDIRECT

<table>
<thead>
<tr>
<th>End User IS</th>
<th><strong>Peers/self support</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>➔ Casual learning</td>
<td></td>
</tr>
<tr>
<td>➔ Scripting/development</td>
<td></td>
</tr>
<tr>
<td>➔ End-user Training</td>
<td></td>
</tr>
<tr>
<td>➔ Satisfaction</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Downtime</strong></th>
<th><strong>Planned</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>➔ Unplanned</td>
<td></td>
</tr>
</tbody>
</table>

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

**Case: 100 terminals for 3 years**

<table>
<thead>
<tr>
<th></th>
<th>Laptop</th>
<th>PDA</th>
<th>Mobile phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>2200e</td>
<td>600e</td>
<td>200e</td>
</tr>
<tr>
<td>TCO per year</td>
<td>12300e</td>
<td>1946e</td>
<td>1414e</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) x100 = <strong>3900ke</strong></td>
<td>(2x600+3x1946) x100 = <strong>704ke</strong></td>
<td>(2x200+3x1414) x100 = <strong>464ke</strong></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-Person

Person-to-System
Role of ICT/Network Manager

• Network services belong to the strategic toolbox of all enterprises
• Network Manager is the person responsible for defining and implementing the network services strategy of a company
• Network services strategy is closely related to the overall ICT strategy
• Network Manager can be a part-time job of a CEO or a full-time job as a leader of networking experts

Typical mission statement

*Leverage networking technology and services

to the greatest possible benefit and competitive advantage of the business

– at the lowest cost*
Tasks of ICT/Network Manager

- **Strategic planning (maximize benefits)**
  - Help to see how ICT/networks aid the company strategy
  - Remain forward-looking into possibly useful new technology
  - Consolidate and centralize services, equipment, and billing wherever possible

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

- **Trouble resolution (minimize downtime)**
  - Trouble ticket system
  - Help desk system
  - Training and end-user education

- **Billing audit and review (minimize costs)**
  - Inventory all company telecom services and equipment
  - Exercise audit approval of all telecom bills
  - Identify and target fraud abusers
ICT 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

Office telephone system
- Office voice switching (in-house vs. outsourced, VoIP vs. POTS)
- Office voice access (wireline vs wireless)
- Long-distance (VPN, public connectivity)
- Value-added services (voice mail, call centers, …)

Office IP connectivity
- Intranet
- Internet access, Extranet services
- Value-added services (mailboxes, web hosting, …)

Wireless services for mobile employees
- Cellular and WLAN
- 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

Systems integrator
  – Main asset: tailored software, project mode
  – Trend: exploiting the VoIP and MVNO opportunities
Operator’s Customer Segments

Number of employees in enterprise
- Small ⇒ Price list process (cmp. consumer customers)
- Large ⇒ RFP process

Location of enterprise
- Multisite ⇒ VPN issues (voice, Intranet)
- International ⇒ Multioperator issues

Enterprise ownership
- Private ⇒ Demand-driven flexible purchase process
- Government ⇒ Budget-driven regulated purchase process

Enterprise’s business and service duration
- Continuous ⇒ Customer retention focus
- Event (e.g. sports, conferences) ⇒ General marketing focus

Specific business domains
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

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

Management architecture

Centralized
- Efficient
- Low market uncertainty

Distributed
- Flexible
- High market uncertainty

VoIP

GSM
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
  - Central server

User manages content
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
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
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 teams
- 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