<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Enabling the information age</th>
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<tr>
<td><strong>Author(s)</strong></td>
<td>Kwanchai Patanapongpibul</td>
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Enabling the Information Age

Kwanchai Patanapongpibul
Sales Consulting Manager
Oracle Systems (Thailand)

Personal Computing and Network Computing

Oracle Systems (Thailand)
Worldwide Internet/Intranet Products and Services Sales, 1996 and 2000

Projected Network Computer Shipments By Market Segment, Thousands of Units

A Bet On the Internet

Standards
- HTML
- PDF
- JAVA
- VRML
- Sound/Hour
- MPEG
- IP
- HTTP
- TCP
- FTP
- RealTime
- others

Bandwidth

Content
Internet is the global digital network
The NC Mission

To deliver inexpensive and easy-to-use appliances based on open standards for information access and communications

What is Network Computing?

- Low cost, easy-to-use appliances
- Everything shared "on the network"
- Connect from anywhere to anywhere
- 1/5th the price of PCs with 1/4 the cost of management

What is Network Computer?

A Low Cost Digital Appliance Computer

Network Devices
What is the NC?

- Browser with Email and Universal Mail Gateway
- Word Processor, Spreadsheet and Presentation Graphics
- Data Entry and Forms based Applications
- JAVA Applets

All the functionality that most people need

- Lower Initial Costs
- Lower Management Costs

PC Computing Today

- $3,500 PC Purchase Price
- $8,000 Annual Cost-of-Ownership
- Microsoft Office '98
  - 136 Mb Hard disk space
  - 24 Mb RAM
- 80% of all users use only 20% of the functionality

NC and the PC

- The NC delivers a consistent user interface across Internet appliances (e.g., NCTV, NC Workstation, NC Phone, etc)
- PCs are used for content creation, while the NC is primarily for content navigation and delivery
- PC run 100% of applications; NC applications will run on PCs
- NC will run a few core communications and personal productivity applications and a plethora of Internet JAVA applets
What is Network Computing?

- Everything is stored on the network
- Everyone is connected to the network

NCI Target Markets

<table>
<thead>
<tr>
<th>Enterprise</th>
<th>Community</th>
<th>Consumer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporations</td>
<td>Schools</td>
<td>Home</td>
</tr>
<tr>
<td>Vertical Industries</td>
<td>Small Business</td>
<td>Personal</td>
</tr>
<tr>
<td>Governments</td>
<td>Local Government</td>
<td>Public</td>
</tr>
<tr>
<td>Institutions</td>
<td>Departmental</td>
<td>Hospitality</td>
</tr>
</tbody>
</table>

Terminal Replacement

Corporate Apps
Information Access
Personal Productivity

Packaged Applications
Information Access
Personal Productivity

Enhanced TV
Entertainment
Personalized Content Library

NCI Market Products

<table>
<thead>
<tr>
<th>Enterprise</th>
<th>Community</th>
<th>Consumer</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC Administration Server</td>
<td>Work in the Box</td>
<td>NC Custom Connect</td>
</tr>
<tr>
<td>NC Desktop</td>
<td>NC Server Suites</td>
<td>NC TV</td>
</tr>
<tr>
<td>NC Card</td>
<td>NC Desktop</td>
<td>NC Card</td>
</tr>
<tr>
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<td>NC Card</td>
<td>NC Card</td>
</tr>
</tbody>
</table>
NC Market Opportunities

- Corporations
- Government Institutions
- Education
- Homes
- Developing Countries

NC Market Opportunities

- Corporations, Government and Institutions
  - meet users where they are and producing a rich user experience
  - manage data anywhere
- Schools
  - support proliferation of computers in unmanaged
  - rapid growth and ease-of-use allows broad deployment
  - ideally suited for improving education within campus and distance learning environments
- Homes
  - high-speed Internet is coming
- World Market
  - will reach the "new normal" opportunity to become the standard

Corporate/Government Intranets

- Network Computers
- Shared Data
- Commerce
- Application Servers
- Oracle
- Database
- Existing PCs
- Oracle Server
- ES Business Applications

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**Home Environment**

- ISP
- NC Server
- ISV Application Server
- Commercial NC Server
- Internet and World Wide Web
- Consumer NC Devices

**Education Environment**

- Students' PCs
- Instructor's PC
- Internet and Environment
- Level NC Server
- ISU/TV and Wireless links

**Bi-Design**

- Consumer
- Corporate
NC TV Enhanced Viewing

**Table:**

<table>
<thead>
<tr>
<th>TV Today</th>
<th>Enhanced TV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive</td>
<td>Passive and Interactive</td>
</tr>
<tr>
<td>Generalized</td>
<td>Personalized</td>
</tr>
<tr>
<td>Entertainment and Education</td>
<td>Entertainment, Education Communication, Library Commerce</td>
</tr>
<tr>
<td>One Dimension</td>
<td>Multi-Dimension</td>
</tr>
</tbody>
</table>

**Diagram:**

**Text:**

The market, most usually interesting way to access personalized web content.

**Corporate**

**Table:**

<table>
<thead>
<tr>
<th>Format and Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast and Faster</td>
</tr>
<tr>
<td>111Mbit - 108Mbit</td>
</tr>
</tbody>
</table>

**Diagram:**

**Text:**

Open Standards (Java, HTML, XML)
Network Computing Architecture

Wired Marketplace Enabled by NC

Success Factors for the Future
- Increased Security (Public Key)
- Plug & Play Servers
- Changes in Information Retrieval and Gathering
- Free Roaming with Security
- Adherence and Development of Open Standards
Enabling the Information Age
Paradigm shifts expand usage and users for technology:
- Focus on new users and uses
- Expand capabilities for terminal users, lower costs for PC users

Network Computing
- Interactive components of the fourth wave of computing

IBM Network Stations

Borders and boundaries disappear
- Information assets are becoming critical
- Barriers to market entry are reduced
The NC is not about hardware. It is not about software. It is about network computing. It is about how users choose to design, deploy and manage their network resources.

Our bottom-line recommendation is that pilot projects in transactional applications should take place by 1997. The advent of NCA will enable a whole new market for small companies.

NCA will enable products, such as NCA SAA, to be delivered to enterprises. For example, a company can deliver a transactional application to an NCA server, which can then be accessed by NCA SAA clients. This will allow companies to quickly deploy and manage their network resources.

NCA will enable NCA SAA to be deployed on a wide range of platforms, including Windows, Solaris, and AIX. This will allow companies to deploy NCA SAA on a variety of platforms, which will enable them to quickly deploy and manage their network resources.

The rise of NCA will enable companies to deploy NCA SAA on a wide range of platforms, including Windows, Solaris, and AIX. This will allow companies to deploy NCA SAA on a variety of platforms, which will enable them to quickly deploy and manage their network resources.
Network Computing is a natural choice for deploying Java-based business applications.

- Consistent with Network Computing design philosophy
- Simplicity at the desktop; complexity moves to the network
- Central management of applications "on demand"
- Avoid client software installation, configuration, version problems
- Full cost of ownership benefits plus:
  - Central management of applications
  - Distribution and delivery of applications "on demand"
- Standard WWW browser support
- 100% Pure Java environment.

Network Computing solutions can be delivered to existing PCs

- Standard WWW browser
- 100% Pure Java environment.

Desktop interface for NC users

- Standard Web browser
- 100% Pure Java environment.

Start programming for the IBM Network Station today

INFOBUN technology

- Common services for all applications
- Business productivity components

IBM Network Station provides a seamless bridge between

13/05 '98 WED 18:37 [TX/RX NO 6075] 004
Current technology is at an era called "one size fits all PC".

- Don't want PCs to become obsolete.
- Standardize on models.
- Results in significant costs or under-utilization.
- Optimal technology strategy would align with job tasks and technology platform.

Technology optimization example from recent TCO0 engagement:

Acquisition is just a part of Total Cost of Ownership.

A new class of business productivity software designed for Network Computing.
- Comprehensive set of integrated Java applications.
- Common design - the NO. 13 attributes, uniform user interface.
- Will be certified for 100% Pure Java certification.
- Initially delivered for Network Computing.
- Two product flavors for different uses:
  - eSuites Workplace
  - eSuits Developer

Annual Savings Compared to Typical Windows 95 LAN PC:
- Network Computing is the most cost-effective way to provide access to MS Windows applications.
- NetPCs similar to test practices' Windows 95 client: higher cost than Network Computing.
- Java NC's offer the highest degree of flexibility, savings.

15 yr savings - 100 client network vs NetPC/best Windows: $1,926K - $6281 vs normal Windows: < $1,926K - $6281
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Using 3270-type terminals to train airport agents

Goal: move train luggage from spatialva regional to 110 airports
- Deploy more than 100 IBM Network Stations with local servers
- Run all transactions making Uninir more convenient and reliable
- Expand usage to place terminals at counters, new inventory systems

Benefits
- More convenient to use than 'grid ana terminal
- Easier to manage and less expensive to own than PCs
- Small size reduces real estate costs, avoids major counter modifications
- Better service and support, easier management of year-round issues

IIM Network Station
- MA in 8-based operator of > 100 supermarkets in New England
- Using RS/6000s, connected terminals, and PCs
- Goal: deploy 1,200 IBM Network Stations
- Simplify each store's computer inventory
- Provide terminal access to broader range of applications
- Replace exponents and hard-to-maintain PCs, increased security

Benefits
- Better access to Intranet and Lotus Notes
- Eliminate exponents and hard-to-maintain PCs
- Connects to store or corporate servers, distributed, flexible, PC
- Reduces cost with support and maintenance of applications across key

Network Computing Hub
- Manufacturer of more than 700 fine dining and beverage products
- Using AS/400 linking 165 terminals, 60 PCs, 10 printers
- Goal: reduce hardware, software expenses of purchasing, supporting 80 PCs
- Avoid hardware, software expenses of purchasing, supporting 80 PCs
- Use AS/400 to leverage existing powerful software environment
- Dramatically reduce costs by sharing documents in PC formats across company
- View access to remote systems using AS/400 Integrated File System

Benefits
- Substantial reduction in total cost of ownership vs. PCs
- Enhanced usability in functionality
- Improved training and support costs
- Increased security
- Applications updated in one place - the server
- Dynamic resource allocation - Client/Server
- Enhanced application deployment speed and flexibility
- With AS/400, no more than 70% of the cost of comparable vs. PCs, more function than terminals
- Dynamic computing across platforms, transparent to users
- More reliable, less expensive
- Simplified software upgrade model
- End-to-end operations - PC, AS/400, and network
- Reduced support and maintenance costs
- Increased security
- Applications/data secured on server
- Simplified software upgrade model
- Software upgraded in one place - the server
- Dynamic asset allocation - Client/Server
- Network resources vary dynamically with tasks performed
- Ubiquitous Internet access
- Enhanced application deployment speed and flexibility
• Washington, D.C. area, nonprofit family-run after-school program
• Goal: Lower initial cost and ongoing cost of ownership. Integrated network management and user interface.
• Benefits:
  - Low initial cost and low total cost of ownership
  - Provide access to AS/400 and PC-based applications, Web
  - Terminal support for 3270, X-Windows
  - Avoid manual input and improve productivity
  - Terminal support for AS/400
  - Terminal support for 3270, X-Windows
  - Reduced maintenance costs
  - Terminal support for AS/400
  - Terminal support for 3270, X-Windows

• Using AS/400, connected terminals, and PCs
• Goal: Deploy IBM Network Station in headquarters, other offices
• Benefits:
  - Expand user base and low total cost of ownership
  - Save money and improve productivity
  - Avoid manual input and improve productivity
  - 3270 terminal support
  - Terminal support for AS/400
  - Terminal support for 3270, X-Windows
  - Terminal support for AS/400
  - Terminal support for 3270, X-Windows

• Terminal support for AS/400
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• Terminal support for 3270, X-Windows
A strategic part of Network Computing
- Accelerated deployment of applications
- Device independence, server-managed
- Universal access to new and existing applications
- Seamless access to multiple servers and networks
- Support for JVM for app development
- Improved application performance and scalability
- Enhanced user experience
- Lower cost

Universal ACCESS to Information...

continued enhancements
- Print support
- Terminal emulation
- Remote Desktop support
- Improved Web browser
- Enhanced virtual desktop management
- Improved security and management
- SmartCard support
- NLP support for die-up capability

Universal ACCESS to information...
Dealing With Cross-Border Broadcasting: More Regulations

Thawansak Sukhawun