



Linux @ IBM

On Demand Government: Linux in the Public Sector

An Executive Perspective

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IBM Canada Ltd.





Agenda

- **Forces of change**
- **On demand**
- **Implications for the infrastructure**
- **Linux and open source – the trump card?**

Objective : Provide food for thought...



The goal of Government On-Line

Communication
Canada

Canada

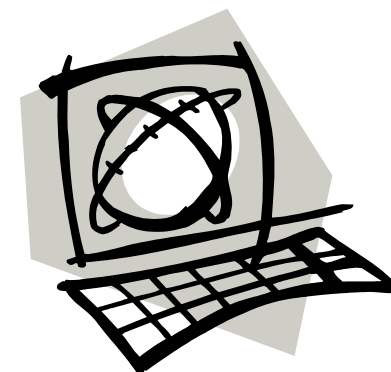
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Government On-Line

GOL is a multi-year project that will provide citizens with the ability to interact with government, to receive information, to access programs and services, and to do business electronically with the Government of Canada. The initiative will bring federal organizations on-line in stages, with all commonly used programs and services on-line by the end of 2005.

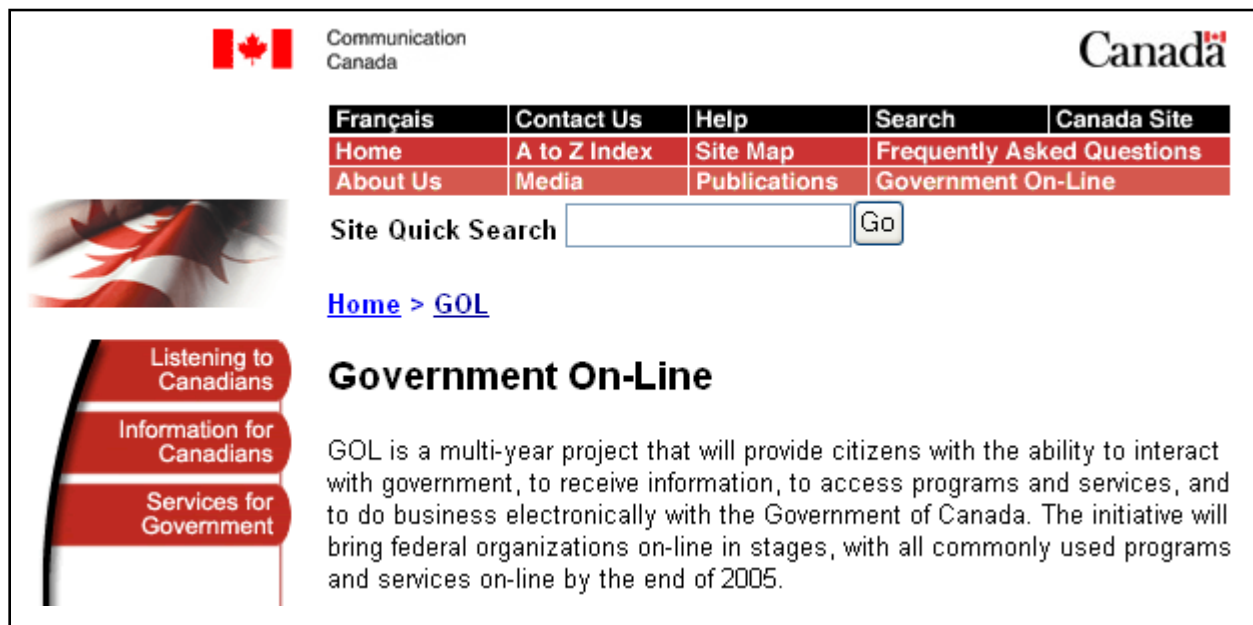
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The “challenges” for Government On-line

1990s  2005



Communication Canada Canada

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Government On-Line

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- Listening to Canadians
- Information for Canadians
- Services for Government

Pressures

- ✘ Security
- ✘ Availability
- ✘ Cost
- ✘ Legacy
- ✘ Functionality
- ✘ Change
- ✘ Sophistication
- ✘ Tolerance
- ✘ ...etc



The same forces that caused change in the corporate world



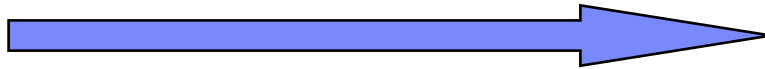
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Add in the connectivity and legislative explosion...

1990s



2005

Pressures

- Security
- Availability
- Cost
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- ...etc

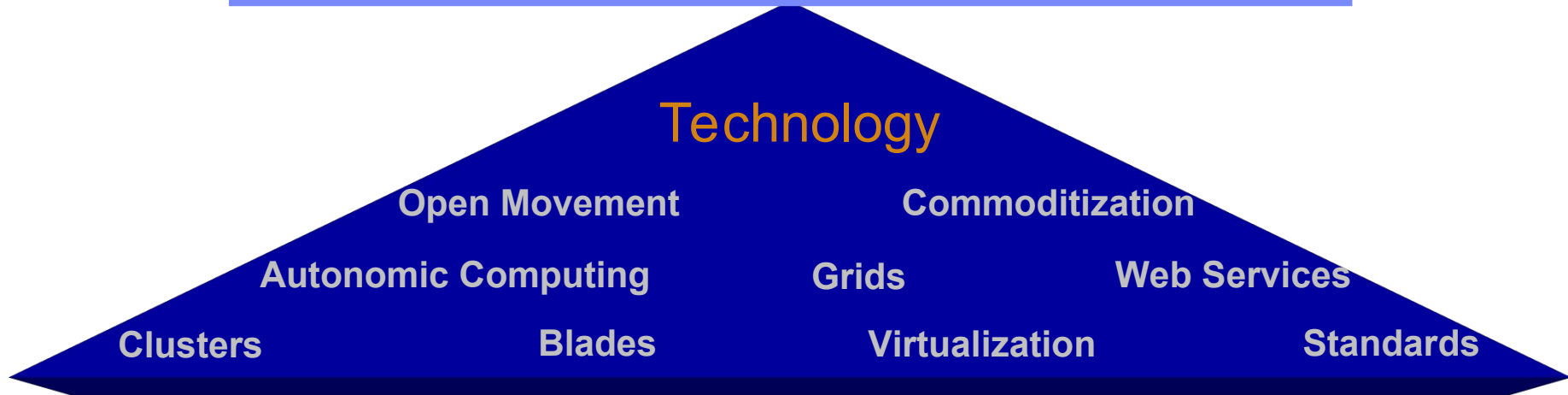
...ever accelerating rate of change



“Business” and “Technology” forced back together



Government On-Line / on demand business





IBM's vision for an on demand world

“An enterprise whose business processes -- integrated end-to-end across the company and with key partners, suppliers and customers – can respond with speed to any customer demand, market opportunity or external threat”



— Sam Palmisano, IBM Chairman and CEO



Examples of IBM's successful transition

	BEFORE	AFTER
CIOs	128	1
Host Data Centers	155	11
Web Hosting Centers	80	7
Networks	31	1
Applications	16,000	5,200
IT Expenses	\$2.1B	\$1.3B
IT Expenses / Revenue	3.2%	1.5%



Relationships were transformed: Customers and suppliers

e-Commerce

\$26.4B in 2002, up 4% YTY



\$11.6B from ibm.com, up 3%



Customer Relationship Management

Cost avoidance from e-Support in 2002: ~\$600M, up 17% YTY



60% of “Call-Me’s” result in sales



Fulfillment

Applications reduced by 42%



70% of PC orders “touchless”



Procurement

90% orders “hands-free”

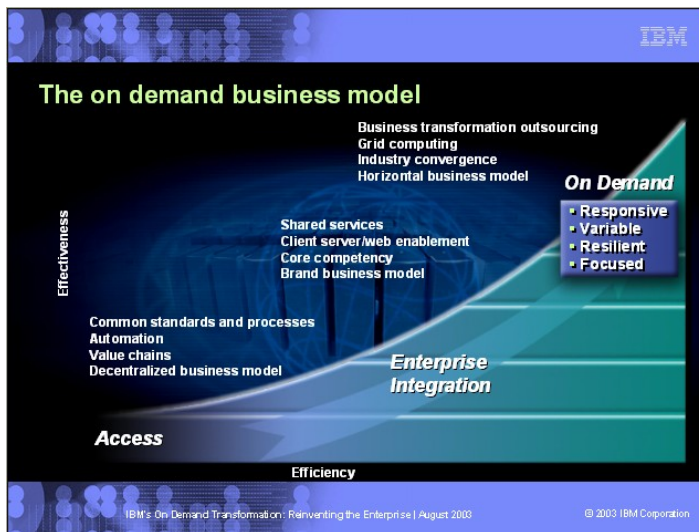


Cost avoidance from e-procurement in 2002: ~\$450M, up 8% YTY

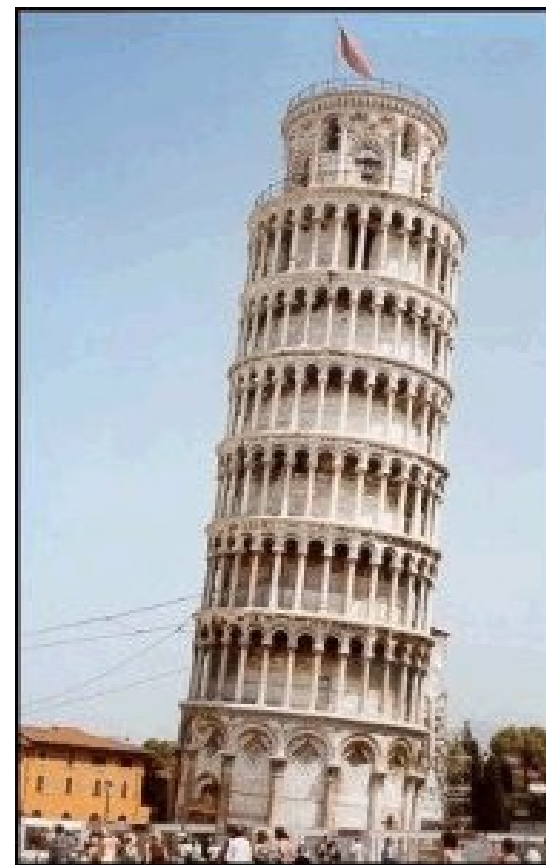




A key lesson learned: *On demand business requires a solid foundation*

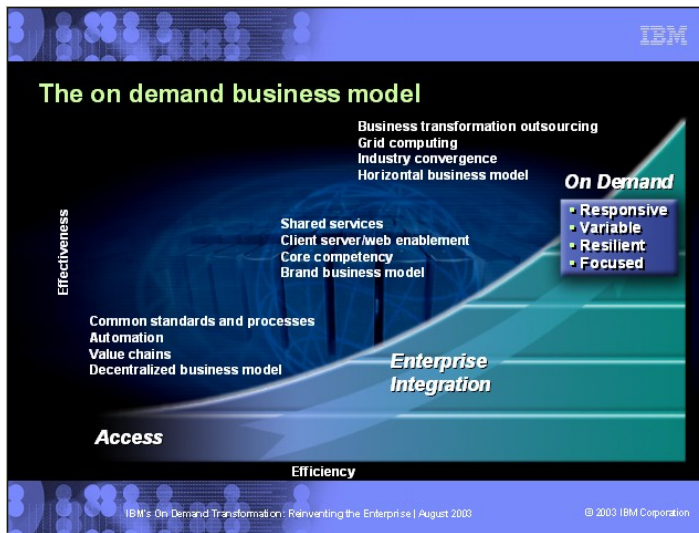


- ✓ Responsive
- ✓ Variable
- ✓ Resilient
- ✓ Focused



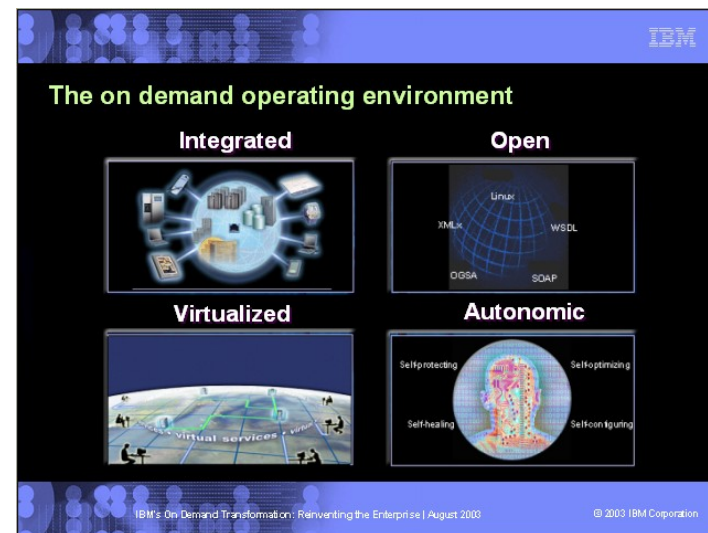


A key lesson learned from the transition: On demand business requires an on demand infrastructure



- ✓ Integrated
- ✓ Open
- ✓ Virtualized
- ✓ Autonomic

- ✓ Responsive
- ✓ Variable
- ✓ Resilient
- ✓ Focused





Openness and Linux are critical to success

The on demand operating environment

Integrated

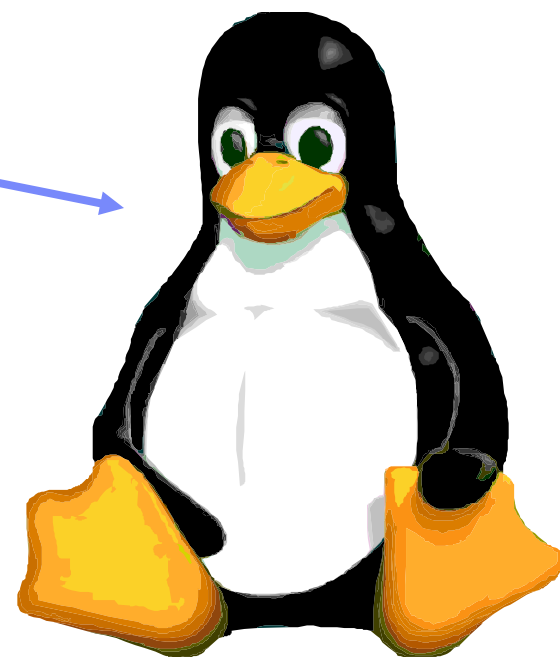
Open

Virtualized

Autonomic

IBM's On Demand Transformation: Reinventing the Enterprise | August 2003

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What is Linux?

- **UNIX-like operating system**
 - Supported by a global community
 - Unprecedented flexibility
- **Why Linux?**
 - Single operating system; desktop to mainframe
 - Attracting the best technical talent
 - Basis for innovation
- **Packaged and shipped by distributors**
 - Red Hat, SuSE, other regional distributors

"Hello everybody... I'm doing a (free) operating system (just a hobby, won't be big and professional...)."

Linus Torvalds, creator of Linux, from the first Internet announcement on August 25, 1991.





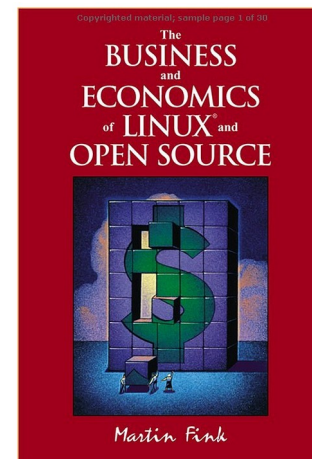
Open Source Software

■ What is Open Source Software?

- Community develops, debugs, maintains
- Generally high quality, high performance software
 - Peer review process promotes excellence
- Half dozen widely-accepted licenses
- Good approach to developing open standards
- Decision to use just another business decision

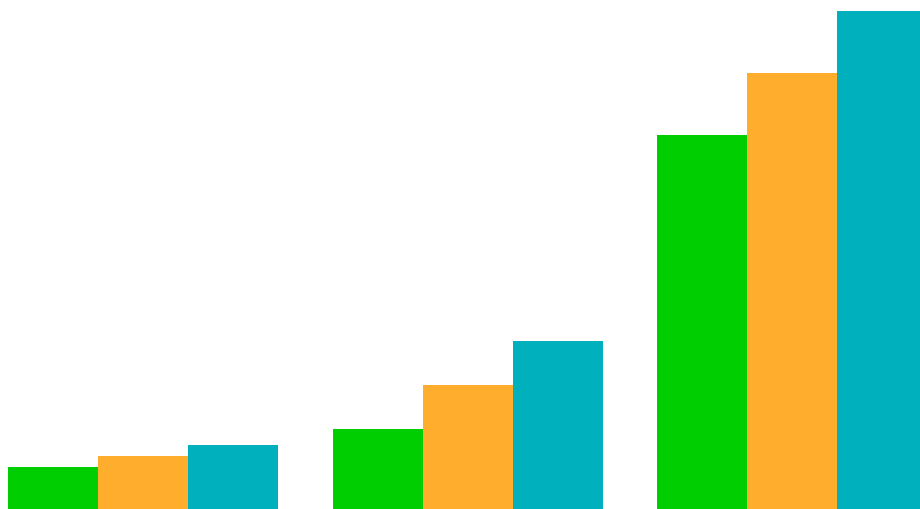
■ Suggested reading

- The Business and Economics of Linux and Open Source
 - Martin Fink





Linux for business... It All Started With Cost Benefits



TCO

1. Operating system purchase prices
2. Hardware purchase / maintenance
3. Upgrade prices
4. Administration costs
(excludes middleware, applications, services)

but cost alone is not enough...



OSS/Linux Strengths Support Key Customer Needs

■ Business needs

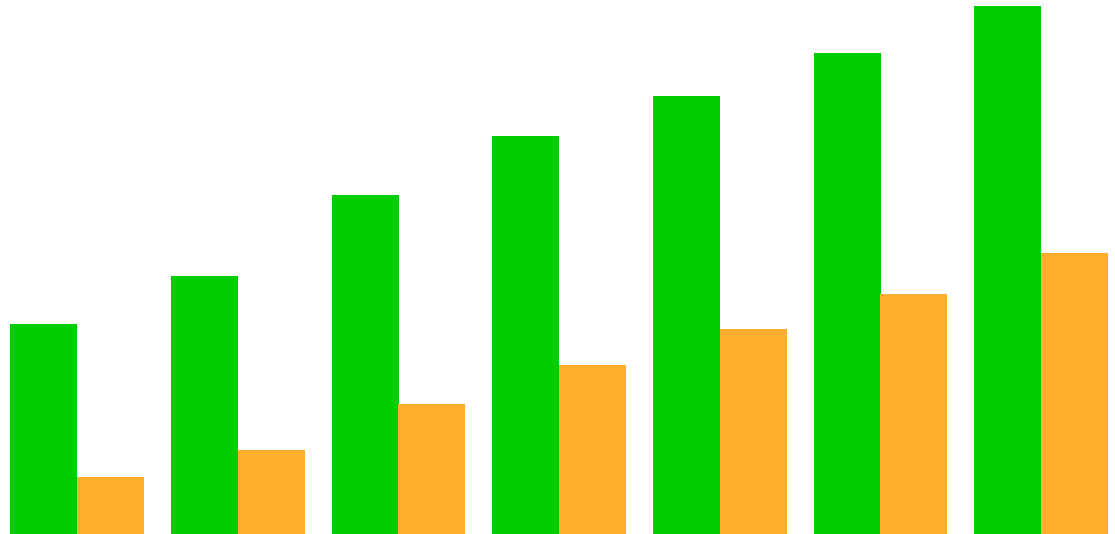
- Address current budget challenges
- Enhance security and privacy
- Improve collaboration of people and organizations
- Shorten cycle time of business and IT projects
- Prepare to address uncertain future needs
- Manage costs and reduce risks over time

■ OSS/Linux strengths

- Low acquisition and lifecycle costs
- Open source permits independent validation
- Open standards enable interoperation
- Application availability and scalability
- OSS model relies on user energy to direct evolution
- Platform stability and lack of "software monoculture"



Linux adoption rates around the world






Linux is an Industry-Wide Initiative





Eating our own cooking

... IBM uses Linux extensively

Powered by 

- **1400+ production servers world-wide**
 - excludes Research and Development !
- **A partial list of our internal Linux projects:**
 - Microelectronics EDGE Application
 - Intranet forums
 - IBM's On Demand Workplace development
 - Security assessments
 - e-mail anti-virus scanners
 - Operations: e-hosting and network management
 - IBM Standard Software Installer (ISSI)
 - Microelectronics 300mm wafer manufacturing
 - Manufacturing line Kiosks





IBM Sports Infrastructure

- **IBM hosts international sports events on Linux servers**
 - US PGA Tour
 - Tennis: US Open, Wimbledon, Roland Garros, Australian Open
- **Web serving on-demand**
 - Delivery hosted by IBM Global Services
- **Linux provides:**
 - Ability to handle very high traffic during live events; high availability; flexible, cost-efficient platform for hosted services





IBM 300MM Wafer Facility

- **Background :**
 - US\$2.9BN 140 000 sq foot facility
 - Largest single investment in IBM's history
 - Largest private investment in NY state's history
- **Challenge :**
 - 60 x 60 x 24 x 365 automation
 - 300 machines in constant communication
 - Ten fold more complex than normal manufacturing
- **The evaluation :**
 - 90 day test of 3 machines
 - Windows
 - Degradation in 6-7 days + outages in 10
 - Linux
 - No issues left it running for 5 months
- **The proof :**
 - Not one single failure to date (18 months)



Perry Hartwick
IBM
Manager of
300mm
Systems

"... just for fun, we kept the Linux experiment running to see what would happen. We finally shut it off after 5 months, and it was still running like a clock."

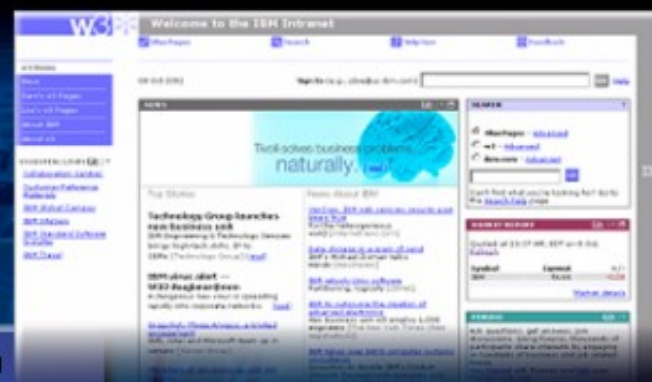


Linux for on demand workplace

On demand workplace

- **w3.ibm.com**
- **Knowledge Management**
- **Content Collaboration**
- **e-Learning**
- **Employee self-service**

- **Employees #1 source of information**
- **68% view w3 as critical to doing job**
- **Over 7,000 Web conferences with over 42,000 participants each month**
- **48% of employee training**
- **Cost avoidance from e-learning: ~\$350M**
- Down 12% YTY



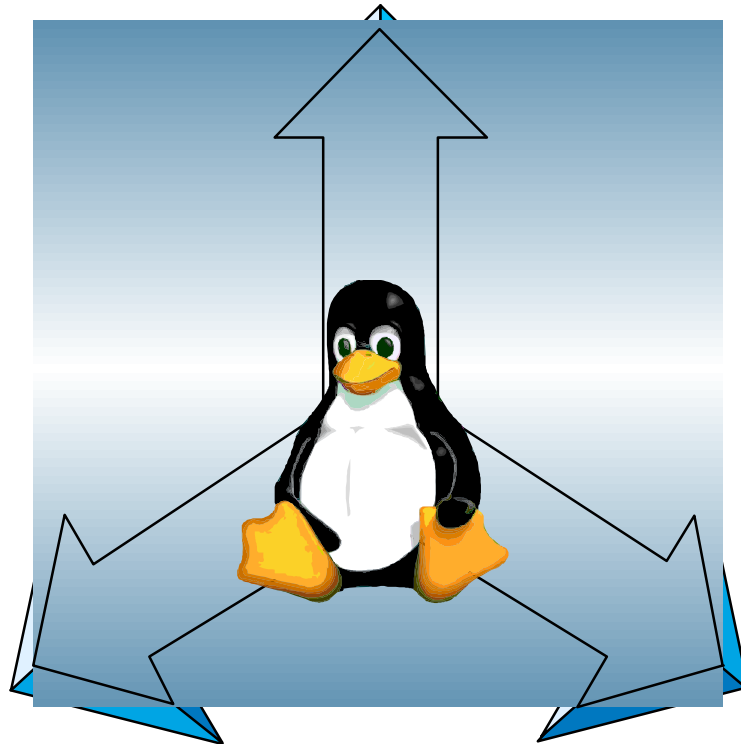


Three main types of Linux usage

Desktop

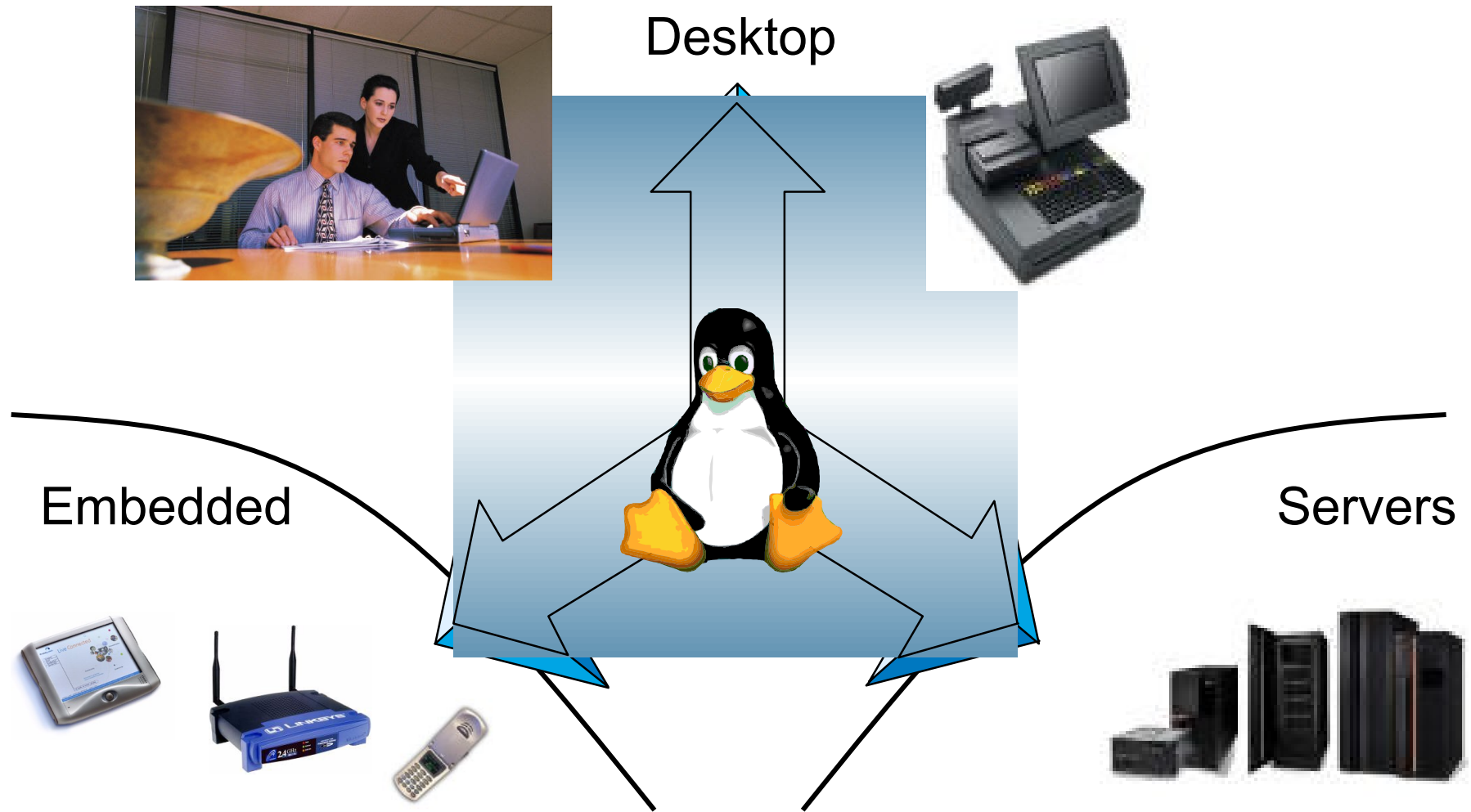
Embedded

Servers





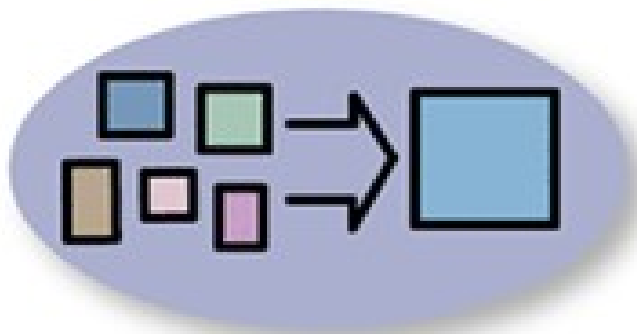
Three main types of Linux usage



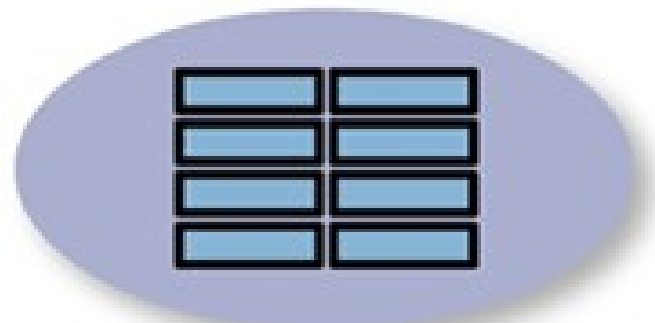


Linux Deployment on Servers

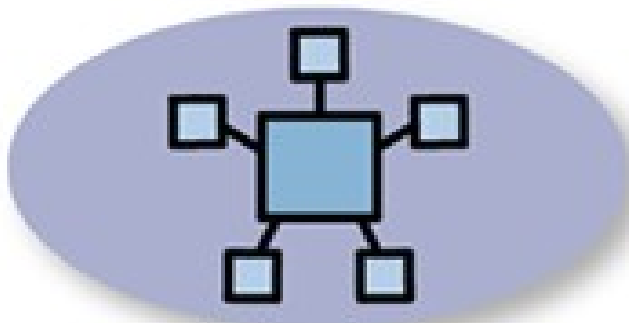
- **Workload Consolidation**



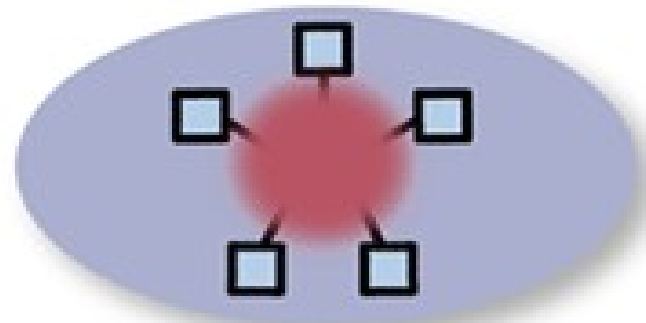
- **Linux Clusters**



- **Distributed Enterprise**



- **Infrastructure Solutions**





What's Driving Linux Adoption in Government? ...

- ***Total Cost of Ownership***
 - Workload consolidation, High Performance Computing, licensing
- ***Improved skills***
 - Expanding interest in Linux is creating a large Linux skill base
- ***Improve service to the citizen***
 - More technology into the hands of more citizens
- ***Improved system capabilities***
 - Reliability, availability, security, performance
 - International, open standards
- ***Low risk implementation / migration***



What's Driving Linux Adoption in Government?

- ***Accelerated innovation***
 - Expedite Research and Development and world wide collaboration
- ***Security***
 - "Many eyes" speeds problem identification and resolution
 - Modular nature of Linux allows for more secure implementations
 - Vendor independence
 - Limit dependency on proprietary systems
- ***Foster technology innovation industry***
 - Lower cost of entry than most Industries
 - Create software industry
 - Create wealth and raise standard of living



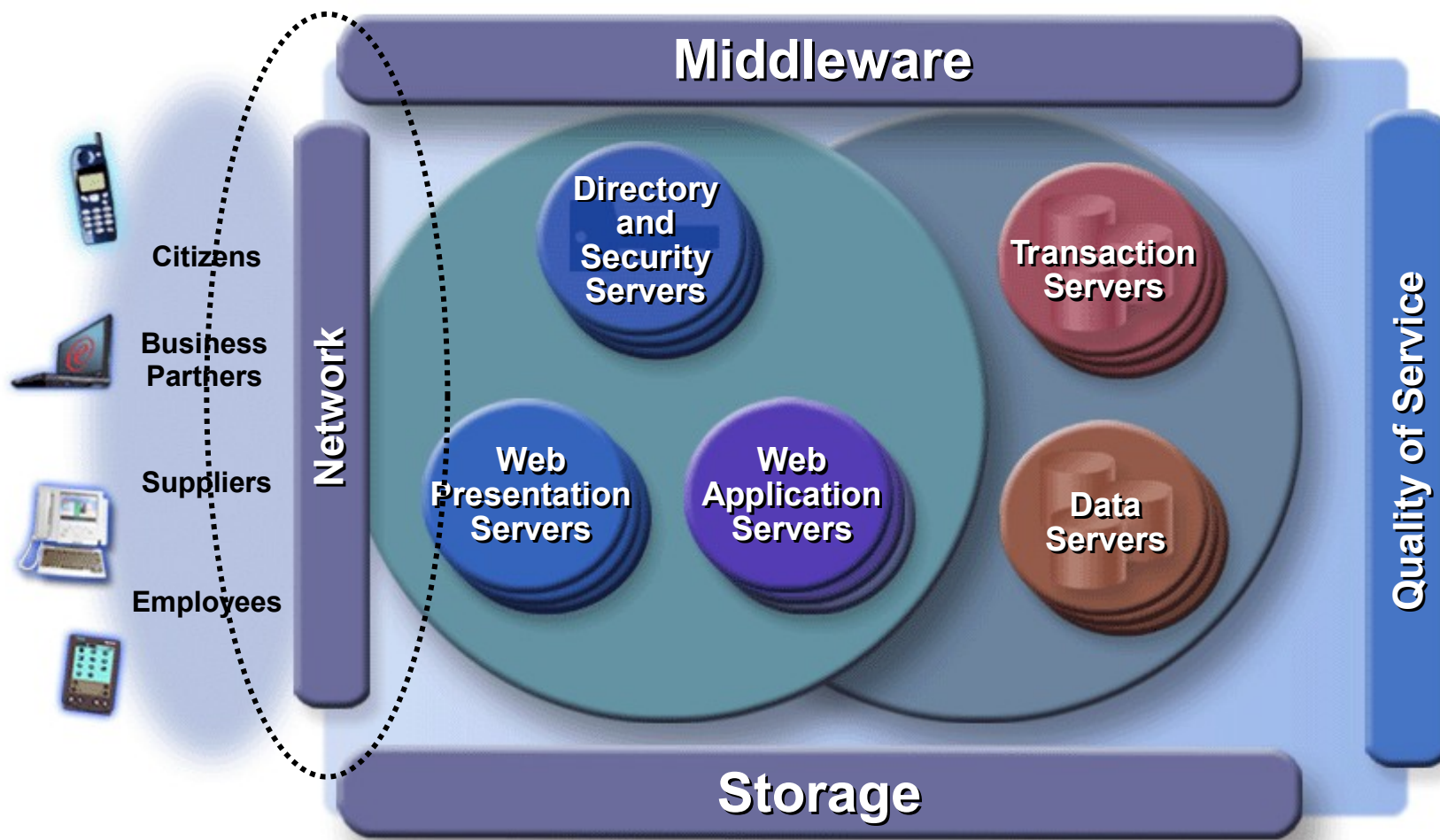
Recommendations

- ***Familiarize yourself with the Open Source phenomenon***
 - OSS / Linux is a game-changing technology with far reaching consequences for IT strategies
- ***View OSS as a valid alternative for IT systems***
 - Evaluate OSS for procurements on equal footing with conventional proprietary software
- ***Incorporate open source software development into IT strategies***
 - No one "owns" the open source movement, barriers to entry are low, and skills can be developed rapidly off an existing base of software (UNIX) skills
 - The open source community, and Linux in particular, are already global communities linked together via the Internet and distinguished by an inclusive rather than exclusive credo
 - The collaboration that results provides a steady source of innovative ideas
- ***Look at OSS, (such as Linux) to see how it can:***
 - Lower costs
 - Increase reliability and security
 - Improve service
 - Create economic opportunities





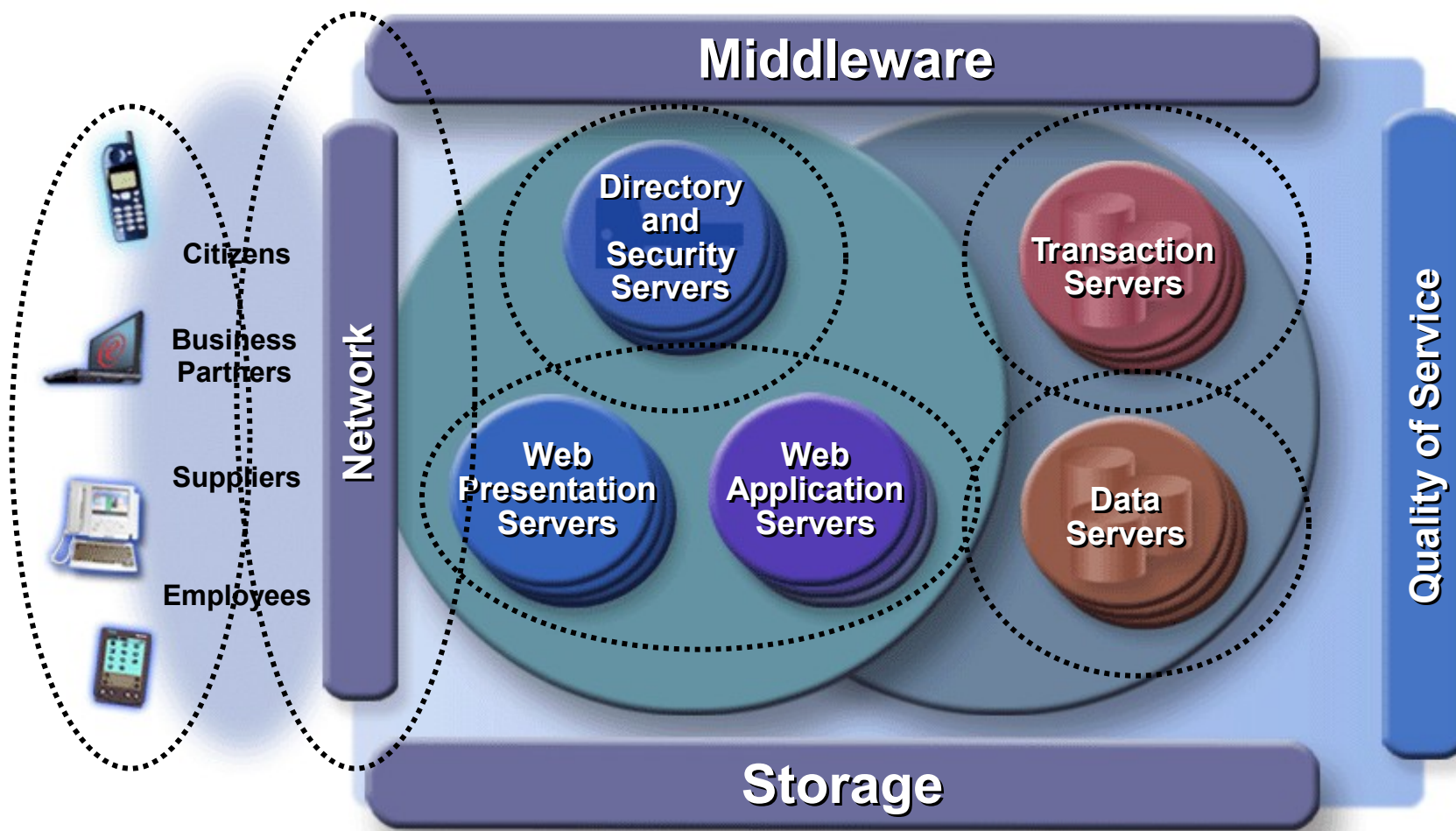
e-Government Infrastructure – “Traditional” view of Linux fit





e-Government Infrastructure

Linux and OSS fits everywhere!





If Linux is an Industry-Wide Initiative – Why IBM?





Comprehensive IBM Linux Investments





IBM Hardware, Software, and Services

Linux is complementary – it is not a threat to IBM!

■ **Hardware**

- All IBM ~ platforms
- POS/Kiosk solutions
- IBM TotalStorage solutions

■ **Software**

- Over 200 software products available

■ **Services**

- Total solution approach
- Single point of contact
- Hardware, software and services
- Defect and usage support for Linux






Why IBM for Linux?

Innovation and leadership!

The First...

- 
- ...Vendor pursuing a **broad** strategy
 - ...Vendor to issue full public endorsement of Linux
 - ...Linux eSourcing solution
 - ...Organization **dedicated** to Linux open-source projects
 - ...Linux-based Integrated Solution platform for e-business
 - ...Integrated Linux Cluster offering
 - ...Comprehensive Linux channel program
 - ...Linux industry-specific CoC
 - ...workload consolidation offering for Linux

Work with IBM to determine how you can benefit from Linux



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