

# *Linux in the Enterprise*

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***TCO***

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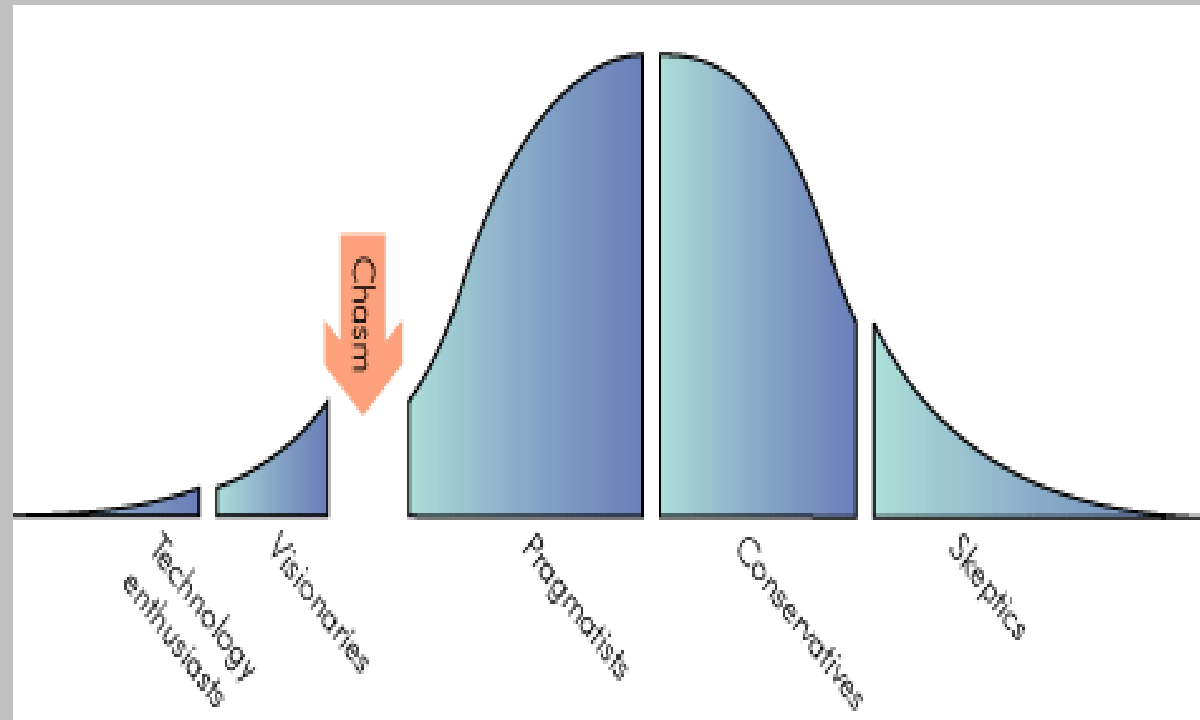
***&***

***Detroit ITEC In Spring 2004***

# Linux in the Enterprise

## Adoption Life Cycle

*The area of each segment corresponds roughly to the number of people who fit its profile.*



“Crossing the Chasm” by Geoffrey A. Moore

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## ***Risk Taking***

- ➔ 5 – 10 years ago      » Technology Enthusiast
- ➔ 2 - 3 years ago      » Visionaries
- ➔ Last year              » *Chasm Crossing*
- ➔ Now                    » The rise of the Pragmatist
- ➔ In 1 -3 years         » Conservative
- ➔ In 10 years            » Skeptic /laggard

# *Linux in the Enterprise*

## *Crossing the Gap*

- Pain
- Opportunity

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## *Crossing the gap because of Pain*

- Cost of Licenses
- Discontinued Support
- Forced upgrades
- Security break-ins
- Viruses
- Spam
- Crashes

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## *Crossing the gap to take advantage of The Opportunity*

- Lowered cost of licenses
- Control over upgrade cycle
- Increased security
- Virus management
- Improved availability and reliability
- Improved performance
- Competitive advantage

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**Crossing the gap at what cost**

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According to the October 2nd, 2003 article in the Economist\*,

*"...The hottest "cold" technology is Linux, an operating system that comes free, **except for maintenance costs.**"*

\* [http://economist.com/printedition/displayStory.cfm?Story\\_ID=2101658](http://economist.com/printedition/displayStory.cfm?Story_ID=2101658)

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## *Total Cost of Ownership*

**TCO** refers to the administrative costs associated with computer hardware and software purchases, deployment and configuration, hardware and software updates, training, maintenance, and technical support.

[www.microsoft.com/windows2000/techinfo/howitworks/management/glossary.asp](http://www.microsoft.com/windows2000/techinfo/howitworks/management/glossary.asp)

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## *Total Cost of Ownership*

### Components of TCO

**Acquisition costs**

**Directly related costs**

**"Consequential" costs**

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## *Total Cost of Ownership*

### *Acquisition costs*

**The most obvious costs are related to the initial purchase of software and hardware**

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## *Total Cost of Ownership*

The “Ownership” in TCO is a slight misnomer:

*Differentiate between:*

- *What you **OWN** and*
- *What you have the “**Right to Use**”*



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## *Total Cost of Ownership*

- *Open source -> you **OWN** and it's free*
- *Commercial -> you have the "**Right to Use**"  
and it is not free*

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## *Total Cost of Ownership*

### *Directly Related Costs*

- ◆ Deploying and maintaining the technology platform, along with the costs of developing, supporting and integrating applications. Plus, training.
- ◆ Direct & Indirect Labor cost; labor cost is the same for commercial software and open source software

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## ***Directly Related Costs - Maintenance***

- ◆ Reliability
- ◆ Availability
- ◆ Serviceability
- ◆ Performance

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## Consequential Costs

The costs of both planned and unplanned downtime, which are often hefty and difficult to quantify

<http://productfinder.infoworld.com/search/viewabstract/infoworld/62644/index.jsp>

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## Consequential Costs Scenario

### Quantifying Down Time

Number of employees	25
Outage per day in minutes	15
Hourly rate per employee with benefits	\$15 .00
Outage occurs once a week yielding	
annual outage of hours per employee	13
Total man-hours of outage per year	325
Cost of outage per year	<b>\$4,875.00</b>

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## Consequential Costs

- ◆ Lost revenue opportunities
- ◆ The cost of capital wasted in idle productivity
- ◆ The cost of damaged business relationships with partners and customers

<http://productfinder.infoworld.com/search/viewabstract/infoworld/62644/index.jsp>

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## Consequential

**The cost of success -- if a project is successful,**

- ◆ Will the technology platform scale to support growth?
- ◆ Will applications need to be migrated to a different platform?

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## Consequential Cost Quantification

### **These are the hardest costs to quantify**

- ◆ use as much of your experiential data
- ◆ use your peers experiences
- ◆ be careful how you read white papers.

<http://productfinder.infoworld.com/search/viewabstract/infoworld/62644/index.jsp>

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## **Beware of commissioned studies**

... In a telephone conference with analysts last week, Martin Taylor, Microsoft's general manager of platform strategy, addressed the issue of pricing overseas. "We do know that we need to work with these governments so that we do have software and the right offerings priced in a way that's relevant to them and their consumers and their constituencies," he said. Taylor also said the company is countering Linux's unbeatable price tag by **commissioning studies that show the total cost of ownership over the life of the software is higher with Linux than Windows.**

Linux Nips at Microsoft's Heels - **By Ronna Abramson, TheStreet.com Staff Reporter**  
**3/8/2004 1:06 PM EST**

<http://www.thestreet.com/tech/ronnaabramson/10147246.html>

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The problem for Microsoft is Longhorn isn't expected to be released until 2006. By then, Gus Zinn, an analyst with Waddell & Reed, expects Linux will have killed off most of the Unix market, setting the stage for the real showdown against Microsoft.

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## Consequential

Finally, Microsoft execs cite one other advantage they offer over open-source software: tightly integrated products. Microsoft's next major operating system release, dubbed Longhorn, aims to integrate numerous products into the operating system and desktop, creating interdependencies that could further **lock customers** to Microsoft, notes Joshua Greenbaum, a technology consultant and principal with Enterprise Applications Consulting in Daly City, Calif.

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## Consequential Choice and Control

Forced Bundling does not equal *choice, control, flexibility, best of breed, or using technology to the best competitive advantage.*

<http://www.thestreet.com/tech/ronnaabramson/10147246.html>

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## Gains

- Compare the gains and the cost savings of embracing one technology vs another

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$$\text{ROI} = (\text{Benefits} - \text{TCO}) / \text{Time}$$

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## Gains

- Cost savings in terms of acquisition (hardware and software licensing)
- Cost savings in terms of Labor (direct and indirect), reliability, availability and Performance
- Opportunity to use savings in other ways
- Customer satisfaction from reduced down time
- Control over destiny

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## Acceptance

	<b>Linux</b>	<b>Microsoft</b>
2003		
-Q4 server revenue	\$960 million	\$3.9 billion
-Q4 server revenue growth	63.1%	16.1%
-Q4 server unit shipment growth	52.5%	23.3%
Market share*, 2002	23.1%	55.1%
Market share, 2001	22.4%	50.5%

\*Market share of paid new software license shipments.

Source: IDC

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## **Decision Factors**

- Short term decisions
- Long term decisions (Plans)
- Edge & risk choices
  - ✓ Bleeding edge (stomach for outages)
  - ✓ Leading edge (stomach for frequent changes)
  - ✓ “Been done before” edge (need stability)

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## **Industry & Economy**

### *Market Share*

- *In order to rapidly roll out software many people have to work on... it which matches the open source model*
- *In order for the software to be high quality it has to be exposed to scrutiny... which again matches the open source model*
- *In order for software to meet business need it has to be easily customizable... which matches....*

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## Scale

### **The scale of the Linux development effort**

One study of the Red Hat Linux 7.1 distribution found that this particular distribution contained 30 million physical source lines of code (SLOC).

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## **The scale of the Linux development effort**

The Linux kernel contained 2.4 million lines of code, or 8% of the total, showing that the vast majority of a Linux operating system is not contained in the Linux kernel.

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## **The scale of the Linux development effort**

Using the COCOMO (Constructive Cost Model\*) cost model, it could be estimated that this distribution required about 8,000 person-years of development time. Had it been developed by conventional proprietary means, it would have cost over \$1.08 billion (1,000 million) to develop in the U.S. (in year 2000 dollars).

\* <http://www.jsc.nasa.gov/bu2/COCOMO.html>

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## **The scale of the Linux development effort**

The majority of its code (71%) was in C, but many other languages were used including C++, shell scripts, Lisp, assembly language, Perl, Fortran, and Python.

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**The scale of the Linux development effort**

Slightly over half of all its code (counting by line) was licensed under the GPL.

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**The scale of the Linux development effort**

Can not be duplicated by one monopolistic company and produce the equivalent high **quality** response to needed changes.

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## Comparisons

### **Support**

(Availability - mean time to recovery)

- Open Source Software
  - ✓ Can fix it yourself
- Commercial Software
  - ✓ More time on the phone waiting for support

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## Gains

### **Support**

(Direct and indirect labor)

- Open Source Software
  - ✓ Many sources available
  - ✓ No vendor tie in
  - ✓ High competition
- Commercial Software
  - ✓ Vendor tie in
  - ✓ Less competition
  - ✓ More time on the phone waiting for support

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## Business Need

- Has the organization prioritized its projects?
- Has the organization determined what it expects in terms of ROI and how it ties to strategic business objectives
- Has the organization identified the competitive advantage – differentiation, that it expects the project to result in
- Has the organization identified its culture (Outsource or DIY)

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For each project

- Prioritize (Mission Critical / Differentiator)
- Set expectations (ROI & competitive advantage)
- Identify commercial and open source options
- Assess quality and adoption rate
- Assess risk
- Identify TCO
- Implement
- Set metrics to compare delivered results to expectations

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## Experience – Lessons Learned

- When the organization's culture is leaning towards DIY & it clearly sees the benefits of open source, ROI is achieved more often than not
- When expectations are set crisply, success is more likely to follow

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Experience – more lessons learned

- Sometimes there are no open source solutions and commercial ones need to be used - hybrid architecture should be ok
- Watch scope creep like a hawk – this is where your costs are likely to get out of control, because you can make the software do what they want
- Measure (& document) delivered results to expectations

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Experience – more lessons learned

- Be sure to be honest with the organization what will work “out of the *source forge* box” and what needs customization
- Free software is open to scrutiny and peer review – review before using
- Focus on the bottom line of the organization not just the technology
- **There are no silver bullets**

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*Thank you!*

Questions / Discussion