Why is CICS Still Alive?

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Agenda

- Middleware – the hidden part of IT

- CICS (Customer Information Control System) track record as a middleware product

- The future environment for middleware

CICS Today

- **CICS Transaction Server V3.1** for zOS on IBM zSeries systems
  - Includes enhanced support for Web Services, application modernisation, and systems management
- **TXSeries V6.0 for AIX** on IBM pSeries systems and other platforms including Windows
  - A fully functional CICS system with no dependencies
- **CICS Transaction Gateway V6.0** for ... many
  - Connects Web to older CICS systems
- One of the most successful s/w products ever
  - *Most people in the developed world use it every day*

Why? How?

- I thought mainframes died years ago ...?

- I never see adverts for CICS programmers ...?

- I don't recall the last time I heard about about CICS ... so how can this be?

Did you do any of these today?

- Buy something in a supermarket?

- Use a mobile phone (or any phone)?

- Travel by public transport?

- Attend an entertainment event?

- Visit a hospital?

- Use electricity, gas or water?

 - *The chances are you used CICS ... 65% of transactions are processed on CICS mainframes ... or a competitor*

Invisible Transactions

- A huge range of daily activities involve automated transactions which are performed on *remote servers*

- The user interface is *embedded* in a supermarket checkout, mobile phone, ticketing machine etc. and is therefore *invisible*

- The number and range of transaction applications will only contine to *grow*

- And you can also do transactions on the *Web*!
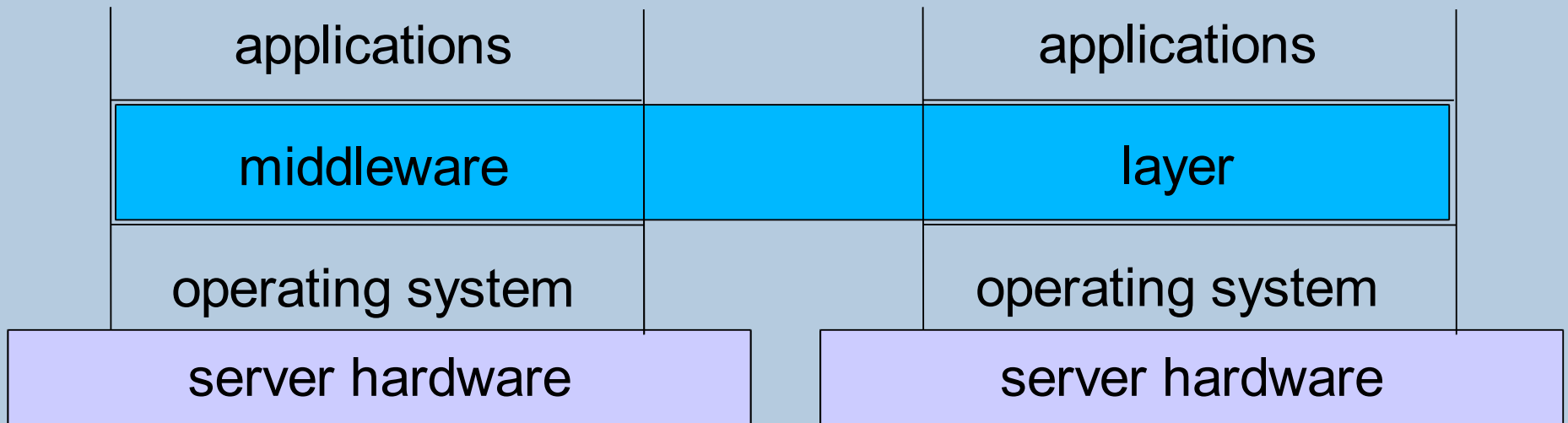
So What's Different About Servers?

- We're all familiar with applications which run on personal systems, e.g. PCs, mobile phones, iPods
  - They offer instant access via low utilisation
- We tend to forget about **server applications**
  - Must offer instant access, but economics demand:
    - low cost per transaction, hence high utilisation
    - high scalability
    - continuous availability
  - So nearly always based on **Middleware**

What is Middleware?

```
          application pgms

          middleware

          operating system

        server hardware
```
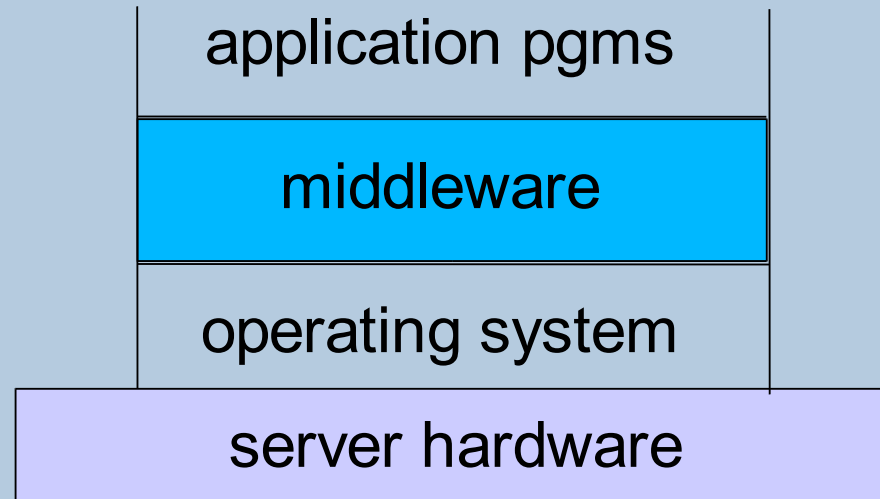
- *Software layer that sits between the operating system and the application programs*

- *Provides higher **level of abstraction** than operating system – makes application programming easier*

- *May provide greater **scalability**, reliability, and availability*

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Middleware may Span Systems

applications		applications
middleware		**layer**
operating system		operating system

server hardware	server hardware

- *Middleware layer:*

  - *May be a class library/subroutine library*

  - *May exist on multiple physical systems*

  - *May exist on different operating systems – so may become a **virtual multi-system environment***

  - *May enable portable applications*

Common Middleware Services

- *Program directory service*
- *Program scheduling service*
- *Program synchronisation service*
- *Time of day/time interval service*
- *Presentation services (device class specific)*
- *Reliable messaging*
- *High performance data management*
- *Transaction commitment service*
- *Journalling service*
- *Monitoring service*
- *Authentication service*
- *Authorisation service*
- *and more...*

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More on Middleware

- *Middleware* is a generic term which includes:
  - TP Monitors
  - Web Application Servers
  - Message Queue Managers
  - Remote Procedure Call
  - Various flavours of Web software
- Normally runs on servers or clusters of servers and requires *systems management*
- *CICS* is the *market leader* in middleware

How? Why?

- 3270 is dead, SNA is dead …

- Does anyone still run COBOL applications …?

- How did CICS get there?

Some Highlights from History

- 1968 CICS, IMS and GIS announced as IBM's first "unbundled" (i.e. priced) software products

- 1974 CICS development transferred to Hursley (in exchange for PL/I); expected to die but new command level API reverses the trend

- 1980 CICS 1.5 remote access to data and invocation of programs (ISC/MRO)

- 1990 CICS 3.1 large virtual storage via 31 bit addressing; enables very large networks

- 2005 CICS TS 3.1 supports "transactional Web"

Another Look at History

- 1968   CICS ~ 50 teletype terminals

- 1974   CICS ~ 500 3270 terminals

- 1980   CICS ~ 5000 3270 terminals

- 1990   CICS ~ 50,000 3270 terminals/emulators

- 2005   CICS ~ 500,000 browsers/emulators etc

CICS systems handle ~ 10^{11} transactions with a financial value ~ $\$10^{13,}$ per day

Typical View of today's Enterprise Network
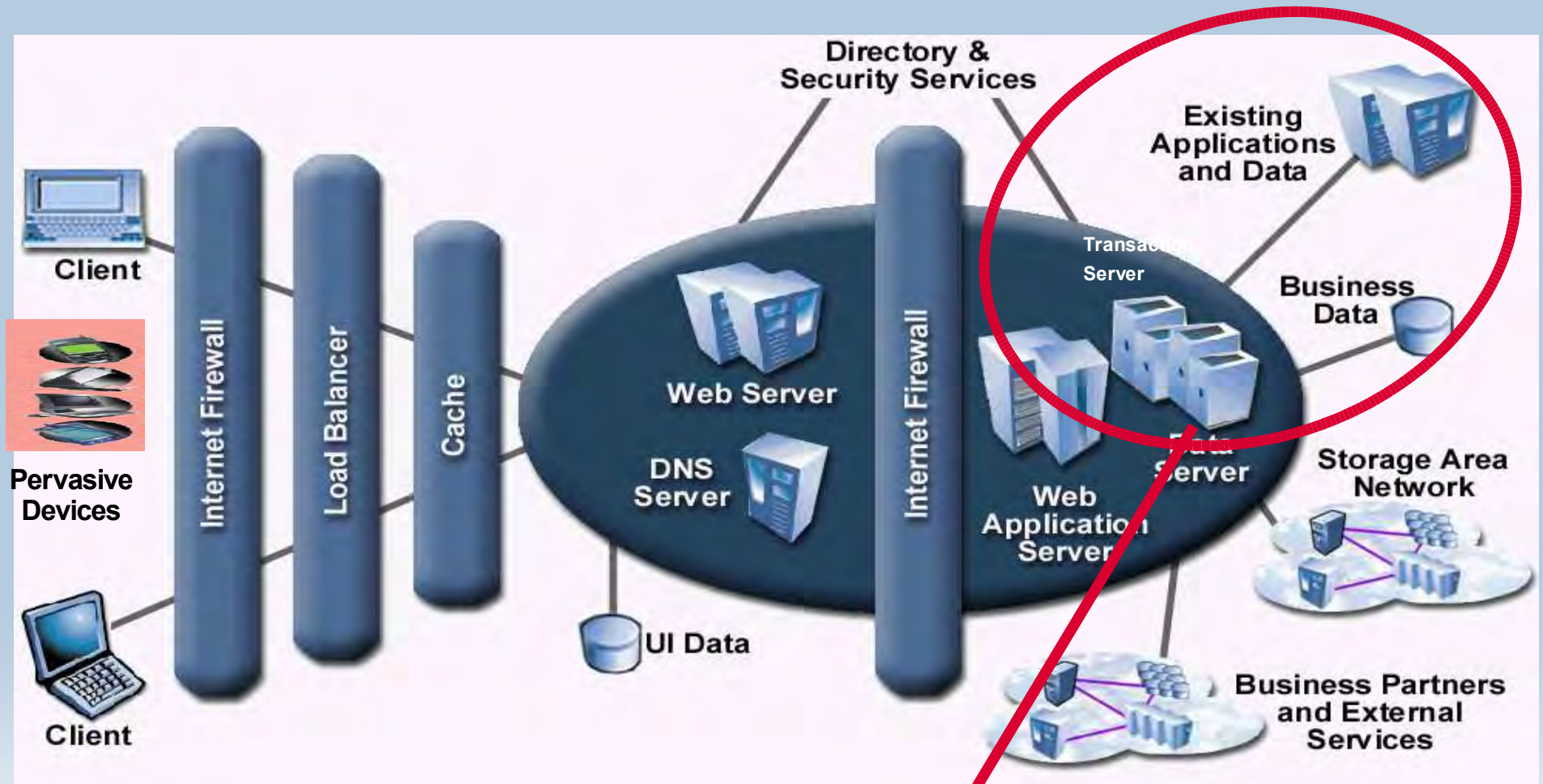
huge investments in applications based on CICS here

Some Lessons from History

- Look after your customers – protect the value of their *past investments*

- Enable *technology change*:

  - Increased processor speed, memory capacity

  - Hierarchical to relational database

  - SNA to TCP/IP and HTTP networking

  - 3270 terminals to Web browsers

- Embrace new *application development* styles:

  - Assembler, COBOL, C/C++, Java, Eclipse tools

- Watch the *competition*

How? Why?

- Well, OK, it looks good so far …

- … but it can't last … can it?

21st Century Market for TP

- Most networking is based on the **Internet**
- Growing number of **consumers** use traditional devices, web browsers, and pervasive devices to access services
- IT **substitutes** for labour - enables changed business processes*, leading to falling labour costs which provide the main source of increased productivity
- **Energy** becomes more **expensive** but usage must fall:
  - IT based communication substitutes for physical travel and reduces movement of goods

- Continued **growth** in transactions processed by a global IT infrastructure

* Harvard Business Review

Market Trends

- Consumers want unique products (i.e. "market of one", *mass customisation*)

- Most enterprises must support *multi-channel service delivery* (browser, mobile phone, retail, etc.)
    - anytime, anyplace service

- Continued pressure for *cost reduction*
    - commoditisation of IT
    - on demand acquisition and pricing
    - utility computing

- Enterprises will continue to *consolidate & outsource*
    - Consolidation often involves migrating workloads or rehosting applications, to achieve economy of scale

The Transactional Web

- Enterprises will outsource by *purchasing IT-based services* ("B2B")
    - Using a *Service Oriented Architecture*
    - Enabled by standards for *Web Services*
    - A Service is an *encapsulated component application* – the supplier runs it as well as providing it (may also contain *non-IT elements)*
    - SOA enables dynamic, *loosely coupled integration* of services
- Enables a business to focus on its *core competency,* offered as a Web Service to other businesses
    - When there is an effective way of *charging* for Services

Where is the Business Value?

- Business value is created by *applications*
  - delivered as components or services

- Infrastructure is perceived as an *enabler*
  - deployed on clusters and networks
  - based on middleware architectures
  - invisible except at the point of delivery
  - cost must be defrayed by large scale use

- Middleware must *compete* for applications
  - Multiple languages and re-use of past investments

Summary

- CICS gained an early lead in TP applications

- Survived by adapting to changed technologies

- Continued to offer customer value

- Is well positioned for the future

- See www.ibm.com/cics/ for more information