

CICS Web Access Methods

**WAVV 2003
Winston-Salem, NC
April 27, 2003**

What you'll learn about in this session...

- Why is CICS web access important
- Web-enabling vs. Web/Application integration
- Web-enabling and integration approaches
- Future direction of CICS Web integration
- Examples and Case Studies

CICS Drives Business

- 30 years and \$1 trillion invested in CICS applications (IDC)
- 20,000+ CICS/390 licenses worldwide
- 14,000+ CICS customers worldwide
- Used by 490+ of IBM's top 500 customers
- 30 million end users of CICS applications
- 5,000 CICS software packages from 2,000 ISVs
- 950,000 programmers earn their living from CICS
- CICS handles >30 billion transactions/day valued at >\$1 trillion/week

The situation...

- CICS is a mission-critical infrastructure component in over 15,000 companies.
- Y2K efforts resulted in many organizations making a renewed commitment to CICS applications.
- 'Real-time' organizations need to expose transactional systems to employees, trading partners, and customers to reduce costs and improve customer satisfaction
- 'Rip and replace' mission-critical systems is extremely costly and do not deliver promised results approximately 50% of the time

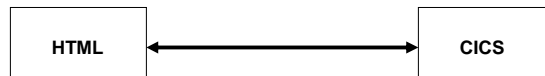
“With CICS processing more transactions per day than the entire WWW, organizations must continue to utilize the transactional capabilities within CICS” - META Group

Web-Enablement vs. Web Integration

CICS Web Access

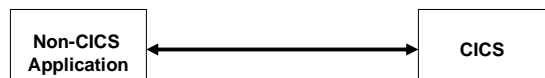
Web-Enabling

- Web-enabling CICS typically means providing HTML end user application access to existing 3270 applications.

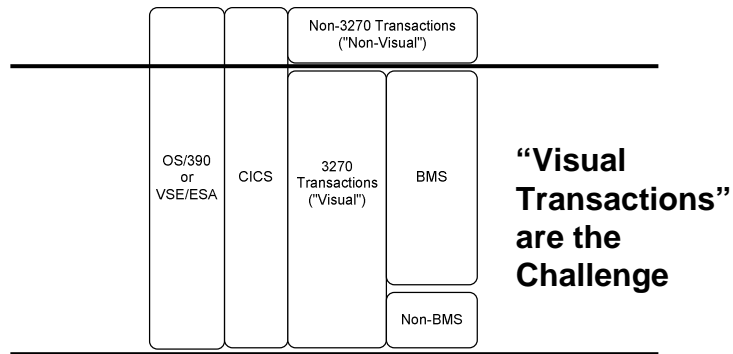


Web/Application Integration

- CICS Integration typically means integrating existing CICS application data and/or business logic with some other client, server or web-based process or application.

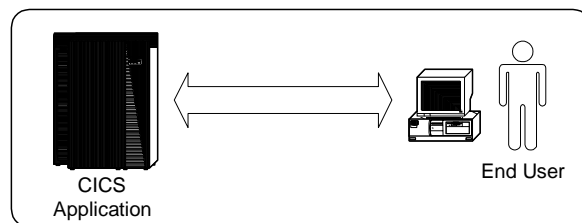


CICS Web Access Taxonomy

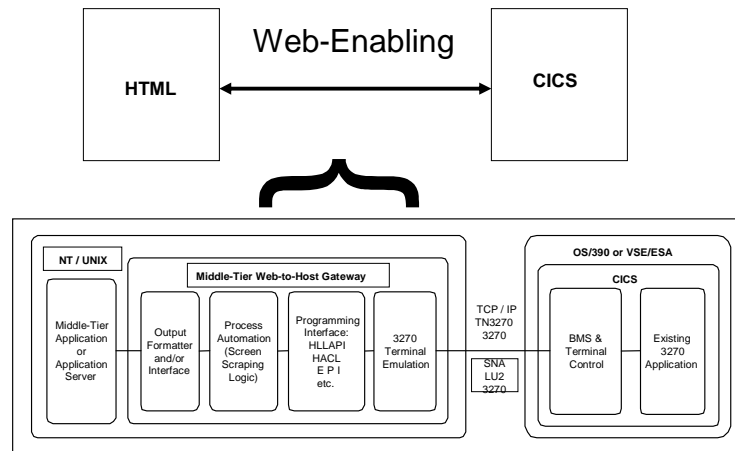


CICS Web-Enabling

- Provide an end user with direct access to the CICS transaction using a browser, etc.
- Improve user experience and expand access to existing CICS applications



CICS Web-Enabling (Web-to-Host Gateways)

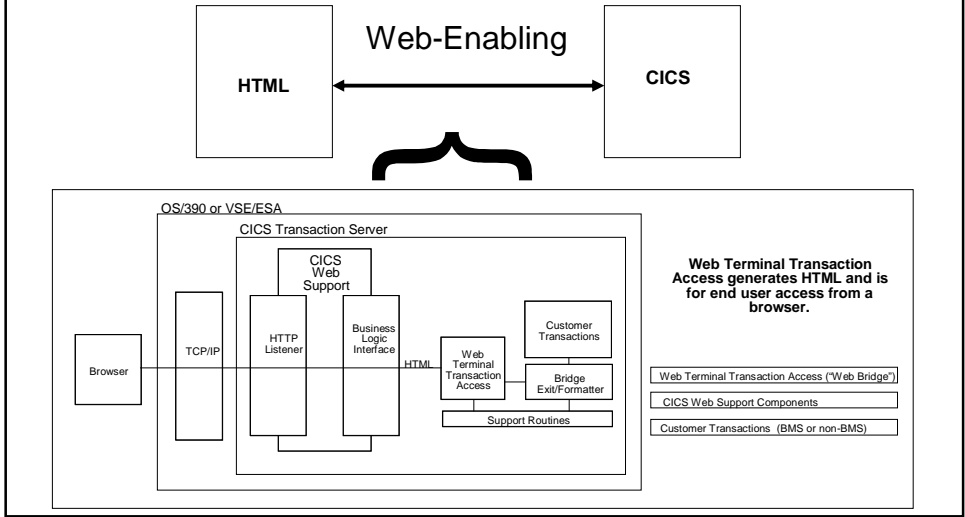


CICS Web-Enabling (Web-to-Host Gateway)

- Pros
 - No change to existing applications.
 - Can support any CICS application.
 - Reasonably fast implementation.
- Cons
 - Changes to host screens tend to break the web-to-host integration.
 - Middle-tier emulation architecture may not scale well.
 - Designed for end-user application access.

Due to their complexity and reliance upon 'screen scraping', Web-to-Host gateways have a tendency to scale poorly and break easily.

CICS TS Web-Enabling (CICS Web Services)

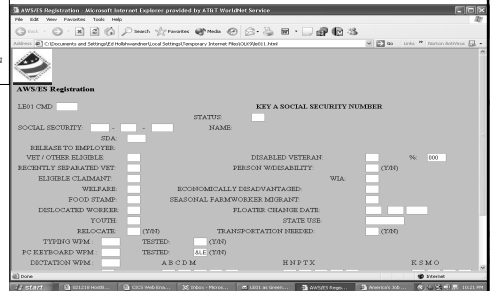


CICS TS Web-Enabling (CICS Web Services)

```

LE01 CMD      JOB SEEKER REGISTRATION      KEY A SOCIAL SECURITY NUMBER
SOCIAL SECURITY:  - -                      STATUS:
NAME:
SDA:
RELEASE TO EMPLOYER:
VET / OTHER ELIGIBLE:  DISABLED VETERAN:          %: 000
RECENTLY SEPARATED VET:  PERSON M/DISABILITY: (Y/N)
ELIGIBLE CLAIMANT:      WIA:
WELFARE:                 ECONOMICALLY DISADVANTAGED:
FOOD STAMP:              SEASONAL FARMWORKER MIGRANT:
DISLOCATED WORKER:      FLOATER CHANGE DATE:
YOUTH:                  STATE USE:
RELOCATE: (Y/N)          TRANSPORTATION NEEDED: (Y/N)
TYPING WPM :            TESTED: (Y/N)
PC KEYBOARD WPM :      TESTED: (Y/N)
DICTATION WPM :        CLASS:  A B C D W      ENDORSE:  H N P T X      RESTRICT:  K S M O
DRIVER LICENSE:
REGISTRATION DATE: 04/18/2003  PROVIDER NO:      STAFF ID:
LAST SERVICE DATE:  PROVIDER NO:      STAFF ID:
LAST STATUS DATE:  LAST UPDATE:
SELF REG PIN:
F1=HELP  F2=INTX  F4=CALIN  F5=JO SRH  F6=SRVC  F9=NOTES  F10=AMS  F12=MAIN
F13=S ACT  F14=TEST  F18=DS ER  F21=JMTPCH  F22=RESME  F23=AUTO X
    
```

- CWS macros incorporated in BMS maps
- HTML templates further modified with JavaScript



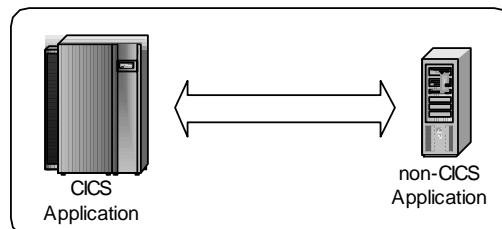
CICS TS Web-Enabling (WTTBA or Web Bridge)

- Pros
 - Minimal changes to existing applications (range from reassemble maps to incorporating BMS macros.)
 - Can support any CICS application.
 - No middle-tier hardware or software required.
- Cons
 - Non-standard browser navigation.
 - Difficulty with non-BMS screens.
 - Limited HTML design without customization (JavaScript).
 - One-for-One screen representation.

Presentation limitations and no UI development environment make CWS implementations more labor intensive and time consuming.

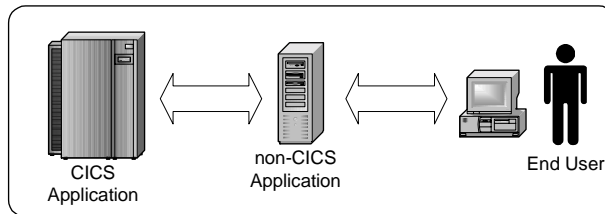
CICS Application Integration (Simple A2A)

- Integrate data and/or business logic between CICS and non-CICS applications

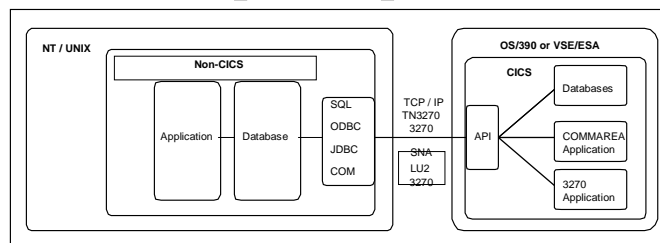
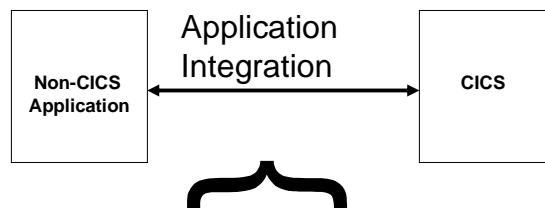


CICS Application Integration (Hybrid/Composite Application)

- Integrate data and/or business logic between CICS and non-CICS applications
- Composite application provides a presentation interface for end user access



CICS Application Integration (Adapters/Connectors)

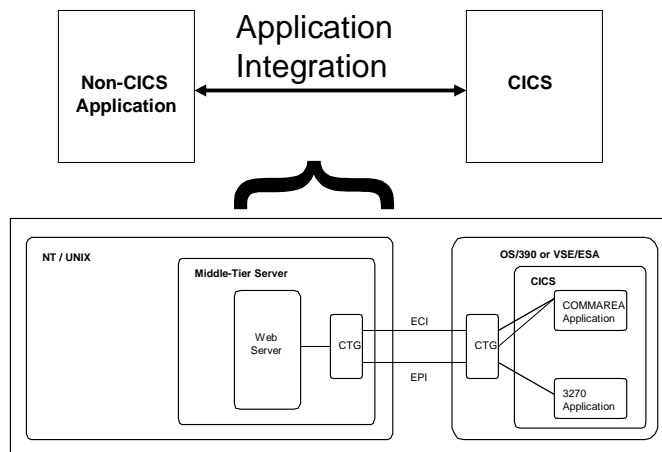


CICS Application Integration (Adapters/Connectors)

- Pros
 - Database connectors good if organization data structured for standardized database access (SQL).
 - Lots of vendors/products = competitive pricing
- Cons
 - Application modification/re-engineering probable to separate presentation from business logic (create COMMAREA app)
 - 3270 connectors use some type of terminal scripting or 'screen scraping' under the covers

Vast majority of CICS applications are “visual” where business and presentation logic is intertwined.

CICS Application Integration (IBM CICS Transaction Gateway)



CICS Application Integration (IBM CICS Transaction Gateway)

- Pros
 - Works well with WebSphere
 - Relatively inexpensive
- Cons
 - ECI connection only to COMMAREA applications
 - EPI connection to 3270 applications utilizes terminal emulation and 'screen scraping' techniques
 - CTG results need to be parsed server-side before usable with other applications
 - Requires middle-tier server

The Future of CICS Integration – XML and Web Services

What is XML?

- Stands for “eXtensible Markup Language”
- XML is a method for expressing structured data as text.
- XML looks a bit like HTML, but isn’t.
- XML is text, but isn’t meant to be read (by a person).
- XML is a family of technologies and specifications.
- XML is platform-independent and well-supported.

Why XML-enable CICS?

- Allow communication with other client, server or web-based applications.
- Enable back-end systems to conduct business transactions in a known format.
- Provide an easy way for non-CICS aware web developers to access CICS applications and data.
- Simplify internal integration projects.
- Assist in migration efforts by making CICS data immediately available to new systems while migration work continues.

Web Services Overview

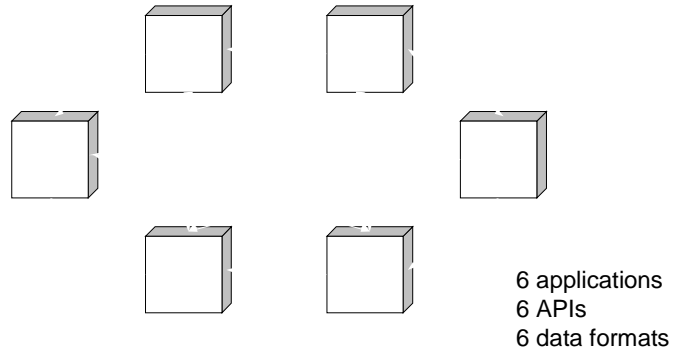
- What?
 - A family of technologies and specifications (SOAP, WSDL, and UDDI)
- Why?
 - To allow application-to-application communication through a loosely-coupled messaging system
- How?
 - Based on Internet standards (**XML and HTTP**)
- So What?
 - Platform-independent
 - Broad vendor support

Web Services Benefits

- Reduces costs and skills required for CICS integration
- Easier integration between different vendors
- Reduced complexity and increased flexibility

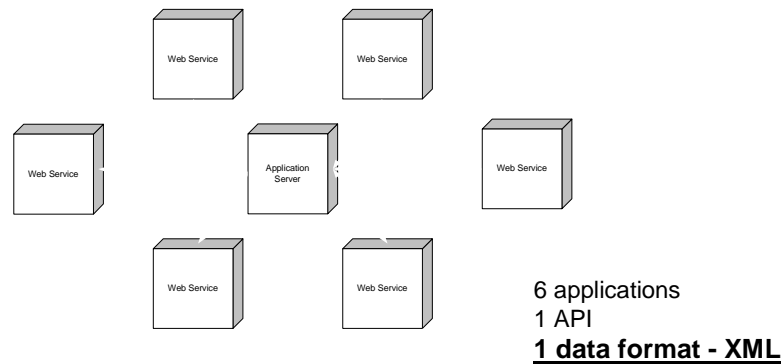
Traditional EAI Model

Complex and inflexible; new applications increase complexity; unique skills required for each application



Web Services/XML EAI Model

Reduced complexity and increased flexibility; new applications do not add complexity; one set of skills required for all applications



CICS XML Output

- Contains field name and value pairs from the CICS application.
- Field names are the same as the BMS map or non-BMS or COMMAREA field names.
- Includes information regarding field characteristics and attributes.
- No row/column references.
- Follows a fixed schema/DTD (easier to process).

So, instead of producing this...

```
Share Trading Demonstration          TRADER.T004
Share Trading Manager: Real-Time Quote

User Name:      RUSS
Company Name:   Casey_Import_Export

Share Values:   Commission Cost:
NOW:           00079.00           for Selling:    007
1 week ago:   00059.00           for Buying:     010
6 days ago:   00063.00
5 days ago:   00065.00
4 days ago:   00070.00
3 days ago:   00072.00           Number of Shares Held: 5806
2 days ago:   00078.00           Value of Shares Held: 000458674.00
1 day ago:    00077.00

Request Completed OK
-----
PF3=Return                      PF12=Exit
```

CICS BMS transactions would now produce this (abbreviated sample)...

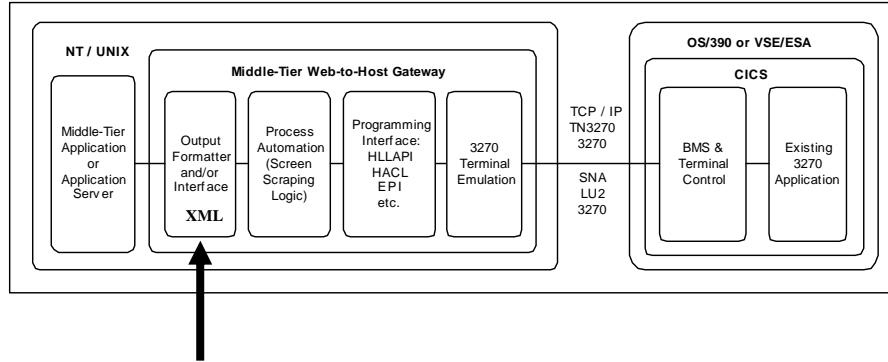
```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<!-- HostBridge Copyright 2000, 2001 HostBridge Technology, U.S. Patent Pending -->
<hostbridge>
  <token>73722b93</token>
  <transaction facility="}AAB" next_tranid="TRAD">
    <parameters>
      <tranid>TRAD</tranid>
    </parameters>
    <command>
      <send_map erase="y" erase_unp="n" unlock_kb="y" alarm="n" reset_mdt="n">
        <mapset>TRADBMS</mapset>
        <map>T004</map>
        <data_indicator>map_and_data</data_indicator>
        <fields count="15">
          <field name="SHRNOW" index="0">
            <name len="6">SHRNOW</name>
            <value maxlen="8" len="8">00079.00</value>
            <attr byte="00" justify="1" disp="n" prot="n" num="n" int="n" mdt="n" />
          </field>
          ...
        </fields>
      </send_map>
    </command>
  </transaction>
</hostbridge>
```

CICS XML-enablement Approaches

- Application Reengineering
 - Modify the CICS application to separate presentation logic from business logic; write an XML front-end for each application.
- Web-to-Host gateways
 - Use terminal emulation and “screen scraping” techniques (usually on a server) to gather application data; format as XML before sending to other application.
- Adapters/Connectors
 - Use integration brokers/transformation engines (usually on a server) to take connector output and convert to XML.
- CICS XML Middleware
 - Access existing CICS terminal-oriented and COMMAREA applications directly and receive application data as XML.

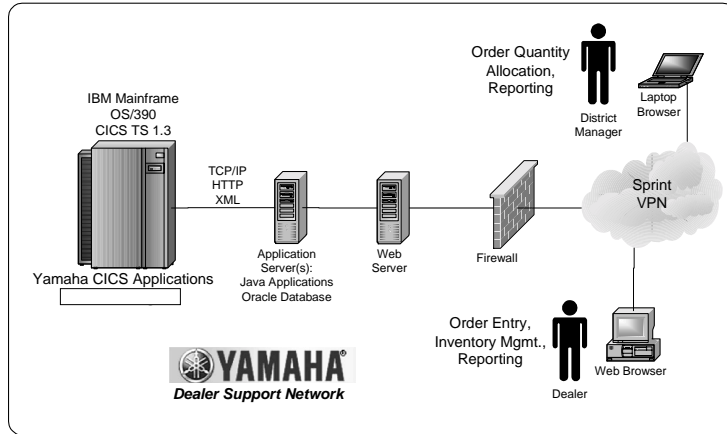
Web-to-Host Gateway with XML output

Due to their complexity and reliance upon screen scraping, Web-to-Host gateways scale poorly and break easily – XML implication unclear.

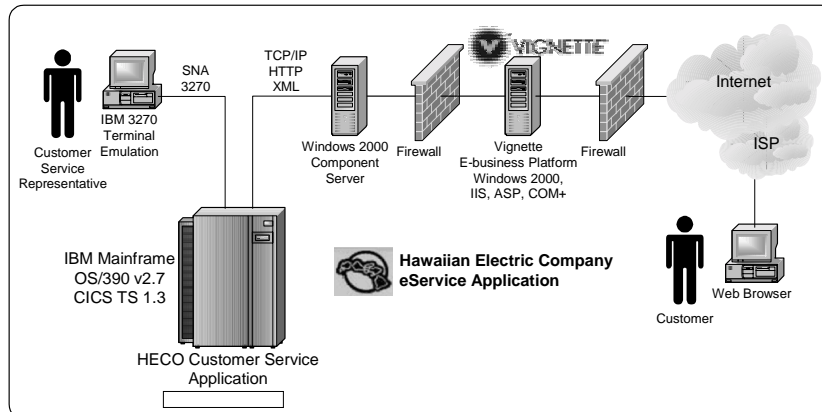


Examples/Case Studies

Supply Chain Application (Yamaha Motors)



CRM Application (Hawaiian Electric Co.)



Summary

- CICS application integration is key issue/opportunity facing large organizations.
- Exploiting XML is a key part of effective application integration.
- XML-enabling CICS applications will significantly extend/enhance the ROI of mainframe legacy assets.
- Web Services is the framework for “real time” system and platform interoperability.

One final thought...

- Remember three simple facts:
 - NOT all CICS applications are the same
 - NOT all integration projects are the same
 - NOT all integration approaches and products are the same