

Government online – an e-business Parallel Sysplex environment for eEurope

In December 1999, the European Commission issued the bulletin, “*eEurope – An Information Society for All*”. It launched *eEurope*, a program to encourage the delivery of government services via the Web. As a response to this initiative, the government of Luxembourg asked the Centre Informatique de l'Etat (CIE) – the central computing agency of Luxembourg – to become a leader in Web service delivery. These services were to support the activity of different ministries and to provide citizens with online access to government information. To help implement this project, CIE recently worked with the team at the Design Center for e-transaction processing in Montpellier, France.

eEurope

A joint effort

CIE's *eEurope* mission was challenging – to define, validate, and implement an e-business infrastructure by year-end 2000 and to roll out the first e-business applications by mid-2001. The agency's main goals were to:

- ✓ Keep using existing government applications in the new architecture.
- ✓ Introduce interactive Web technologies.
- ✓ Define an open architecture that is able to accommodate future requirements.
- ✓ Provide very high security.

In partnership with CIE, IBM proposed using the resources of the Design Center for e-transaction processing based in Montpellier to create a prototype that would help define and validate an architecture for the project. The actual implementation of the solution, not a Design Center mission, would then involve local IBM services in Luxembourg.

Based on S/390 capabilities

As the CIE - Design Center group started working together, the prototype began to take on concrete form. They analyzed the IT resources that were available at CIE's data center and could be exploited. These included OS/390 R10, CICS Transaction Server V1.3 and DB2 V6. This solid basis of up-to-date system software enabled the team to create a prototype that:

- ✓ Is built on S/390 Parallel Sysplex capabilities like scalability and availability.
- ✓ Can access existing CICS and DB2-based applications using modern Web technology.
- ✓ Provides the highest level of security.
- ✓ Has an architecture which is reusable by future applications.



CIE Headquarters in Luxembourg

The prototype's general design is based on a thin client three-tier architecture, Websphere Application Server 3.02 servlets, and uses the Common Connector Framework (CCF) to access CICS applications. Integral to the CCF is the CICS Transaction Gateway (CTG), the Java connector for CICS.

From the beginning, security and scalability/availability were key aspects of the prototype. But that came as no surprise to anyone. Security and scalability/availability are fundamental considerations for *any* e-business, e-commerce project.

Montpellier Design Center Team

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Confidence in meeting the challenges

This project and the resulting prototype again successfully demonstrate the strength of IBM's S/390 e-business capabilities and solutions. CIE can now move forward to the implementation phase with a high degree of confidence in the underlying e-business architecture.

Pierre Zimmer, IT Manger for CIE Luxemburg commented, "The contribution of highly skilled specialists from the e-TP Design Center allowed us to build a secure transactional architecture in a short period of time. Due to the layered structure of the architecture and the strict compliance to open standards, we have the ability to rapidly integrate future technologies and keep up with our customers' needs."

"Basing the solution on our sysplex provides us with the availability, reliability and security expected from our customers and makes us feel confident for the Internet challenge."

Additional information

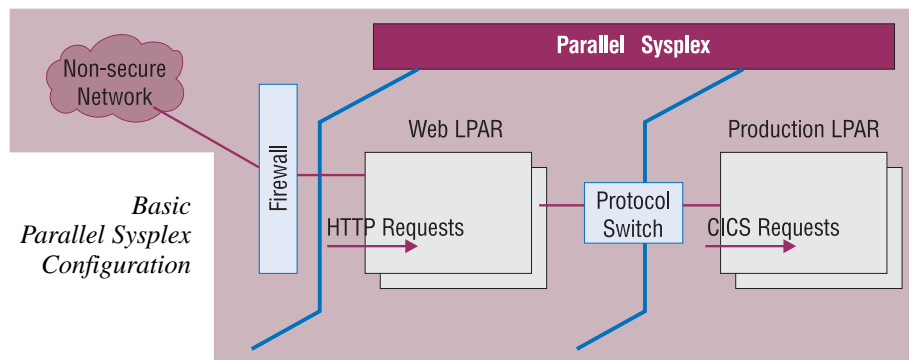
Information about eEurope and the goal of "an information society for all" is at: europa.eu.int/comm/information_society/eeurope

Centre Informatique de l'Etat for the Grand Duchy of Luxemburg has its home page (in French) at: www-internal.etat.lu/CIE

You also can learn more about IBM Design Centers for e-transaction processing by accessing: ibm.com/servers/design_center

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Note: The Web location of this article is: ibm.com/eserver/zseries/zbulletin/pdf/issue30/cieproject.pdf



Security

As illustrated in the drawing above, HTTP requests are received by specific Web logical partitions (LPARs). The business logic, encapsulated in CICS applications, runs in different application LPARs. Communication between Web LPARs and application LPARs is done using XCF, allowing a protocol switch from the TCP/IP incoming requests. All the partitions belong to the same sysplex in order to benefit from the Workload Manager (WLM).

The Web LPARs are located behind a firewall which is part of the global customer security framework. Another level of firewall, between the Web partitions and the application partitions, may be implemented in the future.

The Secure Sockets Layer (SSL) protocol is used to secure the flow of data across the Internet. Digital certificates, generated and stored in a RACF database, are used to authenticate Web users.

Certificate Name Filtering maps a certificate (or many certificates), based on the contents of the certificate, to a RACF user ID. The prototype verified that the user ID is propagated from the beginning until the end of the unit of work. Thus it can be used to control access to all application resources, as shown in the drawing below.

Scalability and availability

In the prototype, a CICSplex is created with CICS "listener" regions running in the Web LPARs and CICS Application Owning Regions (AORs) running in the application LPARs. The listener regions receive servlet requests and dynamically route the requests to the AORs. CICSplex Systems Manager balances the workload using information from WLM.

The Sysplex Distributor, a new function of the SecureWay® Communications Server for OS/390 V2R10 is used inside the Web partitions to dynamically distribute HTTP requests across the IBM HTTP Servers running in the Web LPARs. The distribution is done through WLM and the Quality of Service policy agent.

The HTTP Servers may run in "scalable mode". WLM can then manage the number of Queue Servers to satisfy the business goals assigned to the different applications.

This design provides the necessary degree of redundancy (multiple Web LPARs, multiple application LPARs, and multiple CICS regions) to satisfy the need for high availability.

One User ID for Controlling Access to All Application Resources

