

**Prologue** - The Insurance Company recognizes that it must increase the efficiency of its business processes, while cutting costs, to remain competitive in the industry.

Transitioning to an IBM zEnterprise System (zEnterprise) environment is part of the Insurance Company's plan to streamline business processes, increase speed to market, and generally provide better and faster services for its customers and employees.

The Insurance Company recently adopted a fully automated insurance business solution to streamline its business processes, using interactive electronic forms and signatures to expedite the insurance application process and other forms required for policy changes. Instead of requiring from two to six visits and up to 60 days to process applications from new customers, insurance salespeople can now sell new insurance policies in as little as one sales visit and process them in 45 minutes or less.

This business solution, called the Insurance Business Application, integrates the functions of multiple independent software vendors (ISVs) and IBM strategic software. The Insurance Business Application increases speed and accuracy, ensures compliant and secure processes, and applies real-time business rules for all processes. The Insurance Business Application currently is deployed in a mainframe-centric, heterogeneous infrastructure that consists of multiple platforms and operating system types.

In the future, the Insurance Company expects to launch new and improve existing business processes even more quickly and efficiently. To meet these business goals, the Insurance Company plans to transition the Insurance Business Application to a zEnterprise environment.

**The Insurance Company plan for a zEnterprise ensemble** - The Insurance Business Application currently is deployed in a heterogeneous environment includes the following hardware:

- One IBM System z10® Enterprise Class (z10™ EC)
- One IBM System p® Power 595
- One IBM BladeCenter containing BladeCenter HS20 blade servers
- One IBM System Storage® DS8300.



Figure 1 -The Insurance Company hardware configuration before zEnterprise

The Insurance Company plans to change this hardware configuration by installing and configuring a one-node ensemble as shown in figure 2.

To determine which hardware to install, the Insurance Company information technology (IT) personnel analyzed their current hardware and the architecture of their insurance business application and projected the required capacity. They mapped the z10 EC

resources one-to-one to the IBM zEnterprise 196 (z196) and, with the help of IBM representatives and capacity planning tools, determined the number and type of blades required for the IBM zEnterprise BladeCenter Extension (zBX).



Figure 2 The Insurance Company hardware configuration with zEnterprise components

To transition to this zEnterprise ensemble configuration, the Insurance Company plans to complete the following tasks:

- Install the z196 and move all business processes, services, and components already running on the z10 EC to the z196.
- Install one zBX, containing 14 POWER blades and 14 IBM Smart Analytics Optimizer blades. The top-of-rack switch on the top left of the zBX in the above figure illustrates the connection to the z196 through two private networks:
  - The intraensemble data network (IEDN)
  - The intranode management network (INMN).
- Order the Automate suite (FC0020) to take advantage of the IBM zEnterprise Unified Resource Manager (zManager); See #65 zTidbits(Unified Resource Mgr.)
- Move policy-related applications and processes from the System p Power 595 to the zBX to be monitored together in an ensemble workload.
- Retain the DS8300, with 25 terabytes of virtualized disk as the storage device for Insurance Company data.

The BladeCenter HS20 blade servers remain in the IT shop even after the transition is complete to run Windows-based applications. The System p Power 595 also stays in the IT shop to run its remaining applications. The DS8300, the Power 595, and the HS20 blade servers are connected to the ensemble node through customer-managed data and management networks; See #68 zTidbits (zManager&Network Extensions) Next figure 3 provides a conceptual view of the z196 and its operating system configuration.

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# The Insurance Company: A sample implementation using zEnterprise

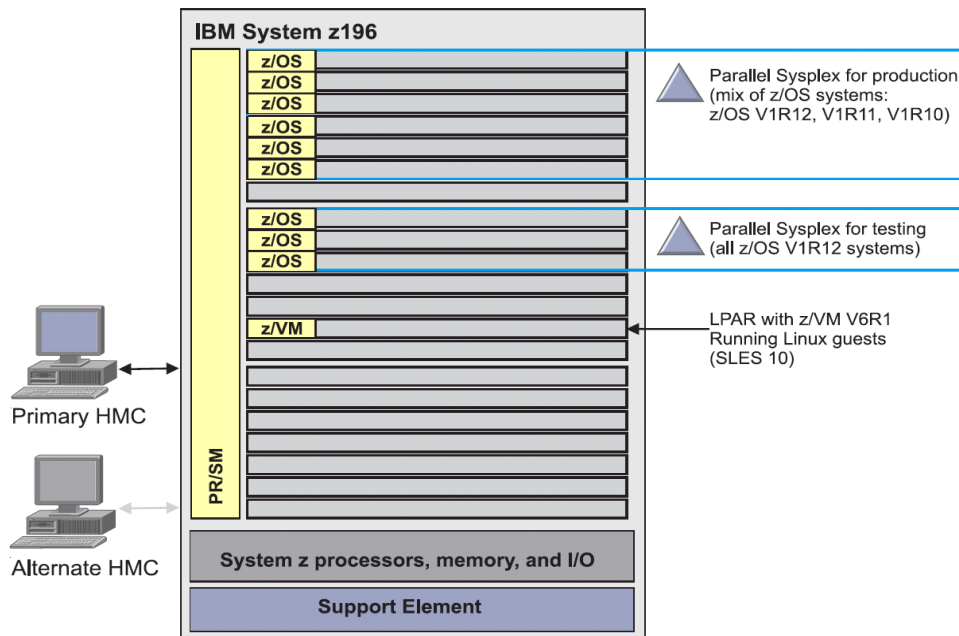


Figure 3 A closer look at the z196 for the Insurance Company IT shop

The above z196 is a 2817 Model M80 with:

- Two terabytes of memory
- Twenty-eight logical partitions (LPAR)s managed by the Processor Resource/System Manager (PR/SM) hypervisor. The LPARs are used for the following purposes:
  - Six LPARs constitute a Parallel Sysplex for production work, running z/OS V1R11 systems. Several LPARs on the z10 EC, also running z/OS V1R11, belong to this sysplex as well. The z/OS LPARs have DB2 9.1 and WebSphere Application Server installed.
  - Three LPARs form another Parallel Sysplex, also running z/OS V1R11, for testing purposes.
  - One LPAR runs z/VM 6.1 with Linux guests.

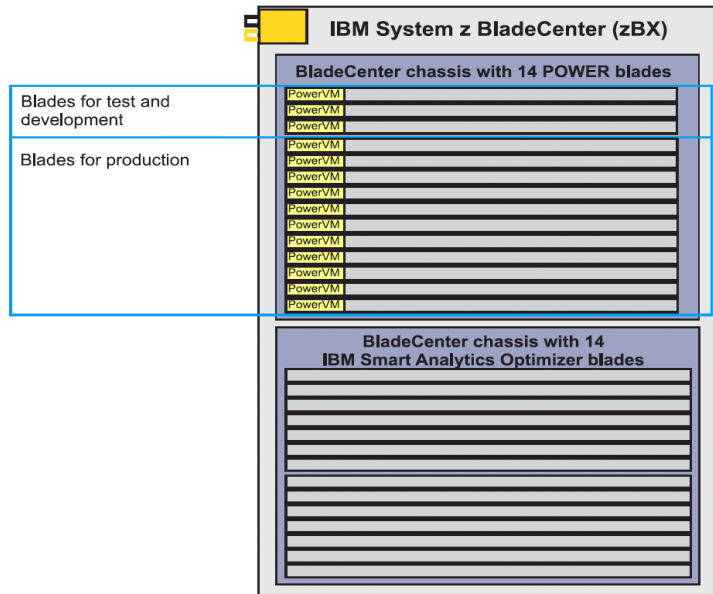


Figure 4 Conceptual view of the zBX and its operating system configuration

The previous diagram 4 illustrates the zBX is a 2458 Model 002, with two BladeCenter chassis:

- One chassis contains 14 POWER blade PS701 blades. Each blade has a PowerVM Enterprise Edition hypervisor. Some POWER blades are reserved for production work, the others for testing and development purposes.
- The other chassis contains 14 IBM Smart Analytics Optimizer blades, which handle work for the z196 LPARs that run z/OS and DB2.

With a plan and requirements in place for the hardware and operating systems, the Insurance Company IT personnel need to plan and prepare to move the Insurance Business Application to the new zEnterprise environment. This planning task requires a “thorough” understanding of the Insurance Company’s business goals, and of the processes that comprise the Insurance Business Application.

**The Insurance Company business goals and processes** - The Insurance Company developed the Insurance Business Application to improve the speed, efficiency, flexibility, and security of business processes and to be able to apply real time business rules for all processes. Through the Insurance Business Application, the Insurance Company has already realized an improvement in the time required to process new applications to 45 minutes or less. The Insurance Company wants to achieve similar improvements for other insurance business processes. Through the application of business rules, the Insurance Company plans to temporarily modify business processes for such events as limited-time offers and marketing campaigns. The architecture and componentry of the Insurance Business Application provide the flexibility to achieve these goals from a software perspective.

The Insurance Business Application follows the style of a Service Oriented Architecture (SOA) which an application is composed of the orchestration of a set of services supplied by service providers. Figure 5 illustrates an architectural view of the multiple layers of this application.

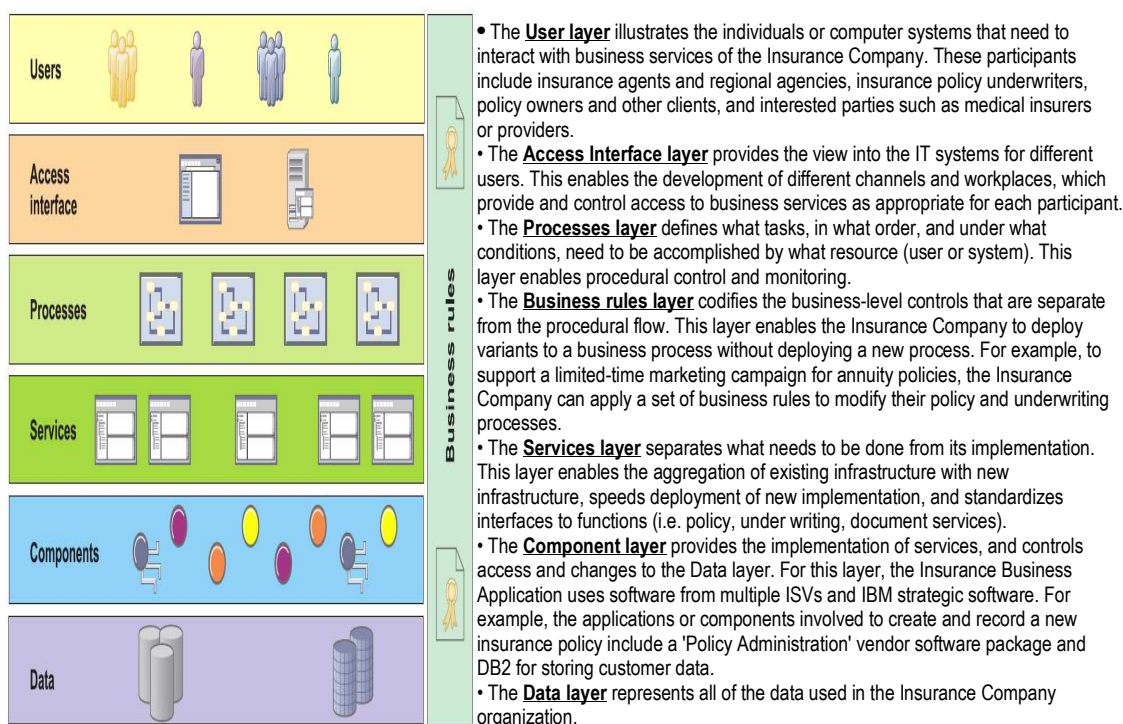


Figure 5 Architecture Layers

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Figure 6 illustrates these layers in a three-tier view to indicate flows between users, processes, services, and components in the Insurance Business Application. This view is not a physical mapping of software onto hardware or operating systems; each process, service, and component can have several instances deployed across the hardware and software. Figure 7 on next page, “The Insurance Business Application in a zEnterprise ensemble” provides a general mapping of the application on the hardware and software environment.

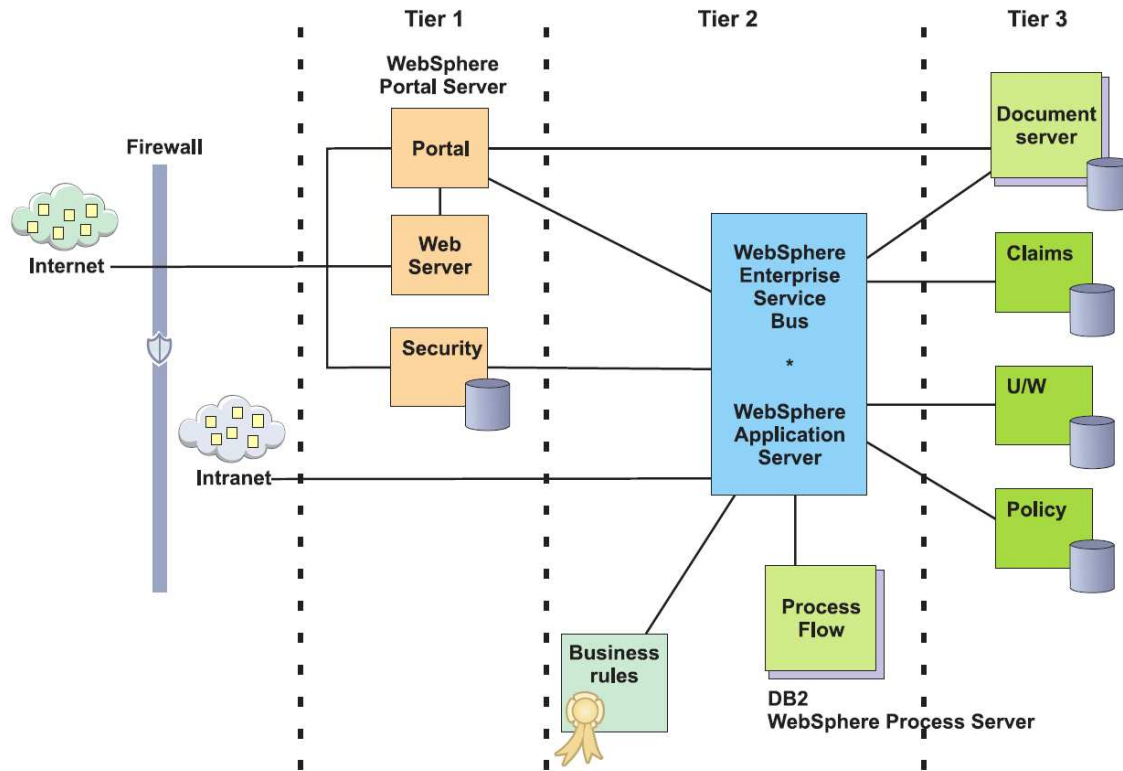


Figure 6 Three-tier view

- Tier 1 consists of software elements that handle user interfaces and interactions, incoming work requests, and security checking for users and work requests. WebSphere Portal Server is one of the major software elements that supports these functions.
- Tier 2 consists of software elements that provide business logic and process orchestration. The Insurance Company uses the IBM WebSphere Enterprise Service Bus to integrate the applications and services that constitute the Insurance Business Application. WebSphere Application Server, WebSphere Process Server, and DB2 also contribute to the functions provided for this tier.
- Tier 3 consists of business services such as Policy, Claims, and Underwriting (U/W), and data storage services. As for Tier 2, the WebSphere products and DB2 contribute to the functions provided for Tier 3.

## **The Insurance Business Application in a zEnterprise ensemble**

Next provides a general illustration of the Insurance Business Application architecture physically mapped onto the z196 and the zBX in the Insurance ensemble.

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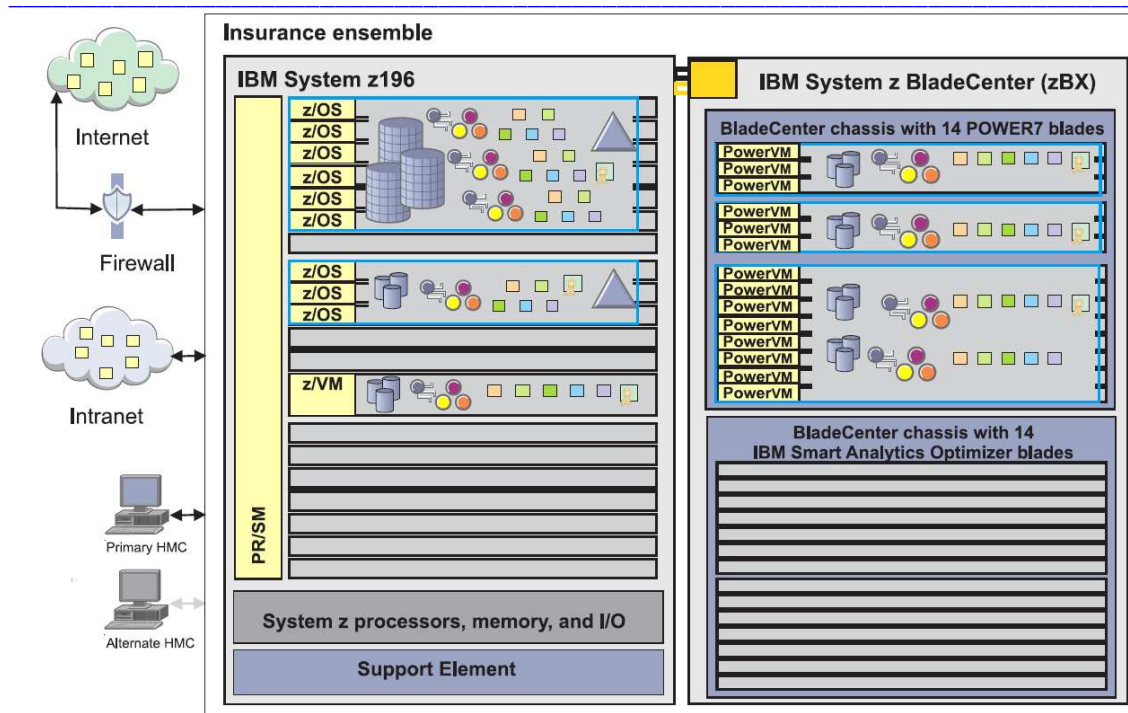


Figure 7 Mapping the Insurance Business Application to the Insurance ensemble

- The User layer is represented on the left, with two methods of access: Intranet access for employees and Internet access through a firewall for Insurance Company clients and business partners.
- The Data layer is represented in each type of virtual server in the zEnterprise environment.

The Insurance Company plans to keep its data warehouse on z/OS, shown by the large databases in the topmost Parallel Sysplex. Information in this data warehouse is copied out to smaller databases on the other virtual servers, for faster access to portions of the data that are most relevant to the applications running on those virtual servers. The Insurance Company uses various DB2 products to provide this support.

- The remaining architectural layers of the Insurance Business Application are supported on various types of virtual server. Each user interface, process, service, and component can be composed of various software elements and can have several instances of those elements deployed across the hardware and software.

For example, the Insurance Company uses several IBM WebSphere products to integrate and orchestrate business processes for the Insurance Business Application. Most of these products require WebSphere Application Server to run on the same system. So instances of WebSphere Application Server run on POWER blades in the zBX, z/OS LPARs, and z/VM guests on a combination of operating systems: z/OS V1R12, V1R11, and V1R10; z/VM V6R1; and SLES 10 Linux for System z.

**The Insurance Business Application on the z196** - On virtual servers in the z196, the Insurance Company plans to install a combination of IBM and ISV applications that handle mission-critical business processes and data. Figure 8 on next page provides a conceptual illustration of these applications, the Insurance Business Application

architecture layers that they support, the services and components that also run on virtual servers in the z196.

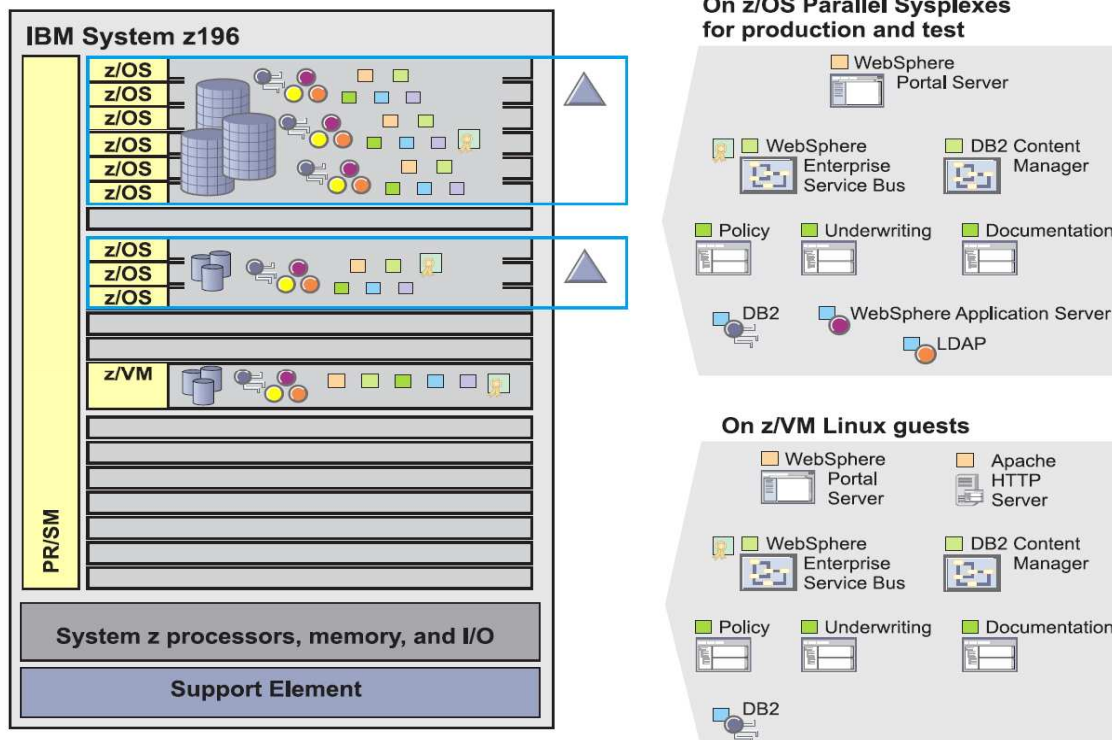


Figure 8 Software support for layers of the Insurance Business Application on the z196

On the z/OS LPARs for production and test, the combination of IBM and ISV applications includes:

- WebSphere Portal Server, which is a high-performance business process automation engine that helps form processes that meet business goals
- WebSphere Enterprise Service Bus, which is a flexible connectivity infrastructure for integrating applications and services
- DB2 Content Manager Enterprise Edition, which manages all types of content for multiple platforms, databases, and applications
- Vendor software that provides the functions to support the Policy, Underwriting, Documentation, and other services for the Insurance Business Application.
- DB2 for z/OS, the relational database management system (DBMS) for the z/OS operating system
- WebSphere Application Server, which provides the foundation for building, reusing, running, integrating and managing SOA applications and services
- Lightweight Directory Access Protocol (LDAP) on z/OS, which provides the foundation for system and application security

On the z/VM guests, a similar combination of IBM and ISV applications runs on the Linux operating system. These virtual servers also have Apache HTTP Server, which provides fully integrated support for secure HTTPS transactions.

**The Insurance Business Application on the zBX-** On virtual servers on the POWER blades in the zBX, the Insurance Company plans to install a combination of IBM and ISV applications that primarily secure, generate, and present online forms for Insurance Company employees and clients. Figure 9 provides a conceptual illustration of these applications, the Insurance Business Application architecture layers that they support, and the services and components that also run on the POWER blades.

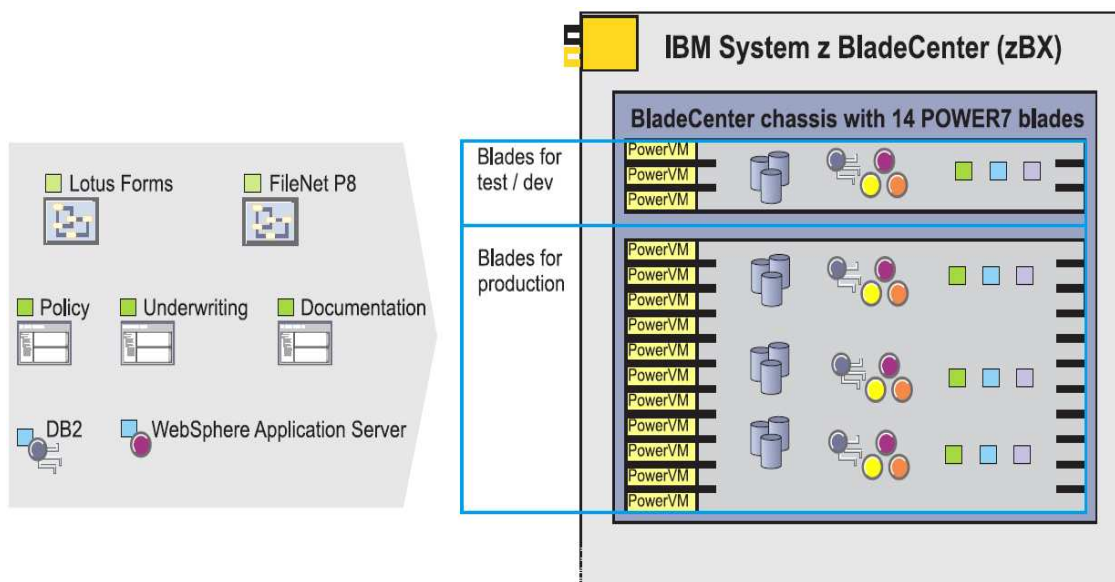


Figure 9 Software support for layers of the Insurance Business Application on POWER blades

The combination of IBM and ISV applications includes:

- Vendor software that provides the functions to support the Policy, Underwriting, and Documentation services for the Insurance Business Application.
- IBM Lotus® Forms and IBM FileNet® P8 Platform products for document management and storage
- DB2 for Linux, UNIX and Windows, the relational database management system (DBMS) for the AIX operating system
- WebSphere Application Server, which provides the foundation for building, reusing, running, integrating and managing SOA applications and services.

These applications and components run on the AIX operating system on the POWER blades for testing, development, and production.

### **The virtual servers supporting the Insurance Business Application**

The following topics provide conceptual illustrations of the virtual servers that the Insurance Company administrators plan to configure in the Insurance ensemble.

On virtual servers in the z196, the Insurance Company plans to install a combination of IBM and ISV applications that handle mission-critical business processes and data. On virtual servers on the POWER blades in the zBX, the Insurance Company plans to install a combination of IBM and ISV applications that primarily secure, generate, and present online forms for Insurance Company employees and clients.

**Annuity server software configuration on the z196** - Figure 10 next illustrates the virtual servers on the z196 that support the Annuity policy processes and software. For each virtual server, the figure indicates the installed operating system and a partial list of installed software. These virtual servers support both production and test work.

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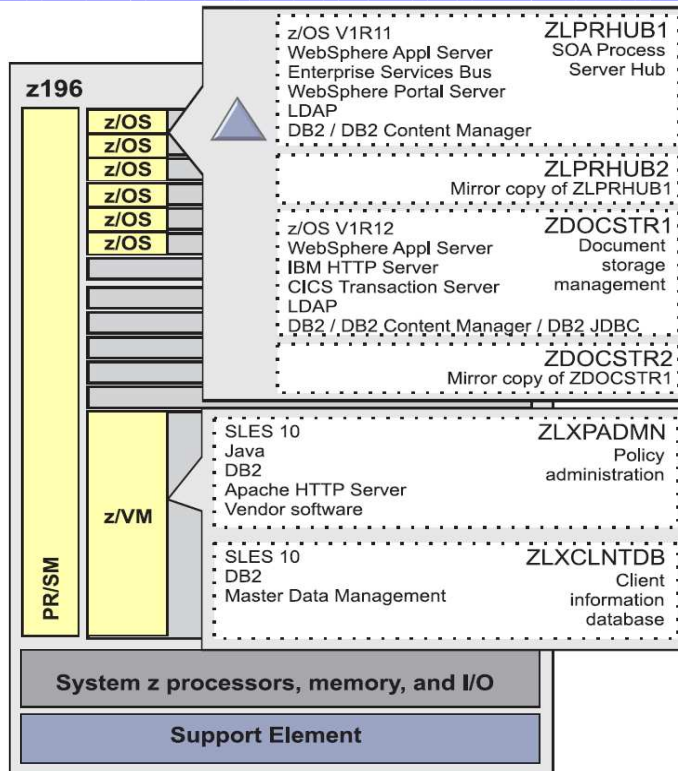
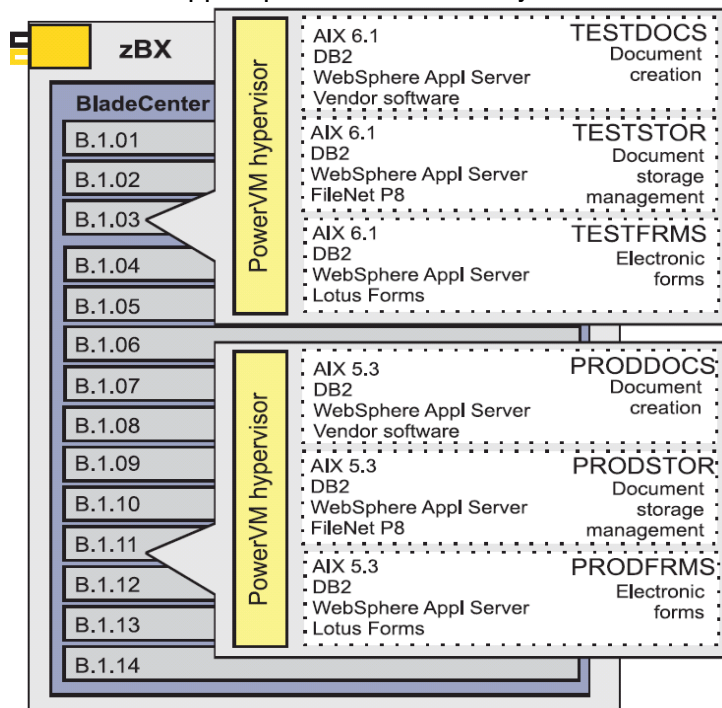


Figure 10 Software support for Annuity policies on the z196

**Annuity server software configuration on the zBX-** Figure 11 illustrates the virtual servers on the zBX that support the Annuity policy processes and software. For each virtual server, the figure indicates the installed operating system and a partial list of installed software. The set of virtual servers on the B.1.03 blade support test work, while those on blade B.1.11 support production work only.



**Note** that each virtual server on the zBX has its own AIX image; the virtual servers on the test blades run AIX V6.1, while the virtual servers on the production blades run AIX V5.3.

Figure 11 Software support for Annuity policies on POWER blades

**Variable Life server software configuration on the z196** - Figure 12 illustrates the virtual servers on the z196 that support the Variable Life policy processes and software. For each virtual server, the figure indicates the installed operating system and a partial list of installed software. These virtual servers support both production and test work.

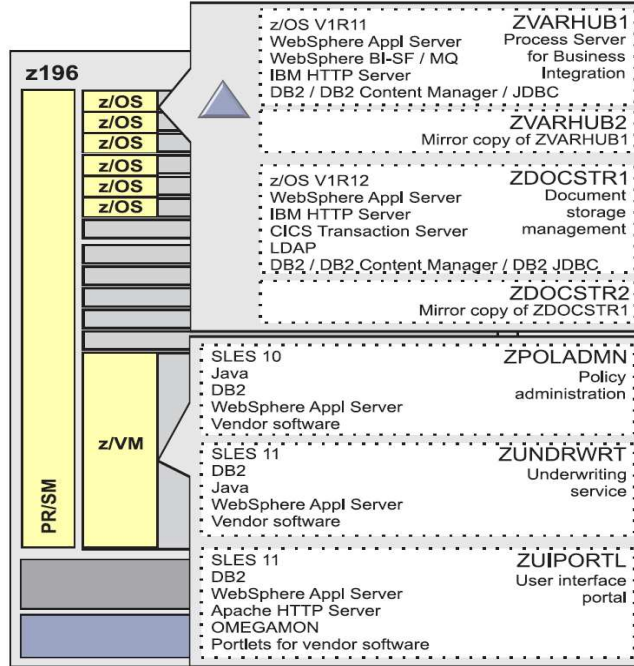


Figure 12. Software support for Variable Life policies on the z196

**Variable Life server software configuration on the zBX**- Figure 13 illustrates the virtual servers on the zBX that support the Variable Life policy processes and software. For each virtual server, the figure indicates the installed operating system and a partial list of installed software. The set of virtual servers on the B.1.03 blade support test work, while those on blade B.1.08 support production work only.

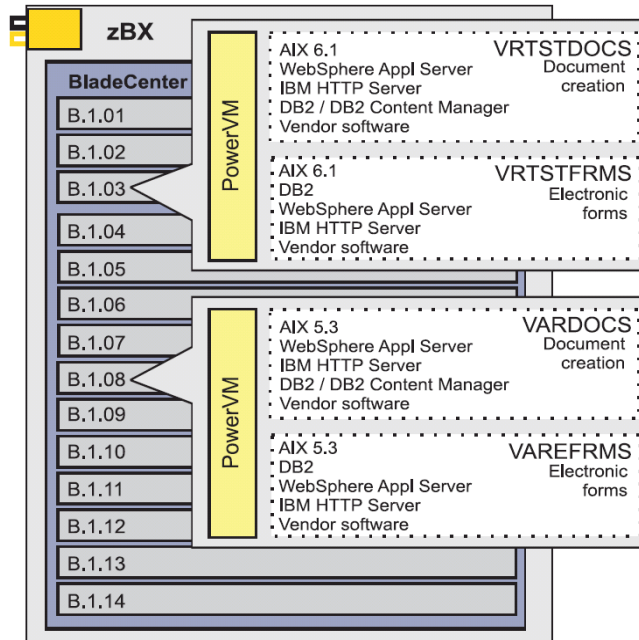


Figure 13 Software support for Variable Life policies on POWER blades