

Chapter 7

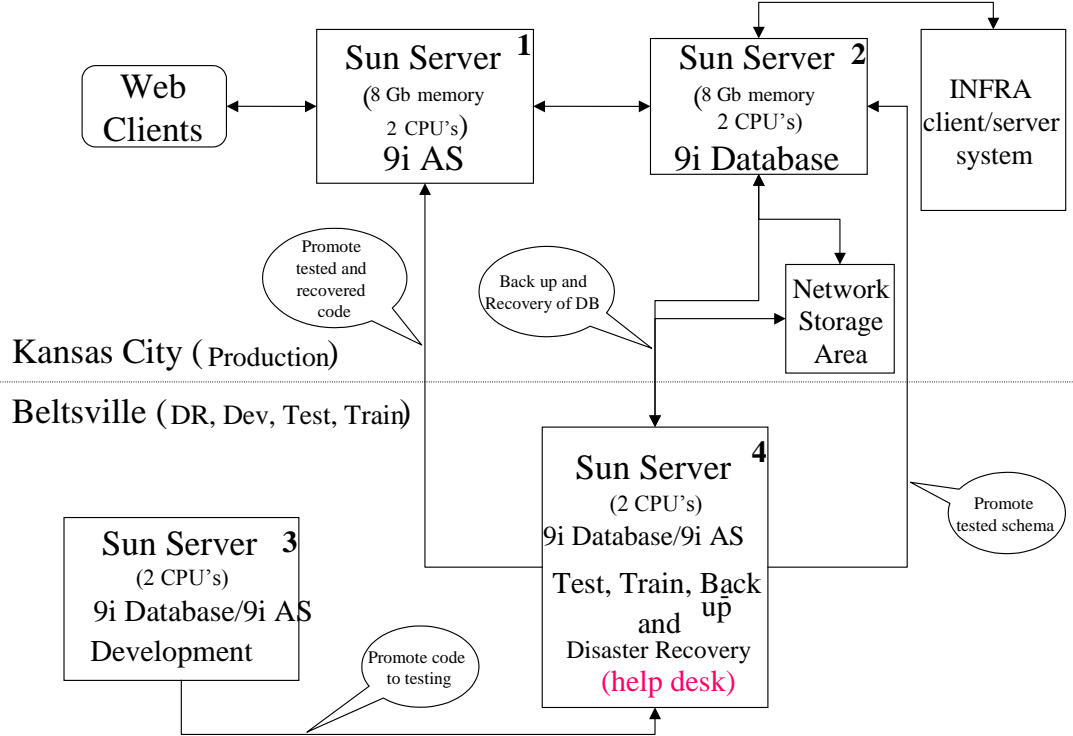
Computer Resource Design

7.1 HARDWARE ARCHITECTURE AND INFRASTRUCTURE

CPAIS will be implemented as a three-tier Oracle application with web-enabled Oracle Forms and Reports. It uses the Oracle 9i Application Server running a web server, Oracle Forms Server and Oracle Reports Server. The source databases as well as the Oracle 9iAS metadata database runs on a separate database server. Oracle Discoverer is used for ad-hoc queries.

The architecture depicted in Figure 7-1 is to be implemented at NITC to host and operate the CPAIS application. The proposed infrastructure will provide an efficient and stable environment for a cost effective, stable, and scalable CPAIS application. The following is a brief high-level description of configuration and usage of each of the proposed four servers and associated components.

Figure 7-1. Hardware Configuration



◆ Production environment (Kansas City)

- **Server 1**—A Sun Fire V880 Server, 8 Gigabytes (GB) memory, 2 CPUs, 900 Mhz UltraSPARC III serves as the production application server. This server will host the Oracle 9iAS Application Server running a web server, Oracle Forms Server and Oracle Reports Server.
- **Server 2**—Sun Fire V880 Server, 8 Gb memory, 2 CPUs, 900 MHz UltraSPARC III serves as the production database server. This server will host Oracle 9i database management system, as well as the Oracle 9iAS metadata database. The database server will provide database management services to the current FS INFRA client/server system as well as the CPAIS application. This allows consolidation and centralization of the real property data.
- **Network Storage Area**—NITC has offered data storage on its Network Storage Area with RAID-5.

◆ Development and Support environment (George Washington Carver Center (GWCC) – Beltsville)

- **Server 3**—Sun Fire V880 Server, 8 GB memory, 2 CPUs, 900 Mhz UltraSPARC III serves as the development server. This server hosts an instance of the Oracle 9iAS, as well as an instance of Oracle 9i database

management and database. This configuration will be used to develop and unit test CPAIS.

- **Server 4**—Sun Fire V880 Server, 8 GB memory, 2 CPUs, 900 MHz UltraSPARC III will serve the testing, training, and disaster recovery functions. This server may also be configured to provide support for on-line help desk and user help functions.

Based on a sizing analysis, it is projected, (based on 15% annual growth in capacity requirements), that in three years both servers will reach and may even exceed their initial capacity and performance limits. Furthermore, potential expansion of the requirements or emergence of new ones prior to the third year milestone may necessitate scaling up and expansion of the system earlier.

7.2 SYSTEM SOFTWARE

All servers will run the Solaris 9 operating system. Oracle Internet Application – Enterprise and Oracle Database – Enterprise will be deployed. This allows full capabilities of Oracle Security management and software promotion (configuration management) functionality.

7.3 APPLICATION(S)

The Oracle Internet Application – Enterprise Edition is deployed.

7.3.1 COTS Packages

The following Oracle products are being deployed to support the development, testing, quality assurance, training, system back-up and recovery, and operation of CPAIS.

7.3.1.1 PRODUCTION SERVERS

- ◆ Advanced Security Option
- ◆ Diagnostic Pack
- ◆ Internet Application Server – Enterprise Edition
- ◆ Oracle Database – Enterprise Edition
- ◆ Partitioning
- ◆ Tuning Pack

7.3.1.2 Test/back-up server

- ◆ Advanced Security Option

- ◆ Change Management Pack
- ◆ Diagnostic Pack
- ◆ Internet Application Server – Enterprise Edition
- ◆ Oracle Database – Enterprise Edition
- ◆ Partitioning
- ◆ Tuning Pack

7.3.1.3 ADDITIONAL SOFTWARE

- ◆ AIM
- ◆ BMC
- ◆ Tivoli

7.3.2 Custom Software

The CPAIS application is developed by implementing the capabilities of the Internet Application Server – Enterprise Edition. As such, minimum customization is performed. The Java development tools are used to develop the CPAIS entry screen (main menu).

7.4 COMMUNICATIONS INFRASTRUCTURE

The USDA communications network provides the backbone of the CPAIS connectivity.