

FEDERAL EMERGENCY MANAGEMENT INFORMATION SYSTEM (FEMIS)

BILL OF MATERIALS (BOM) for FEMIS Version 1.3

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SOFTWARE PRODUCTS

FEMIS integrates the following commercial software products. These products are trademarks or trade names of their respective owners.

Arc/Info® and ArcView® Environmental Systems Research Institute, Inc.

Cisco™ Cisco Systems, Inc.

NFS Maestro™ Hummingbird Communications Ltd.

GroupWise™ Novell Inc.

Microsoft Windows™ NT, Microsoft® Office, Microsoft® Excel for Windows™, Microsoft® Project for Windows™, Microsoft® PowerPoint™, and Microsoft® Visual Basic™ Microsoft Corporation

Oracle7®, SQL*Net®, and PRO*FORTRAN® Oracle Corporation

Solaris™ SunSoft

UNIX™ UNIX System Laboratories

WordPerfect® for Windows WordPerfect Corporation.

FEMIS integrates the following government-furnished software products.

D2PC (April 96) US Army ERDEC

PARDOS v3 US Army ERDEC

Evacuation SIMulation Model (ESIM v2.1F1.3) Oak Ridge National Laboratories



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Acronyms and Definitions

BOM	Bill of Materials
COTS	Commercial-Off-The-Shelf
CPU	Central Processing Unit
CSEPP	Chemical Stockpile Emergency Preparedness Program
E-mail	Electronic Mail
EOC	Emergency Operations Center
ESIM	Evacuation SIMulation, part of Oak Ridge Evacuation Modeling System (OREMS)
ESRI	Environmental Systems Research Institute, Inc.
FEMIS	Federal Emergency Management Information System
FTP	File Transfer Protocol
GB	Gigabyte--billions of bytes
GIS	Geographic Information System
IP	Internet Protocol
IRZ	Immediate Response Zone
JIC	Joint Information Center
KBPS	Kilobit per second
kVa	Kilovolt-ampere
LAN	Local Area Network
MB	Megabyte--millions of bytes
MHz	Megahertz
NFS	Network File System
NTP	Network Time Protocol
ODBC	Open Data Base Connectivity
PAZ	Protective Action Zone
PC	Personal Computer
PNNL	Pacific Northwest National Laboratory, formerly Pacific Northwest Laboratory (PNL)
PPP	Point to Point Protocol
RAM	Random Access Memory
RAS	Remote Access Service
RDBMS	Relational database management system
SMTP	Simple Mail Transfer Protocol
SQL	Structured Query Language
TCP/IP	Transmission Control Protocol/Internet Protocol
UPS	Uninterruptable Power Supply
UNIX	Generic name for the Server Operating System
WAN	Wide Area Network
Windows NT	Microsoft Network Operating System for Workstations

1.0 Overview

This document describes the Bill of Materials (BOM) for the Federal Emergency Management Information System (FEMIS) for version 1.3.

FEMIS runs on a client/server platform consisting of a UNIX^(a) system, employed as a data server, and personal computers (PCs) using the Windows^(b) NT operating system. Servers and PCs require the operating system, utility software, communications and other internal cards that are also listed in the following sections. FEMIS will support the use of Commercial Off-The-Shelf (COTS) software applications and tools.

Several configurations are possible at a Chemical Stockpile Emergency Preparedness Program (CSEPP) site. In this description, a site is understood to be comprised of several installations, including the depot, surrounding Immediate Response Zone (IRZ) and Protective Action Zone (PAZ) counties, and one or more state Emergency Operations Centers (EOCs). In general, the main differences between possible configurations are the number of users at an installation, the location of the UNIX data server(s), and wide area network (WAN) link between installations. The number of PC workstations will vary between installations.

1.1 Further Information

The following Web sites will provide additional information on each product line:

Oracle	www.oracle.com
Sun Microsystems	www.sun.com
Microsoft	www.microsoft.com
Novell	www.novell.com
Hummingbird	www.hummingbird.com
Cisco	cio.cisco.com
U.S. Robotics	www.megahertz.com
Megahertz	www.megahertz.com
Bay Networks	www.baynetworks.com
Cabletron Systems	www.cabletron.com
SunService	sunsolve.sun.com
SunSITE	sunsite.unc.edu
Dell Computer Corp.	www.us.dell.com/us

(a) UNIX™ UNIX System Laboratories

(b) Microsoft Windows™ NT Microsoft Corporation

Gateway 2000	www.gw2k.com
Micron	www.micron.com
Stardust Technologies	www.stardust.com

1.2 Point of Contact

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2.0 Hardware Requirements

To successfully run FEMIS, the following hardware must be present.

2.1 UNIX Server

Each EOC requires access to a UNIX data server. This server can either be physically present in the EOC or it can be remotely accessed across a WAN link of adequate capacity.

2.1.1 Sun SPARCServer 1000e (For installations With More Than 15 Users)

Note: If you have not purchased a UNIX machine for your site, the Sun SPARCServer 1000e is not available. See Section 2.1.3 for a comparable system currently available.

The Sun server recommended for use at CSEPP sites is the SPARCServer 1000e. To ensure an appropriate level of performance, Pacific Northwest National Laboratory (PNNL) recommends that the SPARCServer contain multiple Central Processing Unit (CPUs). The following UNIX server configuration will meet FEMIS needs.

UNIX Server Configuration for Sun SPARCServer 1000e	Notes
Sun SPARCserver 1000e	Two SPARCserver 1000 system boards with two SuperSPARC processors each, no memory.
Main memory 384MB (4x96)	
Standard interfaces 2 10BaseT via twisted-pair	One interface per system board
Internal disk 2 internal disks (2.1GB formatted)	
Internal mass storage 14GB 8mm tape drive Quad speed SunCD 4 drive	
External mass storage 16-32GB 4mm DDS-2 Autoloader, cable, terminator 35.7GB SPARCstorage Array Model 112, SBus card, fiber cable	Disk storage capacity requirement is a function of the size of the installation database and the number of EOCs supported by the data server. 15X2.01GB will provide ~18GB RAID capacity.
Console 20-in. color monitor with Turbo GX frame buffer, cable	

2.1.2 Sun Microsystems SPARCStation 20, Model 612 (For Installations With 15 or Fewer Users)

Note: If you have not already purchased a UNIX machine for your site, the Sun SPARCStation 20, Model 612 is not available. See Section 2.1.3 for a comparable system currently available.

A lower cost alternative to the SPARCServer 1000e, adequate to support EOCs with smaller numbers of clients, is the SPARCStation 20 model 612. To ensure an appropriate level of performance PNNL recommends that the server contain multiple CPUs.

The following UNIX server configuration will meet FEMIS needs.

UNIX Server Configuration for SPARCStation 20, Model 612	Notes
System Board Standard configuration includes two SuperSPARC processors	
Main Memory 192MB (2x96)	
Standard interfaces 10BaseT via twisted-pair	
Internal disk 1 internal disk (2.1GB formatted)	
External Mass Storage 14GB 8mm tape drive, cable, terminator 16-32GB 4mm DDS-2 Autoloader, cable, terminator 35.7GB SPARCstorage Array Model 112, SBus card, fiber cable	Disk storage capacity requirement is a function of the size of the installation database and the number of EOCs supported by the data server. 15X2.01GB will provide ~18GB RAID capacity.
Console 20-in. color monitor with Turbo GX frame buffer, cable	

2.1.3 Sun Ultra Enterprise 2

A migration path from the SPARCServer 1000e and the SPARCStation 20, Model 612 to the Sun Ultra Enterprise 2 is listed below.

UNIX Server Configuration for Sun Ultra Enterprise 2	Notes
Processor 2 UltraSPARC processors	
CPU Modules 2 CPU module	
Main Memory 256MB (2x128)	
Standard interfaces FastEthernet (100BaseT)/10BaseT via twisted-pair 4 SBus expansion slots	
Internal disk 2 3.5-in. x 1-in. disks (2.1-GB formatted) Optional 3.5-in. floppy drive	
Internal Mass Storage Quad speed SunCD 4 drive	
External Mass Storage 14GB 8mm tape drive, cable, terminator 16-32GB 4mm DDS-2 Autoloader, cable, terminator 37.8GB SPARCstorage Array Model 112, SBus card, fiber cable	Disk storage capacity requirement is a function of the size of the installation database and the number of EOCs supported by the data server. 18X2.1GB will provide ~22GB RAID capacity with 1 hot swappable drive.
Console 20-in. color monitor with Turbo GX frame buffer, cable	

2.2 PC Client Workstation

2.2.1 Intel 80486 Platform

FEMIS will run on an 80486 platform which has a minimum of a 60MHz processor or better, with 32MB of Random Access Memory (RAM) minimum and a 500MB hard disk, but performance may be unacceptably slow and disk space limitations may require spatial database modifications. While we recommend the Pentium platform for new purchases, an existing 80486 may be upgraded to 100MHz to increase performance.

2.2.2 Intel Pentium Microprocessor PC

The preferred PC client platform is the Pentium-based PC minimally configured as follows.

PC Client Workstation Configuration	Notes
Intel Pentium Microprocessor PC	
60MHz (or better)	
32MB RAM (minimum)	
1GB hard disk (or better)	
Internal CD ROM drive	
1.44 3.5-in. internal floppy drive	
1 parallel and 2 serial ports	
3COM (3C509, 3C509-TP) Ethernet Adapter card or equivalent (10Mbits/sec, 10 Base T or Thinnet)	
17-in. color VGA monitor (SVGA capable)	
Standard 101 key keyboard	
Mouse	

2.3 Other Supporting Communications Hardware

The following other supporting communications hardware is required by FEMIS.

Supporting Communications Hardware	Notes
Network hardware including Wellfleet or Cisco ^(a) Routers.	
Printers (HP LaserJet, Sun Laser Printer, color printer, or other Local Area Network [LAN] compatible printer).	
Screen projection hardware compatible with a PC client workstation (optional).	
Uninterruptable Power Supply (UPS) of sufficient capacity to operate the EOC system for a length of time acceptable to installation management.	For an EOC with 1 data server and 25 PC clients (including a communications server if used), a UPS rated between 40 and 50kVa should provide adequate protection. Individual EOCs should calculate their power needs based on their existing and planned hardware and may elect to purchase a larger or smaller UPS accordingly.
Hardware that obtains the correct time	All sites must be synched to the same time. Sites must agree to a method of obtaining the correct time. There are several ways to do this.

(a) Cisco™ Cisco Systems, Inc.

3.0 Software Requirements

The following sections discuss the software requirements for FEMIS.

3.1 Data Server Software

Data Server Software Configuration	Notes
NFS Maestro ^(a) authentication daemon	The NFS Maestro daemon hclnfsd process should run on one or more of the local UNIX servers. The source code for hclnfsd is public domain and is distributed with the client product. After installation the source files can be found in the utility sub-directory under the NFS Maestro product directory, c:\maestro. Extensive help can be found in the maestro.hlp Windows help file included with the Windows NT product. Using the Winhelp search function, search on the keyword <u>hclnfsd</u> , and many useful topics will display.
FEMIS Server Application Set The Evacuation SIMulation Model (ESIM v2.1F1.3)	Distributed with FEMIS.
Sun Microsystems Solaris ^(b) v2.5.1	
Arc/Info v7.0.2 or later (optional) Geographic Information System (GIS)	
Oracle ^(c) v7.3.2 relational database management system (RDBMS) with distributed option licensed for the total number of PCs connected to server.	FEMIS has been tested with v7.3.2. Do not install a version later than v7.3.2 or earlier than v7.3.2.
Oracle SQL*Net v2.3.2 with Transmission Control Protocol/Internet Protocol (TCP/IP) driver (one license for each PC on the network)	Oracle licenses are sold in sets, for example, 1, 8, 12. The number of licenses for SQL*Net and the protocol driver for TCP/IP must equal the number of licenses for Oracle v7.3.2.
Oracle SQLPlus v3.3.2	Only one license per server is required for SQLPlus.
Novell GroupWise ^(d) v4.1 Message Server Pack for UNIX	

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- (a) NFS Maestro™ Hummingbird Communications Ltd.
 (b) Solaris™ SunSoft
 (c) Oracle7®, SQL*Net®, and PRO*FORTRAN® Oracle Corporation
 (d) GroupWise™ Novell Inc.

Novell GroupWise Client/Admin Pack for Windows	The Client/Admin pack includes five mailbox licenses. Additional License Packs may be required in order to have one license per mailbox.
Novell GroupWise v4.1 Simple Mail Transfer Protocol (SMTP) Gateway for UNIX	Enables mail to/from SMTP-based mail systems across a LAN and a WAN.
A network time synchronization protocol	Network Time Protocol (NTP) is a public domain product available from louie.undel.edie by anonymous File Transfer Protocol (FTP).

3.2 PC Client Software

PC Client Software Configuration	Notes
FEMIS Client Application Set	The Dispersion Model (D2PC [April 96]) and the Dose/Time Model (PARDOS v3) are part of the FEMIS Client Application Set.
Microsoft Windows NT Workstation v3.51 (CD-ROM edition)	The version specified includes documentation. Additional licenses may be obtained without documentation by procuring the Windows NT License Pack.
Microsoft Windows NT Service Pack 5	The Windows NT3.51 Service Pack 5 is needed to successfully and correctly run the date/time clock on the PC. The service pack is cumulative and includes Service Packs 1, 2, 3, and 4.
ArcView ^(a) v3.0 GIS	
Novell GroupWise v4.1 Client/Admin Pack for Windows	The client portion is installed on the PC client. It contains the DOS-based GroupWise administrative software, the GroupWise for Windows client and five mailbox licenses. Purchase the Client/Admin Pack once per EOC, and purchase Novell GroupWise Additional License Packs as needed to have one license per mailbox.
NFS Maestro v5.1.1	
Microsoft Project v4.0	
Oracle SQL*Net v2.1 with TCP/IP adapter v2.1	This includes the correct version of the Oracle ODBC driver v1.10.0001 and ODBC driver v2.00.1510.

(a) ArcView Environmental System Research Institute, Inc.

WordPerfect ^(a) for Windows v6.0 or better (optional)	
Microsoft Office ^(b) v4.3 (optional)	This includes Microsoft Excel v5.0 or better and Microsoft PowerPoint v4.0 or better

3.3 COTS on CD ROM

Through an agreement with the COTS providers, PNNL has created a CD with a copy of the appropriate version of the COTS software. To allow users to install COTS software prior to their FEMIS installation, the COTS CD is available from PNNL. This agreement does not exempt the site from the responsibility of purchasing the required number of licenses, but it does assure the site of having the correct versions of the software for FEMIS.

The CD will make the installation of these applications easier. The COTS can be installed directly on a PC or copied to the server and then installed on each PC from the server.

Before we can ship you a CD, we must have "proof of purchase" of at least one license for each of the COTS on the CD. The proof of purchase can be a photocopy of each license and must accompany your request for the COTS CD. To request the COTS CD, contact Ranata Johnson (see Section 1.3, Point of Contact).

The CD will contain the following COTS for the PC:

ArcView v3.0 - Environmental Systems Research Institute, Inc., (ESRI) is currently shipping v3.0. FEMIS v1.3 will NOT work with the earlier version of ArcView. If you are running FEMIS v1.2+, do not install v3.0 until your site is ready for the FEMIS v1.3 upgrade.

Microsoft Project v4.0 - Although we are using the Window NT operating system, FEMIS uses Microsoft Project v4.0 for Windows.

Microsoft NT v3.51 and NT Service Pack #5 - These are the correct versions. FEMIS v1.3 will NOT work with the earlier version of Windows NT. If you are running FEMIS v1.2+, do not install Windows NT v3.51 and the Service Pack #5 until your site is ready for the FEMIS v1.3 upgrade.

NFS Maestro v5.1.1 - Hummingbird Communications Ltd. now provides NFS Maestro v5.1.1 as a replacement for Beame and Whiteside. If you are running FEMIS v1.2+, do not install NFS Maestro until your site is ready for the FEMIS v1.3 upgrade.

Oracle PC Components - ODBC and SQL*Net will also be provided on the CD.

(a) WordPerfect® for Windows WordPerfect Corporation.

(b) Microsoft® Office, Microsoft® Excel for Windows™, Microsoft® Project for Windows™, Microsoft® PowerPoint™, and Microsoft® Visual Basic™ Microsoft Corporation

4.0 Telecommunications

Telecommunication access is required at each EOC for voice and dial-in access. This service includes commercial telephone lines suitable for modem data transmission for external communications and remote user interface. Ideally these lines should be 19.2KBPS or better. Leased lines with a minimum capacity of 56KBPS are preferred for serverless (remote) login to FEMIS including shelters, and Joint Information Center (JIC). A 19.2KBPS service will provide remote access capability; however, performance levels will be less compared to more capable service.

Low to medium FEMIS performance can be realized at a remote PC dialing in to an EOC via Windows NT Remote Access Service (RAS) and Point to Point Protocol (PPP). This configuration should be utilized as a last resort, when higher data transmission speeds are not available, and should never be used for more than a single remote PC.

To enable remote dial-in at EOC LANs, sites need network routers capable of PPP operation via V.34 compliant 28.8 DATA/FAX modems.

Popular networking/communication equipment vendors such as Cisco, Wellfleet, and Cabletron can supply the hardware to implement PPP remote dial-in connections.

The following Cisco 2500 configuration is one example of telecommunications equipment.

Product	Description
CISCO2509	Cisco Access Server 2509 Ethernet/8 Dial-In Ports
MEM-1X16D	16MB of DRAM Memory Option
MEM-1X8F	8MB Flash SIMM Option
SF25C-10.37	Cisco 2500 Series IOS Feature Set Software
CAB-OCTAL-KIT	8 Lead Octal Cable and 8 Male DB-25 Mode

The above equipment supports 1 Ethernet port, 2 wide area synchronous T-1 connections, and 8 asynchronous dial-in 28.8 V.34 connections. With Cisco's IP software, PPP can be accommodated. In addition to the TCP/IP required by FEMIS, this equipment supports IPX, AppleTalk, Banyan VINES, and XNS. WAN services such as leased lines, frame relay, ISDN, and X.25 are also supported. For more information on the Cisco Access Server 2500 series, use an Internet browser to view <http://cio.cisco.com/warp/public/558/18.html>.

In addition to the above equipment, EOCs need to provide enough modems for the number of remote dial-ins they intend to accommodate. These modems should be V.34 DATA/FAX 28,800 baud and are available from several vendors, for example, U. S. Robotics, Megahertz, and MultiTech Systems.

5.0 Computer Networks

Computer networks used for FEMIS data communication and database administration should be modern computer networks, which utilizes router equipment that conforms to current industry standards.

FEMIS will perform best when the inter-EOC links are based on T-1 communication. Local networks in the EOCs should be based on a 10MHz or higher data communication rate.

Under certain situations, where low performance is acceptable, lower data transmission rates can be utilized, with the expected longer delay in response of many FEMIS functions.