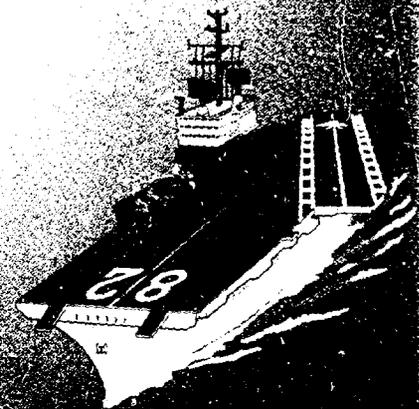
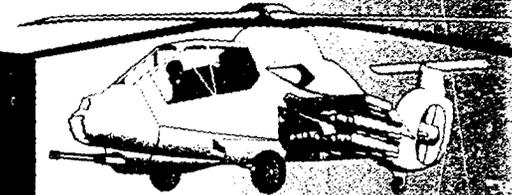
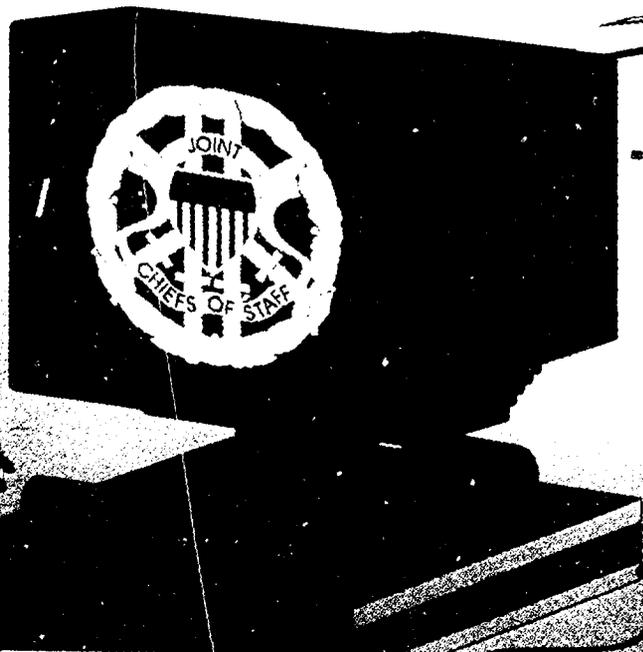
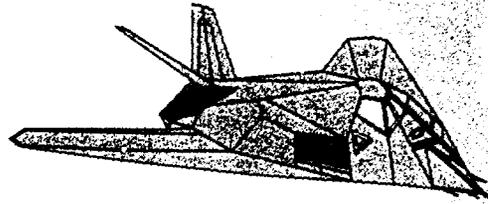
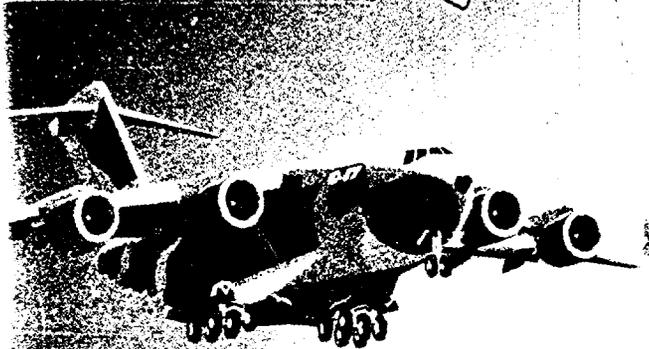


STRATEGIC INFORMATION TECHNOLOGY PLAN

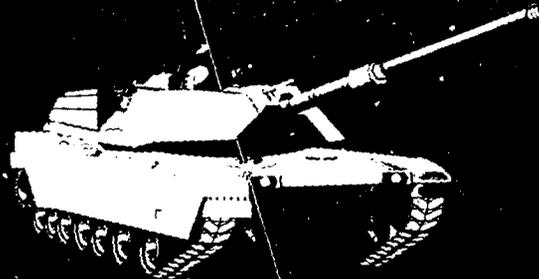
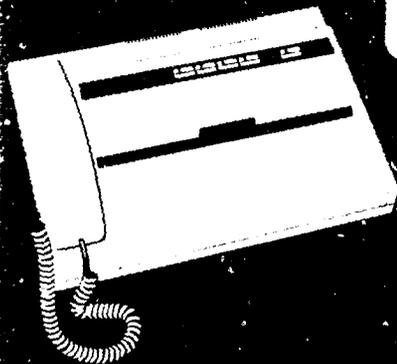
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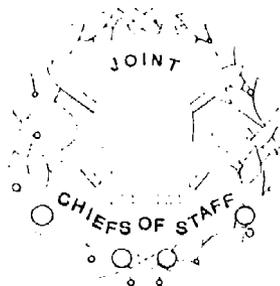


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Joint Staff Strategic Information Technology Plan

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Joint Staff Mission and Organization

The Chairman of the Joint Chiefs of Staff, assisted by the Joint Staff, is the principal military advisor to the President, the National Security Council, and the Secretary of Defense. The specific duties of the Chairman and the Vice Chairman of the Joint Chiefs of Staff are delineated in Titles 10, 22, and 50, US Code, and DOD directives. The other members of the Joint Chiefs of Staff (JCS)--the Chief of Staff, US Army; the Chief of Naval Operations; the Chief of Staff, US Air Force; and the Commandant of the Marine Corps--are military advisors to the President, the National Security Council, and the Secretary of Defense.



Functions of the Chairman of the Joint Chiefs

The Chairman of the Joint Chiefs of Staff is the principal military adviser to the President, Secretary of Defense, and National Security Council. Subject to the authority, direction, and control of the President and Secretary of Defense--the National Command Authorities (NCA), the Chairman is responsible for:

- **Strategic Direction**
 - Assist NCA in providing for strategic direction of the Armed Forces
- **Strategic Planning**
 - Prepare strategic plans
 - Prepare joint logistic and mobility plans to support those strategic plans
 - Perform net assessments of the capabilities of the Armed Forces
- **Contingency Planning**
 - Provide for preparation and review of contingency plans
 - Advise on critical deficiencies and strengths in force capabilities
- **Requirements, Programs, and Budget**
 - Advise on the priorities of requirements
 - Advise on program recommendations and budget proposals
 - Assess military requirements for defense acquisition programs
- **Doctrine, Training, and Education**
 - Develop doctrine for joint employment
 - Formulate policies for coordinating military education and training
- **Other Matters**
 - Exercise exclusive direction of the Joint Staff
 - As directed by the President, attend and participate in meetings of the NSC
 - Advise and assist the National Command Authorities (NCA) on establishing combatant commands
 - Transmit communications between the NCA and combatant commands
 - Review plans and programs to determine adequacy and feasibility
 - As appropriate, consult with and seek the advice of the Joint Chiefs of Staff and combatant commanders

Figure 1. Functions of the Chairman of the Joint Chiefs of Staff

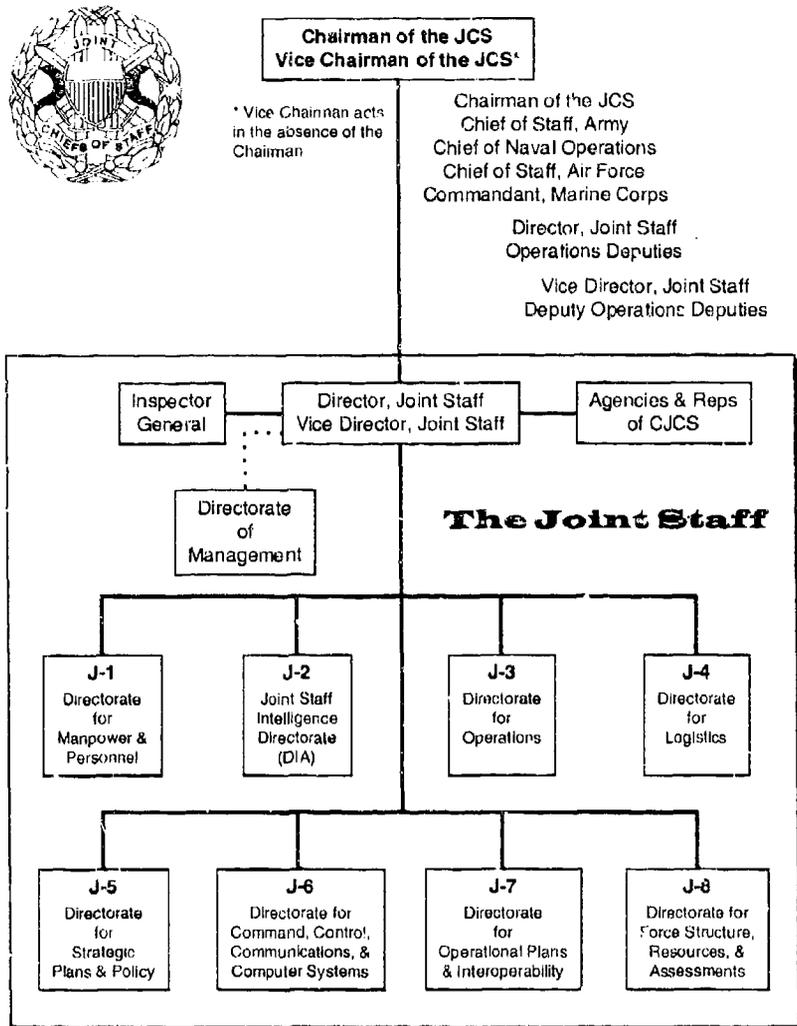


Figure 2. Joint Staff Organization

Subject to the authority, direction, and control of the President and the Secretary of Defense, the Chairman shall be responsible for the following principle functions:

1. Advise and assist the Secretary of Defense on the preparation of annual policy guidance for the heads of Department of Defense (DOD) components for the prepara-

tion and review of program recommendations and budget proposals.

2. Advise the Secretary of Defense on the preparation of policy guidance for the preparation and review of contingency plans.

3. Assist the President and the Secretary of Defense in providing for the strategic direction of the Armed Forces, including the

direction of operations conducted by the Commanders of the Combatant Commands.

4. Prepare strategic plans, including plans which conform with resource levels projected by the Secretary of Defense.

5. Prepare joint logistic and mobility plans to support those strategic plans and recommend the assignment of logistics and mobility responsibilities to the Armed Forces in accordance with those logistic and mobility plans.

6. Prepare military strategy and assessments of the associated risks to include:

a. A military strategy to support national objectives within policy and resource-level guidance provided by the Secretary of Defense.

b. Net assessments to determine the capabilities of the Armed Forces of the United States and its allies as compared to those of possible adversaries.

7. Provide for the preparation and review of contingency plans that conform to policy guidance from the President and the Secretary of Defense.

8. Prepare joint logistics and mobility plans to support those contingency plans and recommend the assignment of logistic and mobility responsibilities to the Armed Services in accordance with those logistics and mobility plans.

9. Advise the Secretary of Defense on critical deficiencies and strengths in force capabilities (including manpower, logistic, and mobility support) identified during the preparation and review of contingency plans, and assess the effect of such deficiencies and strengths on meeting national security objectives and policy and on strategic plans.

10. After consultation with the Commanders of the Combatant Commands, establish and

maintain a uniform system for evaluating the preparedness of each Combatant Command to carry out missions assigned to the command.

11. Advise the Secretary of Defense on the priorities of the requirements, especially operational requirements, identified by the Commanders of the Combatant Commands.

12. Advise the Secretary of Defense on the extent to which the program recommendations and budget proposals of the Military Departments and other components of the DOD conform with the priorities established by strategic plans and with the priorities established for requirements of the commanders of the Combatant Commands.

13. If deemed necessary, submit to the Secretary of Defense alternative program recommendations and budget proposals within projected resource levels and guidance provided by the Secretary of Defense, to achieve greater conformance with the priorities established in strategic plans and with the priorities for the requirements of the commanders of the Combatant Commands.

14. In accordance with guidance of the Secretary of Defense, recommend budget proposals for activities of each Combatant Command, as appropriate. Activities for which funding may be requested include:

a. Joint Exercises

b. Force Training

c. Contingencies

d. Selected Operations

15. Advise the Secretary of Defense on the extent to which major programs and policies of the Armed Forces in the area of manpower conform with strategic plans.

16. Assess military requirements for defense acquisition programs.

Mission and Organization

17. Develop and establish doctrine for all aspects of the joint employment of the Armed Forces.
18. Formulate policies for coordinating the military education and training of members of the Armed Forces.
19. Provide for representation of the United States on the Military Staff Committee of the United Nations in accordance with the Charter of the United Nations.
20. Submit to the Secretary of Defense, not less than once every three years, a report containing such recommendations for changes in the assignment of functions (roles and missions) to the Armed Forces as the Chairman considers necessary to achieve maximum effectiveness of the Armed Forces.
21. Prescribe the duties and functions of the Vice Chairman of the Joint Chiefs of Staff subject to approval of the Secretary of Defense.
22. Exercise exclusive direction of the Joint Staff.
23. Subject to the direction of the President, attend and participate in meetings of the National Security Council.
24. Advise and assist the President and the Secretary of Defense on establishing Combatant Commands to perform military missions and on prescribing the force structure of those commands.
25. Periodically, not less than every two years, review the missions, responsibilities (including geographic boundaries), and force structure of each Combatant Command; and recommend to the President through the Secretary of Defense, any changes to missions, responsibilities, and force structure, as may be necessary.
26. Transmit communications between the President or the Secretary of Defense and the Commanders of the Combatant Commands, as directed by the President.
27. Perform duties, as assigned by the President or the Secretary of Defense, to assist the President and the Secretary of Defense in performing their command function.
28. Oversee the activities of the Combatant Commands.
29. Advise the Secretary of Defense on whether a Commander of a Combatant Command has sufficient authority, direction, and control over the commands and forces assigned to the command to exercise effective command over those commands and forces.
30. Advise and assist the Secretary of Defense on measures to provide for the administration and support of forces assigned to each Combatant Command.
31. Advise the Secretary of Defense on whether aspects of the administration and support necessary for the accomplishment of missions should be assigned to the Commander of a Combatant Command.
32. Serve as the spokesman for Commanders of the Combatant Commands, especially on the operational requirements of their commands.
33. Provide overall supervision of those Defense Agencies and DOD Field Activities for which the Chairman of the Joint Chiefs of Staff has been designated by the Secretary of Defense to oversee. Perform such other functions with respect to the Defense Agencies and DOD Field Activities as may be assigned by the Secretary of Defense.
34. Periodically, not less than every two years, report to the Secretary of Defense on the responsiveness and readiness of designated combat support agencies.

35. Provide for the participation of combat support agencies in joint training exercises, assess their performance, and take steps to provide for changes to improve their performance.

36. Develop, in consultation with the director of each combat support agency, and maintain a uniform readiness reporting system for combat support agencies.

37. Advise and assist the Secretary of Defense on the periodic review and revision of the curriculum of each professional military education school to enhance the education and training of officers in joint matters.

38. Review the reports of selection boards that consider for promotion officers serving, or having served, in joint duty assignments in accordance with guidelines furnished by the Secretary of Defense and return the reports with determinations and comments to the Secretary of the appropriate Military Department.

39. Advise the Secretary of Defense on the establishment of career guidelines for officers with joint specialty.

40. Submit to the Secretary of Defense an evaluation of the joint duty performance of officers recommended for an initial appointment to the grade of lieutenant general or vice admiral, or initial appointment as general or admiral.

41. Promulgate Joint Chiefs of Staff publications (JCS Pubs) to provide military guidance for joint activities of the Armed Forces.

42. Review the plans and programs of the Commanders of Combatant Commands to determine their adequacy and feasibility for the performance of assigned missions.

43. Provide military guidance for use by the Military Departments, the Military Services,

and the Defense Agencies in the preparation of their respective detailed plans.

44. Participate, as directed, in the preparation of combined plans for military action in conjunction with the Armed Forces of other nations.

45. Determine the headquarters support, such as facilities, personnel, and communications, required by Combatant Commands, and recommend the assignment to the Military Departments of the responsibilities for providing such support.

46. Prepare and submit to the Secretary of Defense, for information and consideration, general strategic guidance for the development of industrial and manpower mobilization programs.

47. Prepare and submit to the Secretary of Defense military guidance for use in the development of military aid programs and other actions relating to foreign military forces.

48. Formulate policies for joint training of the Armed Forces.

49. Assess joint military requirements for command, control, and communications; recommend improvements; and provide guidance on aspects that relate to the conduct of joint operations.

50. Prepare and submit to the Secretary of Defense, for information and consideration in connection with the preparation of budgets, statements of military requirements based upon US strategic war plans. These statements of requirements shall include tasks, priority of tasks, force requirements, and general strategic guidance for developing military installations and bases, and for equipping and maintaining military forces.

51. In carrying out his functions, duties, and responsibilities, the Chairman of the Joint

Mission and Organization

Chiefs of Staff, shall, as he considers appropriate, consult with and seek the advice of the other members of the JCS and the Commanders of the Combatant Commands.

52. Convene, preside over, and provide the agenda for meetings of the JCS and determines when issues under JCS consideration will be decided.

53. Sit as a member of the Armed Forces Policy Council.

54. Sit as a member of the Nuclear Weapons Council (VCJCS).

55. Sit as a member of the Strategic Environmental Research and Development Program Council (VCJCS).

56. Arrange for the provision of military advice to all Office of the Secretary of Defense (OSD) offices.

57. Administer the Commanders in Chief (CINC) Initiative Fund.

58. Administer the Partnership for Peace Program.

59. Coordinate all communications of joint interest between OSD and the combatant commands.

60. Chair the Joint Requirements Oversight Council (JROC) (VCJCS).

61. Sit as a member of the Defense Acquisition Board (VCJSC).

62. Advise and assist the Secretary of Defense with promulgation of cost-accounting

system for use by the military departments in preparing budget requests for operation of professional military schools.

63. Advise the military departments of National Defense University budget needs.

64. Coordinate the President's report to Congress on adherence to and compliance with arms control obligations.

65. Provide military representation for US government delegations for selected treaty negotiations, including those related to arms control.

66. Identify for the Secretary of Defense deficiencies in the combat support capabilities of the Defense Intelligence Agency (DIA) and the National Security Agency.

67. Provide operational control over DIA for purpose of obtaining intelligence support required to perform the statutory and assigned duties and to ensure that adequate, timely, and reliable intelligence support is available to the combatant commands.

68. Advise and assist the Secretary of Defense in furnishing guidelines to officer promotion boards to ensure proper consideration of joint duty assignments.

69. Approve organization and unit structure of the Selected Reserve in accordance with contingency and war plans.

70. Perform such other duties as the President or the Secretary of Defense may prescribe.

Joint Staff Information Resources Management Vision

Information Technology: Providing an Affordable Path to Enhanced National Security through Superior Decisionmaking

Advances in information technology have greatly improved the capability of the Joint Staff to perform its mission in support of the national defense. Continuing progress in information management, executive decision systems, and the enabling technologies, provide the Joint Staff opportunities for even greater capabilities in the future. From routine internal administrative support and action staffing to external communications and coordination necessitated by rapid troop deployments to domestic or international crises, the decisionmaking leverage provided by improved information management and technology is becoming more critical for successful accomplishment of Joint Staff missions.

The underlying foundation of the information resources management (IRM) vision for the Joint Staff reflects, to a large degree, a vision shared by many public and private sector organizations--improved productivity and effectiveness promoted through enhanced technology. Towards this goal, the Joint Staff envisions an IRM environment that:

- a. Fosters the establishment of an accurate and effective information base responsive to the user's requirements.
- b. Employs business reengineering practices to the development or refinement of processes before system automation is undertaken.
- c. Establishes a secure open-system approach to the acquisition and deployment of information technology.
- d. Establishes data-standardization procedures addressing clear data ownership responsibility, easy information sharing, and common user-interfaces.

- e. Fosters user involvement to ensure limited resources are effectively used to address prioritized mission-essential requirements.

The IRM vision combines a base of IRM goals and objectives found throughout the public and private sectors and the Joint Staff's specific requirements to support the Chairman of the Joint Chiefs of Staff in his role as principal military adviser to the President, the National Security Council, and the Secretary of the Defense. The following scenario illustrates the pervasive technological impact on how a Joint Staff action officer will conduct business in the not too distant future.

Passing through an automated security system that controls entry into the workspace, the business day may start with the action officer's review of the day's schedule via the electronic calendar present on the workstation. The first scheduled activity, a directorate staff meeting, is a video conference at the workstation. This interactive session, complete with video screens of the participants and animated briefing graphics, allows the action officer to interact with both peers and senior leadership without leaving the office. Follow-on sessions and meetings can be efficiently arranged using the electronic calendar software present throughout the Joint Staff interactive network. Additional participants and pertinent information can be brought into the session for real-time interaction and decisionmaking.

After the on-line staff meeting, the action officer can read, forward, and quickly answer electronic mail.

reducing the delay associated with paper-based processing. Questions on particular issues can be researched and resolved using a variety of compatible electronic resources, ranging from on-line queries to standardized government and commercial data bases to reference material stored on CD-ROMs.

The action officer can prepare briefings for senior management using tools such as digital scanning, corporate data file extracts, and on-line reference material, to name a few. Electronic action tasking and tracking, archival research, package preparation, coordination, editing, and approval will facilitate timely senior management review and processing of staffing actions.

Although this scenario of technological progress could be typical of many organizations within the next several years, the IRM vision of the Joint Staff extends beyond office automation (OA) improvements to address essential decisionmaking and information systems to support the Joint Staff's key role in the national defense structure. These decisionmaking and information systems extend from modeling and simulation requirements associated with research and development, test and evaluation, education, training, military operations and exercises, and analysis, to critical command and control functions.

Tomorrow's action officers and senior leadership will rely on improved models and simulation to support and process assessments of military force generation; command, control, communications, computers, and intelligence; ballistic missile defense; nonlethal combat; low intensity conflict; and special operations. Enhanced models and simulations are also needed to evaluate the political, economic, ethnic, and religious effects on international security and their impact on military actions. Modern network activities such as the Defense Simulation Internet, in concert with initiatives relating to open architecture, application portability and

connectivity, and protocol standards, will enable the entire joint community to interact and responsively address the changing international environment. Core competencies in various subject areas will be readily accessible to form collaborative and more informed responses to senior leadership issues. Advanced simulations, for example, will include applications of virtual reality, synthetic environments, and integrated, multilevel simulations. Joint Staff action officers and their counterparts in the combatant commands, Services, and Defense agencies, will have more powerful information technology tools to use to investigate, analyze, and assess national security options and alternatives. These new, more powerful information technology tools include simultaneous, multisite, distributed wargaming via remote log on, shared workstation conferencing, rapid information interchange, multiparty video conferencing, and host-to-host connectivity. This interaction will provide the Joint Staff leadership with informed, broad-based Joint Military Net Assessments, National Military Strategy Documents, and Program Objective Memorandum evaluations contained in the Chairman's Program Assessment.

The IRM vision is further amplified by the critical demand for providing fused information to military tactical decisionmakers. The development of an interoperable and responsive information infrastructure is essential for effective joint military operations. The nature of modern warfare demands that we fight as a team to apply overwhelming force from different dimensions and directions to shock, disrupt, and defeat the enemy. Joint military operations involving land, sea, air, space, and special operations forces in flexible joint force structures require joint networks and systems that are fully interoperable across the air, sea, space, and ground environments. Towards this end, a new way of doing business is evolving which must accompany the advances being made in information decision systems and information technology.

The revitalization of senior management structures such as the Joint Requirements Oversight Council and the Military Communications-

Electronics Board enable the joint community to focus on functional requirements of crisis planning, force deployment, force status, logistics, intelligence, and personnel in an environment of diminishing personnel and funding resources.

Tomorrow's action officers and senior leadership will rely on an information infrastructure that provides current and accurate operational data in

a consistent, complete, realistic, geographic representation. They must have this new, improved technological infrastructure (data, hardware, and communications) to facilitate the acquisition, processing, distribution, and protection of information to effectively and efficiently support the Chairman of the Joint Chiefs of Staff in his vital role in national defense.

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Information Resources Management Goals

The goals of the Joint Staff IRM program are to enhance the capability of Joint Staff personnel to perform their jobs more accurately, efficiently, and responsively. The IRM goals describe the actions the Joint Staff must undertake in order to establish the organizational environment necessary to achieve mission essential information requirements. Within each stated goal, several objectives or strategies have been formulated to assist in successfully accomplishing each of the IRM goals.

IRM GOALS AND OBJECTIVES WITH ASSOCIATED PROGRAM INITIATIVES AND PERFORMANCE MEASURES

I. Improve the quality of automated information systems and services available to the Joint Staff.

Objective A. Implement quality management techniques within the IRM program.

Objective B. Employ business reengineering practices in the design and development of automated information and decision support systems.

Program Initiatives:

1. Execute a Total Quality Management (TQM) training program to provide all Joint Staff personnel a basic level of understanding of TQM principles.
2. Identify user needs for new or improved automated procedures.
3. Evaluate procedures and processes from a business reengineering process (BRP) or TQM approach prior to automating them.

Performance Measures:

1. Common basis of understanding of TQM principles will facilitate BRP efforts through increased attendance of Joint Staff personnel at TQM training.

2. Implement business process reengineering practices prior to automation of Joint Staff procedures.

3. Implementation of automated procedures and electronic processing to shorten the time required to research, staff, analyze, and prepare coordinated Joint Staff actions.

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II. Promote the effective use of information resources in the accomplishment of mission requirements.

Objective A. Provide the Joint Staff user community with the appropriate information technology tools necessary to satisfy information and decision support requirements.

Objective B. Continually review existing information system capabilities for technology infusion where appropriate.

Program Initiatives:

1. Maintain contracts to allow the Joint Staff to obtain required OA equipment, software, maintenance, and support quickly and cost effectively.

IRM Goals and Objectives

2. Program for incremental technological advances in OA hardware and software.

3. Provide OA training to Joint Staff personnel tailored to their level of expertise--basic, intermediate, and advanced.

processing through common OA software and shared data.

2. Increased use of integrated software suites which facilitate user training and accessibility.

Performance Measures:

1. More efficient Joint Staff action processing and information sharing through interoperability, standardization, and configuration management reviews.

2. Improved efficiency through periodic hardware and software upgrades to capitalize on technology improvements.

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IV. Improve the quality of the Joint Staff's IRM process.

Objective A. Review the existing IRM process and incorporate improvement measures where appropriate.

Objective B. Foster functional user involvement in the prioritization of limited resources in addressing the acquisition and the employment of information technology.

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III. Promote efficient user accessibility to information and decision support automation tools and media.

Objective A. Establish a "user friendly" IRM environment in accessing and utilizing automation data bases and technology.

Objective B. Improve the automation information system training program.

Program Initiatives:

1. Use the directorate information resources management officials (IRMOS) as a corporate body to review and coordinate IRM policies.

2. Manage OA resources with a configuration management board(s) to ensure user needs are satisfied.

Program Initiatives:

1. Provide templates and electronic forms on the OA network.

2. Provide improved means of user support to troubleshoot, repair, and assist.

3. Provide OA training to Joint Staff personnel tailored to their level of expertise--basic, intermediate, and advanced.

Performance Measures:

1. Periodic Information Resources Management Working Group (IRMWG) review of IRM instructions and procedures to facilitate timely review and updates.

2. Implement greater corporate involvement and consideration of user concerns (functional requirements) in IRM decisions.

Performance Measures:

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1. Replacement of paper-constrained systems with higher quality electronic action

V. Improve the information system and the information technology environment in the Joint Staff.

Objective A. Build information and decision support systems based on Federal and DOD data standardization guidance.

Objective B. Acquire network and data processing equipment in accordance with open-system and interoperability standards; invest in open-systems architecture.

Program Initiatives:

1. Review existing data policy and processes to ensure that functional user information requirements conform to existing data standards of integrity, quality, and security.
2. Use existing DOD data definition standards in data base and application software development.
3. Coordinate and assist ongoing industry, Federal, and DOD data standardization initiatives.
4. Apply appropriate Federal policy and guidance regarding open-system architecture to the development and modernization of the Joint Staff infrastructure.

Performance Measures:

1. Improved Joint Staff operations resulting from accurate, reliable, available, and secure information.
2. Improved internal and external interoperability across the Joint Staff and the DOD enterprise.
3. Greater hardware, network, and data interoperability.

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VI. Reduce costs associated with information system development and maintenance.

Objective A. Use structured software techniques and tools in application software development.

Objective B. Where practicable, use commercial-off-the-shelf (COTS) software.

Objective C. Foster competition in acquisition and monitor in-place contracts for efficiency and effectiveness of products and services provided.

Objective D. Employ life-cycle management practices in the management of all automated information system programs.

Program Initiatives:

1. Maintain proactive training programs, such as GSA's Trail Boss, for personnel responsible for program management and life-cycle management of automated information systems (AISs).
2. Develop or modify software only if COTS does not meet the users' requirements.
3. Use standard operating systems and graphical user interfaces for all OA systems.
4. Use proactive program management and contract administration to economically obtain required OA hardware, software, maintenance, support, and training.

Performance Measures:

1. Action officer effectiveness and capabilities improvement through transfer of skills in one application to other applications in the OA suite (e.g., word processing and graphics).
2. Disciplined life-cycle management will enable orderly development and modification of AISs.

IRM Goals and Objectives

3. Well-trained program managers and contracting officer representatives will maximize the return on AIS investments.

4. Increased use of COTS software.

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VII. Improve the security of automated information systems (AISs).

Objective A. Improve the Joint Staff security awareness program.

Objective B. Employ appropriate security measures to prevent unauthorized access to and contamination of Joint Staff AISs.

Objective C. Conduct periodic internal reviews of Joint Staff IRM policies, processes, and programs.

Program Initiatives:

1. Comply with all DOD AIS security requirements.

2. Conduct periodic security awareness training for Joint Staff personnel.

3. Actively use directorate security managers to improve compliance with security measures.

Performance Measures:

1. Improved security awareness through effective working level relationships with Joint Staff Security and the directorates.

2. Increased security awareness training and education to reduce the risk of security violations and improve the protection of classified information.

Joint Staff Office Automation Infrastructure

COMMUNICATION NETWORK CONFIGURATION

1. The Joint Staff Automation for the Nineties (JSAN) program is an initiative in support of Joint Staff OA requirements. The JSAN Data Communications System is partitioned into two independent systems: the data communications network and the video distribution system.

a. The JSAN Data Communication Network design is based on a dual, high-speed fiber distributed data interface (FDDI) backbone supporting corporate processors and routers providing Internet-working capabilities among communities of interest (COIs). The JSAN network employs a FDDI Ring/Star and Ethernet star topology. The network is designed for high availability due to the inherent self-healing nature of FDDI and also to the dual-home architecture applied to all criti-

cal network resources. The FDDI backbone provides high-speed common access among COIs and JSAN corporate assets. The COIs are composed of personal computers (PCs) with access to OA processors configured on an Ethernet 10Base-T network. A high-level conceptualization of the data communication network is depicted in Figure 3.

b. The JSAN Broadband Video System (JSANBVS) is based on a branching-tree topology using copper coaxial cable for its implementation. The system provides eight channels of video and audio to the end users and can be expanded to support up to 60 channels, if required. Figure 4 depicts a high-level conceptualization of the JSANBVS.

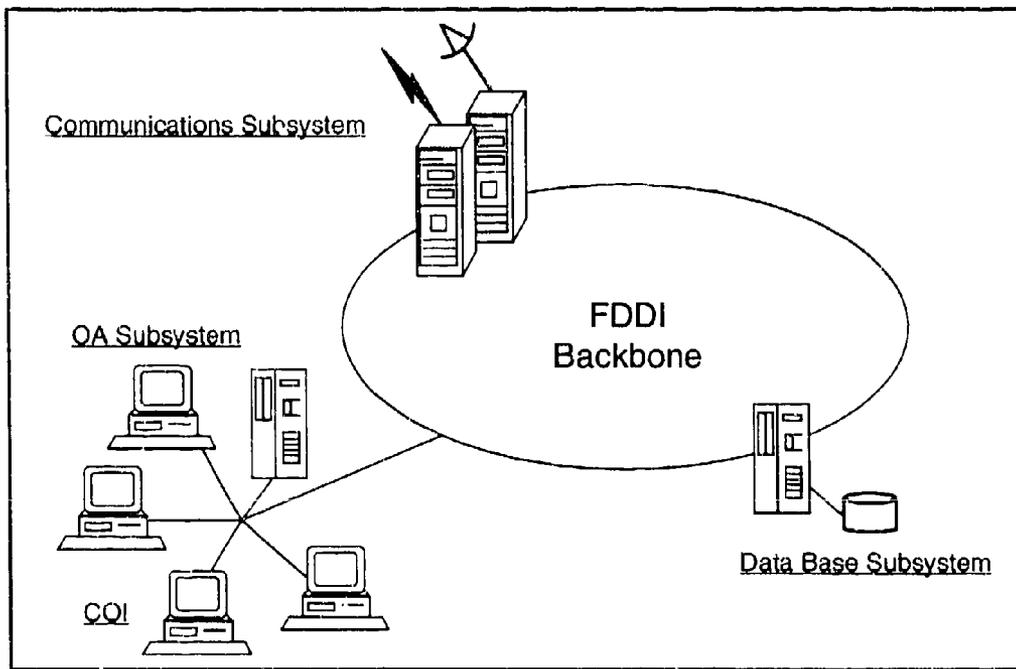


Figure 3. Data Communication Network

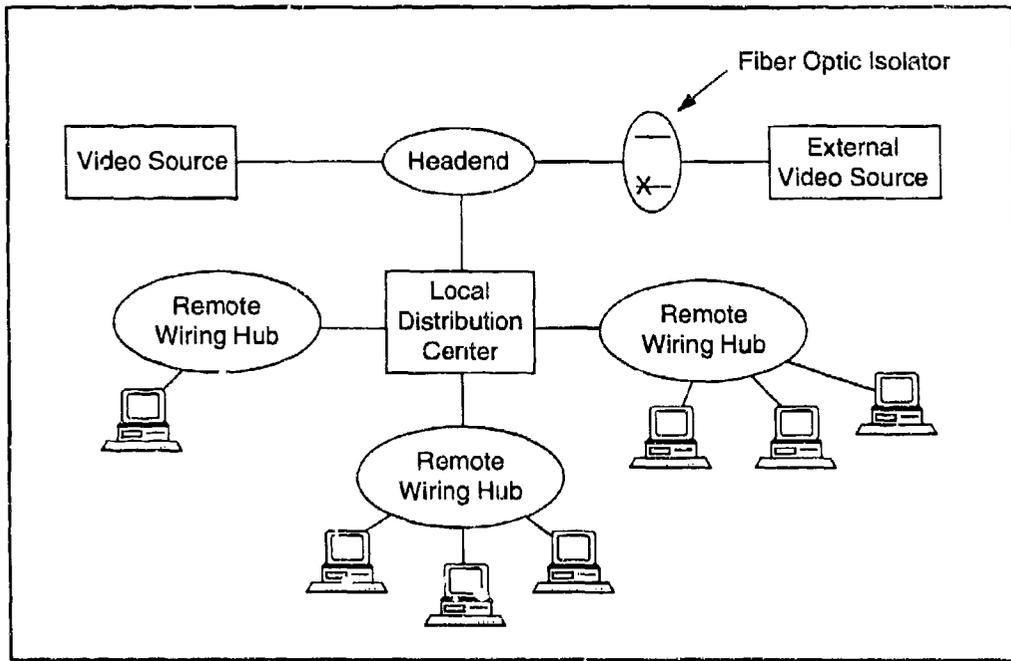


Figure 4. JSAN Broadband Video System

2. Data Communication Network

a. **Design Philosophy.** Several key design points were considered during the design process for the JSAN architecture including minimization of traffic flow over the FDDI, minimization of single points of failure for users and corporate processors, the ongoing Pentagon renovation efforts, and emerging technologies. These considerations are discussed in the following paragraphs.

(1) **Minimization of FDDI Traffic.** Minimization of traffic flow over the FDDI has been accomplished by isolating COI traffic through the use of routers.

(2) **Elimination of Single Points of Failure.** Single points of failure are reduced in a number of ways, as shown in Table 1.

(3) **Renovation Efforts.** In recognition of Pentagon renovation efforts, all routers

and concentrators are positioned on immovable objects (concrete walls, concrete pilings), thus minimizing rewiring requirements when the layout of a room changes.

(4) **Technical Enhancements and Growth.** The design philosophy provides for future growth, enhancements, and migration to new technologies. This is accomplished by specifying state-of-the-market cabling and components, and implementing them in a way that provides an efficient migration path.

(a) The installed backbone cable is a composite cable comprised of eight strands of multi-mode and four strands of single-mode fiber. Eight of the 12 strands can support up to four FDDI rings, while the four single-mode fiber strands can support FDDI, as well as emerging high-bandwidth technologies

such as Asynchronous Transfer Mode (ATM) and Synchronous Optical Network (SONET).

(b) The shielded twisted pair net cabling distributed from the hubs to the workstations can support 100 megabytes per second (Mbps) technologies, such as Copper Distributed Data Interface (CDDI), providing 10 times the bandwidth of Ethernet to a workstation.

(c) The components have been designed with modular architectures that allow for migration to future

technologies. For example, the FDDI concentrators can potentially support multiple FDDI rings. In the event added bandwidth is required, the addition of a FDDI interface card to the concentrator is all that would be required to support the added ring, or rings. These concentrators would then be able to attach to existing spare cable to form the additional ring. Minimal, if any, additional cable plant would be required. The Cisco router supports technologies such as ATM and SONET.

- Using the built-in fault tolerance of FDDI technology. The network is able to survive a break in the backbone without isolating any of the users, a capability of FDDI and fiber technologies. When a break in the cable occurs, the two nearest concentrators loop back, away from the break, thereby maintaining connectivity for all users.
- Augmenting the protected wire distribution system (PWDS) in order to implement a ring technology. A FDDI backbone provides two paths of connectivity between any pair of attached systems. However, to truly exploit this redundancy, the two paths must follow a physically diverse placement. This physically diverse ring topology forms a network backbone which is genuinely immune to a single point of failure (including catastrophic failures along the PWDS).
- Having all FDDI concentrator connections through dual-attach interfaces to fully exploit the availability of the FDDI backbone network, each concentrator must be connected to both the primary and secondary fiber optic rings. Such dual attachment precludes any possibility that a concentrator could become isolated from the rest of the network due to any single point of failure of the backbone.
- Having all FDDI concentrator connections include optical bypass units. Optical bypass units preserve the integrity of both primary and secondary fiber optic rings when an attached station's FDDI interface hardware becomes inoperable.
- Redundant connections to routers at the COI. In the ISAN design, each hub cluster is attached to a primary and a secondary router. Normal traffic flows over the primary router. Should the first become unavailable, the secondary router can dynamically shift the traffic from the primary router, taking over routing for the primary. In addition, the secondary router is able to off-load the primary router during peak traffic periods.

Table 1. Ways to Reduce Single Points of Failure

5. Data Communication Network Components. Figure 5 provides a breakout of network components and should be referenced throughout the discussion.

(1) **FDDI Backbone Cable.** The backbone cable is a 12-strand composite cable comprised of eight tight-buffered 62.5/125 micron multimode fibers and four tight-buffered single mode fibers. The 12-strand composite cable provides for growth and adequate sparing. Two of the 12 strands are required for the backbone; six spare multimode and four spare single-mode fibers are provided for future expansion and repair should any fibers fail.

(2) **Fiber Optic Distribution Cable.** The fiber optic distribution cable is a four-strand cable comprised of four tight-buffered 62.5/125 micron multimode fibers.

This fiber optic distribution cable is used for all FDDI concentrator-to-processor FDDI connections. The processors are the processing subsystem (OAPS), the communications processing subsystem (CPS), the data base processing subsystem, and router-to-workgroup hub connections. In addition, this cable is used for Ethernet-connected processors and Ethernet-connected PCs having cable runs in excess of 100 meters.

(3) **Copper Shielded Twisted Pair Subnet Distribution Cable.** The shielded twisted pair distribution cable is a Category Five cable comprised of eight 24-AWG shielded copper wires. Four of the wires are required for distribution; the remaining four wire pairs are spares provided for future expansion and repair should any wires fail. The copper shielded

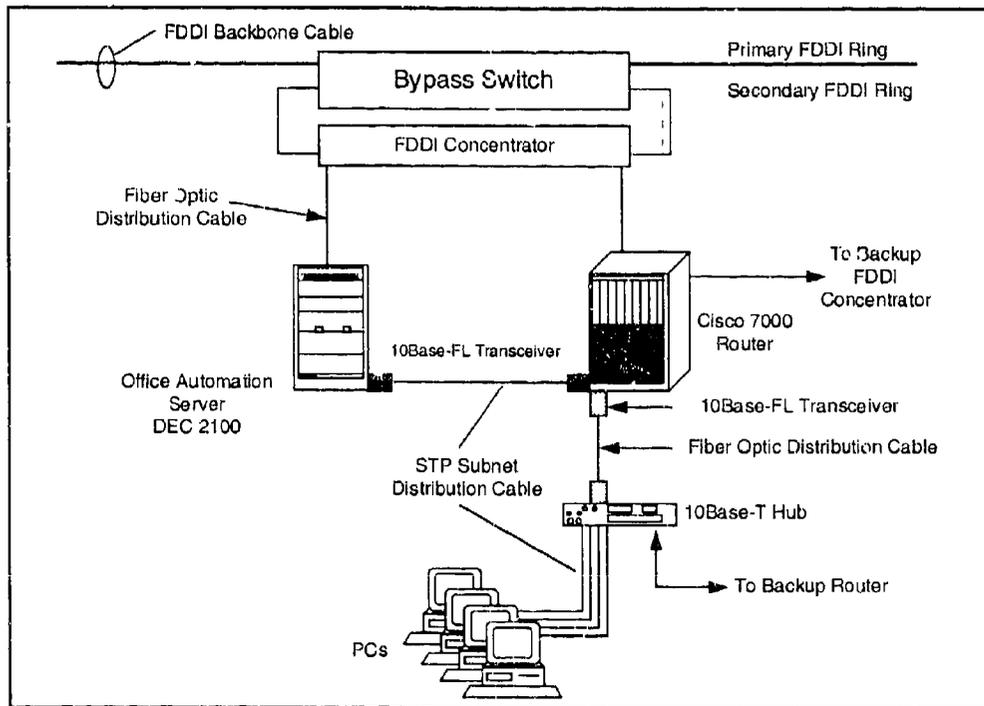


Figure 5. Data Communication Network Components

twisted pair subnet distribution cable serves several purposes. It is used for all Ethernet 10Base-T workgroup hub-to-workstation connections and for Ethernet-connected processors and Ethernet-connected workstations which have cable runs equal to or less than 100 meters.

(4) **Local Distribution Center.** Each Local Distribution Center (LDC), at a minimum, consists of one 70-inch equipment cabinet with locking doors, one router, one FDDI concentrator, an uninterrupted power supply (UPS), a video amplifier, a cable distribution system (two wall-mount distribution enclosures or one rack-mount distribution [patch] panel) and two electromagnetic interference and radio

frequency interference enclosures. Each COI subnet distribution point consists of one UPS, a video amplifier, video splitters, COI subnet hubs, and a cable distribution system. The COI subnet hubs are wall-mounted on a shelf above the video distribution splitters along with the Simple Network Management Protocol (SNMP) agent for the UPS.

(5) **FDDI Concentrators.** The FDDI concentrator provides a means of attaching FDDI devices to the backbone without impacting backbone performance and reliability. The FDDI concentrator provides many advantages over directly connecting FDDI devices to the backbone (See Table 2.)

- | |
|--|
| <ul style="list-style-type: none"> • Providing a means of attaching/detaching FDDI stations to the backbone without interrupting backbone performance. • Increasing backbone reliability by decreasing the number of ring segments, thereby reducing backbone exposure. • Providing a means to dual-home all FDDI-attached devices. • Increasing manageability of the backbone by providing individual port statistics and a means of port blocking by protocol and access criteria. • Adding security by preventing illegal attachments. |
|--|

Table 2. Advantages of FDDI Concentrator

(6) **Routers.** The Cisco 7000 router provides a current packet-forwarding rate of 110,000 packets per second. A packet-switching module is available for the Cisco 7000 that forwards packets at a rate of over 220,000 packets per second. This could be provided as a future technology enhancement, should the need for increased packet forwarding become a requirement.

(7) **10Base-T Workgroup Hubs.** The 3Com Hub provides 12 Ethernet 10Base-T ports in a compact scalable format. Hubs are clustered in order to keep within the design philosophy of dual-homing and to provide the additional ports required by larger COIs. One hub acts as an SNMP host, providing management for all hubs in a cluster. A minimum cluster consists of two hubs providing 24 subnet port connections. One hub provides a host connection to the primary router while the other hub

provides a host connection to a secondary router. A cluster can expand from the minimum configuration of two hubs supporting 24 users to maximum of four hubs supporting 50 users. Each workgroup hub has its own power supply and incorporates either a 10Base-FL (Ethernet over fiber) or an attachment unit interface (AUI). The 10Base-FL interface is used to connect the hubs to the router; the AUI interface is provided for flexibility. It provides other Ethernet media-type connections such as 10Base2 (Thinnet) and 10Base5 (Thicknet).

(8) **LDC UPS.** The UPS provides electrical backup capability for the LDC router and FDDI concentrator, supplying 15 minutes of uninterrupted power in case of a power outage. The UPS also provides an SNMP capability and rack enclosure environmental monitoring. These capabilities allow for remote monitoring of UPS conditions such as power statistics, battery voltage levels, runtime, and load, as well as rack temperature and humidity. Four inputs are provided, permitting remote monitoring of external events such as door closure, smoke, and fire detectors.

(9) **Ethernet 10Base-FL Fiber Optic Transceiver.** The Ethernet 10Base-FL transceiver attaches directly to an AUI port without requiring an AUI cable. The unit has six indicators that monitor power, link status, jabber, collision detection, transmit, and receive, and allows point-to-point Ethernet communications over fiber optic cabling. The unit is connected to the router's AUI port, allowing a fiber optic connection to the 10Base-T workgroup hub fiber optic port. It is also used for other devices requiring Ethernet connections with cable runs that exceed 100 meters.

(10) **Ethernet 10Base-T Twisted Pair Transceiver.** The Ethernet 10Base-T transceiver attaches directly to an AUI

port without requiring an AUI cable. The unit has four indicators that monitor power, link status, polarity and signal quality, and allows point-to-point Ethernet communications over shielded twisted pair cabling. The unit is used to connect the workstations to the 10Base-T workgroup hubs. It is also used for other devices requiring Ethernet connections with cable runs that are less than or equal to 100 meters.

(11) **FDDI Bypass Switch.** The FDDI bypass switch provides a means of segmenting a failed concentrator from the backbone and preventing the adjacent concentrators from going into a wrap mode. By segmenting one failed concentrator from the backbone and continuing the primary and secondary data paths, the integrity of the backbone is maintained. When the concentrator has been repaired and put back into service, the bypass switch will automatically switch back to its normal mode.

c. Network Implementation

(1) **Backbone.** FDDI is based on a dual, counter-rotating, 100 Mbps fiber optic token-passing ring. The dual ring is comprised of a primary ring and a secondary ring. The primary ring is used for data transmission and the secondary ring is used as a backup, should the primary ring fail. (Reference Figure 5.) The FDDI ring is comprised of FDDI concentrators which provide the host ports for the backbone to the COI routers, COI servers, and corporate processors. The Cisco 7000 routers provide the necessary isolation and filtering required for the COI networks. More than one COI may be supported by one router. In addition, all routers are dual-homed to the backbone via the FDDI concentrators, as shown in Figure 6. Should a router path to a primary FDDI concentrator fail, the secondary (standby) path to the secondary FDDI concentrator

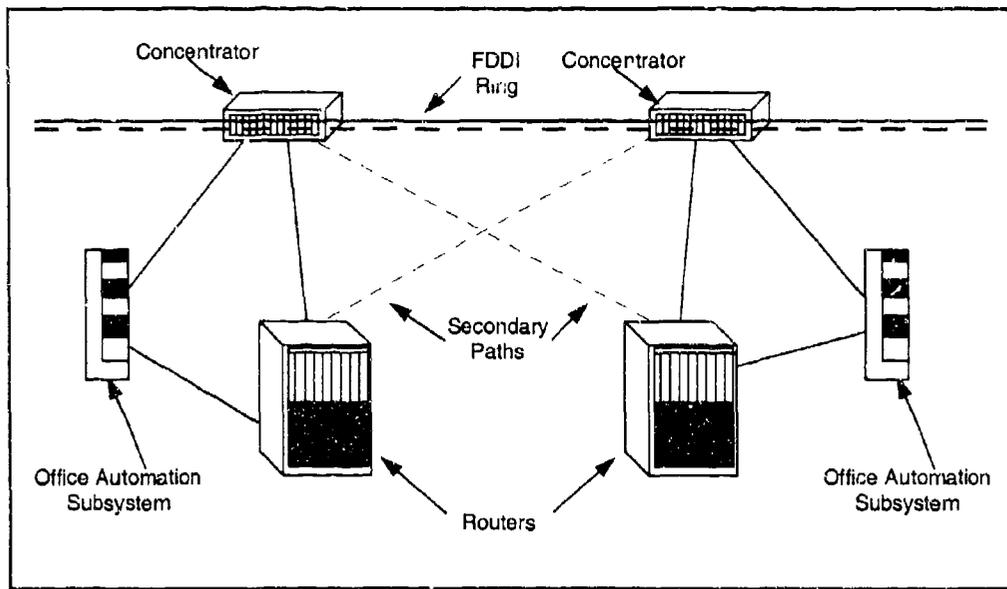


Figure 6. Dual-Homed Network Implementation

will become active, allowing a data path to the FDDI backbone. The cable plant design and implementation minimizes the need for future cable runs within the PWDS. In addition, spare fiber optic cables are provided to support multiple FDDI backbones and emerging technologies such as ATM. Also, by using Category Five shielded twisted pair cable in the subnet design, high bandwidth (100 Mbps) copper technologies such as CDDI can be implemented without having to add or change the cable plant within the directorates.

(2) **Community of Interest.** At a minimum, the COI consists of access to an OA processor, a PC(s), and a hub cluster(s) and a routing capability. The 3Com Hubs are scalable from a single hub providing 12 user ports to a 4-hub cluster supporting 50 user ports. A COI is comprised of one or more hub clusters, depending on its size. In addition, the nature of the 3Com

Hub provides flexibility in the COI implementation, which allows a hub cluster to support more than one COI. The COI network is based on the Institute of Electrical and Electronic Engineers (IEEE) Standard 802.3 10Base-T standard for a twisted pair cable Ethernet star topology. 10Base-T is distributed over shielded twisted pair cabling a distance of no more than 100 meters. When configuring a COI, a minimum of two 3Com Hubs per cluster is specified to conform with the JSAN dual-home architecture design. By providing two Ethernet 10Base-FL communication paths from the hub cluster to the primary and secondary router, a high degree of reliability is met. Should a component common to the data path fail, the redundant link will take on the failed path's traffic.

d. **Communications Software Architecture.** The overall communications concept is centered upon the protocol suites that are

implemented in the various components of the JSAN system. Most of the protocols fall into two principal classes: the DOD protocols and the ISO protocols (as defined in GOSIP). Within the JSAN system, DOD protocols predominate, whereas with communications to systems external to JSAN, ISO protocols are likely to be necessary. Note also that some protocols do not fall into either class, such as SNA. This third class is potentially necessary for communications with some external systems.

(1) The distinction between classes of protocols is essential because it dictates which protocols are implemented in the various JSAN components. None of the PCs/servers communicates directly with external systems and therefore do not require all of the ISO protocols. The communications processor is the component that directly interfaces external systems and it consequently implements all of the classes of protocols. Where necessary, it translates (through protocol gateways)

from ISO (or other protocols) to DOD protocols.

(2) DOD protocols include SNMP, File Transfer Protocol (FTP), and Telnet Protocol. These protocols are running on the Windows-based platforms (the user PCs and the OAPS) and on the UNIX platforms (including the network management station (NMS) and the communications processor). Other protocols specific to the Microsoft environment include data link control (DLC), NetBIOS, NetBEUI, and SMB; the additional protocols specific to the UNIX environment include NIS and NFS. The protocol stack of the PCs and OAPS is illustrated in Figure 7 and the stack for the NMS is illustrated in Figure 8. NMS incorporates OSI and TCP/IP systems and communications management capabilities, enabling it to manage Common Management Information Protocol (CMIP) and SNMP components. The communications processor implements a complete dual stack that includes all of the

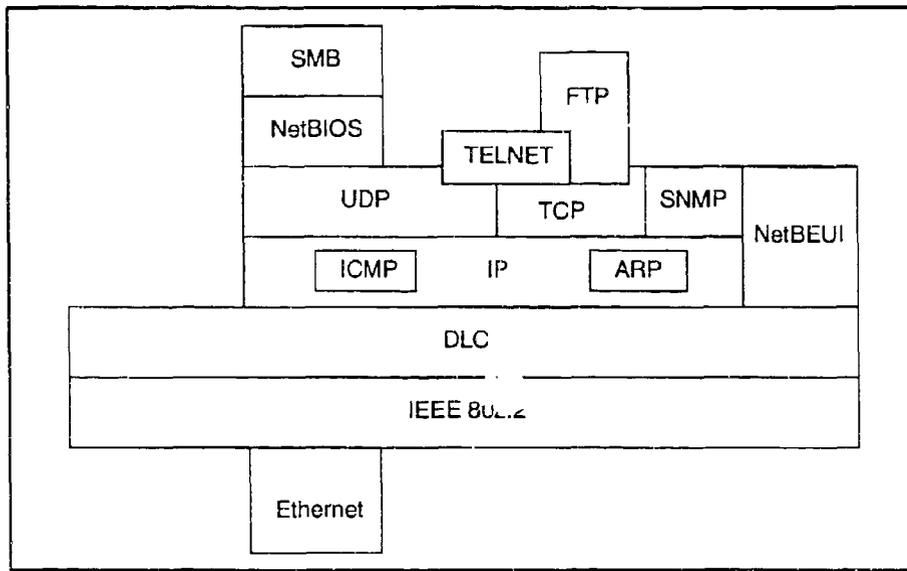


Figure 7. Personal Computer and Office Automation Processing Subsystem Protocol Architecture

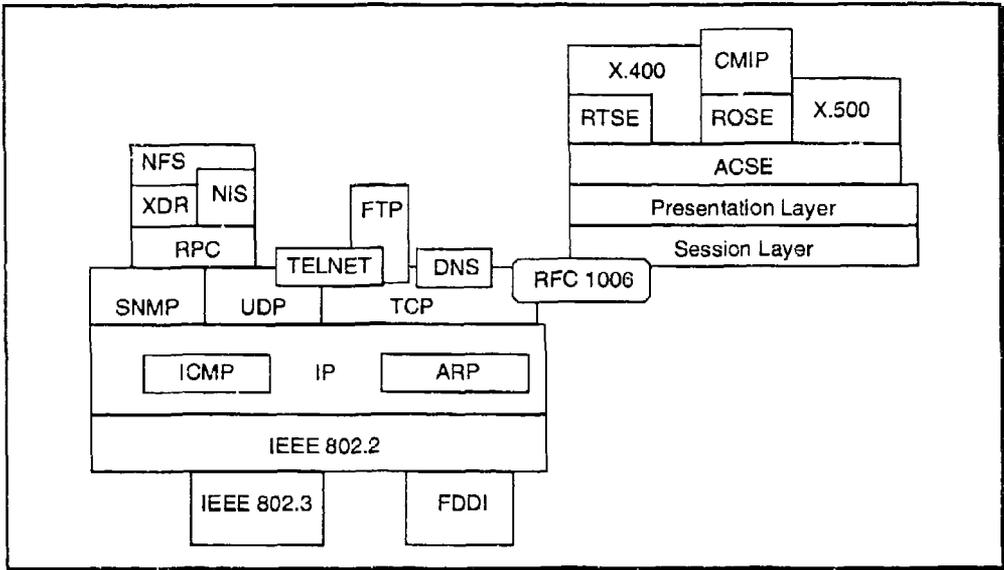


Figure 8. Network Management Station Protocol Architecture

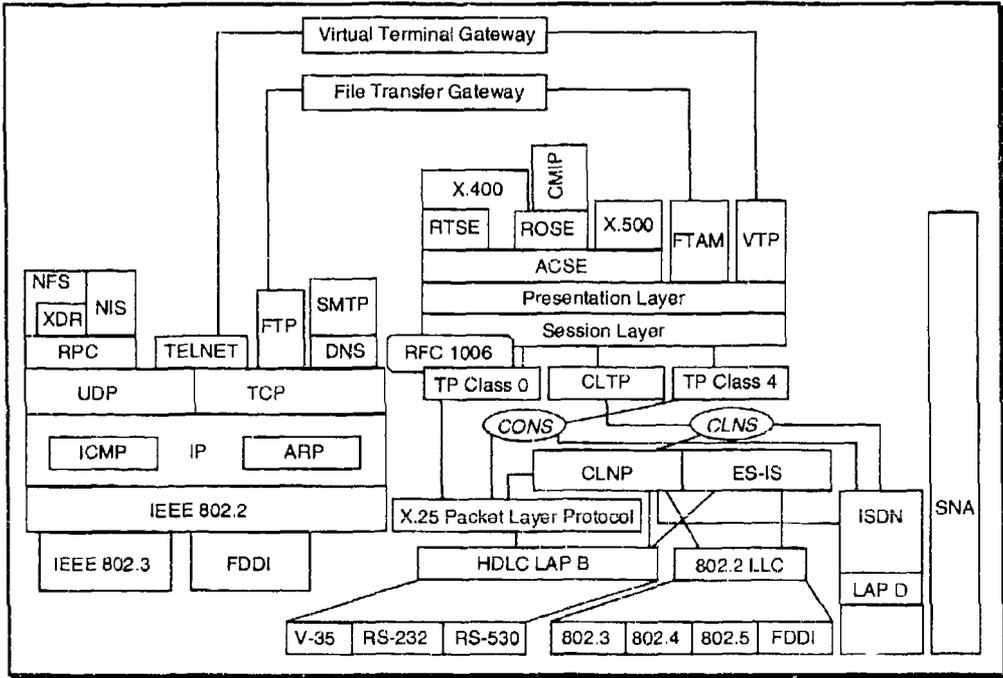


Figure 9. Communications Processor Protocol Architecture

classes of protocols, as illustrated in Figure 9. To external systems, the communications processor can interface with DOD, ISO, or other selected protocols. For internal communications, it uses the same set of protocols as the PCs and servers. The ISO protocols include: X.400 (message handling), X.500 (directory), CMIP, and File Transfer, Access, and Management Protocol. Those components that are in a COI implement IEEE Standards 802.2 and 802.3. JSAN components that interface directly to the backbone implement FDDI.

3. **Video Network.** The JSANBVS is a one-way distribution system designed to provide eight video channels with audio to Joint Staff end users. The JSANBVS has the ability to accept various radio frequency (RF) signal input sources, combine and amplify the resultant signals, and then distribute them over a cable distribution subsystem to end user outlets. The reuse of the existing Joint Staff Support Information System (JSSIS) network coaxial cable was implemented when possible, thus, eliminating the disruptions associated with installing new cable in the work areas.

The local origination programming capability satisfies the current requirement of eight programming channels and provides for various "in-house" requirements; an example includes playback of prerecorded tapes (VHS, BETA) for training. Additionally, the design provides a point of demarcation for future signal sources which may include off-air and broadcast transmissions (both VHF and UHF), satellite antenna, and community access television interfaces, as required.

Should the Joint Staff require connectivity to one of the future signal sources, security must be maintained by preventing emanations and video signals from feeding back through the signal source interface. This is accomplished by utilizing fiber optic technology between the input signal source and the headend equipment. The input signal source must interface through the

copper port and be converted to light within a fiber optic transmitter. The signal then goes out through the fiber optic port over single mode fiber cable into a fiber optic receiver where the signal is converted back to RF. From the receiver, the RF signal goes out through the copper port and into a modulator for channel selection and input to the video system. This satisfies the NACSIM regulation since it is impossible for internal transmissions to feed back out into the external signal source via fiber optics because the RF emanations are eliminated once the conversion to light occurs. Therefore, the external source will not receive ingress if there are no RF emanations being introduced to the external source.

The JSANBVS is a single cable 50-450 MHz one-way distribution system. The system provides eight video channels and has enough expansion capability to provide transmission of up to 60 TV channels to the end user workstation. JSANBVS is comprised of the headend, trunk distribution, and feeder distribution subsystems.

a. **Headend Subsystem.** The JSANBVS headend location is located in the Joint Staff Message center to provide the RF signal source(s) to the Joint Staff end user. The headend receives the various incoming RF signal sources, converts them to a desired TV channel, and then transmits the video/audio to the end users.

b. **JSANBVS Trunk Distribution Subsystem.** The trunk distribution subsystem provides the main broadcast transmission path from the headend location to strategic LDCs located throughout the Joint Staff facility. The trunk cable originates from the equipment cabinet in the Message Center, passes through the PWDS, and terminates in predetermined LDC locations.

c. **Feeder Distribution Subsystem.** The feeder distribution subsystem provides the secondary broadcast transmission path from the LDC location to strategic remote wiring

hubs located throughout the Joint Staff facility. One feeder cable originates from the splitter to each of the predetermined remote wiring hub locations. The splitter uses the 16 available ports to "feed" individual hubs at an average distance of 200 feet away. In the

case where the distance between the LDC and the hub locations exceeds the operationally sound performance characteristics of the cable, an amplifier will be appropriately placed to amplify the signal to the remote areas of the Joint Staff.

PROCESSOR SUBSYSTEM COMPONENTS AND RELATED SERVICES

Until the National Security Agency's (NSA) evaluation of the JSAN B1 Compartmented Mode Workstation is complete, an interim solution is being implemented. This interim solution is based on the original JSAN infrastructure supporting a client-server network comprised of DEC 2100s performing as the OAPS and 80486-based PCs performing as user workstations. The DEC 2100 executes Windows NT Advanced Server as its operating system; the PC runs Windows NT as its operating system.

1. **Workstation.** The user PCs are 80486-based PCs running the Windows NT operating system. Configuration details of the PCs are included below.

a. **Basic Hardware Configuration Data.** The standard JSAN hardware configuration of the 80486-based PC is as follows:

- 66 MHz CPU
- 200 Watt Power Supply
- 16 MB RAM
- 430 MB Drive
- 1.44 MB Floppy Disk Drive
- 5.25" In Floppy Disk Drive
- 256 K Cache Memory
- 15 inch SVGA Color Monitor
- Serial Ports (2)
- Parallel Port (1)
- 101 Key Keyboard
- Mouse and Mouse Pad
- Ethernet 16-bit SNMP Capable Port
- Video Adapter

The standard JSAN hardware configuration for the Pentium is as follows:

- Pentium PC 5D 66PCI
- 200 Watt Power Supply
- 16 MB RAM
- 545 MB Drive
- 1.44 MB Floppy Disk Drive
- 15" Monitor
- Serial Ports (2)
- Parallel Port (1)
- Keyboard
- Mouse and Mouse Pad
- Network Interface Card
- Intel S3805 PCI Video with 1 MB

b. **Network Connectivity.** Connectivity to the JSAN Network is illustrated in Figure 10. The software which is installed on the PCs is as follows:

- Windows NT 3.5
- Microsoft Office 4.2, consisting of Word for Windows, Excel for Windows, PowerPoint for Windows, and the Microsoft Mail Workstation License
- WinQVT/Net, which provides terminal emulation
- Schedule+, which provides a scheduling capability
- Mail

A block diagram showing the application software environment of the PC is illustrated in Figure 11.

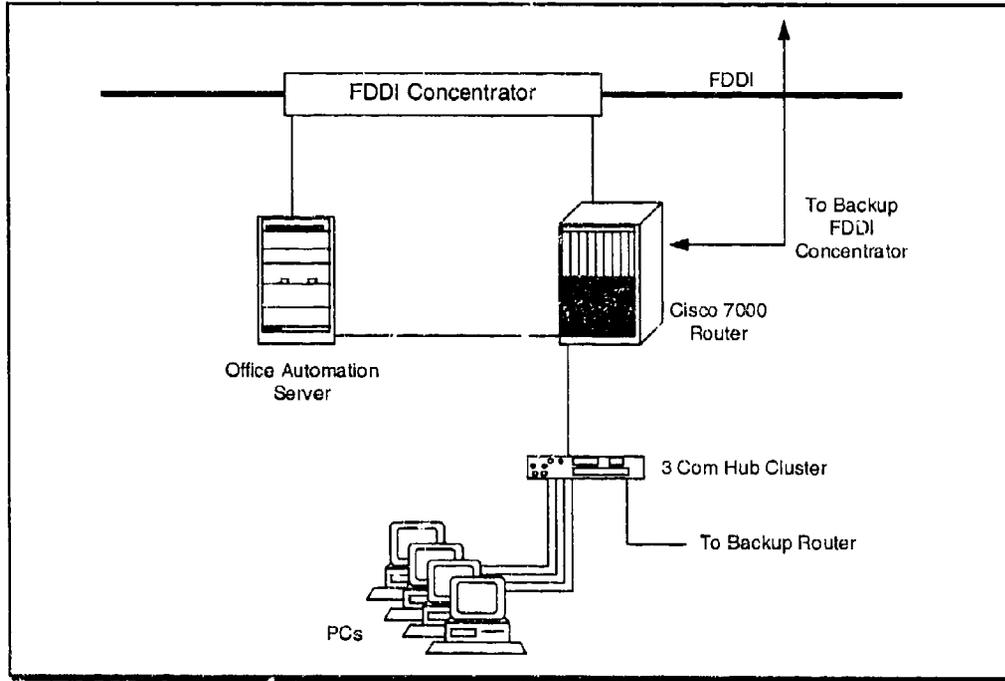


Figure 10. Personal Computer Connectivity

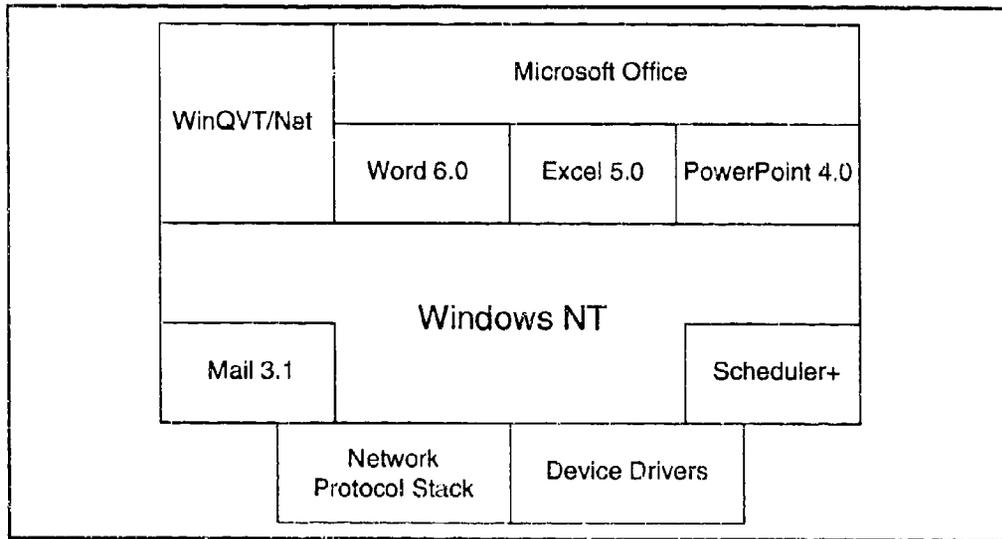


Figure 11. Personal Computer Software Environment

2. **Office Automation Processing System (OAPS).** The OAPS provides such shared services for its community of interest as mail and file sharing. The platform for the OAPS is a DEC 2100. The JSAN DEC 2100 basic hardware configuration is as follows:

- 190 MHz Alpha Chip
- 600 MB CD-ROM
- 2.88 MB Floppy Disk Drive
- 64 MB RAM
- Two 1-GB Internal Disk Drives
- Keyboard
- 3-Button Mouse

- 16 inch Color VGA Monitor, 1280x1024
- 3-Port SCSI Controller
- Two 3.5 inch Disk Drives, 2.1 GB
- 8mm 5 GB Tape Drive (in Pedestal)
- FDDI Interface
- Ethernet Interface

a. **Network Connectivity.** Each DEC 2100 is connected to the FDDI backbone through a FDDI concentrator and through a router for access by all authorized network users. Network connectivity of the DEC 2100 is depicted in Figure 12.

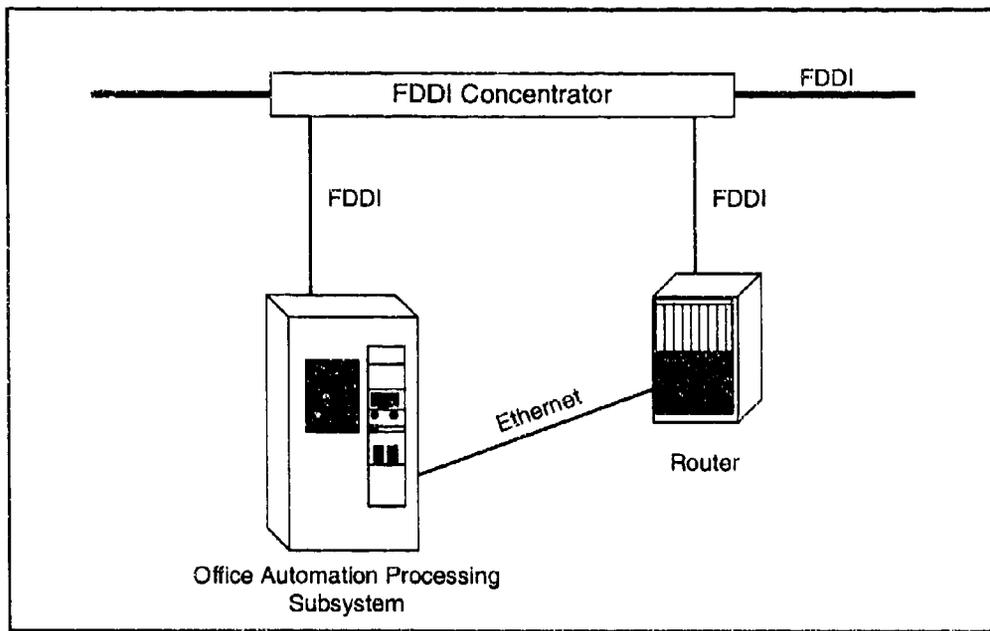


Figure 12. Office Automation Processing Subsystem Connectivity

b. **Software Components.** Windows NTS is a superset of Windows NT. It provides an environment in which user privileges and access to data can be centrally managed. NTS supports the concept of domains, where a domain is defined as a basic unit of security and centralized administration. Within the

JSAN configuration, the single domain model has been implemented.

The primary domain controller (PDC) serves as the single source for administration information, and is a configuration of a Pentium processor with 64 MB of RAM. Each OAPS is configured as a backup domain controller

(BDC). The administration information is automatically replicated from the PDC to the BDC(s) on a periodic basis. Configuring the OAPS as BDCs avoids problems, should the PDC fail. Because a PC must be able to access a domain server to be permitted to log on, BDCs increase performance of the logon process by eliminating the need for the PC to go across the network to find the PDC. Instead, the PC is able to access the local OAPS for the necessary administration information to log on.

This single domain model offers the following advantages over other models:

- Centralized network account administration.
- Centralized network resource administration.
- Centralized network security.
- Consistent and understandable user working environment.
- Elimination of additional hardware needs (only one PDC is needed to perform

administration duties, hence only one machine).

- Minimizes complexity of maintaining "trust relationships" between separate domains.

The software which is installed on the OAPS is as follows:

- Windows NTS 3.5
- Microsoft Office 4.2, consisting of Word for Windows, Excel for Windows, PowerPoint for Windows, and the Microsoft Mail Workstation License
- WinQVT/Net, which provides terminal emulation
- Schedule+, which provides a calendaring capability
- Mail 3.2a
- Resource Kit, which provides administrative tools for Windows NT

A block diagram showing the application software environment at the OAPS is illustrated in Figure 13.

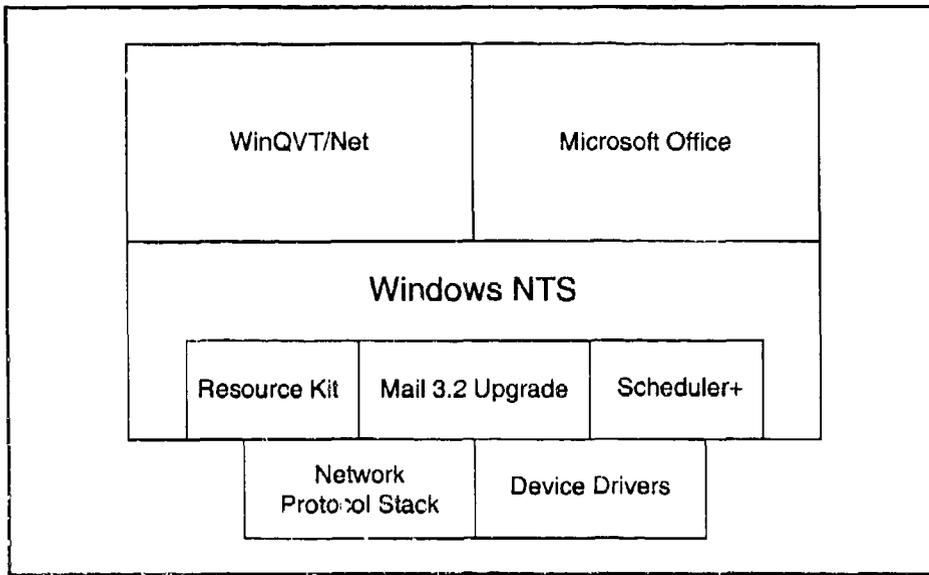


Figure 13. JSAN Office Automation Processing Subsystem Environment

3. **Communications Processing Subsystem.** The CPS supports services for high-speed communications support and store-and-forward service for electronic mail, Automatic Digital Network (AUTODIN), and other message traffic to external networks.

a. **Basic Configuration Data.** The CPS is hosted on two IBM RISC System/6000 Model 950 processors. The system is a rack-mounted server. The basic configuration data of the communication processing subsystem is as follows:

- Processor - 42 MHz
- Main Storage - 64 MB RAM, expandable to 512 MB
- Internal Hard Disk Storage - 857 MB DASD
- IBM FDDI Controller - Provides FDDI backbone access with optical bypass feature
- CD-ROM
- Diskette Drive - 3 inch Floppy Drive
- Internal Battery Backup
- RS/6000 Model 220 as Maintenance Console, with monitor and keyboard

Two Model 950 processors provide for a level of redundancy in communications services. Similarly, support for the external sources is distributed between the two, making it possible to provide backup paths for JSAN and external sources. This distribution also supports load balancing between the processors. Each processor includes a battery-powered backup unit that provides up to 1500 watts of standby power for a minimum of 10 minutes. The backup ensures that communications services can be brought down "gracefully" in case of problems, thereby minimizing time to restore full service after recovery. The CPS provides the capability to support over 100 external sources and provides expansion capability to 200 sources.

b. A block diagram showing the application software environment at the CPS is illustrated in Figure 14. The operating system is depicted at the lowest level and includes AIX system calls, AIX kernel services, and the interface communications to peripheral devices such as printers and storage devices.

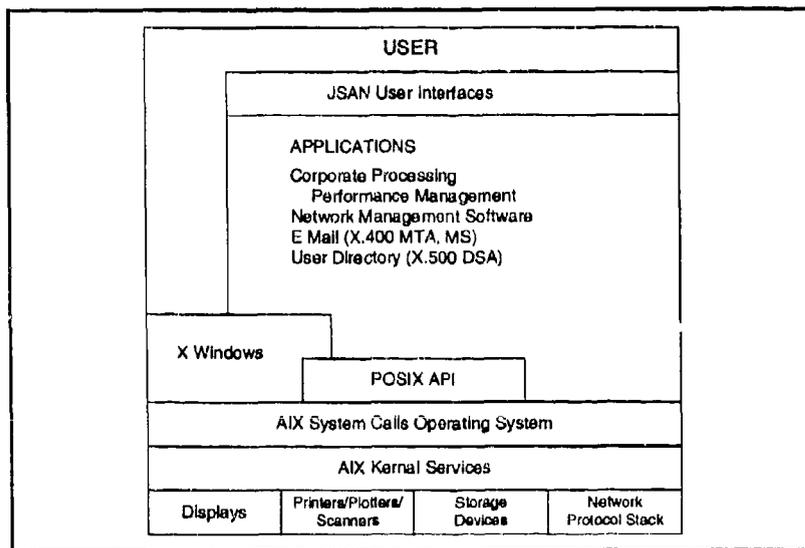


Figure 14. JSAN Communication Processing Subsystem Environment

The protocol software is packaged with the operating system. The POSIX API interface sits between POSIX-compliant applications and the AIX Operating System. The applications software will also interface with the X-Windows software. When an application is executed, it is executed within an X-Window. X-Windows provides the windowing management capability to the user such as resizing a window, closing the window to an icon, or moving a window. Thus, the user is also shown to be interacting with X-Windows.

4. **Network Management System (NMS).** The network management system monitors a full range of network, system, and application resources within networks comprised of heterogeneous workstations, servers, PCs, and network devices by providing a centralized view of the computers and devices in the network environment.

a. **Basic Configuration Data.** The basic configuration of the NMS consists of IBM RISC System/6000 Model 550L. The NMS is configured with the following hardware configuration:

- Processor - 25 MHz, rated at 11.9 MFLOPS
- Main Storage - 64 MB, expandable to 256 MB
- Internal Hard Disk Storage - 2 GB, expandable to 7.2 GB
- IBM FDDI Controller
- IBM Ethernet Adapter
- IBM SCSI Adapter - 4 MB/sec data rate
- Diskette Drive (Standard) - 1.44 MB; 3.5 inch
- Microchannel Slots - Four available
- 21 inch Monitor and Keyboard
- Standard Device Ports/Connection
- 3.0 KVA UPS with SNMP Adapter
- High-Speed Corporate Storage (with SCSI High-Performance External Interface, SCSI Device-to-Device Cable and Host-to-Device Cable
- Double-Speed CD-ROM

- Mouse
- Low-Speed Corporate Storage with 8mm Tape Media
- Graphics Color Printer - 14 MB and Serial Cable
- Low-Speed Page Printer with Input Drawer, Ethernet Interface, 4 MB Memory, and Serial Cable

b. **Network Connectivity.** The NMS is connected to the FDDI backbone through a router.

c. **Software Components.** The software running at the NMS is as follows:

- Corporate Process Performance Monitoring and Management
- Network Management Software
- DUAL FDDI Device Driver
- Electronic Mail
- User Directory

5. **Printer Architecture.** Implementations of print services available within the JSAN Infrastructure are:

- PC or OAPS Connected Implementation
- Network Connected Implementation

Both of these implementations are achieved by the Print Manager functionality of the Windows NT or Windows NT Advanced Server operating systems. Print Manager capabilities include installation of printers and connection to printers, control of documents that have been sent to the printer, and management of local and remote printers. A printer may be connected directly to a PC or an OAPS and may be connected through either the parallel or the serial interface.

a. **PC- or Server-Connected Implementation.** Printers directly connected may be shared by other users on the network. Sharing a printer allows others on the network to connect to the printer and to print their documents on it. Configuring a printer as a "share printer" is a systems administrative task and

is accomplished on site. This functionality is available through the Windows NT Server Print Manager (for OAPS-connected printers) or the Windows NT Print Manager (for PC-connected printers). Windows NT and Windows NT Advanced Server allow remote administration of printer servers, printers, print jobs, and printer drivers. Figure 15

illustrates this concept using a PC-connected printer as an example. Although the printer is directly connected to user A's PC, it has been configured to allow others on the network to print to it. Print jobs are spooled to the hard disk of user A's PC, and then sent by the spooler to the printer.

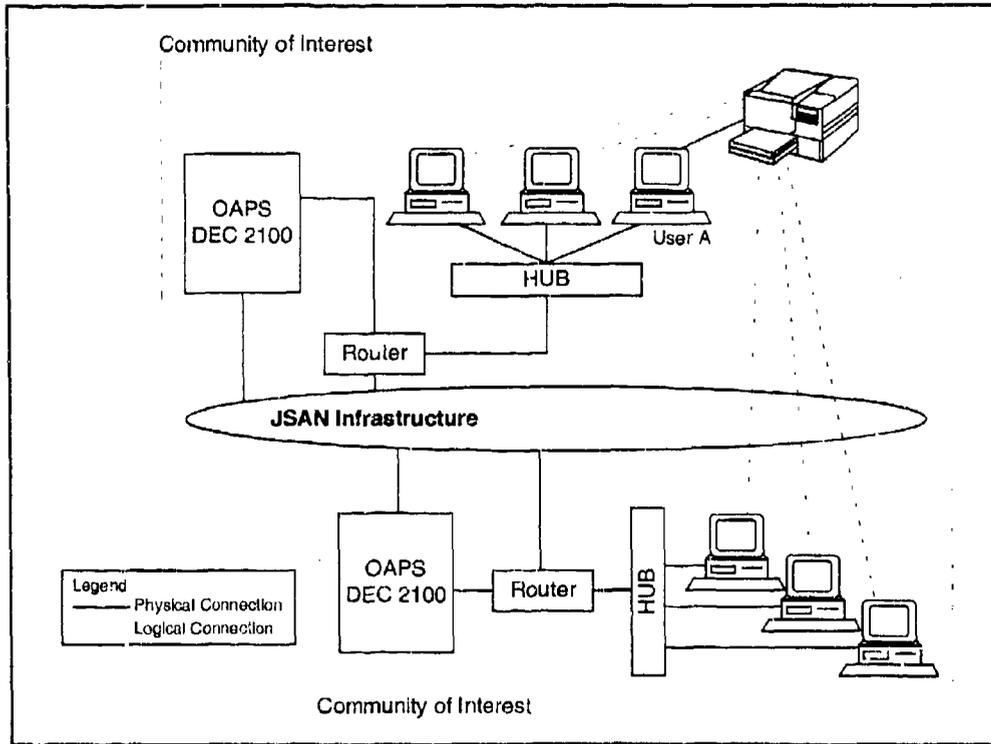


Figure 15. Personal Computer or Server Connected Implementation

b. Network-Connected Implementation. Windows NT and NT Server use the DLC protocol for communication with network-connected printers. In this configuration, the printers are directly connected to the network through a hub. The print spooling area exists on hard disk at one of the PCs or OAPSs, as configured by the system administrator. The spooler executing at that PC or OAPS then sends the print document to the printer. In

Figure 16, the printer is configured as a network printer, with its spooling area located at OAPS A. As with printers connected directly to a PC or a OAPS, a network-connected printer can also be shared. This figure depicts the printer as being shared, and accessible, by all users on the network. Print jobs are queued to the spooling area, and then sent by the spooler to the printer.

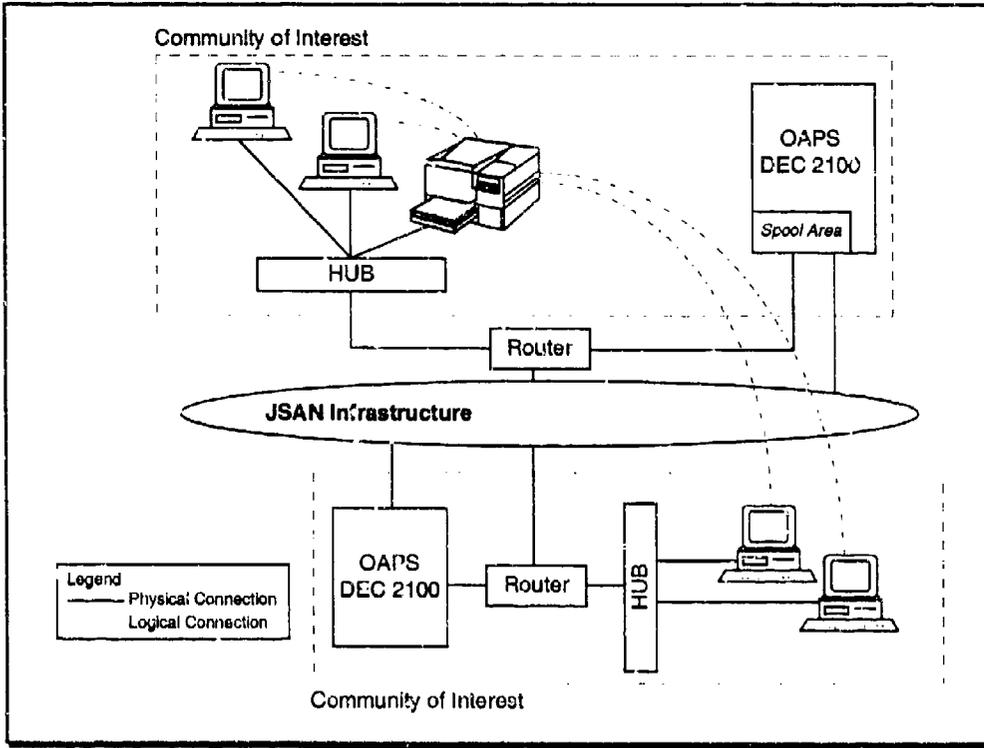


Figure 16. Network Connected Implementation

Joint Staff Information Resources Management Strategy

BROADLY DEFINED INITIATIVES

The Joint Staff IRM strategy consists of several initiatives that provide the foundation for achieving the Joint Staff IRM vision. Consistent with Federal and DOD initiatives, the Joint Staff IRM initiatives identified below provide the guidance promoting organizational efforts toward attaining the vision:

- Implementation of management information systems that provide effective, responsive, and accurate information to the decision-makers on the Joint Staff.
- Development of a cohesive information architecture that facilitates internal and external data sharing, data integrity controls, and reduces the burden of data collection and information processing on the user community.
- Design and implementation of an information technology architecture that complies with open-system environment specifications.
- Simplification of information exchange and sharing within the user community through common data standards.

There are management risks associated with any planning effort and IRM planning is no exception. Joint Staff IRM managers face many challenges in choosing and implementing appropriate courses of action in support of the Joint Staff mission. The dynamics associated with technological change, functional mission requirements, information requirements, security requirements, and evolving standards in combination with an organizational environment characterized by reduced personnel and funding resources pose significant challenges to IRM planning.

Within the framework of the information architecture initiative, for example, external electronic

connectivity between the Joint Staff and other DOD elements (as well as non-DOD organizations), has been severely curtailed for many years. The restriction on external connectivity has been the result of security mandates implemented to protect classified information.

The protection of classified information remains as the primary limiting factor where external connectivity is concerned. The technology supporting the electronic transmission of data through wide area networks has developed much more rapidly than the technology safeguarding information systems and their respective data bases from tampering and intrusion. Although recent security advances in such areas as "firewalls" (on-line devices designed to preclude unauthorized intrusions) and encryption devices have provided marked improvement in network security, the Joint Staff, due to the classified nature of its operations, must carefully balance the requirements of external connectivity with appropriate risk management considerations.

From a policy and procedural perspective, the risk assessment associated with information systems security will require sustainment of an information security program that will align itself with the goals of current DOD program efforts and focus on:

- Identifying, developing, and deploying appropriate security technologies for Joint Staff initiatives.
- Defining and implementing effective security management processes.
- Deploying and operating an intrusion detection system.
- Employing an architectural design philosophy with security protection measures.
- Improving information systems security training within the Joint Staff.

Putting policy into practice is being addressed with near-term alternatives that have the promise of providing a basis for a long-term solution. Identification of a major segment of the Joint Staff user community requiring less than top secret network support, for instance, has provided the Joint Staff with the option of accessing the Secret Internet Protocol Router Network (SIPRNET) at the secret level and accessing the Unclassified Internet Protocol Router Network (NIPRNET/INTERNET). In combination with such efforts as the NSA's Multilevel Information Systems Security Initiative, the Joint Staff should be in the position to effectively implement a viable external connectivity capability.

Resolution of the challenges confronting the Joint Staff's information architecture initiative and external connectivity as described, as with all the initiatives, is predicated on more than successfully addressing the described technological and security concerns. The successful attainment of the IRM vision and its respective initiatives, goals, and objectives has its foundation in senior leadership commitment and functional user involvement. Success in the strategic management of information resources is but one aspect of success in the strategic management of the Joint Staff and the accomplishment of its national defense mission.

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Analytical Gaming and Studies Support

Directorate: J-8

Mission Statement: Studies, Analysis, and Gaming Division (SAGD) is responsible for:

1. Analyses, assessments, interagency and international war games, seminars, and workshops pertaining to the entire spectrum of defense issues.
2. Assessments, analytical studies, and war games to support joint warfighting capability requirements, readiness, the Enhanced Joint Requirements Oversight Council, the statutorily required Joint Military Net Assessment, and the Joint Strategic Planning System.
3. Analytical and wargaming support for operation plan and concept of operation assessments.
4. Supporting international forums and Chairman of the Joint Chiefs of Staff and Combatant Command-sponsored exercises and war games.

To accomplish these objectives SAGD develops, conducts, executes, and analyzes war games and simulations that span the full gamut of military, political, and social phenomenon. Support of gaming activities may necessitate not only prescribing model, data base, and simulation requirements, but also the designation and operation of equipment at a variety of facilities.

ANALYSIS SUPPORT

Budget Element Description: Analysis support provides for the development of new models and simulations (M&S) when existing M&S prove to be inadequate or inappropriate to support gaming or analysis objectives. Due to the often unpredictable nature of SAGD taskings, rigorous or validated capabilities often do not exist to

support required key analyses or assessments. This element also addresses the modification of existing applications necessary to implement capabilities not otherwise available. In special circumstances, M&S development may be tied to a specified hardware environment to meet exigencies of situations (e.g., foreign electric power or network compatibility). As such, a full range of information resources might have to be addressed including the acquisition of COTS software when it satisfies operational needs and is deemed cost effective.

SAGD Gaming Suite: SAGD's mission has undergone revision and expansion. As a result, it will be called upon to address a wider range of situations using both gaming and analytical approaches. Table 3 gives characteristics of some of the types of applications that SAGD has been or is likely to be tasked with. The lists can be viewed as a menu; e.g., a tasking might call for multinational operations other than war, exercising logistics and transportation capability in air and land operations. To achieve this capability, SAGD will use or adapt extant M&S where possible. When required, however, it will specify and develop M&S to satisfy absent capabilities. SAGD will develop this capability to support seminar, man-in-the-loop, stochastic, and analytic gaming. An umbrella architecture will be pursued to define an extensible, reconfigurable, portable, and variable resolution (if possible) environment that will be life-cycle managed. Similarly, support tools will also be incorporated to complement M&S and ensure the gaming suite will be functional and responsive under the time-critical requirements of seminar play. Such tools include graphical user interfaces, data bases, and report and scenario generators. The intent of the suite is not to displace or replace existing models, but rather to satisfy the unique requirements of analytical gaming and studies support.

<u>Agents</u>	<u>Crisis</u>	<u>Function</u>	<u>Domain</u>
Joint Task Force	Conventional Warfare	Combat	Land
Multiservice	Political-Social-Econ	Logistics	Sea
Coalition	Low Intensity Combat	Transportation	Air
Multinational	Operations-other-than-War	C4I	Space
	Crisis Management		

Table 3. Studies, Analysis, and Gaming Division Application Characteristics

Analysis support also provides resources for the maintenance of models, simulations, and data bases developed, acquired, or used for gaming or analytic support. Examples of such models include but are not limited to the Theater Assessment Model (TAM) and Regional Development Simulation System (RDSS). Data base preparation will be on an as needed basis in support of particular gaming requirements. Coding and data development done under this item will be tested and validated; documentation will provide all specifications and instructions on effective execution of the system.

Budget Element Justification: In its role as initiator, evaluator, and honest broker for Joint Staff-directed assessments, SAGD is often called upon to become engaged in issues for which traditional or existing M&S are inadequate. Funds would be used to develop and improve capabilities that were deemed essential to be responsive to specific taskings. While applications used by SAGD might satisfy special and specific gaming needs, M&S will still comply with Joint Staff life-cycle management initiatives, and satisfy compatibility, interoperability, and portability requirements. This initiative supports IRM goals and objectives 95-II, 95-III, and 95-V.

WAR GAME SUPPORT

Budget Element Description: War game support covers all aspects of SAGD gaming and analysis particularly before and during major scheduled activities that might involve hardware or software requirements both within Joint Staff space and at off-site locations. Examples of this support include: assistance in preparation of game specific data bases; surveying SAGD or off-site information resources requirements; installation, setup and takedown of cabling, hardware, or software; operation, modification, and execution of M&S; and technical assistance in extracting, arraying, and displaying emerging game results.

Budget Element Justification: Whereas most gaming support can ordinarily be satisfied from current assets, scheduling overlaps or off-site activities may place demands on the staff that exceed its capability. Additional support is needed at those times to ensure efficient and seamless accomplishment of gaming objectives. This initiative supports IRM goals and objectives 95-II and 95-III.

Joint Models and Simulation Modern Aids to Planning Program (MAPP)

Directorate: J-8

Mission Statement: The Joint Staff is charged with supporting the efforts of the commanders of the combatant commands (CINCs) in developing and maintaining warfighting analysis capability. Specifically, the Joint Chiefs of Staff established the Modern Aids to Planning Program (MAPP) to provide the CINCs with analysis tools to support operational and contingency planning. MAPP established and supports analysis cells in each command. The MAPP capability permits rapid analysis of courses of action (COAs) in support of operation plan (OPLAN) evaluation, assessment of warfighting requirements, and CINC decisionmaking. MAPP equipped the CINCs with the personnel, computer hardware, and software to establish a responsive decision aid to the CINCs in operations planning (analyzing force employment options), joint strategic planning, and planning, programming, and budgeting. The analysis cells were used extensively in DESERT SHIELD/DESERT STORM and continue to support CINC decisionmaking both in current operations and the Enhanced Joint Requirements Oversight Council (JROC). MAPP is a multimillion dollar program that provides funding and a technical services support contract to maintain and enhance CINC analytical M&S capabilities. The mission of the Simulations, Technical Operations, and Policy Division, J-8 is to provide direct analytical support to the CINCs through MAPP.

Budget Element Description: MAPP is a Chairman of the Joint Chiefs of Staff initiative to assist the CINCs in establishing and maintaining collaborative warfighting analysis capabilities to improve the CINCs' planning processes. This initiative provides interoperable, state-of-the-art M&S tools, both hardware and software, to improve the CINCs' ability to develop OPLANS, enhance exercises, and execute the actions required by command missions. This support

ensures basic interoperability and responsiveness of the CINC staffs to conduct rapid and meaningful collaborative analysis. During DESERT SHIELD/DESERT STORM, analysis groups used their respective MAPP analysis suites to evaluate operational courses of action and analyze force structure and force mix requirements.

Budget Element Justification: MAPP is used to capitalize on ongoing advances and improvements in M&S analysis tools and techniques that enable new and innovative ways to perform missions, such as COA analysis. The analysis of COAs in an accurate and timely manner can save lives and win wars. With this capability we are able to see outcomes in a logical progression and determine the costs, both human and fiscal, that each action will require. An improvement in this effort will protect lives as well as reduce the costs of regular and contingency missions. A reduction to this program will limit military capability to effectively react and correspondingly endanger personnel and the success of the mission. MAPP is the only program that supports consistent technological improvement to the joint military planning process. Without MAPP, CINC analysis will be disjointed. There would be a deterioration in analytical equipment and systems as well as a lack of coordination in the development of planning tools. Initiatives to facilitate and improve the planning environment will be stifled in the day to day requirements of a combatant command. Any developments that do occur may be proprietary and valuable only to the current user. MAPP has been a key element in the Defense Department's ability to respond to current national interests, particularly in light of reduced forces and a declining budget. MAPP is a program that allows a competent look at possibilities before a commitment or use of any resources. This initiative supports IRM goals and objectives 95-I, 95-II, 95-III, 95-V, and 95-VI.

Computer Technology Enhancing Information Gathering and Decisionmaking Processes

Directorate: J-4

Mission Statement: J-4 is charged with providing assistance to the Chairman of the Joint Chiefs of Staff by (1) establishing joint logistic doctrine; (2) providing logistic parameters for strategic and contingency plans development; (3) developing logistic mobility and modernization annexes in support of strategic and contingency plans, maximizing the logistic capabilities of the combatant commands, to include developing strategic mobility, mobilization, medical readiness and sustainment policies and procedures to support combat forces; (4) planning and providing guidance for the logistic aspects of security, humanitarian and disaster assistance, and support to civil emergency agencies; (5) providing guidance to the Military Services and combat support to Defense agencies for the preparation of their respective logistic and mobilization plans; and (6) establishing combined logistic strategy, doctrine, and plans; Information technology and resources will be used to facilitate logistics input to and participation in plans, exercises, and wargames. Information technology will also support the execution of logistics operations during crises and contingencies, and the development of medical reporting systems.

Budget Element Description: The joint war-fighting capability assessment (JWCA) process identified the need to provide total asset visibility of logistical and transportation resources within the joint task force (JTF) area of operations. This IRM initiative applies Advanced Concept Technology Demonstration (ACTD) methodologies in the development of JTF support to logisticians, medical, and personnel specialists, providing real-time decision support information and visibility. Use of smart cards and other developing technologies in the medical and personnel areas will enhance the capability to reduce battlefield casualties and provide improved combatant care.

Budget Element Justification: Furnish the JTF commander with a readily deployable tool that provides an immediate logistical and personnel picture upon arrival in an area of operations in order that the decisionmaking process can be enhanced. This initiative supports IRM goal and objective 95-III-A.

Joint Decision Support System (JDSS)

Directorate: J-6

Mission Statement: The Joint Decision Support System (JDSS) provides analytical support to command, control, communications, and computer (C4) planners. It was developed to help the J-6 staffs of the CINCs and the Joint Staff to develop C4 systems master plans (C4SMPs), assessments, and evaluations. The JDSS allows the DOD C4 community to share the benefit of information gathered and assessed by separate C4 planners. It provides a structured approach to assessment which allows a common methodology and frame of reference among the CINCs, the Defense Information Systems Agency (DISA), and the Joint Staff. JDSS has several functions:

- a. It performs an automated color assessment of the ability of C4 systems to support CINC mission requirements in various war-fighting environments based on a user-defined framework and relational data structure.
- b. It ranks both CINC programs and C4 objectives using CINC assessment data and user selected criteria.
- c. It produces standard reports for direct inclusion in the C4SMP.
- d. It aggregates and organizes analysts' notes from the JDSS to form the C4SMP outline.

- e. It provides the CINC J-6 staff with C4 reference data (e.g., program descriptions, requirements data, and Joint Uniform Lessons Learned (JULLS) data).

Budget Element Description: Provides for periodic hardware upgrades, COTS software, and maintenance releases/upgrades for JDSS application software.

Budget Element Justification: JDSS is well received by CINC users and has improved the C4 master plan development process. In addition, JDSS was used by the J-6 for the Information Warfare portion of the JWCA and is being used for readiness and other assessments by the US Air Force and US Marine Corps. Both the US Atlantic Command and US Strategic Command have discussed the intent of using JDSS roll up features for the Chairman of the Joint Chiefs of Staff (CJCS) Joint Monthly Readiness Reporting (JMRR). JDSS will meet future requirements through planned improvement modifications to its modular elements as required. The improvement modifications are dictated by current user requirements and comments from the J-6 Joint Staff CINC C4 Master Plan Working Group. The requirement for JDSS is documented by CJCSI 6111.01 (draft). Providing for recurring data maintenance and planned software upgrades for user applications and COTS software will allow the Joint Staff to maintain the currency of JDSS as required. JDSS supports IRM goals and objectives 95-II-A, 95-III, 95-IV-B, and 95-V.

Joint Electronic Library (JEL)

Directorate: J-7

Mission Statement: The Joint Doctrine Division (JDD) is charged with providing assistance to the Chairman of the Joint Chiefs of Staff in fulfilling the responsibilities under 10 USC 153(a)(5), DODD 5000.49, and DODD 5100.1 to develop, revise, and publish joint doctrine by:

- a. Serving as Joint Staff office of primary responsibility (OPR) for all matters in the development of joint doctrine and joint tactics, techniques, and procedures (JTTP).
- b. Identifying voids in joint doctrine and JTTP.
- c. Coordinating the evaluation of joint doctrine and JTTP in CJCS-sponsored and -directed exercises with the Evaluation and Analysis Division.
- d. Reviewing and developing recommendations on the role of the Services, combatant commands, and Joint Staff activities in the development and evaluation of joint doctrine and JTTP.
- e. Ensuring consistency of Service, joint, and multinational doctrine and JTTP.
- f. Establishing policies, criteria, and procedures concerning the standardization of joint and multinational terminology.
- g. Serving as OPR for Joint Pubs I, "Joint Warfare of the Armed Forces of the United

States," and O-2, "Unified Action Armed Forces (UNAAF)".

- h. Promulgating newly standardized joint and multinational terminology for the DOD; publishing Joint Pub 1-02, "DOD Dictionary of Military and Associated Terms".

- i. Sponsoring the Joint Electronic Library (JEL), an electronic on-line system containing the most current joint, Service, and multinational doctrine, as well as research studies from within and outside the DOD and related elements of information pertaining to joint education programs.

Budget Element Description: This program supports the requirement to manage the joint doctrine and JTTP development process and the DOD Military Terminology Program. The JEL AIS comprises approximately 15% of the funds expended for overall joint doctrine mission support.

Budget Element Justification: To provide technical and research support in the form of worldwide electronic access to joint publications and on-line communications used to coordinate doctrinal issues for the Joint Staff, Services, combatant commands, and DOD agencies in the development of joint doctrine and JTTP. This support entails installing joint pubs onto JEL and operating and maintaining JEL. This program supports IRM goals and objectives 95-I-A, 95-II-A, and 95-III-A.

Joint Exercise Management Package (JEMP)

Directorate: J-7

Mission Statement: The mission of the Evaluation and Analysis Division (EAD) is to assess the preparedness of the combatant commands to carry out assigned missions and the responsiveness and readiness of designated defense agencies to support operating forces. The Division assesses the impact of OPLAN strengths and deficiencies on national security objectives, policy, and strategy. In addition, EAD monitors, evaluates, and analyzes national, theater, and tactical joint forces and systems. The Division is also responsible for operating the Joint Center for Lessons Learned (JCLL).

Budget Element Description: The Joint Exercise Management Package (JEMP), a suite of five software programs, provides the Joint Staff, combatant commands, Services, and combat support agencies (CSAs) a tool to systematically plan, schedule, execute, and assess training during exercises and operations. Included is the

procurement of hardware and software to maintain and enhance the package.

Budget Element Justification: The functionality of JEMP is essential to enhancing the training and operational readiness of the total force. It improves the institutional ability of the Joint Staff, combatant commands, Services, and CSAs to collect, store, retrieve, and analyze planning, scheduling, execution, and assessment data which contribute towards improved combat effectiveness and interoperability.

Funds are used to procure contracting support in order to enhance JEMP software components and to procure required hardware for the operation of the JCLL. Funds are also used to support the training mission of the JCLL. This budget element supports IRM goals and objectives 95-I-A, 95-II-A, and 95-III-A.

Joint Manpower and Personnel System (JMPS)

Directorate: J-1

Mission Statement: Joint Manpower and Personnel System (JMPS) is a reengineered manpower and personnel system whose data requirements were consolidated from five existing manpower and personnel systems. The new system has been expanded to provide for additional information requirements and reorganized to enhance data and process modeling. This system provides an automated method to coordinate manpower changes at joint locations with the Joint Staff and the Services. JMPS assists joint activities and the Joint Staff to maintain, review, modify, and report manpower workcenter and billet requirements. JMPS also provides an interface to the Joint Duty Assignment Management Information System. JMPS provides an automated means for the Services to interface joint manpower requirements into service automated manpower data bases. JMPS is used to store and report billet, personnel, and security information for Joint Staff agencies. The system is used to support all Joint Staff activities.

Budget Element Description: Software support is required to maintain and upgrade this system which is being developed using COTS packages. Included is the procurement of hardware and software to maintain and upgrade JMPS. The JMPS system:

- a. Provides operations, maintenance, upgrades, and technical support for the manpower portion of JMPS.
- b. Provides an automated method to coordinate manpower changes at joint locations with the Joint Staff and, eventually with the Services.

- c. Supports the tracking and reporting of mobilization augmentation of the Joint Staff and the organization directly attached to the Joint Staff.

- d. Records and reports manpower information related to North Atlantic Treaty Organization (NATO) activities.

- e. Supports the tracking and reporting of information concerning personnel reports for individuals within the Joint Staff.

- f. Supports the tracking and reporting of billet, personnel, and security information for Joint Staff agencies.

Budget Element Justification: The functionality provided by the manpower portion of JMPS is essential to the fulfillment of the Joint Staff, Services, and combatant commands' ability to maintain manpower billet/workcenter information at their location. Analytical support requirements continue to motivate the need for greater amounts of data, faster processing speeds, expansion of knowledge-based software tools, and greater interoperability. Funds are used to upgrade the hardware and software components of JMPS and to provide the maintenance of hardware and renewal of software licensing. Maintenance support of the hardware system is needed to protect the significant investment in equipment. Contractor technical support is needed to keep both the hardware and software systems operating reliably and to provide user support services. This program supports IRM goals and objectives 95-I, 95-II, 95-III, 95-IV and 95-V.

Joint Modeling and Simulation (JM&S)

Directorate: J-8

Mission Statement: The Joint Staff is charged with providing the most advanced M&S capability to DOD and the joint analysis community, ensuring a US advantage in National security decisionmaking. Specifically, the Joint Staff supports this goal by:

- a. Enhancing guidance and leadership through an M&S master planning process.
- b. Maximizing M&S capabilities through the integration and sharing of resources via distributed operations.
- c. Maximizing synergistic effect of multi-organizational M&S using video-teleconferencing and computer-to-computer connectivity.
- d. Optimizing analytic tasks through exploitation of shared data and state-of-the-art knowledge management techniques.
- e. Achieving virtual battlefield simulation capability linking tactical- through theater-level M&S.

The mission of the Simulations, Technical Operations, and Policy Division, J-8, is to provide system administration and automated information system technology support to the Joint Staff M&S community, support customer needs by providing required information technology tools, and provide users with ready access to reliable and accurate data and data sources.

Budget Element Description:

Analytical Suite: The Analytical Suite provides automated data processing equipment, operating system resources, and commercial and government software to support the analytical mission of the Joint Staff. The key requirements are to:

- a. Provide for operations, maintenance, upgrades, and technical support to the hardware suite.
- b. Procure hardware and software to maintain and upgrade the analytical suite systems.
- c. Provide the flexibility to perform complex research and analysis on an ad hoc basis for one-time tasking and scenario excursions.

Analytical Tools: The functions of Analytical Tools are to support the development, maintenance, and technical support for the family of Joint Staff analytical software tools and simulations supporting the assessment requirements of the Chairman, Joint Chiefs of Staff to conduct studies and evaluations of military forces, programs and strategies. Key functions includes:

- a. Software development, maintenance, documentation, and training on Joint Staff analytic tools and simulation models.
- b. Development, design, and integration of database and graphics environments with associated interfaces.
- c. Software engineering of analytical code to achieve software portability, interoperability, efficiency, performance, and enhanced analyst productivity.
- d. Administrative and technical support for configuration management of all controlled models for consistency and interoperability of supported software, software tools, and computer hardware systems.
- e. Contracted technical expertise to assist Joint Staff military analysts.

f. Exploring leading edge technologies and methodologies in the joint M&S arena.

Budget Element Justification: The functionality provided by the Analytical Suite and Analytical Tools is essential to the fulfillment of the analysis and assessment taskings of the Joint Staff. Analytical support requirements continue to motivate the need for greater amounts of data,

faster processing speeds, expansion of knowledge-based software tools, exploration and incorporation of new modeling methodologies, and greater interoperability among distributed analysis networks and existing and emerging joint M&S systems. This program supports IRM goals and objectives 95-I, 95-II, 95-III, 95-V, and 95-VI.

Joint Warfighting Center Automation

Directorate: J-7

Mission Statement: The mission of the Joint Warfighting Center (JWFC) is to assist the Chairman, Joint Chiefs of Staff, the CINCs, and the Service Chiefs in their preparation for joint and multinational operations in the conceptualization, development, and assessment of current and future doctrine in the accomplishment of joint and multinational training and exercises.

Budget Element Description: Successful accomplishment of the JWFC mission demands focus on operational readiness to ensure that joint and, where appropriate, multinational training and joint doctrine efforts meet today's, as well as tomorrow's, needs across the full range of military operations. JWFC must take full advantage of technology, especially remoted, distributed, and interactive simulations and networking. Information technology resources support exercise simulation requirements for Aggregate Level Simulation Protocol (ALSP), Corps Battle Simulation (CBS), Research, Evaluation, and Systems Analysis Facility (RESA), Air

Warfare Simulation (AWSIM), Joint Electronic Combat Electronic Warfare Simulation (JECEWSI), Marine Air-Ground Task Force Tactical Warfare System (MTWS), and Tactical Simulator (TACSIM).

Budget Element Justification: Automation requirements for the JWFC are based on models, geographic locations, and workstations necessary to support exercise requirements. Wargame simulations (models/systems) along with their unique proprietary tools require maintenance in the form of code updating and improvement. Software tools require upgrades and technical support. System architecture and processing requirements are determined by model requirements (type and processing power), remote operations/transportability, future growth, performance, and price. This baseline system architecture and corresponding simulation support is depicted in Figure 17. JWFC supports IRM goals and objectives 95-I-A, 95-II-A, and 95-III-A.

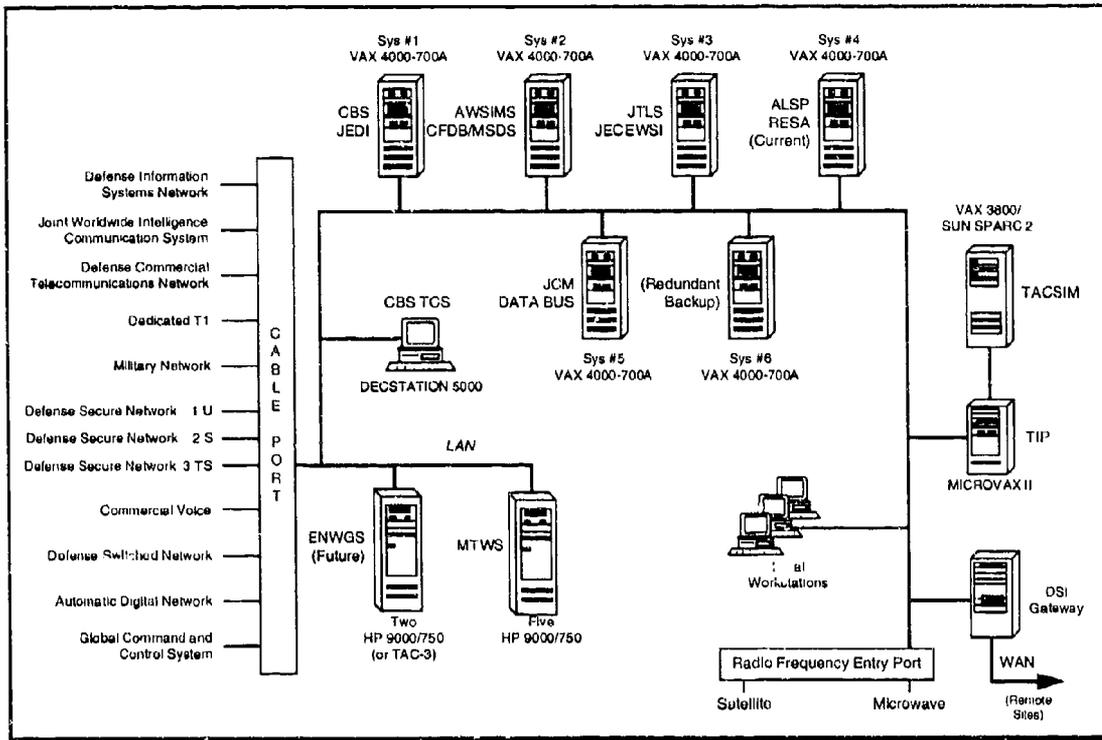


Figure 17. Joint Warfighting Center Baseline System Architecture

Logistic Aspect of Joint Wargames and Exercises

Directorate: J-4

Mission Statement: J-4 is charged with providing assistance to the Chairman of the Joint Chiefs of Staff by (1) establishing joint logistic doctrine; (2) providing logistic parameters for strategic and contingency plans development; (3) developing logistic mobility and modernization annexes in support of strategic and contingency plans, maximizing the logistic capabilities of the combatant commands, to include developing strategic mobility, mobilization, medical readiness, and sustainment policies and procedures to support combat forces; (4) maintaining a logistic and mobility asset prioritization capability for contingency operations; (5) performing logistic studies, assessments, and analysis; (6) reviewing the logistic and mobilization plans and programs of the combatant commands to determine their adequacy; and (7) reviewing service logistics related programs to assess interoperability and compatibility. Information technology and resources will be used to facilitate logistics modeling, simulations, and analysis and logistics input to and participation in plans, exercises, and wargames.

Budget Element Description: This program includes the requirement to improve joint logistics activity in exercises and wargames in support of the JWCA process. Tasks include at a minimum:

- a. Improve logistics assessments in joint wargames and exercises.
- b. Develop recommendations to improve modeling, simulation, and logistics assessment in the JWCA areas.
- c. Develop recommendations to directly link exercises with CINC, Service, and Joint Staff wargames.
- d. Evaluate advanced technical concept methodologies, procedures, or ADP tools that develop logistic requirements or shortfalls in wargames or exercises.

Budget Element Justification: Deficiencies currently exist in joint logistics play in exercises and wargames. Joint exercises and wargames have not properly portrayed joint logistics issues or capabilities because of either exercise or wargame design, duration, level of detail, or lack of computer aided tools to support exercises or wargames. These deficiencies impact logistic assessments in support of the JWCA areas and do not allow for the impact of logistical support requirements to be fully analyzed. This initiative supports IRM goal 95-1.

Logistic Concept Development

Directorate: J-4

Mission Statement: J-4 is charged with providing assistance to the Chairman of the Joint Chiefs of Staff by (1) establishing joint logistic doctrine; (2) performing logistic studies, assessments, and analysis; (3) operating a Logistic Readiness Center (LRC) to monitor and support the logistic aspects of current and future operations for the NCA and CINCs; and (4) implementing information technology as required to support logistics information systems and directorate operations.

Budget Element Description: This program provides technical assistance to the Joint Staff J-4 for organizing, analyzing, concept development, and presentation. The initiative supports

the development of a useful analytical construct for presenting results and findings via a high information content, high impact medium.

Budget Element Justification: To support the Chairman of the Joint Chiefs of Staff and to ensure accomplishment of the J-4 mission often requires technical expertise and automated data processing know-how, not resident in the Joint Staff. When such a requirement arises, technical assistance is required to support or augment the LRC during crisis situations or periods of increased world tensions. In addition, technical assistance is required to provide support for logistic assessment presentations to the JROC. This initiative supports IRM goal 95-III.

Logistic Information Requirements

Directorate: J-4

Mission Statement: J-4 is charged with providing assistance to the Chairman of the Joint Chiefs of Staff by (1) establishing joint logistic doctrine; (2) developing logistic mobility and modernization annexes in support of strategic and contingency plans, maximizing the logistic capabilities of the combatant commands, to include developing strategic mobility, mobilization, medical readiness, and sustainment policies and procedures to support combat forces; (3) maintaining a logistic and mobility asset prioritization capability for contingency operations; (4) planning and providing guidance for the logistic aspects of security, humanitarian and disaster assistance, and support to civil emergency agencies; (5) reviewing the logistic and mobilization plans and programs of the combatant commands to determine their adequacy; (6) providing guidance to the Military Services and combat support to Defense agencies for the preparation of their respective logistic and mobilization plans; (7) establishing combined logistic strategy, doctrine, and plans; and (8) reviewing service logistics-related programs to assess interoperability and compatibility. Information technology and resources will be used to support the execution of logistics operations during crises and contingencies, and the development of medical reporting systems.

Budget Element Description: This initiative focuses on the definition of the logistics information and control system requirements necessary for mobilization, sustainment and mobility/deployment functions to enhance the warfighting capabilities of the combatant commands. It also involves the development of an interoperable logistics architecture for responsive resource information systems in support of the warfighting CINCs. The logistic architecture would describe the logistic information requirements in terms of various logistical disciplines, such as medical, civil engineering, material, transportation, and their support data requirements. The architecture would serve as a guide for functional sponsors and developers to manage the evolutionary development of logistics systems, identify system shortfalls, avoid duplicate development, and improve data management collection by identifying the data required to support logistics.

Budget Element Justification: To provide a logistics information architecture using new technologies for the Joint Staff in support of the combatant commands and Services. This effort will result in better availability of logistics information for the Joint Task Force Commander. The logistics architecture should provide the integration capability of theater distribution and movement control functions. This initiative supports IRM goal 95-11.

Joint Staff Automation for the Nineties (JSAN)

Directorate: Directorate of Management

Mission Statement: The Joint Staff Automation for the Nineties (JSAN) Program will modernize, enhance, and replace existing Joint Staff computer and communications systems that support general purpose OA (and related) requirements, and provide expanded communications interfaces to outside organizations. The purpose of the JSAN Program is to increase mission effectiveness of the Joint Staff through a user-friendly, integrated suite of hardware and software.

JSAN will satisfy mandatory noncommand and control, headquarters OA performance requirements such as word processing, local area networking, electronic mail, data base applications, graphics and image processing, spreadsheet capabilities, automated message handling, and action tracking on commercially available hardware and software platforms.

JSAN will meet future requirements through planned improvement projects in a modular fashion as those requirements are identified. JSAN will maintain currency with technological advancements through an annual technology refreshment program. The JSAN vision includes eventual connectivity with the Global Command and Control System (GCCS), the Defense Messaging System (DMS), and an operational multi-level secure processing environment.

APPLICATIONS MAINTENANCE

Budget Element Description: Provides support for the maintenance of unique Joint Staff corporate and directorate data base applications software. Corporate data base applications include the Comptroller's Automated Budget System (CABS), Action Tracking System-Imaging (ATS I), Joint Staff Action Processing System (JSAP), Joint Staff Automated Message Handler (JMH), Joint Automated Records Management

System (JARMS), Joint Staff Officer Training System (JSOTS), and the Programming and Budgeting System (PBS).

Directorate data base applications include the International Negotiations System (INS), JMAPS, the Joint Staff Requisition and Tracking System (RETS), the Joint Manpower Data System (JMDS), and various data bases that support the Secretary, Joint Staff (SJS) Administrative Section.

Overall program management is by the Joint Staff Information Resources Management Office (JSIRMO), Directorate of Management (DOM), with sub-program managers assigned as necessary. Directorates that are functional proponents of these OA applications coordinate their requirements with JSIRMO. Maintenance of applications are currently implemented by DISA with JSIRMO exercising program management.

The applications software or management information systems that fall within the purview of JSAN support various operational requirements within the Joint Staff. These systems and their associated data bases are described in further detail following this section. Each system or data base description reflects Joint Staff organizational responsibility for the system (functional proponent), system or data base purpose and description, and narrative budget justification.

Budget Element Justification: Provides for recurring corporate and directorate-specific management information system requirements. Supports IRM goals and objectives 95 I-B, 95-II-A, 95-III, 95-V-A, and 96-VI.

APPLICATIONS DEVELOPMENT

Budget Element Description: Provides support for the conversion of existing corporate and

directorates OA and data base applications to JSAN as well as the development of new OA and data base applications as the Joint Staff work process is refined and as new requirements emerge. Where applicable, the modification and changes associated with specific application software are described in the pages following the JSAN IRM initiative.

Budget Element Justification: Provides for the design and development of new OA applications which serve a corporate purpose. Supports IRM goals and objectives 95-I, 95-II, 95-III, and 95-V.

CORPORATE OFFICE AUTOMATION

Budget Element Description: Provides for procurement of corporate OA automated data processing equipment (ADPE) as determined by the Senior Information Resources Management Official (SIRMO) in conjunction with various Joint Staff IRM bodies. Funds are primarily used for corporate OA infrastructure. Examples include FDDI, OAPS, corporate software, required hubs, servers, cabling, conduit, operating systems and peripherals, and printer interfaces.

Budget Element Justification: Provides needed automation advances to support the strategy to replace one third of the Joint Staff user computers each year. Supports IRM goals and objectives 95-II, 95-V, 95-VI, and 95-VII.

DIRECTORATE OFFICE AUTOMATION

Budget Element Description: Provides for procurement of directorate OA ADPE as deemed necessary by directorate IRMOs. ADPE purchased through this sub-element are for directorate OA hardware and software. Funds are distributed based on the number of Joint Staff personnel assigned to each Joint Staff activity.

Budget Element Justification: Provides for the replacement of one-third of the Joint Staff users' computers each year. This will ensure a more consistent strategy in automation for the Joint

Staff, rather than waiting until an entire Joint Staff ADPE system becomes obsolete. Supports IRM goals and objectives 95-II, 95-III-A, 95-V-B, 95-VI-B, and 95-VI-D.

FUNCTIONAL APPLICATIONS

Budget Element Description: Provides support for Joint Staff OA functional applications. These applications are other than the core program but are highly desired in that they allow the Joint Staff to prepare for future, emerging requirements. Initiatives include, but are not limited to, the implementation of external local area networks (LANs), DMS, GCCS, a graphics/desktop publishing LAN, another LAN at an alternate security classification, and other programs.

Budget Element Justification: Provides for efforts to test and refine unstructured and perhaps ill-defined future concepts and requirements. This provides the means to finish structuring these future requirements and for integrating the proposed technical solution(s) into the Joint Staff OA architecture. Supports IRM goals and objectives 95-II and 95-V.

HARDWARE MAINTENANCE

Budget Element Description: Provides hardware maintenance (corporate and directorate) for the Joint Staff OA equipment. This hardware includes both the remaining JSSIS/WANG and installed JSAN/GTE hardware components. Maintenance costs include monthly core maintenance charges and time and material costs. Maintenance is performed by contractors, and supports the entire range of ADPE the Joint Staff uses. Cabling requirements are also supported.

Budget Element Justification: Provides for hardware maintenance for all ADPE supporting the Joint Staff OA requirements. Supports IRM goals and objectives 95-II A, 95-III A, 95-V, and 95-VI.

INFORMATION SYSTEM REQUIREMENTS DOCUMENT (ISR) DOCUMENT PROCESSING

Budget Element Description: Provides for minor ADPE hardware and software changes requested by the directorates.

Budget Element Justification: Such changes are required as a means of maintaining currency with technology or to facilitate interoperability with outside agencies whose automation architectures are different from that of the Joint Staff. Supports IRM goal and objective 95-II-A.

TRAINING

Budget Element Description: Provides for commercially available off-the-shelf software training for Joint Staff action officers. Training is conducted on-site in the Pentagon through contractor support. Courses are available on a monthly basis and are managed by Operations Division, DOM, and coordinated with each directorate IRMO.

Budget Element Justification: A constant transition of one-third of the action officers in the Joint Staff each year necessitates a constant requirement to train the new personnel. Supports IRM goal and objective 95-III-B.

SINGLE AGENCY MANAGER

Budget Element Description: Enables the Joint Staff to reimburse the Pentagon Single Agency Manager (SAM) for services rendered in support of Joint Staff OA requirements.

Budget Element Justification: The SAM will provide networking and automation services for all agencies in the Pentagon. The Joint Staff must pay for its fair share of those services that will be used in response to Joint Staff requirements. This is expected to begin in FY97. All agencies in the Pentagon will be required to reimburse SAM. Supports IRM goal and objectives 95-I-B, 95-IV-A, 95-V, and 95-VI-B.

SOFTWARE MAINTENANCE

Budget Element Description: Provides for annual upgrades and maintenance releases for Joint Staff-wide common-user software and corporate OA software for the Joint Staff OA network. This also provides for annual operating systems upgrades as well as for monthly software fees for various legacy corporate computers (i.e., VS10000, VS85, VS7310).

Budget Element Justification: Providing for recurring and planned software upgrades for both user applications and the operating systems will allow the Joint Staff to maintain currency with enhancements in functionality and features offered as a result of commercial efforts. Supports IRM goals and objectives 95-II, 95-V, 95-VI-B, and 95-VII.

USER SUPPORT TEAM

Budget Element Description: Provides for government and contractor personnel to support various JSAN program requirements, including the JSAN program management office, network and systems administration, informal user training requirements, and network engineering requirements. The key players include the contractor-staffed User Support Team and the Government-staffed DISA personnel. This also provides for the management of miscellaneous categories such as OA security tasks, management of the OA inventory data bases, and inventory/supplies receipt and handling.

Budget Element Justification: On-site, one-on-one user support is provided through the a contracted User Support Team. This team provides assistance on a 24-hour per day basis, and is capable of supporting national emergencies and crises. More administrative and systemic support is provided through DISA, ensuring the proper oversight exists for various security and data base administrator requirements. Supports IRM goals and objectives 95-III and 95-VII.

Comptrollers Automated Budgeting System (CABS)

Directorate: Directorate of Management

Mission Statement: The Joint Staff Comptroller is responsible for the management of all financial resources allocated to the Joint Staff, financial resources provided by other agencies for Joint Staff use, and all aspects of the Planning, Programming, and Budgeting System (PPBS). As Chairman of the Working Resources Management Council and Executive Secretary to the Resource Management Council, the Comptroller provides mediation and coordination during the planning, programming, and budgeting process, negotiating financial priorities throughout the Joint Staff. The Comptroller establishes financial policy and procedures and provides Joint Staff contract management policy, procedures, and oversight. The Comptroller manages the Internal Management Control program. The Joint Staff Comptroller is charged with capturing the cost data for DOD involvement in United Nations peacekeeping missions and provides financial advice and guidance for Joint Staff involvement in new DOD missions.

Budget Element Description: The Comptrollers Automated Budgeting System (CABS) is an automated financial management system that assists the Comptroller in the performance of his duties. It provides management with information concerning budgeting of Joint staff travel and training. The system functions are:

- a. Allocation of funding.
- b. Forms processing.
- c. Performance of all user and travel office functions.
- d. Control of interface with Supply Management Information System (SMIS).
- e. Upload, download, and reconcile Washington Headquarters Service (WHIS) data.

- f. Execute summary reports.

Budget Element Justification: The major objective of CABS is to provide a system that will efficiently and effectively manage and maintain accountability over the total Joint Staff management of travel and training expenditures. CABS is also designed to maintain accurate and complete control records for periodic reports and reconciliations. Specific objectives are:

- a. An automated on-line system capable of providing all data needed for effective financial accounting to assist management in its overall planning, evaluation, and control functions.
- b. A comprehensive set of management reports and on-line queries to assist directorate-level personnel in responding to user requests concerning request status and in determining funding availability and accountability.
- c. Provide Comptroller personnel with a set of automated records that will reduce the need for voluminous hard copy files, logs, and records.
- d. Provide information that will assist the directorates in satisfying "quick response" requests for travel and training.
- e. Provide safeguards that prevent the over allocation of resources by the users.
- f. Provide users with the capability to plan for and execute expenditures that are funded in more than one fiscal year.

This program supports IRM goals and objectives 95-I, 95-II, 95-III, 95-IV and 95-V.

Customer Service and Printing System

Directorate: Directorate of Management

Mission Statement: The mission of the Joint Staff Printing Section is to provide reprographic services, to include printing requests contracted through Defense Printing Services or the Government Printing Office, for the Chairman of the Joint Chiefs of Staff and the Joint Staff. It is also responsible for managing and budgeting the Joint Staff Office Copier Program and Contract Printing.

The Joint Staff operates an internal duplicating facility to meet suspense requirements on classified and unclassified documents for distribution within the Joint Staff or to the Secretary of Defense, the Military Services, and combatant commands. The Printing Section also provides duplicating support to selected relocation facilities during military exercises and real-world requirements.

Budget Element Description: The Customer Service and Printing System data base maintains:

- a. Official records of customer service work orders.
- b. Printing and copier equipment data to include date of purchase, cost, lease to purchase information, and warranty.

- c. Names of various vendors, types of maintenance, and costs.

- d. Location of the copiers, names of key operators, and telephone numbers.

- e. Repair services for each copier and printing equipment.

- f. Individual supply items for each copier and printing equipment.

The data base provides:

- a. Cost analysis of Joint Staff printing.
- b. Monthly, quarterly, and yearly reports of in-house printing impressions and collations.
- c. Monthly, quarterly, and yearly reports of printing supply usage.
- d. History of repairs to all copier and printing equipment.

Budget Element Justification: All of the information above is vital to control the Joint Staff's printing operations and to determine upcoming fiscal year printing budgets. This program supports IRM goals and objectives 95-I, 95-II, 95-III, 95-IV and 95-V.

International Negotiations System (INS)

Directorate: J-5

Mission Statement: The Director for Strategic Plans and Policy (J-5) is charged with providing assistance to the Chairman of the Joint Chiefs of Staff, by:

- a. Preparing joint strategic plans, documents, and studies on current and future military strategy.
- b. Providing recommendations on politico-military matters, nuclear and chemical requirements and development matters, security assistance policy and requirements (less follow-on logistic support), arms and technology transfer policy, national disclosure issues, and Service programs affecting joint matters.
- c. Developing guidance for the combatant commands and the Services on planning, organization, and policy matters (less logistics).
- d. Preparing coordinated military positions on projected and ongoing international negotiations that affect national security.
- e. Providing recommendations on intelligence policy and intelligence related matters, from the user perspective.
- f. Providing recommendations and developing policy on matters pertaining to NATO, maritime affairs, arms control, disarmament, security assistance, the law of armed conflict

and other aspects of national security, including international drug interdiction.

Budget Element Description: The International Negotiations System (INS) provides access to real-time AUTODIN message traffic. INS has a data base that contains an AUTODIN historical record, the complete Arms Control Disarmament Agency computer files, and the complete Defense Nuclear Agency Negotiations Information System computer files. INS searches the entire data base to find user-requested words or phrases. INS supports international negotiations studies to compliance, verification, and testing activities and to analyze US/NATO/Warsaw Pact capabilities/positions for both nuclear and conventional weapons.

Budget Element Justification: Technical and automatic data processing support is required for INS to support the development of the US military position in preparing international treaties, documents, and Joint Staff position papers. Funding is required to perform international negotiations studies for determining relevant US/NATO/Warsaw Pact weapon relationships and propose a methodology for reducing or eliminating comparable armament capabilities. These types of studies are also required to help determine relevant measures needed to consummate treaty accords and to develop treaty concepts and force trade-off opportunities. JSAN will subsume the existing system and provide service. This initiative supports IRM goals and objectives 95-II-A, 95-II-B, and 95-III-A.

Joint Staff Action Processing (JSAP) System

Directorate: Directorate of Management

Mission Statement: Actions Division (AD) assists the Secretary, Joint Staff, in establishing information management requirements for and managing the corporate Joint Staff decision process to include developing action processing policy and procedures and related administrative support systems.

Budget Element Description: AD uses Joint Staff Action Processing (JSAP) for action assignment, data collection, input, and distribution of reports on status of correspondence or internally generated documents received by the Secretary, Joint Staff. JSAP interfaces with the Joint Staff Document Management System to provide access to historical data as well. It consists of the following software applications:

- a. Action Tracking System (ATS)--a revised and modernized Joint Staff specific application to track action packages from creation to archive entry. All Joint Staff personnel can determine the status of actions.
- b. Workflow--a COTS package that provides work delivery, tracking, and reporting. All Joint Staff personnel can receive and return actions from their workstations.
- c. Electronic Filing System (EFS)--a COTS package that provides users the capability to

search and retrieve filed documents by keyword. All Joint Staff personnel can research their directorate and corporate actions from their workstations.

Budget Element Justification: The major objective of JSAP is to provide an automated system that will efficiently and effectively provide Joint Staff personnel with complete processing of Joint Staff actions. JSAP also contributes to the Joint Staff goal of a paperless office. Reports are structured in various ways to provide management tools for control and reference use by Office of the Chairman of the Joint Chiefs of Staff (OCJCS); Office of the Director, Joint Staff (ODJS); Office of the Secretary, Joint Staff (OSJS); and directorates and offices of the Joint Staff. JSAP assigns serial numbers to SJS papers and memorandums and identifies distribution and printing requirements for the documents and other correspondence. JSAP is the coordination, control, and liaison center for documents and correspondence exchanged between the Joint Staff and the Military Services, Office of the Secretary of Defense, National Security Council, White House, combatant commands or subordinate commands within the national military command structure, and other Government agencies. This program supports IRM goals and objectives 95-I, 95-II, 95-III, 95-IV and 95-V.

Joint Staff Document Management System (JSDMS)

Directorate: Directorate of Management

Mission Statement: The Information Management Division assists the Secretary, Joint Staff, in establishing information requirements for and managing the Joint Staff decision process to include archiving policy for the official corporate Joint Staff records. It is responsible for:

- a. Managing and operating the central office of record for the official corporate records of the Chairman, Vice Chairman, Joint Staff, and Joint Chiefs of Staff.
- b. Managing and operating the automated Joint Staff Document Management System (JSDMS) providing library, professional research, information retrieval, and document services.
- c. Preparing and publishing the Annual Index of Directives of the Joint Staff and Joint Chiefs of Staff and other records control and management publications.
- d. Monitoring Joint Staff and joint numbered publications.
- e. Developing and administering special administrative safeguards and procedures for control and distribution of Joint Staff and JCS records and information.
- f. Managing and operating the Joint Staff NATO subregistry.
- g. Managing and administering the Joint Staff Vital Records Program.
- h. Maintaining essential records and information for relocation and reconstitution purposes and providing related services to operating staff elements at Joint Staff relocation sites.
- i. Developing and administering Joint Staff information management policy and procedures.
- j. Managing and administering the Joint Staff Records Management Program.
- k. Developing and administering the Joint Staff Reports Management Program.
- l. Developing and administering the Joint Staff Forms Management Program.
- m. Preparing and publishing the monthly Joint Staff Bulletin.
- n. Developing and administering the Joint Staff Administrative Instruction Program.
- o. Managing and administering the Joint Staff Micrographics Program.
- p. Developing and maintaining an inventory of electronic records-keeping systems and their outputs including a list of records, disposition schedules, and responsible individuals.
- q. Developing and administering the Joint Staff Freedom of Information Act and Joint Staff Mandatory Declassification Review Programs.
- r. Developing and administering the Joint Staff, General Accounting Office, and Assistant Inspector General for Auditing Program.

Budget Element Description: The Joint Staff Document Management System provides the Joint Staff at the action officer level with information retrieval capabilities for most of the official records of the Joint Chiefs of Staff and the Joint Staff from 1942 on in varying degrees of

detail. COTS software is used as the basis of the application. This integrated system is comprised of four automated functions which support all aspects of the Joint Staff's archiving and document storage related activities. These functions are:

- a. Stores index records and abstracts of Joint Chiefs of Staff papers.
- b. Stores actual papers on optical (image) and magnetic (text) disks.
- c. Uses electronic file search software full text "fuzzy" search capability to retrieve papers.
- d. Interfaces with the Joint Staff Action Processing system to be accessible from all work stations.

Budget Element Justification: The major objective of JSDMS is to provide an automated system that efficiently and effectively provides

Joint Staff personnel with access to archived Joint Staff records. JSDMS also contributes to the Joint Staff goal of a paperless office. Specific objectives are:

- a. Create an automated on-line system capable of providing all data needed for effective document storage to establish a complete record of past Joint Staff policy and actions.
- b. Provide a comprehensive set of tools and on-line queries that will assist the action officer in developing approaches to the presentation of actions.
- c. Provide Information Management Division personnel with a set of automated records and research tools that will reduce the need for voluminous hard copy files, logs, and records.

This program supports IRM goals and objectives 95-I, 95-II, 95-III, 95-IV and 95-V.

Joint Staff Officer Training System (JSOTS)

Directorate: Directorate of Management

Mission Statement: The Office of Executive Services is charged with the responsibility to support OCJCS, ODJS, and OSJS in the areas of personnel, automation, budget, security, JCS meetings, and other administrative tasks. The office provides every incoming action officer and other designated personnel with an introduction to the Joint Staff through the Joint Staff Officer Training System (JSOTS).

Budget Element Description: JSOTS is a two-day indoctrination for all incoming officer personnel to the Joint Staff using computer-based training. The automated portion of it is

based on custom and COTS software. The presentations are stored on CD-ROMs and given to the students in classroom situations. The COTS packages are COREL DRAW and MS WORD.

Budget Element Justification: All of the information above is vital to the education of new personnel. It is the only vehicle that provides comprehensive information on Joint Staff organization and action processing procedures. This program supports IRM goals and objectives 95-I, 95-II, 95-III, 95-IV and 95-V.

Joint Staff Requisition and Tracking System (RETS)

Directorate: Directorate of Management

Mission Statement: The Joint Staff Supply Section establishes and maintains accountable records of assigned Joint Staff equipment and nonexpendable supplies, conducts periodic inventories of equipment, and requisitions, receives, stores, and issues required items.

Budget Element Description: The Joint Staff Requisition and Tracking System (RETS) will provide management with information concerning budgeting, inventory management for expendable items, and the utilization and accountability for materiel. The system will be designed to monitor the status of procurement requests from initiation through contracting and receipt in the Supply Section to the actual delivery of the item to the requesting Joint Staff agency. COTS software will be used where feasible. The integrated system will be comprised of seven automated functions which support all aspects of the Joint Staff's procurement- and inventory-related activities. These functions are:

- a. Maintain procurement tracking information.
- b. Maintain organization budgeting information.
- c. Maintain property accountability information.
- d. Maintain Joint Staff inventory.
- e. Provide full accounting of property/inventory actions.
- f. Provide information to Joint Staff Comptroller.
- g. Produce management and control reports.

RETS will use bar-code technology to maximize efficiency in the inventory operation. RETS will track on-hand quantities and due-in and due-out items. Budgeting data will be automatically updated based on supply transactions.

Budget Element Justification: The major objective of RETS is to provide a system that will efficiently and effectively manage and maintain accountability over the total Joint Staff inventory of supplies, equipment, and property. RETS is also designed to maintain accurate and complete inventory control records to be used for periodical physical inventories. RETS will reconcile expendable inventory records and the actual inventory and property records with property accounting records. Specific objectives are detailed below:

- a. Create an automated on-line system capable of providing all data needed for effective inventory management (requisition, receipt, warehousing, issue, disposal and turn-ins) and financial accounting data which management can use in its overall planning, evaluation, and control functions.
- b. Establish accountability and control immediately upon the receipt of accountable property and maintain accountability until the property leaves the possession or ownership of the Joint Staff.
- c. Provide a comprehensive set of management reports and on-line queries that will assist supply personnel in responding to user requests concerning procurement status and in determining Joint Staff property location and accountability. A future version will allow customers read only access to specified information.

RETS

d. Provide Supply Section personnel with a set of automated records that will reduce the need for voluminous hard copy files, logs, and records. A future version will have on-line capability for customers and suppliers, further reducing hard copy files.

e. Provide information that will assist the Supply Section in satisfying "quick response" procurement requests for supplies, services, furniture, etc.

This program supports IRM goals and objectives 95-I, 95-II, 95-III, 95-IV and 95-V.

Mail Distribution System and Distribution Data Base (DISTDB)

Directorate: Directorate of Management

Mission Statement: The primary mission of the Mail and Distribution (M&D) Section is to receive and disseminate classified and unclassified correspondence for the Chairman of the Joint Chiefs of Staff and the Joint Staff. This involves processing, controlling, properly handling, and delivering thousands of our country's most sensitive correspondence.

Budget Element Description: The main function of the DISTDB system is to account for and track documents being disseminated, not only throughout the Joint Staff, but worldwide. The M&D Section accounts for and tracks documents by using a receipt. With the DISTDB, one can quickly generate a document receipt that accompanies the document for the recipient to sign and return. The recipient's signature verifies that the document has reached its destination. With the DISTDB, one can also search and sort on any of the data items, allowing quick and efficient tracking of all documents given to the M&D Section to distribute. The DISTB consists of the following data:

- a. The Document Control Number. Each document that is given to M&D for distribution is given a numeric control number.
- b. Document Identification. An unclassified title that identifies the document.
- c. The classification of the document.
- d. Holder Number. A unique three-digit number that is assigned to each Joint Staff directorate, identifying the directorate that authorized distribution of the document.
- e. Number of copies.
- f. Copy numbers. For top secret documents which require each copy of the document to be numbered.
- g. Short addressee titles. Each short addressee title has a holder number assigned to it. These addressee titles are directorate, commands, and agencies the Joint Staff frequently correspond with.

Budget Element Justification: Top secret and secret material must be transmitted under a chain of receipts covering each individual who gets custody (DOD 5200.1-R). Receipts for confidential material are required for material transmitted to foreign governments and embassies located in the United States. Additionally, many of the unclassified documents the Joint Staff disseminates are of vital importance and must be tracked to ensure the right agencies receive them. This program supports IRM goals and objectives 95-I, 95-II, 95-III, 95-IV and 95-V.

Programming and Budgeting System (PBS)

Directorate: Directorate of Management

Mission Statement: The primary mission of the Program and Budget Office is to manage all budgetary actions/inputs under the PPBS including the Program Objective Memorandum (POM), Budget Estimate Submission (BES), and the President's Budget (PB) through budget execution. The Program and Budget Office also:

- a. Defends Joint Staff fiscal requirements to OSD and Congress and analyzes, prepares, and coordinates all resulting funds adjustments.
- b. Originates and presents recommendations to the Joint Staff general/flag officer representatives to the Resource Management Council and implements and monitors resource allocation decisions.
- c. Interprets and implements financial legislation, directives, and policies.

Budget Element Description: The Programming and Budgeting System (PBS) is an automated financial management system which provides Joint Staff management with information concerning the development and execution of the Joint Staff budget. The PBS data base consists of the following data:

- a. The Joint Requirements Package (JRP) number. This identifies the funding requirements by J-Directorate (first numeric digit) and provides a prefix of "D" if it is a decision or unfunded package (DJRP) or an "F" if it is a funded JRP (FJRP).
- b. JRP Title. Identifies supported budget request or program.
- c. Priority and Security. Lists the priority and the security classification of the JRP

d. JRP Monitor. Lists the responsible action officer.

e. Directorate/Phone Number. JRP monitor's assigned directorate and phone number.

f. JRP Description. A summary of the program being funded in the JRP.

g. Subelement Description/Justification. A detailed description of the supported subelement(s) followed by the justification for the funds needed.

h. Financial Data. Appropriation, Program Element, Object Class, Subelement, Total Budget Authority, and JRP totals. Each of these describe a different level of financial data required for POM, BES, and PB submissions and analysis.

i. Change Control Numbers (CCN). This number provides the audit trail for DJRPs to FJRPs. Only FJRPs receive a CCN.

j. Dollar amounts. Dollar amounts by fiscal year are used to show status and make changes within JRPs.

The primary function of PBS is to manage the Joint Staff budget through screen handling, data queries, and reports. This system is designed to access the budget information from three groups of data: formulation data, budget data, and historical data. The formulation side of the data base consists of information on DJRPs. DJRPs can be created and maintained by all users for testing purposes and/or real budget changes. For audit purposes, funded JRPs can only be altered through the creation and activation of DJRPs. The total of all FJRPs (using Joint Staff budget authority only) must be in balance with OSD's fiscal guidance before submitting required

documents. PBS tracks all budget changes for the JCS.

Budget Element Justification: PBS is the only integrated data base for preparing the POM, BES, and PB documents required by OSD. This program supports IRM goals and objectives 95-I, 95-II, 95-III, 95-IV, and 95-V.

Mobility Modeling and Analysis

Directorate: J-4

Mission Statement: J-4 is charged with providing assistance to the Chairman of the Joint Chiefs of Staff by (1) providing logistic parameters for strategic and contingency plans development; (2) developing logistic mobility and modernization annexes in support of strategic and contingency plans, maximizing the logistic capabilities of the combatant commands, to include developing strategic mobility, mobilization, medical readiness, and sustainment policies and procedures to support combat forces; (3) maintaining a logistic and mobility asset prioritization capability for contingency operations; (4) performing logistic studies, assessments, and analysis; (5) advising on critical logistical requirements in the PPBS, to include developing alternative budget recommendations; (6) reviewing the logistic and mobilization plans and programs of the combatant commands to determine their adequacy; (7) providing guidance to the Military Services and combat support to Defense agencies for the preparation of their respective logistic and mobilization plans; and (8) reviewing service logistics related programs to assess interoperability and compatibility.

Budget Element Description: Strategic mobility studies and analyses support the Logistics Directorate through the development of new methods for enhancing the capabilities of the computer simulation models and by assisting in

the creation, maintenance, and execution of force deployment databases. Tasks include at a minimum:

- a. Test, evaluation, and refinement of the Model for Intertheater Deployment, Air and Sea (MIDAS) data management systems to include scenarios, ship, and movement requirements databases.
- b. Perform support for CJC'S/CINC'-sponsored wargames.
- c. Assist in data collection, manipulation, and execution that address the "Fort to Fox hole" mobility requirement.
- d. Support to the Logistics Directorate analysts.

Budget Element Justification: To provide the Logistics Directorate with technical and analytic expertise over the total spectrum of mobility modeling, computer systems operations and interfaces, data management systems, and the family of interconnecting and supporting hardware systems, in support of strategic mobility studies and analysis as mandated by CINC'S, Chairman of the Joint Chiefs of Staff, Secretary of Defense, or Congress. This initiative supports IRM goal 95-II.

Compliance with the Computer Security Act (P.L. 100-235)

Summary of Computer Security Plans: The Joint Staff is in full compliance with Public Law 100-235, "The Computer Security Act of 1987." All Joint Staff computer systems processing sensitive information have a computer security plan which meets the requirements of OMB Bulletin 90-08, "Guidance for Preparation of Security Plans for Federal Computer Systems that Contain Sensitive Information." Guidance for preparation of security plans is in accordance with local instruction. A computer security plan is developed during concept development and maintained throughout the system's life cycle. Each plan identifies the protective measures implemented to ensure adequate security and privacy of the computer system. Security Plans are reviewed and updated on an annual basis through the Joint Staff AIS Security Inspection Program. (Joint Staff Instruction 5210.01, "Automated Information System Security Management Program")

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ACRONYMS

Term	Meaning
ACTD	Advanced Concept Technology Demonstration
AD	Actions Division
ADPE	automated data processing equipment
AIS	automated information system
ALSP	Aggregate Level Simulation Protocol
ATM	asynchronous transfer mode
ATS	Action Tracking System
ATS-I	Action Tracking System-Imaging
AUI	attachment unit interface
AUTODIN	Automatic Digital Network
AWSIM	Air Warfare Simulation
BDC	backup domain controller
BES	Budget Estimate Submission
BRP	business reengineering process
C4	command, control, communications, and computer
C4SMP	C4 systems master plan
CABS	Comptroller Automated Budgeting System
CBS	Corps Battle Simulation
CCN	Change Control Numbers
CDDI	copper distributed data interface
CINC	commander in chief (of a combatant command)
CJCS	Chairman of the Joint Chiefs of Staff
CMIP	common management information protocol
COA	course of action
COI	community of interest
COTS	commercial-off-the-shelf
CPS	communications processing subsystem
CSA	combat support agency
DIA	Defense Intelligence Agency
DISA	Defense Information Systems Agency
DISTDB	Distribution System and Distribution Data Base
DJRP	decision or unfunded package
DLC	data link control
DMS	Defense Messaging System
DOD	Department of Defense

ACRONYMS

DOM	Directorate of Management
EAD	Evaluation and Analysis Division, J-7
EFS	Electronic Filing System
FDDI	fiber distributed data interface
FJRP	funded JRP
FTP	file transfer protocol
GCCS	Global Command and Control System
IEEE	Institute of Electrical and Electronic Engineers
INS	International Negotiations System
IRM	information resources management
IRMO	information resources management official
IRMWG	Information Resources Management Working Group
ISRD	Information System Requirements Document
JARMS	Joint Automated Records Management System
JCLL	Joint Center for Lessons Learned
JCS	Joint Chiefs of Staff
JDD	Joint Doctrine Division, j-7
JDSS	Joint Decision Support System
JECEWSI	Joint Electronic Combat Electronic Warfare Simulation
JEL	Joint Electronic Library
JEMP	Joint Exercise Management Package
JM&S	joint modeling and simulation (or joint models and simulation)
JMAPS	Joint Manpower and Personnel System
JMDS	Joint Manpower Data System
JMH	Joint Staff Automated Message Handler
JMRR	Joint Monthly Readiness Reporting
JROC	Joint Requirements Oversight Council
JRP	Joint Requirements Package
JSAN	Joint Staff Automation for the Nineties
JSANBVS	JSAN Broadband Video System
JSAP	Joint Staff Action Processing
JSIDMS	Joint Staff Document Management System
JSIRMO	Joint Staff Information Resources Management Office
JSOTS	Joint Staff Officer Training System
JSSIS	Joint Staff Support Information System
JTF	joint task force
JTTP	joint tactics, techniques, and procedures
JULLS	Joint Uniform Lessons Learned
JWCA	joint warfighting capability assessment

ACRONYMS

JWFC	Joint Warfighting Center
LAN	local area network
LDC	local distribution center
LRC	Logistic Readiness Center
M&D	Mail and Distribution
M&S	modeling and simulation (or models and simulations)
MAPP	Modern Aids to Planning Program
Mbps	megabytes per second
MIDAS	Model for Intertheater Deployment, Air and Sea
MTWS	Marine Air-Ground Task Force Tactical Warfare System
NATO	North Atlantic Treaty Organization
NCA	National Command Authorities
NMS	network management station
NSA	National Security Agency
OA	office automation
OAPS	office automation processing subsystem
OCJCS	Office of the Chairman of the Joint Chiefs of Staff
ODJS	Office of the Director, Joint Staff
OPLAN	operation plan
OPR	office of primary responsibility
OSD	Office of the Secretary of Defense
OSJS	Office of the Secretary, Joint Staff
PB	President's Budget
PBS	Programming and Budgeting System
PC	personal computer
PDC	primary domain controller
POM	Program Objective Memorandum
PPBS	Planning, Programming, and Budgeting System
PWDS	protected wire distribution system
RDSS	Regional Development Simulation System
RESA	Research, Evaluation, and Systems Analysis Facility
RETS	Requisition and Tracking System
RF	radio frequency
SAGD	Studies, Analysis, and Gaming Division, J-8
SAM	Single Agency Manager
SIPRNET	Secret Internet Protocol Router Network
SIRMO	Senior Information Resources Management Official
SJS	Secretary, Joint Staff
SMIS	Supply Management Information System

ACRONYMS

SNMP	simple network management protocol
SONET	synchronous optical network
TACSIM	Tactical Simulator
TAM	Theater Assessment Model
TQM	total quality management
UNAAF	Unified Action Armed Forces
UPS	uninterrupted power supply
WHS	Washington Headquarters Service