

**Forest Service Handbook
National Headquarters - Washington Office
Washington, DC**

**Forest Service Handbook 6609.14 – Telecommunications Handbook
Chapter 10 – Planning and Acquisition**

Amendment: 6609.14-1995-1

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Approved by: Jack Ward Thomas, Chief

Date approved:

Responsible Staff:

Last Change:

Superseded Document(s): 6609.14, Contents; 6609.14,0 Code Contents; 6609.14,0 Code; 6609.14,10 Contents; 6609.14,10; 6609.14,20 Contents; 6609.14,20; 6609.14,20,Ex.06; ID 6609.14-95-1; 6609.14,30 Contents; 6609.14,30; 6609.14,40 Contents; 6609.14,40; 6609.14,41.3,Ex.01; ID 6609.14-95-2; 6609.14,50 Contents; 6609.14,50; 6609.14,60 Contents; 6609.14,60; 6609.14,80 Contents; ID 6609.14-94-1; Amendment 6609.14-94-2, May 24, 1994; Amendment 6609.14-94-1, May 24, 1994; Amendment 6609.14-91-1, September 3, 1991

Digest: Following is an explanation of the changes throughout the directive by section.

01: Incorporates authorities into FSM 6640.1 and adds cross reference to that section.

02: Incorporates objectives into FSM 6640.2 and adds cross reference to that section.

03 & 04: Establishes code for Policy and Responsibility.

05: Adds the definitions for the terms: Compressed Video Transmission Service (CVTS); Emergency; Frequency Management; Local Access Transport Area (LATA); Local Area Network (LAN); Metropolitan Area Network (MAN); T-1; Telecommunications; Ultra High Frequency (UHF); Very High Frequency (VHF); and, Wide Area Network (WAN);

Removes the definitions for the terms: Answering Device; Answering Service; Auto Dialers; Business Line; DB4; Dedicated Line; Features; Key Telephone System; Operational Plan; Pager

Service; Speakerphone; and, Subsystem. These terms were removed because they are no longer specifically addressed in this handbook.

Revises the term Radio Frequency Authorization (RFA) to Radio Frequency Assignment (RFA) and Voice Mail to Voice Processing to more accurately reflect their application.

06: Removes section on Program Management.

10.3: Removes policy direction from this section and incorporates it in FSM 6640.6-6640.62.

11: Revises caption from Strategic Plan Format to Strategic Plan.

12: Revises caption from Tactical and Operational Plan Format to Tactical Plan.

12.1: Incorporates and revises direction on guidelines (formerly found in section 13.1).

13: Revises caption from Planning to Telecommunications Systems Planning.

13.1: Revises caption from Guidelines to Radio Communications Planning.

13.12: Removes direction on voice communications planning. (This direction is incorporated into section 13.2).

13.13: Removes direction on data communications planning. (This direction is incorporated into section 13.3).

13.2: Incorporates direction on voice communications planning (formerly found in section 13.12).

13.3: Incorporates direction on data communications planning (formerly found in section 13.13).

13.4: Establishes direction on video communications planning.

13.41: Establishes direction on cost analysis.

14: Establishes section for exhibits.

20.42: Revises responsibilities of the Washington Office, Director of Information Systems and Technology to include annual delegation of technical approval authority and thresholds.

20.62: Revises technical approval levels and removes technical approval authority thresholds which has been incorporated into section 20.42.

21.1: Corrects terms in radio frequency assignments section.

22: Revises direction on voice to reflect usage of FTS2000.

22.8: Establishes direction for voice processing.

22.9: Establishes direction for shared voice services.

24: Establishes direction for video conferencing.

25: Incorporates ID 6609.14-95-1, revises exhibit numbering, and adds exhibits on documentation requirements for cost thresholds (ex. 02) and local area network (LAN) requirements (ex. 05).

30.1: Revises and updates authority references.

31: Revises caption from Forest Service Standards to Standards.

31.1: Revises caption from Data Communications to Radio Communications and adds related direction.

31.11-31.14: Establishes pertinent direction on radio communications and incorporates direction formerly provided in sections 31.21-31.24d.

31.2: Revises caption from Radio Communications Equipment to Voice Communications which is reserved for use by field offices for supplementation purposes.

31.21-31.24d: Removes codes and captions concerning radio communications equipment. This direction has been incorporated in sections 31.11-31.14.

31.3: Revises caption from Telephone Equipment to Data Communications and adds related direction.

31.4: Establishes direction on video communications.

40: Incorporates ID 6609.14-95-2.

41: Revises direction throughout on frequency management.

41.3: Revises direction on national frequencies. Changes authorizations listed in exhibit 01.

41.31: Incorporates direction on air safety guard, air tactics, local air, and aeronautical multicom (formerly set forth in sections 41.31a-41.31d).

41.31a-41.31d: Moves direction on air safety guard, air tactics, local air, and aeronautical multicom, formerly found in these sections and incorporates it in section 41.31.

41.32: Revises caption from National Fire Radio Cache to National Incident Radio Support Cache (NIRSC). Incorporates direction on command, tactical I and II, and incident tactical (formerly set forth in sections 41.32a-41.32c).

41.32a-41.32c: Moves direction on command, tactical I and II, and incident tactical formerly found in these sections and incorporates it in section 41.32.

41.34: Revises caption from Incident Air-to-Ground to VHF/AM Aeronautical Band Frequencies.

41.38: Incorporates direction on law enforcement and wildlife telemetry (formerly set forth in sections 41.38a-41.38b).

41.38a-41.38b: Moves direction on law enforcement and wildlife telemetry and incorporates it in section 41.38.

41.4: Clarifies authorization on coordination for additional Continuous Tone-Controlled Squelch System (CTCSS) tones.

41.5: Revises caption from Cooperative Arrangements to Cooperative Communications.

41.6: Revises caption from Call Signs to International Call Signs.

41.77: Adds direction on use of Form FS-6600-4, Initial Report of Radio Interference.

50: Revises the title of Chapter 50 from Telephone to Voice.

51.1-51.3: Incorporates and adds direction on management tools (formerly set forth in section 51).

52.3: Revises caption from Interexchange Carriers (IC) to Services for Employees with Disabilities (formerly set forth in section 52.4). Adds direction to consider equipment and services to assist employees with disabilities in all plans, installations, or system upgrades. Removes direction for ICs previously set forth in this section.

52.4: Revises caption from Services for the Handicapped to Technical Approvals (formerly set forth in section 52.5) and incorporates direction on services for employees with disabilities in section 52.3.

52.5: Removes direction on technical approvals from this section and incorporates it in section 52.4.

53.4: Removes direction on recording (CDR) records from this section and incorporates it in FSM 6642.2.

60: Removes references to DEPNET contract and establishes local area network specifications in support of the Integrated Information Management Program (Project 615).

62: Adds a cross reference to section 52.3 which requires that services be provided for employees with disabilities.

70: Provides guidelines for the implementation of video conferencing, including shared services (sec. 71); issues and concerns (sec. 72); installation and testing (sec. 73); and training (sec. 74).

80: Incorporates ID 6609.14-94-1, with no substantive changes in text.

81.3: Incorporates direction intermediate distribution facility to work station interface in a local area network environment (formerly set forth in section 81.4) to correct coding.

81.4-81.41a: Incorporates direction on backbones (sec. 81.4), Local area network backbones (sec. 81.41), and local area segmentation (sec. 81.41a) (formerly set forth in sections 81.5-81.51a) to correct coding. Moves direction on intermediate distribution facility to a work station interface in a local area network environment from section 81.4 to 81.3.

90: Provides guidelines for the Federal Telecommunications System 2000 (FTS2000) including the service order process (sec. 91), switched voice services (sec. 92), virtual on-net services (sec. 93), packet switched services (sec. 94), acceptance (sec. 95), trouble handling and escalation (sec. 96), and billing hierarchy (sec. 97).

This Handbook is now available electronically in the National Information Center in the same format as the paper copy.

Table of Contents

11 - Strategic Plan.....	7
12 - Tactical Plan.....	7
12.1 – Guidelines	9
13 - Telecommunications Systems Planning	10
13.1 - Radio Communications Planning	10
13.2 - Voice Communications Planning.....	11
13.3 - Data Communications Planning.....	12
13.4 - Video Communications Planning	12
13.41 - Cost Analysis	13
14 - Exhibits.....	14

11 - Strategic Plan

See section 14, exhibit 02 for the strategic planning checklist. At a minimum, include the following:

1. Cover Page. See section 14, exhibit 01 for a sample cover page.
2. Table of Contents. At a minimum, include titles of sections and subsections contained in the plan and the beginning page number of each.
3. Executive Summary. At a minimum, include a synopsis of each primary section of the plan (approximately one page in length).
4. Mission. Indicate the identity and fundamental purpose of the organization/unit in the form of a charter or statement.
5. Assessment of Issues. Describe the major issues expected to present opportunities or problems over the planning period.
 - a. Internal Issues. This area should address most of the elements which are within the internal control of the organization (for example: services, financial resources, facilities, human resources, management, and knowledge).
 - b. External Issues. This area should address those elements outside of the organization's control that could affect the actions of the Forest Service (for example: supply, demand, technology, economy, political, regulatory, and social forces).
6. Goals and Objectives. Define the significant end conditions that the unit wants to obtain based on the assessment of issues.

Ensure that objectives are reasonable, challenging, specific, time-related, and consistent with other Forest Service activities. Each objective should include a schedule for a periodic review in order to evaluate the progress made.
7. Strategies. Describe how the unit intends to achieve its goals and objectives. Identify the steps required to implement the strategy.
8. Glossary of Terms. Define any technical terms used.

12 - Tactical Plan

See section 14, exhibit 02 for the tactical planning checklist. At a minimum, include the following:

1. Cover Page. See section 14, exhibit 01 for a sample cover page.

2. Table of Contents. At a minimum, include titles of sections and subsections contained in the plan and the beginning page number of each.

3. Executive Summary. At a minimum, include a synopsis of each primary section of the plan (approximately one page in length).

4. Requirements Analysis. Describe and analyze the current telecommunications system and define the functions of the planned system in accordance with the goals and objectives of the strategic plan.

The scope of the analysis should correspond to the complexity of the requirement. In the analysis, address radio, voice, data, and video needs, and project these requirements over a 10-year period. In the document, include a separate section for radio, voice, data, and video. At a minimum, address the following in each section:

a. Current System Definition. Include an inventory and configuration of existing telecommunications systems which form a basis for identifying the unit's future telecommunications requirements.

b. Functional Requirements Definition. Identify the specific requirements that the telecommunications system must satisfy throughout the planning period. The requirements definition covers users, administrative and engineering support requirements, national security, and emergency preparedness requirements.

c. Alternatives. Identify a range of possible system implementations to satisfy the requirements analysis. Ensure that the alternatives encompass a wide array of options and technology. Consider, where appropriate, options such as General Services Administration (GSA) consolidated services, sharing a system with other agencies, commercial service, and exclusive-use systems.

Describe how each alternative satisfies the telecommunications requirements. Identify the types and quantities of all items contributing to the cost and performance of the system throughout the life cycle. Include specifics on equipment, maintenance, management, personnel, and training.

d. Analysis of Alternatives. Evaluate each alternative based on how well it satisfies the requirements relative to the other alternatives. Include a recommendation with life cycle costs and the selected alternative.

e. Selected Alternatives. The selected alternative should include the necessary graphs, diagrams, and maps.

5. Glossary of Terms. Define any technical terms used.

12.1 – Guidelines

Address the following items when preparing tactical plans:

1. Prepare the requirements analysis.
2. Perform a resource workload analysis to determine what staffing, time, and dollars are available.
3. Ensure that the telecommunications systems design is designed only to the extent necessary to accomplish the agency's mission.
4. Ensure that the system life cycle is consistent with spare parts availability (the industry standard is 10 years for spare parts). In any case, do not exceed the maximum life of 15 years.
5. Document any planned maintenance costs of less than 10 percent. Maintenance costs are rarely less than 10 percent per year of the total equipment cost. Maintenance costs may include personnel, facilities, and other resources.
6. Ensure that a functional system design and cost analysis have the flexibility to meet increased needs for 10 years.
7. List the necessary approvals for equipment, frequencies, or services.
8. Implement a procurement strategy to ensure adequate time is allocated for proper acquisition of equipment and services.
9. Adopt a test and acceptance process for equipment and/or services.
10. Outline an installation scheme for site preparation and equipment. If the new system replaces one in use, how should the cutover be done?
11. Adopt a process which can be used to determine if the system meets the design.
12. Document planned disposition of excess equipment.
13. Determine the cost of training technical personnel in installation, maintenance, and operation of the equipment and system, as required.
14. Determine the use of swing units, modular equipment, and innovative maintenance techniques, such as depot maintenance for repair.

15. Document the course of planning to record key issues, rationale, and to provide an audit trail that documents the key decisions made by line management.

16. Consider shared service opportunities.

17. Coordinate needs. Coordinate radio systems with a planned capability for carrying telephone and/or data traffic with the local telephone companies, common carriers, and telephone associations.

In the plan, provide an impact statement which addresses the effects of by-pass on the local telephone companies and a cost analysis which compares the alternatives. Document the rationale as well as a cost analysis on a factual basis as a part of the decision criteria. To foster fairness and maximum competition in the market place, consider all workable alternative systems.

18. Ensure that technical and legal requirements are followed.

19. Develop a review schedule of systems to determine if they meet the requirements of the users; review should include frequency of review.

13 - Telecommunications Systems Planning

13.1 - Radio Communications Planning

Plan radio systems to ensure efficient use of the spectrum. Plan forest systems to utilize transmitters that radiate only as much power as necessary to ensure satisfactory service within the forest's protection area. As part of the tactical plan's selected alternative, include the following:

1. Description. A brief description must be provided of how each system functions, including the use of radio frequencies, signalling, and identification of radio communications sites. An estimate of the general types and quantities for new radio equipment should be included.

2. System Drawing. A system drawing should be made for each system depicting the approximate location of each station and the interface of equipment and controls. The radio frequency channeling, signalling and controls of a typical mobile or portable operating in the system should also be illustrated (sec. 25, ex. 03).

3. Radio Coverage. Map overlays or data plots for each station in a system must identify the radio coverage area for mobiles and portables in the system. At a minimum, maintain this information at the forest level. Overlays, data plots, point-to-point profiles, and path loss fade margin calculations may be obtained from any of several commercial sources or from the NTIA Institute for Telecommunications Sciences in Boulder, Colorado. Contact the Washington

Office, Information Systems and Technology Staff, Customer Services Branch for detailed information.

4. Traffic Studies. New and additional networks require detailed traffic studies which show:

- a. The traffic is essential and cannot be carried economically by other available means.
- b. Traffic handling is conducted according to industry standards.
- c. Congestion on existing networks is at an unacceptable level when it results in repeated delays in passing essential traffic.
- d. The volume of traffic on a new frequency could justify the assignment.

5. Alternative Considerations. In addition to the requirements stated in paragraphs 1-4, address the following items:

- a. A system life cycle consistent with spare parts availability. The maximum life for Forest Service systems shall not exceed 15 years. (The industry standard is approximately 10 years.)
- b. Annual maintenance costs of less than 10 percent of the hardware capital investment costs must be documented. (Communications industry costs are rarely less than 10 percent per year of total system costs.)
- c. Leased services if feasible.
- d. Impact statement which addresses the effects of by-pass on the local telephone companies.
- e. Cost analysis by alternative.

13.2 - Voice Communications Planning

(FSM 6640). Use the following guidelines in planning for new installations or changes to existing telephone systems, services, and equipment.

- 1. Identify all areas, organizations, and functional requirements to be served.
- 2. Estimate seasonal changes and growth projections over a 5-year period.

3. Determine the type and quantity of facilities that are required (for example: business lines, Foreign Exchange (FX) lines, Federal Telecommunications Service (FTS2000), and tielines).

4. Determine the number of calls that are intra- and interstate, the total number of calls, the number of minutes, and the toll cost.

5. Determine the type and quantities of equipment necessary, such as switches or key systems, telephone instruments, and ancillary equipment (which would include voice processing). Complete a system design describing the requirements of the proposed system.

13.3 - Data Communications Planning

Address the following:

1. Determine the target architecture, per GOSIP and Washington Office mandated standards, to include at a minimum:

- a. 10BASE-T/10BASE-F Local Area Networks,
- b. 802.3 Carrier Sense Multiple Access with Collision Detection (CSMA/CD),
- c. Logical Link Control (LLC) Type 1,
- d. Connectionless Network Layer Protocol (CLNP),
- e. Transport Protocol (TP) 4 with a TPO option for interconnection electronic mail systems, and
- f. A GOSIP approved network management system.

2. Identify the current configuration.

3. Identify the steps required to provide a transition from the current environment to the target environment to include year-by-year purchase and implementation of new equipment, the timeframe for the phase-out of old equipment, and the relationship to other sites.

4. Identify management assessment of operational procedures of the system to include preventive maintenance procedures, staff time, and training requirements.

13.4 - Video Communications Planning

Use the following guidelines in planning for new video teleconferencing installations or changes to existing video systems, service, and/or equipment:

1. Identify the potential users, applications for compressed video teleconferencing systems, and requirements definition.
2. Design a video conference room using the following planning items:
 - a. Location,
 - b. Number of people,
 - c. Sound,
 - d. Lighting,
 - e. Equipment placement,
 - f. Building wiring, and
 - g. Table image.
3. Identify the type of FTS2000 service required (for example: Compressed Video Transmission Service (CVTS), or Switched Compressed Video Transmission Service (SCVTS)).
4. Submit a facility design, cost analysis, and other pertinent information with the technical approval request to the Washington Office, Information Systems and Technology Staff. Requests which require approval by the USDA Office of Information Resources Management shall be coordinated by Washington Office, Information Systems and Technology Staff.
5. Remember that CVTS and SCVTS service orders contractually require 120 working days to be processed by General Services Administration and FTS2000.

13.41 - Cost Analysis

Use the following as a guide to develop a cost analysis.

1. Current Meeting Costs. Determine the following:
 - a. All travel costs including air fare, per diem (lodging and miscellaneous expenses), car rental, and so forth.
 - b. All meeting costs including number of meetings per year, number of traveling participants, travel costs for all traveling participants (para. a), meeting room fees, and so forth.

- c. Lost productivity costs for all traveling participants.

2. Non-recurring Costs. Determine the following:

- a. All equipment costs including monitors, cameras, audio systems, controllers, and so forth.
- b. All site preparation costs including premise wiring, and required improvements for acoustics, electrical power, lighting, and so forth.
- c. All installation costs performed by contracted or Forest Service personnel.
- d. All training costs.
- e. All FTS2000 service initiation charges.

3. Recurring Costs. Determine the following:

- a. All room equipment maintenance costs.
- b. All support personnel costs.
- c. All FTS2000 service ready and equipment costs.
- d. All conference establishment and usage costs.

14 - Exhibits

1. Exhibit 01 - Sample Regional Telecommunications Plan Cover Sheet. This exhibit provides a sample format for a telecommunications plan cover page.

2. Exhibit 02 - Checklist for Preparation of Strategic and Tactical Plans. This exhibit identifies the sections that must be included in a strategic or tactical telecommunications plan. See section 11 which provides detailed information on each item.

14 - Exhibit 01

REGIONAL TELECOMMUNICATIONS PLAN

INTERMOUNTAIN PLAN

MARCH 1993

Prepared By:	<u>/s/ T. C. Smith</u> T. C. SMITH Forest Telecommunications Manager	<u>March 1, 1993</u> Date
Reviewed By:	<u>/s/ Stephen M. Teller</u> STEPHEN M. TELLER Land Management Planning Staff Officer	<u>March 8, 1993</u> Date
	<u>/s/ Robert L. Helper</u> ROBERT L. HELPER Deputy Forest Supervisor	<u>March 15, 1993</u> Date
Approved By:	<u>/s/ Ward G. Bond</u> WARD G. BOND Forest Supervisor	<u>March 22, 1993</u> Date
Approved By:	<u>/s/ E. H. Pinchot</u> E. H. PINCHOT Regional Forester	<u>May 14, 1993</u> Date

14 - Exhibit 02

CHECKLIST FOR PREPARATION OF STRATEGIC AND TACTICAL PLANS

Plan Type	Strategic	Tactical
_____ Cover Page (sec. 14, ex. 01).	X	X
_____ Table of Contents	X	X
_____ Executive Summary	X	X
_____ Mission Statement	X	
_____ Assessment of Issues	X	
_____ Goals and Objectives	X	
_____ Strategies	X	
_____ Glossary	X	X
_____ Requirements Analysis		X
_____ Selected Alternatives		X
_____ Necessary Approvals (ch. 20, ex. 01).		X