GUIDELINES TO ESTABLISHING SERVICE
OBJECTIVES AND SERVICE AGREEMENTS
FOR MINICOMPUTER SYSTEMS

CONTENTS

1. GENERAL

1.01 The purpose of this section is to
present guidelines for the creation of
quantitative minicomputer system service
objectives and associated formal service
agreements.

1.02 Whenever this section is reissued, the
reason(s) for reissue will be listed
in this paragraph.

1.03 The information presented in this
section has been primarily taken from
two BSP's; Section 007-505-320 and Section
007-205-310. The specific discussions
provided herein are a simplification of the
two BSP documents. If the reader finds
that there is insufficient information
presented in this document, then the reader
should reference the two Bell System
Practices.

1.04 Minicomputer system operations,
affected user organizations, and
application support groups should concur
that the service agreement is worthwhile
and economically feasible prior to its
acceptance. The service agreement should
include contingency planning that addresses
poor performance by including authorization
for the assignment of personnel to address
the problem(s) causing unsatisfactory
service objective results.

1.05 Service objectives define the per-
formance goals of a computer based
system that satisfy the needs of the
business in a cost effective manner. The
service objectives are identified in terms
of timeliness, availability, accuracy,
throughput, etc.

1.06 A Service Agreement is a negotiated
document which defines the service
objectives agreed to by the users and
operators of the system. The service
objectives specify satisfactory levels of
performance for the system in terms that
are understandable to all involved parties
(particularly user organizations).

1.07 When the user and the operator of the
system are in the same Southwestern
Bell Assistant Vice President Organization,
these parties do not need to enter into a
Service Agreement. However, should they
decide that a Service Agreement would be
desirable, then the guidelines specified in
this Section shall apply.

1.08 The signatories to the Service
Agreement are nominally the users
of the system and the organizations
supporting operation of the system such as

minicomputer center operations personnel. These personnel have responsibility for the obligations addressed in the agreement and have been involved in the negotiation of the Agreement. The Service Agreement is binding on all signatories until subsequent changes are negotiated.

1.09 The principal uses of a Service Agreement are to:

(a) Document the service objective expectations of the system, the responsibilities of the parties involved, the techniques and methods of measuring performance, escalation procedures, etc., so as to avoid misunderstanding.

(b) Specify the elements of the system to be measured, their acceptable levels of performance and appropriate measurement tools.

(c) Specify the method to be used for performance reporting and associated scheduling for the distribution of the report(s).

(d) Provide means to compare the performance of new system releases or maintenance revisions versus existing levels of system performance.

2. TYPES OF SERVICE AGREEMENTS

2.01 There are two types of Service Agreements; Initial Service and Operating Service. An Initial Service Agreement is based on system design and test results provided by the development group. An Operating Service Agreement is entered into after several months of operation using the Initial Service Agreement. This second agreement reflects changes based on actual performance data

accumulated during the time that the system has been in production.

2.02 If a minicomputer based system is in operation without a formal service agreement and it is determined that a service agreement should be developed, then the involved parties shall establish an Operating Service Agreement (see paragraph 7.02). This agreement shall be reviewed at the end of six months instead of one year as specified in 7.09. This review replaces the need to have first created an Initial Service Agreement.

2.03 The contents of a Service Agreement are determined by the nature and complexity of the system and the user's needs. In order to highlight the flexibility of service agreements, the contents can be separated into three parts:

- Basic Information
- Service Objectives
- Additional Considerations and Constraints

3. BASIC INFORMATION SECTION IN SERVICE AGREEMENT

3.01 The Basic Information portion of a Service Agreement has two component parts which are:

- Administrative Information
- System Details.

3.02 ADMINISTRATIVE INFORMATION: Administrative information should be the first page of a Service Agreement and should contain the following information:

- System Name
- System Acronym (if any)
- Effective date of the agreement

- Issue number: This number is updated following yearly review
- Next review date
- Type of agreement: Initial Service or Operating Service
- Signatures of the parties to the agreement
- Date signed
- Name, title, department, and address of each signatory.

3.03 SYSTEM DETAILS: System details provide brief overview comments concerning the minicomputer based system. These details are divided into four parts. They are to be included on one page (form) or multiple pages. The parts are:

(a) System Purpose: A brief explanation of the minicomputer system's purpose should be stated.

(b) Operating Priority: A notation of this system's relative priority in its environment - i.e. the application's relative priority with respect to other applications running at the same site. The priority is determined by Southwestern Bell Executive Level management. This priority is the same as that provided when assigning application priority used for Disaster Recovery procedures.

(c) Notification and Escalation Procedures: This section describes the procedures to be followed in the event that service requirements cannot be met. These procedures should be simply stated with specific time durations detailed to meet desired escalation requirements. The contacts must be identified by name, organization, title, office telephone number, and home phone number. This information is also required for

related systems when coordination of inputs or outputs between systems is part of the Service Agreement. Changes in names and telephone numbers must be provided to the System Manager who will distribute updated copies to all signatories of the Service Agreement.

(d) Restoration: This is a brief synopsis of existing contingency plans for the system. A list of major activities required after an emergency situation should be provided. This contingency plan is the same as one that would be provided as part of disaster recovery plans for the system (See Section 007-590-901SW).

3.04 Examples of forms that could be used for Administrative Information and System Details are included as Exhibits 1 and 2 of this section respectively.

3.05 Page Headings: All pages of the Service Agreement must be dated and contain the following information:

- System Acronym
- Effective Date
- Issue Number
- Page Number.

4. SERVICE OBJECTIVES

4.01 The Service Objectives portion of the Service Agreement specifies the performance goals of all organizations associated with a system in the areas covered by the Service Agreement.

4.02 The following paragraphs of this subsection address service objectives independent of their inclusion in the Service Agreement.

4.03 The development of Service Objectives needs to begin during the feasibility and definition phases of a system with the identification of service characteristics. This provides project management with important portions of information needed to:

  (a) Monitor progress and keep the user informed of any changes in design specifications.

  (b) Assist in determining project resource requirements.

  (c) Determine the categories and levels of measurable performance which are to be subsequently tracked for the operational minicomputer system.

  (d) Obtain project approval at the end of each phase.

  (e) Evaluate alternate systems.

  (f) Determine performance measurement facilities, capabilities, and tools that need to be built into the system.

  (g) Determine resources that may be required for implementation and conversion.

4.04 The more precisely the service characteristics of system objectives can be stated during feasibility, the more effective their implementation.

4.05 Prior to the setting of service objectives, user service elements must be defined. These elements are what the user observes, identifies or perceives as a service of the system. To identify these elements the project team should:

  (a) Identify all users of the system products and services.

  (b) Conduct an analysis of user needs.

  (c) Analyze assumptions and constraints.

  (d) Clearly and concisely define and quantify the elements that constitute the basic parts of the service to be provided in nontechnical terms.

  (e) Ensure that the various users fully communicate their service element requirements.

4.06 Once an initial list of service elements has been agreed to, the project team should request technical representatives (e.g. - information systems, network services, etc.), as needed, to assist the project team to:

  (a) Priority rank each element (e.g. - vital, necessary, desirable, regulatory agency required, etc.).

  (b) Test the elements against the technical representative's experience and knowledge to ensure that the elements chosen are correct.

  (c) Select those key elements that should be measured as indicative of the system's performance.

4.07 The setting of Service Objectives to be used in Service Agreements should only address objectives that are meaningful to the user. These are critical components that reflect overall system performance expectations. One such example is response time at the user location. Intermediate times (e.g. - communication facility transmit time) should not be used as a stated objective.

4.08 Once desirable service elements have been identified, the next step is to

describe the expected performance levels and define the proper statistics to employ. This process is called Quanti- fication. These statistics should be easy to understand, use, and interfere as little as possible with the process being measured.

4.09 The quantification techniques employed should allow the capability of adequately expressing the delivered service in meaningful and understandable terms.

4.10 Units of measure associated with objectives should be familiar to users. This will allow associated performance reports to be understandable to all the participants of the system.

4.11 After the appropriate statistic for the service element has been selected, it is necessary to develop a range of allowable values in order to complete the quantification process. For example, selecting a statistic for measuring on-line system response time requires specifying a time unit and a numerical value goal (e.g. - 5 seconds or less than 95% of the time).

4.12 Another important consideration in the measurement selection process is the cost and overhead required to acquire, store, summarize, and present the performance statistics. This is especially important when considering the design or selection of a monitoring tool as it impacts any system logic, storage, or processing requirements.

4.13 Any service objective proposed should be evaluated, not only with regard to its primary purpose of service reporting, but also its ability to identify where improvements are needed and to analyze the effects of changes made to the system.

4.14 Precise measurement of service objectives will indicate trends, some of which foreshadow imminent system deterioration. Support personnel can then address the problem areas prior to them resulting with user dissatisfaction.

4.15 Service Objectives should be concerned with the timeliness, availability, and quality of the service to be provided.

(a) Timeliness - This factor applies to both on-line and batch modes of processing and is concerned that the services provided are performed, processed, delivered, etc., at a time commensurate with the needs of the business in a cost-effective manner.

(b) Reliability/Availability - This addresses the question of "is the facility operational for processing when scheduled or required?".

(c) Quality - This addresses the question of "is the product or system usable?".

4.16 Exhibit 3 itemizes the information that should be included on a work-sheet used for developing service objectives.

4.17 Major releases of a system should include documentation specifying the effect, if any, that the release may have on the service objectives. If the changes are great, the update could cause renegotiation of certain aspects of the Service Agreement.

4.18 Service objectives should be reviewed periodically and updated for systems in operation. The existence of service objectives for operational systems allow management to:

(a) Measure and evaluate conformance to the stated system goals.

(b) Control the performance of the system.

(c) Determine if the system needs modification.

(d) Ascertain if the participants in the system are fulfilling their responsibilities.

(e) Determine if new objectives, and, therefore, new system modifications are needed.

(f) Ensure that users receive the agreed upon service.

4.19 Any other factors that seem to be reasonable should be considered during service objective development. Some of these are:

- Measurement techniques and tools
- Boundaries of measurement
- Data base
- Backup, recovery, and reorganization
- Scheduling
- Measurement procedure
- General assumptions and constraints
- Resource consumption and utilization rate
- Minimization of self-supported data
- Subjective evaluation.

4.20 The measurement of the service objectives called for in service agreements should become part of a regular reporting procedure to monitor the performance of the system. The objectives should be stated in ranges or bands. One possibility for expressing relative performance is:

H: Higher than objective results - possibly too costly

O: Objective results - the most acceptable range of service

L: Lower than objective results - slight improvement could be warranted

U: Unsatisfactory results - requires immediate attention.

5. SERVICE OBJECTIVES SECTION IN SERVICE AGREEMENT

5.01 This section of the Service Agreement should:

(a) Identify parts of the system for which service objectives have been set.

(b) Define the measurement components.

(c) Specify the desired performance level for each component to be measured.

(d) Describe measurement procedures such as: time period for measurement, measurement formula, delivery and processing priorities, etc.

(e) Designate who will:

- Record the events being measured
- Summarize the measurements, if applicable
- Prepare and distribute Performance Reports
- Receive and analyze Performance Reports
- Provide data on input and output volumes
- Have responsibility for each service objective.

5.02 If possible, the service agreement should identify the organizations that will address performance results that are measured consistently High (H) or Unsatisfactory (U): the former to see if costs can be reduced; the latter to implement corrective action.

6. ADDITIONAL CONSIDERATIONS FOR SERVICE AGREEMENTS

6.01 Additional items that may be included in a Service Agreement are:

(a) CHANGES TO PREVIOUS AGREEMENT: Highlight the changes made to to the agreement from the previous issue.

(b) RECORDS MANAGEMENT: Remote storage and file retention procedures should be established where required for security and control.

(c) INTRASYSTEM CONTROLS: In addition to previously specified performance

objectives, data integrity procedures can be included.

(d) INTERSYSTEM CONTROLS: The Service Agreement should identify related systems and any areas of dependency between systems.

(e) SYSTEM CHANGES: The Service Agreement should include procedure for implementing changes which will significantly impact the budget and resource requirements of the system.

(f) SCHEDULES AND VOLUMES: A schedule for generation and delivery of all system inputs and products should be developed.

(g) PERFORMANCE REPORTS: The reporting procedures (schedules, format and retention) of measurements and performance reports should be defined in the Service Agreement.

(h) FUNCTIONAL RESPONSIBILITIES: The Service Agreement should contain a definition of the responsibilities of

each organization involved in system operation and maintenance.

(i) MEASUREMENT CRITERIA: Careful consideration should be given to the establishment of measurement criteria. One hundred percent fulfillment of any objective over a period of time is improbable.

(j) ACTION REPORTING: Service Agreements can also be used to document any requirements to collect additional performance data based on certain triggers. For example, new data can be collected when performance objectives are not met. This additional reporting would continue until performance reaches stated objectives for a predetermined period of time.

(k) CAVEATS: Care should be exercised to ensure that a Service Agreement does not become administratively unwieldly because of extensive and/or minor details. Only meaningful, achievable, measurable, realistic, and cost effective service elements should be included. The administrative function of an agreement should not become an end unto itself.

7. SERVICE AGREEMENT ADMINISTRATION

7.01 All groups who participate in system operation or who are users of the service provided by the system should be included as parties to the Service Agreement.

7.02 The basic groups who will negotiate a Service Agreement are representatives of the System User, Computer Center Supervision (Operations), and the System Manager. When applicable, concurrence must also be obtained from other departments.

7.03 The System Manager ensures that follow-up is performed when service objectives are not met. The follow-up may include remedial actions or a redefinition of the service objective. The System Manager is responsible for negotiations and approvals of the Initial and Operating Service Agreements, including annual reviews.

7.04 The boundaries of the service described in the agreement should constitute an end-to-end service for the system user. Since many organizations may be involved, they all may become parties to a Service Agreement.

7.05 Some systems are installed at several locations. Normally a separate agreement is negotiated for each location. An attempt should be made, however, to make the separate agreements as similar as possible.

7.06 An Initial Service Agreement is developed during the implementation phase of a system. This Initial Service Agreement remains in effect until a performance review is completed. After the performance review, the System Manager and the other involved parties negotiate and enter into the Operating Service Agreement.

7.07 Service Agreements should be negotiated for systems in service that do not have Service Agreements. In these cases, historical information is the basis for ensuring that the service objectives chosen are realistic.

7.08 Service Agreements must be reviewed when any change occurs that may impact system service.

7.09 Service agreements should be reviewed annually. This will force all responsible parties to assess changes made during the year and their effect on the particular system.

7.10 A copy of each Service Agreement should be distributed to all signatories. The System Manager will keep a historical set of the Service Agreements and the performance reports or their summaries.

8. A sample Agreement is included as an appendix to Section 007-505-320

EXHIBIT 1

SERVICE AGREEMENT
ADMINISTRATIVE INFORMATON

			Page ____ of ____
SYSTEM NAME:		ACRONYM:	ISSUE #
EFFECTIVE DATE	TYPE OF AGREEMENT: ____Initial ____Operating	NEXT REVIEW DATE:	

CONCURRING ORGANIZATIONS

CONCURRED:	DATE:	CONCURRED:	DATE:
Name: Title: Dept: Addr:		Name: Title: Dept: Addr:	
CONCURRED:	DATE:	CONCURRED:	DATE:
Name: Title: Dept: Addr:		Name: Title: Dept: Addr:	
CONCURRED:	DATE:	CONCURRED:	DATE:
Name: Title: Dept: Addr:		Name: Title: Dept: Addr:	
CONCURRED:	DATE:	CONCURRED:	DATE:
Name: Title: Dept: Addr:		Name: Title: Dept: Addr:	

EXHIBIT 2

SERVICE AGREEMENT
SYSTEM DETAILS

ACRONYM:	Page ___ of ___
EFFECTIVE DATE:	ISSUE #

SYSTEM PURPOSE:

OPERATING PRIORITY:
_____ High   _____ Medium   _____ Low

NOTIFICATION AND ESCALATION PROCEDURES:

RESTORATION:

EXHIBIT 3

The following are items that should be included on a worksheet designed to be used for determining service objectives:

A. Name of person preparing this worksheet.

B. Name of minicomputer based system.

C. TITLE OF OBJECTIVE - A brief description of objective.

D. MEASUREMENT PURPOSE - A brief explanation of why attaining the objective is important directly or indirectly to the user.

E. STATEMENT OF MEASURE - Quantitative description of the objective.

F. PRIORITY - Relative ranking of this objective in relation to other objectives for this system.

G. RESPONSIBLE GROUP(S) - List of the groups responsible for attaining the objective. Groups listed must have the authority to effect remedies when such need arises.

H. MEASUREMENT TOOL - Tool or measurement method used to determine raw measurement data.

I. MEASUREMENT FORMULA - Formula used to determine quantitative attainment (or miss) of service objective. e.g. total # of transactions

$$100 \text{ x } \frac{\text{processed in X secs.}}{\substack{\text{total \# of transactions} \\ \text{processed}}} = \substack{\text{Response time \%} \\ \text{(in X secs.)}}$$

J. TIME PERIODS OF MEASUREMENTS - Time span included in report, month, quarter, etc.

K. BOUNDARIES OF MEASUREMENTS - Start and stop points (limits) of the service objective. (Should be understood by user: e.g. - system up time while user cannot access system is not a valid boundary for measuring system availability.)

L. OUTPUT REPORT USERS - A list of the groups that should be supplied with the measured results for this objective.

M. QUANTITATIVE MEASUREMENT - Statistical method used for measurement: e.g. - percentile, total count, etc.

EXHIBIT 3 (cont'd.)

N. MEASUREMENT BANDS - The ranges that the customer (user) can expect for this objective. (See paragraph 4.20)

O. GROUP RESPONSIBLE FOR MEASUREMENT RECORDING - The group that measures and records the measurement data for this objective.

P. GROUP RESPONSIBLE FOR MEASUREMENT PROCESSING - The group responsible for converting the measurement data into a report format.

Q. GROUP RESPONSIBLE FOR MEASUREMENT DISTRIBUTION - Group responsible for distributing the report to all interested parties. This should be the same group that monitors compliance to the performance goals.

R. ASSUMPTIONS - The basic factors required for this service objective to be achieved.

S. CONSTRAINTS - The restrictions which must be accounted for in meeting this objective; e.g. - company policy, government, etc.

T. INTERNAL SYSTEM DEPENDENCIES - Any internal system characteristic that can affect attaining this objective including programs that supply data.

U. EXTERNAL SYSTEM DEPENDENCIES - Any known external inputs and/or systems that are needed to meet this objective.

V. UNUSUAL SYSTEM REQUIREMENTS - Specialized equipment or skills needed to attain this objective.

W. DATA BASE RECOVERY/UPDATE - The probable effect of improper data including time needed for correction.

X. SCHEDULING PRIORITIES - Mutually exclusive criteria; e.g. - fast response time with high message traffic.

Y. COMMENTS - Special cautions or conditions that could affect the service objective that has not been previously specified.