F.   Test Results: Pre-Order Processing Systems Capacity Management Evaluation (PRE-6)

1.0   Description

The Pre-Order Processing Systems Capacity Management Evaluation entailed a detailed review of the methods and procedures in place to plan for and manage projected growth in the use of the Telecommunications Access Gateway (TAG) interface and the other shared systems for pre-order processing. The test evaluated the functions for pre-order transaction volume tracking and forecasting, resource usage tracking and forecasting, performance management procedures, and capacity management. The objective of this evaluation was to determine the extent to which procedures to accommodate increases in the pre-order TAG interface transaction volumes and users are actively managed.

2.0   Methodology

This section summarizes the test methodology.

2.1   Business Process Description

See Section IV, "Pre-Ordering Overview" for a complete description of the pre-order processing systems. The capacity management process for TAG and other shared pre-order processing systems is distributed along various lines of responsibility. BellSouth has outsourced operations and application support for mainframe and mid-range systems. The Customer Records Information System (CRIS), Regional Street Address Guide (RSAG), Application for Telephone Number Load Administration and Selection (ATLAS), Product/Services Inventory Management System (P/SIMS), Central Office Feature File Interface (COFFI) and Direct Order Entry Support Application (DSAP) systems operate in a mainframe environment. The mainframe operations groups manage the mainframe hardware, which includes Central Processing Unit (CPU), core memory, Direct Access Storage Device (DASD), and tape library systems. The application teams manage the production software applications and databases.

The TAG system operates in a midrange environment. The midrange operations groups manage the midrange hardware. The application teams provide mid-range software support. The BellSouth Transport Team manages day-to-day operations for the network and collects data on network performance. The BellSouth Architecture & Standards group is responsible for network capacity planning.

2.2   Scenarios

Scenarios were not applicable to this test.

2.3   Test Targets & Measures

The test target was the pre-order processing systems capacity management process. Sub-processes, functions, and evaluation criteria are summarized in the following table. The last column "Test Cross-Reference" indicates where the particular measures are addressed in Section 3.1 "Results & Analysis."

Table IV-6.1: Test Target Cross-Reference

Sub-Process	Function	Evaluation Criteria	Test Cross-Reference
Pre-Order Processing Systems Capacity Management	Data collection and reporting of business volumes, resource utilization, and performance monitoring	Adequacy and completeness of data collection and reporting	PRE-6-1-1, PRE-6-1-2, PRE-6-1-3, PRE-6-1-4, PRE-6-1-5, PRE-6-1-6
	Data verification and analysis of business volumes, resource utilization, and performance monitoring	Adequacy and completeness of data verification and analysis	PRE-6-1-7, PRE-6-1-8, PRE-6-1-9, PRE-6-1-10, PRE-6-1-11
	Systems and capacity planning	Adequacy and completeness of systems and capacity planning	PRE-6-1-12, PRE-6-1-13, PRE-6-1-14, PRE-6-1-15

2.4   Data Sources

The data collected for the test are summarized in the table below.

Table IV-6.2: Data Sources for Pre-Order Processing Systems Capacity Management Evaluation

Document	File Name	Location in Work Papers	Source
Telecommunications Access Gateway (TAG) Architecture/Detailed Design [Issue 1, September 1999, Release 3.1]	Design.doc	O&P-6-A-2	BLS
TAG Configurations	Tagconfig.doc	O&P-6-A-3	BLS
Tivoli Checklist, Tivoli for BLP, Tivoli for TAG, Tivoli Monitoring (15 November, 1999)	Tivcheck.doc, Tivmon.doc, Tivoli_blp.doc, Tivoli_tac.doc	O&P-6-A-4	BLS
Monthly Metric Data Summary (TAG)	No electronic copy	O&P-6-A-5	BLS
Interview Summary – TAG Administration	Interview_summary_110499.doc	O&P-6-A-6	KCI

Document	File Name	Location in Work Papers	Source
Interview Summary – Encore Management	Interview_summary_ 120999.doc	O&P-6-A-7	KCI
Capacity Planning & Management Playbook (What we do & How we do it) Working Draft – Not Approved	No Electronic Copy	O&P-6-C-1	BLS
BellSouth Telecommunications Information Technology – Capacity Planning Methodology, Practices and Requirements – July, 1999	Cap_methodology.do c	PRE-6-A-1	BLS
Mainframe Software Support Procedure Manual	ipsa5001.doc	BLG-3-A-3	BLS
BellSouth Mainframe CPU Configuration RAO's	hardware.txt RAO.ppt	BLG-3-A- 4	BLS
Framework and column descriptions for Mainframe Performance Reporting	PT.xls	BLG-3-A-9	BLS
Scratch Tape Statistics By Site, 10/01/99	SCRATCH TAPE STATISTICS BY SITE.doc	BLG-3-A-10	BLS
Active Tape Count By Site, 07/01/99-10/01/99	ACTT1099.doc	BLG-3-A-11	BLS
Strobe Performance Profile, 11/04/98	stbrtp.doc	BLG-3-A-12	BLS
StorageGUARD Pool Utilization	Stguard.doc	BLG-3-A-13	BLS
Concurrent Tape Drive Usage Report Card, September, 1999	CONC0999.XLS.xls	BLG-3-A-14	BLS
StorageGUARD Pool Summary History	History.doc	BLG-3-A-15	BLS
InTune Report	Snap.txt	BLG-3-A-16	BLS
CPU Measurement Reports	CPU.xls	BLG-3-A-17	BLS
Interview Summary – Mainframe Operations	Interview_summary2 _111699.doc	BLG-3-A-18	KCI
Interview Summary – Billing Test Team	Interview_summary2 _112999.doc	BLG-3-A-20	KCI
Interview Summary – Database Administration	Interview_summary1 _112999.doc	BLG-3-A-21	KCI
Interview Summary – Mainframe Performance & Tuning	Interview_summary3 _112999.doc	BLG-3-A-22	KCI
Mainframe Resource Utilization-- Top 10 (CPU, DASD, and Tape) Consumers	Top 10 Consumers Sept.xls	BLG-3-A-23	BLS
MIP Projections	MVS MIPS Projections.xls	BLG-3-A-27	BLS

Document	File Name	Location in Work Papers	Source
Projected DASD Retirements for 2000	2000-DASD-Retirements.xls	BLG-3-A-28	BLS
B2SY-S2ST-G2SY Application Hours	Trend CPU_Corp.xls	BLG-3-A-29	BLS
A6SY Application Hours	Trend CPU-RAO.xls	BLG-3-A-30	BLS
Letter on Mainframe Asset Planning Inputs	MF-capacity planning letter.doc	BLG-3-A-31	BLS
EDS Mainframe Requirements	EDS Mainframe reqs.doc	BLG-3-A-32	BLS
System Production Readiness Requirements	Readiness checklist.doc	BLG-3-A-33	BLS
Critical Application Availability (Andersen & EDS)	KCIdata.xls	BLG-3-A-34	BLS
Application Availability	GA2000SLAs.xls	BLG-3-A-35	BLS
Interview Summary – Wholesale Billing Manager	Interview_summary_04192000.doc	BLG-3-A-36	KCI
Interview Summary – BCS Transport	Interview_summary_121599.doc	PRE-6-A-2	BLS
BOSIP Network Diagrams	Atlntadc.ppt Bosipcor.ppt Brmghmdc.ppt Chrltdc.ppt Jcksondc.ppt Miamidc.ppt Nsvlledc.ppt	PRE-6-A-3	BLS
Birmingham BayNet Protocol Distribution	Bay1.gif	PRE-6-A-4	BLS
Monthly Average Utilization - Birmingham	FDDI1.gif	PRE-6-A-5	BLS
LAN Interface With In Utilization over 20%	LAN~1.htm	PRE-6-A-6	BLS
Average Latency Between RDC's Originating from Birmingham	Monthl~1.gif	PRE-6-A-7	BLS
Monthly Maximum IP Routes Known to Core	Monthl~2.gif	PRE-6-A-8	BLS
WAN Interface With In Utilization over 30%	SMDS1.gif	PRE-6-A-9	BLS
Daily Interface Performance Statistics for PNSCGS04 to JCVLBA19	Pnscgs04.gif	PRE-6-A-10	BLS
Total Traffic Across Core	WAN~1.htm	PRE-6-A-11	BLS
Server Utilization Report	Viewar~1.csv	PRE-6-A-12	BLS
Interview Summary – Transport	Interview_summary1	PRE-6-A-13	KCI

Document	File Name	Location in Work Papers	Source
Solutions	_121099.doc		
Interview Summary – Asset Planning	Interview_summary1_01202000.doc	PRE-6-A-14	KCI
BSCN – DS3 Equivalent Capacity	Bscncap.ppt	PRE-6-A-15	BLS
BellSouth Official Communications Special Services Facility Forecast for 2000 – 2002 and Update to the 1999 Forecast (Cover Letter)	Ss99ltr.doc	PRE-6-A-16	BLS
BellSouth Telecommunications Official Communications Service Requirements And Special Service Forecast	Bscn1999.doc	PRE-6-A-17	BLS
Capacity Planning Metrics for BST Assets Managed by BCS	Capaci~1.doc	PRE-6-A-18	BLS
BellSouth Telecommunications Official Communications Service Requirements Mechanized Input Form	Bscnele.xls	PRE-6-A-19	BLS
Trunk Utilization Report	Rpdn_0110.doc	PRE-6-A-20	BLS
Unserviceable Request for Video Conferences 1999	Unservr.xls	PRE-6-A-21	BLS
BellSouth Integrated Broadband Network Diagram	Ibtcp911.ppt	PRE-6-A-22	BLS
Transport Asset Planning – Infrastructures	Infraex.ppt	PRE-6-A-23	BLS
Interview Summary – Network Asset Planner	Interview_summary2_01202000.doc	PRE-6-A-24	KCI
Questionnaire designed to aid Capacity Planner and/or Technical Architect in characterizing an application workload	Config.xls	PRE-6-A-25	BLS
Interview Summary – Midrange Performance Monitoring	Interview_summary_01252000.doc	PRE-6-A-26	KCI
Printouts from Midrange Performance Data Warehouse	No Electronic Copy	PRE-6-A-27	BLS
BGSCOLL Problem Resolution Guide for Collection of Nodes	Probres.doc	PRE-6-A-28	BLS
Data Collected 11/19/99 – (Status Report, by project, of Midrange data collection tool installation)	Perforn1.doc	PRE-6-A-29	BLS
Interview Summary – Capacity Planner	Interview_summary_01272000.doc	PRE-6-A-30	KCI
TAG Usage Report	TAG Usage.xls	PRE-6-A-35	BLS

Document	File Name	Location in Work Papers	Source
BOSIP Support Web Site Printouts – Homepage	No Electronic Copy	PRE-6-A-39	BLS
BOSIP Support Web Site Printouts – Shared BOSIP Network	No Electronic Copy	PRE-6-A-40	BLS
BOSIP Support Web Site Printouts – BCS Support	No Electronic Copy	PRE-6-A-41	BLS
BOSIP LAN and WAN Network Topology Overview	No Electronic Copy	PRE-6-A-42	BLS
Datakit Support Homepage and affiliated web pages	No Electronic Copy	PRE-6-A-43	BLS
ENCORE Successful Logins vs. Failed Logins	No Electronic Copy	PRE-6-A-44	BLS
TRENDview HTML Reports	No Electronic Copy	PRE-6-A-45	BLS
TRENDview HTML Reports – Overutilized/Underutilized WAN Interfaces	No Electronic Copy	PRE-6-A-46	BLS
TRENDview HTML Reports – WAN interface utilization graphed over time	No Electronic Copy	PRE-6-A-47	BLS
Printouts from EDS Midrange Performance Data Warehouse Web Site	No Electronic Copy	PRE-6-A-48	BLS
Project List	No Electronic Copy	PRE-6-A-49	BLS
ENCORE-LESOG Performance Data	No Electronic Copy	PRE-6-A-51	BLS
TAG Performance Data	No Electronic Copy	PRE-6-A-60	BLS
Interview Summary – Capacity Planner	Interview_summary3 _03292000.doc	O&P-6-A-12	BLS
Interview Summary2 – Product Manager	Interview_summary_ 03292000.doc	O&P-6-A-13	BLS
Interview Summary3 – Second Capacity Planner	Interview_summary2 _ 03292000.doc	O&P-6-A-14	BLS
Interview Summary – Product Support Manager	Interview_summary2 _04132000.doc	O&P-6-A-15	BLS
Interview Summary2 – Forecast Manager	Interview_summary_ 04132000.doc	O&P-6-A-16	BLS
Interview Summary – Capacity Planning Project Manager	Interview_summary2 _04182000.doc	O&P-6-A-17	BLS
Interview Summary2 – Capacity Planning Manager	Interview_summary_ 04182000.doc	O&P-6-A-18	BLS
Interview Summary – Support Manager	Interview_summary_ 04192000	O&P-6-A-19	BLS
BST Product Forecasts	No Electronic Copy	PRE-6-A-61	BLS

Document	File Name	Location in Work Papers	Source
N&CS Forecasting Process	Foreca~1.ppt	PRE-6--A-62	BLS
Network & Carrier Service Forecasting	No Electronic Copy	PRE-6-A-63	BLS
The Forecast Process	No Electronic Copy	PRE-6-A-64	BLS
Capacity Management Notification Process	Capnot1.doc	PRE-6-A-65	BLS
Capacity Forecasts Contacts for Encore & LNP Applications	Capconts.doc	PRE-6-A-66	BLS
LSR Actuals & Forecast Report (1998 – 2004)	No Electronic Copy	PRE-6-A-67	BLS
Monthly Capacity Report – Network Summary – March 2000	Network summary.xls	PRE-6-A-68	BLS
LSR Volume Report by data source for 3/2000	Totals.gif	PRE-6-A-69	BLS
LCSC Center Activity Report (3/2000)	Resale.doc	PRE-6-A-70	BLS
Analysis of Recently Received Documentation and Proposed Changes to Capacity Management Final Reports	Analysis of recent docs for cap mgmt.doc	PRE-6-A-71	BLS
Application Specific Forecast Processes	Capmgt.MP.doc	PRE-6-A-72	BLS
Capacity Planning & Management Standard Operating Procedures	F-1-5 Capacity Plan.doc	PRE-6-A-74	BLS
12/07/2000 Interview Summary	Interview_summary_1207200.doc	PRE-6-A-75	KCI
LSR Volume Tracking	Mainframe_forecast2.xls	PRE-6-A-76	BLS
LSR Tracking Actuals –vs– Forecasted	Actuals.xls	PRE-6-A-77	BLS
Pre-Order Volumes Per Interfaces	Capacity3.xls	PRE-6-A-78	BLS
LCSC Center Activity Report (4/2000)	April car.doc	PRE-6-C-1	BLS
LCSC Center Activity Report (NON Reqtyp E + NON Reqtyp J)	Non-E-J.doc	PRE-6-C-2	BLS
LCSC Center Activity Report (Reqtyp M Only)	TypeM.doc	PRE-6-C-3	BLS
LCSC Center Activity Report (Reqtyp J Only)	TypeJ.doc	PRE-6-C-4	BLS
Daily LCSC Order Flow Summaries	Lesog.doc	PRE-6-C-5	BLS

Document	File Name	Location in Work Papers	Source
Third Party Testing Forecast of Volumes – EOY 2001	No Electronic Copy	PRE-6-C-6	BLS
Numbers Ported per Day (Week of 3/1/99 – 9/20/99)	No Electronic Copy	PRE-6-C-7	BLS
Maximum Number of Ports Per Day Per Week and Projection through 2001	No Electronic Copy	PRE-6-C-8	BLS
Number of LSRs Process Per Day (Week of 3/1/99 – 9/20/99)	No Electronic Copy	PRE-6-C-9	BLS
Maximum Number of LSRs Per Day Per Week and Projections through 2001	No Electronic Copy	PRE-6-C-10	BLS
Transaction to System Activity Map	No Electronic Copy	PRE-6-C-11	BLS
Business Drivers Form	No Electronic Copy	PRE-6-C-12	BLS
Email with LCSC Service Rep Headcount Forecast	No Electronic Copy	PRE-6-C-13	BLS
Electronic Interface Trends	Nov99T~1.ppt Trends.ppt Trends1.ppt FEBLSR.ppt MARLSR.ppt	PRE-6-C-14	BLS
Server Usage Report (LSOG)	LSOGUsage.xls	PRE-6-C-15	BLS
Encore Forecasts	Encore Forecasts.xls	PRE-6-C-16	BLS
Encore Capacity Analysis Assumptions	Encore capacity analysis assumptions.doc	PRE-6-C-17	BLS
Capacity Analysis Report Encore Systems	Encore.doc	PRE-6-C-18	BLS
Selective Carrier Routing, Full Deployment, Decision Package for Interconnection	No Electronic Copy	PRE-6-C-19	BLS
Memorandum to EDS Centralized System Administrators re: BTSI Capacity Planning	CSA Performance Letter.doc	PRE-6-C-20	BLS
BTSI Capacity Upgrade Request / EDS Performance Analysis Workflow	BTSI Performance Process.doc	PRE-6-C-21	BLS
Project Charter: Encore SLA Performance	ProjCharter063000.doc	PRE-6-C-22	BLS

Document	File Name	Location in Work Papers	Source
Memo to Capacity Planners re: CLEC SQM Performance information availability via the PMAP Web site	CapPlanmemo0700. doc	PRE-6-C-23	BLS

2.4.1 Data Generation/Volumes

This test relied on documentation reviews and interviews with BellSouth personnel.

2.5 Evaluation Methods

The Pre-Order Processing Systems Capacity Management Evaluation began with a review of systems documentation and process flows for pre-order processing. Interviews were conducted with system administration personnel responsible for the operation of the TAG, CRIS, RSAG, ATLAS, P/SIMS, COFFI, and DSAP pre-order processing systems. These interviews were supplemented with an analysis of BellSouth's documented capacity management procedures as well as collection of evidence of related activities such as: periodic capacity management reviews; system reconfiguration/load balancing; load increase induced upgrades; and resource utilization and performance management reporting.

2.6 Analysis Methods

The Pre-Order Processing Systems Capacity Management Evaluation included a checklist of evaluation criteria developed by KCI during the initial phase of the BellSouth - Georgia OSS Evaluation. These evaluation criteria provided the framework of norms, standards, and guidelines for the Pre-Order Processing Systems Capacity Management Evaluation.

The data collected from inspections and interviews were analyzed employing the evaluation criteria referenced above.

3.0 Results Summary

This section identifies the evaluation criteria and test results.

3.1 Results & Analysis

The results of this test are presented in the table below. Definitions of evaluation criteria, possible results, and exceptions are provided in Section II.

Table IV-6.3: PRE-6 Evaluation Criteria and Results

Test Cross-Reference	Evaluation Criteria	Result	Comments
PRE-6-1-1	There is an established process for capturing business and transaction volumes	Satisfied	Pre-order midrange transaction volume data is available from the TAG database logs, is extracted monthly by the Application Support Group, and is provided monthly to the Capacity Planner. The number of Mainframe Legacy System (RSAG, ATLAS, COFFI, DSAP, Hands-off Assignment Logic [HAL], and P/SIMS) requests is collected and used in the calculation of Service Quality Measure (SQM) OSS-1 Average Response Time and Response Interval (Pre-Ordering). BLS developed an appendix to the *Capacity Planning & Management Playbook* specifying that BTSI will track actual pre-order volumes and will maintain a tracking spreadsheet for actual vs. forecast volumes. Copies of the September 2000 monthly TAG transaction volume report and of the pre-order tracking worksheet were provided to KCI.
PRE-6-1-2	There is an established process for capturing resource utilization	Satisfied	The shared pre-order processing systems operate in a mainframe environment, therefore, resource utilization and performance monitoring are covered under the efforts of the mainframe operations groups. Mainframe resource utilization data are collected and reported monthly. Midrange and network resource utilization data are tracked and reported on the Midrange Performance Monitoring Web site and the BellSouth Open System Interconnect Protocol (BOSIP) home page respectively. These Web sites are available to and accessed by the resources responsible for monitoring the performance of systems and networks. The processes for capturing resource utilization were described during interviews with members of the groups

Test Cross-Reference	Evaluation Criteria	Result	Comments
			responsible for these activities. In addition, KCI reviewed the BOSIP home page and the Midrange Performance Monitoring Web site. Sample resource utilization reports were collected and reviewed.
PRE-6-1-3	Resource utilization is monitored for system components and elements	Satisfied	The Performance and Tuning group monitors Multiple Virtual Storage (MVS) mainframe components such as storage utilization (central storage), memory paging rates, batch jobs, Time Share Operations (TSO) sessions, Direct Access Storage Device (DASD) response times, tape drives allocated, Central Processing Unit (CPU) percentage busy, etc. Sample mainframe resource utilization reports were collected during the test. For midrange systems, Disk input/output (I/O), Network I/O, as well as resource utilization for CPUs, Memory, and file systems is tracked and reported. BLS also collects resource utilization data on CPU, buffer and memory utilization for the routers, circuits utilization of the routers, LAN interfaces on routers, hubs, and the Fiber Distributed Data Interface (FDDI) rings. For the circuits and LAN interfaces, reports are generated for the devices with the highest utilization. The midrange and network resource utilization data collection processes were described during interviews and verified through a review of the BOSIP home page, review of the Midrange Performance Monitoring Web site, and through the collection of sample reports.
PRE-6-1-4	Instrumentation and other tools are used to collect resource utilization data	Satisfied	InTune and Strobe are (mainframe) MVS tools used to provide information on where applications are spending CPU cycles, wait times, DASD volumes and tracks accessed, etc. These application-profiling tools operate on

Test Cross-Reference	Evaluation Criteria	Result	Comments
			IMS and DB2 databases. Storage Guard is an on-line system that takes a snapshot of DASD storage (each Volume Table of Contents (VTOC) every 30 minutes. Through the on-line facility it is possible to view the capacity and utilization of each storage pool. Data Facility Storage Management Subsystem (DFSMS) is a hierarchical storage manager that checks for previous messages. Targets are set for storage utilization. If a device is over the utilization target, then the utility searches for old data (past period set for retention for all data types) that can be moved to a lower priority stage. These tools were identified through interviews with the mainframe operation group and sample reports were provided to KCI.
			The data used to produce midrange system resource utilization reports are gathered through a variety of tools and utilities including Best/1, BGSCOLL, GlancePlus, SAR, Unicenter TNG, and Tivoli. The Best/1 modeling and simulation capacity planning tool is used for monitoring of midrange system resources. The BGSCOLL tool collects data in 15-minute intervals daily. The data are compiled into daily and monthly averages. Three months of data are stored for trending. The tools used to collect midrange resource utilization data were described during interviews and sample reports were collected and reviewed.
			Tools running to collect network resource utilization data include TRENDsnmp (from DeskTalk), Spectrum Enterprise Manager, OpenView, Nerve Center for BOSIP (the router network), and Starkeeper (for the Datakit networks). These tools were described during interviews with the BOSIP Support manager and sample reports were provided to KCI.

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Test Cross-Reference	Evaluation Criteria	Result	Comments
PRE-6-1-5	Performance is monitored at all applicable levels (e.g., network, database server, application server, client, etc.)	Satisfied	The Performance and Tuning Group monitors system resources for mainframe computers [i.e., MVS mainframe components such as storage utilization (central storage), memory paging rates, batch jobs, TSO sessions, DASD response times, tape drives allocated, CPU percentage busy, etc.]. The site manager ensures that DFSMS is running, checks for previous messages, and checks tape drive status. The performance of the (midrange) application servers is monitored daily by the midrange operations groups. The BLS Transport Team is responsible for day-to-day operations of the networks (comprised of components such as routers, ATM switches, and hubs). The team is comprised of three groups: PACS, which provides tier three support; Proactive Performance Analysis, which monitors the networks to prevent problems; and the Tools group. This team collects the data on network performance. BLS has also written scripts to collect data such as latency and packet loss across the BOSIP core. These activities were described during interviews with the Application Support Teams, Midrange Operations Group, and Network Support Team. In addition, sample performance reports were collected.
PRE-6-1-6	Instrumentation and other tools are used to monitor performance	Satisfied	The CMF tool looks at system logs to collect mainframe performance data. MainView (a graphical user interface for CMF) presents the performance data collected by CMF in a graphical format so that trending can be performed. The Midrange Performance Monitoring and the BOSIP Web sites are available to and accessed by the resources responsible for monitoring the performance of (midrange) systems and network elements. Best/1, GlancePlus,

Test Cross-Reference	Evaluation Criteria	Result	Comments
			SAR, Unicenter TNG, and Tivoli are tools used to monitor midrange performance. TRENDsnmp (from DeskTalk), Spectrum Enterprise Manager, OpenView, Nerve Center for BOSIP (the router network), and Starkeeper (for the Datakit networks) are tools used to monitor network performance.
			Performance monitoring activities were described during interviews and sample reports were provided to KCI. The Midrange Performance Monitoring Web site and the BOSIP home page were reviewed.
PRE-6-1-7	There is an established process for forecasting business volumes and transactions	Satisfied	During initial testing, no established, ongoing process for forecasting business volumes and transactions was observed for BLS's pre-order processing systems. See Exception 25 for additional information on this issue.
			During retest activities, KCI learned that pre-order transaction volume is not directly forecast. Instead, the current Local Service Request (LSR) to pre-order transaction ratio is extracted from system performance data. This ratio is applied to the LSR forecast and used in the mid-range system capacity model to simulate the growth in pre-order transaction volume for the TAG interface.
			The business volume and transaction forecasting process for the mainframe pre-order systems is described in the Standard Operating Procedure (SOP) section of the *Capacity Planning & Management Playbook.* The SOP documents the process of using the LSR forecast to develop projections for mainframe impact. Applications targeted are RSAG, ATLAS, P/SIMS DSAP, and COFFI. The SOP outlines the process steps that the Capacity

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Test Cross-Reference	Evaluation Criteria	Result	Comments
			Planner is to complete in order to develop the mainframe forecast that is delivered to mainframe operations for use in the quarterly capacity planning meetings. In addition, an appendix to the Playbook describes the transaction forecasting process for mainframe pre-order systems. The new process has been completed once and a forecast was provided to the mainframe planners in November 2000. Exception 25 is closed.
PRE-6-1-8	The business volume tracking and forecasting data is at an appropriate level of detail to use for capacity management	Satisfied	During initial testing, no process was observed for the collection of mainframe (CRIS, RSAG, ATLAS, P/SIMS, COFFI and DSAP) or mid-range (TAG) pre-order business and transaction volumes. See Exception 25 for additional information on this issue. During the retest, KCI learned that the current Local Service Request (LSR) to pre-order transaction ratio is extracted from system performance data. These ratios are incorporated into the mid-range capacity-planning model and are assumed to hold as the volume of LSRs (order workload) is increased according to the LSR forecast. Business volume tracking and forecasting data will be utilized in the mainframe capacity management process. The mainframe forecast worksheet tracks actual LSRs and forecast data through 12/2001 and transforms the LSR forecast into calculated CRIS region Millions of Information per Second (MIPS) requirements. The calculated MIPS requirements are compared to MIPS installed and a percentage of Installed MIPS to LSR Impact is reported. The dedicated CRIS control region contains the RSAG, ATLAS, COFFI, and DSAP applications.

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Test Cross-Reference	Evaluation Criteria	Result	Comments
			In addition, resource utilization data is trended based upon historical system performance. These trended data, along with any application changes, are used to project system needs.
			For BLS's network, capacity planning is done annually as part of the budgeting process and also for each application release. Application development, system administration, and production support resources participate in the capacity planning process. The planning process takes as input the Network Carrier Services (NCS) Marketing Group forecast, current volumes, trend data, and anticipated volume changes that may result from new system functionality. This information is used to project future hardware and software needs. If additional capacity is needed, the request is brought to BLS (Delivery and Customer Service Managers) for approval, equipment purchase, and installation.
			Exception 25 is closed.
PRE-6-1-9	There is an established process for reviewing the performance of the business and transaction volume forecasting process	Satisfied	During initial testing, no established, ongoing process for reviewing the performance of the mainframe, mid-range, or network pre-order business and transaction volume forecasting process was observed. See Exception 25 for additional information on this issue.
			BLS developed an appendix to the *Capacity Planning & Management Playbook* specifying that BellSouth Technology Service, Inc. (BTSI) will track and compare actual LSR flow-through against forecast volumes. In addition, a copy of a recent comparison of actual to forecast LSRs was provided.
			Exception 25 is closed.

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Test Cross-Reference	Evaluation Criteria	Result	Comments
PRE-6-1-10	There is an established process for verification and validation of performance data	Satisfied	Mainframe hardware performance is monitored daily. Any anomalies detected are reported, investigated, and resolved. The performance monitoring, database administration, and application support groups participate in this process of verification and validation of performance data. Data from the system hardware resources are downloaded for personal computer access. This information is formatted into PC reports and is analyzed and/or reviewed periodically by the team members responsible for mainframe performance and tuning analysis. The data are retained for a minimum of one year. In the midrange and network environments, performance data are verified and validated by System Administrators and the Transport Group. Performance reports are reviewed regularly on the Midrange Performance Monitoring Web site, on the BOSIP home page, and through on-line tools. The reports and tools define thresholds for utilization of system and network resources. Any values exceeding the established threshold are highlighted in the reports, investigated, and resolved. Performance monitoring activities were described during interviews. KCI reviewed and collected sample performance and resource utilization reports.
PRE-6-1-11	Performance monitoring results are compared to service level agreements and other metrics	Satisfied	BLS and the third party managing the systems operations have contracts in place governing system performance. These contracts define targets for system availability for TAG, CRIS, RSAG, ATLAS, P/SIMS and DSAP. KCI was provided with the targets for system availability and copies of reports on vendor performance, by system. Service Quality Measurements

Test Cross-Reference	Evaluation Criteria	Result	Comments
			(SQMs) are defined for availability of the TAG interface [OSS-2. Interface Availability (Pre-Ordering)]. SQMs are also defined for average OSS Response Time and Response Interval for the CRIS, RSAG, ATLAS, and DSAP systems from TAG [OSS-1 Average Response Time and Response Interval (Pre-Ordering)]. (See *BellSouth Service Quality Measurements Plan* document dated 07/2000.) Performance results for these metrics are reported through the Performance Monitoring and Analysis Platform (PMAP). BLS's capacity planning process identifies PMAP data as an input for the mid-range capacity planning process. BLS monitors its own network performance results. Network availability (i.e., trunk and node availability) results are tracked against established performance targets/objectives. The Transport Group works with the BLS Architecture & Standards (A&S) Group to address network performance issues. Network performance activities were described during interviews with the BOSIP Support Manager.
PRE-6-1-12	The Capacity Management process is defined and documented	Satisfied	The processes that are executed for performance monitoring and capacity planning activities are defined and documented. The document, *BLS Telecommunications Information Technology Capacity Planning Methodology, Practices, and Requirements July 1999,* outlines a capacity planning process for the mainframe, midrange, and network environments. BLS's capacity planning process is part of the IT Engagement Process (ITEP). Process flows for the capacity planning process have been developed and are posted on the BLS IT Web site. These flows are also contained in a document entitled *Capacity Planning &*

Test Cross-Reference	Evaluation Criteria	Result	Comments
			Management Playbook.
			The capacity planning process has been communicated within the Engineering & Design Group. The links within the Asset Management Group and the interfaces to other organizations are defined in the process documentation. BLS is refining the definition of process links between the remaining functional groups.
			Documentation depicting the current mainframe performance monitoring process was provided to KCI. Midrange and network performance monitoring is addressed in the capacity planning and management documentation.
PRE-6-1-13	Resource usage and capacity is considered in the planning process for capacity management	Satisfied	On a monthly basis, the Mainframe Operations Management Group uses data collected for each mainframe box to 1) fit a trend line through the monthly utilization data points; 2) estimate, based on trends and rates of growth, when upgrades or new purchases must occur; and 3) purchase additional capacity, as needed. If anomalies in CPU utilization, DASD, etc. occur, the Operations Group will contact the appropriate Application Support Group to determine the root cause of the anomaly.
			In addition, TRIAD meetings are held every three months. TRIAD meetings include representatives from hardware procurement, mainframe performance monitoring, and customer representatives for the applications running in the mainframe environment with the largest DASD usage. Customer representatives provide input on changes to applications and how they may impact various components of system capacity. Resource utilization reports are examined on an ongoing basis and as part of the quarterly capacity planning

Test Cross-Reference	Evaluation Criteria	Result	Comments
			process. Server usage reports, LAN/WAN interface and FDDI utilization reports are examined on an ongoing basis as part of the mid-range and network capacity planning processes. These capacity planning activities were described during interviews.
PRE-6-1-14	Performance monitoring results are considered in the planning process for capacity management	Satisfied	Mainframe and mid-range performance monitoring reports are examined on an ongoing basis and as part of the quarterly capacity planning process. The BLS Architecture & Standards (A&S) Group is responsible for network capacity planning. The BLS Transport Team analyzes network performance data and resolves capacity issues. If unable to resolve capacity issues, the Transport Team alerts the A&S Group, which purchases equipment or makes architecture changes. These capacity planning activities were described during interviews.
PRE-6-1-15	Capacity Management procedures define performance metrics that trigger the addition of capacity, load re-balancing or system tuning	Satisfied	Mainframe application hours are tracked monthly. Historical growth trends of these hours is tracked against known thresholds and used to estimate future growth and determine when upgrades or new purchases must occur. Scratch tape counts and scratch tape thresholds are tracked monthly by site. These counts and thresholds are used to assist in determining when additional tapes should be ordered. Active tape counts (and corresponding Average Growth per Month) are also tracked monthly. Thresholds have been set for resource utilization and performance measures in both mainframe and mid-range environments. Values that exceed the established thresholds are flagged and investigated. In the network environment, WAN interface utilization is tracked to identify opportunities for load

Test Cross-Reference	Evaluation Criteria	Result	Comments
			balancing. Procedures for performance management were described during interviews. In addition, KCI viewed and collected sample reports.