REBUTTAL TESTIMONY OF

CATHERINE E. PITTS

ON BEHALF OF

AT&T COMMUNICATIONS OF THE SOUTHERN STATES, INC.

AND MCI WORLDCOM, INC.

BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

Docket No. 990649 - TP

Filed: July 31, 2000

PROPRIETARY VERSION

appeal

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NH 3/6/07 (entire document)

DECLASSIFIED

CONFIDENTIAL

1. INTRODUCTION

Q. PLEASE STATE YOUR NAME, PRESENT POSITION AND BUSINESS ADDRESS

A. My name is Catherine E. Pitts (formerly Petzinger). I am a District Manager with AT&T in Law and Government Affairs, 295 North Maple Avenue, Basking Ridge, New Jersey.

Q. PLEASE DESCRIBE YOUR WORK EXPERIENCE AND EDUCATIONAL BACKGROUND

A. I have an MBA from Rutgers University, New Jersey, and have thirteen years of experience in the telecommunication industry building, and subsequently leading, a group that developed switching cost models, including the Switching Cost Information System ("SCIS"). My experience includes extensive consultation on the use of cost models in various cost studies in the United States and abroad.

Before joining AT&T in 1996, I worked at Telcordia (formerly Bellcore) for 13 years in the Cost Methods and Models organization. I was one of three individuals who designed the SCIS/IN[1] model and implemented new incremental costing methodology into the program. I also was the lead subject matter expert on feature costing in general as well as a subject

[1] SCIS/IN is the SCIS model that determines the costs for vertical features and services.

matter expert on 1ESS, 1A ESS and 5ESS switches. When I was promoted to lead the SCIS group, I had responsibility for the technical development, production, documentation, customer care and cost study consultation for the SCIS family of models.

Q. HAVE YOU PREVIOUSLY TESTIFIED IN REGARD TO LEC COST MODELS IN GENERAL, AND THE SWITCHING COST INFORMATION (SCIS) IN PARTICULAR?

A. Yes, I have presented expert testimony in numerous state proceedings dealing with switching unbundled element cost studies.

2. PURPOSE AND SUMMARY OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to report my findings regarding BellSouth's switch cost study methodology and the inputs used by BellSouth for developing switch investments. Other witness' testimony analyzes the annual cost factors, investment loading factors and expense factors. Their proposed recommendations, in conjunction with the proposed changes I make to switch investments, support the UNE switch costs restated in Mr. King's testimony.

Q. PLEASE SUMMARIZE THE MAIN POINTS OF YOUR TESTIMONY

A. Inappropriate switch prices were used as a starting point for BellSouth's cost study, resulting in inflated costs for all switch-related elements.

The SST model has inappropriate and unsupported feature cost methodologies that contain numerous errors, causing seriously overstated feature-related costs.

3. OVERVIEW OF BELLSOUTH'S SWITCH COST STUDY

Q. DESCRIBE HOW BELLSOUTH DETERMINES ITS PROPOSED COSTS FOR UNBUNDLED SWITCH ELEMENTS.

A. BellSouth first used the proprietary Telcordia SCIS/MO model to allocate switch costs to pre-defined traffic sensitive and non-traffic sensitive cost categories. BellSouth then analyzed various data, including proprietary information from the Telcordia SCIS feature module (SCIS/IN), to develop its new Simplified Switching Tool (SST). The BellSouth SST model includes formulas to calculate feature investments and switch usage investments in the SST-Usage workbook, and computes investments for switch ports in the SST-Port workbook. Additional investments for RTU fees, land and building, local telephone company engineering and installation are added to the switch investments. The in-place investments are then converted to annual and/or monthly costs, and switch related and

other expenses are added to produce BellSouth's claimed cost for switch UNEs.

4. INAPPROPRIATE SWITCH PRICES WERE USED AS THE FOUNDATION OF BELLSOUTH'S SWITCH ELEMENT COST STUDIES.

Q. WHAT SWITCH PRICES DID BELLSOUTH USE IN ITS COST STUDY?

A. BellSouth used the new (replacement) switch price for equipment included in the first cost (getting started cost) of the switch and a melded new and growth price for all remaining switch equipment.[2]

Q. WHAT IMPACT DOES THE USE OF A MELDED DISCOUNT HAVE ON SWITCH PRICES?

A. The vendors often provide a two-tiered pricing structure with higher discounts for new switch purchases and a lower discount for add-on, or growth, equipment. The SCIS/MO model only has list prices. The user must enter discounts as inputs to derive net switch prices. If the new switch discount is melded with the growth discount, the overall switch prices and ultimately the switch element costs will be higher.

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[2] Page Testimony, pg. 24

Even if melding were appropriate, BellSouth's melded discount input to SCIS/MO appears to assume that the majority of lines are at the higher growth price.[3] BellSouth, however, purchases most lines on a switch at the new switch price. BellSouth would recover significantly more than its own switch investment from the ALECs for UNE-P if the switch UNEs are costed using heavily weighted higher growth prices. Not only is cost causation violated, but a barrier to market entry is constructed when ALECs not only pay more than BellSouth for the same resource, but are also required to overcompensate BellSouth, providing it with extraordinary profits.

Q. IS BELLSOUTH'S EXAMPLE OF REPLACEMENT COSTS EXCEEDING MELDED REPLACEMENT AND GROWTH COSTS REALISTIC?

A. No. BellSouth's example[4] showing that replacement costs "can" lead to a higher cost in the long run falls apart if realistic numbers are assumed for current switch sizes, forward-looking growth rates, realistic discounts for replacement and growth, and a reasonably foreseeable time horizon. In fact, the example that BellSouth uses to support its claim that the use of new (replacement) switch prices "can" lead to higher costs includes growth at 10% per year over 10 years. Ten percent growth is not

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[3] BellSouth's Response to ATT's 2nd Set of Interrogatories, Item #87, attached as Exhibit CEP-1

reasonable nor is ten years foreseeable in the dynamic telecommunications industry.[5] Moreover, it is doubtful that the switch contracts currently in place would be effective through the year 2010, making the prices pure speculation.[6]

In summary, BellSouth's use of higher growth costs in the switching cost study, while not including the impacts of growth costs in interoffice facilities (which would decrease costs), for example, is inconsistent, causes higher switch costs, and should be rejected.

Q. WHAT DISCOUNT INPUTS TO SCIS SHOULD BE USED?

A. The new switch discounts BellSouth entered into SCIS/MO that are applied to the getting started equipment (first cost) should be used for all switch equipment.

Q. WHAT IMPACT DOES THIS HAVE ON THE RESULTS?

A. Correcting the discount inputs, rerunning SCIS/MO and loading the new SCIS/MO results into BellSouth's SST model produces switch investments for ports that are approximately 50% of the port investments

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[4] Page Testimony, Exhibit JHP-1

[5] Indeed, BellSouth's switch planning horizon is 2-3 years as stated in Page Testimony, pg. 22 Footnote 3.

[6] As BellSouth requires review of its contracts at its location (unlike other RBOCs who do provide this information under protective cover directly to participants in a proceeding), AT&T has not yet had an opportunity to determine the precise contract

claimed by BellSouth. Unbundled local switching and trunk ports are approximately 40% and 50%, respectively of BellSouth's claimed BellSouth costs.

The restated BellSouth costs sponsored by Mr. King include the corrected discount inputs.

Q. PLEASE EXPLAIN WHY SOME ISDN RESULTS ARE NOT RELIABLE.

A. When AT&T attempted to calculate the offices in BellSouth's SCIS/MO, multiple processing errors were displayed associated with calculating ISDN on DMS RSC-S remotes.[7] The ISDN port section of BellSouth's SCIS/MO ISDN Investment report that was included in BellSouth's electronic SCIS/MO filing is excerpted below:

*****Begin Proprietary*****

Min. Inv. per BRI (U/T Weighted):		162.40639
A. Working ISDN Line Inv.:	87.21107	
C. Excess Capacity Inv.:	36.79089	
D. Getting Started Inv. per BRI:	400.92860	
D1: Breakage Inv.	8.52871	
D2: Spare Inv.:	29.87572	

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expiration dates.

[7] While the user had to click on the error messages indicating that there were missing table items necessary to the calculations, SCIS/MO continued to calculate.

D3: Ext. Shf. Inv.: 362.52417

End Proprietary DECLASSIFIED

Note that subcategory D is the sum of the D1, D2 and D3. Also note that the Min. Inv. per BRI (ISDN 2-wire port) should be the sum of subcategories A, C and D, but obviously it is not. It appears that the D3 category value, which is usually minimal, is wrong, but the printed value not being added to the Min. Inv. per BRI.

The SST model, when importing the detailed results from SCIS, does load the individual subcategory values to calculate an incorrect investment for ISDN BRI ports.[8] When we removed the wire centers with the DMS RSC-S remote switches from the SCIS/MO study, the individual 'A, C, and D' sub-elements added up correctly to the Min. Inv. per BRI and no error messages were received during calculations.

Q. HOW SHOULD THE ISDN COSTS BE CALCULATED?

A. We removed the offices that had DMS RSC-S remotes with ISDN in order to have SCIS/MO recalculate the ISDN port investments with corrected discounts without processing errors. Therefore, the restated ISDN port investments in Mr. King's testimony excludes these offices.

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[8] See, for example, Columns AA and AK of the SCIS Input Worksheeet in FLST_SST-P.

5. THE SST MODEL'S FEATURE STUDY IS FLAWED

Q. PLEASE DESCRIBE HOW THE SST MODEL DETERMINES THE COST OF FEATURES.

A. BellSouth's SST-U model categorizes features into thirteen categories, based on the type of switch resource used to operate the feature. BellSouth uses the SCIS/MO model outputs as inputs to SST-U, along with the results of BellSouth's feature Hardware Study, and makes numerous simplifying assumptions about switch resources consumed by features, to calculate a theoretical cost for a given feature category. The features in each category are then added together to generate BellSouth's composite feature, shown as Central Office Features Category 13, that makes up Element B.4.13. An additional feature that purportedly identifies the cost of Centrex Intercom Usage is calculated under the name Centrex Functionality, Element B.4.10.

Q. PLEASE IDENTIFY THE FEATURE COSTING FLAWS.

A. BellSouth states that "The key inputs to feature material prices are switch realtime estimates, customer usage characteristics, and special hardware prices."[9] Ironically, these "key inputs" are the ones that have the most serious flaws in BellSouth's feature costing methodology. The following flaws will be described subsequently in more detail.

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[9] Page Testimony, pg. 26

- The SCIS/MO output results used as inputs to SST were generated using melded discount inputs weighted heavily towards higher-priced growth costs rather than new switch prices, and contribute to overstating feature costs.

- The Hardware Study uses incorrect investments, incorrect capacities and utilization adjustments that produce inflated hardware costs for features.

- The entire conceptual methodology of averaging disparate feature inputs together in an attempt to force the costs to fit a theoretical feature category, and making broad assumptions that are used as critical inputs is flawed.

Q. PLEASE EXPLAIN WHY THE INCORRECTLY DISCOUNTED SCIS/MO RESULTS CONTRIBUTE TO FEATURE COST OVERSTATEMENTS.

A. The SCIS/MO model produces investments for switch functions on a usage-sensitive basis. These unit costs from SCIS/MO (for example, the cost of a processor millisecond, or the cost of a line path, etc.) are then multiplied by BellSouth's guesstimates of the amount of resources used by a feature category. The SCIS/MO results were produced using the inappropriate discounts described previously, and thus produce inflated feature costs. The cost restatements in Mr. King's testimony incorporate the corrected discounts.

6. THE HARDWARE STUDY HAS INVESTMENT, CAPACITY AND UTILIZATION FACTOR ERRORS

Q. PLEASE EXPLAIN WHAT THE HARDWARE STUDY IS.

A. BellSouth produced the Hardware Study to calculate the cost of unique feature-related hardware, such as conference circuits and announcements.[10] The hardware category makes up more than 70% of BellSouth's proposed composite feature investment. BellSouth says it obtained investments and capacities from Telcordia's SCIS/IN model and from the switch vendors. BellSouth's Hardware Study divides the investments for specific hardware components by their respective capacities, adjusted for utilization, to produce an average cost per CCS[11] for each feature hardware component. The cost per CCS for each component was then averaged together to produce a simple average cost per CCS for all hardware. Then the cost per CCS was multiplied by an assumed average holding time for all features that use hardware to generate a cost for hardware for the feature category.

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[10] This hardware is often bundled in the vendor's basic switch design and price, thereby causing no unique investment for features.

[11] Centum call seconds - an alternative measure to minutes typically used in switch engineering.

Q. WHAT PROBLEMS DID YOU FIND WITH THIS APPROACH?

A. There were numerous investment and capacity problems in this study that affected each and every hardware component calculation. Usually, the investments in the numerator were too high and the capacities in the denominator were too low, causing inflated hardware costs per CCS. In addition, the method of averaging the hardware costs, the holding times and the number of calls using the hardware is flawed.

Q. PLEASE DETAIL THE INVESTMENT PROBLEMS.

A. Feature hardware components are integrated into the switch itself and the prices are discounted by the switch manufacturers in the same manner as the rest of the switch. Using the SCIS/IN model to calculate hardware investments with *no discount at all* produced lower costs for most of the hardware[12] than BellSouth's Hardware Study. We analyzed BellSouth's Hardware Study in detail to determine what caused its net unit investments to be higher than the list price unit investment using SCIS data.

There are two hardware items in BellSouth's Hardware Study sourced to SCIS/IN; namely, the Call Waiting Tone circuit and the CLASS Modem Resource Card (required for calling number delivery, calling name delivery, etc.). BellSouth used the list price (with no discount at all) for

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[12] Only three announcement circuits of the ten hardware components were priced

the CLASS Modem Resource Card. And although BellSouth's study did show a discount (albeit the heavily weighted growth melded discount) for the Call Waiting Tone, it showed 0 discount for the CLASS Modem Resource Card. In addition, BellSouth shows the source of the Call Waiting Tone as SCIS/IN, but the BellSouth claimed investment could not be found. BellSouth's undocumented investment was 88% higher than the Call Waiting Tone investment listed in SCIS/IN.[13]

The remaining hardware investments are sourced to the vendors – Lucent or Nortel. It is unclear from BellSouth's documentation exactly what information was provided by the vendors and what was derived from BellSouth sources[14], but it appears that at least one technology's investments included "loadings" and costs for "associated resources".[15] It is probable that some of these associated resources are double counted here and again in the telco installation factor, and/or other factors subsequently applied to the material investments in the Cost Calculator.

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slightly higher by SCIS/IN's methodology using list prices than BellSouth's study.

[13] The SCIS/IN hardware investment tables for DMS and 5ESS are attached as Proprietary Exhibit CEP-2.

[14] See BellSouth's Response to POD #6, Attachment 1 that shows a note to an unknown recipient from Jeff Shadrick requesting costs without specific instructions, attached as Exhibit CEP-3. For example, it is unknown whether the costs requested were discounted costs or list prices. Nor do we know the author of the notes or table entries in the attachment.

[15] ID. Page 4 "*estimated* prices are *loaded* and include *associated resources* required to add equipment" [emphasis added]

Q. PLEASE EXPLAIN THE CAPACITY PROBLEMS FOUND IN BELLSOUTH'S HARDWARE STUDY.

A. The capacity information provided by BellSouth in POD Item #6, Attachment 1 (Exhibit CEP-3), is not in CCS units and BellSouth provided no explanation for the capacities it ultimately used in the Hardware Study.

BellSouth used the Call Waiting Tone capacity for one call waiting tone from SCIS/IN, but used an undocumented investment for two circuits.[16] Dividing the investment of two circuits by the capacity of one circuit produced a cost per CCS twice as high as it should have been (not counting other errors).

The Hardware Study labels the capacity of the CLASS Modem Resource Card "CCS", but it is actually the number of lines that can share the card, but the estimate is too low. The actual number of lines that can share a CLASS Modem Resource Card is more than ten times what BellSouth has shown.

BellSouth used the capacity from SCIS/IN for a DSU2 / RAF / BRCS announcement, but used the investment for a much higher-capacity announcement called an SAS.[17] BellSouth has mixed an apple with a

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[16] See formula in Call Waiting Tone Material $ cell of Hardware Study worksheet.

[17] See Exhibit CEP-3 - POD #6, Attachment 1, page 4, Note 3

crate of oranges. Dividing the high cost SAS announcement by the RAF announcement's comparably smaller capacity results in a seriously overstated cost per CCS.

Finally, BellSouth applied utilization factors to all the capacities that further inflate the costs. Most of the values in SCIS/IN's capacity table for hardware are already utilization values, not ultimate capacity. Applying a utilization factor to SCIS/IN values double counts spare capacity, thereby contributing to overstated feature costs.

Q. IS THERE A MORE ACCURATE WAY TO DETERMINE THE COSTS OF THIS HARDWARE?

A. Yes. SCIS/IN does have the hardware investments in the model and we have been able to use its investments, formulas and capacities to restate BellSouth's hardware study results shown in Proprietary Exhibit CEP- 4. Even using BellSouth's original melded discount for the hardware components, SCIS/IN produced results approximately 50% of BellSouth's study. Correcting the discount input to reflect new switch prices produces results that are approximately 33% of BellSouth's claimed hardware investments. The restated costs in Mr. King's testimony include the hardware corrections.

7. BELLSOUTH'S FEATURE COST METHODOLOGY USES FLAWED CUSTOMER USAGE CHARACTERISTICS AND SWITCH REALTIME ESTIMATES

Q. WHAT SIMPLIFYING ASSUMPTIONS HAS BELLSOUTH MADE TO COST FEATURES?

A. The following simplifications were made to streamline the feature costing methodology.

BellSouth collapsed the "400 or so SCIS switch features" into 13 SST feature categories, based on the types of switch resources the features consume.

BellSouth mixed and matched busy hour call usages for individual features, that are themselves suspect, to derive an average busy hour call usage per line for an entire category of features.

BellSouth assumes that every feature uses the same amount of central processor time; in fact, it assumes that each and every feature uses the same amount of processing time as a regular call set-up. In addition, BellSouth's methodology assumes that both the Lucent and Nortel switches process all feature calls in the central processor.

BellSouth averages the holding times of hardware components performing vastly different functions to derive an average holding time for all hardware.

Q. WHAT ARE THE FEATURE CATEGORIES DEFINED BY BELLSOUTH?

A. The major categories are switch functions; i.e., features that use the processor, a line path, special hardware, a line port, or SS7 and then these five are mixed and matched to produce an additional eight combination categories for a total of thirteen categories.

Q. WHAT IS NEEDED TO DETERMINE THE COST OF A CATEGORY OF FEATURES?

A. An individual feature is basically the cost of a switch resource (e.g., cost per hardware CCS) times the number of times the feature is used in the busy hour[18] and the holding time of the call using the feature (BellSouth refers to these as key inputs). BellSouth's approach was to derive the "key inputs" for customer usage characteristics for an entire category of features.

Q. HOW DID BELLSOUTH DETERMINE THE BUSY HOUR CALL USAGE FOR EACH OF THE 56 FEATURES REVIEWED?

A. When asked for supporting documents, analysis and calculations to support the busy hour call estimates per feature category[19], BellSouth

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[18] Switches are engineered to the busy hour. Features used out of the busy hour have no economic usage cost. Indeed, processors in digital switches do not limit the capacity of the switch, instead, switches are port limited as will be discussed in detail subsequently.

[19] See POD #14l, Attachment No. 1, attached as Exhibit CEP-5.

provided a listing and indicated that the source was its own retail study inputs.[20] Just a casual review causes concern that these inputs are not correct. For example, 3-way calling is shown as ***Begin Proprietary*** .5 ***End Proprietary*** calls in the busy hour. In BellSouth's study, lines average just over ***Begin Proprietary*** 2.5 ***End Proprietary*** calls in the busy hour, and this would mean that an inordinately high one of every ***Begin Proprietary*** five ***End Proprietary*** calls would have to be a conference call. Another example is Night Service which allows an attendant to close down the attendant console and divert incoming calls to another station in the business group. BellSouth's inputs indicate that the console would be closed down ***Begin Proprietary*** twice ***End Proprietary*** in the switch's busy hour, which is highly unlikely.[21]

Q. HOW DID BELLSOUTH CONVERT THE INDIVIDUAL FEATURE CALL USAGES TO ONE CALL USAGE FOR AN ENTIRE CATEGORY?

A. BellSouth took the simple average (mean) of all the inputs for the features in a category to derive the average number of times a feature is used. The features that make up a category are disparate; for example, PBX attendant

[20] See POD #14, attached as Exhibit CEP-6.

[21] Night Service would typically be activated at the end of the business day – usually not the busy hour for a switch serving business customers. A switch serving business customers typically experiences a 10-11a.m. busy hour.

features, residential features, Centrex features, multiline group features and trunk-side connection features all go into one category.

Q. WHAT CONCERNS DO YOU HAVE WITH BELLSOUTH'S DERIVATION OF ONE CALL USAGE FOR AN ENTIRE CATEGORY?

A. There are two significant problems. First, taking a simple average, rather than a weighted average, of all the features ignores that some features have high penetrations (e.g., Caller ID for residence and business) and some are quite rare (e.g., Trunk Answer Any Station when an attendant's console is shut down to enable any station in the group to answer a call), causing a distorted result.

Second, some inputs for these features are on a single line basis, some are on a per business group basis, and some are on a trunk group basis. BellSouth takes Caller ID usage per *line*, Uniform Call Distribution whose input is on a per hunt *group*[22] basis, and Night Service activations per *attendant*; and then averages them together to illogically come up with an average usage *per port.* Call usages that are per line, per trunk, per attendant and per group cannot be simply added up and divided by the number of features that BellSouth then assumes is a per port average.

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[22] This is not the only group basis input used – there are multiple features whose inputs are per group.

Q. HOW DOES BELLSOUTH USE THE FLAWED AVERAGE USAGE PER CATEGORY PER LINE?

A. BellSouth takes the call usage, multiplies it by the average number of features per line times the averaged cost of the resources used in the switch for a given category to generate the composite feature investment. The number of busy hour calls per feature category that are used up to make up the composite feature[23] is:

Begin Proprietary DECLASSIFIED

Feature Category	Busy Hour Calls	Features per Line
Processor	1.1	4.0
Line Path	0.7	2.2
Hardware	1.6	1.4
SS7	0.9	0.4

End Proprietary

BellSouth stated that "... it can be concluded that the typical user activates about 4.5 features *in the busy hour*."[24] However, according to BellSouth's SCIS inputs, originating and terminating calls only average less than ***Begin Proprietary*** 2.7 ***End Proprietary*** requiring more than *** Begin Proprietary*** 1.5 ***End Proprietary*** features to be active on every originating and every terminating call.

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[23] See BellSouth's response to POD #141, Attachment 1 included as Exhibit CEP-5.

[24] BellSouth's response to ATT Item #89, attached as Exhibit CEP-7.

Q. WHAT OTHER AVERAGE CUSTOMER USAGE DATA IS USED BY BELLSOUTH?

A. BellSouth uses the estimates of holding times of five hardware components to derive a simple average, rather than a weighted average, holding time for all hardware. BellSouth mixes holding times for different types of announcements with holding times of conference circuits with no regard to whether there are more announcements of one type versus another announcement type, or the number of conference circuits compared to announcements in the network. As in the case of the busy hour call averages, BellSouth's broad generalizations and use of the simple arithmetic average produces inaccurate inputs that will result in inaccurate cost results.

We were not able to correct these input problems for two reasons: [1] we do not have accurate call usage data; and [2] even if did have it, BellSouth's SST model methodology requires only one call usage input per feature category. We know of no legitimate method of averaging together such disparate inputs without making many more additional error-prone assumptions.

Q. THE THIRD TYPE OF INPUT BELLSOUTH STATES IS KEY TO FEATURE COSTS IS PROCESSOR REALTIME. PLEASE EXPLAIN WHAT PROCESSOR REALTIMES ARE AND HOW BELLSOUTH USED THE PROCESSOR REALTIMES.

A. Processor realtimes are the individual measurements of central and/or distributed processor time it takes to activate or use a feature. The processor-related costs are 13% of BellSouth's claimed feature costs, second only to the hardware costs. One of the incorrect simplifying assumptions that BellSouth makes is that every feature uses the exact same processing time – in fact, it assumes that each feature uses the same processing time as one regular call set-up.

BellSouth also assumes that the processor is used in the same way for both the DMS switch and the 5E switch. The Lucent switch has distributed processors that perform the bulk of the feature call processing (which BellSouth's model includes as an additional and separate cost item) and only rarely does the 5ESS central processor become involved in a feature. BellSouth, however, assigns a central processor regular call-setup to each feature for both the Nortel switch and the Lucent switch, even though the Lucent switch's central processor doesn't get involved with most features. Assigning costs that do not exist clearly violates cost causation principles.

Most importantly, BellSouth's presumption that features, because they use the processor, must pay for the processor is misguided. The processor must be purchased for basic call processing and is part of the switch's first

cost – adding features do not cause BellSouth to purchase additional processing equipment. The processor, along with the rest of the getting started cost of the switch is a fixed cost and feature usage does not impact the level of getting started investment. Historically, analog and earlier digital switches could be call processing limited, but this is no longer true with the dramatic increases in computer processing power.[25] The limiting capacity of the current generation of switches is ports, not call processing. When a switch's port capacity is reached, an additional switch must be placed, thus incurring an additional getting started cost. A cost study, based on true cost-causation, would allocate the processor and getting started cost to all the ports in the switch, not the traffic sensitive minute of use and feature costs.

Q. WHAT IS THE SWITCH ELEMENT CENTREX FUNCTIONALITY?

A. BellSouth's Centrex functionality feature costs out intra-Centrex intercom usage and assigns it as a flat-rate port additive.

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[25] In fact, BellSouth's inputs to SCIS/MO show less than ***Begin Proprietary*** 40% ***End Proprietary*** average processor utilization, including features. Features that simply add usage to a processor that will not exhaust has no economic processor-related cost.

Q. WHAT IS WRONG WITH FLAT-RATING THE CENTREX USAGE?

A. It is our understanding that all ALEC UNE-P lines generate UNE MOU switch charges for every minute the line uses. BellSouth's separate and additional Centrex intercom usage feature would, therefore, be a double count and result in double recovery. This element should be set to 0.

Q. HAVE YOU IDENTIFIED OTHER ERRORS?

A. Yes. BellSouth's example for charging a line path to a feature is incorrect. The SST Methodology documentation (Appendix D-76) states:

> "Some of the features also tie-up an additional call path. For example, a three-way call invokes another call path in addition to the one established with the original call."

The SST developers either misunderstand the 3-way call functionality or confuse the interactions between total feature costs and existing charging schemes. The problems in BellSouth's 3-way calling example can best be understood by example. Assume that Subscriber A lives in Tallahassee, Subscriber B lives in Atlanta and Subscriber C lives in San Francisco.[26] When Subscriber A calls Subscriber B, a standard call is made and minute of use charges are incurred. When Subscriber A invokes 3-way calling and makes a second call to Subscriber C a second line path is not used by

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[26] The following example works whether the calls are local, intraLATA toll, or interLATA toll because the ALEC will be charged UNE MOU charges regardless of the jurisdiction of the call.

Subscriber A (after all there is only one line path between the switch and the end user). The role of the 3-port conference circuit (invoked via a switch-hook flash) is to put the first call on "hold" in the switch and Subscriber A re-uses its one and only path to dial Subscriber C. It is important to note that the re-use of the path is being "paid for" by the first call, which is still incurring MOU charges as if the entire call path were being used. The second call is made from Subscriber A to Subscriber C and minute of use charges are now incurred for the second call while the minute of use charges are still in effect for the first call. In fact, the re-use of the line path during the second call is recovered twice in the existing charging schemes – once from the original call and a second time by the second call.[27] There is no incremental line path to be charged as part of the 3-way feature cost that isn't already recovered via the two calls' charges.

Q. WHAT DO YOU RECOMMEND REGARDING THE LINE PATH COSTS FOR FEATURES?

A. The Line Path cost category accounted for only 2% of BellSouth's claimed composite feature cost. As described above, BellSouth's explanation for including line path costs is flawed and therefore does not adequately support these claimed costs. Mr. King's restated feature cost excludes the cost of line paths.

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[27] The rest of the second call (the trunk port and facility usage, etc. are incremental and are appropriately recovered via the second call charges).

Q. WHAT PROBLEMS DID YOU FIND WITH RESPECT TO CALLER ID AND REMOTE CALL FORWARDING?

A. One of the key inputs to these features is the percent penetration of Caller ID (for the CLASS Modem Card hardware cost) and Remote Call Forwarding (for assignment of a second line port). BellSouth's support for these penetration levels provided in BellSouth's response to POD Item 33 and its Attachment 1 (attached as Exhibit CEP-8) uses the number of lines per office in order to develop the penetration of Caller ID (shown as Calling Number Delivery –CND on BellSouth's POD) and lines that are remotely call forwarded. BellSouth's SCIS inputs show different average office line counts than what BellSouth used in its separate analysis documented in POD Item #33 for these two features as shown below:

Begin Proprietary

Lines Per Office

	BellSouth's Feature Analysis POD Item #33	Bellsouth's SCIS/MO Inputs
Caller ID (CND)	16,191 avg. per office	38,000 avg. per DMS Office
Remote Call Forwarding	16,191 avg. per office	48,445 avg. for all Offices

End Proprietary Replacing the POD Item #33 line counts causes with the SCIS line counts results in penetrations of ***Begin Proprietary*** 23% and .13% ***End Proprietary*** for Caller ID and RCF, respectively. These corrections are reflected in Mr. King's restated costs.

Q. PLEASE STATE YOUR CONCLUSIONS REGARDING BELLSOUTH'S FEATURE COST PORTION OF THE SST-U WORKBOOK.

A. BellSouth has not met its burden of proof to document and support its costs for features. There are problems with inputs, assumptions and methodology throughout BellSouth's feature cost study. BellSouth's feature cost model and its costs should be rejected.

8. SUMMARY AND CONCLUSION

Q. PLEASE SUMMARIZE YOUR FINDINGS.

A. BellSouth's use of melded discounts that presume that a majority of lines of a reconstructed network are purchased at the higher growth prices produced inflated switch UNE costs. The new switch discounts that BellSouth used for the getting started equipment should be used throughout the switch study.

Critical investment and capacity problems in the feature hardware study cause seriously overstate feature costs.

The overly simplistic averaging of widely disparate (and often wrong) inputs just to arrive at one feature category input cannot produce accurate results.

Miscellaneous feature costing errors were corrected as described previously and have been incorporated into the restated costs in Mr.

King's testimony. Some other errors (such as call usage inputs and BellSouth's flawed premise that features cause incremental costs in the fixed getting started equipment of the switch) cannot be corrected within the confines of BellSouth's model.

Q. PLEASE STATE YOUR CONCLUSION.

A. The Simplified Switching Tool BellSouth developed to produce switch element investments has too many errors, generalizations and methodological faults and should be rejected. The following alternative methodology is recommended:

1. Obtain the line and trunk port costs from SCIS/MO, using the correct new switch discounts.

2. Allocate the total Getting Started Cost of the switch, from SCIS/MO using the correct new switch discounts, to all ports.

3. Divide the trunk port cost from SCIS/MO using the correct new switch discounts, by the minutes per trunk to produce the investment per trunk MOU.[28]

4. The remainder of the total switch investment (after subtracting out the above items) from SCIS/MO using the new switch discounts, is the

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[28] Use the same methodology to derive the tandem trunk port MOU cost.

traffic sensitive cost. Divide this total investment (augmented by the corrected feature hardware costs) by total minutes to calculate the investment per end office switch MOU.[29]

The above simplified methodology uses Florida-specific investments assigned to UNE elements using accurate, cost-causation principles. It accounts for the full cost of forward-looking switches, maintains cost-causation relationships, and eliminates the error-prone feature cost inputs, assumptions and methodologies found in BellSouth's SST model.

Should this Commission not reject the SST Model for the reasons detailed above, then the switch UNE restated costs in Mr. King's testimony, reflecting the corrections to the investments proposed here, should be adopted.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

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[29] Use the same methodology (without feature hardware) to derive the tandem switch MOU cost.

BellSouth Telecommunications, Inc.
FPSC Docket No. 990649-TP
AT&T's 2nd Set of Interrogatories
May 12, 2000
Item No. 87
Page 1 of 1

REQUEST: From page 23, lines 3 and 4 of Mr. Page's May 1, 2000 Direct Testimony, please explain fully the statement "The majority of BellSouth's forward-looking switching equipment expenditures are for growth jobs" and provide an example of a digital switch purchased to replace an analog switch showing what portion of the expenditures would be for replacement and what portion would be for growth. Fully explain all assumptions.

RESPONSE: Mr. Page's testimony is based upon the fact that each year BellSouth purchases more lines for purposes of growth than for replacement. Presently, BellSouth is pursuing an aggressive course of analog switch replacement in order to provide digital switching even more widely. All small and medium sized analog switches have already been replaced. Current plans are to replace the largest analog switches with digital switches by the fourth quarter of 2004. Even with that aggressive plan, growth demand forecasts indicate that only 45% of BellSouth's line purchases from vendors from 1999 through 2002 will be for replacement purposes. Growth is expected to account for 55% of line purchases during that time period. Given that BellSouth's vendor growth discount is substantially less than the replacement discount, expenditures for growth will exceed that for replacement even during this time of aggressive replacement. If longer range forecasts of growth lines were available beyond 2004, they would reveal a slow down of replacements and therefore exacerbate the expenditures for growth relative to that of replacement.

BellSouth does not break down individual switch purchases to identify expenditures for replacement and for growth and therefore cannot offer a specific example of that type purchase. Also, one example of a single switch replacement would not be reflective of the universe of switch replacements. Also, see BellSouth's response to AT&T Interrogatory Item No. 88c.

RESPONSE PROVIDED BY:

Robert McKnight
Director
3535 Colonnade Parkway
Birmingham, Alabama 35243
BellSouth Telecommunications, Inc.

SCIS/IN Features 2.6
Investment Table - DMS-100 SN/ENET

State: Not Applicable Today's Date: 07/18/2000

Item #	Description (Generic=NA0010 Date=1	Material	Engineering	Install.
1.00	MDF Cost per Line or Ana Trk	9.8305	0.0000	4.2782
2.00	Protector Cost per Line	2.5379	0.0000	3.3969
3.00	Line Card - Loop Start (Type A)	185.7797	0.0001	0.0048
4.00	Line Card(B) w/+48v Grnd Start(NT6	265.1597	0.0001	0.0048
5.00	Line Card - Business Set (Type C)	235.3922	0.0001	0.0048
6.00	Line Card - Data LIU (Type D)	483.5597	0.0001	0.0048
7.00	Line Card - Type E	251.9297	0.0001	0.0048
8.00	Analog Trunk	1554.2447	2.0812	34.6829
9.00	Digital Trunk	504.3623	4.1612	4.2526
10.00	Reserved For Future Use	0.0000	0.0000	0.0000
11.00	Announcement/Music Channel	1381.4395	0.1435	11.3456
12.00	Reserved For Future Use	0.0000	0.0000	0.0000
13.00	Tone Circuit	841.1331	2.0800	48.7390
14.00	Reserved For Future Use	0.0000	0.0000	0.0000
15.00	Reserved For Future Use	0.0000	0.0000	0.0000
16.00	Reserved For Future Use	0.0000	0.0000	0.0000
17.00	Conference Circuit Port	530.3915	0.1387	5.2508
18.00	Reserved For Future Use	0.0000	0.0000	0.0000
19.00	Transmitter Circuit	841.1331	2.0800	48.7390
20.00	Reserved For Future Use	0.0000	0.0000	0.0000
21.00	Reserved For Future Use	0.0000	0.0000	0.0000
22.00	Massage Waiting Converter (6X20AA)	637.8046	0.0001	0.0048
23.00	Tone Detector Circuit	794.2900	2.0800	34.4390
24.00	Master Scanner Point	152.6856	0.2971	11.5199
25.00	AIOD Trunk/Receiver Ckt Cost NT2X0	1526.6822	2.0812	56.7329
26.00	Analog 4W 2Way Trunk - NTX2X72AA	1179.9460	2.0812	77.0329
27.00	Analog 2W 2Way Trunk - NTX2X81AA	1152.0947	2.0812	34.6829
28.00	Loop-Back Trunk - NT2X75AA	1005.7510	2.0812	34.6829
29.00	IOM Port Interface	1208.5702	0.2600	75.4861
30.00	IOC Port	2030.9969	0.0000	58.7889
31.00	Multi-Protocol Control I/O Port	2030.9969	0.0000	58.7889
32.00	Signal Distribution Point	154.6544	0.2971	11.5199
33.00	DS0 CCC Trunk	504.3623	4.1612	4.2526
34.00	Analog (Music) Trunk	1433.5210	2.0812	55.6829
35.00	Reserved For Future Use	0.0000	0.0000	0.0000
36.00	Asynchronous Interface Line Card	292.4597	0.0001	0.0048
37.00	Reserved For Future Use	0.0000	0.0000	0.0000
38.00	E-911 SMU T1	9453.9372	99.8932	151.1615
39.00	Reserved For Future Use	0.0000	0.0000	0.0000
40.00	Reserved For Future Use	0.0000	0.0000	0.0000
41.00	Reserved For Future Use	0.0000	0.0000	0.0000
42.00	Reserved For Future Use	0.0000	0.0000	0.0000
43.00	Reserved For Future Use	0.0000	0.0000	0.0000
44.00	Reserved For Future Use	0.0000	0.0000	0.0000
45.00	Reserved For Future Use	0.0000	0.0000	0.0000
46.00	Class Modem Resource Card	5490.0000	0.0000	0.0000

BELLCORE AND AUTHORIZED CLIENTS ONLY

SCIS/IN Features 2.6
Investment Table - DMS-100 SN/ENET

State: Not Applicable Today's Date: 07/18/2000

Item #	Description (Generic=NA0010 Date=1	Material	Engineering	Install.
47.00	LPP Frame Relay Interface	22826.5620	0.0000	123.8000
48.00	LPP Ethernet Interface	14827.9425	0.0000	89.5000

SCIS/IN Features 2.6
Investment Table - 5ESS

State: Not Applicable Today's Date: 07/18/2000

Item #	Description (Generic=5E12 Date=12/1998)	Material	E, F and I
1.00	1:1 SM term cost (trunks)	366.3733	399.3455
2.00	MDF term cost	9.8305	14.1087
3.00	AMA call - local	0.0000	0.0000
4.00	AMA call - toll	0.0000	0.0000
5.00	AMA call - packet	0.0000	0.0000
6.00	Tandem analog trunk cost	391.5500	433.4450
7.00	Tandem digital trunk cost	101.1568	105.3995
8.00	GDSU SM termination cost	364.5930	397.5417
9.00	GDSU peripheral termination cost	0.0000	0.0000
10.00	3-port circuit cost	1022.5423	1111.9329
11.00	6-port circuit cost	2045.0845	2223.8658
12.00	Trunk unit cost	108.6653	150.0181
13.00	DLTU2 cost	13.1106	17.2668
14.00	30-sec announcement cost	2112.5136	2239.4410
15.00	60-sec announcement cost	2859.4536	2986.3810
16.00	SM appearance cost	364.5930	397.5417
17.00	Metallic access point	201.0292	209.6625
18.00	Scan point	34.1764	38.3538
19.00	Signal distributor point	50.8373	66.6205
20.00	Digital trunk + DLTU2	101.1824	105.4339
21.00	Analog trunk + TU (loop out)	344.6160	386.5107
22.00	Analog trunk + TU (loop in)	396.8385	438.7332
23.00	Analog trunk + TU (EM4W)	282.8985	324.7932
24.00	Analog trunk + TU (EM2W)	404.4872	446.3819
25.00	DSU2/RAF/BRCS service group	17683.3825	17849.6325
26.00	XAT Channel Investment	538.1610	562.9560
27.00	DSU2/RAF/ASP service group	11315.4025	11481.6525
28.00	36A Voice Coupler	837.6700	837.6700
29.00	Protector Term Cost	2.5379	5.9348

BellSouth Telecommunications, Inc.
FPSC Dkt No. 990649-TP
AT&T's 1st Request for Production
Of Documents
May 2, 2000
Item No. 6
Proprietary

Subject: UNE cost study - vertical features hardware cost

This is to request average EF&I cost and utilization information on switch hardware to support switch "vertical features."

This information will be used to develop cost studies for de-averaging the unbundled network elements (UNE) that BellSouth provides to the competitive local exchange company (CLEC) in Florida.

We are interested in getting an average cost by hardware type by Vendor.

We need the information by January 26, 2000

Point of contact in BellSouth Cost Matters is E. Jeff Shadrick, 404-529-2922, e-mail, e.j.shadrick@bridge.bellsouth.com

Please call me at 404-529-2922 if you have a question.

Thanks for your assistance, Jeff Shadrick

a	b	c	d	e	f	g	h	i
Item	Switch	Feature Hardware	Vintage Date (YYYY)	Material Only Cost ($)	(EF&I) Engineered Furnished & Installed Cost ($)	Capacity	Capacity Units	BellSouth Utilization
1	5ESS	3 Point Conference Circuit						
2	5ESS	6 Point Conference Circuit						
3	5ESS	30 Second Announcement						
4	5ESS	60 Second Announcement						
5	5ESS	Metallic Access Point						
6	5ESS	Scan Point						
7	5ESS	Signal Distributor Point						
8	5ESS	Recorded Announcement for Coin						
9	5ESS	XAT Channel Investment						
10	5ESS	Voice Coupler						
11	5ESS	Announcement/Music Trunk						
12	5ESS	Tone Circuit						
13	5ESS	Transmitter Circuit Cost						
14	5ESS	Modems						

BellSouth - Cost Matters
Room 30-B-49
675 West Peachtree Street
Atlanta, GA 30375

a	b	c	d	e	f	g	h	i
Item	Switch	Feature Hardware	Vintage Date (YYYY)	Material Only Cost ($)	(EF&I) Engineered Furnished & Installed Cost ($)	Capacity	Capacity Units	BellSouth Utilization
1	DMS	3 Point Conference Circuit						
2	DMS	6 Point Conference Circuit						
3	DMS	30 Second Announcement						
4	DMS	60 Second Announcement						
5	DMS	Metallic Access Point						
6	DMS	Scan Point						
7	DMS	Signal Distributor Point						
8	DMS	Recorded Announcement for Coin						
9	DMS	XAT Channel Investment						
10	DMS	Voice Coupler						
11	DMS	Announcement/Music Trunk						
12	DMS	Tone Circuit						
13	DMS	Transmitter Circuit Cost						
14	DMS	Modems						

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675 West Peachtree Street
Atlanta, GA 30375

a	b	c		d	e	f	g	h	i
Item	Switch	Feature Hardware	5ESS Hardware	Vintage Date (YYYY)	Material Only Cost ($)	(EF&I) - Engineered Furnished & Installed Cost ($)	Capacity	Capacity Units	BellSouth Utilization
1	5ESS	3 Point Conference Circuit	GDSF Ckt Pack	2000	$37,000.00	$41,600.00	(42) 3-port conf ckt	Note 1, 5	
2	5ESS	6 Point Conference Circuit	GDSF Ckt Pack	2000	$37,000.00	$41,600.00	(21) 6-port conf ckt	Note 1, 5	
3	5ESS	30 Second Announcement	16A BLD3 CP	2000	$7,000.00	$7,680.00	(8) 60 sec ann	Note 2, 5	
4	5ESS	60 Second Announcement	16A BLD3 CP	2000	$7,000.00	$7,680.00	(8) 60 sec ann	Note 2, 5	
5	5ESS	DSU2/RAF BRCS	SAS svs grp	2000	$23,000.00	$24,450.00	10MB memory	Note 3, 5	
6	5ESS	Announcement/Music Trunk	STSX-1 KTU1 CP	2000	$147,875.00	$154,676.00	(28) DS1 ckt	Note 4, 5	

NOTES

1- The GDSF ckt pack can be programed for a combination of 3 & 6 port conf, ISTF and TTF functions. The capacity shown is the maximum qty of each type conference ckt supported on a dedicated GDSF pack. The GDSF mounts in a DSU3 unit. A DSU3 can support up to (4) GDSF packs, but is not usually fully equipped. The DSU3 has (6) slots available for packs, the first (2) are required for LDSF function(1st unit), leaving (4) for possible GDSF packs.

2- The 16A announcement unit requires (1) T1 ckt and supports (3) 8-channel announcement ckt packs. The loaded price shown is for (1) 8 channel 60 second rec ann ckt pack with remote record option.The loaded price includes (when required) a misc cabinet and/or 16A ann unit. Not included in the pricing is the associated T1 trunk that is required for each 16A ann unit.

3- The RAF service announcements have been replaced by SAS service announcements. The pricing reflects a loaded price for (1) SAS BRCS service group. A DSU2 can support up to (4) SAS service groups.

4- The KTU1 circuit pack mounts on a DNU-S and supports 28 DS1s in a STSX-1 format.

5- This is a loaded pricing ***estimate*** and includes an average price of associated office resources required to add this equipment.

BellSouth - Cost Matters
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675 West Peachtree Street
Atlanta, GA 30375

a	b			d	e	f
Item	Switch	Feature Hardware	PEC	Vintage Date (YYYY)	Material Only Cost ($)	(EF&I) Engineered Furnished & Installed Cost ($)
1	DMS	3 Point Conference Circuit	NT1X81AA Conference Trunk Module CP	2000	$4,020.00	$67.86
2	DMS	6 Point Conference Circuit	NT1X81AA Conference Trunk Module CP	2000	$4,020.00	$67.86
3	DMS	30 Second Announcement	NT1X80AA Enhanced Digitally Recorded Announcement Mach	2000	$11,725.00	$209.96
4	DMS	60 Second Announcement	NT1X80AA Enhanced Digitally Recorded Announcement Mach	2000	$11,725.00	$209.96
5	DMS	Metallic Access Point	NT3X09BA 8X8 Matrix CP	2000	$1,174.18	$94.54
6	DMS	Scan Point	NT0X10AA Misc Scanner	2000	$197.65	$76.56
7	DMS	Signal Distributor Point	NT2X57AA SD Card I	2000	$206.03	$76.56
8	DMS	Recorded Announcement for Coin	NT1X80AA Enhanced Digitally Recorded Announcement Mach	2000	$11,725.00	$209.96
9	DMS	XAT Channel Investment				
10	DMS	Voice Coupler				
11	DMS	Announcement/Music Trunk	NT2X88AA 4W INC/OG 600 E&M MF/DP	2000	$362.14	$34.80
12	DMS	Tone Circuit	NT6X70AA Continuity Tone Detector	2000	$339.36	$23.20
13	DMS	Transmitter Circuit Cost				
14	DMS	Modems				

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a	g	g	h	i
Item	Switch	Feature Hardware	Capacity	Capacity Units	BellSouth Utilization
1	DMS	3 Point Conference Circuit	10 3-port circuits per circuit pack	CCS (3 port=Orig. lines CCS x % of Orig. Calls requiring 3 ports	per SCM
2	DMS	6 Point Conference Circuit	5 6-port circuits per circuit pack	CCS (3 port=Orig. lines CCS x % of Orig. Calls requiring 3 ports	per SCM
3	DMS	30 Second Announcement	4.3 minutes announcement time	30 announcement channels for playback/recording	per SCM
4	DMS	60 Second Announcement		30 announcement channels for playback/recording	per SCM
5	DMS	Metallic Access Point	8x8 matrix circuit pack (CP)	4 LCM assignments per circuit pack or 8 SMS/SMU sites per CP	
6	DMS	Scan Point	14 scan points per circuit pack (CP)		
7	DMS	Signal Distributor Point	14 signal distribution points per CP		
8	DMS	Recorded Announcement for Coin		30 announcement channels for playback/recording	per SCM
9	DMS	XAT Channel Investment			
10	DMS	Voice Coupler			
11	DMS	Announcement/Music Trunk	2 circuits per CP; takes up 1 MTM slot	Outside music source connected to DMS via trunk	
12	DMS	Tone Circuit	2 circuit packs per DTC	Performs continuity check on CCIS trunks	
13	DMS	Transmitter Circuit Cost			
14	DMS	Modems			

DMS

Equipment	Material $	Discount Rate	E&I	Total	Capacity (per CCS)	$/Unit	Utilization	Utilized Investment	Source
Variable Announcement	$ 11,725.00	0%	$ 209.66	$ 11,934.66	7,700	$ 1.55	85%	$ 781.10	Nortel
6-port Conference Circuit	$ 4,020.00	0%	$ 67.66	$ 4,087.66	105	$ 38.93	85%	$ 145.80	Nortel
3-port Conference Circuit	$ 4,020.00	0%	$ 67.66	$ 4,087.66	210	$ 19.47	85%	$ 22.60	Nortel
Call Waiting Tone	$ 1,561.90	76%	$ 21.26	$ 1,583.16	16	$ 100.95	85%	$ 105.70	SCIS/IN
Average								$ 0.00	

5ESS

Equipment	Material $	Discount Rate	E&I	Total	Capacity (per CCS)	$/Unit	Utilization	Utilized Investment	
30-Second Announcement	$ 7,000.00	0%	$ 680.00	$ 7,680.00	288	$ 26.67	85%	$ 31.37	Lucent
60-Second Announcement	$ 7,000.00	0%	$ 680.00	$ 7,680.00	288	$ 26.67	85%	$ 31.37	Lucent
DSU2/RAF/BRCS	$ 23,000.00	0%	$ 1,450.00	$ 24,450.00	300	$ 81.50	85%	$ 95.68	Lucent
6-port Conference Circuit	$ 37,000.00	0%	$ 4,600.00	$ 41,600.00	420	$ 99.05	85%	$ 16.53	Lucent
3-port Conference Circuit	$ 37,000.00	0%	$ 4,600.00	$ 41,600.00	840	$ 49.52	85%	$ 56.26	Lucent
Average								$ 0.00	

Equipment	Material $	Discount Rate	E&I	Total	Capacity (per CCS)	$/Unit	Utilization	Utilized Investment	
DMS									
Class Modem Card	$ 5,460.00	0%	$ 0.00	$ 5,460.00	70.00	$ 77.43	85%	$ 65.81	SCIS/IN

DECLASSIFIED

Restated Hardware Study using New Switch Discounts

DMS

Equipment	Material $	Discount Rate	E&I	Total	Capacity (per CCS)	$/Unit	Utilization	Utilized Investment	Source
Variable Announcement	$ 3,142.35	89%	$ 168.82	$ 514.48	24.0	$ 21.44	$ 0.85	$ 25.22	Inv. from SCIS investment table;capacity from SCIS default table
6-port Conference Circuit	$ 3,182.35	89%	$ 32.34	$ 382.40	25.0	$ 15.30	$ 1.00	$ 15.30	Inv. from SCIS/IN Investment table; capacities from SCIs/IN default Table
3-port Conference Circuit	$ 1,591.17	89%	$ 16.17	$ 191.20	25.0	$ 7.65	$ 1.00	$ 7.65	Inv. from SCIS/IN Investment table; capacities from SCIs/IN default Table
Call Waiting Tone	$ 841.13	89%	$ 50.82	$ 143.34	18.4	$ 7.79	$ 1.00	$ 7.79	Inv. from SCIS/IN Investment table; capacities from SCIs/IN default Table
Average								***$ 13.99***	

5ESS

Equipment	Material $	Discount Rate	E&I	Total	Capacity (per CCS)	$/Unit	Utilization	Utilized Investment	
30-Second Announcement	$ 2,395.41	79%	$ 168.82	$ 671.86	1,152	$ 0.58	85%	$ 0.69	Inv. from SCIS investment table;capacity calculated per note
60-Second Announcement	$ 3,142.35	79%	$ 168.82	$ 828.72	1,152	$ 0.72	85%	$ 0.85	Inv. from SCIS investment table;capacity calculated per note
DSU2/RAF/BRCS		79%		$ -	300	$ 18.85	100%	$ 18.85	Lucent
6-port Conference Circuit		79%		$ -		$ 68.29	100%	$ 68.29	Inv., capacities and equations from SCIS/IN 6-port feature
3-port Conference Circuit		79%		$ -		$ 26.06	100%	$ 26.06	Inv., capacities and equation from SCIS/IN 3-port feature
Average								***$ 22.95***	

Equipment	Material $	Discount Rate	E&I	Total	Capacity (per CCS)	$/Unit	Utilization	Utilized Investment	
DMS									
Class Modem Card	$ 5,490.00	89%	$ 50.82	$ 654.72	1,280	$ 0.51	85%	$ 0.60	Inv. from SCIS/IN Investment table; capacities from SCIs/IN default Table

Notes:

BS 5E Announcement Investments are for 8 channels with no trunk; SCIS is for one channel with trunk
BS 5E Capacity appears to be 36 CCS per trunk * 8 channels; AT&T capacity is 36 CCS per trunk * 32 fanouts per announcement
BS used investment for an 5E SAS announcement from its Engineering org., but incorrectly used the capacity from SCIS/IN for an RAF announcement.
The SAS has a cpacity of 638 CCS.
Capacity of 5E DSU@/RAF is ~450 CCS - SCIS uses conservative 300 CCS, so no utilization adjustment should be applied
BS DMS Announcement investment appears for announcement machine with multiple channels
SCIS DMS announcement investment for one channel with trunk
BS conference circuit investments and capacities include 10 3 port or 5 6 port circuits; SCIS investments are for 1 circuit
SCIS capacities are already average utilizations, not capacity.
SCIS/IN default table call waiting "capacities" are average utilizations, not capacities
BS filed call waiting tone investment could not be identified in the SCIS/IN investment tables
Capacity for CLASS Modem Resource Card is lines, not CCS as shown in BS Hardware Study
SCIS/IN does not have capacity in default table, but BS's capacity is incorrect.
A CMR card is required for each LGC. And LGC handles 16-20 DSA links. Each LCM requires 2-6 DSA links.
LCMs per LGC therefore is min 16/6=2 to 20/2=10.
Each LCM handles 640b line cards
Lines per LGC is 640*2 = 1280 to 640*10=6400
Therefore lines per CMR is 1280 to 6400

POD Item No. 141
Attachment No. 1
Page 1 of 2

Feature	Processor	Line	Hardware	SS7
3-way Calling	0.5		0.5	
CF Variable	0.3	0.3		
Speed calling (1)	1	1		
Speed calling (2)	1	1		
CW	0.5	0.5	0.5	
RACF	0.04	0.04	0.04	
Cancel CW	0.1	0.1		
Automatic Callback	1.5	1.5	1.5	1.5
Automatic Recall	0.5	0.5	0.5	0.5
Caller ID – Basic (Number, only)	1.6	1.6		
Calling Number Delivery Blocking	0.15	0.15		
Distinctive Ringing	1.25	1.25	1.25	1.25
COT	0.01	0.01	0.01	
Selective Call Rejection	0.8	0.8	0.8	
Selective Call Forwarding	0.02	0.02	0.02	0.02
Selective Call Acceptance	0.4	0.4	0.4	0.4
MLH	6			
CFBL	0.4			
CFDA	0.4			
RCF	0.1			
CT	0.25		0.25	
Speed Calling	1	1		
Manual Line Service	0.4			
Distinctive Ringing	1			
CH	0.2			
Semi-restricted	0.02			
Toll Restricted	0.02	0.02		
Call Pick-up	0.13	0.13		
Directed Call Pick-up (w/barge-in)	0.19	0.19		
Directed Call Pick-up (w/obarge-in)	0.5	0.5		
Trunk Answer	0.6	0.6		
Message Detail Recording	1	1	1	
Fixed Night Service	2		2	
Att'd Camp-on	1		1	
CW Lamps	5		5	
Fixed Night Service - CF	2			
Att'd ID	1			
Att'd Conference	0.5	0.5	0.5	
UCD	10.8			
Queuing	1.2			
ARS	3.53			
Deluxe ARS	4.41	4.41		
SFGs	0.35			
Selective Control of Facilities	1.47	1.47	1.47	
Facility Restriction Level	1			

POD Item No. 141
Attachment No. 1
Page 2 of 2

Feature	Processor	Line	Hardware	SS7
MWI	0.45			
ACR	0.2	0.2		
Calling Name/Number Delivery	1.6		1.6	1.6
Dial CW	0.2	0.2		
Teen Service	1.25			
Voice/Data Protection	0.1	0.1		
Code Restriction	0.05	0.05		
Call Park	0.28			
Selective Class of Call Screening	1.47	1.47		
Star 98 Access to Voice Mail	1	1		
CW Deluxe	0.3		0.3	
Average	1.1	0.7	1.0	0.9
Count	56	31	19	6
Average Number of Features per Line	4	2.2	1.4	0.4
Usage per Line	*4.5*	*1.6*	*1.3*	*0.4*

MDF Material Price Study Description	Documentation\Section 1	Narative.doc (Section 4, Item 7)

Request No. 13: Please provide all documents, analysis used to derive the inputs referenced in AT&T's First Interrogatory No. 43.

Response: Attached are three EXCEL files used to determine the quantity of analog lines to use in SCIS/MO. Those files are FLYE98lines.xls (Attachment No. 1) and FL_lines_d&a.xls (Attachment No. 2) and Attachment 3.

Request No. 14: The following production requests are in reference to the Data Dictionary:

a) "Equivalent Business Days" Input: Please provide all supporting documents, analysis and calculations for the statement that "each non-business day has one half the usage of a business day."

b) "Call Completion Ratio" Input: Please provide all documents and calculations referenced in AT&T's First Interrogatory No. 45b.

c) "Average Non-Conversation Time" Input: Please provide original 1996 results, all documents and calculations to trend the results referenced in AT&T's First Interrogatory No. 45c.

d) "Average Number of Minutes/Call" Input: Please provide all documents referenced in AT&T's First Interrogatory No. 45d.

e) "(5ESS) BH CMP Processor Call Handling Capacity" Input: Please provide the Lucent document dated 06/04/99 and any other documents supporting this input.

f) "(5ESS) % of CMP Processor Time Available for Call Processing" Input: Please provide the Lucent document dated 11/99 and any other documents supporting this input.

g) "(5ESS) SM Processor EPHCs per Call Setup" Input: Please provide the Lucent practices and any other documents supporting this input.

h) "(5ESS) SM and SM-2000 Processor EPHC Capacity" Input: Please provide memo dated 01/04/00 and any other documents supporting this input.

i) "(DMS) BH Processor Call Handling Capacity (SN70EM) and % of SN70 Processor Time Available for Call Processing" Input: Please provide all documents, analysis and calculations supporting this input.

j) "Average Busy Season Busy Hour CCS per Circuit" Input: Please provide the CCS data that is expected to be available in the April/May, 2000 timeframe.

k) "Central Office Feature Inputs" Input: Please provide all documents, analysis and calculations from Network supporting the Holding Times per Feature.

l) "Average Busy Hour Calls per Feature" Input: Please provide the UNE Feature Usage Study shown as the source of this data. Include all supporting documents, analysis and calculations.

m) "Equivalent Busy Hour Call Attempts" Input: Please provide the documents, analysis and calculations used to derive the ratio for switch feature real-time to POTS call real-time. Include the source documents shows as the SCIS/IN real-time tables and the vendor capacity management tools.

Response:

a) The statement that "each non business day has one half the usage of a business day" is a study assumption, accepted as an industry-standard, used in calculating the equivalent business days input. See the following section of the CD-ROM provided in BellSouth's April 17, 2000 Cost Study Filing in this proceeding:

Documentation\Xappendix\Appendix D\SST_IDC.doc, page 133.

b) Attachment No. 1 provides the data used to trend the call completion ratio input.
c) The data in Attachment No. 1 was used to trend the average non conversation time input.
d) The average number of minutes per call input used for the Florida study was developed from a mechanized reporting system based on a sample of individual customer call detail records. There are no paper records readily available.
e) The requested Lucent document dated 08/04/99 is attached as Attachment No. 2. This document is proprietary and is being produced subject to the provisions of the nondisclosure agreement executed by AT&T.
f) The requested Lucent document dated 11/99 is attached as Attachment No. 3. This document is proprietary and is being produced subject to the provisions of the nondisclosure agreement executed by AT&T.

g) Section 2.1 of the Lucent document dated 11/99, as provided in response to item 14(f), contains support for this input.
h) See Attachment No. 4. This information is proprietary and is being provided subject to the provisions of the nondisclosure agreement executed by AT&T.
i) See Attachment No. 5. This information is proprietary and is being provided subject to the provisions of the nondisclosure agreement executed by AT&T.
j) The requested data is not available.
k) The holding time input is only used for hardware-related features. Inputs formerly used in retail cost studies were averaged to determine the holding times for these features.

The computation follows: DECLASSIFIED

Equipment	Holding Time (Sec)
30-Second Announcement	24
60-Second Announcement	48
DSU2/RAF/BRCS	24
6-port Conference Circuit	180
3-port Conference Circuit	180

The average of the inputs displayed in the chart rounds to 90 seconds.

l) In order to obtain average usage data, 56 features (over 20% of the unique switch features) were reviewed. These features were analyzed as to which switch resources were required to process the feature call, processor, line, hardware, and/or SS7. BellSouth's retail study inputs (busy hour calls) were then input into a matrix. This allowed the development of an average call demand by type of switch resource required. The next step was to consider the number of features an average user would utilize, which BellSouth determined to be 4 features used by a typical customer. The calculations are displayed in the chart provided in Attachment No. 6.
m) This input is provided as a potential modification to the assumption that each vertical feature uses realtime equivalent to that of a call setup. This input is set to 100%.
The processor realtimes for the SCIS/IN switch features are available from the SCIS/IN Realtime Tables. These Realtime Tables are part of the Telcordia™ Switching Cost Information System "SCIS/MO and SCIS/IN for BellSouth" Release 2.6.1

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REQUEST: In reference to page 27, lines 21 and 22, please confirm or deny whether the statement "the typical end user customer utilizes 4 vertical features" means that the customer uses four vertical features in the busy hour.

RESPONSE: BellSouth denies that "the typical end user customer utilizes 4 vertical features" means that the customer uses four vertical features in the busy hour. The meaning of this statement, as explained in Mr. Page's testimony, is that the typical customer has on average 4 features that he uses regularly. The number of busy hour calls per vertical feature varies by feature, but averages approximately 1.1 calls for the set of features that BellSouth reviewed. Therefore it can be concluded that the typical user activates about 4.5 features in the busy hour. BellSouth believes this number is reasonable because it includes both originating and terminating features.

RESPONSE PROVIDED BY:

Joseph H. Page
Manager
675 West Peachtree Street
Atlanta, Georgia 30375

b) The matrix has been previously provided in response to AT&T's 1st Production of Documents in this Docket, item 14(l). That list clearly indicates, for each feature, the quantity of busy hour usage generated by that feature in each feature investment category, i.e., Processor, Line, Hardware, or SS7.

c) This data was obtained by a BellSouth Product Management study of BellSouth's Complete Choice™ retail product. This study is provided in Attachment No. 1. This information is proprietary and is being provided subject to the provisions of the nondisclosure agreement executed by AT&T.

Request No. 33: Regarding STT-Usage Study WP10 Inputs:

a) "% of all lines Using at least one CLASS Modem Feature" - Please provide all documentation, analysis for this input value

b) "% of all lines with Remote Call Forwarding" - Please provide all documentation, analysis for this input value.

Response: a) Attachment No. 1 provides the data requested. This information is proprietary and is being provided subject to the provisions of the nondisclosure agreement executed by AT&T.

b) This input value (0.4%) was computed as follows:

Item	Description	Value
A	Number of Lines with Remote Call Forwarding per Central Office	65
B	Average Number of Lines per Office	16,191
C	Percent of All Lines With Remote Call Forwarding (A / B)	0.4%

Item A was obtained from a BellSouth Number Portability cost study performed in 1996. Attachment No. 2 provides the relevant cost study documentation. This information is proprietary and is being provided subject to the provisions of the nondisclosure agreement executed by AT&T. Item B is included in the response to POD Item No. 33a above.

BellSouth Telecommunications, Inc. Features

POD Item No. 33
Attachment No. 1
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	A	B	C
1	Florida		
2	Back-up for CLASS Modem Card Penetration		
3	Study Period: 2000-2002		
4			
5			
6	Item/Description	Source	Amount
7	**Lines per Office w/ CND**	Network	
8	Residence		12,000
9	Business		900
10			
11	**Percent Distribution**		
12	Residence		70%
13	Business		30%
14			
15	**Melded Input - Lines per Office**	Ln8*Ln12+Ln9*Ln13	8,699
16			
17	**Average Number of Lines per Office**	SCIS/MO Inputs	16,191
18			
19	**Penetration of CND**	Ln15/Ln17	**54%**