A COMPUTER PROGRAM FOR OPTIMIZING LONG HAUL TELEPHONE NETWORKS FOR LEAST. (U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH S A DRAPER 1986

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A Computer Program for Optimizing Long Haul Telephone Networks for Least Cost Via Common Carrier Wide Area Telephone Service (WATS)

Thesis directed by Professor Floyd K. Becker

With the breakup of American Telephone and Telegraph (AT&T) nearly two years old, many businesses and government agencies are just starting to feel the impact. Equal access, the process of making four wire direct trunk connections available for all long haul common carriers to the local telephone switch, is now being offered incrementally throughout the country. People are being asked to choose the carrier they want to carry their traffic.

Businesses and governments have had WATS available as a cost saving measure even before the divestiture of AT&T; however, divestiture has created additional savings possibilities for WATS through competition. A tool is needed for businesses and governments to make an informed decision. It would be simple if one carrier was the cheapest for all network configurations, but that is not the case. The least costly alternative is different for each specific network configuration and usage pattern of the customer.

Various algorithms have been designed for this purpose; however, the real test of their worth as decision making tools is the development and use of a final product. The purpose of this thesis is to develop
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A COMPUTER PROGRAM FOR OPTIMIZING
LONG HAUL TELEPHONE NETWORKS FOR LEAST COST
VIA COMMON CARRIER WIDE AREA TELEPHONE SERVICE (WATS)

by

Stephen A. Draper
B.M., Berklee College of Music, 1979

A thesis submitted to the
Faculty of the Graduate School of the
University of Colorado in partial fulfillment
of the requirements for the degree of
Master of Science
Program in Telecommunications
1986
This Thesis for the Master of Science Degree by
Stephen A. Draper
has been approved for the
Program in Telecommunications
by

Floyd K. Becker
Robert J. Williams
Michael J. Chase

Date 26 Dec 1985
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Chapter I introduces the goals and criteria used in development of the software. Chapter II identifies the assumptions used in the algorithms along with data for each carrier's method of calculating charges. Chapter III contains a step by step view of screen displays, how to use the program, required data input, and expected output. Chapter IV contains an example of a network configuration, results from the program, and how the program can be used in making a management decision to decrease costs and/or improve service. Chapter V contains conclusions.
To Dottie, my wife

and Joshua, Benjamin, Michael,
Noah, and Abraham, my children
ACKNOWLEDGEMENTS

Laurie Cullip of AT&T, Cindy Schmidt of MCI, Pat Smith of GTE SPRINT, and Carol Pettibone of SBS Skyline provided key data and information on customer billing procedures and calculation of circuit usage. John Nolan of the 1837 Information Systems Squadron was very helpful in providing phone bills for Lowry Air Force Base, Colorado.

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Finally, a special thanks to my wife, Dottie, and my children for their patience and forbearance during a difficult time.
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CHAPTER I

INTRODUCTION

Purpose

The purpose of this thesis is to develop an applications software to optimize a common carrier long haul telephone communications network for least cost utilizing Wide Area Telephone Service (WATS). The software is designed to be menu driven and requires no computer programming expertise by the user. The software is also self correcting; i.e., only valid data entries are accepted with the user receiving instructions on how to provide valid entries.

Goals and Criteria

1) A person with no computer experience should be able to use the program.

2) The user should not have to consult other documentation to use the program; i.e., explanatory information about each aspect should be provided on the display screen as the program progresses through each level of the menu.
3) The program should accept only valid data entries. It should ensure data is valid before computations are attempted.

4) The program should contain a provision to easily update all carriers' rate tables and criteria by loading from a floppy disk. The date of the rate tariff on file with the Federal Communications Commission (FCC) that is being utilized will be displayed when the program is started. When new rate tables are loaded, the date will be updated.

5) The user should have the option of seeing the results on the screen, having them printed, or saving them for later use.

6) Output should be in individual reports to enable a communications manager to quickly make an informed decision on the least cost alternative for long distance common carrier WATS.
CHAPTER II

ALGORITHM

Definitions

A. Access Charge: The monthly amount which the local telephone company charges to use its facilities to connect to the long distance carrier. This reimburses the telephone company for circuit usage attributed to long distance use.

B. Band: A geographic service area for WATS extending from the originating location of the service. Band 0 is intrastate service only and can only be provided by the local telephone company. Band 1 includes the contiguous states but does not provide Band 0 service. Bands 2 through 5 extend service further from the originating location with corresponding increases in usage charges. Band 5 service includes the entire continental United States. Any band of service includes all lower bands of coverage (except Band 0). Band 6 also includes Alaska and Hawaii.
C. Busy Hour: The continuous 60 minute period during the day when maximum calling volume occurs.

D. Carried Traffic: The amount of time a circuit or equipment is busy. Carried traffic equals connected traffic plus processing time.

E. Connected Traffic: The amount of time the origin and destination can communicate with each other. This is the total time both parties are off-hook. Bills received from common carriers are figured using connected traffic.

F. Connection Charge: A one time charge by the long distance carrier to establish service. The amount is based on the number of lines being provided.

G. Direct Distance Dialing (DDD): A method of calling long distance without operator assistance. Business and residential customers pay the same rates. Each call is calculated according to distance, time of day, and length of the call.

H. Erlang: A measure of telephone traffic as 60 minutes or one hour of equipment use.

I. Grade of Service: The probability that a caller will receive a busy signal on the first attempt. It is designated by a "P" plus a number. For example, "P.03" means a 3 percent probability of
a busy signal. Other conventions express it as "P03" which signifies the same thing. This program will use the latter.

J. Off-hook: Opening the loop between the user and the central office by lifting the receiver off the telephone.

K. Off-net: Utilizing AT&T facilities for any part of a connection.

L. On-hook: Closing the loop between the user and the central office by replacing the receiver on the telephone.

M. On-net: No AT&T facilities are utilized for any part of a connection.

N. Processing Time: The time used to establish and terminate a connection. Circuits are tied up during this time even though no actual connection or communication can occur. For this reason, connection time on a single line can never equal one erlang or 60 minutes.

O. Station Message Detail Recording (SMDR): A device to measure all user calling activity. Data provided includes date, time, origin, destination, and duration of the call. The duration includes some of the processing time.

P. Trunk: A communications path between switches.
Q. Usage Charge: The amount per minute or hour of connection time charged by the carrier for the connection.

R. Wide Area Telephone Service (WATS): A service to high usage business or government users with reduced rates per minute of connection. Service areas are identified by bands with all locations connected on a given line charged at the same rate. For example, all calls made on a Band 4 line would be charged at the Band 4 rate even though some destinations are in the lower rate Bands 1, 2, or 3.

Assumptions

This program is designed in order to accommodate many types of models one of which a particular network may approximate. Because the program operates through look-up tables, changing algorithms is a simple matter of loading a new look-up table for the grade of service. The program does not calculate costs of blocked calls which are redirected to DDD trunks. For purposes of this thesis, the poisson distribution is used for the look-up table because it is simple, widely used, and in many cases the results are close to those given by Erlang B and Erlang C. In Erlang B, calls are assumed to arrive in a random order so as to approximate an exponential distribution. Blocked calls are cleared from the system
and do not return; i.e., their is no queue so the caller must redial in order to make the call. This is especially true of military installations because accountability is needed to prevent abuses of the system. Erlang B is also accurate in an automatic route selection system which allows blocked calls to immediately try the next higher band.

In systems where blocked calls are not cleared from the system and immediate overflow to the next higher band is not available, Extended Erlang B should be used. In systems where an infinite queue is available, Erlang C should be used. For unusual situations where a peaked or smooth traffic pattern exists, other formulas must be used. Additional details on traffic models are in Appendix D.

This thesis assumes that the average length of each call exceeds one minute. The reason for this is that most common carriers charge a minimum time of one minute times the number of calls. Telephone voice traffic will most always exhibit this behavior. The average would fall below one minute if most traffic was short data inquiries to a computer such as bank accounts. Even then, the user can still use the program by entering his time as one minute times the number of calls.

In optimizing the network for lowest cost, the algorithm uses as a default value, the worst grade of service for any of the customer's existing lines. If the
customer is satisfied with the existing grade of service, there is no need to pay for any better. If the customer is not satisfied with the present grade of service, a different one can be entered.

The network is optimized according to the busy hour service requirement of the customer. If the busy hour service is adequate, all other times will be better than the busy hour.

**AT&T Costs**

AT&T calculates each WATS call to the nearest tenth of a second for the total time that both parties are off-hook. Charges are based on band, time of day, and the total accumulated time charged so far that month. The first 15 hours of use are charged at the highest rate, the next 25 hours at a lower rate, the next 40 hours at a still lower rate, and anything over 80 hours total use at the lowest rate. The hours for all lines of a given band are averaged before determining the charges. For example, if one had two Band 2 lines, one with 50 hours/month of use and another with 100 hours/month of use, charges would be calculated for two lines, each with 75 hours/month of use. This is done for usage during each of three time periods:

1) **DAY** - 8:00 A.M. to 5:00 P.M. Monday through Friday.
2) EVENING - 5:00 P.M. to 11:00 P.M. Sunday through Friday.

3) NIGHT/WEEKEND - 11:00 P.M. to 8:00 A.M. Sunday through Friday and all day Saturday.

AT&T has no minimum monthly usage charge. The access charge is $37.65/month for each outbound WATS line and $42.80/month for each inbound WATS line. Connection charges are $222.00 for the first line and $123.00 for each additional line. AT&T is the only carrier with true incoming WATS; i.e., the user dials "1-800-XXX-XXXX."

**MCI Costs**

MCI uses the same procedure as AT&T except each call is rounded to the nearest six second interval. MCI has a minimum usage charge of $75.00 per line. Access charge is $100.00/month per line. Connection charge is $120.00 per line. MCI also has separate on-net and off-net rates. Unless the customer knows his actual calling pattern through use of a detail call recording device, default values of 80% on-net and 20% off-net are used for calculating costs in the algorithm. The customer can enter his own values if he chooses. For example, a stock brokerage would probably have close to 100% of his calls on-net (large metropolitan cities); whereas, a farm implement company would be just the opposite.
GTE SPRINT Costs

SPRINT uses the same procedure as MCI; however, its crossover points for reduced rates occur at 40, 70, and 100 total usage hours/month. SPRINT has no minimum usage charge. Access charge is $100.00 per line. Connection charge is $105.00 per line. SPRINT also has a feature which AT&T and MCI do not. SPRINT bills for the exact band of the call, not the band of the trunk utilized. All calls can travel over a single line (provided busy hour traffic permits this) and each call will be billed according to the band of the destination. SPRINT breaks out its calls at the switch location and routes them over separate WATS band lines.

SBS Skyline Costs

SBS Skyline does not have separate bands as the other carriers do. It has a four tier structure as follows:

1) TIER I - Major metropolitan areas.
2) TIER II - Includes additional frequently called cities.
3) TIER III - Remainder of contiguous U.S., Puerto Rico, and the Virgin Islands not covered by Tier I, II, or IV.
4) TIER IV - Equivalent to WATS Band 1 coverage.

All traffic regardless of destination travels over the same channel. There are only two time of day
billing periods: day, 8:00 A.M. to 5:00 P.M., and all others. There is a minimum usage charge of $400.00 per channel if usage is below 50 hours/channel/month. Connection charge is $105.00 per line. Access charge is based on the distance from the customer to the SBS Skyline access point as follows:

<table>
<thead>
<tr>
<th>Distance</th>
<th>Access Charge</th>
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<tr>
<td>0-1 Mile</td>
<td>$85.00/month</td>
</tr>
<tr>
<td>2-15 Miles</td>
<td>$100.00/month</td>
</tr>
<tr>
<td>16-25 Miles</td>
<td>$125.00/month</td>
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<tr>
<td>26-35 Miles</td>
<td>$150.00/month</td>
</tr>
<tr>
<td>36-50 Miles</td>
<td>$175.00/month</td>
</tr>
<tr>
<td>Over 50 Miles</td>
<td>$12.00/month plus other common carrier charges</td>
</tr>
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Table 2-1 provides a summary of all four carriers.

Overview

The name of the program is OPTICOM. There are five menu options for the user to choose in the main menu:

1) Determine Least Cost WATS Carrier for Current Network.
2) Optimize Current Network for WATS Carrier.
3) Load New Carrier Rate Tables.
4) View Existing Result Files.
5) Delete Existing File.
### TABLE 2-1

Comparison of Common Carrier Rate Structures

<table>
<thead>
<tr>
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<th>AT&amp;T</th>
<th>MCI</th>
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<th>SBS</th>
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<tr>
<td>Billing Period</td>
<td>1/10</td>
<td>6</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Minimum Use</td>
<td>NONE</td>
<td>$75</td>
<td>NONE</td>
<td>$400 *</td>
</tr>
<tr>
<td>Access/Out</td>
<td>$37.65</td>
<td>$100</td>
<td>$100</td>
<td>**</td>
</tr>
<tr>
<td>Access/In</td>
<td>$42.80</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Connection 1st</td>
<td>$222</td>
<td>$120</td>
<td>$105</td>
<td>$105</td>
</tr>
<tr>
<td>2nd</td>
<td>$123</td>
<td>$120</td>
<td>$105</td>
<td>$105</td>
</tr>
<tr>
<td>Use Reduction</td>
<td>15</td>
<td>15</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>(Hours)</td>
<td>40</td>
<td>40</td>
<td>70</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>80</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td>Separate Band</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Trunks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time of Day Periods</td>
<td>Day</td>
<td>Day</td>
<td>Day</td>
<td>Day</td>
</tr>
<tr>
<td></td>
<td>Eve</td>
<td>Eve</td>
<td>Eve</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>Night</td>
<td>Night</td>
<td>Night</td>
<td></td>
</tr>
<tr>
<td>Net Structure</td>
<td>N/A</td>
<td>2 Rates</td>
<td>2 Rates</td>
<td>4 Tiers</td>
</tr>
</tbody>
</table>

* If less than 50 hours.

** $85 to $175 depending on distance.
Determine Least Cost WATS Carrier for Current Network

This option will use the information provided on the customer's present monthly phone bill to calculate what the cost would be for all four carriers. This does not optimize his network; it uses his existing network configuration. For SBS Skyline, the number of channels is equal to the total number of AT&T lines in order to keep the average grade of service equivalent for comparison purposes.

Optimize Current Network for WATS Carrier

This option will utilize information obtained from a detail call recording device to optimize a network for each carrier. The network will have been previously entered in option 1 above and stored. The optimum network configuration for each carrier will be separately provided. The algorithm calculates the cost for all possible configurations and saves the lowest cost and configuration for each carrier. The program is written for up to Band 6. The maximum number of possibilities occurs when there is Band 6 traffic. The user either does or doesn't have each of the other five band lines so the maximum number of possibilities is $2^5$ or 32.

Load New Carrier Rate Tables

This option enables all carrier rate tables, parameters, and minimums to be updated when new ones are filed with the FCC. This is done from a floppy disk.
View Existing Result Files

This option allows the user to either view or have printed the results previously calculated in options 1 and 2 above.

Delete Result File

This option allows the user to delete results previously calculated in options 1 and 2 above.
CHAPTER III

USING THE OPTICOM PROGRAM

Requirements

OPTICOM is written in the dBASE III language for use on any IBM PC compatible computer with a minimum of 384K of RAM and two 360K floppy drives or one hard disk and one floppy drive. It can be used with as little as 256K of RAM; however, new carrier rate tables cannot be loaded then. Since the program has not been compiled, the user must already have the dBASE III software. The program is run with the dBASE III software in either the hard disk or floppy drive A and the OPTICOM floppy in drive B. A printer is required to obtain hard copy results.

Beginning the Program

When dBASE III is first started, the screen appears as in Fig. 3-1. With the OPTICOM floppy in drive B, type "DO B:OPTICOM" as shown in Fig. 3-2 and then press <Return>. <> will be used to denote keys on the keyboard. The screen will appear as in Fig. 3-3. From here on, using the program is just a matter of following
the directions on the screen. The program will accept valid entries only. The screen will stay the same until a valid entry is made. The main menu for OPTICOM appears in Fig. 3-4.

dBASE III version 1.10 IBM/MSDOS ***
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dBASE, dBASE III and ASHTON-TATE are trademarks of Ashton-Tate

Press the F1 key for help
Type a command (or ASSIST) and press the return key (<--)
.

FIGURE 3-1
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Press the F1 key for help
Type a command (or ASSIST) and press the return key (<--)

. DO B:OPTICOM

FIGURE 3-2
OPTICOM is a software package designed to aid you, the communications manager in making decisions to optimize your long haul communications network. This program is currently limited to telephone traffic; however, future versions may be expanded to include data traffic as well. The program is menu driven so you needn't worry if you are uncomfortable with computers or programming. Each option, when selected, will provide a description along with the information you are required to provide. If you need a different selection, you can return to any level of the menu to make a different selection. Press <Esc> any time you wish to terminate the OPTICOM program.

Press any key to continue...

FIGURE 3-3

MAIN MENU

- 1 - DETERMINE LEAST COST WATS CARRIER FOR CURRENT NETWORK
- 2 - OPTIMIZE CURRENT NETWORK FOR WATS CARRIER
- 3 - LOAD NEW CARRIER RATE TABLES
- 4 - VIEW EXISTING RESULT FILES
- 5 - DELETE EXISTING FILE

- 0 - FINISHED

CHOOSE ONE:

FIGURE 3-4
Option 1 - Determine Least Cost WATS Carrier for Current Network

Upon selecting this option, the screen appears as in Fig. 3-5. The default for continuing is "N." Any response other than "Y" will return to the main menu. Additional explanatory information appears as in Figs. 3-6 and 3-7. Fig. 3-8 begins the process of entering data. Entries can be corrected by using the <Back Space> or <Del> keys and retyping correct values. Also, the cursor can be positioned by using the directional arrow keys on the numerical keypad. If the entries are valid, the screen will then appear as in Fig. 3-9. If the entries are not valid, the screen will again appear as in Fig. 3-8 with a message to reenter the data. The program automatically calculates the SBS Skyline Tier 4 percentage after the other values are entered.

Data entry for each WATS band is shown in Figs. 3-10 and 3-11. These continue until the last entry is made. The screen then appears as in Fig. 3-12. In Fig. 3-13, corrections, deletions, or additions can be made before calculations are performed. Instructions appear at the top of the screen ("^" means the <Ctrl> key). Once all data is correct, the user presses <Ctrl><End> and the screen appears as in Fig. 3-14. Fig. 3-15 appears when all calculations are complete.
DETERMINE THE LEAST COST WATS CARRIER

This option will determine which carrier is the least costly for your existing network. The carriers used are MCI, SPRINT, SBS Skyline, and AT&T. You must provide information on your current configuration for each line as follows:

1. Average hours billed each month.
2. WATS band.
3. WATS in or out.
4. Percentage of calls to metropolitan areas.

DO YOU WISH TO CONTINUE WITH THIS OPTION (Y/N)? N

FIGURE 3-5

MCI and SPRINT have two rate tables: one for calls that utilize only their facilities, such as large cities, and one for calls that must also utilize AT&T facilities, such as rural areas. The default values for MCI and SPRINT are 80% ON-NET (metropolitan) and 20% OFF-NET (rural).

Press any key to continue...

FIGURE 3-6
SBS Skyline has all WATS band calls over a single access channel rather than a separate line for different bands of service. Consequently, their rate tables take into account where the destination of the call is for billing purposes. SBS rates are based on a four-tier structure as follows:

TIER 1 - Major metropolitan areas.
TIER 2 - Includes additional frequently called cities.
TIER 3 - Includes remainder of contiguous US, Puerto Rico, and the Virgin Islands.
TIER 4 - Equivalent WATS band 1 coverage of bordering states.

Default values for SBS Skyline are 65%/20%/10%/5% for TIERs 1 through 4 respectively. If your calling patterns are unusual, then enter different values. For example, a stock brokerage would have close to 100% of its calls to metropolitan areas and a farm implement company mostly to rural areas.

Press any key to continue...

--- FIGURE 3-7 ---

PRESS RETURN KEY TO USE DEFAULT VALUES OR ENTER YOUR OWN.

MCI & SPRINT METROPOLITAN PERCENTAGE: 80
SBS SKYLINE TIER 1: 65
SBS SKYLINE TIER 2: 20
SBS SKYLINE TIER 3: 10

--- FIGURE 3-8 ---
PRESS RETURN KEY TO USE DEFAULT VALUES OR ENTER YOUR OWN.

MCI & SPRINT METROPOLITAN PERCENTAGE: 80
SBS SKYLINE TIER 1: 65
SBS SKYLINE TIER 2: 20
SBS SKYLINE TIER 3: 10
SBS SKYLINE TIER 4: 5

Press any key to continue...

FIGURE 3-9

ENTER INFORMATION FOR EACH WATS BAND YOU CURRENTLY HAVE.

WATS BAND (1 THRU 6):

FIGURE 3-10
ENTER INFORMATION FOR EACH WATS BAND YOU CURRENTLY HAVE.

WATS BAND (1 THRU 6): 1

IS THIS AN OUT WATS (T/F)? T

NUMBER OF LINES: 2

AVERAGE HOURS BILLED PER LINE PER MONTH:
DAY: 45.00
EVENING: 12.00
NIGHT/WEEKEND: 5.00

IS THIS YOUR LAST ENTRY (T/F)? F

FIGURE 3-11

ENTER INFORMATION FOR EACH WATS BAND YOU CURRENTLY HAVE.

WATS BAND (1 THRU 6): 1

IS THIS AN OUT WATS (T/F)? T

NUMBER OF LINES: 2

AVERAGE HOURS BILLED PER LINE PER MONTH:
DAY: 45.00
EVENING: 12.00
NIGHT/WEEKEND: 5.00

IS THIS YOUR LAST ENTRY (T/F)? F

DOUBLE CHECK YOUR ENTRIES AND MAKE CORRECTIONS ON THE NEXT SCREEN.
PRESS <Ctrl><End> WHEN FINISHED.
Press any key to continue...
Record No. 1 NOWNET

<table>
<thead>
<tr>
<th>Field: Home End</th>
<th>Page: PgUp PgDn</th>
<th>Field: ^Y</th>
<th>Abort</th>
<th>Esc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pan: ^&lt;^&gt;</td>
<td>Record: ^U</td>
<td>Set Options ^Home</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Band Out</th>
<th>Quantity</th>
<th>Use Day</th>
<th>Use Eve</th>
<th>Use Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 T</td>
<td>2</td>
<td>45.00</td>
<td>12.00</td>
<td>5.00</td>
</tr>
<tr>
<td>3 T</td>
<td>1</td>
<td>89.00</td>
<td>45.00</td>
<td>12.00</td>
</tr>
<tr>
<td>5 T</td>
<td>3</td>
<td>123.00</td>
<td>33.00</td>
<td>26.00</td>
</tr>
<tr>
<td>5 F</td>
<td>1</td>
<td>67.00</td>
<td>2.00</td>
<td>2.00</td>
</tr>
</tbody>
</table>

FIGURE 3-13

WAIT A MINUTE WHILE I DO SOME FIGURING.

FIGURE 3-14

-1- DISPLAY RESULTS ON SCREEN
-2- PRINT OUT THE RESULTS
-0- FINISHED

CHOOSE ONE:

FIGURE 3-15
Suboption 1 - Display Results on Screen

Explanatory information appears as in Fig. 3-16 followed by reports of the results. If there are outgoing WATS lines, five reports will be generated as in Figs. 3-17 through 3-22. The percentage of on-net/off-net traffic entered appears at the top of each MCI and SPRINT report and the SBS Skyline percentages appear in that report. Fig. 3-22 shows a summary of all the carriers' outgoing WATS cost in order to select the lowest cost carrier for the current network. If there are incoming WATS lines, one report will be generated as in Fig. 3-23. Upon completion, the menu again appears as in Fig. 3-24.

A report summary will be displayed for each carrier plus a comparison report of all the carriers. The display will wait between reports. Press <Ctrl><S> to stop the scrolling. Press <Ctrl><S> again to resume.

Press any key to continue...
### AT&T OUT MATS

#### MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>Day</th>
<th>Hrs/Line</th>
<th>Eve Hrs/Line</th>
<th>Night Hrs/Line</th>
<th>Night Access Charge</th>
<th>Total Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>45.00</td>
<td>12.00</td>
<td>275.52</td>
<td>61.40</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>89.00</td>
<td>45.00</td>
<td>494.70</td>
<td>77.28</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>123.00</td>
<td>33.00</td>
<td>1191.06</td>
<td>532.74</td>
</tr>
<tr>
<td><em><strong>Total</strong></em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>671.42</td>
</tr>
</tbody>
</table>

Press any key to continue...

Access charge is $37.65 per line.
Connection charge is $222.00 for the first line and
$123.00 for each successive line.
Total connection charge for this configuration is $837.00.

---

### MCI OUT MATS

#### MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>Day</th>
<th>Hrs/Line</th>
<th>Eve Hrs/Line</th>
<th>Night Hrs/Line</th>
<th>Night Access Charge</th>
<th>Total Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>1122.78</td>
<td>12.00</td>
<td>270.58</td>
<td>60.08</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1111.46</td>
<td>45.00</td>
<td>477.46</td>
<td>75.60</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>4826.25</td>
<td>33.00</td>
<td>1149.96</td>
<td>521.04</td>
</tr>
<tr>
<td><em><strong>Total</strong></em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>666.72</td>
</tr>
</tbody>
</table>

Press any key to continue...

Access charge is $100.00 per line.
Connection charge is $120.00 per line.
Total connection charge for this configuration is $720.00.
Minimum usage charge is $75.00 per line exclusive of access charges.

---

**Figure 3-17**

---

**Figure 3-18**
### SPRINT OUT VATS

**MONTHLY COST SUMMARY**

<table>
<thead>
<tr>
<th>Tier</th>
<th>Tier Lines</th>
<th>Day Hrs/ Line ($)</th>
<th>Day Hrs/ Line ($)</th>
<th>Eve Hrs/ Line ($)</th>
<th>Night Hrs/ Line ($)</th>
<th>Night Access ($)</th>
<th>Total ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>65</td>
<td>99.37</td>
<td>4511.63</td>
<td>29.03</td>
<td>1149.72</td>
<td></td>
<td>5661.35</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>18.27</td>
<td>1523.66</td>
<td>8.93</td>
<td>418.08</td>
<td></td>
<td>1941.74</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>9.13</td>
<td>929.19</td>
<td>4.47</td>
<td>281.72</td>
<td></td>
<td>1210.91</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>4.57</td>
<td>414.78</td>
<td>2.23</td>
<td>131.86</td>
<td></td>
<td>546.64</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>91.33</strong></td>
<td><strong>7379.26</strong></td>
<td><strong>44.67</strong></td>
<td><strong>1981.38</strong></td>
<td></td>
<td><strong>9360.64</strong></td>
</tr>
</tbody>
</table>

Press any key to continue...

**Figure 3-19**

Access charge is $75.00 per line.
Connection charge is $75.00 per line.
Total connection charge for this configuration is $450.00.
Press any key to continue...

---

### SBS SKYLINE OUT VATS

**MONTHLY COST SUMMARY**

<table>
<thead>
<tr>
<th>Tier</th>
<th>Tier Lines</th>
<th>Day Hrs/ Line ($)</th>
<th>Day Hrs/ Line ($)</th>
<th>Eve Hrs/ Line ($)</th>
<th>Night Hrs/ Line ($)</th>
<th>Night Access ($)</th>
<th>Total ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>65</td>
<td>59.37</td>
<td>4511.63</td>
<td>29.03</td>
<td>1149.72</td>
<td></td>
<td>5661.35</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>18.27</td>
<td>1523.66</td>
<td>8.93</td>
<td>418.08</td>
<td></td>
<td>1941.74</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>9.13</td>
<td>929.19</td>
<td>4.47</td>
<td>281.72</td>
<td></td>
<td>1210.91</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>4.57</td>
<td>414.78</td>
<td>2.23</td>
<td>131.86</td>
<td></td>
<td>546.64</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>91.33</strong></td>
<td><strong>7379.26</strong></td>
<td><strong>44.67</strong></td>
<td><strong>1981.38</strong></td>
<td></td>
<td><strong>9360.64</strong></td>
</tr>
</tbody>
</table>

Press any key to continue...

**Figure 3-20**
Access charge is $100.00 per line.
Total monthly access charge for this configuration is $600.00.
Minimum usage charge is $400.00 if average use is less than 50 hours/line.
Total monthly cost for this configuration is $9960.64.
Connection charges per line are based on the distance between your exchange carrier wire center and the SBS Skyline WATS access point.

<table>
<thead>
<tr>
<th>DISTANCE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 mile</td>
<td>85.00</td>
</tr>
<tr>
<td>2-15 miles</td>
<td>100.00</td>
</tr>
<tr>
<td>16-25 miles</td>
<td>125.00</td>
</tr>
<tr>
<td>26-35 miles</td>
<td>150.00</td>
</tr>
<tr>
<td>36-50 miles</td>
<td>175.00</td>
</tr>
</tbody>
</table>

SS Skyline total monthly cost is $9960.64.

Press any key to continue...
AT&T IN WATS
MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>DAY</th>
<th>EVE</th>
<th>NIGHT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRS/</td>
<td>HRS/</td>
<td>HRS/</td>
<td>ACCESS</td>
</tr>
<tr>
<td>LINE</td>
<td>LINE</td>
<td>LINE</td>
<td>($)</td>
</tr>
</tbody>
</table>

5 1 167.00 1147.80 2.00 25.60 2.00 13.66 37.65 1224.71

Press any key to continue...

Access charge is $42.80 per line.
Connection charge is $222.00 for the first line and $123.00 for each successive line.
Total connection charge for this configuration is $345.00.

Press any key to continue...

---

**Figure 3-23**

-1- DISPLAY RESULTS ON SCREEN.
-2- PRINT OUT THE RESULTS.
-0- FINISHED.

CHOOSE ONE:

**Figure 3-24**
Suboption 2 - Print Out the Results

Upon selecting this option, the screen appears as in Fig. 3-25. If no printer is connected or the printer is turned off, an error message will appear as in Fig. 3-26. To correct, turn on the printer and press <R>. WARNING! DO NOT PRESS <A>! THIS WILL ABORT THE PROGRAM AND ALL DATA JUST ENTERED PLUS THE RESULTS WILL BE LOST! Just be sure you have a printer connected if you select suboption 2.

Individual reports will be printed as in Figs. 3-27 through 3-32. Upon completion, the screen will again return to the menu as in Fig. 3-33.

ALIGN PAPER AND TURN ON PRINTER
Press any key to continue...

FIGURE 3-25

Write fault error writing device PRN
Abort, Retry, Ignore?

FIGURE 3-26
### AT&T OUT NABS
#### MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>DAY</th>
<th>EVE</th>
<th>NIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRS/</td>
<td>HRS/</td>
<td>LINE (§)</td>
</tr>
<tr>
<td>HRS/</td>
<td>HRS/</td>
<td>LINE (§)</td>
</tr>
<tr>
<td>HRS/</td>
<td>HRS/</td>
<td>LINE (§)</td>
</tr>
<tr>
<td>HRS/</td>
<td>HRS/</td>
<td>LINE (§)</td>
</tr>
<tr>
<td>LINE (§)</td>
<td>LINE (§)</td>
<td>LINE (§)</td>
</tr>
<tr>
<td>ACCESS</td>
<td>TOTAL</td>
<td></td>
</tr>
<tr>
<td>(§)</td>
<td>(§)</td>
<td></td>
</tr>
<tr>
<td>(§)</td>
<td>(§)</td>
<td></td>
</tr>
<tr>
<td>(§)</td>
<td>(§)</td>
<td></td>
</tr>
<tr>
<td>(§)</td>
<td>(§)</td>
<td></td>
</tr>
<tr>
<td>(§)</td>
<td>(§)</td>
<td></td>
</tr>
</tbody>
</table>

| 1 | 2 | 45.00 | 1452.80 | 12.00 | 275.52 | 5.00 | 61.40 | 75.30 | 1865.02 |
| 3 | 1 | 89.00 | 1376.19 | 45.00 | 494.70 | 12.00 | 77.28 | 37.65 | 1985.82 |
| 5 | 3 | 123.00 | 5719.05 | 33.00 | 1191.06 | 26.00 | 532.74 | 112.95 | 7555.80 |

### Total

| 6 | 8548.04 | 1961.29 | 671.42 | 225.90 | 11406.64 |

Access charge is $37.65 per line.

Connection charge is $222.00 for the first line and $123.00 for each successive line.

Total connection charge for this configuration is $837.00.

---

Figure 3-27
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>45.00</td>
<td>1122.76</td>
<td>12.00</td>
<td>270.58</td>
<td>5.00</td>
<td>60.08</td>
<td>200.00</td>
<td>1653.44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>99.00</td>
<td>1111.46</td>
<td>45.00</td>
<td>477.46</td>
<td>12.00</td>
<td>75.60</td>
<td>100.00</td>
<td>1764.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>123.00</td>
<td>4826.25</td>
<td>33.00</td>
<td>1149.96</td>
<td>26.00</td>
<td>521.04</td>
<td>300.00</td>
<td>6797.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>7060.49</td>
<td>1898.00</td>
<td></td>
<td>656.72</td>
<td>600.00</td>
<td>10215.21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Access charge is $100.00 per line.

Connection charge is $120.00 per line.

Total connection charge for this configuration is $720.00.

Minimum usage charge is $75.00 per line exclusive of access charges.

Figure 3-28
<table>
<thead>
<tr>
<th>DAY</th>
<th>HRS/</th>
<th>EVE</th>
<th>HRS/</th>
<th>NIGHT</th>
<th>HRS/</th>
<th>NIGHT</th>
<th>ACCESS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N LNS</td>
<td>LINE</td>
<td>($)</td>
<td>LINE</td>
<td>($)</td>
<td>LINE</td>
<td>($)</td>
<td>($)</td>
<td>($)</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>45.00</td>
<td>1277.48</td>
<td>12.00</td>
<td>260.21</td>
<td>5.00</td>
<td>63.16</td>
<td>150.00</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>89.00</td>
<td>1171.88</td>
<td>45.00</td>
<td>511.20</td>
<td>12.00</td>
<td>80.06</td>
<td>75.00</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>123.00</td>
<td>5055.71</td>
<td>33.00</td>
<td>1179.88</td>
<td>26.00</td>
<td>539.91</td>
<td>225.00</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*** Total ***</td>
<td></td>
<td>7505.07</td>
<td>1951.29</td>
<td>683.13</td>
<td>450.00</td>
<td>10589.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Access charge is $75.00 per line.

Connection charge is $75.00 per line.

Total connection charge for this configuration is $450.00.

**Figure 3-29**
### SBS SKYLINE OUT WATS
### MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>TIER</th>
<th>% LINES</th>
<th>DAY HRS/</th>
<th>OTHER HRS/</th>
<th>OTHER</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>65</td>
<td>59.37</td>
<td>29.03</td>
<td>1149.72</td>
<td>5611.35</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>18.27</td>
<td>8.95</td>
<td>418.08</td>
<td>1941.74</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>9.13</td>
<td>4.47</td>
<td>281.72</td>
<td>1210.91</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>4.57</td>
<td>2.23</td>
<td>131.86</td>
<td>546.64</td>
</tr>
<tr>
<td>***Total ***</td>
<td></td>
<td>100</td>
<td>91.33</td>
<td>44.67</td>
<td>1981.38</td>
</tr>
</tbody>
</table>

Access charge is $100.00 per line.
Total monthly access charge for this configuration is $600.00.

Minimum usage charge is $400.00 if average use is less than 50 hours/line.
Total monthly cost for this configuration is $9960.64.

Connection charges per line are based on the distance between your exchange carrier wire center and the SBS Skyline WATS access point.

<table>
<thead>
<tr>
<th>DISTANCE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 mile</td>
<td>85.00</td>
</tr>
<tr>
<td>2-13 miles</td>
<td>100.00</td>
</tr>
<tr>
<td>14-25 miles</td>
<td>125.00</td>
</tr>
<tr>
<td>26-35 miles</td>
<td>150.00</td>
</tr>
<tr>
<td>36-50 miles</td>
<td>175.00</td>
</tr>
</tbody>
</table>

**Figure 3-30**
OUT WATS
MONTHLY COST COMPARISON
BY BAND

<table>
<thead>
<tr>
<th>BAND LINES</th>
<th>DAY HRS/</th>
<th>EVE HRS/</th>
<th>NIGHT HRS/</th>
<th>AT&amp;T TOTAL ($)</th>
<th>MCI TOTAL ($)</th>
<th>SPRINT TOTAL ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>45.00</td>
<td>12.00</td>
<td>5.00</td>
<td>1865.02</td>
<td>1653.44</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>89.00</td>
<td>45.00</td>
<td>12.00</td>
<td>1985.82</td>
<td>1764.52</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>123.00</td>
<td>33.00</td>
<td>26.00</td>
<td>7555.80</td>
<td>6797.25</td>
</tr>
</tbody>
</table>

*** Total ***

6

SBS Skyline total monthly cost is $9960.64.

Figure 3-31
AT&T IN MATS
MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>DAY</th>
<th>EVE</th>
<th>NIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRS/</td>
<td>HRS/</td>
<td>HRS/</td>
</tr>
<tr>
<td>LINE</td>
<td>LINE</td>
<td>LINE</td>
</tr>
<tr>
<td>($)</td>
<td>($)</td>
<td>($)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>TOTAL</td>
<td>TOTAL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5</th>
<th>1</th>
<th>67.00</th>
<th>1147.80</th>
<th>2.00</th>
<th>25.60</th>
<th>2.00</th>
<th>13.66</th>
<th>37.65</th>
<th>1224.71</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>1</td>
<td>1147.80</td>
<td>25.60</td>
<td>13.66</td>
<td>37.65</td>
<td>1224.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Access charge is $42.80 per line.

Connection charge is $222.00 for the first line and $123.00 for each successive line.

Total connection charge for this configuration is $345.00.

**Figure 3-32**
-1- DISPLAY RESULTS ON SCREEN
-2- PRINT OUT THE RESULTS
-0- FINISHED

CHOOSE ONE:

FIGURE 3-23
Suboption 0 - Finished

Upon selecting this option, Fig. 3-34 appears. The default is "Y." Anything other than "N" will cause the results to be saved. Fig. 3-35 appears with a list of the current filenames. The filename where the results are to be stored is entered as in Fig 3-36 (note that ".DBF" is not entered as part of the filename). Upon completion, the main menu reappears as in Fig. 3-37.

DO YOU WISH TO SAVE THESE RESULTS FOR LATER USE (Y/N)? Y

FIGURE 3-34

Filenames can have up to eight letters and/or numbers, must begin with a letter, and can have no imbedded blanks.

EXISTING FILENAMES ARE:

ONE.DBF   TWO.DBF   THREE.DBF   FOUR.DBF

184342 bytes in 4 files.
123904 bytes remaining on drive.

ENTER FILENAME WHERE RESULTS ARE TO BE STORED:

FIGURE 3-35
Filenames can have up to eight letters and/or numbers, must begin with a letter, and can have no imbedded blanks.

EXISTING FILENAMES ARE:
ONE.DBF       TWO.DBF       THREE.DBF       FOUR.DBF

18432 bytes in 4 files.
123904 bytes remaining on drive.

ENTER FILENAME WHERE RESULTS ARE TO BE STORED: FIVE

FIGURE 3-36

MAIN MENU

- 1 - DETERMINE LEAST COST WATS CARRIER FOR CURRENT NETWORK
- 2 - OPTIMIZE CURRENT NETWORK FOR WATS CARRIER
- 3 - LOAD NEW CARRIER RATE TABLES
- 4 - VIEW EXISTING RESULT FILES
- 5 - DELETE EXISTING FILE

- 0 - FINISHED

CHOOSE ONE:

FIGURE 3-37
Option 2 - Optimize Current Network for WATS Carrier

Upon selecting this option, the screen appears as in Fig. 3-38. The default again is "N" with any response other than "Y" returning to the main menu. In Fig. 3-39 the screen displays the current configuration files which already exist so the user can pick one. If the user changes his mind and doesn't want any of the files listed, he can press <Return> to return to the main menu. After a file is selected as in Fig. 3-40, Fig. 3-41 will appear on the screen if the configuration has outgoing WATS lines.

Data for each WATS band is entered just as in Option 1. The computer will compute the grade of service for each of the existing trunks and display the results as in Fig. 3-42. The user can now optimize his network for the existing grade of service or choose his own. A value less than 1 or greater than 50 will not be accepted. If attempted, Fig. 3-43 will appear. Once a valid grade of service is entered, Fig. 3-44 followed by 3-45 will appear. This will appear for each band through the highest band trunk in the configuration. After data for the last band is entered, the screen will be similar to Fig. 3-46.

When computations to optimize the configuration begin, Fig. 3-47 will appear. The time displayed will vary from a minimum of 5 minutes for only band 1 trunks to a maximum of one hour for band 6 trunks.
If the configuration has incoming WATS lines, screens similarly will appear as shown in Figs. 3-48 through 3-51. Maximum time in Fig. 3-51 is 30 minutes for band 6 trunks. After all computations are complete, the results are stored and Fig. 3-52 appears to select output.

OPTIMIZE CURRENT NETWORK

This option will determine the number of trunks you need for each band in your network optimized for least cost for each carrier. Information is utilized from the present network which was entered in option <1> DETERMINE LEAST COST WATS CARRIER. To optimize your network requires a call recording device on each of your WATS lines to determine your actual calling patterns. You must provide the busy hour traffic for each WATS band.

Also, you must provide the "P" value required for your lines. A value of "P10" means that during the busy hour, 10 percent of the calls attempted will receive a busy signal on the first attempt. The lower the "P" value, the better the availability of lines; however, it requires more trunks at a higher expense. The default value is the highest "P" value of your present network.

DO YOU WISH TO CONTINUE WITH THIS OPTION (Y/N)? N

FIGURE 3-38

EXISTING RESULT FILES ARE:

ONE.DBF    TWO.DBF    THREE.DBF    FOUR.DBF

20480 bytes in  4 files.
121856 bytes remaining on drive.

CHOOSE ONE:

FIGURE 3-39
EXISTING RESULT FILES ARE:

ONE.DBF    TWO.DBF    THREE.DBF    FOUR.DBF

20480 bytes in 4 files.
121856 bytes remaining on drive.

CHOOSE ONE:

FIGURE 3-40

ENTER TOTAL PEAK HOUR OUT WATS TRAFFIC IN MINUTES FOR EACH BAND:

BAND1: 0.0
BAND2: 0.0
BAND3: 0.0
BAND4: 0.0
BAND5: 0.0

FIGURE 3-41

ENTER TOTAL PEAK HOUR OUT WATS TRAFFIC IN MINUTES FOR EACH BAND:

BAND1: 65.0
BAND2: 10.0
BAND3: 15.0
BAND4: 40.0
BAND5: 50.0

BAND1 TRUNKS: P30
BAND3 TRUNKS: P34
BAND5 TRUNKS: P20

PRESS RETURN KEY TO USE DEFAULT "P" VALUE OR ENTER YOUR OWN: 34

FIGURE 3-42
ENTER TOTAL PEAK HOUR OUT WATS TRAFFIC IN MINUTES FOR EACH BAND:

BAND1: 65.0
BAND2: 10.0
BAND3: 15.0
BAND4: 40.0
BAND5: 50.0

BAND1 TRUNKS: P30
BAND3 TRUNKS: P34
BAND5 TRUNKS: P20

PRESS RETURN KEY TO USE DEFAULT "P" VALUE OR ENTER YOUR OWN: 34

"P" VALUE MUST BE 1 THRU 50. REENTER VALUE.

FIGURE 3-43

ENTER TOTAL PEAK HOUR OUT WATS TRAFFIC IN MINUTES FOR EACH BAND:

BAND1: 65.0
BAND2: 10.0
BAND3: 15.0
BAND4: 40.0
BAND5: 50.0

BAND1 TRUNKS: P30
BAND3 TRUNKS: P34
BAND5 TRUNKS: P20

PRESS RETURN KEY TO USE DEFAULT "P" VALUE OR ENTER YOUR OWN: 34

"P" VALUE MUST BE 1 THRU 50. REENTER VALUE.

Press any key to continue...

FIGURE 3-44
ENTER ACTUAL MEASURED TRAFFIC IN HOURS PER MONTH:

BAND1:

DAY: .

EVENING: .

NIGHT/WEEKEND: .

FIGURE 3-45

ENTER ACTUAL MEASURED TRAFFIC IN HOURS PER MONTH:

BAND5:

DAY: 69.00

EVENING: 19.00

NIGHT/WEEKEND: 8.00

Press any key to continue...

FIGURE 3-46

COME BACK IN 30 MINUTES.

FIGURE 3-47
ENTER TOTAL PEAK HOUR IN WATS TRAFFIC IN MINUTES FOR EACH BAND:

BAND1: 5.0
BAND2: 5.0
BAND3: 5.0
BAND4: 5.0
BAND5: 10.0

BAND5 TRUNKS: P40

PRESS RETURN KEY TO USE DEFAULT "P" VALUE OR ENTER YOUR OWN: 40

---

FIGURE 3-48

ENTER TOTAL PEAK HOUR IN WATS TRAFFIC IN MINUTES FOR EACH BAND:

BAND1: 5.0
BAND2: 5.0
BAND3: 5.0
BAND4: 5.0
BAND5: 10.0

BAND5 TRUNKS: P40

PRESS RETURN KEY TO USE DEFAULT "P" VALUE OR ENTER YOUR OWN: 40

Press any key to continue...

---

FIGURE 3-49
ENTER ACTUAL MEASURED TRAFFIC IN HOURS PER MONTH:

BAND5

DAY: 10.00
EVENING: 0.25
NIGHT/WEKEND: 0.25

Press any key to continue...

FIGURE 3-50

TAKE A 15 MINUTE BREAK WHILE I DO SOME WORK.

FIGURE 3-51

-1- DISPLAY RESULTS ON SCREEN.
-2- PRINT OUT THE RESULTS.
-0- FINISHED.

CHOOSE ONE:

FIGURE 3-52
Suboption 1 - Display Results on Screen

Fig. 3-53 is displayed followed by Figs. 3-55 through 3-59. The grade of service is included in the heading of each report. The data used to optimize the configuration is included in the last reports for outgoing and incoming WATS carriers.

Suboption 2 - Print Out the Results

Fig. 3-54 is displayed followed by the printing of Figs. 3-55 through 3-59.

Suboption 0 - Finished

The program returns to the main menu as in Fig. 3-60.

OPTIMIZED RESULTS

A report summary will be displayed for each carrier. The display will wait between reports. Press <Ctrl><S> to stop the scrolling. Press <Ctrl><S> again to resume.

Press any key to continue...

FIGURE 3-53

OPTIMIZED RESULTS

Align Paper and Turn on Printer

Press any key to continue...

FIGURE 3-54
### AT&T OUT WATS

**MONTHLY COST SUMMARY**

<table>
<thead>
<tr>
<th>D</th>
<th>N LNS</th>
<th>DAY HRS/</th>
<th>EVE HRS/</th>
<th>NIGHT HRS/</th>
<th>NIGHT</th>
<th>ACCESS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
<td>119.75</td>
<td>7164.14</td>
<td>37.25</td>
<td>1710.46</td>
<td>23.00</td>
<td>603.52</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>23.00</td>
<td>1306.53</td>
<td>6.33</td>
<td>243.07</td>
<td>2.67</td>
<td>54.71</td>
</tr>
<tr>
<td><em><strong>Total</strong></em></td>
<td><em><strong>7</strong></em></td>
<td><em><strong>8470.67</strong></em></td>
<td><em><strong>1953.53</strong></em></td>
<td><em><strong>658.23</strong></em></td>
<td><em><strong>263.55</strong></em></td>
<td><em><strong>11345.98</strong></em></td>
<td></td>
</tr>
</tbody>
</table>

Access charge is $37.65 per line.

Connection charge is $222.00 for the first line and $123.00 for each successive line.

Total connection charge for this configuration is $960.00.

---

*Figure 3-55*
OPTIMIZED CONFIGURATION: P20
(80% ON-NET/ 20% OFF-NET)

12/23/95

MCI OUT WATS
MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>B</th>
<th>DAY</th>
<th>D</th>
<th>EVE</th>
<th>NIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>HRS/</td>
<td>LINE</td>
<td>($)</td>
<td>HRS/</td>
</tr>
<tr>
<td>N LNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>119.75</td>
<td>5899.16</td>
<td>37.25</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>23.00</td>
<td>1051.15</td>
<td>6.33</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>6950.31</td>
<td>1886.70</td>
<td>643.97</td>
</tr>
</tbody>
</table>

Access charge is $100.00 per line.

Connection charge is $120.00 per line.

Total connection charge for this configuration is $840.00.

Minimum usage charge is $75.00 per line exclusive of access charges.

Figure 3-56
Page No. 1

OPTIMIZED CONFIGURATION: P20
( 80% ON-NET/ 20% OFF-NET)

12/23/85

SPRINT OUT WATS
MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>DAY</th>
<th>EVE</th>
<th>NIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>A0</td>
<td>A1</td>
<td>A2</td>
</tr>
<tr>
<td>A4</td>
<td>A5</td>
<td>A6</td>
</tr>
<tr>
<td>A8</td>
<td>A9</td>
<td>A10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LINE</th>
<th>($)</th>
<th>($)</th>
<th>($)</th>
<th>($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>18.00</td>
<td>1311.84</td>
<td>4.80</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>16.00</td>
<td>1176.48</td>
<td>8.00</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>1.80</td>
<td>137.38</td>
<td>1.00</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>60.00</td>
<td>4345.40</td>
<td>16.00</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>13.80</td>
<td>1110.08</td>
<td>3.80</td>
</tr>
</tbody>
</table>

Total

8081.18 | 1917.61 | 667.97 | 10666.76

Access charge is $ 75.00 per line.
Total monthly access charge for this configuration is $ 375.00.

Connection charge is $ 75.00 per line.
Total connection charge for this configuration is $ 375.00.

Total monthly cost for this configuration is $ 11041.76.

Figure 3-57
OPTIMIZED CONFIGURATION: P20

SBS SKYLINE OUT WATS
MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>TIER</th>
<th>% LINES</th>
<th>DAY HRS/</th>
<th>OTHER HRS/</th>
<th>OTHER ($)</th>
<th>TOTAL ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>65</td>
<td>71.24</td>
<td>34.84</td>
<td>1149.72</td>
<td>5580.14</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>21.92</td>
<td>10.72</td>
<td>418.08</td>
<td>1912.15</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>10.96</td>
<td>5.36</td>
<td>276.74</td>
<td>1109.16</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>5.46</td>
<td>2.68</td>
<td>129.20</td>
<td>535.76</td>
</tr>
</tbody>
</table>

*** Total ***

100 109.60 7243.47 53.60 1973.74 9217.21

Access charge is $100.00 per line.
Total monthly access charge for this configuration is $500.00.

Minimum usage charge is $400.00 if average use is less than 50 hours/line.
Total monthly cost for this configuration is $9717.21.

Connection charges per line are based on the distance between your exchange carrier wire center and the SBS Skyline WATS access point.

<table>
<thead>
<tr>
<th>DISTANCE</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 mile</td>
<td>85.00</td>
</tr>
<tr>
<td>2-15 miles</td>
<td>100.00</td>
</tr>
<tr>
<td>16-25 miles</td>
<td>125.00</td>
</tr>
<tr>
<td>26-35 miles</td>
<td>150.00</td>
</tr>
<tr>
<td>36-50 miles</td>
<td>175.00</td>
</tr>
</tbody>
</table>

OUT WATS BUSY HOUR TRAFFIC

<table>
<thead>
<tr>
<th>BAND</th>
<th>(Minutes)</th>
<th>DAY</th>
<th>EVENING</th>
<th>NIGHT/WEEKEND</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>65.0</td>
<td>90.0</td>
<td>24.0</td>
<td>10.0</td>
</tr>
<tr>
<td>2</td>
<td>10.0</td>
<td>80.0</td>
<td>40.0</td>
<td>10.0</td>
</tr>
<tr>
<td>3</td>
<td>15.0</td>
<td>9.0</td>
<td>5.0</td>
<td>2.0</td>
</tr>
<tr>
<td>4</td>
<td>40.0</td>
<td>300.0</td>
<td>80.0</td>
<td>70.0</td>
</tr>
<tr>
<td>5</td>
<td>50.0</td>
<td>69.0</td>
<td>19.0</td>
<td>8.0</td>
</tr>
</tbody>
</table>

OUT WATS MONTHLY TRAFFIC

<table>
<thead>
<tr>
<th>BAND</th>
<th>(Hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3-58
AT&T IN MATS
MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>N LNS</th>
<th>D DAY HRS/</th>
<th>A 0 EVE HRS/</th>
<th>B NIGHT HRS/</th>
<th>C TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>($)</td>
<td>($)</td>
<td>($)</td>
<td>($)</td>
</tr>
<tr>
<td></td>
<td>LINE</td>
<td>LINE</td>
<td>LINE</td>
<td>ACCESS</td>
</tr>
<tr>
<td>5</td>
<td>2 33.50</td>
<td>1142.55</td>
<td>1.00</td>
<td>17.06</td>
</tr>
<tr>
<td>*** Total ***</td>
<td></td>
<td>1142.55</td>
<td>25.80</td>
<td>17.06</td>
</tr>
</tbody>
</table>

Access charge is $42.80 per line.

Connection charge is $222.00 for the first line and $123.00 for each successive line.

Total connection charge for this configuration is $468.00.

<table>
<thead>
<tr>
<th>IN WATS BUSY HOUR TRAFFIC</th>
<th>IN WATS MONTHLY TRAFFIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Minutes)</td>
<td>(Hours)</td>
</tr>
<tr>
<td></td>
<td>DAY</td>
</tr>
<tr>
<td>BAND 1</td>
<td>5.0</td>
</tr>
<tr>
<td>BAND 2</td>
<td>5.0</td>
</tr>
<tr>
<td>BAND 3</td>
<td>5.0</td>
</tr>
<tr>
<td>BAND 4</td>
<td>5.0</td>
</tr>
<tr>
<td>BAND 5</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Figure 3-59
MAIN MENU

- 1 - DETERMINE LEAST COST WATS CARRIER FOR CURRENT NETWORK
- 2 - OPTIMIZE CURRENT NETWORK FOR WATS CARRIER
- 3 - LOAD NEW CARRIER RATE TABLES
- 4 - VIEW EXISTING RESULT FILES
- 5 - DELETE EXISTING FILE

- 0 - FINISHED

CHOOSE ONE:

FIGURE 3-60
Option 3 - Load New Carrier Rate Tables

Screen displays are shown in Figs. 3-61 through 3-64. In Fig. 3-64, the response should be "Y" and press <Return>. This erases the rate tables from the dBASE III disk which was used as a temporary storage place.

LOAD NEW CARRIER RATE TABLES

This option will load new carrier rate tables onto the OPTICOM program as well as any new parameters such as access charges, connection charges, minimum billed, etc. WARNING! OLD TABLES AND PARAMETERS WILL BE ERASED. IF YOU DESIRE TO SAVE THE OLD TABLES OR RUN DATA USING THE OLD TABLES, BE SURE TO MAKE A COPY OF THIS DISK BEFORE PROCEEDING.

DO YOU WISH TO CONTINUE WITH THIS OPTION (Y/N)? N

FIGURE 3-61

WHICH DRIVE IS OPTICOM PROGRAM ON (A/B/C/D)?

WHICH DRIVE IS DBASE III ON (A/B/C/D)?

FIGURE 3-62
WHICH DRIVE IS OPTICOM PROGRAM ON (A/B/C/D)? B
WHICH DRIVE IS DBASE III ON (A/B/C/D)? A

REMOVE OPTICOM FLOPPY FROM DRIVE B AND INSERT FLOPPY
WITH UPDATED TABLES.
Press any key to continue...

B: TABLES AT&TOUT.DBF
B: TABLES AT&TIN.DBF
B: TABLES SPRNTOUT.DBF
B: TABLES SBSOUT.DBF
B: TABLES MCIOU.T.DBF
B: TABLES SBSIN.DBF
B: TABLES SBSCONEC.DBF
- 7 File(s) copied
B: TABLES CONSTANT.MEM
B: TABLES DATE.MEM
- 2 File(s) copied

FIGURE 3-63

INSERT FLOPPY WITH OPTICOM PROGRAM IN DRIVE B.
Press any key to continue...

A: TABLES AT&TOUT.DBF
A: TABLES AT&TIN.DBF
A: TABLES SPRNTOUT.DBF
A: TABLES SBSOUT.DBF
A: TABLES MCIOU.T.DBF
A: TABLES SBSIN.DBF
A: TABLES SBSCONEC.DBF
A: TABLES CONSTANT.MEM
A: TABLES DATE.MEM
- 9 File(s) copied

Are you sure (Y/N)?

FIGURE 3-64
Option 4 - View Existing Results Files

Fig. 3-65 shows the screen display which includes the selection made. Again, press the <Return> key rather than make an entry and you will return to the main menu. Fig. 3-52 will appear in order to choose the appropriate output.

Suboption 1 - Display Results on Screen

Figs. 3-16 through 3-23 apply. If the configuration has previously been optimized, Figs. 3-53 and 3-55 through 3-59 will follow. After completion, Fig. 3-52 will appear.

Suboption 2 - Print Out the Results

Figs. 3-25 and 3-27 through 3-32 apply. If previously optimized, Figs. 3-54 through 3-59 will follow. Fig. 3-52 completes this choice.

Suboption 0 - Finished

The screen returns to the main menu as in Fig. 3-60.

EXISTING RESULT FILES ARE:
ONE.DBF TWO.DBF THREE.DBF FOUR.DBF FIVE.DBF
20480 bytes in 5 files.
101376 bytes remaining on drive.
DO YOU WISH TO SEE ANY OF THESE FILES (Y/N)? Y
CHOOSE ONE:FIVE

FIGURE 3-65
Option 5 - Delete Existing File

Figure 3-66 shows the screen display along with the responses. When complete, the program returns to the main menu.

Option 0 - Finished

This exits the OPTICOM program and returns to the dBASE III dot (.) prompt as in Fig. 3-1.

EXISTING RESULT FILES ARE:
ONE.DBF  TWO.DBF  THREE.DBF  FOUR.DBF  FIVE.DBF

20480 bytes in 5 files.
101376 bytes remaining on drive.

DO YOU WISH TO DELETE ANY OF THESE FILES (Y/N)? Y

CHOOSE ONE: FIVE

FIGURE 3-66
CHAPTER IV

DECISION MAKING WITH THE PROGRAM

Figures 4-1 through 4-6 show the results from actual data obtained for Lowry Air Force Base, Colorado for its WATS lines during the period of July 1985. Detail call recording devices are not used on the lines so an optimization could not be performed; however, looking at the current network output gives valuable information. Traffic patterns do not fluctuate radically from month to month so this can be used as a representative.

As can be seen in Fig. 4-5, approximately $1500 per month could be saved just by switching from AT&T to SPRINT as the long distance carrier. The connection charge of $1125 would be saved in less than one month. First year savings would be $16,875. If detail traffic information were available, the network could be optimized for further possible savings. For example, Fig. 4-1 shows five band 5 lines with low usage of 19.06 hours/line. It may be more cost effective to eliminate these and pass the traffic over the band 6 lines. Only an optimization will show this. There are also possible
savings in Fig. 4-6 on the nine high usage band 5 lines through adding lower band lines.

OPTICOM can be especially valuable for "what if" situations. The cost of projected requirements are immediately available along with the least expensive carrier and configuration. As Chapter 3 showed, the grade of service of the current network is determined to help the user ensure his service is adequate. If the user is dissatisfied with his grade of service, the optimization will tell him the cost of changing it.
AT&T OUT WATS
MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>DAY</th>
<th>EVE</th>
<th>NIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRS/</td>
<td>HRS/</td>
<td>HRS/</td>
</tr>
<tr>
<td>LINE</td>
<td>LINE</td>
<td>LINE</td>
</tr>
<tr>
<td>($)</td>
<td>($)</td>
<td>($)</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5</th>
<th>1</th>
<th>79.50</th>
<th>1339.67</th>
<th>5.90</th>
<th>75.52</th>
<th>13.30</th>
<th>90.84</th>
<th>37.65</th>
<th>1543.68</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>2</td>
<td>77.30</td>
<td>2611.81</td>
<td>8.50</td>
<td>217.60</td>
<td>11.00</td>
<td>150.26</td>
<td>75.30</td>
<td>3054.97</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>78.44</td>
<td>6617.02</td>
<td>9.82</td>
<td>628.48</td>
<td>10.18</td>
<td>347.65</td>
<td>188.25</td>
<td>7781.40</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>19.06</td>
<td>1832.41</td>
<td>0.00</td>
<td>0.00</td>
<td>1.80</td>
<td>61.47</td>
<td>188.25</td>
<td>2082.13</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>6.20</td>
<td>296.36</td>
<td>0.05</td>
<td>1.55</td>
<td>0.30</td>
<td>5.02</td>
<td>75.30</td>
<td>378.23</td>
</tr>
</tbody>
</table>

***Total***

|  15 | 12697.27 |  923.15 | 655.24 | 564.75 | 14840.41 |

Access charge is $37.65 per line.

Connection charge is $222.00 for the first line and $123.00 for each successive line.

Total connection charge for this configuration is $1944.00.

Figure 4-1
### MCI OUT WATS

#### MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>B</th>
<th>A</th>
<th>N LNS</th>
<th>HRS/ DAY</th>
<th>HRS/ EVE</th>
<th>HRS/ NIGHT</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>LINE</td>
<td>($)</td>
<td>($)</td>
<td>($)</td>
<td>($)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>($$)</td>
<td>($)</td>
<td>($)</td>
<td>($)</td>
<td>($)</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
<td>79.50</td>
<td>1101.37</td>
<td>5.90</td>
<td>74.14</td>
<td>13.30</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>77.30</td>
<td>2144.70</td>
<td>8.50</td>
<td>213.62</td>
<td>11.00</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>78.44</td>
<td>5436.95</td>
<td>9.82</td>
<td>616.99</td>
<td>10.18</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>19.04</td>
<td>1485.49</td>
<td>0.00</td>
<td>0.00</td>
<td>1.80</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>6.20</td>
<td>200.22</td>
<td>0.05</td>
<td>0.05</td>
<td>1.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>10368.73</td>
<td>906.00</td>
<td></td>
<td>639.95</td>
<td>1500.00</td>
</tr>
</tbody>
</table>

**Access charge is $100.00 per line.**

**Connection charge is $120.00 per line.**

**Total connection charge for this configuration is $1800.00.**

**Minimum usage charge is $75.00 per line exclusive of access charges.**

---

**Figure 4-2**
Page No. 1  80% ON-NET/ 20% OFF-NET  
12/23/85

<table>
<thead>
<tr>
<th>B</th>
<th>DAY</th>
<th>EVE</th>
<th>NIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
<td>79.50</td>
<td>1123.75</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>77.30</td>
<td>2194.49</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>78.44</td>
<td>5554.91</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>19.06</td>
<td>1533.19</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>6.20</td>
<td>234.58</td>
</tr>
<tr>
<td><em><strong>Total</strong></em></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Access charge is $75.00 per line.

Connection charge is $75.00 per line.

Total connection charge for this configuration is $1125.00.

**Figure 4-3**
### SBS Skyline Out MATS Monthly Cost Summary

<table>
<thead>
<tr>
<th>Tier</th>
<th>% Lines</th>
<th>Day Hrs/Line</th>
<th>Day Cost ($)</th>
<th>Other Hrs/Line</th>
<th>Other Cost ($)</th>
<th>Total Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>65</td>
<td>31.81</td>
<td>6781.50</td>
<td>7.28</td>
<td>720.29</td>
<td>7501.79</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>9.79</td>
<td>2279.51</td>
<td>2.24</td>
<td>261.92</td>
<td>2541.43</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>4.89</td>
<td>1370.52</td>
<td>1.12</td>
<td>194.43</td>
<td>1564.95</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>2.45</td>
<td>616.56</td>
<td>0.56</td>
<td>91.67</td>
<td>708.23</td>
</tr>
<tr>
<td><em><strong>Total</strong></em></td>
<td></td>
<td><strong>48.93</strong></td>
<td><strong>11049.09</strong></td>
<td><strong>11.19</strong></td>
<td><strong>1258.31</strong></td>
<td><strong>12316.40</strong></td>
</tr>
</tbody>
</table>

Access charge is $100.00 per line.
Total monthly access charge for this configuration is $1500.00.

Minimum usage charge is $400.00 if average use is less than 50 hours/line.
Total monthly cost for this configuration is $13816.40.

Connection charges per line are based on the distance between your exchange carrier wire center and the SBS Skyline MATS access point.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 mile</td>
<td>85.00</td>
</tr>
<tr>
<td>2-15 miles</td>
<td>100.00</td>
</tr>
<tr>
<td>16-25 miles</td>
<td>125.00</td>
</tr>
<tr>
<td>26-35 miles</td>
<td>150.00</td>
</tr>
<tr>
<td>36-50 miles</td>
<td>175.00</td>
</tr>
</tbody>
</table>

*Figure 4-4*
OUT WATS
MONTHLY COST COMPARISON
BY BAND

<table>
<thead>
<tr>
<th>BAND LINES</th>
<th>DAY hrs/line</th>
<th>EVE hrs/line</th>
<th>NIGHT hrs/line</th>
<th>AT&amp;T Total ($)</th>
<th>MCI Total ($)</th>
<th>SPRINT Total ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>79.50</td>
<td>5.90</td>
<td>13.30</td>
<td>1543.68</td>
<td>1364.35</td>
<td>1361.13</td>
</tr>
<tr>
<td>5</td>
<td>77.30</td>
<td>8.50</td>
<td>11.00</td>
<td>3054.97</td>
<td>2705.28</td>
<td>2699.39</td>
</tr>
<tr>
<td>5</td>
<td>78.44</td>
<td>9.82</td>
<td>10.18</td>
<td>7781.40</td>
<td>6893.96</td>
<td>6867.41</td>
</tr>
<tr>
<td>5</td>
<td>19.06</td>
<td>0.00</td>
<td>1.80</td>
<td>2082.13</td>
<td>2045.61</td>
<td>1970.49</td>
</tr>
<tr>
<td>6</td>
<td>6.20</td>
<td>0.05</td>
<td>0.30</td>
<td>378.23</td>
<td>405.48</td>
<td>390.15</td>
</tr>
</tbody>
</table>

*** Total ***

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Total ($)</th>
<th>Total ($)</th>
<th>Total ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td>14840.41</td>
<td>13414.68</td>
<td>13288.57</td>
</tr>
</tbody>
</table>

SBS Skyline total monthly cost is $13816.40.

Figure 4-5
### AT&T IN WATS

#### MONTHLY COST SUMMARY

<table>
<thead>
<tr>
<th>Day</th>
<th>Eve</th>
<th>Night</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>6</td>
<td>5.15</td>
<td>2.07</td>
</tr>
<tr>
<td>9</td>
<td>150.47</td>
<td>83.21</td>
<td>1713.27</td>
</tr>
<tr>
<td>17</td>
<td>29410.61</td>
<td>727.60</td>
<td>31934.69</td>
</tr>
</tbody>
</table>

Access charge is $42.60 per line.

Connection charge is $222.00 for the first line and $123.00 for each successive line.

Total connection charge for this configuration is $2313.00.

---

Figure 4-6
CHAPTER V

CONCLUSION

OPTICOM is a valuable tool to be used by a business or government agency to optimize its long distance WATS service for least cost. The program as originally written uses the rate tables for Colorado. Using the program elsewhere requires loading the rate tables for the appropriate state. For a small organization in a few states, this can be done manually using the format of files in Appendix C. If the organization has multiple locations in the state, the tables can be put on a single floppy disk, duplicated, and distributed to each location for updating the program.

This would not be cost effective for an organization that had many locations but only one or two in each state. Manual loading of 50 different tables each time there was an update would be too time consuming. In this case the OPTICOM program could be modified to include the full nation-wide rate table and a configuration option to choose the state. For example, the program would ask "Which state do you want the program configured for?" The response would be a two
letter abbreviation for the state. The program would then select the subset of the nation-wide rate table which applied to that state.

As currently written, OPTICOM requires the user to already own dBASE III software. dBASE III cannot be duplicated so each location would be required to own a copy at approximately $370 through mail order sources. If dBASE III is not required at those locations for any other uses, there is a cheaper alternative. dBASE III compilers are now available for $500 to $750 through mail order. The OPTICOM program could be compiled, then copied and distributed to locations. The only maintenance required would be periodic (every six months) distribution of new rate table floppies at a cost of $5. The original manual load of the new tables would take a person about 1/2 day. Sources for dBASE III software and compilers are provided in Table 5-1.
**TABLE 5-1**

dBASE III Software and Compiler Sources

<table>
<thead>
<tr>
<th>SOFTWARE</th>
<th>MANUFACTURED BY</th>
<th>RETAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>dBASE III</td>
<td>Ashton-Tate</td>
<td>$695</td>
</tr>
<tr>
<td></td>
<td>10150 West Jefferson Blvd.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Culver City, CA 90230</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phone: 213-329-8000</td>
<td></td>
</tr>
<tr>
<td>COMPILERS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clipper</td>
<td>Nantucket, Inc.</td>
<td>$695</td>
</tr>
<tr>
<td></td>
<td>5995 South Sepulveda Blvd.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Culver City, CA 90230</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phone: 213-390-7923</td>
<td></td>
</tr>
<tr>
<td>dB III Compiler</td>
<td>Wordtech Systems, Inc.</td>
<td>$750</td>
</tr>
<tr>
<td></td>
<td>21 Altarinda Road</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orinda, CA 94563</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phone: 415-254-0900</td>
<td></td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY


APPENDIX A

OPTICOM PROGRAM FLOWCHARTS

This appendix contains a hierarchical representation of program module dependencies along with a description of each module.

![Program Hierarchy Level 1](image)

FIGURE A-1. Program Heirarchy Level 1.
FIGURE A-2. Program Hierarchy Level 2, NOWNET.

FIGURE A-3. Program Hierarchy Level 3, NOWNET.
FIGURE A-4. Program Hierarchy Level 4, NOWNET.

FIGURE A-5. Program Hierarchy Level 2, NEWNET.
FIGURE A-6. Program Hierarchy Levels 3 and 4, NEWNET.
FIGURE A-7. Program Hierarchy Level 2, TABLES.

TABLES.PRG

LOAD.PRG

FIGURE A-8. Program Hierarchy Levels 3 and 4, RESULTS.

RESULTS.PRG

OUTPUT.PRG

DISPLAY.PRG

PRINT.PRG

/NOWNET/DISPLAY.PRG

/NEWNET/DISPLAY.PRG

/NOWNET/PRINT.PRG

/NEWNET/PRINT.PRG
Module Descriptions

/DELETE/ Directory Modules

1. DELETE.PRG - Controls removal of files containing results of network configuration costs and optimizations.

/NEWNET/ Directory Modules

1. AT&TIN.PRG - Calculates the cost of each configuration possible for the incoming WATS traffic in order to find the optimum AT&T solution.

2. AT&TOUT.PRG - Calculates the cost of each configuration possible for the outgoing WATS traffic in order to find the optimum AT&T solution.

3. DISPATT.PRG - Displays the optimum AT&T solution for outgoing WATS traffic.

4. DISPIN.PRG - Displays data which was input and used to optimize the incoming WATS traffic.

5. DISPLAY.PRG - Controls screen displays of optimum configurations for all carriers.

6. DISPMCI.PRG - Displays the optimum MCI solution for outgoing traffic.

7. DISPOUT.PRG - Displays data which was input and used to optimize the outgoing WATS traffic.

8. DISPSBS.PRG - Displays the optimum SBS Skyline solution for outgoing traffic.
9. DISPSPNT.PRG - Displays the optimum GTE SPRINT solution for outgoing traffic.

10. DISPTIN.PRG - Displays the optimum AT&T solution for incoming WATS traffic.

11. INCPUTE.PRG - Controls selection of possible configurations and computations in order to find optimum solution for AT&T incoming WATS traffic.

12. INLINES.PRG - Computes the number of incoming lines of each band required for each configuration in order to meet the customer's service requirement.

13. INSTORE.PRG - Stores the optimal solution for the AT&T incoming WATS traffic in the /RESULTS/ directory.

14. MCIOUT.PRG - Same as #2 for MCI.

15. NEWNET.PRG - Controls all functions to optimize the current network based on data provided by the user.

16. OUTLINES.PRG - Computes the number of outgoing lines of each band required for each configuration in order to meet the customer's service requirement.

17. OUTPUT.PRG - Controls all output of optimized solutions.

18. OUTSTORE.PRG - Stores the optimal solution for outgoing WATS traffic for each carrier in the /RESULTS/ directory.
19. PRINT.PRG - Controls the printing of optimum solutions for all carriers.
20. PRNTATT.PRG - Same as #3 to the printer.
21. PRNTIN.PRG - Same as #4 to the printer.
22. PRNTMCI.PRG - Same as #6 to the printer.
23. PRNTOUT.PRG - Same as #7 to the printer.
24. PRNTSBS.PRG - Same as #8 to the printer.
25. PRNTSPNT.PRG - Same as #9 to the printer.
26. PRNNTIN.PRG - Same as #10 to the printer.

/NOWNET/ Directory Modules

1. COMPAT&T.PRG - Computes the AT&T cost of the present network.
2. COMFMCI.PRG - Computes the MCI cost of the present outgoing WATS configuration.
3. COMPSBS.PRG - Same as #2 for SBS Skyline.
4. COMPSPNT.PRG - Same as #2 for GTE SPRINT.
5. COMPUTE.PRG - Controls all computations of cost for the current network.
6. DISPLAY.PRG - Controls all screen displays of current network costs for each carrier.
7. FINISH.PRG - Stores the current network costs for all carriers in a /RESULTS/ directory file specified by the user, then returns to the main menu.
8. NOWNET.PRG - Controls all functions to determine current network costs.
9. OUTPUT.PRG - Controls all output for the current network.
10. PRINT.PRG - Controls the printing of current network costs for each carrier.

/RESULTS/ Directory Modules
1. DISPLAY.PRG - Controls screen displays of all results.
2. PRINT.PRG - Controls printing of all results.
3. OUTPUT.PRG - Controls all output.
4. RESULTS.PRG - Retrieves a file specified by the user in order to look at the results of a configuration previously run through the program.

/TABLES/ Directory Modules
1. LOAD.PRG - Loads new carrier rate tables into the OPTICOM program.
2. TABLES.PRG - Provides explanatory information to the user and controls the loading of new tables.
APPENDIX B

OPTICOM PROGRAM CODE
TYPE OPTICOM.PRG

CLEAR ALL
SET TALK OFF
SET DEFAULT TO D:
SET MENU ON
STORE 'N' TO CHOICE
CLEAR
@10,20 SAY 'ARE YOU USING A COLOR MONITOR (Y/N)?' GET CHOICE PICTURE '!'
READ
IF CHOICE = 'Y'
    SET COLOR TO 7/1,1/7,4
ELSE
    SET COLOR TO 7/0,0/7,0
ENDIF
CLEAR
RESTORE FROM \TABLES\DATE
? 'OPTICOM VERSION 1.00' + 'RATE TABLES AS OF:' + DATE
? 'DECEMBER 2, 1985'
? 'STEPHEN A. DRAPER'
?
? OPTICOM is a software package designed to aid you, the
? communications manager in making decisions to optimize your
? long haul communications network. This program is currently
? limited to telephone traffic; however, future versions may
? be expanded to include data traffic as well. The program is
? menu driven so you needn't worry if you are uncomfortable
? with computers or programming. Each option, when selected,
? will provide a description along with the information you
? are required to provide. If you need a different selection,
? you can return to any level of the menu to make a different
? selection. Press the <Esc> key any time you wish to terminate
? the OPTICOM program.'
?
WAIT
DO WHILE .T.
    CLEAR
    @5,10 SAY "MAIN MENU"
    @8,15 SAY "1 - DETERMINE LEAST COST WATS CARRIER FOR CURRENT NETWORK."
0 9,15 SAY "2 - OPTIMIZE CURRENT NETWORK FOR WATS CARRIER"
0 10,15 SAY "3 - LOAD NEW CARRIER RATE TABLES."
0 11,15 SAY "4 - VIEW EXISTING RESULT FILES."
0 12,15 SAY "5 - DELETE EXISTING FILE."
0 15,15 SAY "0 - FINISHED."
STORE " " TO CHOICE
0 18,15 SAY "CHOOSE ONE:" GET CHOICE PICTURE "9"
READ
DO CASE
   CASE CHOICE = "0"
      CANCEL
   CASE CHOICE = "1"
      SET PATH TO B:\NONNET
      DO NONNET
   CASE CHOICE = "2"
      SET PATH TO B:\NEUNET
      DO NEUNET
   CASE CHOICE = "3"
      SET PATH TO B:\TABLES
      DO TABLES
   CASE CHOICE = "4"
      SET PATH TO B:\RESULTS
      DO RESULTS
   CASE CHOICE = "5"
      SET PATH TO B:\DELETE
      DO DELETE
   ENDCASE
SET PATH TO B:
ENDDO

SET ECHO OFF
TYPE "NOWNET\NOWNET.PRG"

DO TEXT

CLEAR
RESTORE FROM \TABLES\CONSTANT
FLAG = .T.
DO WHILE FLAG
    STORE 60 TO METRO
    STORE 65 TO SBS1
    STORE 20 TO SBS2
    STORE 10 TO SBS3
    @ 5,10 SAY "PRESS RETURN KEY TO USE DEFAULT VALUES OR ENTER YOUR OWN."
    @ 6,10 SAY "MCI & SPRINT METROPOLITAN PERCENTAGE:" GET METRO
    @ 10,10 SAY "SBS SKYLINE TIER 1:" GET SBS1
    @ 12,10 SAY "SBS SKYLINE TIER 2:" GET SBS2
    @ 14,10 SAY "SBS SKYLINE TIER 3:" GET SBS3
    READ
    IF SBS1 + SBS2 + SBS3 <= 100 .AND. METRO <= 100
        FLAG = .F.
        SBS4 = 100 - SBS1 - SBS2 - SBS3
        @ 16,10
        @ 16,10 SAY "SBS SKYLINE TIER 4:" GET SBS4
        WAIT
    ELSE
        @ 16,10 SAY "INVALID ENTRIES. TOTALS EXCEED 100%. REENTER VALUES."
    ENDIF
ENDDO
SET SAFETY OFF
SAVE TO \TABLES\CONSTANT
SET SAFETY ON

CLEAR
USE NOWNET
SET SAFETY OFF
ZAP
SET SAFETY ON
FINISHED = .F.
DO WHILE .NOT. FINISHED
    GOTO BOTTOM
    APPEND BLANK
    REPLACE USE_DAY WITH 0
    REPLACE USE_EVE WITH 0
    REPLACE USE_NIGHT WITH 0
DO WHILE .NOT. VALID
  DELETE
  PACK
  APPEND BLANK
  REPLACE USE_DAY WITH 0
  REPLACE USE_EVE WITH 0
  REPLACE USE_NIGHT WITH 0
  REPLACE OUT WITH .T.
  REPLACE QUANTITY WITH 0
  9,10 SAY "MATS BAND (1 THRU 6):" GET BAND
  READ
  IF BAND >=1 AND BAND <= 6
     VALID = .T.
  11,10 ELSE
  11,10 SAY "INVALID ENTRY. REENTER BAND."
  ENDIF
ENDDO

11,10 SAY "IS THIS AN OUT MATS (T/F)?" GET OUT
13,10 SAY "NUMBER OF LINES:" GET QUANTITY
15,10 SAY "AVERAGE HOURS BILLED PER LINE PER MONTH:" GET USE_DAY
16,10 SAY "DAY:" GET USE_EVE
17,10 SAY "EVENING:" GET USE_NIGHT
18,10 SAY "NIGHT/WEEKEND:" GET USE_NIGHT

20,10 SAY "IS THIS YOUR LAST ENTRY (T/F)?" GET FINISHED
READ

IF FINISHED
  22,10 SAY "DOUBLE CHECK YOUR ENTRIES AND MAKE CORRECTIONS ON NEXT SCR
EEEN."
  23,10 SAY "PRESS (Ctrl)<End> WHEN FINISHED."
  WAIT
  CLEAR
  GOTO TOP
  BROWSE
  GOTO TOP
DO WHILE .NOT. EOF()
  IF BAND > 6 OR BAND < 1
     CLEAR
  12,10 SAY "INVALID ENTRIES. BAND MUST BE 1 THRU 6. PLEASE MAKE CORRECTIONS ON NEXT SCREEN."
  13,10 SAY "PRESS (Ctrl)<End> WHEN FINISHED."
WAIT
BROWSE
GOTO TOP
ELSE
SKIP
ENDIF
ENDDO
PACK
ELSE
ENDIF
ENDDO
DO COMPUTE
RETURN
SET ECHO OFF
TYPE \NOWNET\TEST.PRG

CLEAR
@ 5,15 SAY "Determine the least cost NATS carrier"
?
?
? " This option will determine which carrier is the least"
? " costly for your existing network. The carriers used are"
? " MCI, SPRINT, SBS Skyline, and AT&T. You must provide information"
? " on your current configuration for each line as follows:"
?
? " (1) Average hours billed each month."
? " (2) NATS band."
? " (3) NATS in or out."
? " (4) Percentage of calls to metropolitan areas."
?
STORE "M" TO CHOICE
@ 23,15 SAY "Do you wish to continue with this option (Y/N)?" GET C
VOICE PICTURE "!#
READ

IF CHOICE (< "Y"
    RETURN
ENDIF

CLEAR
?
?
?
?
?
? " MCI and SPRINT have two rate tables:"
? " one for calls that utilize only their facilities, such as"
? " large cities, and one for calls that must also utilize AT&T"
? " facilities, such as rural areas. The default values"
? " for MCI and SPRINT are 90% ON-NET (metropolitan) and"
? " 20% OFF-NET (rural)."
?
?
WAIT
CLEAR
SBS Skyline has all NATS band calls over a single access channel rather than separate lines for different bands of service. Consequently, their rate tables take into account where the destination of the call is for billing purposes. SBS rates are based on a four-tier structure as follows:

TIER 1 - Major metropolitan areas.
TIER 2 - Includes additional frequently called cities.
TIER 3 - Includes remainder of contiguous US, Puerto Rico, and the Virgin Islands.
TIER 4 - Equivalent NATS band 1 coverage of bordering states.

Default values for SBS Skyline are 65%/20%/10%/5% for TIERs 1 through 4 respectively. If your calling patterns are unusual, then enter different values. For example, a stock brokerage would have close to 100% of its calls to metropolitan areas and a farm implement company mostly to rural areas.
TYPE \DONNET\COMPUTE.PRG

CLEAR
@ 12,18 SAY "WAIT A MINUTE WHILE I DO SOME FIGURING."
@ 13,18 SAY "COMPUTING AT&T COST."
DO COMPAT&T
@ 14,18 SAY "COMPUTING MCI COST."
DO COMPMCI
@ 15,18 SAY "COMPUTING SPRINT COST."
DO COMPSPRINT
USE RESULTS
COUNT TO COUNT

IF COUNT > 1
    DO SORT
ELSE
    ENDIF

@ 16,18 SAY "COMPUTING SBS SKYLINE COST."
DO COMPSBS
DO STORE
DO OUTPUT
RETURN

SET ECHO OFF
TYPE \NONNET\COMPAT\AT.PRG

CLEAR ALL
USE RESULTS
SET SAFETY OFF
IAP
SET SAFETY ON
APPEND FROM NONNET
GOTO TOP
RESTORE FROM \TABLES\CONSTANT

SELECT 1
DO WHILE .NOT. EOF()
  IF OUT
    SELECT 2
    USE \TABLES\AT\OUT
  ELSE
    SELECT 2
    USE \TABLES\AT\IN
  ENDIF
  LOCATE FOR BAND = A->BAND
SELECT 1
DO CASE
  CASE USE_DAY >= 80
    REPLACE DAY_ATT WITH (B->)DAY15\*15 + B->)DAY25\*25 + B->)DAY40\*40 +
    (USE_DAY-80)*B->)DAY80) + QUANTITY
  CASE 40 < USE_DAY .AND. USE_DAY < 80
    REPLACE DAY_ATT WITH (B->)DAY15\*15 + B->)DAY25\*25 +
    (USE_DAY-40)*B->)DAY40) + QUANTITY
  CASE 15 < USE_DAY .AND. USE_DAY <= 40
    REPLACE DAY_ATT WITH (B->)DAY15\*15 + (USE_DAY-15)*B->)DAY25)
    + QUANTITY
  CASE USE_DAY <= 15
    REPLACE DAY_ATT WITH USE_DAY*B->)DAY15 + QUANTITY
  ENDCASE

DO CASE
  CASE USE_EVE >= 80
    REPLACE EVE_ATT WITH (B->)EVE15\*15 + B->)EVE25\*25 +
    B->)EVE40\*40 + (USE_EVE-80)*B->)EVE80) + QUANTITY
  CASE 40 < USE_EVE .AND. USE_EVE < 80
    REPLACE EVE_ATT WITH (B->)EVE15\*15 + B->)EVE25\*25 +
    (USE_EVE-40)*B->)EVE40) + QUANTITY
  CASE 15 < USE_EVE .AND. USE_EVE <= 40
    REPLACE EVE_ATT WITH USE_EVE*B->)EVE15
  ENDCASE
REPLACE EYE_ATT WITH (B->EVE15+15 + 
SE_EVE-15)+B->EVE25)*QUANTITY
CASE USE_EVE <= 15
   REPLACE EYE_ATT WITH USE_EVE*B->EVE15 * QUANTITY
ENDCASE

REPLACE NIGHT_ATT WITH (USE_NIGHT + B->WEEKEND * QUANTITY)
REPLACE ACCES_ATT WITH B->ACCES * QUANTITY

IF DAY_ATT + EVE_ATT + NIGHT_ATT >= QUANTITY*ATT_MIN
   REPLACE ATT_TOTAL WITH DAY_ATT+EVE_ATT+NIGHT_ATT+ACCES_ATT
ELSE
   REPLACE ATT_TOTAL WITH QUANTITY*ATT_MIN + ACCES_ATT
ENDIF

SKIP
ENDDO
RETURN

SET ECHO OFF
TYPE \%NONET\%COMP\%C\%PRG

CLEAR ALL
RESTORE FROM \%TABLES\%CONSTANT
USE RESULTS
GOTO TOP
SELECT 1
DO WHILE .NOT. EOF()
    IF OUT
        SELECT 2
        USE \%TABLES\%NCOUT
        LOCATE FOR BAND = A->BAND
        SELECT 1
        DO CASE
            CASE USE_DAY >= 80
                REPLACE DAY_MCI WITH (B->)DAY15+ (B->)DAY25+ (B->)DAY40+ (USE_DAY-80)*B->DAY80)* QUANTITY
                METRO/100
                SELECT 2
                SKIP
                SELECT 1
                REPLACE DAY_MCI WITH (B->)DAY15+ (B->)DAY25+ (B->)DAY40+ (USE_DAY-80)*B->DAY80)* QUANTITY
                60-OMETRO)100 + DAY_MCI
            CASE 40 < USE_DAY .AND. USE_DAY < 80
                REPLACE DAY_MCI WITH (B->)DAY15+ (B->)DAY25+ (USE_DAY-40)*B->DAY40)* QUANTITY * METRO/100
                SELECT 2
                SKIP
                SELECT 1
                REPLACE DAY_MCI WITH (B->)DAY15+ (B->)DAY25+ (USE_DAY-40)*B->DAY40)* QUANTITY * (100-METRO)/100 + DAY_MCI
            CASE USE_DAY < 40
                REPLACE DAY_MCI WITH (B->)DAY15+ (USE_DAY-15)*B->DAY25)* QUANTITY * METRO/100
                SELECT 2
                SKIP
                SELECT 1
                REPLACE DAY_MCI WITH (B->)DAY15+ (USE_DAY-15)*B->DAY25)* QUANTITY * (100-METRO)/100 + DAY_MCI
            CASE USE_DAY <= 15
                REPLACE DAY_MCI WITH USE_DAY8->DAY15* QUANTITY * METRO/100
                SELECT 2
                SKIP
SELECT 1
  REPLACE DAY_MCI WITH USE_DAY*B->DAY15 + QUANTITY
  *(100-METRO)/100 + DAY_MCI
ENDCASE
SELECT 2
SKIP -1
SELECT 1

DO CASE
  CASE USE_EVE >= 80
    REPLACE EVE_MCI WITH (B->EVE15*15 + B->EVE25*25 +
    B->EVE40*40 + (USE_EVE-B->EVE80) * QUANTITY) * ME
    METROI/100
SELECT 2
SKIP
SELECT 1
  REPLACE EVE_MCI WITH (B->EVE15*15 + B->EVE25*25 +
    B->EVE40*40 + (USE_EVE-B->EVE80) * QUANTITY) * METRO/100 +
    (100-METRO)/100 + EVE_MCI
CASE 40 < USE_EVE AND USE_EVE < 80
  REPLACE EVE_MCI WITH (B->EVE15*15 + B->EVE25*25 +
    (USE_EVE-40)*B->EVE40) * QUANTITY * METRO/100
SELECT 2
SKIP
SELECT 1
  REPLACE EVE_MCI WITH (B->EVE15*15 + B->EVE25*25 +
    (USE_EVE-40)*B->EVE40) * QUANTITY * (100-METRO)/100 +
    EVE_MCI
CASE USE_EVE <= 40
  REPLACE EVE_MCI WITH (B->EVE15*15 + (USE_EVE-15)*B->EVE25) * QUANTITY * METRO/100
SELECT 2
SKIP
SELECT 1
  REPLACE EVE_MCI WITH (B->EVE15*15 + (USE_EVE-15)*B->EVE25) * QUANTITY * (100-METRO)/100 + EVE_MCI
CASE USE_EVE <= 15
  REPLACE EVE_MCI WITH USE_EVE*B->EVE15 * QUANTITY * METRO/100
SELECT 2
SKIP
SELECT 1
  REPLACE EVE_MCI WITH USE_EVE*B->EVE15 * QUANTITY
  *(100-METRO)/100 + EVE_MCI
ENDCASE
SELECT 2
SKIP -1
SELECT 1

REPLACE NIGHT_MCI WITH USE_NIGHT * B->WEEKEND * QUANTITY) * METRO/100
SELECT 2
SKIP
SELECT 1
REPLACE NIGHT_MCI WITH (USE_NIGHT * B->WEEKEND * QUANTITY)
+ (100-METRO)/100 + NIGHT_MCI

REPLACE ACCES_MCI WITH MCI_ACCESS * QUANTITY

IF DAY_MCI + EVE_MCI + NIGHT_MCI >= QUANTITY+MCI_MIN
    REPLACE MCI_TOTAL WITH DAY_MCI+EVE_MCI+NIGHT_MCI+ACCES_MCI
ELSE
    REPLACE MCI_TOTAL WITH QUANTITY+MCI_MIN + ACCES_MCI
ENDIF
ELSE
ENDIF
SKIP
ENDDO
RETURN

SET ECHO OFF
TYPE \NONMET\COMPSPNT.PRS

CLEAR ALL
RESTORE FROM \TABLES\CONSTANT
USE RESULTS
GOTO TOP
SELECT 1
DO WHILE .NOT. EOF()
    IF OUT
        SELECT 2
        USE \TABLES\SPRNTOUT
        LOCATE FOR BAND = A->BAND
        SELECT 1
        DO CASE
        CASE USE_DAY >= 100
            REPLACE DAY_SPNT WITH (B->DAYO_40+40 + B->DAYO_70+30 + B->DAY70_100+30 + (USE_DAY-100)*B->DAY100PLUS) * QUANTITY
            * METRO/100
            SELECT 2
            SKIP
            SELECT 1
            REPLACE DAY_SPNT WITH (B->DAYO_40+40 + B->DAYO_70+30 + B->DAY70_100+30 + (USE_DAY-100)*B->DAY100PLUS) * QUANTITY
            * (100-METRO)/100 + DAY_SPNT
        CASE 70 < USE_DAY .AND. USE_DAY < 100
            REPLACE DAY_SPNT WITH (B->DAYO_40+40 + B->DAYO_70+30 + (USE_DAY-70)*B->DAY70_100) * QUANTITY * METRO/100
            SELECT 2
            SKIP
            SELECT 1
            REPLACE DAY_SPNT WITH (B->DAYO_40+40 + B->DAYO_70+30 + (USE_DAY-70)*B->DAY70_100) * QUANTITY * (100-METRO)/100 + DAY_SPNT
        CASE 40 < USE_DAY .AND. USE_DAY <= 70
            REPLACE DAY_SPNT WITH (B->DAYO_40+40 + (USE_DAY-40)*B->DAYO_70)
            * QUANTITY * METRO/100
            SELECT 2
            SKIP
            SELECT 1
            REPLACE DAY_SPNT WITH (B->DAYO_40+40 + (USE_DAY-40)*B->DAYO_70)
            * QUANTITY * (100-METRO)/100 + DAY_SPNT
        CASE USE_DAY <= 40
            REPLACE DAY_SPNT WITH USE_DAY*B->DAYO_40 * QUANTITY * METRO/100
            SELECT 2
            SKIP
        END CASE
    END IF
END DO
SELECT 1
    REPLACE DAY_SPNT WITH USE_DAY*B->DAYO_40 * QUANTITY
* (100-METRO)/100 + DAY_SPNT
ENDCASE
SELECT 2
SKIP -1
SELECT 1
DO CASE
CASE USE_EVE >= 100
    REPLACE EVE_SPNT WITH (B->EVEO_40*B + B->EVE40_70*B +
    B->EVE70_100*B + (USE_EVE-100)*B->EVE100PLUS) * QUANTITY
* METRO/100
    SELECT 2
    SKIP
    SELECT 1
    REPLACE EVE_SPNT WITH (B->EVEO_40*B + B->EVE40_70*B +
    B->EVE70_100*B + (USE_EVE-100)*B->EVE100PLUS) * QUANTITY
* (100-METRO)/100 + EVE_SPNT
CASE USE_EVE AND USE_EVE < 100
    REPLACE EVE_SPNT WITH (B->EVEO_40*B + B->EVE40_70*B +
    USE_EVE-70)*B->EVE70_100) * QUANTITY * METRO/100
    SELECT 2
    SKIP
    SELECT 1
    REPLACE EVE_SPNT WITH (B->EVEO_40*B + B->EVE40_70*B +
    USE_EVE-70)*B->EVE70_100) * QUANTITY * (100-METRO)/100 +
    EVE_SPNT
CASE USE_EVE <= 70
    REPLACE EVE_SPNT WITH (B->EVEO_40*B + (USE_EVE-70)*B->EVE40_70)
* QUANTITY * METRO/100
    SELECT 2
    SKIP
    SELECT 1
    REPLACE EVE_SPNT WITH (B->EVEO_40*B +
    USE_EVE-40)*B->EVE40_70) * QUANTITY * (100-METRO)/100 +
    EVE_SPNT
CASE USE_EVE <= 40
    REPLACE EVE_SPNT WITH USE_EVE*B->EVEO_40 * QUANTITY * METRO/100
    SELECT 2
    SKIP
    SELECT 1
    REPLACE EVE_SPNT WITH USE_EVE*B->EVEO_40 * QUANTITY
* (100-METRO)/100 + EVE_SPNT
ENDCASE
SELECT 2
SKIP -1
SELECT 1
REPLACE NIGHT_SPNT WITH (USE_NIGHT*B->WEEKEND*QUANTITY) * METRO/100
SELECT 2
SKIP
SELECT 1
REPLACE NIGHT_SPNT WITH (USE_NIGHT * D->WEEKEND * QUANTITY)
* (100-METRO)/100 + NIGHT_SPNT

REPLACE ACES_SPNT WITH SPNTACCESS * QUANTITY

IF DAY_SPNT + EVE_SPNT + NIGHT_SPNT >= QUANTITY * SPNT_MIN
    REPLACE SPNT_TOTAL WITH DAY_SPNT + EVE_SPNT + NIGHT_SPNT + ACES_SPNT
ELSE
    REPLACE SPNT_TOTAL WITH QUANTITY * SPNT_MIN + ACES_SPNT
ENDIF

ELSE
ENDIF
SKIP
ENDDO
RETURN

SET ECHO OFF
TYPE \HOMENET\SORT.PRG

CLEAR ALL
USE RESULTS
SET SAFETY OFF
SORT ON BAND, QUANTITY TO TEMP
ZAP
APPEND FROM TEMP FOR OUT
APPEND FROM TEMP FOR .NOT. OUT
DELETE FILE TEMP.DBF
SET SAFETY ON
RETURN

SET ECHO OFF
CLEAR ALL
SELECT 1
USE RESULTS
RESTORE FROM \TABLES\CONSTANT
SUM USE_DAY * QUANTITY TO DAYTOTAL FOR OUT
SUM (USE_EVE + USE_NIGHT) * QUANTITY TO NIGHTTOTAL FOR OUT
USETOTAL = DAYTOTAL + NIGHTTOTAL
SUM QUANTITY TO LINETOTAL FOR OUT
DAYAVG = DAYTOTAL/LINETOTAL
NIGHTAVG = NIGHTTOTAL/LINETOTAL
USEAVG = USETOTAL/LINETOTAL
SUM USE_DAY*QUANTITY TO BAND1DAY FOR OUT . AND . BAND = 1
SUM (USE_EVE*USE_NIGHT)*QUANTITY TO BAND1NIGHT FOR OUT . AND . BAND = 1
COUNT TO COUNT

IF COUNT < 4
   APPEND BLANK
   APPEND BLANK
   APPEND BLANK
   APPEND BLANK
ELSE
ENDIF

GOTO TOP
SELECT 2
USE \TABLES\SDBOUT
LOCATE FOR USAGE_HRS > USEAVG . OR. EDF()
SKIP -1
SELECT 1
REPLACE TIER WITH 1
REPLACE PERCENT WITH SBS1
REPLACE SBSHRS_DAY WITH SBS1*DAYTOTAL/100
REPLACE SBSHRS_EVE WITH SBS1 *NIGHTTOTAL/100
REPLACE DAY_SBS WITH SBS1=B->TIER1_DAY = 0.6 * DAYTOTAL/100
REPLACE NIGHT_SBS WITH SBS1=B->TIER1_OTHR = 0.6 * NIGHTTOTAL/100
REPLACE ACCES_SBS WITH SBS_ACCESS*LINETOTAL
REPLACE SBS_LINES WITH LINETOTAL
SKIP

REPLACE TIER WITH 2
REPLACE PERCENT WITH SBS2
REPLACE SBSHRS_DAY with SBS2#DAYTOTAL/100
REPLACE SBSHRS_EVE with SBS2#NIGHTTOTAL/100
REPLACE DAY_SBS with SBS2 * B->TIER2_DAY 0.6 * DAYTOTAL/100
REPLACE NIGHT_SBS with SBS2 * B->TIER2_OTH 0.6 * NIGHTTOTAL/100
REPLACE SBS_LINES with LINETOTAL
SKIP
REPLACE TIER with 3
REPLACE PERCENT with SBS3
REPLACE SBSHRS_DAY with SBS3#DAYTOTAL/100
REPLACE SBSHRS_EVE with SBS3#NIGHTTOTAL/100
REPLACE DAY_SBS with SBS3 * B->TIER3_DAY 0.6 * DAYTOTAL/100
REPLACE NIGHT_SBS with SBS3 * B->TIER3_OTH 0.6 * NIGHTTOTAL/100
REPLACE SBS_LINES with LINETOTAL
SKIP
REPLACE TIER with 4
REPLACE PERCENT with SBS4
REPLACE SBSHRS_DAY with SBS4#DAYTOTAL/100
REPLACE SBSHRS_EVE with SBS4#NIGHTTOTAL/100
REPLACE DAY_SBS with SBS4 * B->TIER4_DAY 0.6 * DAYTOTAL/100
REPLACE NIGHT_SBS with SBS4 * B->TIER4_OTH 0.6 * NIGHTTOTAL/100
REPLACE SBS_LINES with LINETOTAL
SUN DAY_SBS to SUNDAY
SUN NIGHT_SBS to SUMNIGHT
GOTO TOP

IF USEAVG < SBS_HRS_MIN .AND. SUNDAY + SUMNIGHT < SBS_MIN#LINETOTAL
   REPLACE SBS_TOTAL with SBS_MIN#LINETOTAL + ACCES_SBS
ELSE
   REPLACE SBS_TOTAL with SUNDAY + SUMNIGHT + ACCES_SBS
ENDIF
RETURN
SET ECHO OFF
TYPE \NONNET\OUTPUT.PRG

CLEAR ALL
DO WHILE .T.
  CLEAR
  STORE " " TO CHOICE
  0 8,25 SAY "-1- DISPLAY RESULTS ON SCREEN."
  0 10,25 SAY "-2- PRINT OUT THE RESULTS."
  0 13,25 SAY "-0- FINISHED."
  0 17,25 SAY "CHOOSE ONE:" GET CHOICE PICTURE "9"
  READ

  DO CASE
  CASE CHOICE = "1"
    DO DISPLAY
  CASE CHOICE = "2"
    DO PRINT
  CASE CHOICE = "0"
    DO FINISH
    RETURN
  ENDCASE

ENDO

SET ECHO OFF
A report summary will be displayed for each carrier plus a comparison report of all the carriers. The display will wait between reports. Press (Ctrl)(S) to stop the scrolling. Press (Ctrl)(S) again to resume.

Restoring from \TABLES\CONSTANT
SUM QUANTITY TO NUMLINES FOR OUT
SELECT 2
USE \TABLES\AT&TOUT

IF NUMLINES = 0
    CONNECTOTAL = 0
ELSE
    COONNECTOTAL = CONNECT1 + (NUMLINES-1)*CONNECT2
ENDIF
SELECT 1
LINE1 = "Access charge is $" + STR(B-ACCESS,6,2) + " per line."
LINE2 = "Connection charge is $" + STR(B-CONNECT1,6,2) + " for the first line and"
LINE3 = "$" + STR(B-CONNECT2,6,2) + " for each successive line."
LINE4 = "Total connection charge for this configuration is $" + STR(COONNECTOTAL,7,2) + "."
LINE5 = "Minimum usage charge is $" + STR(ATT_MIN,6,2) + " per line exclusive of access charges."

REPORT FOR ATT&OUT FOR OUT
WAIT
?
?
? LINE1
? LINE2
? LINE3
? LINE4

IF ATT_MIN > 0
? LINES
ELSE
ENDIF
WAIT
CLEAR

IF NUM_LINES = 0
CONNECTION = 0
ELSE
CONNECTION = NCCONNECT * NUM_LINES
ENDIF

LINE1 = "Access charge is $ + STR(MCI_ACCESS,6,2) + " per line."
LINE2 = "Connection charge is $ + STR(MCICONNECT,6,2) + " per line."
LINE3 = "Total connection charge for this configuration is $ + STR( CONNECTION,7,2) + "."
LINE4 = "Minimum usage charge is $ + STR(MCI_MIN,6,2) + " per line exclusive of access charges."

REPORT FORM MCIOUT FOR OUT HEADING STR(METRO,3,0) + "% ON-NET/" + STR(100-METRO,3,0) + "% OFF-NET"
WAIT
?
?
?
? LINE1
? LINE2
? LINE3

IF MCI_MIN > 0
? LINE4
ELSE
ENDIF
WAIT
CLEAR

IF NUM_LINES = 0
CONECTOTAL = 0
ELSE
CONECTOTAL = SPNTCONNECT * NUMLINES
ENDIF

LINE1 = "Access charge is $" + STR(SPNTACCESS,6,2) + " per line."
LINE2 = "Connection charge is $" + STR(SPNTCONNECT,6,2) + " per line."
LINE3 = "Total connection charge for this configuration is $" + STR(CONECTOTAL,7,2) + "."
LINE4 = "Minimum usage charge is $" + STR(SPRNT_MIN,6,2) + " per line exclusive of access charges."

REPORT FORM SPNTOUT FOR OUT HEADING STR(METRO,3,0) + "ON-NET/" + STR(100-METRO,3,0) + "OFF-NET"
WAIT
?
?
?
? LINE1
? LINE2
? LINE3

IF SPRNT_MIN > 0
? LINE4
ELSE
ENDIF
WAIT
CLEAR

GOTO TOP
LINE1 = "Access charge is $" + STR(SBS_ACCESS,6,2) + " per line."
LINE2 = "Total monthly access charge for this configuration is $" + STR(R(ACCESS_SBS,7,2) + "."
LINE3 = "Minimum usage charge is $" + STR(SBS_MIN,6,2) + " if average use is less than " + STR(SBS_HRSMIN,3,0) + " hours/line."
LINE4 = "Total monthly cost for this configuration is $" + STR(SBS_TOTAL,11,2) + "."
LINE5 = "Connection charges per line are based on the distance between your"
LINE6 = "exchange carrier wire center and the SBS Skyline WATS access point."

REPORT FORM SBSOUT FOR TIER >= 1 .AND. TIER <= 4
WAIT
?
?
?
? LINE1
? LINE2
IF SBS_MIN > 0
? LINE3
ELSE
ENDIF
? LINE4
? LINES
? LINE6
USE \TABLES\SBS\CONEC
SET MARGIN TO 30
?...
DISPLAY OFF ALL
?...
SET MARGIN TO 0
WAIT
CLEAR
USE RESULTS
LINE1 = "SBS Skyline total monthly cost is $" + STR(SBS\_TOTAL,11,2) + ".
" REPORT FORM COMPARE FOR OUT
?...
? LINE1
WAIT
ENDIF
LOCATE FOR .NOT. OUT

IF BAND > 0
CLEAR
RESTORE FROM \TABLES\CONSTANT
SUM QUANTITY TO NUMLINES FOR .NOT. OUT
SELECT 2
USE \TABLES\AT&T\USING

IF NUMLINES = 0
CONECTOTAL = 0
ELSE
CONECTOTAL = CONNECT1 + (NUMLINES) \* CONNECT2
ENDIF

SELECT 1
LINE1 = "Access charge is $" + STR(B\_ACCESS,6,2) + " per line."
LINE2 = "Connection charge is $" + STR(B\_CONNECT1,6,2) + " for the fi rst line and"
LINE3 = "$" + STR(B\_CONNECT2,6,2) + " for each successive line."
LINE4 = "Total connection charge for this configuration is $" + STR(CONECTOTAL,7,2) + ".
" LINES = "Minimum usage charge is $" + STR(ATT\_MININ,6,2) + " per line exclusive of access charges."
REPORT FORM AT&T IN FOR .NOT. OUT .AND. ATT_TOTAL > 0
WAIT
?
?
?
? LINE1
? LINE2
? LINE3
? LINE4

IF ATT_MININ > 0
  ? LINES
ELSE
ENDIF

WAIT
CLEAR
ENDIF

RETURN

SET ECHO OFF
TYPE \NONNET\PRINT.PRG

CLEAR
@ 8,10 SAY "ALIGN PAPER AND TURN ON PRINTER"
WAIT
USE RESULTS

IF OUT
  RESTORE FROM \TABLES\CONSTANT
  SUM QUANTITY TO NUMLINES FOR OUT
  SELECT 2
  USE \TABLES\AT&TOUT
  IF NUMLINES = 0
    CONECTIONAL = 0
  ELSE
    CONECTIONAL = CONNECT1 + (NUMLINES-1)CONNECT2
  ENDIF
  SELECT 1
  LINE1 = "Access charge is $" + STR(B-)ACCESS,6,2) + " per line."
  LINE2 = "Connection charge is $" + STR(B-)CONNECT1,6,2) + " for the
  first line and"
  LINE3 = "$" + STR(B-)CONNECT2,6,2) + " for each successive line."
  LINE4 = "Total connection charge for this configuration is $" + STR(CONE
  NNECTIONAL,7,2) + "."
  LINE5 = "Minimum usage charge is $" + STR(ATT_MIN,6,2) + " per line ex
  clusive of access charges."
ELSE
  RESTORE FROM \TABLES\OUT
  SELECT 1
  LINE1 = "Access charge is $" + STR(B-)ACCESS,6,2) + " per line."
  LINE2 = "Connection charge is $" + STR(B-)CONNECT1,6,2) + " for the
  first line and"
  LINE3 = "$" + STR(B-)CONNECT2,6,2) + " for each successive line."
  LINE4 = "Total connection charge for this configuration is $" + STR(CONE
  NNECTIONAL,7,2) + "."
  LINE5 = "Minimum usage charge is $" + STR(ATT_MIN,6,2) + " per line ex
  clusive of access charges."
ENDIF

REPORT FORM AT&TOUT FOR OUT NOEJECT TO PRINT
SET PRINT ON
?
IF ATT_MIN > 0
IF NUMLINES = 0
    CONECTOTAL = 0
ELSE
    CONECTOTAL = MCICONNECT * NUMLINES
ENDIF

LINE1 = " Access charge is $" + STR(MCI.ACCESS,6,2) + " per line."
LINE2 = " Connection charge is $" + STR(MCICONNECT,6,2) + " per line."
LINE3 = " Total connection charge for this configuration is $" + STR(CO
NECTTOTAL,7,2) + "."
LINE4 = " Minimum usage charge is $" + STR(MCI.MIN,6,2) + " per line ex
clusive of access charges."

REPORT FORM MCIOUT FOR OUT HEADING STR(METRO,3,0) + "% ON-NET/" + STR(100-METRO,3,0) + "% OFF-NET" TO PRINT
SET PRINT ON

IF MCI_MIN > 0
    ? LINE4 ?
ELSE ENDIF

SET PRINT OFF CLEAR CLEAR

IF NUMLINES = 0
    CONECTOTAL = 0
ELSE
    CONECTOTAL = SPNTCONNECT * NUMLINES
ENDIF
Access charge is $' + STR(SPNTACCESS,6,2) + " per line."
Connection charge is $' + STR(SPNTCONNECT,6,2) + " per line."
Total connection charge for this configuration is $' + STR(CO
NECTOTAL,7,2) + "."
Minimum usage charge is $' + STR(SPRNT_MIN,6,2) + " per line
exclusive of access charges."
REPORT FORM SPRTOUT FOR OUT HEADING STR(METRO,3,0) + "% ON-NET/" + STR(100
-METRO,3,0) + "% OFF-NET" TO PRINT
SET PRINT ON
IF SPRNT_MIN > 0
? LINE4
ELSE
ENDIF
SET PRINT OFF
CLEAR
GOTO TOP
Access charge is $' + STR(SBS_ACCESS,6,2) + " per line."
Total monthly access charge for this configuration is $' + STR(SBS_ACCESS,7,2) + "."
Minimum usage charge is $' + STR(SBS_MIN,6,2) + " if average
use is less than " + STR(SBS_HRSMIN,3,0) + " hours/line."
Total monthly cost for this configuration is $' + STR(SBS_TOT
AL,11,2) + ":".
Connection charges per line are based on the distance between
your
exchange carrier wire center and the SBS Skyline WATS access
point."
REPORT FORM SBSOUT FOR TIER >= 1 .AND. TIER <= 4 TO PRINT
SET PRINT ON
IF SBS_MIN > 0
? LINE3
ELSE
ENDIF
? LINE4
? LINE5
? LINE6
USE \TABLES\SBSCONEC
SET MARGIN TO 30
?
?
DISPLAY OFF ALL
?
SET MARGIN TO 0
SET PRINT OFF
CLEAR
USE RESULTS
LINE1 = " SDS Skyline total monthly cost is $" + STR(SBS_TOTAL,11,2) + 
".
" REPORT FORM COMPARE FOR OUT TO PRINT
SET PRINT ON
?
? LINE1
?
SET PRINT OFF
ENDIF

LOCATE FOR .NOT. OUT

IF BAND > 0
  CLEAR
  RESTORE FROM \TABLES\CONSTANT
  SUM QUANTITY TO NUMLINES FOR .NOT. OUT
  SELECT 2
  USE \TABLES\AT&TIN
  IF NUMLINES = 0
    CONNECTOTAL = 0
  ELSE
    CONNECTOTAL = CONNECT1 + (NUMLINES) * CONNECT2
  ENDDIF

SELECT 1
LINE1 = " Access charge is $" + STR(B->ACCESS,6,2) + " per line."
LINE2 = " Connection charge is $" + STR(B->CONNECT1,6,2) + " for the fi
rst line and "
LINE3 = " $" + STR(B->CONNECT2,6,2) + " for each successive line."
LINE4 = " Total connection charge for this configuration is $" + STR(C
NECTOTAL,7,2) + 
LINE5 = " Minimum usage charge is $" + STR(ATT_MININ,6,2) + " per line
exclusive of access charges."

REPORT FORM AT&TIN FOR .NOT. OUT .AND. ATT_TOTAL > 0 TO PRINT
SET PRINT ON
?
?
? LINE1
?
? LINE2
? LINE3
?
? LINE4
?
IF ATT_MININ > 0
? LINES
?
ELSE
ENDIF
SET PRINT OFF
ENDIF
CLEAR
RETURN
SET ECHO OFF
TYPE \NONNET\FINISH.PRG

CLEAR ALL
RESTORE FROM \TABLES\CONSTANT
RELEASE ALL EXCEPT METRO
CLEAR
DO WHILE .T.
  STORE "Y" TO CHOICE
  @ 20,10 SAY "DO YOU WISH TO SAVE THESE RESULTS FOR LATER USE (Y/N)?"
  GET CHOICE PICTURE "!" READ
  DO CASE
    CASE CHOICE = "N"
      RETURN
    CASE CHOICE = "Y"
      CLEAR
      STORE "" TO FILENAME
      TEIT
      Filenames can have up to eight letters and/or numbers, must begin with a letter, and can have no imbedded blanks. (1111111.DDF).
      EXISTING FILENAMES ARE:
      ENOTEXT
      DIR \RESULTS\*
      @ 23,10 SAY "ENTER FILENAME WHERE RESULTS ARE TO BE STORED:"
      GET FILENAME PICTURE "?????????"
      READ
      FILENAME = TRIM(FILENAME)
      OPTIMIZE = .F.
      RELEASE CHOICE
      CONSTANT = FILENAME + ".MEM"
      SAVE TO \RESULTS\&CONSTANT
      FILENAME = FILENAME + ".DBF"
      SET TALK ON
      COPY FILE RESULTS.DBF TO \RESULTS\&FILENAME
      SET TALK OFF
      RETURN
    ENDCASE
  ENDCASE
ENDDO

SET ECHO OFF
This option will determine the number of trunks you need for each band in your network optimized for least cost for each carrier. Information is utilized from the present network which was entered in option (1) DETERMINE LEAST COST WATS CARRIER. To optimize your network requires a call recording device on each of your WATS lines to determine your actual calling patterns. You must provide the busy hour traffic for each WATS band.

Also, you must provide the "P" value required for your lines. A value of "P10" means that during the busy hour, 10 percent of the calls attempted will receive a busy signal on the first attempt. The lower the "P" value, the better the availability of lines; however, it requires more trunks at a higher expense. The default value is the highest "P" value of your present network.
READ

IF FILENAME = "   "
   RETURN
ENDIF

? FILENAME = TRIM(FILENAME)

FILE = FILENAME + "\nD\nF"
USE NEWNET
ZAP
USE \RESULTS\FILE
COPY TO \NEWNET\NEWNET FIELDS BAND, OUT, QUANTITY, USE_DAY, USE_EVE, USE_NIGHT

CLEAR
SAVE TO \NEWNET\\nTEMP
GOTO TOP

IF OUT
   DO OUTWATS
ENDIF

CLEAR ALL
CLEAR
RESTORE FROM TEMP
USE \RESULTS\FILE

LOCATE FOR .NOT. OUT .AND. BAND > 0

IF .NOT. EOF()
   DO INWATS
ENDIF

DO OUTPUT
RETURN

SET ECHO OFF
TYPE \NEWNET\OUTWATS.PRG

RESTORE FROM TEMP
USE NEWNET
LOCATE FOR .NOT. OUT .OR. EOF()
SKIP -1
MAX = BAND
ROW = 5
PEAKHR1 = 0.0
PEAKHR2 = 0.0
PEAKHR3 = 0.0
PEAKHR4 = 0.0
PEAKHR5 = 0.0
PEAKHR6 = 0.0
NUMBER = 1
CLEAR
@ 2,5 SAY "ENTER TOTAL PEAK HOUR OUT WATS TRAFFIC IN MINUTES FOR EACH BAND:"

DO WHILE NUMBER <= MAX
   TEMP = "PEAKHR" + STR(NUMBER,1,0)
   @ ROW,10 SAY "BAND" + STR(NUMBER,1,0) + ":" @ GET &TEMP PICTURE "999.9"
   NUMBER = NUMBER + 1
   ROW = ROW + 2
ENDDO

READ

USE NEWNET
ROW = 4
HIGH_P = 0
TEMP = 0
PEAKNUM = 1
LOCATE FOR BAND > TEMP

DO WHILE OUT .AND. .NOT. EOF()
   TEMP = BAND
   PEAKTOTAL = 0

   DO WHILE PEAKNUM <= TEMP
      NAMEPK = "PEAKHR" + STR(PEAKNUM,1,0)
      PEAKTOTAL = PEAKTOTAL + &NAMEPK
      PEAKNUM = PEAKNUM + 1
   ENDDO

SELECT 2
USE POISSON
LOCATE FOR TRUNKS = LINES
NUMBER = 1
FLAG = .T.

DO WHILE NUMBER <= 50 .AND. FLAG
   IF NUMBER > 9
      FIELD = "P" + STR(NUMBER,2,0)
   ELSE
      FIELD = "P" + STR(NUMBER,1,0)
   ENDIF
   IF FIELD >= PEAKTOTAL
      FLAG = .F.
   ENDIF
   NUMBER = NUMBER + 1
ENDDO

@ ROW,40 SAY "BAND" + STR(TEMP,1,0) + " TRUNKS: " GET FIELD

IF NUMBER -1 > HIGH_P
   HIGH_P = NUMBER -1
ENDIF

ROW = ROW + 2
SELECT 1
LOCATE FOR BAND > TEMP
ENDDO

CLEAR GETS

FLAG = .T.
DO WHILE FLAG
   TEMP2 = HIGH_P
   @ 20,3 SAY 'PRESS RETURN KEY TO USE DEFAULT "P" VALUE OR ENTER YOUR OWN: '
      'GET HIGH_P PICTURE "99"
   READ
   IF HIGH_P <= 50 .AND. HIGH_P >= 1
      FLAG = .F.
   ELSE
      HIGH_P = TEMP2
      @ 22,5 SAY '"P" VALUE MUST BE 1 THRU 50. REENTER VALUE.'
   ENDIF
ENDDO

WAIT
USE NEWMET
ZAP
NUMBER = 1

DO WHILE NUMBER <= MAX
    APPEND BLANK
    REPLACE BAND WITH NUMBER
    REPLACE OUT WITH .T.
    NUMBER = NUMBER + 1
ENDDO

CLEAR
GOTO TOP
@ 5,10 SAY "ENTER ACTUAL MEASURED TRAFFIC IN HOURS PER MONTH:"

DO WHILE .NOT. EOF()
    @ 11,10 SAY "BAND" + STR(BAND,1,0)
    @ 13,10 SAY "DAY:" GE USE_DAY
    @ 15,10 SAY "EVENING:" GET USE_EVE
    @ 17,10 SAY "NIGHT/WEEKEND:" GET USE_NIGHT
READ
SKIP
ENDDO

WAIT
SAVE TO \NEWMET\TEMP
DO OUTPUT
RETURN

SET ECHO OFF
RESTORE FROM TEMP
CLEAR
USE POSSIBLE

DO CASE
  CASE MAX = 1
    LOCATE FOR ONE .AND. .NOT. TWO .AND. .NOT. THREE .AND. .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
      @ 23,5 SAY 'TAKE A 5 MINUTE BREAK WHILE I DO SOME WORK.'
  CASE MAX = 2
    LOCATE FOR TWO .AND. .NOT. THREE .AND. .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
      @ 23,5 SAY 'TAKE A 5 MINUTE BREAK WHILE I DO SOME WORK.'
  CASE MAX = 3
    LOCATE FOR THREE .AND. .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
      @ 23,5 SAY 'TAKE A 10 MINUTE BREAK WHILE I DO SOME WORK.'
  CASE MAX = 4
    LOCATE FOR FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
      @ 23,5 SAY 'TAKE A 15 MINUTE BREAK WHILE I DO SOME WORK.'
  CASE MAX = 5
    LOCATE FOR FIVE .AND. .NOT. SIX
      @ 23,5 SAY 'COME BACK IN 30 MINUTES.'
  CASE MAX = 6
    LOCATE FOR SIX
      @ 23,5 SAY 'COME BACK IN 1 HOUR.'
ENDCASE

SELECT 2
USE \RESULTS\FILE
STORE 9999999999 TO ATTLLOWCOS, HCILLOWCOS

SELECT 3
USE RESULTS

SELECT 1
LASTCOUNT = 0

DO WHILE NOT. EOF()
  DO CASE
    CASE MAX = 1
      LOCATE FOR ONE .AND. .NOT. TWO .AND. .NOT. THREE .AND.
      .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
CASE MAX = 2
   LOCATE FOR TWO .AND. .NOT. THREE .AND. .NOT. FOUR .AND.
   .NOT. FIVE .AND. .NOT. SIX
CASE MAX = 3
   LOCATE FOR THREE .AND. .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
CASE MAX = 4
   LOCATE FOR FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
CASE MAX = 5
   LOCATE FOR FIVE .AND. .NOT. SIX
CASE MAX = 6
   LOCATE FOR SIX
ENDCASE

COUNTER = 0
DO WHILE COUNTER < LASTCOUNT .AND. .NOT. EOF()
   CONTINUE
   COUNTER = COUNTER + 1
ENDDO
LASTCOUNT = LASTCOUNT + 1

@ 23,5 SAY "CALCULATING AT&T AND MCI COST FOR CONFIGURATION " + STR
   (LASTCOUNT,2,0) + "."

IF .NOT. EOF()
   SELECT 3
   ZAP
   IF A->ONE
      APPEND BLANK
      REPLACE BAND WITH 1
   ENDIF
   IF A->TWO
      APPEND BLANK
      REPLACE BAND WITH 2
   ENDIF
   IF A->THREE
      APPEND BLANK
      REPLACE BAND WITH 3
   ENDIF
   IF A->FOUR
      APPEND BLANK
      REPLACE BAND WITH 4
   ENDIF
   IF A->FIVE
      APPEND BLANK
      REPLACE BAND WITH 5
   ENDIF
ENDIF
IF A->JSII
    APPEND BLANK
    REPLACE BAND WITH 6
ENDIF
SAVE TO \NEWNET\TEMP

DO OUTLINES

SELECT 3
DO AT&TOUT
DO MCIOUT
RESTORE FROM TEMP ADDITIVE
SELECT 1
ENDIF
ENDDO

@ 23,5 SAY "CALCULATING COST FOR 986 SKYLINE."
DO SKYLINE
@ 23,5 SAY "CALCULATING COST FOR GTE SPRINT."
DO SPRINTOUT
@ 23,5 CLEAR
@ 23,5 SAY "STORING THE RESULTS."
DO OUTSTORE
RETURN

SET ECHO OFF
TYPE \NEWNET\OUTLINES.PRG

RESTORE FROM TEMP
LASTBAND = 0
SELECT 4
USE NEWNET
SUM USE_DAY + USE_EVE + USE_NIGHT TO SUMMEASURED
GOTO TOP
SELECT 2
SUM (USE_DAY + USE_EVE + USE_NIGHT) * QUANTITY TO SUMBILLED FOR OUT
FACTOR = SUMBILLED/SUMMEASURED

SELECT 3
GOTO TOP

DO WHILE .NOT. EOF()
   NUMBER = LASTBAND + 1
   STORE 0 TO PEAKSUM, DAYSUM, EVESUM, NIGHTSUM

   DO WHILE NUMBER <= BAND
      NAME = "PEAKHR" + STR(NUMBER,1,0)
      PEAKSUM = PEAKSUM + &NAME
      NUMBER = NUMBER + 1
   ENDDO

SELECT 4
DO WHILE BAND <= BAND .AND. .NOT. EOF()
   DAYSUM = DAYSUM + USE_DAY
   EVESUM = EVESUM + USE_EVE
   NIGHTSUM = NIGHTSUM + USE_NIGHT
   SKIP
ENDDO

SELECT 5
USE POISSON

IF HIGH_P <= 9
   P = "P" + STR(HIGH_P,1,0)
ELSE
   P = "P" + STR(HIGH_P,2,0)
ENDIF
LOCATE FOR &P > PEAKSUM
SELECT 3
REPLACE QUANTITY WITH E->TRUNKS
REPLACE USE_DAY WITH DAYSUM/QUANTITY * FACTOR
REPLACE USE_EVE WITH EVESUM/QUANTITY * FACTOR
REPLACE USE_NIGHT WITH NIGHTSUM/QUANTITY * FACTOR
LASTBAND = BAND
SKIP
ENDDO

SAVE TO \NEWNET\TEMP

RETURN

SET ECHO OFF
TYPE \NET\AT\&\OUT\PRG

RESTORE FROM TEMP
RESTORE FROM \TABLES\CONSTANT ADDITIVE

SELECT 6
USE \TABLES\AT\&\OUT

SELECT 3
GOTO TOP
DO WHILE NOT EOF()

SELECT 6
LOCATE FOR BAND = C->BAND
SELECT 3
DO CASE
CASE USE\_DAY >= 80
REPLACE DAY\_ATT WITH (F->DAY15*15 + F->DAY25*25 + F->DAY40*40 + (USE\_DAY-80)*F->DAY80) * QUANTITY
CASE 40 <= USE\_DAY AND USE\_DAY < 80
REPLACE DAY\_ATT WITH (F->DAY15*15 + F->DAY25*25 + (USE\_DAY-40)*F->DAY40) * QUANTITY
CASE 15 <= USE\_DAY AND USE\_DAY <= 40
REPLACE DAY\_ATT WITH (F->DAY15*15 + (USE\_DAY-15)*F->DAY25) * QUANTITY
CASE USE\_DAY <= 15
REPLACE DAY\_ATT WITH USE\_DAY+F->DAY15 * QUANTITY
ENDCASE

DO CASE
CASE USE\_EVE >= 80
REPLACE EVE\_ATT WITH (F->EVE15*15 + F->EVE25*25 + F->EVE40*40 + (USE\_EVE-80)*F->EVE80) * QUANTITY
CASE 40 <= USE\_EVE AND USE\_EVE < 80
REPLACE EVE\_ATT WITH (F->EVE15*15 + F->EVE25*25 + (USE\_EVE-40)*F->EVE40) * QUANTITY
CASE 15 <= USE\_EVE AND USE\_EVE <= 40
REPLACE EVE\_ATT WITH (F->EVE15*15 + USE\_EVE-15)*F->EVE25) * QUANTITY
CASE USE\_EVE <= 15
REPLACE EVE\_ATT WITH USE\_EVE+F->EVE15 * QUANTITY
ENDCASE

REPLACE NIGHT\_ATT WITH (USE\_NIGHT + F->WEKEND) * QUANTITY
REPLACE ACCESS\_ATT WITH F->ACCESS * QUANTITY
IF DAY_ATT + EVE_ATT + NIGHT_ATT ≥ QUANTITY*ATT_MIN
    REPLACE ATT_TOTAL WITH DAY_ATT+EVE_ATT+ NIGHT_ATT+ACCES_ATT
ELSE
    REPLACE ATT_TOTAL WITH QUANTITY*ATT_MIN + ACCES_ATT
ENDIF

SKIP
ENDDO

SUM ATT_TOTAL TO ATT_TOTE

IF ATT_TOTE < ATTLONCOS
    ATTLONCOS = ATT_TOTE
    SELECT 3
    USE
    SELECT 6
    USE AT&TOUT
    ZAP
    APPEND FROM \\NENNET\RESULTS
    SELECT 3
    USE RESULTS
ENDIF
SAVE ALL EXCEPT METRO TO \\NENNET\TEMP
RETURN

SET ECHO OFF
TYPE \NEWINET\MCOUT.PRG

RESTORE FROM TEMP
RESTORE FROM \RESULTS\FILENAME ADDITIVE
SELECT 3
GOTO TOP
DO WHILE .NOT. EOF()
  SELECT 6
  USE \TABLES\MCOUT
  LOCATE FOR BAND = C->BAND
  SELECT 3
  DO CASE
    CASE USE_DAY >= 80
      REPLACE DAY_MCI WITH (F->DAY15*15 + F->DAY25*25 + F->DAY40*40 + (USE_DAY-BO)*F->DAY80) * QUANTITY
      METRO/100
      SELECT 6
      SKIP
      SELECT 3
      REPLACE DAY_MCI WITH (F->DAY15*15 + F->DAY25*25 + F->DAY40*40 + (USE_DAY-BO)*F->DAY80) * QUANTITY
      END OF CASE
    CASE 40 < USE_DAY .AND. USE_DAY < 80
      REPLACE DAY_MCI WITH (F->DAY15*15 + F->DAY25*25 + (USE_DAY-40)*F->DAY40) * QUANTITY * METRO/100
      SELECT 6
      SKIP
      SELECT 3
      REPLACE DAY_MCI WITH (F->DAY15*15 + F->DAY25*25 + (USE_DAY-40)*F->DAY40) * QUANTITY * (100-METRO)/100 + DAY_MCI
      END OF CASE
    CASE USE_DAY >= 15
      REPLACE DAY_MCI WITH (USE_DAY-F->DAY25) * QUANTITY * METRO/100
      SELECT 6
      SKIP
      SELECT 3
      REPLACE DAY_MCI WITH (USE_DAY-F->DAY25) * QUANTITY * METRO/100 + DAY_MCI
      END OF CASE
    CASE USE_DAY <= 15
      REPLACE DAY_MCI WITH USE_DAY*F->DAY15 * QUANTITY * METRO/100
      SELECT 6
      SKIP
      SELECT 3
      REPLACE DAY_MCI WITH USE_DAY*F->DAY15 * QUANTITY
      END OF CASE
  END OF DO CASE
• (100-METRO)/100 + DAY_MCI
ENDCASE
SELECT 6
SKIP -1
SELECT 3

DO CASE
CASE USE_EVE >= 80
REPLACE EVE_MCI WITH (F->EVE15*15 + F->EVE25*25 +
F->EVE40*40 + (USE_EVE-80)*F->EVE80) * QUANTITY * ME
100-METRO)/100 + EVE_MCI
SELECT 6
SKIP
SELECT 3
REPLACE EVE_MCI WITH (F->EVE15*15 + F->EVE25*25 +
F->EVE40*40 + (USE_EVE-80)*F->EVE80) * QUANTITY * (100-METRO)/100 +
EVE_MCI
CASE 40 < USE_EVE .AND. USE_EVE < 80
REPLACE EVE_MCI WITH (F->EVE15*15 + F->EVE25*25 +
(USE_EVE-40)*F->EVE40) * QUANTITY * METRO/100
SELECT 6
SKIP
SELECT 3
REPLACE EVE_MCI WITH (F->EVE15*15 + F->EVE25*25 +
(USE_EVE-40)*F->EVE40) * QUANTITY * (100-METRO)/100 +
EVE_MCI
CASE USE_EVE <= 40
REPLACE EVE_MCI WITH (F->EVE15*15 + (USE_EVE-15)*F->EVE25) * QUANTITY * METRO/100
SELECT 6
SKIP
SELECT 3
REPLACE EVE_MCI WITH (F->EVE15*15 + (USE_EVE-15)*F->EVE25) * QUANTITY * (100-METRO)/100 +
EVE_MCI
CASE USE_EVE <= 15
REPLACE EVE_MCI WITH USE_EVE*F->EVE15 * QUANTITY * METRO/100
SELECT 6
SKIP
SELECT 3
REPLACE EVE_MCI WITH USE_EVE*F->EVE15 * QUANTITY
• (100-METRO)/100 + EVE_MCI
ENDCASE
SELECT 6
SKIP -1
SELECT 3
REPLACE NIGHT_MCI WITH (USE_NIGHT * F->WEEKEND * QUANTITY) * METRO/100
SELECT 6
SKIP
SELECT 3
REPLACE NIGHT_MCI WITH (USE_NIGHT * F->WEEKEND * QUANTITY)
* (100 - METRO)/100 + NIGHT_MCI

REPLACE ACCES_MCI WITH MCI_ACCESS * QUANTITY

IF DAY_MCI + EVE_MCI + NIGHT_MCI >= QUANTITY*MCI_MIN
    REPLACE MCI_TOTAL WITH DAY_MCI+EVE_MCI+NIGHT_MCI+ACCES_MCI
ELSE
    REPLACE MCI_TOTAL WITH QUANTITY*MCI_MIN + ACCES_MCI
ENDIF

SKIP
ENDDO

SUM MCI_TOTAL TO MCI_TOTE

IF MCI_TOTE < MCILOWCOS
    MCILOWCOS = MCI_TOTE
    SELECT 3
    USE
    SELECT 6
    USE MCIOUT
    ZAP
    APPEND FROM \NEWNET\RESULTS
    SELECT 3
    USE RESULTS
ENDIF

SAVE TO \NEWNET\TEMP
RETURN

SET ECHO OFF
TYPE \NEWNET\SKYLINE.PRG

CLEAR ALL
RESTORE FROM TEMP
SELECT 2
USE \RESULTS\&FILE
SELECT 5
USE POISSON
SELECT 6
USE SKYLINE
SELECT 7
USE \TABLES\SBSOUT

PEAKTOTAL = PEAKHR1 + PEAKHR2 + PEAKHR3 + PEAKHR4 + PEAKHR5 + PEAKHR6

SELECT 2
SUM USE_DAY * QUANTITY TO DAYTOTAL FOR OUT
SUM (USE_EVE + USE_NIGHT) * QUANTITY TO NIGHTTOTAL FOR OUT
GOTO TOP

SELECT 5
LOCATE FOR &P >= PEAKTOTAL

SELECT 6
ZAP
USEAVG = (DAYTOTAL + NIGHTTOTAL) / (DAYTOTAL + NIGHTTOTAL)
RESTORE FROM \TABLES\CONSTANT ADDITIVE

TIERNUM = 1

DO WHILE TIERNUM <= 4
  APPEND BLANK
  REPLACE SBS_LINES WITH E->TRUNKS
  REPLACE ACCES_SBS WITH SBS_ACCESS + SBS_LINES
  REPLACE TIER WITH B->TIER
  REPLACE PERCENT WITH B->PERCENT
  REPLACE SBSHRS_DAY WITH DAYTOTAL * PERCENT / 100
  REPLACE SBSHRS_EVE WITH NIGHTTOTAL * PERCENT / 100
  SELECT 7
  LOCATE FOR USAGE_HRS > USEAVG .OR. EOF()
  SKIP -1
  SELECT 6
  NAME = 'TIER' + STR(TIERI0) + '.DAY'
  REPLACE DAY_SBS WITH SBSHRS_DAY + B->NAME * 0.6
  NAME = 'TIER' + STR(TIERI0) + '_OTH'


REPLACE NIGHT_SBS WITH SBSHRS_EVE * 0.6

TIERNUM = TIERNUM + 1
SELECT 2
SKIP
SELECT 6
ENDDO

SUM DAY_SBS + NIGHT_SBS TO TOTAL_SBS
GOTO TOP

IF USEAVG < SBS_HRSMIN .AND. TOTAL_SBS < SBS_MIN * SBS_LINES
   REPLACE SBS_TOTAL WITH SBS_MIN * SBS_LINES + ACCES_SBS
ELSE
   REPLACE SBS_TOTAL WITH TOTAL_SBS + ACCES_SBS

RETURN

SET ECHO OFF
TYPE \NEWNET\SPRINTOUT.PRG

RESTORE FROM TEMP
SELECT 4
USE
SELECT 1
USE SPRINTOUT ALIAS SPRNT
ZAP
APPEND FROM NEWNET
GOTO TOP

DO WHILE .NOT. EOF()
    REPLACE QUANTITY WITH E->TRUNKS
    REPLACE USE_DAY WITH USE_DAY/QUANTITY * FACTOR
    REPLACE USE_EVE WITH USE_EVE/QUANTITY * FACTOR
    REPLACE USE_NIGHT WITH USE_NIGHT/QUANTITY * FACTOR
    SKIP
ENDDO

GOTO TOP
DO WHILE .NOT. EOF()
    SELECT 6 ALIAS SPRNT
    USE \TABLES\SPRINTOUT
    LOCATE FOR BAND = A->BAND
    SELECT 1
    DO CASE
        CASE USE_DAY >= 100
            REPLACE DAY_SPNT WITH (F->DAY0_40 + F->DAY40_70 + F->DAY70_100 + (USE_DAY-100)*F->DAY100PLUS) * QUANTITY + METRO/100
            SELECT 6
            SKIP
            SELECT 1
            REPLACE DAY_SPNT WITH (F->DAY0_40 + F->DAY40_70 + F->DAY70_100 + (USE_DAY-70)*F->DAY70PLUS) * QUANTITY + (100-METRO)/100 + DAY_SPWT
        CASE 70 < USE_DAY .AND. USE_DAY < 100
            REPLACE DAY_SPNT WITH (F->DAY0_40 + F->DAY40_70 + (USE_DAY-70)*F->DAY70) * QUANTITY + METRO/100
            SELECT 6
            SKIP
            SELECT 1
            REPLACE DAY_SPNT WITH (F->DAY0_40 + F->DAY40_70 + (USE_DAY-70)*F->DAY70) * QUANTITY + (100-METRO)/100 + DAY_SPWT

CASE 40 < USE_DAY .AND. USE_DAY (= 70
REPLACE DAY_SPNT WITH (F->DAY0_40*40 +
_DAY-40)*F->DAY0_70) * QUANTITY * MERO/100
SELECT 6
SKIP
SELECT 1
REPLACE DAY_SPNT WITH (F->DAY0_40*40 +
_DAY-40)*F->DAY0_70) * QUANTITY * (100-MERO)/100 + DAY_SPNT
CASE USE_DAY (<= 40
REPLACE DAY_SPNT WITH USE_DAY*F->DAY0_40 + QUANTITY * MERO/100
SELECT 6
SKIP
SELECT 1
REPLACE DAY_SPNT WITH USE_DAY*F->DAY0_40 + QUANTITY
* (100-MERO)/100 + DAY_SPNT
ENDCASE
SELECT 6
SKIP -1
SELECT 1
DO CASE
CASE USE_EVE >= 100
REPLACE EVE_SPNT WITH (F->EVE0_40*40 + F->EVE0_70*30 +
F->EVE7_100*30 + (USE_EVE-100)*F->EVE100PLUS) * QUANTITY
* MERO/100
SELECT 6
SKIP
SELECT 1
REPLACE EVE_SPNT WITH (F->EVE0_40*40 + F->EVE0_70*30 +
F->EVE7_100*30 + (USE_EVE-100)*F->EVE100PLUS) * QUANTITY
* (100-MERO)/100 + EVE_SPNT
CASE 70 < USE_EVE .AND. USE_EVE < 100
REPLACE EVE_SPNT WITH (F->EVE0_40*40 + F->EVE0_70*30 +
(USE_EVE-70)*F->EVE7_100) * QUANTITY * MERO/100
SELECT 6
SKIP
SELECT 1
REPLACE EVE_SPNT WITH (F->EVE0_40*40 + F->EVE0_70*30 +
(USE_EVE-70)*F->EVE7_100) * QUANTITY * (100-MERO)/100 +
EVE_SPNT
CASE 40 < USE_EVE .AND. USE_EVE (= 70
REPLACE EVE_SPNT WITH (F->EVE0_40*40 +
_EVE-40)*F->EVE0_70) * QUANTITY * MERO/100
SELECT 6
SKIP
SELECT 1
REPLACE EVE_SPNT WITH (F->EVE0_40*40 +
_EVE-40)*F->EVE0_70) * QUANTITY * (100-MERO)/100 + EVE_SP
CASE USE_EVE (= 40
REPLACE EVE_SPNT WITH USE_EVE*F->EVE0_40 + QUANTITY * MERO/100
SELECT 6
SKIP
SELECT 1
REPLACE EVE_SPNT WITH USE_EVE*EVEO_40 * QUANTITY
* (100-METRO)/100 + EVE_SPNT
ENDCASE

SELECT 6
SKIP -1
SELECT 1
REPLACE NIGHT_SPNT WITH (USE_NIGHT * F->WEEKEND * QUANTITY) * METRO/100
SELECT 6
SKIP
SELECT 1
REPLACE NIGHT_SPNT WITH (USE_NIGHT * F->WEEKEND * QUANTITY)
* (100-METRO)/100 + NIGHT_SPNT

SKIP
ENDDO

SELECT 1
SUM DAY_SPNT + EVE_SPNT + NIGHT_SPNT TO TOTAL_SPNT
GOTO TOP
REPLACE ACCES_SPNT WITH SPNTACCESS * QUANTITY

IF TOTAL_SPNT/QUANTITY < SPRNT_MIN
REPLACE SPNT_TOTAL WITH SPRNT_MIN * QUANTITY + ACCES_SPNT
ELSE
REPLACE SPNT_TOTAL WITH TOTAL_SPNT + ACCES_SPNT
ENDIF
SAVE TO \NEWNET\TEMP
RETURN

SET ECHO OFF
TYPE \NEWNET\OUTSTORE.PRG

CLEAR ALL
RESTORE FROM TEMP
RESTORE FROM \RESULTS\FILENAME ADDITIVE
RESTORE FROM TEMP ADDITIVE
SAVE ALL LIKE PEAKHR? TO \NEWNET\TEMP2
RELEASE ALL EXCEPT ?I+
RELEASE NIGHTSUM, LINES
RESTORE FROM TEMP2 ADDITIVE
SAVE TO \NEWNET\TEMP2
RESTORE FROM TEMP
RELEASE ALL EXCEPT MAI
RESTORE FROM TEMP2 ADDITIVE
SAVE TO \NEWNET\TEMP2
RESTORE FROM TEMP
RELEASE ALL EXCEPT METRO
RESTORE FROM TEMP2 ADDITIVE
OPTIMIZE = .T.
P.OUT = HIGH_P

IF HIGH_P < 10
   FIELDOUT = "P" + STR(HIqHP,1,0)
ELSE
   FIELDOUT = "P" + STR(HIGH_P,2,0)
ENDIF

MAIOUT = MAI
PEAKHR1OUT = PEAKHR1
PEAKHR2OUT = PEAKHR2
PEAKHR3OUT = PEAKHR3
PEAKHR4OUT = PEAKHR4
PEAKHR5OUT = PEAKHR5
PEAKHR6OUT = PEAKHR6
RELEASE HIGH_P, FIELD, MAI
RELEASE ALL LIKE PEAKHR?
SAVE TO \RESULTS\FILENAME

NAME = FILENAME + ".ATT"
COPY FILE ATOUT.DBF TO \RESULTS\FILENAME
NAME = FILENAME + ".MCI"
COPY FILE MCIOUT.DBF TO \RESULTS\FILENAME
NAME = FILENAME + ".SPT"
COPY FILE SPINTOUT.DBF TO \RESULTS\FILENAME
NAME = FILENAME + ',S3S'
COPY FILE SKYLINE.DBF TO \RESULTS\NAME
NAME = FILENAME + ',NEW'
COPY FILE NEWNET.DBF TO \RESULTS\NAME

RETURN

SET ECHO OFF
TYPE \NEWNET\INWATS.PRG

CLEAR ALL
RESTORE FROM TEMP
RELEASE ALL EXCEPT FILE*
USE \RESULTS\FILE
COPY TO \NEWNET\NEWNET FIELDS BAND, OUT, QUANTITY, USE_DAY, USE_EVE, USE_NI
GET FOR .NOT. OUT
LOCATE FOR .NOT. OUT .AND. BAND > 0

DO WHILE BAND > 0 .AND. .NOT. EOF()
    SKIP
ENDDO

SKIP -1
MAX = BAND
ROW = 5
PEAKHR1 = 0.0
PEAKHR2 = 0.0
PEAKHR3 = 0.0
PEAKHR4 = 0.0
PEAKHR5 = 0.0
PEAKHR6 = 0.0
NUMBER = 1
CLEAR
@ 2,5 SAY *ENTER TOTAL PEAK HOUR IN WATS TRAFFIC IN MINUTES FOR EACH BAND:*

DO WHILE NUMBER (= MAX
    TEMP = "PEAKHR" + STR(NUMBER,1,0)
    @ ROW,10 SAY "BAND" + STR(NUMBER,1,0) + ': * GET TEMP PICTURE "999.9"
    NUMBER = NUMBER + 1
    ROW = ROW + 2
ENDDO

READ

USE NEWNET
ROW = 4
HIGH_P = 0
TEMP = 0
PEAKNUM = 1
LOCATE FOR BAND > TEMP
DO WHILE .NOT. OUT .AND. .NOT. EOF()
    TEMP = BAND
    PEAKTOTAL = 0

    DO WHILE PEAKNUM <= TEMP
        NAMEPK = "PEAKHR" + STR(PEAKNUM,1,0)
        PEAKTOTAL = PEAKTOTAL + &NAMEPK
        PEAKNUM = PEAKNUM + 1
    ENDDO

SUM QUANTITY TO LINES FOR BAND = TEMP .AND. .NOT. OUT
SELECT 2
USE POISSON
LOCATE FOR TRUNKS = LINES
NUMBER = 1
FLAG = .T.

    DO WHILE NUMBER <= 50 .AND. FLAG
        IF NUMBER > 9
            FIELD = "P" + STR(NUMBER,2,0)
        ELSE
            FIELD = "P" + STR(NUMBER,1,0)
        ENDFIELD

        IF &FIELD >= PEAKTOTAL
            FLAG = .F.
        ENDFIELD

        NUMBER = NUMBER + 1
    ENDOO
R ROW, 40 SAY "BAND" + STR(TEMP,1,0) + " TRUNKS: " GET FIELD

    IF NUMBER = 1 > HIGH_P
    HIGH_P = NUMBER - 1
ENDIF

    ROW = ROW + 2
SELECT 1
LOCATE FOR BAND > TEMP
ENDDO
CLEAR GETS

FLAG = .T.
DO WHILE FLAG
    TEMP2 = HIGH_P
    @ 20, 5 SAY "PRESS RETURN KEY TO USE DEFAULT P VALUE OR ENTER YOUR OWN:"
    GET HIGH_P PICTURE "99"
READ
IF HIGH.P <= 50 .AND. HIGH.P >= 1
    FLAG = .F.
ELSE
    HIGH.P = TEMP2
    022,5 SAY 'P VALUE MUST BE 1 THRU 50. REENTER VALUE.'
ENDIF
ENDDO

WAIT

USE NEWMET
ZAP
NUMBER = 1

DO WHILE NUMBER <= MAX
    APPEND BLANK
    REPLACE BAND WITH NUMBER
    REPLACE OUT WITH .F.
    NUMBER = NUMBER + 1
ENDDO

CLEAR
GOTO TOP
0 5,10 SAY 'ENTER ACTUAL MEASURED TRAFFIC IN HOURS PER MONTH:'

DO WHILE .NOT. EOF()
    0 11,10 SAY "BAND" + STR(BAND,1,0)
    0 13,10 SAY * DAY:" GET USE_DAY
    0 15,10 SAY * EVENING:" GET USE_EVE
    0 17,10 SAY "NIGHT/WEEEKEND:" GET USE_NIGHT
    READ
    SKIP
ENDDO

WAIT
SAVE TO \NEWNET\TEMP
DO INCPUTE
RETURN

SET ECHO OFF
TYPE \NEWNET\INCPUTE.PRG

RESTORE FROM TEMP
CLEAR
USE POSSIBLE

DO CASE
CASE MAX = 1
  LOCATE FOR ONE .AND. .NOT. TWO .AND. .NOT. THREE .AND. .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
    @ 23,5 SAY 'TAKE A 5 MINUTE BREAK WHILE I DO SOME WORK.'
CASE MAX = 2
  LOCATE FOR TWO .AND. .NOT. THREE .AND. .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
    @ 23,5 SAY 'TAKE A 5 MINUTE BREAK WHILE I DO SOME WORK.'
CASE MAX = 3
  LOCATE FOR THREE .AND. .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
    @ 23,5 SAY 'TAKE A 5 MINUTE BREAK WHILE I DO SOME WORK.'
CASE MAX = 4
  LOCATE FOR FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
    @ 23,5 SAY 'TAKE A 10 MINUTE BREAK WHILE I DO SOME WORK.'
CASE MAX = 5
  LOCATE FOR FIVE .AND. .NOT. SIX
    @ 23,5 SAY 'TAKE A 15 MINUTE BREAK WHILE I DO SOME WORK.'
CASE MAX = 6
  LOCATE FOR SIX
    @ 23,5 SAY 'COME BACK IN 30 MINUTES.'
ENDCASE

SELECT 2
USE \RESULTS\&FILE
STORE 9999999999 TO ATFWOUCS

SELECT 3
USE RESULTS

SELECT 1
LASTCOUNT = 0

DO WHILE .NOT. EOF()
  DO CASE
    CASE MAX = 1
      LOCATE FOR ONE .AND. .NOT. TWO .AND. .NOT. THREE .AND. .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
      CASE MAX = 2
        LOCATE FOR TWO .AND. .NOT. THREE .AND. .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
      ENDCASE
    ENDCASE
  ENDWHILE
LOCATE FOR TWO .AND. .NOT. THREE .AND. .NOT. FOUR .AND.
   .NOT. FIVE .AND. .NOT. SIX
CASE MAX = 3
    LOCATE FOR THREE .AND. .NOT. FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
CASE MAX = 4
    LOCATE FOR FOUR .AND. .NOT. FIVE .AND. .NOT. SIX
CASE MAX = 5
    LOCATE FOR FIVE
   LOCATE FOR SIX
ENDCASE

COUNTER = 0
DO WHILE COUNTER < LASTCOUNT .AND. .NOT. EOF()
    CONTINUE
    COUNTER = COUNTER + 1
ENDDO

LASTCOUNT = LASTCOUNT + 1

@ 23,5 SAY "CALCULATING AT&T COST FOR CONFIGURATION " + STR(LASTCOUNT, 2) + "."

IF .NOT. EOF()
    SELECT 3
    ZAP
    IF A->ONE
        APPEND BLANK
        REPLACE BAND WITH 1
    ENDF
    IF A->TWO
        APPEND BLANK
        REPLACE BAND WITH 2
    ENDF
    IF A->THREE
        APPEND BLANK
        REPLACE BAND WITH 3
    ENDF
    IF A->FOUR
        APPEND BLANK
        REPLACE BAND WITH 4
    ENDF
    IF A->FIVE
        APPEND BLANK
        REPLACE BAND WITH 5
    ENDF
IF A->SIX
    APPEND BLANK
    REPLACE BAND WITH 6
ENDIF
SAVE TO \NEWNET\TEMP

DO INLINES

    SELECT 3
    DO AT&TIN
    RESTORE FROM TEMP ADDITIVE
    SELECT 1

ENDIF
ENDDO

@ 23,5 SAY "STORING THE RESULTS."
DO INSTORE
RETURN

SET ECHO OFF
TYPE \NEWNET\INLINES.PRG

RESTORE FROM TEMP
LASTBAND = 0
SELECT 4
USE NEWNET
SUM USE_DAY + USE_EVE + USE_NIGHT TO SUMEASURED
GOTO TOP
SELECT 2
SUM (USE_DAY + USE_EVE + USE_NIGHT) * QUANTITY TO SUMBILLED FOR .NOT. OUT
FACTOR = SUMBILLED/SUMEASURED

SELECT 3
GOTO TOP

DO WHILE .NOT. EOF()
    NUMBER = LASTBAND + 1
    STORE 0 TO PEAKSUM, DAYSUM, EVESUM, NIGHTSUM

    DO WHILE NUMBER <= BAND
        NAME = "PEAKHR" + STR(NUMBER,1,0)
        PEAKSUM = PEAKSUM + &NAME
        NUMBER = NUMBER + 1
    ENDDO

SELECT 4
DO WHILE BAND <= C-)BAND .AND. .NOT. EOF()
    DAYSUM = DAYSUM + USE_DAY
    EVESUM = EVESUM + USE_EVE
    NIGHTSUM = NIGHTSUM + USE_NIGHT
    SKIP
ENDDO

SELECT 5
USE POISSON

IF HIGH_P <= 9
    P = "P" + STR(HIGH_P,1,0)
ELSE
    P = "P" + STR(HIGH_P,2,0)
ENDIF
LOCATE FOR LP >= PEAKSUM
SELECT 3
REPLACE QUANTITY WITH E->TRUNKS
REPLACE USE_DAY WITH DAYSUM/QUANTITY * FACTOR
REPLACE USE_EVE WITH EVESUM/QUANTITY * FACTOR
REPLACE USE_NIGHT WITH NIGHTSUM/QUANTITY * FACTOR
LASTBAND = BAND
SKIP
ENDDO

SAVE TO \NEWNET\TEMP

RETURN

SET ECHO OFF
RESTORE FROM TEMP
RESTORE FROM "\TABLES\CONSTANT ADDITIVE"

SELECT 6
USE "\TABLES\AT&TIN"

SELECT 3
GOTO TOP
DO WHILE .NOT. EOF()

   SELECT 6
   LOCATE FOR BAND = C->BAND
   SELECT 3
   DO CASE
   CASE USE_DAY >= 80
      REPLACE DAY_ATT WITH (F->)DAY15*15 + F->)DAY25*25 + F->)DAY40*40 +
      (USE_DAY-80)*F->)DAY80) * QUANTITY
   CASE 40 < USE_DAY .AND. USE_DAY < 80
      REPLACE DAY_ATT WITH (F->)DAY15*15 + F->)DAY25*25 +
      (USE_DAY-40)*F->)DAY40) * QUANTITY
   CASE 15 < USE_DAY .AND. USE_DAY <= 40
      REPLACE DAY_ATT WITH (F->)DAY15*15 + (USE_DAY-15)*F->)DAY25)
      * QUANTITY
   CASE USE_DAY <= 15
      REPLACE DAY_ATT WITH USE_DAY#F->)DAY15 * QUANTITY
   ENDCASE

   DO CASE
   CASE USE_EVE >= 80
      REPLACE EVE_ATT WITH (F->)EVE15*15 + F->)EVE25*25 +
      F->)EVE40*40 + (USE_EVE-80)*F->)EVE80) * QUANTITY
   CASE 40 < USE_EVE .AND. USE_EVE < 80
      REPLACE EVE_ATT WITH (F->)EVE15*15 + F->)EVE25*25 +
      (USE_EVE-40)*F->)EVE40) * QUANTITY
   CASE 15 < USE_EVE .AND. USE_EVE <= 40
      REPLACE EVE_ATT WITH (F->)EVE15*15 +
      (USE_EVE-15)*F->)EVE25) * QUANTITY
   CASE USE_EVE <= 15
      REPLACE EVE_ATT WITH USE_EVE#F->)EVE15 * QUANTITY
   ENDCASE

   REPLACE NIGHT_ATT WITH (USE_NIGHT * F->)WEEKEND * QUANTITY)
   REPLACE ACCESS_ATT WITH F->)ACCESS * QUANTITY
IF DAY_ATT + EVE_ATT + NIGHT_ATT > QUANTITY#ATT_MININ
    REPLACE ATT_TOTAL WITH DAY_ATT+EVE_ATT+NIGHT_ATT+ACCES_ATT
ELSE
    REPLACE ATT_TOTAL WITH QUANTITY#ATT_MININ + ACCES_ATT
ENDIF
SKIP
ENDDO

SUM ATT_TOTAL TO ATT_TOTE

IF ATT_TOTE < ATTLOWCOS
    ATTLOWCOS = ATT_TOTE
    SELECT 3
    USE
    SELECT 6
    USE AT&T#IN
    ZAP
    APPEND FROM \NEWNET\RESULTS
    SELECT 3
    USE RESULTS
ENDIF
SAVE ALL EXCEPT METRO TO \NEWNET\TEMP
RETURN

SET ECHO OFF
TYPE \NEWNET\INSTORE.PRG

CLEAR ALL
RESTORE FROM TEMP
RESTORE FROM \RESULTS\FILENAME ADDITIVE
RESTORE FROM TEMP ADDITIVE
SAVE ALL LIKE PEAKHR? TO \NEWNET\TEMP2
RESTORE FROM TEMP
RELEASE ALL EXCEPT ?*
RELEASE NIGHTSUM, LINES
RESTORE FROM TEMP2 ADDITIVE
SAVE TO \NEWNET\TEMP2
RESTORE FROM TEMP
RELEASE ALL EXCEPT MAX
RESTORE FROM TEMP2 ADDITIVE
OPTIMIZE = .T.
P_IN = HIGH_P

IF HIGH_P < 10
   FIELPIN = "P" + STR(HIGH_P,1,0)
ELSE
   FIELPIN = "P" + STR(HIGH_P,2,0)
ENDIF

MAXIN = MAX
PEAKHR1IN = PEAKHR1
PEAKHR2IN = PEAKHR2
PEAKHR3IN = PEAKHR3
PEAKHR4IN = PEAKHR4
PEAKHR5IN = PEAKHR5
PEAKHR6IN = PEAKHR6
RELEASE HIGH_P, FIELD, MAX
RELEASE ALL LIKE PEAKHR?
SAVE TO \NEWNET\TEMP2
RESTORE FROM TEMP2
RESTORE FROM \RESULTS\FILENAME
RESTORE FROM TEMP2 ADDITIVE
SAVE TO \RESULTS\FILENAME

NAME = FILENAME + '.TIN'
COPY FILE ATATIN.DBF TO \RESULTS\NAME
NAME = FILENAME + '.NEW'
USE \RESULTS\FILENAME

IF OUT
USE \RESULTS\NAME
APPEND FROM NEWNET
ELSE
    USE NEWNET
    COPY TO \RESULTS\NAME
ENDIF
RETURN
SET ECHO OFF
TYPE \NEWNET\OUTPUT.PRG

DO WHILE .T.
    CLEAR
    STORE * * TO CHOICE
    @ 8,25 SAY "-1- DISPLAY RESULTS ON SCREEN."
    @ 10,25 SAY "-2- PRINT OUT THE RESULTS."
    @ 13,25 SAY "-0- FINISHED."
    @ 17,25 SAY "CHOOSE ONE:" GET CHOICE PICTURE "9"
    READ

    DO CASE
        CASE CHOICE = "1"
            RESTORE FROM TEMP
            DO DISPLAY
        CASE CHOICE = "2"
            RESTORE FROM TEMP
            DO PRINT
        CASE CHOICE = "0"
            RETURN
    ENDCASE

ENDDO

SET ECHO OFF
A report summary will be displayed for each carrier. The display will wait between reports. Press (Ctrl)(S) to stop the scrolling. Press (Ctrl)(S) again to resume.
TYPE \NEWNET\DISPATT.PRG

CLEAR
NAME = FILENAME + ".ATT"
USE \RESULTS\NAME

RESTORE FROM \TABLES\CONSTANT ADDITIVE
SUM QUANTITY TO NUMLINES
SELECT 2
USE \TABLES\AT&TOUT

IF NUMLINES = 0
  CONECTOTAL = 0
ELSE
  CONECTOTAL = CONNECT1 + (NUMLINES-1)*CONNECT2
ENDIF

SELECT 1
LINE1 = "Access charge is $" + STR(B-)ACCESS,6,2) + " per line."
LINE2 = "Connection charge is $" + STR(B-)CONNECT1,6,2) + " for the first line and "
LINE3 = "$" + STR(B-)CONNECT2,6,2) + " for each successive line."
LINE4 = "Total connection charge for this configuration is $" + STR(CONNECT TOTAL,7,2) + ".
LINE5 = "Minimum usage charge is $" + STR(ATT_MIN,6,2) + " per line exclusive of access charges."

REPORT FORM \NEWNET\AT&TOUT HEADING "OPTIMIZED CONFIGURATION: " + FIELDOUT
WAIT
?
?
?
? LINE1
? LINE2
? LINE3
? LINE4

IF ATT_MIN > 0
  ? LINES
ELSE
ENDIF
WAIT
RETURN
TYPE \NOWNET\DISPMCI.PRG
CLEAR
NAME = FILENAME + ".MCI"
USE \RESULTS\&NAME
RESTORE FROM \TABLES\CONSTANT ADDITIVE
SUM QUANTITY TO NUMLINES
IF NUMLINES = 0
   CONECNTOTAL = 0
ELSE
   CONECNTOTAL = MCICONNECT + NUMLINES
ENDIF

LINE1 = " Access charge is $" + STR(MCI_ACCESS,6,2) + " per line."
LINE2 = " Connection charge is $" + STR(MCICONNECT,6,2) + " per line."
LINE3 = " Total connection charge for this configuration is $" + STR(100-METRO,3,0) + " per line exclusive of access charges."
LINE4 = " Minimum usage charge is $" + STR(MCI_MIN,6,2) + " per line exclusive of access charges."

REPORT FORM \NOWNET\MCIOUT HEADING " OPTIMIZED CONFIGURATION:
+ FIELDOUT + " + " + STR(100-METRO,3,0) + " ON-NET/" + STR(100-METRO,3,0) + " OFF-NET" + "*
WAIT
?
?
?
? LINE1
? LINE2
? LINE3
IF MCI_MIN > 0
   ? LINE4
ELSE
ENDIF
WAIT
RETURN

SET ECHO OFF
TYPE \NEWNET\DISPSPNT.PRG

CLEAR
NAME = FILENAME + ".SPT"
USE \RESULTS\NAME
RESTORE FROM \TABLES\CONSTANT ADDITIVE
IF QUANTITY = 0
    CONECTOTAL = 0
ELSE
    CONECTOTAL = SPNTCONNECT + QUANTITY
ENDIF

LINE1 = " Access charge is $" + STR(SPNTACCESS,6,2) + " per line."
LINE2 = " Total monthly access charge for this configuration is $" + STR(SPNTACCESS * QUANTITY,7,2) + ":"
LINE3 = " Connection charge is $" + STR(SPNTCONNECT,6,2) + " per line."
LINE4 = " Total connection charge for this configuration is $" + STR(CONNECTOTAL,7,2) + ":"
LINE5 = " Minimum usage charge is $" + STR(SPNTMIN,6,2) + " per line exclusive of access charges."
LINE6 = " Total monthly cost for this configuration is $" + STR(SPNTTOTAL,12,2) + ":"

REPORT FORM SPRNTOUT HEADING " OPTIMIZED CONFIGURATION: " + FIELD OUT + "+(" + STR(METRO,3,0) + "% ON-NET/" + STR(100-METRO,3,0) + "% OFF-NET")"
WAIT
?
?
?
? LINE1
? LINE2
?
? LINE3
? LINE4
?
IF SPRNTMIN > 0
    ? LINES
?
ELSE
ENDIF
? LINE6
?
WAIT
RETURN
TYPE \NEWNET\DISPSBS.PRG

CLEAR
NAME = FILENAME + ".SBS"
USE \RESULTS\NAME
RESTORE FROM \TABLE\CONSTANT ADDITIVE
LINE1 = " Access charge is $' + STR(SBS_ACCESS,6,2) + " per line."
LINE2 = " Total monthly access charge for this configuration is $' + STR(ACCESS,7,2) + "."
LINE3 = " Minimum usage charge is $' + STR(SBS_MIN,6,2) + " if average use is less than $' + STR(SBS_MIN,7,2) + " hours/line."
LINE4 = " Total monthly cost for this configuration is $' + STR(SBS_TOT,11,2) + "."
LINE5 = " Connection charges per line are based on the distance between you and the exchange carrier wire center and the SBS Skyline MATS access point."
LINE6 = " Minimum usage charge is $' + STR(SBS_MIN,6,2) + " if average use is less than $' + STR(SBS_MIN,3,0) + " hours/line."
REPORT FORM \NEWNET\SBSOUT HEADING "OPTIMIZED CONFIGURATION: " + FIELDOUT WAIT
? LINE1
? LINE2
IF SBS_MIN > 0
? LINE3
ELSE
ENDIF
? LINE4
? LINE5
? LINE6
USE \TABLE\SBSCONC
SET MARGIN TO 30
? 
? 
DISPLAY OFF ALL
? 
SET MARGIN TO 0
WAIT
RETURN
CLEAR
NAME = FILENAME + ".NEW"
USE \RESULTS\NAME
LINE0 = 'OUT WATTS
LINE1 = 'BUSY HOUR TRAFFIC MONTHLY TRAFFIC'
LINE2 = '('Minutes') (Hours')
LINE3 = 'DAY EVENING NIGHT/WEEK
NO'
NUMBER = 1

DO WHILE NUMBER <= MAIOUT
   PEAKNAME = 'PEAKHR' + STR(BAND,1,0) + 'OUT'
   LINENAME = 'LINE' + STR(BAND + 3,1,0)
   LINENAME = 'BAND ' + STR(BAND,1,0) + ' ' + STR(PEAKNAME
   ,6,1) + ' ' + STR(USE_DAY,6,2) + ' ' + STR(USE_EVE,6,2)
   + ' ' + STR(USE_NIGHT,6,2)
   SKIP
   NUMBER = NUMBER + 1
ENDDO
GOTO TOP
?
?
? LINE0
? LINE1
? LINE2
? LINE3
?
NUMBER = 1

DO WHILE NUMBER <= MAIOUT
   LINENAME = 'LINE' + STR(BAND + 3,1,0)
   ? LINENAME
   SKIP
   NUMBER = NUMBER + 1
ENDDO
WAIT
RETURN
TYPE \NENET\DISPTIN.PRG

CLEAR
NAME = FILENAME + ".TIN"
USE \RESULTS\NAME
RESTORE FROM \TABLES\CONSTANT ADDITIVE
SUM QUANTITY TO NUMLINES
SELECT 2
USE \TABLES\AT&TIN

IF NUMLINES = 0
  CONECTOTAL = 0
ELSE
  CONECTOTAL = CONNECT1 + (NUMLINES) * CONNECT2
ENDIF

SELECT 1
LINE1 = " Access charge is $" + STR(ATTR.ACCESS,6,2) + " per line."
LINE2 = " Connection charge is $" + STR(ATTR.CONNECT1,6,2) + " for the first line and "."
LINE3 = "$" + STR(ATTR.CONNECT2,6,2) + " for each successive line."
LINE4 = " Total connection charge for this configuration is $" + STR(CONECTOTAL,7,2) + "."
LINE5 = " Minimum usage charge is $" + STR(ATTR.MININ,6,2) + " per line exclusive of access charges."

REPORT FORM \NENET\AT&TIN HEADING "OPTIMIZED CONFIGURATION: "+ FIELDIN
WAIT
? ?
? LINE1
? LINE2
? LINE3
? LINE4

IF ATTR_MININ > 0
  ? LINE5
ELSE
ENDIF
ENDIF
WAIT
RETURN
TYPE \NEWNET\DISP.IN.PRG

CLEAR
NAME = FILENAME + ".NEW"
USE 'RESULTS\&NAME
LINE0 = ' IN WATS
LINE1 = ' BUSY HOUR TRAFFIC
LINE2 = ' (Minutes)
LINE3 = ' MONTHLY TRAFFIC
ND' = 1
NUMBER = 1
LOCATE FOR .NOT. OUT

DO WHILE NUMBER <= MAXIN
  PEAKNAME = 'PEAKHR' + STR(BAND,1,0) + 'IN'
  LINENAME = 'LINE' + STR(BAND + 3,1,0)
  &LINENAME = 'BAND' + STR(BAND,1,0) + ' + STR(&PEAKNAME
  ,6,1) + ' + STR(USE_DAY,6,2) + ' + STR(USE_EVE,6,2)
  SKIP
  NUMBER = NUMBER + 1
ENDDO

LOCATE FOR .NOT. OUT

? ?
? LINE0
? LINE1
? LINE2
? LINE3
?

NUMBER = 1

DO WHILE NUMBER <= MAXIN
  LINENAME = 'LINE' + STR(BAND + 3,1,0)
  ? &LINENAME
  SKIP
  NUMBER = NUMBER + 1
ENDDO

WAIT
RETURN
TYPE \NEWNET\PRINT.PRG

CLEAR
TEXT

OPTIMIZED RESULTS

Align Paper and Turn on Printer

ENDTEXT
WAIT
CLEAR
USE \RESULTS\FILENAME
RESTORE FROM \RESULTS\FILENAME

IF OUT
   DO PRNTATT
   DO PRNTMCI
   DO PRNTSPMT
   DO PRNTSBS
   DO PRNTOUT
ENDIF

USE \RESULTS\FILENAME
LOCATE FOR .NOT. OUT

IF BAND > 0
   CLEAR
   DO PRNTTIN
   DO PRNTIN
ENDIF

RETURN

SET ECHO OFF
CLEAR
NAME = FILENAME + ",ATT"
USE \RESULTS\&NAME
RESTORE FROM \TABLES\CONSTANT ADDITIVE
SUM QUANTITY TO NUMLINES
SELECT 2
USE \TABLES\ATTOUT

IF NUMLINES = 0
   CONECTOTAL = 0
ELSE
   CONECTOTAL = CONNECT1 + (NUMLINES-1)*CONNECT2
ENDIF

SELECT 1
LINE1 = "Access charge is $' + STR(B-)ACCESS,6,2) + " per line."
LINE2 = "Connection charge is $' + STR(B-)CONNECT1,6,2) + " for the first line and"
LINE3 = "$' + STR(B-)CONNECT2,6,2) + " for each successive line."
LINE4 = "Total connection charge for this configuration is $' + STR(CONECTOTAL,7,2) + "."
LINES = "Minimum usage charge is $' + STR(ATT_MIN,6,2) + " per line exclusive of access charges."

REPORT FORM \NONNET\ATITOUT HEADING "OPTIMIZED CONFIGURATION: " + FIELDOUT
NOEJECT TO PRINT
SET PRINT ON
?
?
? LINE1
?
? LINE2
? LINE3
?
? LINE4
IF ATT_MIN > 0
   ? LINES
ELSE
ENDIF
?
SET PRINT OFF
RETURN
TYPE \NEWMET\PRNTMCI.PRG

CLEAR
NAME = FILENAME + ".MCI"
USE \RESULTS\NAME
RESTORE FROM \TABLES\CONSTANT ADDITIVE
SUM QUANTITY TO NUMLINES
IF NUMLINES = 0
   CONECTOTAL = 0
ELSE
   CONECTOTAL = MCICONNECT * NUMLINES
ENDIF

LINE1 = " Access charge is $" + STR(MCI_ACCESS,6,2) + " per line."
LINE2 = " Connection charge is $" + STR(MCICONNECT,6,2) + " per line."
LINE3 = " Total connection charge for this configuration is $" + STR(CONNECTOTAL,7,2) + "."
LINE4 = " Minimum usage charge is $" + STR(MCI_MIN,6,2) + " per line exclusive of access charges."

REPORT FORM \NEWMET\NCIOUT HEADING " OPTIMIZED CONFIGURATION: " + FIELDOUT + "% ON-NET/" + STR(100-METRO,3,0) + "% OFF-NET" TO PRINT
SET PRINT ON
?
?
? LINE1
?
? LINE2
?
? LINE3
?
IF MCI_MIN > 0
   ? LINE4
ELSE
ENDIF
?
SET PRINT OFF

RETURN

SET ECHO OFF
TYPE \NENNET\PRNTSPNT.PRG

CLEAR
NAME = FILENAME + ".SPT"
USE \RESULTS\NAME
RESTORE FROM \TABLES\CONSTANT ADDITIVE

IF QUANTITY = 0
    CONECTOTAL = 0
ELSE
    CONECTOTAL = SPNTCONNECT + QUANTITY
ENDIF

LINE1 = "Access charge is $" + STR(SPNTACCESS,6,2) + ", per line."
LINE2 = "Total monthly access charge for this configuration is $" + STR(SPNTACCESS + QUANTITY,7,2) + ", per line."
LINE3 = "Connection charge is $" + STR(SPNTCONNECT,6,2) + ", per line."
LINE4 = "Total connection charge for this configuration is $" + STR(CONNECTOTAL,7,2) + ", per line."
LINE5 = "Minimum usage charge is $" + STR(SPNTMIN,6,2) + per line exclusive of access charges."
LINE6 = "Total monthly cost for this configuration is $" + STR(SPNTTOTAL,12,2) + ", per line."

REPORT FORM SPNTOPT HEAD "OPTIMIZED CONFIGURATION: " + FIELD OUT + " + " + STR(METRO,3,0) + " ON-MET/" + STR(100-METRO,3,0) + " OFF-MET/" + " TO PRINT"
SET PRINT ON

? LINE1
? LINE2
? LINE3
? LINE4
? LINE6
? LINE5

IF SPNTMIN > 0
    ? LINE5
    ?
ELSE
    ENDIF
? LINE6
?
SET PRINT OFF
RETURN
CLEAR
NAME = FILENAME + ".SBS"
USE \RESULTS\NAME
RESTORE FROM \TABLES\CONSTANT ADDITIVE
LINE1 = " Access charge is $" + STR(SBS_ACCESS,6,2) + " per line."
LINE2 = " Total monthly access charge for this configuration is $" + STR(ACCESS,7,2) + ".
LINE3 = " Minimum usage charge is $" + STR(MIN,6,2) + " if average use is less than " + STR(HRS_MIN,3,0) + " hours/line."
LINE4 = " Total monthly cost for this configuration is $" + STR(TOTAL,2) + ".
LINE5 = " Connection charges per line are based on the distance between you and exchange carrier wire center and the SBS Skyline WATS access point."
REPORT FORM \NEWNET\SBSOUT HEADING "OPTIMIZED CONFIGURATION: " + FIELDOUT T O PRINT
SET PRINT ON
?
?
?
? LINE1
? LINE2
IF MIN > 0
?
? LINE3
ELSE
ENDIF
?
? LINE4
?
? LINE5
? LINE6
USE \TABLES\SBS_CONE
SET MARGIN TO 30
?
?
DISPLAY OFF ALL
?
SET MARGIN TO 0
SET PRINT OFF
RETURN
CLEAR
NAME = FILENAME + ".NEW"
USE \RESULTS\NAME
LINE0 = ' DUT WATS DUT WATS'
LINE1 = ' BUSY HOUR TRAFFIC MONTHLY TRAFFIC'
LINE2 = '(Minutes) (Hours)'
LINE3 = ' DAY EVENING NIGHT/WEEK
ND'
NUMBER = 1
DO WHILE NUMBER <= MAXOUT
  PEAKNAME = 'PEAKHR' + STR(BAND,1,0) + 'OUT'
  LINENAME = 'LINE' + STR(BAND + 3,1,0)
  &LINENAME = ' BAND ' + STR(BAND,1,0) + ' ' + STR(&PEAKNAME

  &LINENAME = ' ' + STR(USE_DAY,6,2) + ' ' + STR(USE_EVE,6,2)
  + ' ' + STR(USE_NIGHT,6,2)

  SKIP
  NUMBER = NUMBER + 1
ENDDO

GOTO TOP

SET PRINT ON
?
?
? LINE0
?
? LINE1
?
? LINE2
?
? LINE3
?

NUMBER = 1

DO WHILE NUMBER <= MAXOUT
  LINENAME = 'LINE' + STR(BAND + 3,1,0)
  &LINENAME
  SKIP
  NUMBER = NUMBER + 1
ENDDO
?
SET PRINT OFF
RETURN
TYPE \NEWNET\PRNTTIN.PRG

CLEAR
NAME = FILENAME + *.TIN*
USE \RESULTS\NAME
RESTORE FROM \TABLES\CONSTANT ADDITIVE
SUM QUANTITY TO NUMLINES
SELECT 2
USE \TABLES\ATTIN

IF NUMLINES = 0
    CONNECTOTAL = 0
ELSE
    CONNECTOTAL = CONNECT1 + (NUMLINES) *CONNECT2
ENDIF

SELECT 1
LINE1 = " Access charge is $" + STR(B-ACCESS,6,2) + " per line."
LINE2 = " Connection charge is $" + STR(B-CONNECT1,6,2) + " for the first line and "."
LINE3 = " $" + STR(B-CONNECT2,6,2) + " for each successive line."
LINE4 = " Total connection charge for this configuration is $" + STR(CONNECT TOTAL,7,2) + "."
LINE5 = " Minimum usage charge is $" + STR(ATT_MININ,6,2) + " per line exclusive of access charges."

REPORT FORM \NEWNET\ATTIN HEADING "OPTIMIZED CONFIGURATION: " + FIELDIN TO PRINT
SET PRINT ON
?
?
?
? LINE1
?
? LINE2
? LINE3
?
? LINE4
IF ATT_MININ > 0
    ? LINES
ELSE
ENDIF
?
SET PRINT OFF
RETURN
CLEAR
NAME = FILENAME + ".NEW"
USE \RESULTS\NAME
LINE0 = ' IN WATS IN WATS'
LINE1 = ' BUSY HOUR TRAFFIC MONTHLY TRAFFIC'
LINE2 = ' (Minutes) (Hours)'
LINE3 = ' DAY EVENING NIGHT/WEEK
ND'
NUMBER = 1
LOCATE FOR .NOT. OUT
DO WHILE NUMBER <= MAXIN
    PEAKNAME = 'PEAKHR' + STR(BAND,1,0) + 'IN'
    LINENAME = 'LINE' + STR(BAND + 3,1,0)
    &LINENAME = ' BAND ' + STR(BAND,1,0) + ' ' + STR(&PEAKNAME,6,1) + ' ' + STR(USE_DAY,6,2) + ' ' + STR(USE_EVE,6,2) + ' ' + STR(USE_NI6HT,6,2)
    SKIP
    NUMBER = NUMBER + 1
ENDDO
LOCATE FOR .NOT. OUT
SET PRINT ON
?
?
? LINE0
? LINE1
? LINE2
? LINE3
?
NUMBER = 1
DO WHILE NUMBER <= MAXIN
    LINENAME = 'LINE' + STR(BAND + 3,1,0)
    ? &LINENAME
    SKIP
    NUMBER = NUMBER + 1
ENDDO
?
SET PRINT OFF
RETURN
LOAD NEW CARRIER RATE TABLES

This option will load new carrier rate tables onto the OPTICON program as well as any new parameters such as access charges, connection charges, minimum amount billed, etc. WARNING! OLD TABLES AND PARAMETERS WILL BE ERASED. IF YOU DESIRE TO SAVE THE OLD TABLES OR RUN DATA USING THE OLD TABLES, BE SURE TO MAKE A COPY OF THIS DISK BEFORE PROCEEDING.

ENDEXIT

CHOICE = "N"
DO WHILE .T.
   @ 20,10 SAY "DO YOU WISH TO CONTINUE WITH THIS OPTION (Y/N)?" GET CH
   DICE PICTURE "!" READ
   DO CASE
      CASE CHOICE = "Y"
         DO LOAD
         RETURN
      CASE CHOICE = "N"
         RETURN
   ENDCASE
ENDDO

SET ECHO OFF
TYPE \\TABLES\LOAD.PRG

CLEAR ALL
CLEAR
OPTICOMFIL = ""
DBASEFIL = ""
DO WHILE .NOT. ((DBASEFIL) = "C" .AND. DBASEFIL < "D" .AND. OPTICOMFIL) = "A" .AND. OPTICOMFIL = "D") .OR. (DBASEFIL = "A" .AND. OPTICOMFIL = "B" .AND. OPTICOMFIL = "D")

OPTICOMFIL = ""
DBASEFIL = ""
@ 0,10 SAY "Which Drive is Opticom Program on (A/B/C/D)?" GET OPTICOMFIL PICTURE "@:
@ 10,10 SAY "Which Drive is Dbase III on (A/B/C/D)?" GET DBASEFIL PICTURE "@:
READ
ENDDO

@ 15,10 SAY "Insert floppy with updated tables in Drive B."
WAIT

DO CASE
CASE OPTICOMFIL = "C"
! COPY B:\TABLES\*.DBF C:\TABLES\*.DBF
! COPY B:\TABLES\*.MEM C:\TABLES\*.MEM
RETURN
CASE OPTICOMFIL = "D"
! COPY B:\TABLES\*.DBF D:\TABLES\*.DBF
! COPY B:\TABLES\*.MEM D:\TABLES\*.MEM
RETURN
CASE DBASEFIL = "A"
! MD A:\TABLES
! COPY B:\TABLES\*.DBF A:\TABLES\*.DBF
! COPY B:\TABLES\*.MEM A:\TABLES\*.MEM
CASE DBASEFIL = "C"
! MD C:\TABLES
! COPY B:\TABLES\*.DBF C:\TABLES\*.DBF
! COPY B:\TABLES\*.MEM C:\TABLES\*.MEM
CASE DBASEFIL = "D"
! MD D:\TABLES
! COPY B:\TABLES\*.DBF D:\TABLES\*.DBF
! COPY B:\TABLES\*.MEM D:\TABLES\*.MEM
ENDCASE
CLEAR
@ 15,10 SAY "INSERT FLOPPY WITH OPTICOM PROGRAM IN DRIVE B."
WAIT

DO CASE
  CASE DDASEFIL = "A"
    ! COPY A: \TABLES\*.DBF B: \TABLES\*.DBF
    ! COPY A: \TABLES\*.MEM B: \TABLES\*.MEM
    ! ERASE A: \TABLES\*.#
    ! RD A: \TABLES
  CASE DDASEFIL = "C"
    ! COPY C: \TABLES\*.DBF B: \TABLES\*.DBF
    ! COPY C: \TABLES\*.MEM B: \TABLES\*.MEM
    ! ERASE C: \TABLES\*.#
    ! RD C: \TABLES
  CASE DDASEFIL = "D"
    ! COPY D: \TABLES\*.DBF B: \TABLES\*.DBF
    ! COPY D: \TABLES\*.MEM B: \TABLES\*.MEM
    ! ERASE D: \TABLES\*.#
    ! RD D: \TABLES
ENDCASE
RETURN

SET ECHO OFF
TYPE \RESULTS\RESULTS.PRG

CLEAR ALL
CLEAR
@ 5,10 SAY "EXISTING RESULT FILES ARE:"
?
? DIR \RESULTS\*.DBF
?
?
STORE "N" TO CHOICE
STORE " " TO FILENAME
DO WHILE .T.
   @ 24,0 SAY "DO YOU WISH TO SEE ANY OF THESE FILES (Y/N)?" GET CHOICE PICTURE E "!
   READ
   DO CASE
   CASE CHOICE = "Y"
      SET SAFETY OFF
      @ 24,50 SAY "CHOOSE ONE:" GET FILENAME PICTURE "!!!!!!!!!!"
      READ
      IF FILENAME = "" THEN RETURN
      ENDF
      FILENAME = TRIM(FILENAME)
      SAVE TO \RESULTS\TEMP
      DO OUTPUT
      SET SAFETY ON
      RETURN
      CASE CHOICE = "N"
      RETURN
   ENDCASE
   ENDCASE
   ENDDO

SET ECHO OFF
TYPE \RESULTS\OUTPUT.PRG

CLEAR
FILENAME = TRIM(FILENAME)
USE &FILENAME
COPY TO \NONNET\RESULTS
RESTORE FROM \RESULTS\&FILENAME
RELEASE ALL EXCEPT METRO
SAVE TO \RESULTS\METRO
RESTORE FROM \TABLES\CONSTANT
RESTORE FROM METRO ADDITIVE
SAVE TO \TABLES\CONSTANT
DO WHILE .T.
  CLEAR
  STORE " " TO CHOICE
  @ 8,25 SAY "-1- DISPLAY RESULTS ON SCREEN."
  @ 10,25 SAY "-2- PRINT OUT THE RESULTS."
  @ 13,25 SAY "-0- FINISHED."
  @ 17,25 SAY "CHOOSE ONE:" GET CHOICE PICTURE "9"
  READ
  DO CASE
    CASE CHOICE = "1"
      DO DISPLAY
    CASE CHOICE = "2"
      DO PRINT
    CASE CHOICE = "0"
      RETURN
  ENDCASE
ENDDO

SET ECHO OFF
TYPE \RESULTS\PRINT.PRG

CLEAR
SET PATH TO B:\NOWNET
DO PRINT
RESTORE FROM \RESULTS\TEMP
RESTORE FROM \RESULTS\FILENAME ADDITIVE

IF OPTIMIZE
    SET PATH TO B:\NEWNET
    DO PRINT
    SET PATH TO B:\RESULTS
ENDIF

RETURN

SET ECHO OFF
TYPE \DELETE\DELETE.PRG

CLEAR ALL
CLEAR
0 5,10 SAY "EXISTING RESULT FILES ARE:"
? 
? 
DIR \RESULTS\*.DBF 
? 
? 
STORE "N" TO CHOICE
STORE " " TO FILENAME
0 23,0 SAY "DO YOU WISH TO DELETE ANY OF THESE FILES (Y/N)?" GET CHOICE PICTURE "!"
READ
IF CHOICE = 'Y'
   0 23,50 SAY "CHOOSE ONE:" GET FILENAME PICTURE "!!!!!!!!"
   READ
   IF FILENAME = " 
     RETURN
   ENDIF
   FILENAME = TRIM(FILENAME)
   RESTORE FROM \RESULTS\FILENANE
   ERASE B:\DELETE\*.ATT
   ERASE B:\DELETE\*.MCI
   ERASE B:\DELETE\*.SPT
   ERASE B:\DELETE\*.SBS
   ERASE B:\DELETE\*.DBF
   ERASE B:\DELETE\*.MEM
   ERASE B:\DELETE\*.NEW
   ERASE B:\DELETE\*.TIN

   NAME = FILENAME + ".MEM"
   COPY FILE \RESULTS\NAME TO \DELETE\NAME
   DELETE FILE \RESULTS\NAME

   NAME = FILENAME + ".DBF"
   COPY FILE \RESULTS\NAME TO \DELETE\NAME
   DELETE FILE \RESULTS\NAME

   IF OPTIMIZE
USE \DELETE\&NAME

NAME = FILENAME +'.NEN'
COPY FILE \RESULTS\&NAME TO \DELETE\&NAME
DELETE FILE \RESULTS\&NAME

IF OUT

NAME = FILENAME +'.ATT'
COPY FILE \RESULTS\&NAME TO \DELETE\&NAME
DELETE FILE \RESULTS\&NAME

NAME = FILENAME +'.MCI'
COPY FILE \RESULTS\&NAME TO \DELETE\&NAME
DELETE FILE \RESULTS\&NAME

NAME = FILENAME +'.SPT'
COPY FILE \RESULTS\&NAME TO \DELETE\&NAME
DELETE FILE \RESULTS\&NAME

NAME = FILENAME +'.SBS'
COPY FILE \RESULTS\&NAME TO \DELETE\&NAME
DELETE FILE \RESULTS\&NAME

ENDIF

LOCATE FOR .NOT. OUT

IF BAND > 0

NAME = FILENAME +'.TIN'
COPY FILE \RESULTS\&NAME TO \DELETE\&NAME
DELETE FILE \RESULTS\&NAME

ENDIF

RETURN

SET ECHO OFF
APPENDIX C

OPTICOM PROGRAM FILE STRUCTURES
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Number of data records : 2
Date of last update : 12/20/85

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Date of last update : 01/01/80

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A COMPUTER PROGRAM FOR OPTIMIZING LONG HAUL TELEPHONE NETWORKS FOR LEAST. (U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH S A DRAPER 1986

UNCLASSIFIED AFIT/CI/NR-86-48T
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**Total: 34 records**
Structure for database: B:±TABLES±MCIOUT.dbf
Number of data records: 12
Date of last update: 10/11/85

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**Total** 48

Structure for database: B:±TABLES±SBSCONEC.dbf
Number of data records: 5
Date of last update: 10/18/85

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**Total** 22
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.
LIST MEMORY TO PRINT

CHOICE  pub  C "Y"
FLAG    pub  L .F.
METRO   pub  N 80  (  80.000000000 )
SBS1    pub  N 66  (  66.000000000 )
SBS2    pub  N 22  (  22.000000000 )
SBS3    pub  N 11  (  11.000000000 )
SBS4    pub  N  1  (   1.000000000 )
MCI_MIN pub  N 75.00  (  75.000000000 )
MCI_ACCESS pub  N 100.00  ( 100.000000000 )
MCICONNECT pub  N 120.00  ( 120.000000000 )
SPNTCONNECT pub  N  75.00  (  75.000000000 )
SPNTACCESS pub  N  75.00  (  75.000000000 )
SBS_ACCESS pub  N 100.00  ( 100.000000000 )
SBS_MIN pub  N 400.00  ( 400.000000000 )
SBS_HRS_MIN pub  N  50  (  50.000000000 )
ATT_MIN pub  N  0  (   0.000000000 )
SPRT_MIN pub  N  0  (   0.000000000 )
ATT_MININ pub  N  0  (   0.000000000 )

78 variables defined, 149 bytes used
238 variables available, 5851 bytes available

RESTORE FROM ±TABLES±DATE
.
LIST MEMORY TO PRINT

DATE  pub  C " 1 JULY 1985"

1 variables defined, 14 bytes used
255 variables available, 5986 bytes available
APPENDIX D

TRAFFIC MODELS

Poisson

The probability of a call being blocked when there are $N$ trunks carrying a total of $T$ erlangs of traffic is given by the formula:

$$P_p (N,T) = 1 - \sum_{i=0}^{N-1} \frac{T^i e^{-T}}{i!}$$

This formula does not take into account whether blocked calls are diverted from the system or delayed as in Erlang B and Erlang C. An erlang of traffic is defined as 60 minutes of circuit usage; i.e., one call of 60 minutes duration and six calls of ten minutes duration both equal one erlang of traffic.

Another unit often used to express traffic is the CCS which stands for hundreds of call-seconds per hour. In this case $T = \text{CCS}/36$ or $\text{CCS} = 36T$. Jerry Finefrock indicates that both the erlang and CCS are difficult terms to use. Consequently, his tables are expressed in total minutes of usage for easier use and understanding.

The "P" number generally indicates the percentage of calls reaching a busy signal on the first attempt.
P.01 means one percent of the calls reach a busy signal. As the "P" number or level of traffic increases, the actual percentage of blocked calls exceeds the "P" number so it is then only an approximation. For example, at P.25 with 20 circuits, the actual percentage of blocked calls is 35%.²

**Erlang B**

This formula was derived by A.K. Erlang of Denmark in the early 20th century for systems where blocked calls are diverted from the system and sent via alternate facilities. The formula is expressed as:¹

\[
P_b (N,T) = \frac{T^N e^{-T}}{N!} \sum_{i=0}^{N} \frac{N^i e^{-T}}{i!}
\]

**Extended Erlang B**

This model was developed by James E. Jewett for situations when immediate overflow is not available and blocked calls do not exit from the system. It applies a factor to the Erlang B formula to calculate reattempt traffic.⁴

**Erlang C**

This applies to systems which have an infinite queue and blocked calls are merely delayed until a trunk is available. The formula is:³
\[ P_c (N, T) = \frac{T^N e^{-T} * \frac{N}{N - T}}{\sum_{i=0}^{N} \frac{T_i e^{-T}}{i!} + \frac{T^N e^{-T} * \frac{T}{N - T}}{N - T}} \]

Table Values

Values used in the traffic tables for this program are in minutes. The AT&T, MCI, and SPRINT rate tables are expressed in cost/hour. The SBS Skyline rate table is expressed in cost/minute.
END
FILMED

5-86

DTIC