MCI Telecommunications Corporation

1801 Pennsylvania Avenue, NW
Washington, DC 20006

EX PARTE OR LATE FILED

ORIGINAL

EX PARTE

February 18, 1998

RECEIVED

FEB 18 1998

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Magalie Roman Salas, Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Ex Parte Submission
Federal-State Joint Board on Universal Service; CC Docket No. 96-45
Forward-Looking Mechanism for High Cost Support for Non-Rural LECs; CC Docket No. 97-160

Dear Ms. Salas:

This filing provides the Commission with a complete copy of the HAI 5.0a distribution CD-ROM, including all expense modules and workfiles run at the default input values. The HAI 5.0a executable and documentation filed on this CD-ROM match exactly the executable and documentation filed with the Commission on February 6, 1998, except for the errata described in the ex parte letter from Richard N. Clarke to Magalie Roman Salas, Secretary, FCC, on February 13, 1998 in this docket. Included with this filing are a hard-copy of the three pages of documentation that reflect the changes made in that errata filing. Please associate these materials with the above-captioned docket.

Respectfully submitted,

Chris Frentrup

Chris Frentrup
Senior Regulatory Analyst
MCI Telecommunications Corp.
1801 Pennsylvania Ave., NW
Washington, DC 20006
(202) 887-2731

CC: Bob Loube, ITS

No. of Copies rec'd 0+3
List ABCDE

HAI Model
Release 5.0a

Model Description

HAI Consulting, Inc.

737 29th Street, Suite 200
Boulder, Colorado 80303

Revised: February 16, 1998

a) The clustering algorithm first calculates the distance between each cluster and every other cluster in the wire center service area.

b) The algorithm then determines the shortest distance between any two clusters, and associates these two clusters together.

c) Next, the algorithm determines the next shortest distance between any two clusters or cluster chains, and associates these together.

d) This process continues until all outliers are chained to a main cluster.

In addition to creating chains to associate outlier clusters to a main cluster; the clustering algorithm calculates the centroid location, "aspect ratio" and area of the rectangle that overlays the convex hull of each cluster; and that has the same centroid location, aspect ratio and area as this convex hull.[36]

When this process is completed, the main cluster and its subtending outliers are considered to constitute one serving area.

The description the HM 5.0a Distribution Module in Section 6.3 provides greater detail on the model's engineering of outside plant to serve main and outlier clusters.

5.6. PointCode Translation Processes

PointCode is a Microsoft Access '97 database process that translates between coordinate systems, computes distances and assigns additional characteristics to cluster records. Among the activities executed by PointCode are the following.

Convert the latitude and longitude coordinates provided by PNR for cluster centroids to V&H coordinates. Ensure that modeled distribution rectangles have an aspect ratio and area that reflects a minimum dimension equal to twice the default drop length for that lines density range. Calculate radial distances between main clusters and their serving wire center. Calculate radial distances between outlier clusters and main clusters.

Compute omega angles between main feeders and the clusters they serve and compute alpha angles between clusters and their subfeeders. Calculate rectilinear (right angle) distances between main clusters and their serving wire center, and between outlier clusters and main clusters.

On the basis of the characteristics of the covering CBG, assign terrain and lines density zone characteristics to the cluster.

[36] The convex hull of the cluster is the convex polygon that has as its boundary the outermost points of the cluster – as such, it covers all of the points in the cluster. The aspect ratio is the ratio of the North-South length to the East-West length of the convex hull of the cluster.

Workbook: **R50A_switching_io.xls**
Worksheet: **wire center investment**

Equation Listing

HAI Model, v5.0A
Switching/Interoffice Module

Column	Name	Formula	Description
A	location	='loop db inputs'!A2	repeats wire center location ID
B	switches required	=IF(F2=0,0,MAX(0,CEILING(F2/line_fill/inputs!$C$17,1), CEILING((BM2*IF(('loop db inputs'!E2+'loop db inputs'!G2)/F2 <inputs!$C$22,inputs!$C$20/inputs!$C$19,inputs!$C$20+(inputs!$C$21-inputs!$C$20)*((('loop db inputs'!E2+'loop db inputs'!G2)/F2)-inputs!$C$22)/(1-inputs!$C$22))/inputs!$C$19)/VLOOKUP(F2,sw_capacity,2),1), CEILING(BN2/VLOOKUP(F2,sw_capacity,3),1)))	computes number of switches required in wire center by considering switch port, real time, and traffic limits
C	total lines	='loop db inputs'!D2	Repeats total lines, including switched and special access, served by wire center
D	total residential lines	='loop db inputs'!F2	repeats total residential lines from loop db input sheet
E	total business + public lines	='loop db inputs'!E2+'loop db inputs'!G2	calculates sum of business and public lines in wire center
F	total switched lines	='loop db inputs'!E2+'loop db inputs'!F2+'loop db inputs'!G2	calculates total switched lines (residential + business + public) in wire center
G	host/remote indicator (user defined)	=IF(AND(COUNTA('host remote'!A:A)>1,hr_enable),IF(ISNA(VLOOKUP(A2,host_list,1,FALSE)),IF(ISNA(VLOOKUP(A2,remote_tbl,1,FALSE)),"A","R"),"H"),"")	Indicates switch type according to user-invoked options: H = host R = remote A = autonomous blank = aggregated investment selected
H	installed EO switching per line	=IF(AND(sw_type="H",B2>1),(1-1/B2)*BU2+BV2/B2,BU2+BV2+BW2+BX2)	calculates end office switching investment per line according to switch type
I	MDF/protector investment per line	=IF('loop db inputs'!D2=0,0,inputs!$C$23*('loop db inputs'!D2-'loop db inputs'!I2)/'loop db inputs'!D2)	calculates total main distribution frame and protector investment per line, with adjustment for DLC-served lines (which do not require MDF/protector investment in wire center)
J	end office wire center per line	=IF(F2=0,0,IF(OR(sw_type="",sw_type="A"),1/F2*(VLOOKUP('wire center investment'!F2,wc_inv,7)+IF(B2>1,B2*VLOOKUP(F2/B2,wc_inv,6),0)),IF(sw_type="R",BZ2,IF(AND(sw_type="H",B2>1),BZ2+B2/F2*VLOOKUP(F2/B2,wc_inv,6),BZ2))))	calculates per-line investment in wire center facilities
K	total local direct-routed traffic, CCS	=(bus_public_lines*bus_loc_dir+res_lines*res_loc_dir)*0.5	computes total offered load for wire center for local direct-routed traffic
L	total local direct trunks required (equiv per line)	=IF($C2=0,0,1/$C2*IF(G2="H",VLOOKUP(A2,hr_tbl,30,FALSE),IF(K2<=trfc_thresh,VLOOKUP(K2,trk_table,2),CEILING(K2/inputs!$C$36,1))))	computes total local direct trunks required according to total offered load calculation and user-set inputs for maximum trunk occupancy

Attachment A

DOCUMENT OFF-LINE

This page has been substituted for one of the following:

o An oversize page or document (such as a map) which was too large to be scanned into the RIPS system.

o Microfilm, microform, certain photographs or videotape.

o Other materials which, for one reason or another, could not be scanned into the RIPS system.

The actual document, page(s) or materials may be reviewed by contacting an Information Technician. Please note the applicable docket or rulemaking number, document type and any other relevant information about the document in order to ensure speedy retrieval by the Information Technician.

CD-ROM