Verizon

Switch Traffic Data Compilation

Traffic data input for the Verizon Switch Cost study was obtained from the Verizon Engineering systems --Traffic Data Collection System (TDCS) and Traffic Sensitive Forecast (TSF).

The TDCS system is the source for usage calling inputs such as Centum Call Seconds (CCS) and Call Attempts for lines and trunks on a host and remote switch level for both POTS and ISDN traffic. This data from the TDCS system is average busy season busy hour (ABSBH). The TDCS system also provides working trunk quantities for both end offices and tandems.

The TSF system is used to obtain working line quantities for all host, remote and integrated digital loop carrier systems in the network. The TSF system is also the source for ISDN PRI link quantities.

Data Processing – TSF

TSF data is provided from Network Engineering in formatted text files by state. These files are:

Line – Provides a listing of host, remote, and IDLC units by line type. This file includes the working line quantities and equipment types.

Cluster and **PG** – These files provide the host / remote relationships of the units listed in the line file.

Trunk – Provides the PRI link quantities.

These files are imported to a Microsoft Access database and queries have been developed to reformat the data to be exported to Excel files to combine data from TSF and TDCS.

For states that have hosts with remotes in adjoining states, data for all associated states has to be compiled.

Line Quantity Summations

Once the data is aggregated in an Excel file, the line quantities are summed to host cluster line totals for both POTS and ISDN BRI lines. These quantities are required since the TDCS traffic data is provided by host switch by total ABSBH CCS and calls. In order to calculate a CCS/line and Calls/line, the TDCS data needs to be divided by the host cluster line quantities.

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In addition, the line quantities are also summed to correspond to the wire centers in the Verizon Loop Study. Each remote and IDLC unit is reviewed and assigned one of the wire centers included in the loop study. If the remote or IDLC unit isn't one of the loop study wire centers, its lines are summed to its host's line quantity.

Data Processing – TDCS

TDCS data is provided from Network Engineering in formatted comma delimited text files by state. These files are:

Call Rate – This file provides total line CCS and Calls data by host office. These quantities include both POTS and ISDN BRI.

Call Event – This file provides Call type data – Line to Line, Trunk to Line, Line to Trunk Call quantities.

ISDN -- This file provides IDSN BRI CCS and Calls data by host office.

H/R Link – Provides umbilical quantities, CCS and Call quantities for umbilical links between hosts and remotes or IDLC's.

Local Trunk – Provides trunk, CCS and Call quantities for host end offices.

Tandem Trunk – Provides trunk, CCS and Call quantities for tandem offices.

PRI -- Provides PRI link CCS and Call quantities for host end offices.

This data is also provided by state so for any host / remote applications that cross state boundaries the data from all states involved needs to be compiled.

This data is imported into an Excel file to process.

Traffic Calculations - Lines

The data included in the Call Rate file includes traffic from both POTS and ISDN BRI lines. Consequently to calculate the CCS/line and Calls/line for POTS service, the ISDN BRI quantities are subtracted from the total quantities and then divided by the number of POTS lines in the host cluster. The POTS host cluster lines is the quantity calculated from the TSF data.

For GTD5 switches, separate ISDN BRI data is not available so the total CCS and total Call quantities are divided by the total number of host cluster lines. Since the

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Since ISDN BRI call rate data is not available for GTD5 switches, the state average BRI CCS/line and Calls/line are used.

For ISDN BRI, the CCS and Call quantities from the ISDN file are divided by the total number of BRI host cluster lines to calculate CCS/line and Calls/line.

For the Calls/Line calculations, the DMS and 5ESS switches are adjusted by a factor of .85 to allow for a .15 ineffective call factor. This calculation was required since the SCIS model requires an input on completed call basis. No adjustment was made for GTD5 offices since Costmod internally adjusts the call attempts to completed calls.

Call Rate Calculations – Trunks and Umbilicals

The data included in the Local Trunk file includes traffic from both Local and ISDN PRI trunks. Consequently to calculate the CCS/trunk and Calls/trunk for POTS service, the ISDN PRI quantities are subtracted from the total quantities and then divided by the number of local trunks. The local trunks quantity is calculated by subtracting the PRI trunk quantity (from the PRI file) from the total trunk quantity (from the Local Trunks file).

For GTD5 switches separate ISDN PRI data is not available so the total CCS and total Call quantities are divided by the total number of local trunks. Since the ISDN PRI call rate data is not available for GTD5 switches, the state average PRI CCS/trunk and Calls/trunk are used.

For ISDN PRI, the CCS and Call quantities from the PRI file are divided by the total number of PRI trunks to calculate CCS/trunk and Calls/trunk.

For tandem trunks, the CCS and Call quantities from the Tandem Trunks file are divided by the total number of tandem trunks to calculate CCS/trunk and Calls/trunk.

For remote switches included as wire centers in the Verizon Loop Study, traffic data on the umbilical links is compiled. This data is from the H/R link file. The CCS and Call quantities from the H/R Link file are divided by the total number of umbilical channels to calculate CCS/trunk and Calls/trunk. For 5ESS ORM remotes, traffic data is not available so the state average values are used.

Traffic Data Review

 The per line and per trunk results are then reviewed for reasonableness. For example, a CCS/trunk value can not be greater than 36. If any questionable values are found, Network Engineering is asked to review the data. If they do not find any

revisions needed for their data, the value in question should be replaced with the state average of the value.

Switch Data Summary

After the traffic calculations are completed a listing of all the switch sites in the state is compiled. This includes all the switches corresponding to the loop study wire center sites. The summary includes all the key traffic parameters for the host and remote sites.

Final Review

After the switch data compilation is completed, the switch listing is further reviewed to determine if any switches need to be excluded from the study and also to calculate an average umbilical distance.

To determine the switches to include in the study, the following factors are considered:

1) Include only the switches in the jurisdiction(s) being studied.

   For example for a particular state, not all Verizon companies within the state may be included in the study.

   In addition, the switches in adjoining states with host/remote applications with sites in the state under study will be excluded from the study.

2) For Class 4/5 switches, determine if the switch should be studied as a tandem or end office.

   For the GTD5 4/5 switches, these are studied as an end office. The tandem trunks from these switches were added to the closest DMS tandem in the study and the traffic parameters were also weighted together.

   For the DMS100/200 and 5ESS 4/5 switches, a determination was made based on the split between local / tandem trunks and line quantities. For switches studied as tandems, the local line and trunk quantities were added to the nearest same technology switch and the traffic parameters were weighted. For the 4/5 switches studied as end offices, the tandem trunks were added to the closest same technology tandem in the study and the traffic parameters were also weighted together.

3) DMS-10 and DCO switches are reviewed to determine substitute switch technologies. If there is a GTD5, DMS100, or 5ESS office in proximity,

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substitute a remote of that technology. If no other switch is in proximity, substitute a DMS-100. The DMS-10 and DCO remotes will be substituted with a remote of the same technology its host was substituted.

Average Umbilical Distances

To calculate the average umbilical distance, only remotes from the final study switch list are included. The average distance was calculated based on the V and H coordinates of the hosts and remotes and was weighted by the number of umbilical links.