

area transaction oriented services be evaluated within the SIGNET Simulation Centre across a 19.2 kbit/s test circuit with an expected cross section of messaging/transfer load added simultaneously. Consideration of standardized deployment of wide area transaction oriented services should only be given in the event that the simulation yields positive results. A final decision to deploy wide area transaction oriented services must also take into account the availability of the wide area subnetwork (Section 4.0).

- b. Table 3.1 and the following calculations summarize the model upon which the throughput oriented recommendations are based. The reader is referred to Appendix I for analysis details.

<u>Application</u>	<u>Remote Volume (kbytes) per 100 Persons per Day</u>
Electronic Messaging (No Attach)	2695
CATS (Message Archival)	2695
CATS (File Archival)	108
File Transfer / Message Attach	4313
NOCAMS	105
WIN Exports	263
CAJPS	263
Mission FINEX	53
CIDA Decentralization	263
Total Daily Volume	10758 kbytes

Table 3.1: Traffic Volume Estimates

Using a typical model of two busy hours per day, one in the morning, and one in the afternoon, and assuming that during a busy hour 25% of all daily traffic is transferred, for a total of one half the daily traffic within two hours, and further assuming that 5% of the busy hour traffic is transferred during the busy minute yields the required busy minute aggregate throughput, or required bandwidth, to be:

$$\text{Bandwidth} = (10758 \text{ kbytes} \cdot 0.25 \cdot 0.05 \cdot 8000 \text{ bits/kbyte}) / 60 \text{ secs} = 18 \text{ kbits/s per 100 users}$$

At 18 kbits/s a user would be able to transfer this document, which is relatively image intensive and is approximately 580 Kbytes in size, in approximately 5 minutes.

- c. Note the sensitivity of the bandwidth as a function of the busy hour and busy minute volume assumptions; increasing the busy minute assumption from 5%, which is 3 times greater than the average volume per minute during the busy hour, to 10% causes the required aggregate bandwidth to increase to 36 kbits/s; simultaneously increasing the busy hours assumption to 33% has a net effect of increasing the required aggregate bandwidth to 48 kbits/s. A variance of the busy minute assumption from 5% to 10%, combined with a variance of the busy hours assumption from 25% to say 33% may be considered as reasonable variances indicating that a fixed aggregate bandwidth on the order of 19.2 kbits/s per 100 users should be viewed as potentially constraining under the volume assumptions for a typical cross section of 100 users assumed herein.