

Computer-controlled transmission systems. CNCP Telecommunications and the Trans-Canada Telephone System operate store-and-forward message-switching computers which control the flow of message traffic. CN's system provides a switching medium for Air Canada, CP Air, regional air lines and CN administrative message traffic, and also controls and transmits information on CN's reservation system. To make a reservation, a computer card is marked and inserted into a card reader and a reply returns via a teleprinter confirming the reservation. A third-generation computer installed for CN is performing major store-and-forward message switching functions for the Atmospheric Environment Service; when the computer finds a weather report from any of the 500 weather stations throughout Canada, it will tell the station equipment to transmit the report into the computer, which then determines where and at what time of the day the information is to be sent.

Commercial telegrams, entered on local CRT sets at most major offices, are forwarded by mini-computers to CN's third-generation message-switching computer complex for switching across the country.

Telenet. A time-shared, computer-directed data-and-message system called Telenet was introduced by CNCP Telecommunications in 1971. The Telenet system controls a number of subscriber networks by central computers. The message-switching computer centres handle many customers but each customer's network is completely private. In its initial phase Telenet will be confined to message-switching and related features such as speed and code conversions, message storage and retrieval, high-speed data handling, interface with customer-owned computers and message refile. A single message may be transmitted for delivery to as many as 32 stations by one group-routing indicator at one time. The computers recognize two levels of priority; messages marked "quick" are handled first. Message-switching computers are located at CN offices in Toronto and CP offices in Montreal and all Canadian subscribers' requirements are routed by one of these centres. Future plans call for switching-computer centres at Vancouver, Edmonton, Winnipeg and Halifax. Various options and capabilities of Telenet will enable CNCP to custom-design a system to meet specific needs of individual subscribers.

Message-switching data service. TCTS companies provide a message-switching data service (MSDS) which controls message traffic by computer between TWX terminals and private line terminals. TWX operates on a switched network at 100 words a minute and private line teletypewriters can operate at 60, 75 or 100 words a minute. In addition the TWX and private line teletypewriters may use different codes. Normally teletypewriters using different speeds and codes cannot communicate, but the MSDS computer makes this possible. The computer can also store messages destined for a teletypewriter that is busy at the time the message is sent. Later on the computer will check the recipient machine and will automatically forward the message when it is free. Developed in 1967, MSDS has relieved many large Canadian firms of the chore of manually sorting and forwarding inter-company teletypewriter messages.

Store-and-forward message switching dates back to the early 1940s when TCTS provided electro-mechanical devices which were installed on each customer's premises. The computer in today's switching system is located on telephone company premises, resulting in better maintenance. The computer not only operates faster than electro-mechanical switching, but also provides customers with additional features.

Software controlled communications service features a mini-computer that acts as a bridge between the communications networks and a customer's computer, allowing the latter to reach a wide variety of remote terminals using different speeds and codes. It can be re-programmed to cope with changing conditions, a function which previously could be performed only by physical modification of control units. The mini-computer can also direct traffic and diagnose trouble on the communications circuits.

16.1.1.4 Public and private commercial microwave facilities

Railways. CNCP Telecommunications operates a microwave system extending from Moncton, NB to Nanaimo, BC, which is used for television, telephone and data-relay purposes. During 1972, a connection was provided to Campbellton, NB, and the capability of handling telephone and data traffic was added along the Toronto—Hamilton—St. Catharines—Kitchener—London—Windsor route, previously used only for television purposes. Extensions to the microwave system have been completed on the Moncton—Halifax—Sydney and Kamloops—Kelowna—Penticton—Trail—Nelson routes.