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. CN-CP 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 are under construction on the Moncton - Halifax - Sydney and Kamloops - Kelowna - Penticton - Trail - Nelson routes.

On its own, CN has microwave facilities linking Newfoundland to the Maritime Provinces at Sydney, NS, and across the Strait of Belle Isle to Labrador and to Quebec at Blanc Sablon. In addition, CN has installed a microwave system from Grande Prairie, Alta., through the Yukon Territory to Alaska to carry telephone and data traffic; it serves both civil and military organizations. In co-operation with Alberta Government Telephones, a combination microwave and tropospheric scatterwave system has been established to connect Alberta to Yellowknife, Fort Simpson and Lady Franklin Point in the Northwest Territories. A combination microwave-scatterwave system links the Yukon Territory with the Mackenzie Delta area of the Northwest Territories. Microwave is used from Whitehorse to Keno and a tropospheric scatterwave system bridges the Richardson Mountains from Keno to Arctic Red River; from there, microwave is used north to Tuktoyaktuk. A scatterwave system hurls transmission up to the troposphere where it is bounced back to the next station some 200 miles away. A microwave system is being built by CN between Fort Simpson and Norman Wells.

The Quebec North Shore and Labrador Railway has developed a microwave system extending into northern Quebec to provide communication for mining operations and to serve some civil communication purposes. Ontario Northland Railway operates a microwave system connecting northern Ontario and James Bay for military and civil communication. The British Columbia Railway makes extensive use of 6,000 Mc/s microwave facilities linking Vancouver with Prince George, Dawson Creek and Fort Nelson, and the company is now constructing a branch of this system linking Fort St. James to Dease Lake.

Satellite communications facilities. Telesat Canada launched the world's first geostationary communications satellite designed for domestic commercial use, ANIK I, on November 9, 1972. By December 1, ANIK I was operationally functional in its internationally designated orbital position over the equator at 114° W. The satellite maintains a stationary orbit at an altitude of 22,300 miles, rotating with the earth every 24 hours and therefore constantly maintaining the same relative position over the equator.

Initial commercial service to Telesat's customers commenced during January 1973 through a network of some 37 earth stations located across the length and breadth of Canada. Basically, satellite communication is one long microwave link. The clarity and strength of transmission provided by satellites is comparable to that of existing microwave systems but with the added advantage of providing virtually all forms of telecommunications to areas which had not previously been well serviced.

ANIK I and its in-space back-up satellite, ANIK II, will provide television distribution in both English and French to many parts of Canada not now served by terrestrial facilities,