

11.4 Trunking and Transfer

The following conditions commonly characterize the rural situation:

- subscriber and traffic densities are too low to justify alternative or high usage routes;
- the costs of transmission facilities compared to switching equipment costs are relatively high; and
- traffic tends to be between large and small centres rather than among small centres.

Under these conditions, traffic routing is usually optimized by using a minimum-length star or tree configuration (see Figure 11.5). After each link has been dimensioned according to traffic levels, a transmission medium and physical path can be selected.

As stated before, an optimal arrangement over the study period needs to be sought by doing a few iterations.

11.5 Final Alternatives

The subscriber access system, exchange and collection point equipment, and trunking and transfer systems should be optimized independently so that the number of variables to be dealt with at any one time would be manageable. This procedure generally converges to an acceptable overall optimal solution. However, it is advisable at this stage to consider whether any net advantage can be gained by trading off any of these optimums.

Logically the optimization process should have eliminated the impractical network design solutions and fine-tuned the practical ones. At this stage, however, probably more than one practical and contending alternative has been derived. Since engineering problems seldom have only one possible solution, two or more alternatives should be selected to undergo a more detailed financial and technical evaluation.

For example, satellite-based and land-based alternatives should be further examined and compared; or perhaps, a cellular radio-based system compared with separate mobile and fixed-service radio systems. Often, contending alternatives have to be closely examined, to find out, for example, whether one has low capital costs but high annually recurring costs, whereas the other has the opposite characteristics of high capital costs but low annually recurring costs.

The next two steps in this guide describe how to undertake a financial and technical evaluation of contending alternatives.