RTNR Application in the AT&T Network

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The introduction of Real-Time Network Routing (RTNR) into the AT&T Switched Network was completed in July 1991, and completely replaced dynamic nonhierarchical routing (DNHR). It has resulted in a marked improvement in network connection availability while simultaneously reducing network costs. RTNR has laid the foundation for an important service and quality advantage by introducing new class-of-service capabilities and dramatically improving network service and robustness, particularly in responding to abnormal traffic or failure conditions. RTNR provides the platform for the dynamic class-of-service routing features for emerging new services, and also provides a multiple ingress/egress routing arrangement to ensure reliability and flexibility for international and access networks. To date 10 virtual networks have been established to serve major classes-of-service, which share the facilities of the network but provide individual control and monitoring of traffic as well as new priority service capabilities. RTNR allows a marked improvement in network reliability by providing for the selection of over 135 routes between every pair of cities for every call.

RTNR operation has shown outstanding performance improvements over DNHR. These improvements are illustrated across various network conditions, which include a) high day loads on the Monday after Thanksgiving, which set a record for the number of calls on the AT&T network, 157.5 million, and provided a completion rate on AT&T facilities of 99.999% on the first try, b) peak day loads on Thanksgiving and Christmas, in which call blocking was reduced by more than 50% over the year before, c) a cable cut near Austin, Indiana, in which the combination of RTNR and automatic facility restoration provided excellent recovery from the failure, and d) the international network performance to Taiwan during the Chinese New Year three-day holiday calling period, which showed considerable improvement in the quality of service following the introduction of RTNR multiple ingress/egress routing to that country. We conclude that RTNR improves network performance under all network conditions, that it simplifies the operations environment and lowers operations cost, and that it enables the sharing of voice and data network capacity in the deployment of ISDN.