



Performance from Experience

---

# Telcordia Notes on the Networks

Telcordia Technologies Special Report  
SR-2275  
Issue 4  
October 2000

## Telcordia Notes on the Networks

SR-2275 replaces SR-2275, *Bellcore Notes on the Networks*, Issue 3, December 1997.

Related documents:

SR-NOTES-SERIES-01, *Telcordia Notes on the Synchronous Optical Network (SONET)*

SR-NOTES-SERIES-02, *Telcordia Notes on Dense Wavelength-Division Multiplexing (DWDM) and Optical Networking*

SR-NOTES-SERIES-03, *Telcordia Notes on Number Portability and Number Pooling*

SR-NOTES-SERIES-04, *Telcordia Notes on the Evolution of Enhanced Emergency Services.*

To obtain copies of this document, contact your company's document coordinator or your Telcordia account manager, or call +1 800.521.2673 (from the USA and Canada) or +1 732.699.5800 (all others), or visit our Web site at [www.telcordia.com](http://www.telcordia.com). Telcordia employees should call +1 732.699.5802.

Copyright © 2000 Telcordia Technologies, Inc. All rights reserved. This document may not be reproduced without the express written permission of Telcordia Technologies, and any reproduction without written authorization is an infringement of copyright.

## Trademark Acknowledgments

Telcordia is a trademark of Telcordia Technologies, Inc.

CLCI, CLEI, CLFI, CLLI, ISCP, NMA, and SEAS are trademarks of Telcordia Technologies, Inc.

COMMON LANGUAGE, SPACE, TELEGATE, AIRBOSS, and TIRKS are registered trademarks of Telcordia Technologies, Inc.

CLASS is a service mark of Telcordia Technologies, Inc.

Appletalk is a registered trademark of Apple Computer, Inc.

DECNet is a trademark of Digital Equipment Corporation.

1/1AESS, 4ESS, 5ESS, Dataphone, and SLC are registered trademarks of Lucent Technologies, Inc.

DMS-10, DMS-100F, DATAPATH, and TOPS are trademarks of Nortel.

DMS-100 is a registered trademark of Nortel.

NEAX-61E is a trademark of NEC America, Inc.

EWSD is a registered trademark of Siemens AG.

Any other companies and products not specifically mentioned herein are trademarks or service marks of their respective trademark and service mark owners.

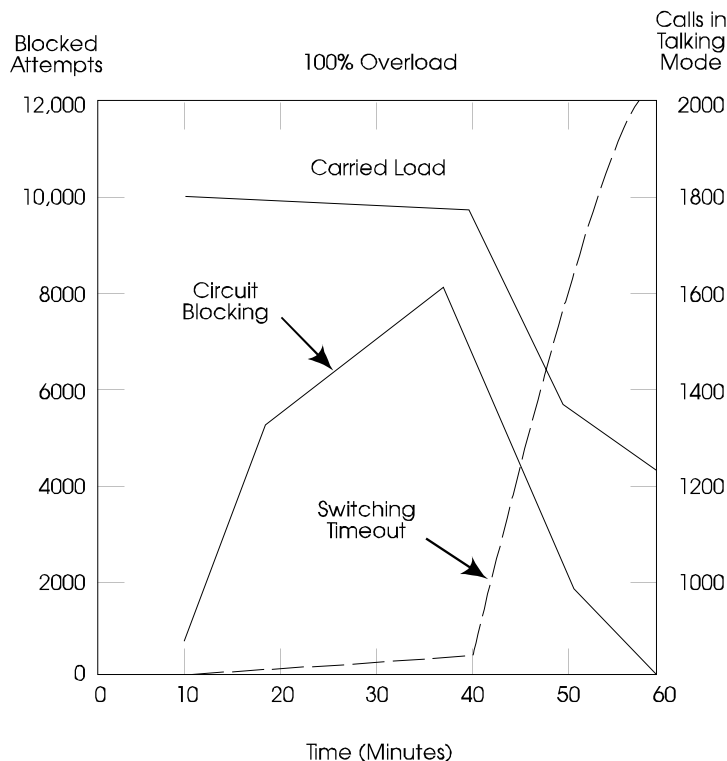


Figure 10-2. Network Congestion

At the onset of the overload, also known as circuit shortage, the dominant cause for customer blockage is the failure to find an idle circuit. Circuit blocking alone limits the number of extra calls that can be completed but does not cause a significant loss in the call-carrying capacity of the network below its maximum. As the overload persists and the network enters a congested state, regenerated-calling pressure changes customer blockage from circuit shortage to switching delays.

Switching delays cause timeout conditions during call setup and occur when switching systems become severely overloaded. Timeouts are designed into switching systems to release common-control components after excessively long delay periods and provide the customer with a signal indicating call-attempt failure. Switching-congestion timeouts with short holding-time attempts on circuit groups replace normal holding-time calls. Switching delays spread quickly throughout the network.

- A *trunk-group overload* usually occurs during general or focused overloads and/or atypical busy hours. Some of the overload causes not discussed above are facility outages, inadequate trunk provisioning, and routing errors. The results of a trunk-group overload can be essentially the same as those previously discussed for general overloads. However, the adverse effects are usually confined to the particular trunk group or the apex area formed by the trunk group and those groups' alternate-routing to the overloaded trunk group.