

Blackout Results in Widespread Network Outages

The August 2003 blackout affected 50 million people in the Northeastern US and Canada, causing economic losses estimated to exceed \$5 billion. The blackout was not only the largest in US history, but also the first of its scale since the rise of the commercial Internet and the World Wide Web.

We find that Internet connectivity in the blacked-out region was far more seriously affected than has been publicly revealed.

While the largest Internet backbones were apparently unaffected by the blackout, many thousands of significant networks and millions of individual Internet users were offline for hours or days.

Banks, investment funds, business services, manufacturers, hospitals, educational institutions, internet service providers, and federal and state government units were among the affected organizations.

The scale and duration of the Internet connectivity outages recorded during the blackout strongly suggest that without additional investment in higher-quality interconnection and backup power at its edges, the Internet will be in no shape to supersede the telephone network as the nation's primary communications infrastructure.

Excerpts:

According to our estimates, on August 14, 2003 there were over 9,700 globally advertised customer networks in the geographic area affected by the August blackout.

They belonged to over 3,500 business entities and other private and public organizations, whose size and/or significant dependence on Internet communications warranted that routes to their own networks were advertised throughout the global Internet. This report shows that during the blackout the fate of these networks was as follows:

- 3,175 networks suffered from abnormal connectivity outages. Of those, more than 2,000 networks suffered severe connectivity outages for longer than 4 hours, and over 1,400 networks for longer than 12 hours (some even longer than 48 hours).
- The networks suffering from abnormal connectivity outages belonged to over 1,700 organizations (business entities, government, education and other institutions). More than 1,000 organizations had outages of *all* of their networks lasting longer than 4 hours.
- Nearly 50% of Autonomous Systems (organizational entities involved in global Internet routing, typically corporations) lost connectivity to some or all of their networks in the blackout area.