

Scientists examine energy trends of communications equipment

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A team of scientists at Alcatel-Lucent Bell Labs have examined the energy consumption trends of communications equipment in use today and determined that gains in energy efficiency are not keeping pace with traffic growth. One consequence is that energy is going to become an increasingly important problem for communication networks.

In one unabated, business-as-usual scenario, the scientists estimate that power consumed per user could increase by seven-fold over the next 10 years. Based on these findings, Bell Labs has developed several technology evolution scenarios for the coming decade, which they will present at Frontiers in Optics (FiO) 2010/Laser Science XXVI -- the 94th annual meeting of the Optical Society (OSA), which is being held together with the annual meeting of the American Physical Society (APS) Division of Laser Science at the Rochester Riverside Convention Center in Rochester, N.Y., from Oct. 24-28.

"Traffic growth predictions are a key part of this and we took a novel approach in which we extrapolated the North American backbone network traffic growth rate forward, rather than the traffic itself," explains Dan Kilper, member of the technical staff at Bell Labs and chair of the GreenTouch Technical Committee. "In this way we accounted for the gradual slowing of traffic growth, which is expected as the number of users saturates. Even taking this into account, the growth rate is expected to drop from the current 40 to 60 percent today down to somewhere in the range of 25 to 50 percent in 2020."

This number is important because the scientists' study of network equipment indicates that recent efficiency improvement rates of 20 percent per year are falling to roughly 10 percent. "Our findings also showed that [optical transmission](#) gear consumes more than a factor of 10 less than other network technologies such as cellular base stations and packet routers," says Kilper.

These findings, along with recent research from other groups worldwide, were the impetus for establishing the GreenTouch Consortium , which is comprised of industrial, academic and non-governmental research experts who are dedicated to fundamentally transforming communications and data networks, including the Internet, and significantly reducing the carbon footprint of information and communications technology devices, platforms and networks.

More information: The talk, "Optical Transmission Energy Consumption in the Internet" is at 8:30 a.m. on Tuesday, Oct. 26, 2010.

Provided by Optical Society of America

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