

Measurement to inform policy: who should do it?

Interconnection, privacy, and broadband performance

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Critical question #1: How should a regulatory body determine whether interconnection agreements are reasonable?

Networking-related questions: What are the routes (including IXPs) for both indirect and direct interconnection between content providers and BIAS providers? What is the QoS associated with each route?

Data needed: Routes (including locations of source, destination, and all IXPs); traffic matrices; performance metrics.

Commercial service providers: An ISP (in cooperation with a content provider or transit provider) has a superior vantage point for performance across an IXP. A content provider has a superior vantage point for QoS. Only an ISP, content provider, or transit provider likely has data on traffic.

Making it useful: Measurement needs to be combined with economic questions (e.g., pricing and cost data) and with policy questions (e.g., how to determine whether interconnection agreements are reasonable).

Critical question #2: What personal information is collected by various types of entities, how is it used, and with whom it is shared and for what purposes?

Networking-related questions: What personal information is collected? Is it collected by first and/or third parties? With whom is it shared?

Data needed: Personal identifiers and behavioral information transmitted from an app or through a service; the receiving parties of such traffic; inferred use of such traffic.

Commercial service providers: Only the app or service provider knows the purpose for each piece of personal information and the constraints under which it is shared.

Making it useful: Measurement needs to be combined with an examination of privacy policies to determine compliance, and needs to be combined with policy questions (e.g., does a privacy policy contain sufficient information).

Critical question #3: What performance do consumers obtain using BIAS?

Networking-related questions: What QoS do consumers obtain using fixed BIAS? Using mobile BIAS? What QoE do consumers obtain?

Data needed: Distribution of throughput measured over various time windows, over consumers, and over time of day; distribution of delay end-to-end and over the ISP portion of the route, over consumers and over time of day; packet loss over consumers and over time of day. Mapping of QoS to QoE for popular classes of applications and popular specific applications.

Commercial service providers: ISPs might have a superior vantage point for some subsets of data. Some commercial data collectors have large datasets.

Making it useful: Measurement needs to be combined with better analysis than usually provided by ISPs, commercial data collectors, or regulatory agencies to understand the impact upon consumers and the bottlenecks. Measurement needs to be combined with policy questions (e.g., how much “speed” do consumers need, where is network infrastructure lacking).