

Reading Report #15
Paper: Networking Named Content
Student: Shuo Yang

The paper proposed an fundamentally different approach to the Internet design than the current Internet architecture. It intended to shift from the current IP-centric networking to a future content-centric networking where it views data, but not hosts, as the network primitive. Such a radically different idea is very interesting and intriguing, but I want to raise some concerns to this named-content networking approach.

1. *Performance concern*

Named content networking uses a PKI (public key infrastructure) to bind a name to a public key. Every content object needs to be signed for privacy concern. For the current Internet, we already have a large amount of web servers who sign data or use SSL for privacy reasons. And this is just for end-to-end connectivity. If we shift the architecture to named content where each content object is unique, it will cause even more security signature? How do we manage public key globally? Does every content object need to be signed? Should each router forwarding a content object verify its integrity? These questions are critically for named content networking in terms of performance. Implementing security at the content level is good for privacy but can impact performance negatively.

2. *Inter-domain routing*

The paper did not say much about inter-domain routing within named content networking. It illustrated the problem of bottom-up deployment and proposed to use the current BGP inter-domain routing. But we know that BGP is problematic by its own and using an old inter-domain routing for a completely new Internet architecture does not sound that convincing.

3. *Applications*

The current Internet is sender driven, which means communications are centralized around content providers. So even though many users are interested in the same piece of content (for example, a popular Youtube video) and they do not care where they get it, each of them still has to establish a connection with Youtube server to get that content. Such observation and the fact that current Internet is more and more content-centric are the underlying motivation of the named content networking, trying to turn the Internet into a receiver-driven network. However, Internet is rich of a variety of applications, still there are many applications favor sender driven model. For example, email service and instance messaging. Such applications still emphasize host to host connectivity, which the current TCP/IP seems to better fit them than the named content networking. So how to enable the named content networking to satisfy the needs of different network applications (not only for content delivery) remains a challenging.