

NAMING, ROUTING AND SECURITY OF CONTENT-CENTRIC NETWORKING

Content-centric networking (CCN) is type of the information-centric networks (ICN) architectures. Basic idea of concept is that the object with which communication is carried out is less important as what data is required for this.

Communication is controlled by the recipients, i.e. the data consumers exchange of two packets types: Interest and Data. Both types of packages have a name that identifies a chunk of data in a Data packet. The user makes the desired name in the data part Interest packet and sends it to the network. Routers use the name to send Interest packet to the data provider. When the packet reaches the node that contains the requested data, the Data returns a package that contains both the name and the content provider, together with the signature key.

ICN routes and forwards the packet based on the name, which solves three challenges associated with addresses in the IP-architecture: the exhaustion of the address space, the NAT Tracking and address management. These names are hierarchical in nature, and includes the global name of the content producer -> application where the data will be processed -> instance of the application. In addition, and other necessary data may be in the name of the data - version assignment segments and etc. So the name is generated by content application, in accordance with certain rules and protocols.

This architecture has no separate transport layer. It passes the current transport protocols (demultiplexing, reliable delivery and congestion management) applications to the support libraries and module strategy in promoting the plane. The information of the transport layer, such as a port and a serial number is not necessary. All information required for transport are in the data names.

An important advantage of CCN/ICN is reducing the burden on the resources that provide access to data, logically organizing around the ring, which caches data, that is often accessed by users and so can respond to requests, thus protecting the resource overload.

CCN is only an experimental study. While there is no real-world implementations, and mathematics process is in deep study.