**I2RS Working Group** by Susan Hares

Since 2013, the Interface to Routing System (I2RS) working group (WG) has developed a data-model driven architecture and key data models to establish a new programmatic and asynchronous interface to structured routing information in Internet connected systems (router, virtual machines, security systems) for atomic operations that combine filtered events, notifications, configurations, and user defined events. The I2RS WG served as a place to set requirements and key models that influenced other groups to change their structure. The I2RS WG architecture [RFC7921] and requirements for ephemeral state [RFC8242], traceability [RFC7922], subscriptions to Yang data stores [RFC7923], and security of an I2RS interface influenced the NETMOD WG’s Network Management Datastore Architecture (NMDA) [RFC8342] and related Yang data models. The basic NMBA models include IP Interfaces [RFC8342], Hardware [RFC8344], Routing Management [RFC8349], and Network access Control lists [RFC8349]. The I2RS WG architecture and requirements also influenced the changes to the NETCONF and RESTCONF protocols to support NMDA (RFC8526, RFC8527] plus changes to allow Yang models to define dynamic subscription and publication (aka push) of data store events and notifications in the NETCONF protocol [RFC8640, RFC8641 and drafts[[1]](#footnote-1)] and the RESTCONF protocol[[2]](#footnote-2). The future direction of IETF network management in NETMOD and NETCONF WGs is data driven models based on NMDA architecture. Active support of the Routing and Network Management/OPS Area Directors (ADs) in charge of I2RS and NETCONF/NEMOD work (Alia Atlas and Benoit Claise) made this cross-area work have such strong impact.

 The key models in the I2RS working group are a set of data-driven models for network topology models information and a Routing Information (RIB) data. The network topology models included a generic topology model [RFC8345], a Layer 3 topology model [RFC8346], and a L2[[3]](#footnote-3) topology model. The basic network model and Layer 3 topology model influenced Traffic Engineering related information models [RF8454] and data models[[4]](#footnote-4) developed in the TEAS WG[[5]](#footnote-5). In 2017-2018, I2RS began discussing a set of key data models that would utilize the ephemeral state qualities of an NMDA model. These models include the following: virtual data center fabrics [RFC8542], filter-based RIB models used in routing-firewall combinations, next-generation broad-network gateway (BNG) models to separate control, and data-slicing models. In 2018, the Routing ADs and NM/OPS ADs felt that the I2RS WG had kick-started the work, but that deployment and development of NMDA technology was behind. They felt that the I2RS WG advance work could continue in the Routing Area WG (rtgwg) or TEAS WG, and I2RS WG was constrained to finish the L2 topology work. Since 2018, TEAS and RTGWG have considered configuration and NMDA data models, but little work has progressed on ephemeral data models. The I2RS WG expects to finish standardization of the L2 data model in early 2019.

1. Works in progress: draft-ietf-netconf-notification-capabilities-04.txt and draft-ietf-netconf-nontification-messages-07.txt. [↑](#footnote-ref-1)
2. Works in progress: draft-ietf-netconf-restconf-notif-15.txt [↑](#footnote-ref-2)
3. Work in progress: draft-ietf-i2rs-yang-l2-network-topology-11.txt] [↑](#footnote-ref-3)
4. Works in progress: Direct model reference: draft-ietf-teas-yang-te-topo-22.txt, draft-ietf-teas-l3-te-topo-05.txt, draft-teas-act-vn-yang-06.txt, draft-ietf-teas-te-service-mapping-yang-02.txt. Informational reference: draft-teas-yang-te-types-10.txt, draft-teas-yang-sr-te-topo-05.txt [↑](#footnote-ref-4)
5. TEAS – Traffic Engineering Architecture and Signaling (TEAS): <https://datatracker.ietf.org/wg/teas/about/> [↑](#footnote-ref-5)