Problem solved—Internet of Things with SDN network scalability

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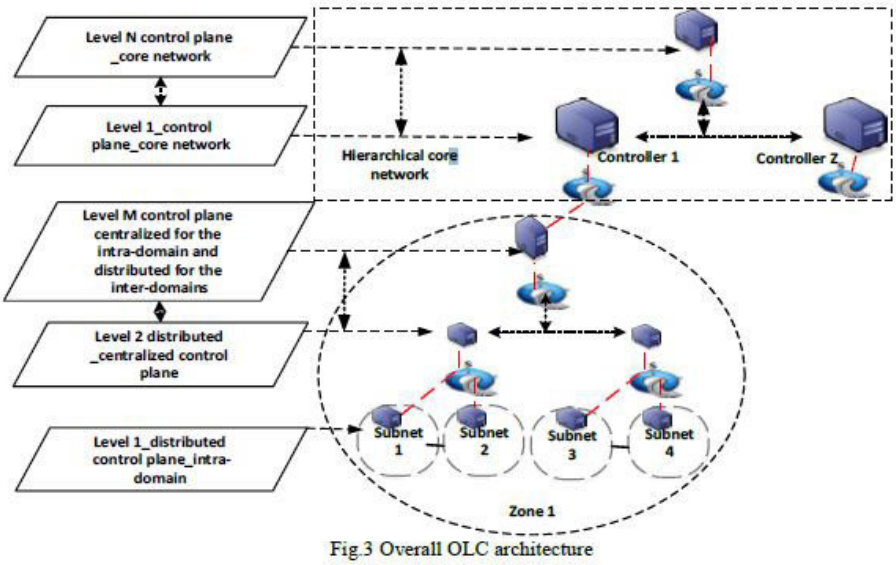

Fig.3 Overall OLC architecture

Network diagram. Credit: Brunel University

A fresh blueprint outlining how to rebuild the Internet to make it super slick at handling rising traffic from new technologies has been unveiled by scientists.

The Internet of Things and wireless sensor networks are just two recent new technologies that generate a vast growth of traffic, which puts an ever-heavier load on networks.

But the way these networks currently fit together makes it tricky to expand them to cope with the spiralling amounts of data they now need to transport.

Electronics engineers have hatched out a fresh way to re-stack the building blocks of Software-Defined Networking (SDN) to make it smarter at finding data and easier to extend.

Their Open-Level Control (OLC) plane architecture scales up the SDN network with high performance during heavy traffic without need to change the host's hardware, software or protocols.

"We believe we have developed the best discovery architecture because it combines both distributed and centralised architectures," said Professor Hamed Al-Raweshidy at Brunel University London. "This introduces an open-level distributed–centralised control plane architecture in an SDN network."

The model splits the SDN scale framework into vertical and horizontal scales for the control plane and data plane. Being able to scale the control plane in turn scales the data plane, because it speeds discovery time.

Test-bed. Credit: Brunel University

It's the most efficient solution yet to the scalability problem.

A 22-computer test-bed showed OLC cuts the number of discovery packets in the data plane by 84.2%, speeds up discovery time by 55.2% and scales up the number of subnets in an SDN network 3.2 times more than the standard distributed architecture and mechanism. It also showed a 4.34 seconds rediscovery time even with very high load.

"In future, we plan to connect OLC to the Internet to check its validity for dealing with real everyday traffic," said Professor Al-Raweshidy. "We also aim to implement a core network prototype using the OLC architecture and test it across several virtual campus networks."

More information: OLC: Open-Level Control plane architecture for providing better scalability in an SDN network by Hamed Al-Raweshidy and Emad Al-Asadi is published by the Institute of Electrical and Electronics Engineers (IEEE)

Provided by Brunel University