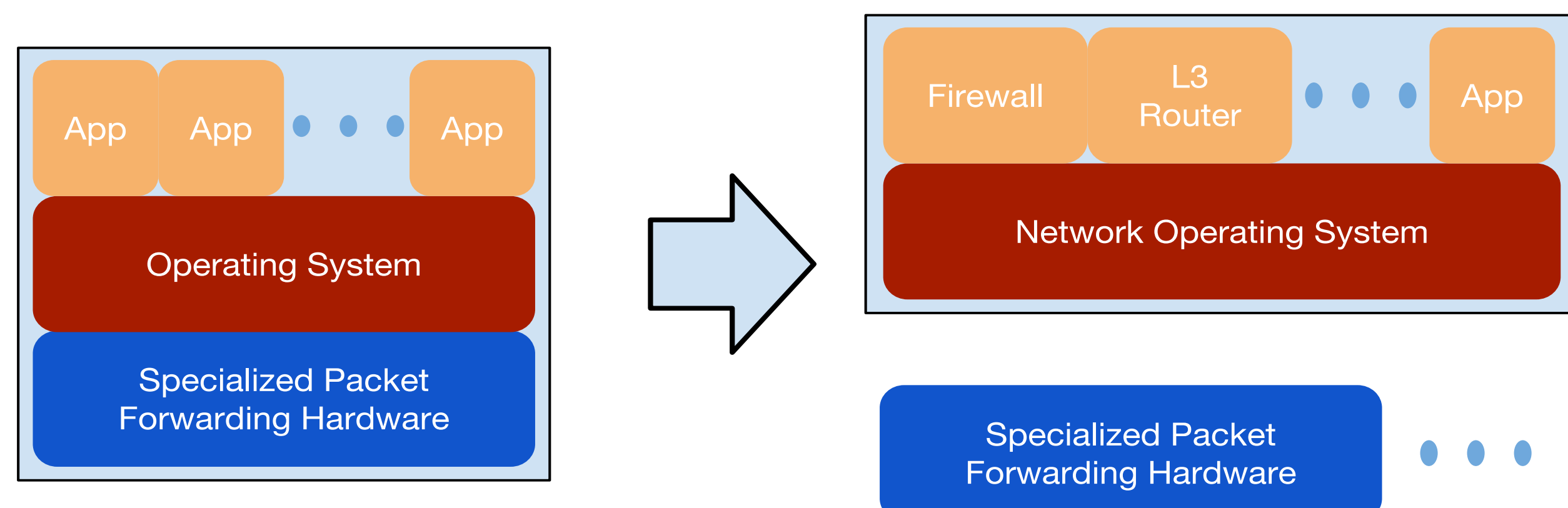


Software Defined Networking at UW

Overview

Software Defined Networking (SDN) decouples the data and control planes of network devices allowing flexibility and innovation into the network infrastructure.

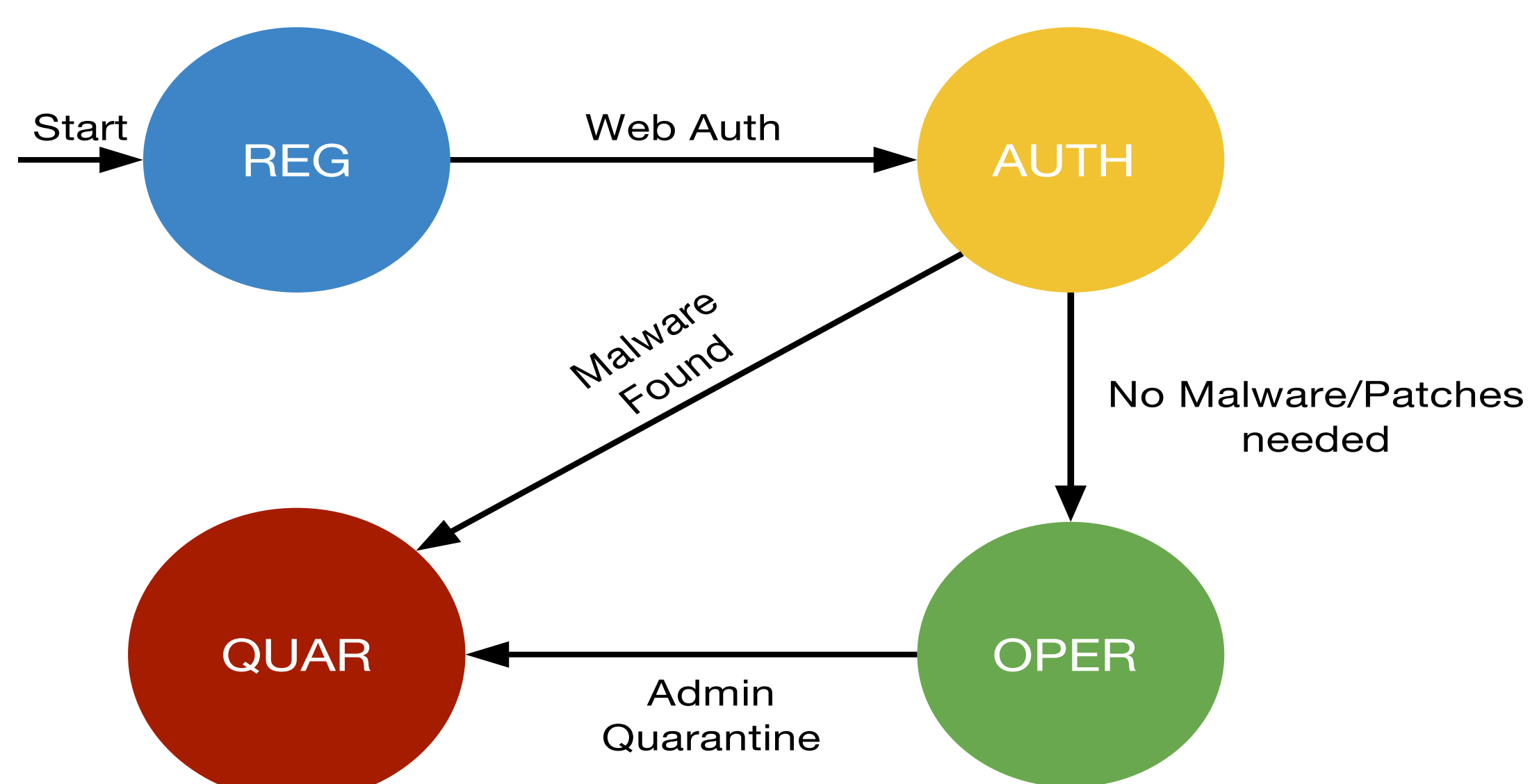
SDN networks provide an Open API between hardware, a “Network Operating System” and network applications.



UW-IT is using SDN protocols such as OpenFlow¹ and complementary technology to take advances in networking and distributed systems research and deploying them to assist in the conduction of domain research and education.

Cassini

Cassini², developed at UW, is a SDN framework that allows applications to be deployed at the network edge. The first application developed provides network access control³ (NAC) to secure and authenticate hosts attached to the network. Hosts placed in the network can be placed in a selectable number of states and policy associated with the states applied.



Cassini provides a model of the network, with API and web based interface that can be used by many applications in addition to NAC.

References

¹ N. McKeown, T. Anderson, H. Balakrishnan, G. Parulkar, L. Peterson, J. Rexford, et al., "OpenFlow: enabling innovation in campus networks," SIGCOMM Comput. Commun. Rev., vol. 38, pp. 69-74, 2008.

² Cassini : <http://chrissmall22.github.io/cassini/>

³ Resonance: <http://resonance.noise.gatech.edu>

⁴ <http://www.internet2.edu/products-services/advanced-networking/layer-2-services>

⁵ Network Function Virtualization – ETSI: <http://www.etsi.org/technologies-clusters/technologies/nfv>

⁶ J. Sherry, S. Hasan, C. Scott, A. Krishnamurthy, S. Ratnasamy, and V. Sekar, "Making middleboxes someone else's problem: network processing as a cloud service," presented at the Proceedings of the ACM SIGCOMM 2012, Helsinki, Finland.

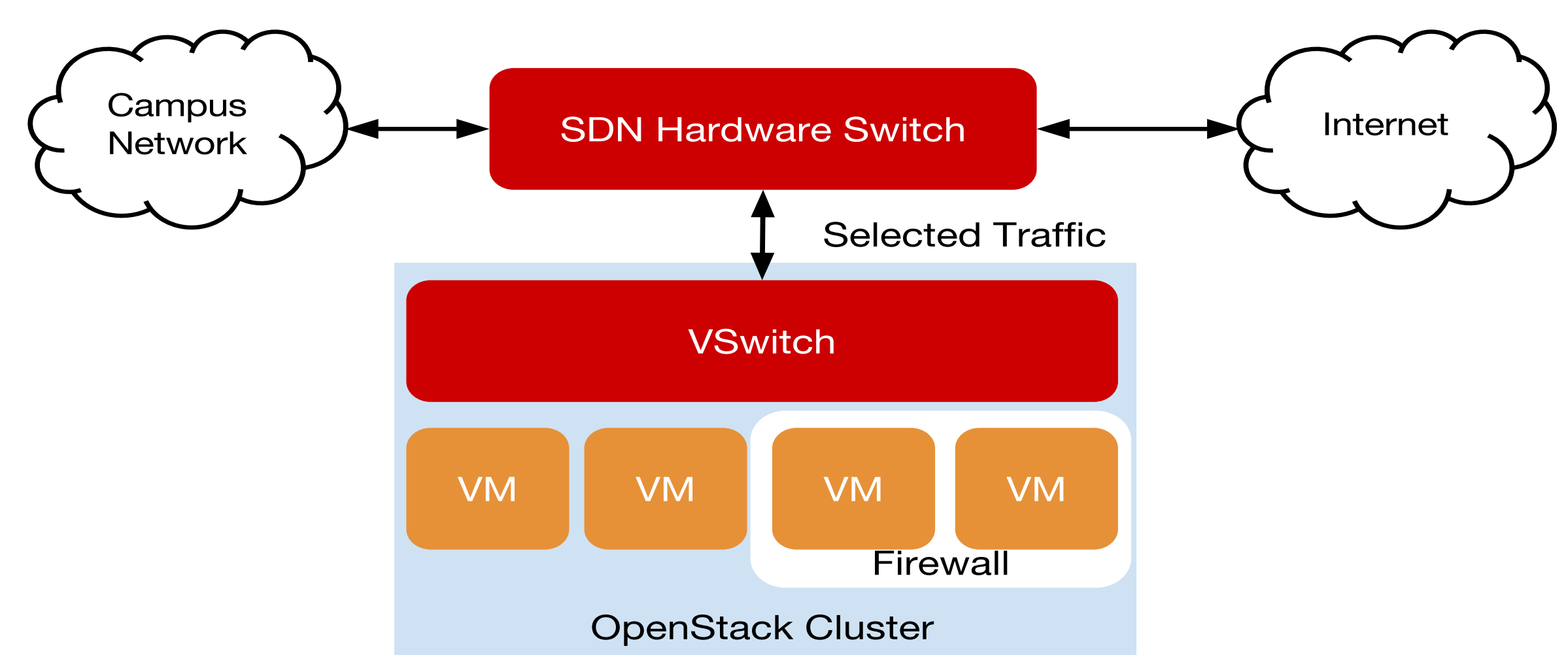
Dynamic Circuit Services

SDN can also be used in concert with network Cyberinfrastructure deployments to provide dynamic circuit services across national and international networks⁴. Dynamic Circuit Services provides the ability to deploy extremely high bandwidth circuits quickly and easily in response to researchers needs. APIs allow applications to automate and customize network provisioning with little on no administrative effort.



Network Function Virtualization

Network Function Virtualization⁵ (NFV) re-engineers networks replacing hardware-based “middleboxes” (firewalls, loadbalancers, IPS/IDS, etc..) with virtualized appliances⁶. NFV allows the infrastructure to be scaled to exact utilization of the network service provided and speed the deployment of services in support of research.



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