

# WILS: The Data Center API Compass Rose



Lori MacVittie, 2012-19-09

#SDN #cloud North, South, East, West. Defining directional APIs.



There's an unwritten rule that says when describing a network architecture the perimeter of the data center is at the top. Similarly application data flow begins at the UI (presentation) layer and extends downward, toward the data tier. This directional flow has led to the use of the terms "northbound" and "southbound" to describe API responsibility within SDN (Software Defined Network) architectures and is likely to continue to expand to encompass in general the increasingly-API driven data center models.

But while network aficionados may use these terms with alacrity, they are not always well described or described in a way that a broad spectrum of IT professionals will immediately

understand.

Too, these terms are increasingly used by systems other than those directly related to SDN to describe APIs and how they integrate with other systems within the data center.

So let's set about rectifying that, shall we?

## **NORTHBOUND**

The northbound API in an SDN architecture describes the APIs used to communicate with the controller. In a general sense, the northbound API is the interconnect with the management ecosystem. That is, with systems external to the device responsible for instructing, monitoring, or otherwise managing the device in some way.

Examples in the enterprise data center would be integration with HP, VMware, and Microsoft management solutions for purposes of automation and orchestration and the sharing of actionable data between systems.

## **SOUTHBOUND**

The southbound API interconnects with the network ecosystem. In an SDN this would be the switching fabric. In other systems this would be those network devices with which the device integrates for the purposes of routing, switching and otherwise directing traffic.

Examples in the enterprise data center would be the use of OpenFlow to communicate with the switch fabric, network virtualization protocols, or the integration of a distributed delivery network.

## **EASTBOUND**

Eastbound describes APIs used to integrate the device with external systems, such as cloud providers and cloud-hosted services.

Examples in the enterprise data center would be a cloud gateway taking advantage of a cloud provider's API to enable a normalized network bridge that extends the data center eastward, into the cloud.

## **WESTBOUND**

Westbound APIs are used to enable integration with the device, a la plug-ins to a platform. These APIs are internal-focused and enable a platform upon which third-party functionality can be developed and deployed.

Examples in the enterprise data center would be proprietary APIs for network operating systems that enable a plug-in architecture for extending device capabilities beyond what is available "out of the box."

Certainly others will have a slightly different take on directional API definitions, though north and south-bound API descriptions are generally similar throughout the industry at this time. However, you can assume these definitions are applicable if and when I use them in future blogs.

---

- [Architecting Scalable Infrastructures: CPS versus DPS](#)
  - [SDN is Network Control. ADN is Application Control.](#)
  - [The Cloud Integration Stack](#)
  - [Hybrid Architectures Do Not Require Private Cloud](#)
  - [Identity Gone Wild! Cloud Edition](#)
  - [Cloud Bursting: Gateway Drug for Hybrid Cloud](#)
  - [The Conspecific Hybrid Cloud](#)
- 

---

F5 Networks, Inc. | 401 Elliot Avenue West, Seattle, WA 98119 | 888-882-4447 | [f5.com](http://f5.com)

F5 Networks, Inc.  
Corporate Headquarters  
[info@f5.com](mailto:info@f5.com)

F5 Networks  
Asia-Pacific  
[apacinfo@f5.com](mailto:apacinfo@f5.com)

F5 Networks Ltd.  
Europe/Middle-East/Africa  
[emeainfo@f5.com](mailto:emeainfo@f5.com)

F5 Networks  
Japan K.K.  
[f5j-info@f5.com](mailto:f5j-info@f5.com)