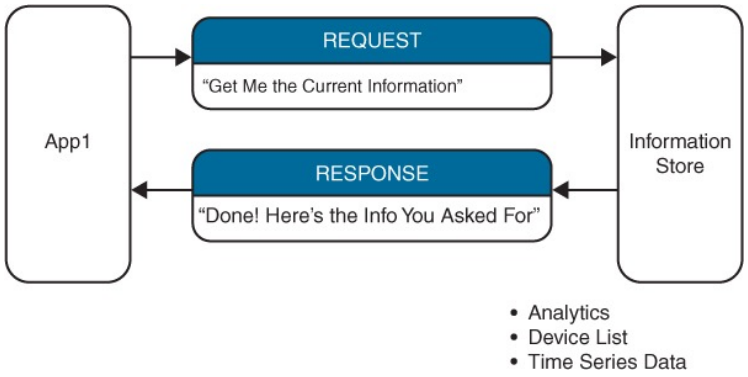
APPLICATION PROGRAMMING INTERFACES (APIS)

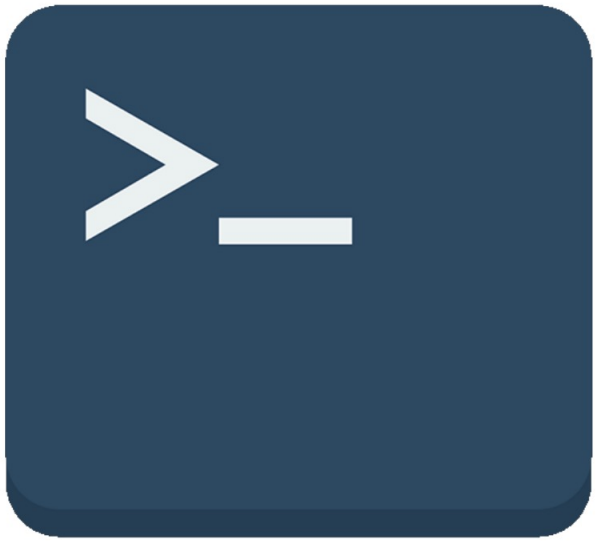
API definition: Wikipedia

An **application programming interface** (**API**), is a computing interface that defines interactions between multiple software intermediaries. It defines the kinds of calls or requests that can be made, how to make them, the data formats that should be used, the conventions to follow, etc. It can also provide extension mechanisms so that users can extend existing functionality in various ways and to varying degrees. An API can be entirely custom, specific to a component, or designed based on an industry-standard to ensure interoperability. Through information hiding, APIs enable modular programming, allowing users to use the interface independently of the implementation.



API is the new CLI

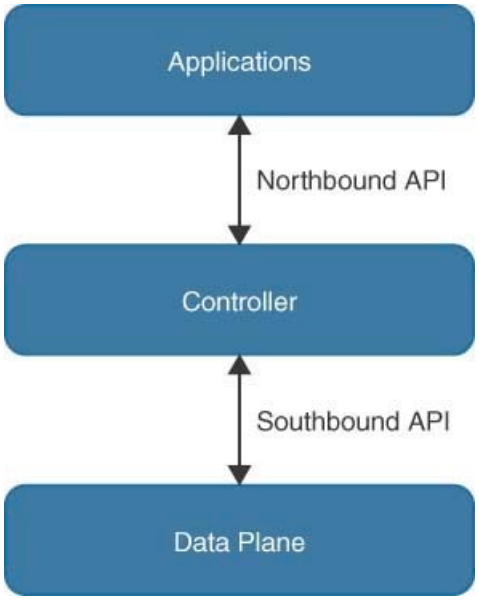
Application Programing Interface



Three Basic type of API

Local API	Web API	Program API
The original API created to provide operating systems or middleware service to application programs	Designed to represent widely used resources like HTML pages and are accessed using a simple HTTP protocol. Often called REST APIs or RESTful APIs	Based on RPC technology that makes remote program component appear to be local to the rest of the software

Northbound & Southbound APIs



- Northbound APIs are often used for communication from a network controller to its management software. For example, Cisco DNA Center has a software graphical user interface (GUI) that is used to manage its own network controller. Typically, when a network operator logs into a controller to manage the network, the information that is passed to the management software leverages a northbound REST-based API. Best practices suggest that the traffic should be encrypted using TLS between the software and the controller. Most types of APIs have the ability to use encryption to secure the data in flight.
- If a network operator makes a change to a switch's configuration in the management software of the controller, those changes will then be pushed down to the individual devices using a southbound API. These devices can be routers, switches, or even wireless access points. APIs interact with the components of a network through the use of a programmatic interface. Southbound APIs can modify more than just the data plane on a device.

Common Types of Web service APIs

- SOAP:
  - Simple Object Access Protocol
- RPC (JSON and XML):
  - Remote Procedure Call
- REST:
  - REpresentational State Transfer