Router and Switch Planes

- **Data (Forwarding) Plane**: Traffic which is forwarded through the device.

- **Control Plane**: Makes decisions about how to forward traffic. Control plane packets such as routing protocol or spanning tree updates are destined to or locally originated on the device itself.

- **Management Plane**: The device is configured and monitored in the management plane. For example at the CLI through Telnet or SSH, via a GUI using HTTPS, or via SNMP or an API (Application Programming Interface).

SDN - Data and Control Plane Separation

- Network infrastructure devices are responsible for their own individual control and data planes in a traditional environment.

- Software-Defined Networking decouples the data and control planes.

- The network infrastructure devices are still responsible for forwarding traffic, but the control plane moves to a centralised SDN controller.

FLACKBOX
www.flackbox.com

Data and Control Plane Separation

- Rules for packet handling are sent to the network infrastructure devices from the controller.

- The network infrastructure devices query the controller for guidance as needed, and provide it with information about traffic they are handling.

SDN Architecture

Application Layer   SDN Business Applications

Northbound APIs ↕

APIC-EM

Control Layer

SDN Controller

Southbound APIs ↕   eg OpenFlow

Infrastructure Layer