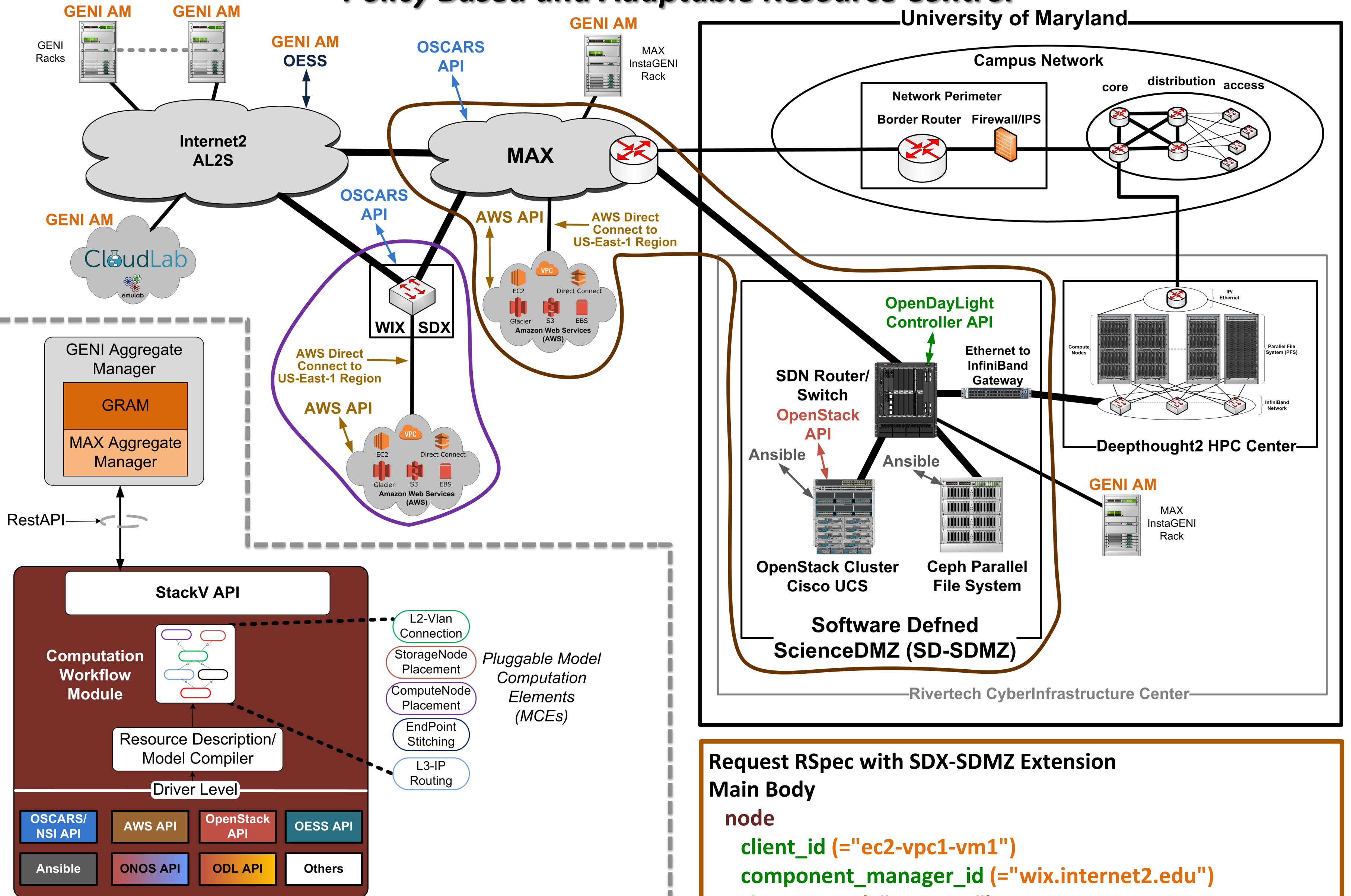


# GENI Enabled Software Defined Exchange (SDX) and ScienceDMZ (SD-SDMZ)

## GRAM based Aggregate Manager and Model Based Orchestration System (StackV)

### Policy Based and Adaptable Resource Control



- UMD/MAX developed StackV is an open source model driven orchestration system:
  - ✓ [github.com/MAX-UMD/StackV.community](https://github.com/MAX-UMD/StackV.community)
- Native StackV Application (Northbound) API
- Access via GENI Aggregate Manager API
- Multiple Drivers, Southbound APIs

### GRAM with ABAC like policy features for resource access control:

- Federation(Clearinghouse), Virtual Organization (Project), Slice, User
- VLANs (total), Bandwidth, VMs, Ceph Storage, SR-IOVs
- Future Features Desired: Realtime policy adjustments, More policy granularity (specific VLANs, resources)

### Flexible Advanced Hybrid Cloud Construction

- GENI RSpecs, Tools, and Stitching can be used

### Request RSpec with SDX-SDMZ Extension

```

Main Body
node
  client_id ("ec2-vpc1-vm1")
  component_manager_id ("wix.internet2.edu")
  sliver name ("aws_ec2")
  client_id ("wix:if0")
  ip_address ("10.20.2.2/24")
SDX-SDMZ Extension
virtual_cloud
  client_id ("vpc1")
  provider_id ("aws.amazon.com:aws-cloud")
  cidr ("10.0.0.0/16")
  subnet (for public cloud AWS)
    client_id ("subnet1")
    cidr ("10.0.0.0/24")
    vm ("ec2-vpc1-vm1", public="true")
    route (to="default", from="vpn", next_hop="vpn")
    route (to="default", next_hop="internet")
  gateway
    client_id ("aws_dx1")
    type ("direct_connect")
    to (type="stitch_port, value=\
      "sw.net.wix.internet2.edu:13/1:vlan=1725")
  subnet (for private cloud sd-sdmz)
    client_id ("subnet1")
    cidr ("10.0.0.0/24")
    vm ("ops-vpc1-vm1" type="nova" private="true")
    quagga (remoteASN, key, networks)
    ceph (size, mountpoint)
    
```

