

# Clouds and Data Center Networks

Breakout Summary

# New Cloud Abstractions

- We are Lacking abstractions
- Lack of QoS: response time to user
- How to schedule all resources together?
- Global optimization of resources
- QoS constraints
  - Cloud must be able to evolve
- Platform must be programmable, adaptable, dynamic
  - No need for pressing knobs for adaptation
- Resource adaptation
- Collaborators: Kate, Carlos, Artur, Beraldo, Yan, Edmundo, Gabriel, Nelson

# New Cloud Abstractions

- Layered abstraction
  - From applications down to hardware
- Application Characterization
- Application Requirements
- QoS/Dynamicity Requirements
- Virtual Spaces (Slices)
- Hardware Configuration (programmable platform)

# Resource Adaptation

- Automated adaptation of resources (on demand)
  - Elasticity (depends on applications)
- We must understand different applications domains
  - Business
  - Science (ex.: ocean)
  - Smart Cities (IoT sensors)
  - Health-care (patient monitoring)

# Application Modelling

- Critical element of adaptation
- Cloud adapts according to application requirements, but users do not know what they are
- Different classes of applications
  - Low/high hanging fruit
- Degree of criticality

# Cloud Monitoring

- Monitoring physical and virtual elements
- Collecting of usage of ports, virtual switches.
- Analyze huge amount of data in a data center.
- How to use this information to model congestion, ... when you change a flow how it affects others.
- Data visualization
  - How to visualize data, then how to load into monitoring system
- Collaborators: Fabio, Kate, Yan, Magnos