Topics on Datacenter Design

Modern datacenters with thousands of servers and multi-megawatt power budgets form the backbone of our digital universe. In this course, we will survey a broad and comprehensive spectrum of datacenter design topics from workloads, to server architecture and infrastructure.

Content
The course will use the primer from ClayPool lecture series on Warehouse-Scale Computing by Barrosso and Hoelzle, and technical research papers from recent years in venues corresponding to the topic. The course will be run as a seminar series with student presentations followed by an in-class discussion. The students will be graded based on presentations and short reviews written for each reading assignment.

Datacenter basics: computing at scale of tens of thousands of servers
Quality of service, energy proportionality and total cost of ownership
Workloads
Programming paradigms
System software
Virtualization
Networking
Storage systems
Processors and memory systems
Resource management
Infrastructure: power distribution and cooling

Keywords
datacenter, warehouse-scale computing, scale-out

Remarque
Next time: unknown

Assessment methods
Oral presentation

Learning Prerequisites
Recommended courses
Computer Systems

Resources
Ressources en bibliothèque

• The Datacenter as a Computer / Barroso

Websites

• http://parsa.epfl.ch/courses/cs712/