



Foundation of Internet Platform Development & Operation

Introduction

2019-09-10



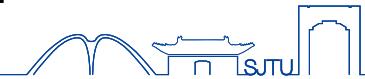
上海交通大学
SHANGHAI JIAO TONG UNIVERSITY



Background

- The 4rd course of the series
 - In 5th semester
 - Engineering & Society, Individual & Team, Environment & Sustainable Development, **Foundation of Development & Operation of Internet Application**
 - Following course
 - **Design and Implementation of Information System**

Introduction of the 4nd Course



▪ Objectives

- Presentation
- Team working
- Development of Internet Platform
- Operation of Internet Platform
- Building A Internet Platform



Introduction of 4nd Course

- Schedule

- 19 lectures
 - 4 from Industry
 - Practice of backend architecture
 - Mid-ware of internet platform
 - DevOps
 - Infra
 - 15 from University
 - Introduction(1)
 - Internet Platform(5)
 - Asynchronous System(2)
 - Big Data(2)
 - Machine Learning(1)
 - Operation(6)
 - Overview(1)
 - Traditional Operation(1)
 - Application Operation(4)
 - Assignments Review(3)



Introduction of 4st Course

- How to get credits
 - Attendance, 10%
 - 4 Task , 30%
 - 3 homework, 30%
 - Team
 - 1 Projects, 30%
 - Team
 - Operation system of a internet application
- Deadline
 - Before Monday of the 16th week
- Submission
 - sjtuseproj@163.com



Review of Back-end

- Service, Microservice
 - Online
 - Long running
- Message Queue
 - Offline
 - Batch
- Deep Learning
 - Training
 - Offline
 - Batch
 - Model Service
 - Online
 - Long running



Review of The Project of Back-end

- Spring Cloud
 - 60%
 - Registry, load balance, gateway, Hystrix
 - 30%
 - Tracing
- Operation
 - 50%
 - Docker, Docker Compose, ELK



Review of The Summer Project

- Microservice (3/13)
 - Spring Cloud
 - Service Discovery, Config, Feign, Hystrix
 - Go-micro
- Infrastructure (3/13)
 - Docker, Docker Compose, ELK



Review of The Summer Project

- Problems

- Test (4/13)
 - Unit test
 - Performance Test (1/13)
- UI (2/13)
- Architecture Design (3/13)
- Git/GitHub (1/13)
 - Workflow
 - Code review
 - Project Management

Introduction



- Application Lifecycle
 - From the startup to shutdown
 - From development to endless version upgrade

Introduction



- Workload
 - Online VS. Offline
 - Long VS. Short
 - Definition
 - Any processes to consuming the resources



Introduction



- Resources
 - CPU
 - Memory
 - Storage
 - Network
 - AI
 - Power
- Infrastructure

Infrastructure

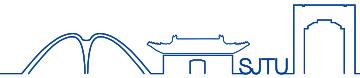


- “IT infrastructure is defined broadly as a set of information technology components that are the foundation of an IT service; typically physical components (**computer** and **networking hardware** and **facilities**), but also various software and network components.”

-wikipedia



Computer



- Components
 - Mainboard
 - CPU
 - Memory
 - Storage
 - Power
 - Case



Mainboard



- Desktop





Mainboard



- Desktop





Mainboard



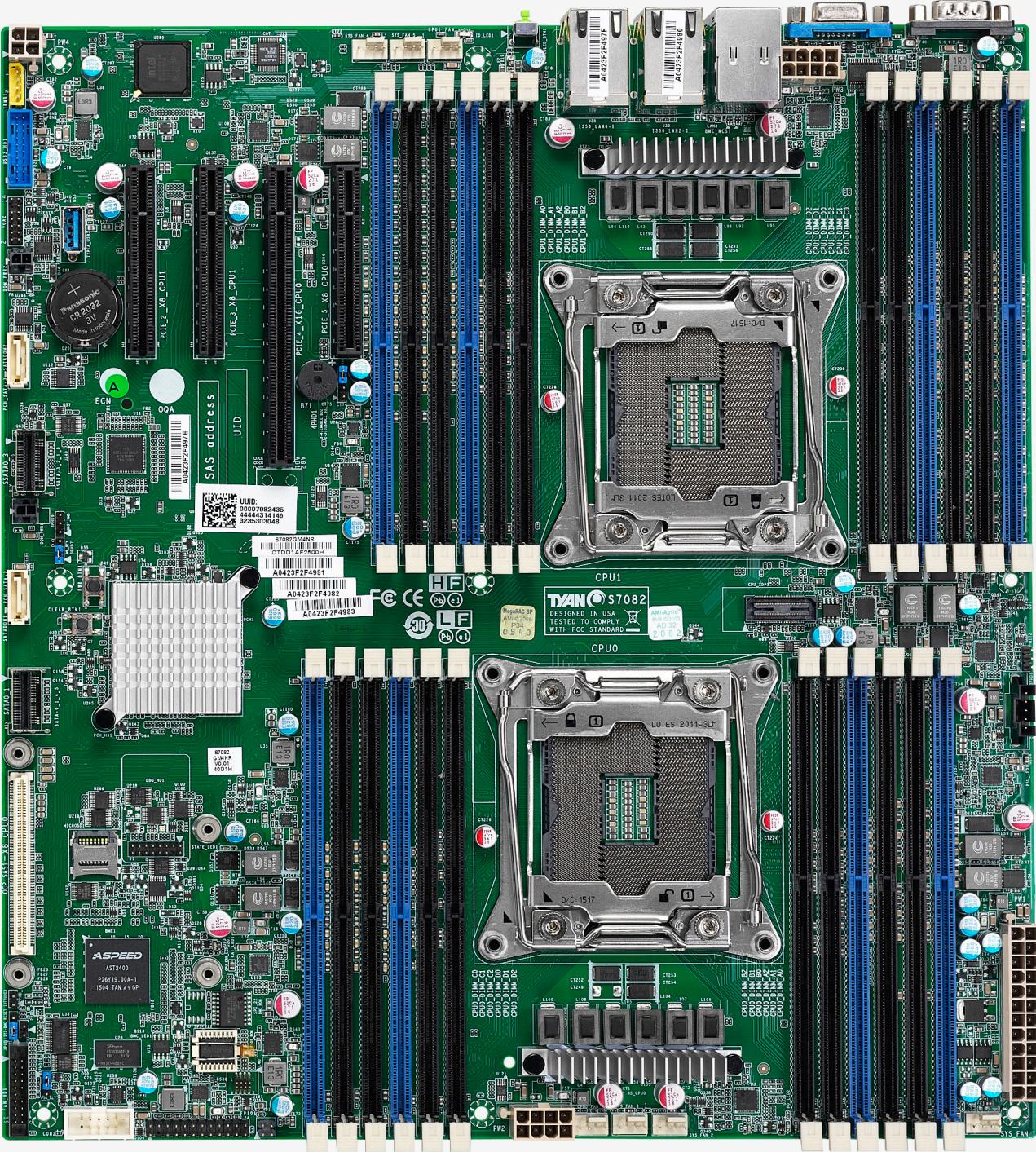
- Desktop





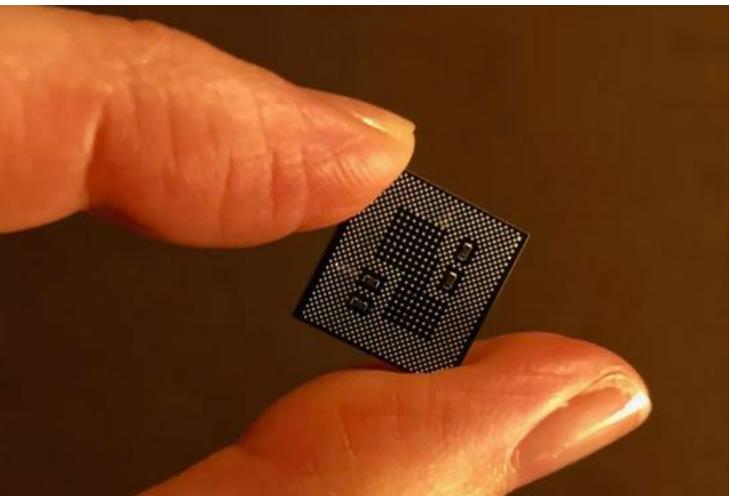
Mainboard

- Server





CPU





Memory



- DDR4
- RDIMM
- 3DS
- LRDIMM





Memory



- DDR4
- RDIMM
- 3DS
- LRDIMM





Storage

- RAID
 - IDE
 - SATA
 - SAS
- Hard drive VS SSD drive



Windows Central



Power

- Redundant Power



Load	80 PLUS	80 PLUS BRONZE	80 PLUS SILVER	80 PLUS GOLD	80 PLUS PLATINUM	80 PLUS TITANIUM
10 %						90%
20 %	80%	82%	85%	87%	90%	92%
50 %	80%	85%	88%	90%	92%	94%
100 %	80%	82%	85%	87%	89%	90%
PF	≥.90 at 100%	≥.90 at 50%	≥.90 at 50%	≥.90 at 50%	≥.95 at 50%	>.95 at 20%



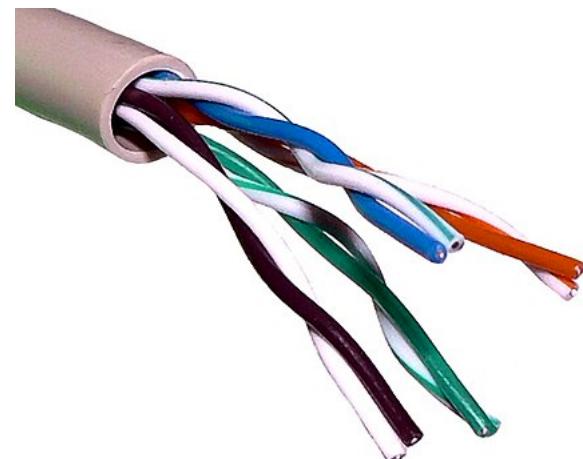
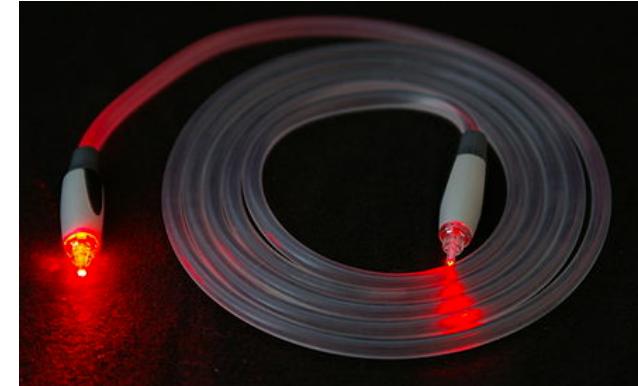
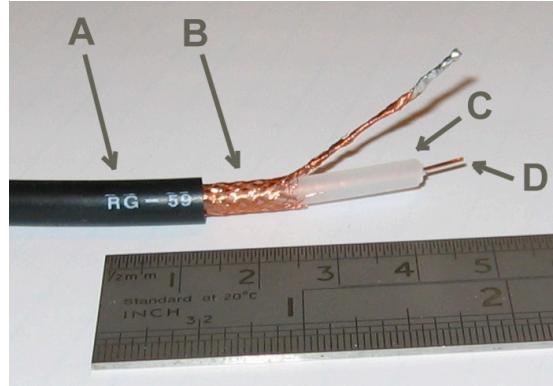
Case





Network

- Device
 - Switch
 - Router
 - Firewall
- Cable
 - Coaxial cable
 - Optical fiber cable
 - Twisted pair





Switch



- Layer 1
- Layer 2
- Layer 3

