Communication systems for e-Business - course description

General information

Course name	Communication systems for e-Business
Course ID	04.2-WE-BizEIP-SystKomunikE-Biz-Er
Faculty	Faculty of Computer Science, Electrical Engineering and Automatics
Field of study	E-business
Education profile	practical
Level of studies	First-cycle Erasmus programme
Beginning semester	winter term 2021/2022

Course information

Semester	4
ECTS credits to win	5
Course type	obligatory
Teaching language	english
Author of syllabus	• dr hab. inż. Marcin Mrugalski, prof. UZ

Classes forms

The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	30	2	-	-	Exam
Laboratory	30	2	-	-	Credit with grade

Aim of the course

Student is able to describe the architecture and services applied in the convergent networks which support VoIP and VoD technologies; Student is able to present protocols: SIP, H.323,RTP, RTCP; Student is able to present methods: WFQ, CBWFQ, LLQ; Student is able to chose appropriate methods in order to ensure QoS in the VoIP and telepresence systems. Student is able to perform implementation of the QoS methods.

Prerequisites

Internet technologies

Scope

Convergent networks. Hierarchical model of convergent network. Technologies applied in the convergent networks.

WAN Technologies. Switching methods in the WAN. Packet, frames and cells switching. Review of technologies applied in the WAN: ISDN, xDSL, ATM, FrameRelay, GSM.

Telephony PSTN and VoIP. Structures, devices and functionality of VoIP technology. Protocols applied in the VoIP: RTP, RTCPH, H.323 and SIP.

Ensuring the QoS in the convergent networks. Quality parameters in the convergent networks. Models of QoS: Best-Effort, IntServ and DiffServ. Congestion avoidance algorithm in the computer networks: RED, WRED, CBWRED. Marking and classification methods: CoS, ToS. Queuing methods: CBWFQ, WFQ, PQ, LLQ, FIFO.

Teaching methods

Lecture, laboratory exercises.

Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form
can describe and implement the quality of services (QoS) in convergent network		• a project • an evaluation test	• Lecture • Laboratory
can describe technologies and protocols used in convergent networks		• an evaluation test	• Lecture
can characterize the idea and properties of converged networks		• an evaluation test	• Lecture
can describe technologies and protocols used in VoIP and telepresence systems		• an evaluation test	• Lecture • Laboratory

Assignment conditions

Lecture – the main condition to get a pass is acquiring in written or oral tests conducted at least once a semester.

Laboratory – the main condition to get a pass is acquiring sufficient marks for all laboratory exercises as scheduled.

Recommended reading

1. Wallace K.: Implementing Cisco Unified Communications Voice over IP and QoS (CVOICE) Foundation Learning Guide. Cisco Press, Indianapolis 2011.

2. Firestone S., Ramalingam T., Fry S.: Voice and Video Conferencing Fundamentals. Cisco Press, Indianapolis 2007.

3. Ahmed. A., Madani H., Siddiqui T.: VoIP Performance Management and Optimization, Cisco Press, 2010.

Further reading

1. Wallace K.: Authorized Self-Study Guide Cisco Voice over IP (CVOICE). Cisco Press, Indianapolis 2009.

2. Kaza R., S. Asadullah: Cisco IP Telephony: Planning, Design, Implementation, Operation, and Optimization, Cisco, 2007.

Notes

Modified by dr hab. inż. Marek Kowal, prof. UZ (last modification: 12-07-2021 11:41)

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