ARCHITECTURE AND TYPES OF COMPUTER NETWORKS

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Abstract : This in the thesis computer networks architecture , their main principles and applicable models about in detail information is given . Network architecture networks organization to manage , to control and information transmission effective done increase for intended layered structure as seeing The thesis discusses the OSI and TCP/IP architectures , their functions , layers and each other comparison Also , the computer networks types – such as LAN, MAN, WAN territorial classifications and client -server and p2p (peer-to-peer) architectures advantages and application sectors analysis will be done .

Key words : Computer networks , network architecture , OSI model , TCP/IP model , LAN, MAN, WAN, network topologies , switch , router, network equipment, SDN, IoT, cloud technologies , network security , network infrastructure .

Computer networks modern information society foundation they are information exchange , remote the connection installation and from resources together use opportunity The network stability , scalability and speed his/her main project — architecture related . Architecture network structure , components , interactions work rules and information transmission protocols determinant conceptual This is the basis . thesis computer networks architecture main types , their functional principles , basic equipment and modern in technologies caught place about surrounding information gives .

Relevance : Computer networks architecture and types study current on the day current from issues one is considered . Because digital of technologies intense

development , information exchange size sharp increase and enterprise and organizations continuous performance for networks efficiency important importance profession Networks right their design , architecture and functional features deep to know information systems safety , stability and speed to provide service does .

This to the topic related main problem — exists network architectures diversity and their application areas right in the definition is complexity . With this together , globally and local networks management , their resources distribution , security provide such as scientific questions as of now remains .

The research purpose — computer networks main architectures , their technician and functional features , as well as LAN , MAN, WAN network types application areas analysis is to do . Through this modern network infrastructure effective organization of reaching theoretical the basics lighting in the eye is being held .

This thesis general context — network architecture elements learning , networking types different aspects show , their advantages and application opportunities analysis to do through computer networks modern information in systems place and importance open to give focused .

Home Part

Computer networks modern information society main infrastructure they are information exchange , remote communication and from resources general use opportunity The network performance , stability and efficiency his/her architecture , that is structure and to the protocols related . Network architecture various devices and of technologies mutual performance providing layered approach based on This is in the thesis computer networks main architectures , their types and application about general information statement is being done .

Computer networks theoretical based on the OSI and TCP/IP models place important The OSI model is seven from the layer consists of from them every one separately function does : physics from the layer pull practical to the floor until all

processes layers through TCP /IP model and The Internet main model divided into practical , transport , internet and to the network entrance from the layers organization found . This models network devices and of applications standard basically performance provides .

Networks geographical coverage according to one how many to the type The smallest PAN network is divided into starting with , LAN — local area network networks , MAN — city scale networks and WAN — global, long-distance distances cover recipient networks Also available , such as SAN, VPN, WLAN, CAN specialized networks various in the fields is used . Each network type his/ her own function , speed , safety and to the scope according to is selected .

Network network topologies in architecture important importance has . Star topology the most many is used because it controls and expansion for comfortable . Complete connection topology and the most high reliability required in systems Topology choice network price , performance speed and to malfunctions to the endurance impact does .

Network infrastructure right performance for switch , router, hub , repeater , bridge and gateway such as devices necessary . Switches local MAC addresses in networks based on information transmits , routers and various networks between IP packets routes . Hubs are simple. device to share information all to devices distributes , but currently less is used . Gateway is various to the protocols has networks their lips , their lips mutual performance provides .

Future networks SDN (Software-Defined Networking) technology for important is . Through SDN network management centralized and software supply through IoT networks and billions small devices connect for flexible and effective requires infrastructures . Cloud technologies and network resources service as presented reach , networks traditional local from the borders outside take comes out .

Conclusion

Computer networks architecture technological of progress every one in the phase updated Like OSI and TCP / IP layered models general the language provides , LAN, WAN, SAN types and network task and coverage Switches and Routers network traffic effective in management main role Plays . Network architecture right choice and management modern organizations digital in the economy competitiveness in providing solution doer importance Future SDN and IoT architectures and network further intelligent , dynamic and scalable to be provides .

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