Introduction to networking Section_ 3 E.M.A Medium
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(Layer(Layer22))ofofthetheOSIOSImodelmodel..?Function:Function:Packages data into frames, adds
error detection and correction mechanisms (like checksums), Packages data into frames, adds error
detection and correction mechanisms (like checksums), and controls access to the physical medium
using protocols like Carrier Sense Multiple Access with and controls access to the physical medium
using protocols like Carrier Sense Multiple Access with Collision Detection (CSMA/CD).Collision
Detection
(CSMA/CD).?ProtocolsProtocols::DefinesDefinesthetheelectrical,electrical,mechanical,mechanical,andan
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(PPP).?UserUserDatagramDatagramProtocolProtocol((UDPUDP))::UDPUDPisisaaconnectionlessconne
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rconnectionmodel,model,isisaaconceptualconceptualframeworkframeworkusedusedtotodescribedescribe networknetworkcommunicationcommunication..ItItdefinesdefinessevensevendifferentdifferentlayers,layer s,eacheachwithwithspecificspecificfunctionalitiesfunctionalitiesandandresponsibilitiesresponsibilities..?Th eTheSessionSessionLayerLayerprovidesprovidesprocessprocesstotoprocessprocesscommunicationsco mmunicationsbetweenbetweentwotwoorormoremorenetworkednetworkedhostshosts..ThisThislayerlayeri sisresponsibleresponsibleforformaintainingmaintainingproperpropercommunicationcommunicationbybyes tablishing,establishing,managingmanagingandandterminatingterminatingsessionssessions(a(apropertypr opertyofofTCP)TCP)betweenbetweentwotwonodesnodes..ItIttakestakescarecareofofgracefullygracefullyc losingclosingsessionssessionsandandforforsessionsessioncheckcheckpointingpointingandandrecoveryre covery..?ConnectionConnection−−oriented:oriented:Guarantees inGuarantees in−−order delivery of data packets and errororder delivery of data packets and error−−free transmission (e.g., free transmission (e.g., TCP).TCP).Uses routing protocols like Open Shortest Path First (OSPF) or Border Gateway Protocol (BGP) to determine the best path for data to travel.(BGP) to determine the best path for data to travel.?Additional functionalities:Additional functionalities:Performs network address translation (NAT) to allow private IP addresses to Performs network address translation (NAT) to allow private IP addresses to communicate on the public internet.communicate on the public internet.?Additional functionalities:Additional functionalities:Provides logical addressing (MAC addresses) for identifying devices on the same Provides logical addressing (MAC addresses) for identifying devices on the same network segment.network segment.?Protocols:Protocols:Transmission Control Protocol (TCP), User Datagram Protocol (UDP), port numbers.Transmission Control Protocol (TCP), User Datagram Protocol (UDP), port numbers.Uses routing protocols like Open Shortest Path First (OSPF) or Border Gateway Protocol

addresses).?FunctionFunction::EstablishesEstablishesthethephysicalphysicalconnectionconnectionbetw eenbetweendevicesdevicesandandtransmitstransmitsrawrawdatadatabitsbitsthroughthroughaaphysicalph ysicalmediummediumlikelikecablescables(copper,(copper,fiberfiberoptic)optic)ororwirelesswirelesssignal ssignals(radio(radiowaves)waves)..?UnicastUnicast::oneone−−toto−−

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allallcommunication,communication,wherewheredatadataisissentsenttotoeveryeverydevicedeviceononthe thenetworknetwork..Transmission Types: Transmission Types: Transmission

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