

## IP- Header Format:  IP- Layer is connectionless unreliable layer.  OSI model Kahata hal ki network layer Should be connection oriented but TCP fare network connectionless hat hai.  TCP model fare network layer ki function kaam hali hai as compare to OSI- model.  DDL layer is the only layer that affind both header 8 trailer.  Network layer and transfort layer affind only information in header hat in trailer.  Pretwork layer and transfort layer affind only information in header hat in trailer.  Soviet und header of data including the later of the soviet und header, as to the IT Enagment (166th).  TTL Protocol Header checksum (166th).  Sowice IP address.	1					Page	
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il Yousion field:>

Vension field hamne yet batati has a ab IP Ka Konsa vension use Karrahas ho. It is of 4 bit.

· After four bit, another four bit is for IHI (IP-Header Leagth). This field is necessary because IP- Header is of variable length.

IHL: Sina it is 4 bit long top IHL Ki max value 15 and min 0.

· Rya IP- Huader Sinf 15 byte Ka hi hozakta hai Kya??

Ans. In this format IHL min joh rabu store hoti hai woh actual brader length nahi hoti.

Actual Header = 4 x IHL (in bytes). Length

Minimum value of IHL is 5, less than 5 Mefrusent every.

Complusory IP-Header 20 bytes Ka hota hais aux maximum 60 byte Ka.

Next 6 byte is for type of survice & next 2 bit is unused but adual min type of survice field bhi unrused hote hai.

· Modurn noulins inko use nahi kartes.

Type of Survice indicales his - type hi survice hai, tuliable hai, unruliable hai, connection less hai.

Par IP is field ko dek k afene working min kohi Change nahi karta hai.

Now hixt 16 bit for Total lingth of IP facket including header-

Packet Ki max = 216 Size

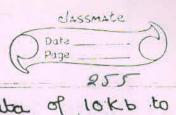
aux data Ki z (216\_20) bytes.

But thuroitical we have max datagrams
size 64k bytes (216) but in practically
they are usually around 1500 bytes.

Now next 16 bits for identification

H Identification mattab, when ultimate host divide signents into fackets than it assigns some identification number to each facket.

Par backet Ka identification number hota hai.



Suppose A wants to send data of loke to host E, gabse fahale A ka data, signents min divide hua then Segment facket/data.

year min divide hua.

Now pource system (host) ke network layer har facket ko ek unique identification number assign karb hai.

Packet Ki Size undurline wire Ki cafacily Ko dek kar decide Ki jate hai.

Now Suppose B K fass gaye facket gaya, now Suppose B Si C Si jane water link ki undurline capacity slow hai as compone to A and B. Joh fackets k aux fackets hogyer far identification number j'is facket ka joh hou woh same Mahega.

Bhallihi daß fackets ko kitana bhi divide karlo-

But fackets ki menging ultimate destinations for his hogey., bich mun facket ki assembly rahis hogis, balehi aafka aachi bandwidth kyo ra miljaye.



Now we known that he ritwork hayve connectionless hai, both identification humber 5 water facket K agar 5 farts hur hai lot konsa bhi fart fahale aasakta has Since connectionless layer hai to ultimate distination ha murge karter samay taise fata Chaliga hi yeh subfacket original ha fahale subfacket original hai

Joh to Solve this problem, fragment offset Came Into existance, woh field 13 bit ka hota hai.

Fragment Offset ki helf se hum yen balæfakte hai Ki y Subfacket konsi facket ka konsa wala hai, fanala hai, duena hai, thisra hai like this.

Pragment offset hame kya bodata hai 1st byte of this backet is which byteof origonal packet.

Suppose Ikb Ka facket agan four fants mun divide hua har

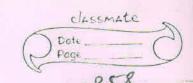
256 256 256 256.

Joh Cahali Gacket Ka Offset Kitana hoga

0 - - 255

1 L ===

35	Next wall ka Kitana hoga 256 and so on.
•	Eabse fahale murging kanna hai toh kaha Se kangey facket with fragment offset 0.
•	Hum adual fragment offset r nahi tante hour hum usko 8 & divide kanke Store kants have
	Actual = 8 * Stoned offset  offset.
	Fragment offset hamesa 8 Se divisible hona Chahiye, agar hati hai toh woh aafka fragmint offset banane yog hati hai, but last wale fragment to chark sab 8 Se divisible hone chahiye.
•	Mahi hai toh evner aayegry.
Our.	How to find fragment offset of backet if Current fragment offset is given-
	Fragment offsid of = Current + (Jotal Length  Next backet - (Enity)
Ours-	9f fragment offset of current backet is 8.  Jotal lingth of backet is 268 and value of IHL is 5 then what will be the fragment offset of next backet??
Aηs	8 + (268 - 20)   8 = 39 - Ans



If current: Backet is second backets with fragment offset = 8 what is the size of first

Jotal 64 byte data + 20 IP header = 84 pate.

Agan offset 8 se divisible nahi hav, bob Something went wrong in the question data.

Last fragment K fragment offsit to char kar Some fragment offsit 8 Si divisible bona chahige

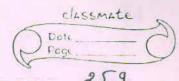
Now Juestion Jeh Kaisi bata kanagut Kir.

MF bit: - More fragment: >>

Agan MF=1 thun is fragment k baad is identification k am bhi fragment exist kante

I'm facket hi MF bit 0 woh facket ta last fragment hoga won original facket ka last fuagement hoga.

DF - Don't fragment: Agar DF field is I then us facket & aun fragment hahr hopakte.



· DF: > Source Router, Set Kanta hois

LP- Layer far jab bhi kohi veren acti hai woh ICMP handle Konta hai.

ICMP Stands for Inturnet control History

DF= I set hat aun hamme us fragment Ko aun divide Kanna h tabhe humo Send Kansakte ho toh this situation le handle by ICMP, aun ICMP, ex vura missage " Un reachable destination" Source Nouter ko send Korega.

Now next 8 bit for TTL Etime to Live3

TTL: - Every Router devement TTL by one & Houter on which TTL become 0, will discard the facket- (sabse pahale decument than church).

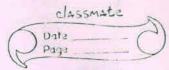
TIL measured in Seconds (distination bhi?

deveament karterlan)

To avoid the indifinite traversing TTL field

AS TIL is of 1 byte its value is 255, at most ek facket at most 255 Router to Choss Kargakte hai.

Now next 8 bût for Protocol is field mun highest layer i-e transport hayer



260

Ka frotocol konsa used karna hai woh Hahata hai.

Then 16 bit for Header checksum.

hav nouture Checksum combute kanta hav aun Check bhe kanta have because TTL Change hoga to checksum bhe change hoga han noutur k hije.

Header Checksum Check bhi karta har aun laagry wate ka Checksum bhi inkat k Makta hai:

If Header of the Same layer is already added then System first remove the header and then again add. header to each divided packet.

Durg: - Consider a 1246 byte facket is received by Houling that has a PPP Link to next hop for the facket. The MTU (excluding IP) for the PPP Link is 255 byte.

Aps
1246 - include header
1226 - daler

248 248 248 248 234

5 fragments

(255 divisible nati h 8 de