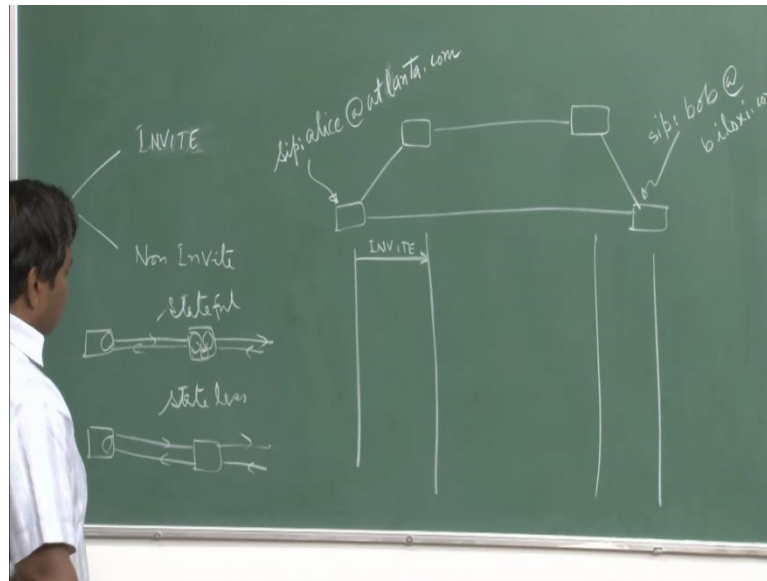


Digital Switching
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Lecture – 34

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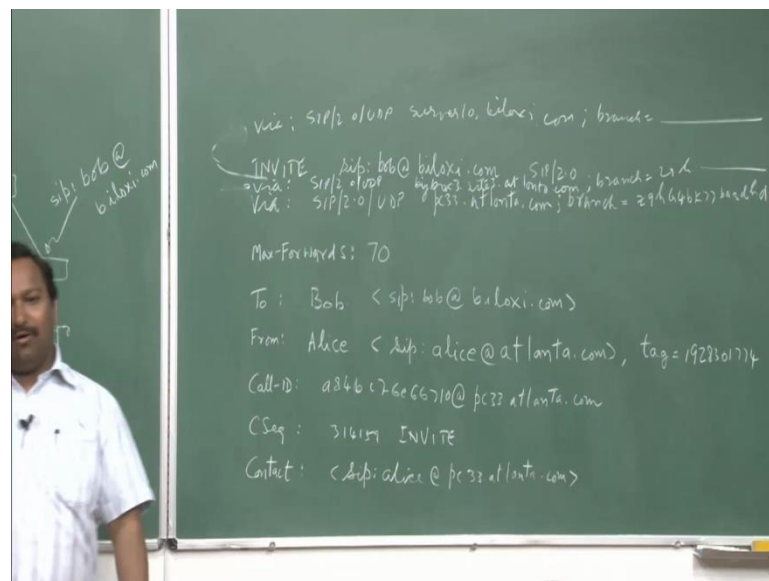
So, actually what we are discussing in yesterday, was the sip proxy right and how invite a message. Remembering 2 kinds of messages will come, one is a invite all other is not invite. This is actually written in a capital letters let us see. And other kind of request will be non invite. And most important thing of this is; acknowledgement is only sent for... Invite is a request, there is a response and there is a acknowledgement has send. This only happens for the invite request. For non invite request there is no acknowledgement sent and there is only request and response kind.

So, sip which I mentioned was proxy server and mean to be a proxy here and there are sip rules. So, phones or any device which basically act as a client and most of the signaling will happen in this route. In the beginning to start up the connections both go through the identities, they can do that directly. This is the media transfer technically of course, signaling also over this line, once it has been set up. This is was the sip tripisize.

So, initial case, if I put timing diagram here, this is first thing which is sent by this invite. And that what we are discussing yesterday what the field and the u r l for this sip client is

this 1. And we should actually appreciate that this is something like a mail id, but sip colon is something like STDP transport u r I. This is a mix of SNTP or a mail that creates format. Then we can find this protocol; then build that SNTP or SMTP both for certain multimedia process. So, lot of things that are happen taken them. So, address header format actually that is come from STTP mine type, is common between internet messaging processing prototype, as well as an STTP both. So, coming back to how they are look like.

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So, invite is we are discussing. This invitation for this person sip colon bob at the rate of biloxi dot com and this brings for a sip 2.0. This is required for compatibility reasons. See you are proxy that the clients can be actually implemented 1.0 or 2.0 both. So, since they are specifying in their request. So, proxy server which we are going to implement, you can configure out the request and response to the client. Based on that, different behavior in responding back or you might actually we are doing what again gate way kind of thing.

So, you talk the client which we use 1.0 online like to do 2.0. You do all the translations that capability also built with the proxy. Usually it will implement back to back user id client that is known as buse. So, proxy is again of 2 types a especial mentioned. These are the states; I will explain what will it actually. 1 kind of proxy that is user id client it maintains all these states are those to proxy, proxy understands everything about it.

So, it keep the complete track of transaction, which is happening this mid is the whole state. And the hence thus the communication further, those mint entering the state of transaction. That is state full proxies, that the states full proxy. There is a server setting here and here is an client is an server is an another user client, this communicating. Further those data structures which are maintaining this state. While, stateless proxy; the state of the transaction is not maintained; stateless proxies.

So, here user is an client passing a message, what it does; simple receives the request, changes whatever the request, whatever in the transport further. It does not maintain the status. So, when the response come from other side, then it will send by the response to ... So, the proxy which I am talking about here is; a state full proxy a stateless proxy. So, state less proxy is also exist. Mostly it will be implementing state full only state less cannot ... for example, here I am trying to connection for that.

So, it will not send the signal back for example, that 100 thing. I am say it is a. So, the fist line will be this, then there is via header field, that for this particular request. Remember a request will have a at least 1 response, can be more than 1 response you send a request, 1 response and give a multiple response, but at least 1 response has been there. This via field will tell that, who is sending and this is what is going to be used and other response will come that want actually means.

So, in this case, it gives the complete transport receipt version which is there. So, the user is actually sending invite through this particular client. So, actually the response will come back for particular and this will communicate to that user. So, this tears the machine which is... we can implement rammer will be in a single machine, there can be multiple user id simultaneously. This possible actually, we have to tell test through this machine only.

We cannot tell the row matters here, we are giving the IP address. And the machine will be given that, it has to be handed. And what is this pc 33 has somebody asked yesterday; in the domain name system database is pc 33.atatlanta.com. When it is a business query, domain name query, it will give back address of that machine. So, which the response has come back, which is currently the gives DNS name for the phone used by ails in the sense. And there of course, semicolon branch and then it is a random airport something here.

So, this is this for identification. And then after that, I have to understand, the first letter is always capital for attribute. And the attribute comes other side always and this is usually come in 1 line most the address is. And next format is how many times, this request which is generated by the can be forward for this. The sip proxy can be keeps on hand over, but how many times. So, each time you forward, you reduce this number by 1, where it becomes 0 no more forwarded. It is like to is the destination to whom the invite to be sent. You are trying to make a phone call for the bob, then bobs address must come here.

Now this first character is known as display name. It is actually this is display to the user; it is not actually u r I. It is also not used in email systems. So, you write your name, your phone number, whatever the display name email comes later on, that comes on the angular brackets. This is very similar to email. Angular brackets will close; this is your arbitrary thing. There of course, rules for setting up. So, this is again giving internet format. There is r f c to that, it is given or you it look at from ... There is from field corresponding. Always the first character will be capital in all field names.

Now, there is 1 more important thing that will come here it is a tag. This alice is simultaneously multiple phone calls, that possible. It have might of certain multiple sessions, the tag will be different. Bob might be receiving multiple sessions. So, the session time is different for each session. So, that currently has no tag this is a initial invite. If the response will come back, that tag will be added by the bob. And this tag will be simply replicated, till this dialogue will exist. This particular call, this tag is just simply replicated everywhere.

Since, in the beginning will be the ails machine will choosing, this really generated by soft phone. In this case, I have just put some random number. So, these 2 tags have an identical define bob and alice. Now there is only from is; we need to has identify the on the third entity, because bob may not be using 1 phone, but multiple phones simultaneously. So, we might be use the bobs are something else. So, there is possibility of using the same time.

If it is same machine, it can be shown or otherwise it cannot be shown soft phone. This is 1 is alice, bob has not receive the invite message, nothing there. Only when he responded, he will has his own time. This is random, it is not sequence number, it is not

incremented. The soft phone has local features internet features does not bother about it. Then you will have call id. This usual is a random number, random machine IP address...

So, in case we have a DNS name, the source which is pc3atlanta.com. If it is not there, we simply use the IP address, got it an simple notation IP address. So, exact there is no need of these things, we had already used IP address The call id is some random number, generated by the random history, but it is not a good, this is going to be done nobody can call, because this call can initiated by this IP address. It is generating the string contain what are the sessions are running. It can show that this id is generated anybody else in the world, is unique call.

The way in TCP/IP connection call, will always use that quadruplet, source IP address, destination IP address, source port and destination port and that unique all across the world. All TCP connections will occur at any point of work. None of them has actually which are going to be sent, that are not possible. Same is also true with this. So, this particular tag and another tag will come all the setup are in the response of this. These 3 things together will put, triplet is unique is always unique.

So, this actually reduces the some you can observe there. And this uniquely indentifies a call. Hence all these three random numbers, put together, indentifies something dialogue. In earlier r f c, this was use to call it, call log. Now it call log is there, now has a dialogue then of course, c sequence. Interestingly I am using u d p, but the reliability in the systems, sequence number of messages is extending ... This whole thing is 1 common why we need a u d p packet. But it is lost what it will do? You should get a response to a certain time; then we will re transmit. Response will come multiple times.

So, important thing first common, I will put a sequence number. When a send next and can change the sequence number, but it is 1 is common sequence and again it is for reliable purpose, we can figure out the duplicates. And all the responses, when they will come back, we will just duplicate this, whatever the value of particular id. In this case the sum number will be the comment, invite this comment will changing; then they will keep on changing 1 by 1, and of course the context. This is not the sip u r I that is actually u r I at that point of time.

So, varying from example, while you send a registry message. So, this will consist of registry, it will send to register by your phone. So, it will give the rest of URI whatever it has, everything will come. The contact some fields will be there and contact field is what is going to be used. So, from and contact for variables for the registry, because what will happen; proxy server will have a URI, does not mean the contact here. The contact actually is machine address which is going to be used.

So, here it is currently written as and this can keep on changing actually. Depending on Alice keep on moving, IP address is ... So, when the response will come, you are telling the receiver that the contact is this for sender. We can understand this authentic will be directly getting touch here and then starts talking actually. So, the direct point to point signal. Of course, the worst thing will be generate all these header and contact it to somebody else.

So, where point to point connections happen, you might be talking to wrong person possible. But that is taking care the authentication, change the responsibility. But what will happen if the Alice proper, for this can authentication proxy server Alice. So, whatever the Alice telling as a problem is actual contact of that point, all has to be made, it must be justified. Even authentication you say all the matter should be discussed is fine, I will always do that. There is nothing to worry about. If there is authentication get then there is a problem. There is somebody else came, need not even create a name with a own client, but you send a request in the name and then I can start hearing about somebody else.

So, supping can happen in that case, but security is currently not discussed here. Security is a separate thing as mentioned earlier also. Both of them will change, only IP address will remain sent. You will have multiple bindings finding in the same machine address. The machine address is only this part, this is a sip URI. Sip colon and names will keep same and IP address remains same. The multiple users are same in the machine.

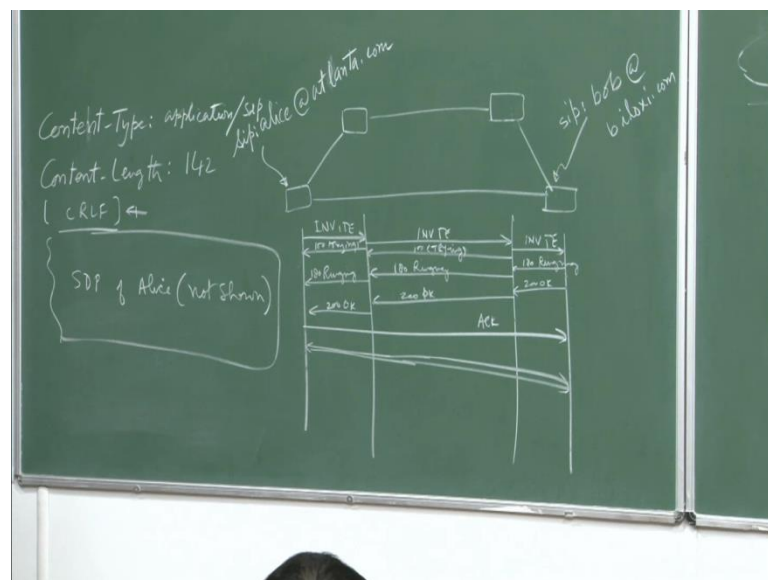
So, bindings will change actually, I am binding like this of the same URI, same sip URI. You are going to have multiple different devices, will the context will be there in rare star. But currently I am not looking for the register files; that is also permitted. So, when a proxy will get a require has to connect some sip URI. And then it will look into

application server, what will be the rare star only what it does. The u r I comes in and it maps into certain u r I the sip u r I.

Now this u r I dynamically changing, depending on where you are connected, that was the rare star with that, this address is keep on changing. But remember, your identity here remains same where you are. So, this dynamic mapping, from here to here we are going to see that is done by rare star or location the server falls the destination side. For receiver you telling the authentic value for the proxy and proxy can be take up behalf. In case set up the connection from here to here.

So, if you goes to your friends office, then actually make the registration for it machine and then you can starts getting calls from there. Very simple way we can do call forwarding, but this is true registration. So, after the contact, we will have the content type. This is typically what you will see in the http response or content type since life will content type. So, STTP protocol is not a, it is a for format description is written, but we use the call protocol. The protocol is nothing but set of the rules are the followed.

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So, there is no f s p in u d p, it is a final state machine. So, in this case any application or SDP. I can say application not any issue, sip 2 move to removed side. I can communicate pa to pa, file transfer is do we can do this it does permit that it will ... So, we can ... this typically that is internet messaging, this is actually doing for messaging; sending s m s for example.

So, I use sip technical is used in 2G and 3G has system, this is what will be used for transporting an s m s to user this message. See does not bother about going in the pay load; for an it is a object, it does not see any object any way, there is an object certain number of objects. So, this application type what will be used from the receiver client, see what applications required to understand the context. If, you right a application or p d f, that client must be maintaining a application list, whenever application contains that will be used by a u d p, where ever application has less SDP processing component has to be there in the media client which is understand ...

So, totally do not bother about in the content. This only transferring from 1 person to another person and these has to be correct persons. After the authentication process, we take object where is and other is of course, most important thing content length. Some number I will, this is basically this. Remember all going through it is not a as key or eskey, then which has to be used. All characteristics must be in you even sent text message.

If you want you can write your s d p in the language send experiment, it not as key text. In fact, all these things put in u t t p, no more discuss. Even u r I also defining u t t p. We can write your name in u d p in the domain name, permitted then the integration. So, sip is standard all across multi lingual and then of course, there is blank line we can write as line field CRLF. This actually taken from http, after the header then they will carry they write in the line field.

So, courage will be you will do where it return come back and to the line field, there is a line from ... And after that whatever the characteristics are there 142 characteristics from here on wards, 142 characters which has to be taken out by the receiver and has to be analyzed. This will call there are header and trailer. So, other ends here shape that indicates they should not be any blank finding between. There also their character, that is important.

So, there is a SDP content not shown, this is 142 characters, there as a typically we will look like. So, now, what will happen is; this invite this sentence is and writing all the numbers, we are asking what this is a train and what is finally. Invite message, invite is a request; in response to the SDP we get multiple response. So, this first response we get

more of them before invite responses. So, train is we keep instead whole down do not time out, we have to keep on sending train periodically.

So, the time rest, timeout sending the invite to reset the time out clock. So, this is typically designed for them, because they timeout actually they happen for a long period. And then of course there is a longer part let be thing. So, there is always the management also be sent back, that why invite only in the request. In response to the response of the invite, only in this case we will send the net for not any kind of request. Invite will be forwarded by the proxy, go through this one, if for the sending invite to him, there is again train. This gays form is free my assumption here in this case phone start ring ringing actually. When you start ringing, see 180.

So, train, ringing all this; the top with 1 exercise series actually. This ringing once which is here, we sent back further. And it this is very similar to signaling, which is use to conventionally telephone, similar structure, their will slide variation, which 200 voice is fixed is willing to communication is 2 connection, is not to be set. Call is not through to 200 locate, because acknowledgement we have sent back also sent by remember.

So, will lift we willing tick the call, due will be waiting call is not through. So, that also happens in telephonic exchange by conventional separate 2 systems by passing. So, happen, relies after hand set are the receiver end the signal is going back till the source and is disconnecting the in wire circuit as be connecting, because that they also will getting a tone back, hurting tone will have to give ringing tone. That as to be to stop; wire circuit has to be connected.

So, all wires path actually to be cleared, we see the conformation happens. Here is no wire path as of now, they only started; the moment happen, whatever has been sent in this particular field, they header fields field as not again as SDP. It is already seen that SDP which have receive. It is now what are the capabilities, it is set to be never interruption protocol, tell what kind of protocol will going to be used, what kind of barite port number whatever will be.

So, this phone at list by this time that, the common subset of the 2 SDP; is what. Communications go to how happen on that those steps. So, never gets tell now. So, this gay ask for are barite protect, but that protect is not available, we are lower 1. So, it will just it will not them of choose lower 1. There is nothing like, your own choice. Whatever

is the minimum; that to we have choose at. So, it will choose, it will start with the media server service online. It will start excepting the voice call and transmission we also called permitted actually. But is not call through, because this client it not configure that.

So, this is send 200, this 200 we happens s t d p as the way, actually same stand score will be what will be used STDP. Except some of the numbers the different, deviser does not happen in this case of STDP, this only function that. 100 I do not thing is they are in STDP, because there is no proxy forward. So, once this 200 comes, then by this tends there is knows that, how the call how the response come to be. Remember in this case, via header was invite this property, in which initial send the only 1 header set. By the time, this gay actually forward this the invite and another via field that is separated again, its via sip slash 2.0 slash UDP. Whatever this name of the entity and then sign equal to branch some number in set corresponding in this.

So, in reverse, when we come terms match actually. When the responses in that is this, this gay figure out matching that, which particular IP. Because so for infective this tag is can be this, but dollar is not fully set, because this is not known response. This putting those tag will be. So, these 3 combinations for this proxy, now it early define as a dollar in time; that show has been them. They will not contain headers in this, also be it contain period, that to the structure of for example, this 200 in the document message having come for that. So, here field which is added here, this something like big box what are the DNS for that thing, shall 3.alanta.com branch. This is then write comes out from this machine, we of the lesion most started first here.

So, remember this have here added a, in some number which will come z minus 1. May be different dusting them, this is function of the machine is; which is starting in the invite. And all this steps proxy currently both of them currently proxy; is there it less proxy doing this. Similarly this via will be same and anther via left here. So, this one also see sip 2.0 it is UDP and sever time, but proxy dot com then up course a branch; a random string setting in here.

So, when this gay send the response by any rigging. So, for this particular request it was all responses as sent to be special, not for the complete daylong remember, for some the daylong. So, daylong there is a here field which is to be by this. For example: should be letter on for this old daylong; that ever transaction happen to happen to me. It is same

through something there root header fielding like this, conversely we cannot root while the response this invite it will be send back to this that.

So, once is coming that, this via removed. So, for this, only this via available, send the response, this train everything by taking half by half. They are coming the back word direction. If this via has been added, for example, this via this via what will added in this equation simple thing, but remove thing come to is there intermediate. And this case which 1 we currently, everything multiple this 3 response to the single like. This request, this invite request is not over, we can response at requires 3 response we complete the request. There intermediate, I actually tolled, are request he only tolled the request requires at list 1 response which... So, at only one response, multiple of them perfectly.

There are 3 responses there via field and every time veiled by every proxy is allowed how many forward is called 73, will may be 70 as which can be there; that means; the request is itself lot of time response itself, we can take loss of time given. This is for example: here self do not by the discussion is. Usually always forward the request 2 which are proxy server for is to be configure by IPs, that is, this will be put is proxy server address, login continues registration, will then we get the proxy another login their continue. But will restart that we get the proxy server easily established in co located thing, is same material, but logically they have separately is. And when we go to weather about, how will be rooted a sentence how to this.

Now, look at the sip for the distention, it just practice, somebody calling block proxy dot com. It is a DNA story, how the mail for example. You also send to the mail to that, the rate proxy dot com. Your their mail essential x y z, that proxy dot com here mail eccentric have to dcp.in. So, this essentially server that will try look at beguines, require which cores round to let we call mail exchange, we call multiple kind of this simply given the machine is that address, corresponding IP address ,that can be. I can ask with from me, what are the corresponding to the mail exchange MS required.

So, when want to send the mail to gmail, for example our machine find the query the make the dominoes of gmail.com. So, gmail.dot com is not through the root server or bad server actually, a server showed be known to everybody. The root server DNS are always conforming, the pre machine in the periodically related for the main server. These

are again written by the internet, assign by authority actually take care of this I now every part of I solve internet society I.

So, response of this donation, no forming funding I, so much clearly donation voluntary. So, you go to the root, from root will find out how will go to gmail.com were is a got come sells, will find out the dot comes DNS, that dot com all everybody got whatever name the com list inside shell, we go the g mail dot com in a shall. In that server what is the unnecessary call for you domain IP address, were arms do acetify connection will do the mail transfer for same way for belongs. Same way proxy dot com, we will ask for what is the corresponding, when your domain as will domain 1 or 2 servers 1 is the mail. Another 1 is the stand back that cover will be there.

So, will the DNS server, this gay will be talk to unique is not purely depending DNS is given that proper information tempest by anybody you will say records from given. So, certificate for that that should be is a am. So, and so this how do will, many both of them will security certification, since for each other they now, each other this gay actually. There is domain only through rest server find out the gay they are not there is connection in then before, making connection authentic connection, you are right person are not I show you certification, show me through you will be authentic.

So, authentic again using they will be certificate this thing, outside the challenging form transaction, you will say give me user ID and password. When you example form through proxy here what happens, we both actually giving after beginning itself u r l to reliving the pop self form the proxy form the messages, we not authentic user username and password. Once user name and password becomes, we will enter that a browser actually towards the user name and password for that secession in the memory. For every transaction; there is 2 fields which are identical; a new header this are no a static user a static password, user in proxy password.

So, every a static transactions for the browser sent, we also send this, which then the proxy which authentic. So, challenging response method here doing login password immediately, for without that pace there it will respond duck, it is not there, it will respond duck are given wrong entry. So, they respond that. So, then potential that personally go with STDP header when he not reticules thus interrupted. So, if we can that actually user's password. So, it actually password, lot of people will use STDP and

will the proxy a technical possible to do this special name is the password telnet because of also this. Telnet beginning login password this in that is it, but the rest is not only in the beginning it was the bed park.

So, the response system here; how to look like, let me the complete... then the after this, technology argument is go back directly. This never goes this multiple off, because letting now were we need to contact this gay, we now tell what is resection of location is will understand the context of they, we have to contact here. So, this context of the strings is available with him. Now the context correct they should not actually copy each other. This we have this only gives were the formerly in come back, is does not give the as to be connected given here. Correct there will be that we have say; then up course depending on the SDP, we can start the transferring. They can use the keep on the similar say; this can also keep on sunny is, via we start receiving playing back. And that is how, we can take place.

We did the flow proxy; what happens ratability representation; it is only belt for written by. We are done all thing and said the and more of them it is again, but this not IP address of the ... Has to come back. That does not know the contact; context cannot be consider to be current holder, will the machine what the current machine. So, remember; use a clime this we also do the you see user and u s. User id kind user password both are running every client. Use the which drooping to run here, we are in client we should the string also, but the actual locations not known. It only this is now because of straight, because of quite at this take a different. Here to first 1 doing signal that cans some were its then to somebody, but when you actually some a required the media herring with the friend. This signal used to be are not participating there, they weed not except in the case called media gets.

We are part medial proxy is media proxy actually, some will taking your already sent the invite n s d c in the return also is nothing s d p. These 2 s d p is minimal of the 2 sides, what is going to be excepted by the rules numeral of this 2. For example: this gay says context video and audio, it is have samples for set it come. So, on science in the s d p that does not capability, let we see monastic, it is monolithic audio the problem ... I for may I cannot to that. I will get the lower rate. It can do that were lower the specifications.

So, which are the lower specification; prove that it will be used aggregate by both are excepting kind of agreement happen. So, that self, now the we already know SDP it is coming, what are the agreed step as the keep it can be center this. I thing which sir to be there available primarily, they can may be whatever it is not available in a; that means, is refuse in that case, it machine does not happen. All video we not be able to handle.

But I thing is nice example; we have a respect same kind is actually; live lecture string .I required chart white board; I required are you required video and audio multiple arrangements. I defined that the let here; this poor noise it is first try to lesion to the finally, spiking in lecture as soon. We can only what you do let see video; she will say I can that ever no living, but I cannot chat to the write board. So, that will at do 2 audios simply as they got and all the video set to be, so but is the function we can go to essential. Some person I think do not have much may be happening, congested in happen letter been bit very poor, they video should not be sent actually.

So, any one of them they can modify the current is that session parameters. They agreed for the video part, some one of the as for we will drop. Then I can to drop also the pear to pear direction. The expert thing does not work on this is equal the pear to pear over layer multicasting. By using we can modify the call letter can be invite, but remember message as will say write this nothing, but invite only invite as re invitation; how to be people invitation, because this 2 terms x and this we reaming the same. There same as the same daylong it region dollar already must be existing. There is no nothing re write, keyword else write, we can another invite secession for the same daylong, that reversion in the parameters call is running.

So, call is already running. This is accepted you both of them, which are the new parameters; able to the rejected is the old parameter. Call not would be remove, call not be end keep on multiple times live find out, something which you treble both of them. Assign which is does not instigation very STDP is not again pass out will again, send the permission is login password am different for happen, so now only thinking last page to the reverse direction the, part. Then up course lot of features which are there in. We come to this discussion. I thing I have four more crossing left, only to set most of the ... I will learn plan at the some more grid.