**SRWE - DHCPv4**

0:02  
OK.

0:05  
And so you start that.

0:10  
So OK, I think last time the bat was the Tiresano STP and link aggregation, no?

0:26  
So it didn't continuation.

0:28  
So this is module 7, it's a network service, so it's dynamic host configuration protocol.

0:40  
For version 4, no.

0:41  
For IP version 4, you can actually use DHCP, especially for mobile users, let us say Naka Wi-Fi for example.

0:58  
So that's the common use case, No, for DNCP, for mobile users, they will just simply get their IP address from a DNCP server which is set up locally or presidential set up remotely in the data center.

1:21  
OK, so for IP version 4, no, we call it DHCP version 4IN which this DHCP server that you're going to set up will be allocating IP address for IP version 4, of course.

1:39  
OK.

1:40  
And I'm just going to directly get into the the core no implementation of DHCP version 4.

1:57  
So I want you to read the details when it comes to the concept.

2:02  
So I'm just going to give you the the the core, shall we say you Pinakaki points non non non service, non non DHCP service.

2:19  
So that's dynamic host configuration protocol architecture, non DHCP is that you have a DHCP server.

2:28  
You will be the one to set it up.

2:31  
You can have your Windows Server add a role to it as a DHCP server.

2:41  
OK, so it's already a built in role.

2:43  
Now, if you're going to buy a Windows Server operating system, so you have a role that you can add making it as a DHCP server.

2:54  
You can also make Linux servers like Ubuntu red hot or any other distribution of Linux can also be a DHCP server, Unix as well, even Mac, OK.

3:10  
And so as our Cisco IOS.

3:12  
So you can even make your Cisco switch or even your Cisco router running Cisco IO OS or Cisco ISXE make them as a DHCP server for clients.

3:25  
Well, this typically your your computer know your desktop, your laptop know your smartphone, your tablet.

3:35  
So even IP cameras, IP phones, this this can be set as a DHCP client.

3:42  
So DHCP client will just simply request no IP address from the DHCP server.

3:50  
First it will try to discover if there are DHCP server around.

3:57  
So it will send a DHCP discover pocket.

4:00  
It's via broadcast, so everybody in the network receives such broadcast.

4:06  
And if there are a DHCP server no set up in the network, the DHCP server will reply with an offer.

4:18  
Normal replies and DHCP offer offer contains information about what are the IP informations that the client can request.

4:31  
And so if the client receives that, the client will send a DHCP request, the new communication, then finally the DNCP server will reply with acknowledgement.

4:44  
So once the request of the client is acknowledged, meaning the IP address offered is already reserved know for that particular client, OK, So that's how they communicate.

4:56  
OK, Now the lease of actually the the IP address that is offered is actually for lease only know for a certain period of time.

5:07  
So meron Chang duration, meron Chang expiration.

5:11  
So let us say if it is lease only for four hours because it was set in the DHCP server for four hours and then the client will release the IP and request again no.

5:23  
So ganun young system and then renew non bagun IP address.

5:28  
Now in most cases IP unang binigesa Kenya no.

5:34  
If there are no other clients requesting most likely be that same IP will be will be receive no or will be offered OK, so in our demo we will use not our C score router here we will use the C score router as a DHCP server, no.

5:55  
Why not mention DHCP server?

5:58  
OK, so young steps know if we get Kunalan later and the human commands OK, that's exactly the commands.

6:08  
So we will try that out later on and then you can check with show IP DHCP binding to check if what more those clients got the IP no from the DHCP server.

6:22  
OK, sample on Yan later.

6:28  
OK, so if you want to disable the HCP server or the DHCP service in our in your Cisco IOS, your command is just no service DHCP.

6:39  
If you want to enable it again simply service DHCP.

6:44  
So enable disable.

6:47  
Now, what if the DHCP server is somewhere in a different network in this a locally reachable from the client, but it is somewhere in the data center, no.

6:59  
So it's it's not available in the local network of the client, but it is somewhere in the remote location or in the remote network.

7:09  
Let us see the data center.

7:11  
So in that case, you need to configure your router as a relay agent.

7:17  
So if there are clients in the network send a DHCP discover packet, that packet will be forwarded to the DHCP server by the relay agent.

7:29  
So why did they not any configure your router as a relay agent also Gannon case OK.

7:37  
So I'm also going to give you how to later demonstrate that how you can configure your router as a relay agent, OK.

7:49  
You can also configure your router by the way, as a DHCP client.

7:53  
So this is the common case in an any subscription environment like let us say your business owner and then you subscribe for Internet connection.

8:08  
Your ISP will provide no IP address to your router via DHCP.

8:17  
So your DHCP server is now configures ISP side and then you configure your router as a DHCP client.

8:24  
Now putting you configure your router and your DHCP lion.

8:28  
So command is just this IP address DHCP.

8:33  
No, you see your command but making your router to to get IP via DHCP.

8:45  
OK, so let's have let's demonstrate that.

8:51  
Now Kuma and Yuma home router normally on setup is automatic configuration DHCPU settings.

8:59  
So yeah, let's try here.

9:01  
Let us say I have in this network here I have two Vlans.

9:06  
Let us say I have VLAN 10.

9:11  
The network is one 92168 dot 10.0 slash 24.

9:19  
I also have VLAN 20 and this is VLAN 10 no VLAN 10 VLAN 20.

9:40  
Young network is one 92168 dot 20.0 slash 24 and let us say this side ethiom data center and genuine server, not ten, let us say on network Ditto is 10.10 dot 10.0 slash 24.

10:02  
No Canon configure nothing, send Lithium router.

10:08  
OK in the router we will be implementing your router on a stick.

10:17  
So if you are going to configure Gigabit 00, OK, configure moon and nothing.

10:26  
So let us say this is my hosting your AC RTR, this is RTR 1 and then interface Gigabit 00 slash 1.10.

10:41  
That's how you configure some interfacing, right?

10:46  
And Tapustian, and then I know command encapsulation, that one Q you're going to assign what VLAN 10 up encapsulation, encapsulation.

11:08  
Then IP address one 92168 dot 10.1, for instance, know your first usable IP.

11:17  
OK, zero.

11:18  
Then that's the first sub interface.

11:22  
Then let's create another 120.

11:26  
This will be for VLAN 20.

11:30  
And then our IP address would be 20.1.

11:36  
OK, that's it.

11:37  
And then let's activate the interface.

11:40  
Gigabit 100/0/1.

11:47  
OK, then no, shut down to activate it.

11:51  
OK, light.

11:58  
Where's that light show lights?

12:00  
OK, activate activated Gigabit 01, this one OK.

12:18  
So show IP interface brief, OK.

12:26  
So if you're adding the sub interface, OK, that 10 font, let's make this just 16 shadow Molapit so that 10 divide that 20 and you IPA.

13:06  
So let us say I don't go any attend I no configuration Tapadito or VLAN.

13:14  
So let us say this is host name.

13:18  
Let's configure this one, configure CPA network.

13:25  
So this is let us say switch one, let's create VLAN 10 and also VLAN 20.

13:33  
And then let us say it on computer NATO.

13:37  
This computer is 2 VLAN 10.

13:41  
This one would be two VLAN 20.

13:47  
OK, OK, you import 15 it took us is 20 no.

13:53  
So interface FA0/15 taoba.

14:00  
So switch port mode access, switchboard access what Villan villan 10 and 20 switchboard mode access, then Asaina tensa VLAN 20 and lastly your interface.

14:23  
Gigabit 01 is ANU dapato switchboard mode rank inland tapos.

14:34  
So instead of assigning this computer with IP address we are going to let it get IP, IP from DHCP server.

14:45  
So there are two scenario no for no for implementing DHCP.

14:52  
So now a first scenario is a local DHCP servers.

15:19  
Server.

15:21  
DHCP server let us say we are going to set up a local DHCP version for server.

15:44  
Meaning let us say for for bill and 10, meaning bill and 10 host will their DHCP server is locally reachable.

15:59  
Meaning the DHCP server is just in the network where they are.

16:05  
So we could potentially use this router as their DHCP server because this router is their gateway, so it is locally reachable.

16:17  
So that's one thing to do that a new command number one to remember is IP example for VLN 10 and VLN 10, the network of VLN 10 is one 92168 the 10.0 their subnet mass is 255255255.0 no.

16:42  
So for VLN 10 Yan.

16:43  
So this is their network.

16:47  
That's the rather the network address.

16:53  
So this is the subnet mask.

16:58  
And on the bank default gateway nano nan villan 10, it's one 92168 dot 10.1.

17:07  
Let's assume that our DNS is 8.8 dot 8.8, just a public one.

17:13  
OK, so to configure our router as DHCP server, these are the commands.

17:20  
So let us say IP DHCP excluded address and you're going to specify what are the range of IP that you don't want be offered to the client.

17:40  
So I'm range IP.

17:41  
Need to remember this starts with one 92168 dot 10.1 up to what one 92168 dot 10.254 that is the host addresses.

17:55  
So let us say I I don't want the client receives IP starting with 10.1 up to one 92168.10 dot let us say, let us say up to 50.

18:13  
So another I I don't want to give or offer to the client IP address like the last IP250 four 254.

18:29  
So that's how you exclude IP.

18:31  
So meaning the DHCP server will be giving out or will be offering out IP starting from 51, then sunut, sunut the end 515253 and so on.

18:45  
And of course it will not offer the last one up to 253.

18:49  
Now all right, so let us say.

18:53  
Now the next command to remember is you need to specify what is the network and the subnet mask of or the network address and the subnet mask for that network that this router will be serving.

19:11  
No will be offering IP since it will be offering IP to VLAN 10.

19:15  
So the network address of VLAN 10 is 10.0 OK and then the subnet mask is 255 255255255.0.

19:32  
Next is you need to specify the default gate, the default gateway.

19:38  
So the default router address is 190 two 168 dot 10.1.

19:47  
The DNS server is 8.8 dot 8.8 OK.

19:54  
You can actually include also the.

20:01  
I think the domain name example that's mcm.edu dot pH and also you can include the list.

20:13  
Let us say 0 day, 4 hours, 0 minutes.

20:18  
So union configuration and also if we're just in case service DHCP.

20:31  
If in case the DHCP server is disabled.

20:37  
So to enable it, the command is service DHCP and to create a DHCP pool is itoyong manga series of commands to remember.

20:49  
And if you want to exclude certain addresses from that pool because the pool of address available is from then that one up to 254.

21:00  
So you want to exclude 1250 and 254.

21:02  
So you should use the.

21:04  
You will use this command IP DHCP excluded address and let's copy that copy then let's paste it here.

21:21  
Hopefully we will long error then we will check on meron man up my error in a title send by an error Banda.

21:31  
Hi my command is you need to say IPDHCP pool I forgot you provide the name.

21:45  
Let us say DHCP 4 V10 OK, actually the lease is not supported no by default 24 hours you lease.

22:20  
No.

22:21  
So OK Langan don't mind that, but the other commands are accepted.

22:25  
So that's how you configure your router as DHCP server.

22:30  
So RTR now is now a DHCP server for VLAN 10.

22:35  
So let's try if Maccabi Gang as an IP.

22:40  
So you go to this client and then we will set it up as a DHCP client.

22:48  
So that part I know my biggest Canyon IP 51 that part.

22:52  
So OK, yeah, it got 51190 two 168 dot 10.51.

23:01  
No, OK, so no, no.

23:08  
So of course it cannot ping because it has already an IP mapping the answer gateway.

23:13  
Yeah 192 168 dot 10.1 and there is a reply but it got the IP via DHCP server.

23:24  
Now second scenario, let us say your DHCP server is now Anusha remote.

23:43  
So you have remote DHCP server and we will use we will apply this for VLAN 20.

23:52  
Yes.

23:56  
But you, you are just going to create multiple pool.

24:02  
So why didn't on VLAN 20 will be also be served locally by that same DHCP server?

24:10  
Why didn't OK, but I I I choose to Sir villain 20 from the remote DHCP server, so villain 20 so 20 on network is 20.

24:30  
Let's assume this is 20 right?

24:38  
And so in my information, and now I'm going to use, let us say I have here, I'm, I'm going to make this server a DHCP server.

24:52  
But before we do that, let's assign this this server with an IP 1st and its gateway would be this.

25:01  
So let's assign this router with an IP OK, interface Gigabit 000 IP address is what 10.10 dot 10.1255255255 dot 0 Sanya Gallium IP ITO young land one no, so the first usable IP is assigned to Gigabit 00 enter then no shut down.

25:33  
So it's now active No, it's now active and let's assign this server.

25:40  
Let's assign this an IP with 10.10 dot 10.11 subnet mask is 255 subnet mask yeah, 255255255.0 then no.

25:59  
So let's assign this with an IP.

26:03  
OK, An IP is 10 dot 10.10 dot 10.

26:12  
Yes, that part template.

26:14  
No, I say I'm going within the client.

26:20  
You're going to change gateway every time I'm going to change an IP router.

26:25  
So the path static chat, the path and the 10 static.

26:31  
So 10, the 10, the 10 the cell phone, laptop or computer.

26:38  
Humana mobile, Humana user, naka mobile.

26:43  
So usually guess you my student that's accessing via Wi-Fi.

26:49  
The HCPN.

26:51  
No, I'm normally static, but I think the implementation here is no naka DHCP.

27:01  
Ditto Salab.

27:02  
I don't know.

27:03  
Naka DHCP.

27:04  
Yes, naka DHCP.

27:11  
I think do some computer lab, you know, I think no check your lung, no verify new lung obtained IP address automatically Pagano naka DSCP client resources Normally this onion like naka static resources, no server firewall access point switches router static IPN that pad no printer my network printer yes OK, so try nothing.

27:57  
So that pad new server macaping SA gateway one macaping demand.

28:04  
So I would expect that also this server, this computer can ping the server ping 10.10 dot 10.11 pay money because I mean the network here can reach the server on the other side.

28:22  
But the question is, let us say I'm going to make this a DHCP server.

28:26  
So you just go to services, then melody to DHCP?

28:31  
No, then it's off by default.

28:35  
You turn it on and then you create a pool.

28:38  
The default gateway is 10 and I'm sorry, I know my young villain 20 gateway nila.

28:47  
Yeah, young gateway Nila and DNS dila is and then the start IP would be start giving out 168 to 20.

29:00  
Let the same will start from 51 paren OK Gaya no SA Sano SA villanten And then the subnet mass is the same and the maximum number of users, let us say we limit it to 50.

29:16  
So meaning it can only it will only be listing 51 to 150 long mano 50.

29:26  
All right, then click save and you start Ditto.

29:34  
You know you offer meaning the the that one up to 50 will not be included.

29:42  
So that's how you configure it in the server in the pocket Tracer.

29:49  
Now we're assuming an assumption that in Ditto is that a tongue server 0 maybe LAN running Linux, it could be running Windows.

29:59  
OK, so on how to configure them to be a DHCP server, that's what you're going to discover.

30:06  
Well, if I'm training, you know, though I do make training also for Windows Server and Linux, but unless operating system the class with the lecture.

30:23  
OK, but right now we are just focused on we just focused on networking, networking.

30:30  
So and save you long save by and we already have the pool Now let's try so already have a DHCP server for BLM 20.

30:39  
But the question is, can this client, if we're going to configure it as a DHCP client, will it able to get IP from the DHCP server?

30:52  
Now remember the client is in a different network from the DHCP server.

30:58  
So as you can see it only the IP address is 169, the 254, this is known as a PIPA.

31:07  
No, that's automatic private IP addressing.

31:11  
That's what actually Windows do.

31:15  
If the operating system of the client is not able to reach the DHCP server, it will assign IP to itself.

31:22  
That's the link local address that's 169.254.

31:27  
So this is the indicator that there is no reachable DHCP server in the local network.

31:32  
So how can this client, it's DHCP discover packet be relayed to the DHCP server?

31:47  
So my configures are out there yung sabinath in Kanina DHCP relay engine.

31:56  
So you are going to configure here.

32:00  
So you're going to configure here your RTR.

32:05  
You're going to configure RTR 1 as a DHCP relay agent.

32:13  
OK, I know command yen interface Gigabit 00 slash 1.20 and command modito is IPDHCP.

32:29  
No, sorry, IP helper address.

32:35  
And then you specify the IP address of the DHCP server, it's 10 dot.

32:43  
The IP address of the DHCP server is 1010.10 dot 11 and exit as simple as that.

32:50  
And we configure, John, so that Punta Tidito OK base.

32:59  
So you have now configure RTR 1 as a relay agent, DHCP relay agent for VLAN 20.

33:09  
The RTR 1 is a DHCP server in VLAN 10 but it is not a DHCP server for VLAN 20 but it serves as a DHCP relay agent because the DHCP server for VLAN 20 is located in a different network.

33:27  
So when the client now again request IP, it should be able to get an IP and it got 20.51 OK and then I'm set up.

33:40  
So there are two scenario for implementing the HTP server locally reachable and the other one is remotely located.

33:50  
Don't say bank network but on DHCP server is in in a different network.

33:54  
You need to set up a DHCP relay agent Yunnan Thailand from from the network reachable SHA through the router through routing.

34:19  
So that configure your routing Gen.

34:23  
OK, so that the VLAN 20 should be able to reach the LAN 1 and that's normally be through routing.

34:32  
So routing IP Hello Tara.

34:44  
OK, so how are you going to configure?

34:47  
Let us say, let us say can how can a router also get how can I am going to make this a DHCP?

34:58  
I know let us say wait, yes, let us say 11.

35:13  
Let us say I want it get an IP from VLAN 10, so assign Kumuna young FA01 a zero 11 Pala switchboard mode access switchboard access VLAN ten OK.

35:36  
The next is I'm going to configure my router it as a DHCP client, so.

35:48  
So if I'm going to make this a DHCP client, so no.

35:54  
OK, let us say I'm going to make this a DHCP all right.

36:04  
Now I know interface Gigabit 000 activate nothing, no shut down to get an IP via DHCP.

36:17  
The command is IPDHCPIP address DHCP.

36:26  
If you're going to assign to manually assign IPIP address then the IP address in subject mass.

36:33  
But if you want it get an IP via DHCP canonian command enter.

36:39  
Alright, so it should be able to get an IP.

36:43  
Let's just wait.

36:44  
It should be able to get an IP from a DHCP server.

36:48  
What's the reason?

36:53  
You know Abigail Canina is ISP, you you sabahi nuna router.

37:02  
The IP address will need to be through DHCP server.

37:06  
So you need to configure your router Dun Sabahi new home router new as a DHCP client.

37:11  
So what I'm going to need in detail because you can actually make your this kind of router as a home router.

37:19  
So yeah, question IP 52, you know, and let's see show IP interface brief.

37:33  
So it gets an IP via DHCP?

37:38  
No.

37:39  
So show run, go down, all right, Diva IP address, DLCP, check the routing table, show IP route, automatic default route it in default gate when you see 10.1 yeah, that's RTR, right?

38:05  
So makapina dinito shakai RTR so ping 10.10 I sorry one 92168 dot 10.1 OK.

38:20  
It should also be able to ping the server 10.10 dot 10.11 OK, so that's making this router a DNCP lion.

38:44  
You cannot because you you can be long side.

38:51  
Example little.

38:53  
Let us say you have another little on the side one day little aside can be long side in day No Jampola Ganyan Cesaro Cerro a Cerro Cerro 1.

39:13  
So Jack would become a grouter honesty Queditos a Cabila, then Merocan among the low one computer Ditto.

39:20  
For example, villain.

39:24  
That's villain 100.

39:25  
Villain 200.

39:26  
So grouter honesty.

39:34  
No, no, you're gonna let us say this one here is what?

39:44  
A yen with a ordinary switching in Gamita La Malang Cisco example, Little is villain 100, the little side is villain 200.

40:06  
So on this side then you do router on the stick, but in this case so that this network will be reachable from here.

40:21  
Now routing, static routing OSPF, yeah.

40:39  
Normally it starts with the first.

40:42  
So in this random, well, my when I configured Windows Server, there's no option to randomly assigned IP address.

40:54  
It normally starts with the 1st and then the next and so on.

41:06  
No, 'cause he may maintain the computer, a computer, my time and also the server is, you know, checking on the time, my time and the server.

41:23  
So server was also checking the lease.

41:27  
No expired now Hindi no.

41:30  
So you knew Sano?

41:41  
Where is our this one and IP address?

41:53  
DHCP young really Agents or union command IP helper no.

42:03  
So you name the discuss Kanina Yeah.

42:06  
And if you want to enable this E ball DHCP service OK, then you command IPDHCP binding.

42:21  
So exit for this router, I think show IPDHCP binding.

42:27  
You'll see here that the Mac address of the clients getting this IP.

42:33  
So if you see IP address, Mac address it on the man.

42:39  
Is Mac address me?

42:40  
I know some client, no.

42:43  
So yeah, troubleshooting, you know, so next meeting the man, we will also implement the HCP, but for IP version 6.

43:04  
Alright, so we'll use the same topology.

43:08  
OK, save us.

43:12  
So this is the HCP demo.

43:19  
OK, So question.

43:23  
OK.

43:32  
Server so available you offer any servers cliente depending if one with other clients that request IP and then serve with that IP because it's not available then it could be a different IP and EB guy no, not in common case.

44:10  
OK.

44:18  
OK.

44:19  
So you know next meeting Module 8 Etonnaman is implementation addressing San Onaman, the dynamic addressing for IP version 6 Thursday, yes and then Saturday Maglab time, Yeah, OK.

44:42  
So tendon Salang OK, like random?