Video – Modifying a Thing in PT

Hello, everyone. This is our Cisco Packet Tracer Modifying a Thing walkthrough video. Now, this is going to be the best one ever. Why? Because we've got a wireless access point hooked to a router, to a network down below, and yes, there is a server named Mission Control. So, let's start it off.

We're going to go ahead and click on Components, and then we're going to click on Thing. It is the blue puzzle piece. When I click on Thing we're going to place in our topology somewhere in the cloud. Now, this puzzle piece is an IoT device that we're going to custom build and do some modification by borrowing some code. So we'll click on it to open it up. So, it opens up, I will resize my window. Now, first we need to make sure we're in the Advanced, which we are because the button is highlighted. We're going to go and say specifications: "This will be a Shuttle!" You know where we're going with this. From here I'll click on the I/O Config, and for Network Adapter, eventually we're going to want to hook this to a network, so we'll click the dropdown and we want 1W. That's going to be for a wireless adapter. Now, here for Digital, we only need one. For Analog Slots we don't need any, so we'll just do zero. Now, for us, Physical has got a power adapter. That's okay, we're good to go. We can click on the Config tab, but there's nothing we want to do here for networking just yet. So we're going to change the name only and we're going to name this thing to Space Shuttle. This is going to be epic. After you've got your name for Space Shuttle, we're going to head over to the Thing Editor, which we can click on. So we need to build this shuttle. For component name, we're going to change component 1 to Launch Shuttle, that is the purpose of this. Now we want some graphics here, for the shuttle to change states. So I'm going to click on the New button, and I'm going to go to my Desktop, 'cause on my desktop I have a space shuttle before launch. I can double click that, go to the next New button and I want a different state. I can click on it, and I want to shuttle during launch. Awesome. Now, we need to map this to a slot, so I'll choose Digital, and we're going to choose slot number five, which will come in handy for some code we're going to use later on. In order for these states to change though, we need to go to our Rules tab, and inside of the Rules tab, we're going to add a component. So I'll use the Add button at the bottom. When I click add, I can now click in the Sub Component section, and we will choose our Launch Shuttle property, that we just built. When the slot is Low, we will have the image of the shuttle on the launchpad. I will click Add again, I'll select my Launch Shuttle, and I'll change the Slot Value to High. And at High I'll change the graphic from the shuttle sitting on the launchpad to accelerating and taking off with flames underneath.

We're good to go with the Thing Editor, so let's go over to the Programming tab. In the Programming tab I'll see that there's a JavaScript file here. I can double click on it, and I can double click on the main.js JavaScript file. Here we have some very basic JavaScript code, and we're not here to learn JavaScript and type in our own custom code. We're going to do some borrowing. So let me minimize this space shuttle thing, I can drag this shuttle out, and your just like, no forget that, I'm just going to hold on the alt key and click, and nothing is going to happen yet, 'cause we haven't customized code. So we need to borrow some code from somewhere. So lets get something really advanced. I'm going to go ahead and click on End Devices, click on Home, and let's take a Lawn Sprinkler. I click on the Lawn Sprinkler, and I will put it on my screen. So go ahead and open that Lawn Sprinkler, we're going to borrow some code. When the Lawn Sprinkler opens up, the first thing we're going to have to do is get to the Advanced area, 'cause we don't have the programming tab. So I click Advanced, and now I have the Programming tab. Inside of Programming, I'm going to double click on the Lawn Sprinkler JavaScript, double click on main.js JavaScript file. And we're going to make it easy, we're just going to Ctrl A, and copy it all with the Copy button. I'll go back into my space shuttle, and I'm going to Ctrl A, I'm just going to paste the Lawn Sprinkler code. And to make this as legit as possible, we're going to change the name from Lawn Sprinkler, to Space Shuttle. Then go ahead and click the Run button.

We're not done yet. We're going to click on those dots at the top, above the main.javascript file in the space shuttle, takes us back. And we're going to click New to bring a Python code into play. With New, we're going to see these Template drop downs here, we're going to click the drop down, and we will choose Python. When you click Python, go ahead and click Create. We'll now have a new Python, with a dot py file we can double click on. With a dot py file, it is blank and empty. So let's go back to the Lawn Sprinkler. And in the Lawn Sprinkler we can go back, by using those dots, and then we can open up the Lawn Sprinkler Python. Inside of there we have our dot py file, which we can double click. And now here, we have all this Python code, again we're just going to Ctrl A

© 2019 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

it, Copy, and we're going to bring this in to our Space Shuttle. Click on the Space Shuttle in our main.py Python file, we'll paste it in here, then we scroll to the top and we're going to name it Space Shuttle. After you name it Space Shuttle, go ahead and click Run.

At this time our Space Shuttle, built from a Lawn Sprinkler, should be ready to launch. You can give yourself a countdown, and go ahead and hold that Alt key, and give it a left click. And that Space Shuttle goes from sitting on the launchpad to igniting it's boosters and taking off. I hold on the Alt key and click it again, it's back on the launchpad. Now we don't want to walk up to the shuttle and push a button to tell it to launch. 'Cause that's just, doesn't sound like a good idea. So how about we connect this thing to a network, and re launch this from that safety of a bunker, through a mission control server. Well that's the next step. If you go back into our Space Shuttle, we want to do, is go into our Config tab, in our Config tab here, we click on our Wireless Interface, and here we have the access ID of HomeGateway. The access point here is actually using a wireless access ID name of Launch. That makes it easy, there's no security whatsoever. So with a capital LAUNCH, we can type that in there, and then if we close that off, we'll see we now have a wireless connection coming from the access point to the shuttle. But now we'd like the shuttle to be able to be remotely controlled, via the mission control server. If you click on the mission control server, we can go over to our IoT section of the Services area, and we'll see that the IoT Registration Server is on. We've set up one of these previously, also I can see the username is all caps, MCONTROL with a password of cisco. To target the server, we need it's IP address, or url that it's operating under. I go to the Desktop, IP Configuration, and here we see the address of 10.0.0.200, this is the address we're going to target. So the Shuttle can register with this mission control server. Let's close off of the mission control server, we'll go back to our shuttle, and let's register it with the server. On the shuttle, we'll move this on our screen a little bit better, we're going to go to our General Settings, which we're under by default. And at the bottom we'll see our IoT Server setting is just like in previous videos. I'll go ahead and click on Remote Server, the address is 10.0.0.200. The username is MCONTROL, that's what we saw in the IoT Server. And then the password is all lower case cisco. When I click Connect it should take a second, then it should say Refresh, when we've successfully registered with the mission control server. It says Refresh, we are good to go.

At this time we need a countdown. Let's open up this laptop, in the safety of our bunker, and we're going to target the mission control server, and launch the shuttle. So open my laptop, and we're going to go over to our web browser, in the web browser we'll type in the server, which is 10.0.0.200, when I hit enter, we now try to access the server using our credentials. Followed by the password of cisco. Then we go ahead and click Sign In. At this point in time we see the Space Shuttle, it is registered with our server, it is green, it is available to be reached. I can expand that, we have a red light. Red light means the engines are not active at this time. So we're going to click this thing and launch this shuttle into orbit, hopefully successfully, because it is based off the code, of a Lawn Sprinkler. So I'll click my red button, turns green, we remotely launch the shuttle into orbit. I believe it is orbiting right now, safely and successfully.

So this is Cisco Package Tracer, and this is taking a device, known as a thing, modifying it by taking code from another IoT device, making it your own, hooking it up to a network, and remotely controlling that device, which just so happens to be a space shuttle. Play with Cisco Package Tracer, continue your experience and your learning, and make your own IoT, custom built space shuttle.

© 2019 Cisco and/or its affiliates. All rights reserved. Cisco Confidential