

# Tangent Panel Setup

## *Introduction*

Now that SCRATCH has more capability for using the external control surface, the setup of these devices is something that everyone should know how to do.

This document will cover the setup and configuration of the Tangent Devices control surfaces. There are four different types of Tangent panels; the BK [balls and knobs], TS [transport], K [knobs] and S [selection].

We'll look at how to get everything connected and then how to configure the system to talk to the panels.

## *Physical Connections*

### **Tangent Devices Ethernet Interface**

The Tangent panels use an Ethernet Interface where each control surface is assigned an IP address on the network. This IP address identifies the control surface on the network so that SCRATCH can communicate with it. In most cases, this really just means the control surfaces and computer must have the same first 3 number in the IP address. For example, 192.168.10.xxx.

First, make all the physical connections. Be sure to use Ethernet CAT5 cables that are configured as standard Ethernet patch cables. Do NOT use crossover or 'null' cables or other cables that have standard Ethernet connectors but non-standard Ethernet wiring within the cable.

If the computer is on a network already, then the control surfaces need to be on the same physical network but they can go through a network switch or hub, if necessary.

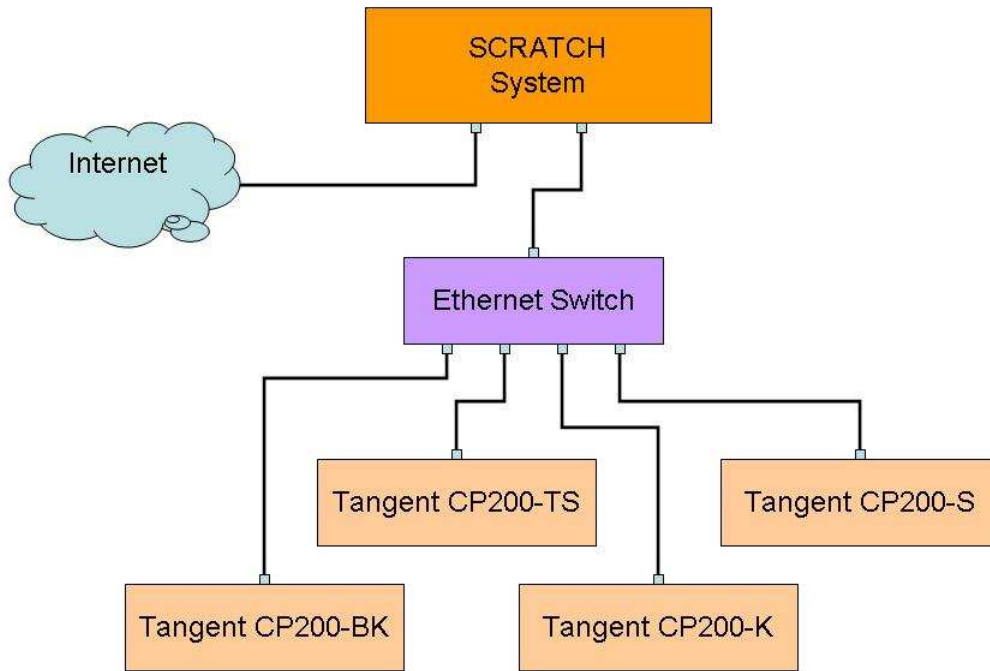
It's recommended to keep the control surfaces as close to the computer on the network as possible. Meaning, there are a minimal number of network switches in between them.

If necessary, consult a network administrator or IT manager for proper network setup between the SCRATCH computer and the Ethernet control surfaces.

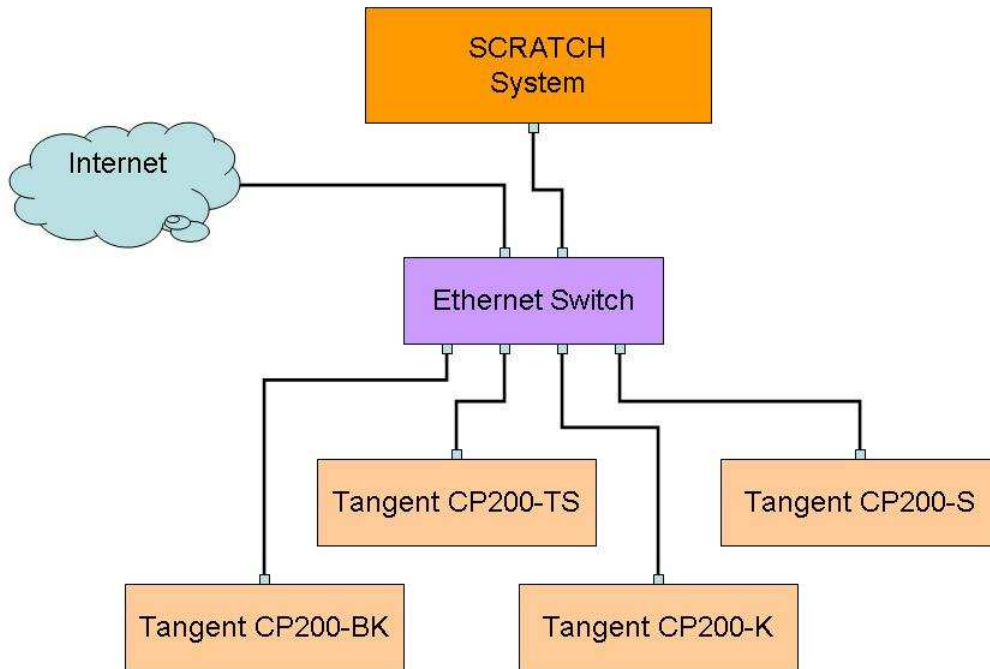
If the network has a DHCP server which assigns IP addresses, it is possible to just use that to assign the IP address to the control surfaces.

If, however, there is no DHCP server, or if you are connecting the control surfaces directly to the computer and there is no other networking connection needed, assigning the IP addresses manually is recommended.

Below is a diagram showing a typical way of setting up the panels.  
Note that most Ethernet switches have one port that is the 'uplink' port. This port will usually be set apart from the other ports or may be labeled as UPLINK.  
The uplink port should be used for the connection between the panels and the SCRATCH computer.



In a system with only one Ethernet port, it may be necessary to connect the devices as shown in this diagram:



In this situation, the uplink port would be the port that connects to the Internet and the SCRATCH system would connect through one of the regular ports on the Ethernet Switch. Note that this configuration requires more ports on the Ethernet Switch.

When connecting this way, there's a good chance that DHCP can be used since the SCRATCH system and all Tangent panels will be directly connected to the main network, which will most likely have a DHCP server that can assign IP addresses. It's best to work with a network administrator to ensure that the SCRATCH system and each Tangent panel can be given a proper IP address.

## ***Configuring the Control Surfaces***

### **Preparing the Configuration Files**

Whether you are using DHCP or setting the IP address manually, the proper information about the control surfaces must be provided so that SCRATCH can establish a communication link.

The configuration of the control surface is done through a text file in the SCRATCH installation directory, located at C:\Program Files\Assimilate\Settings.

In this directory you will find these 3 files: 'cs\_devices.xml', 'cs\_mappings.xml' and 'cs\_mappings\_JLC.xml'.

'cs\_devices.xml' is the file which defines the physical devices that are connected to the system.

'cs\_mappings.xml' and 'cs\_mappings\_JLC.xml' define what SCRATCH function each knob, dial and button will control.

## Editing the cs\_devices.xml File

Before you edit any of the configuration files, you'll want to make a copy of them so that the original file will remain intact.

Make a copy of the 'cs\_devices.xml' file and rename it 'cs\_devices\_init.xml'.

When SCRATCH starts up, it checks to see if the file 'cs\_devices\_init.xml' exists. If it exists, SCRATCH reads that file and ignores the 'cs\_devices.xml' file.

This way, the 'cs\_devices.xml' file is your backup copy and all changes you make will be to the 'cs\_devices\_init.xml' file.

Open the 'cs\_devices\_init.xml' file in notepad or any other text editing program.

The file is broken into sections which are defined by the specific xml tags.

Here's a sample of one section from the 'cs\_devices\_init.xml' file:

```
-----  
<device name="Tangent CP200-BK" mode="disabled" >  
  <driver>CsDrv_TangentCP200.dll</driver>  
  <entry_data>  
    <!--IMPORTANT: The serial number below has to be  
    changed, ie it is unique for every tangent device -->  
    <!--           : This number is shown on the display  
    when the device is started -->  
  
    <serial_number>XX</serial_number>  
    <dhcp>0</dhcp>  
    <ip_address>192.168.10.33</ip_address>  
    <gateway>192.168.10.2</gateway>  
    <netmask>255.255.255.0</netmask>  
    <port>33106</port>  
    <idle_timeout>125</idle_timeout>  
  
    <!-- The encoder ID is used for making encoders/knobs  
    unique when hooking up multiple panels -->  
    <!-- Use a different value for each panel used. When  
    using the same mapping configurations -->  
    <!-- accross different seats, ensure they use the  
    same encoder id's -->  
  
    <encoder_id>1</encoder_id>  
  </entry_data>  
  
  <!--  
  Define the lines of the active mapping group for this  
  device  
  'display' defines the first line  
  'lines' defines how many lines to display  
  -->  
  
  <display>0</display>  
  <lines>2</lines>  
</device>  
-----
```

Each section is indented to make it easier to read and identify individual sections.

Each section which starts with the tag <device name = ...> identifies the beginning of a device description. You'll see the name of the device within this tag.

For example:

```
<device name="Tangent CP200-BK" mode="disabled" >
```

The `</device>` tag identifies the end of that particular device's description. Everything in between these two tags describes particular settings for that device. There are only a few lines in each device description which you need to be concerned with. The first is in the `<device name = ...>` tag itself. You will need to change the "disabled" setting to "enabled". This will tell SCRATCH to look for this device. Go through each section and enable each device that you have connected.

### **Tangent Serial Numbers**

Next, you will need to provide the serial number ID for each panel. The serial number ID is shown on the panel's display when it is powered on. Every Tangent panel has a unique ID. This is set using the `<serial number>` tag. Replace the XX between the `<serial_number>` tags with the ID of your panel. Repeat this for each device that you have connected. Remember, the number will be different for each panel.

The remaining sections of the device definition describe the IP address and other network information for the panel. If you are using DHCP, be sure the `<dhcp>` tag is set to 1 for every panel that you have connected. The remaining settings are only necessary to change if you are going to set the IP addresses manually and for some reason need to change them from the default. If `<dhcp>` is set to 1 [on], then the remaining tags for IP address, subnet and gateway are ignored.

To set the IP address of the panel and computer manually, first set the `<dhcp>` tag to 0 in the device description for each device you have connected. This is telling the system to use the values in the device definition for IP address, subnet and gateway. If the computer and panel are the only things on the network, it's recommend to leave the IP addresses at their default values. The default values are pre-configured to work between all of the Tangent panels. If the Tangent panels will be on a network with other computers, you will need to get the proper IP address, gateway and subnet information from a network administrator.

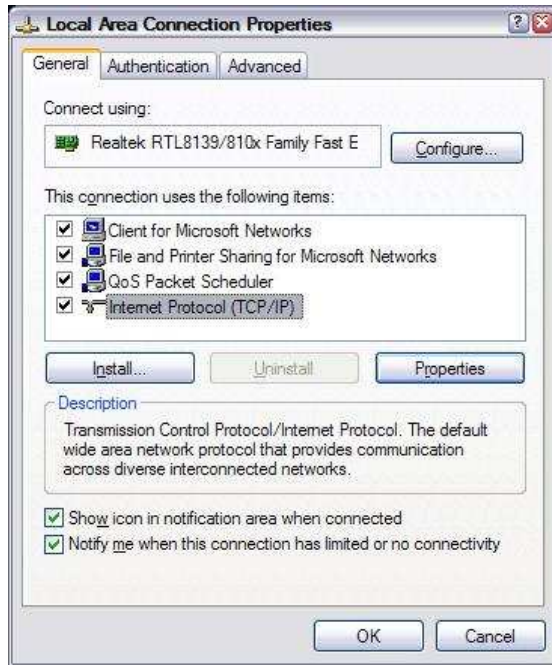
Once you have set the IP address, gateway and subnet information for each device, save this file and close the text editor.

### **Setting the IP Address of the Computer**

Once all the configuration files have been set, the only thing remaining is to set the computer's IP address to a unique number in the same subnet – for example, 192.168.10.xxx if you are using the default IP addresses. It's recommended to set the computer to 192.168.10.100 and use the gateway of 192.168.10.2 since this works well with the default values in the `'cs_devices_init.xml'` file. You change the computer's IP settings through the CONTROL PANEL->NETWORK CONNECTIONS. Find the connection that is the Ethernet port. It is usually called "Local Area Connection" by default. There may be two of these if the computer has multiple Ethernet ports. If the system has two Ethernet ports, it's a good idea to set one of the ports up for regular Internet connectivity and use the other port for the control surface configuration.

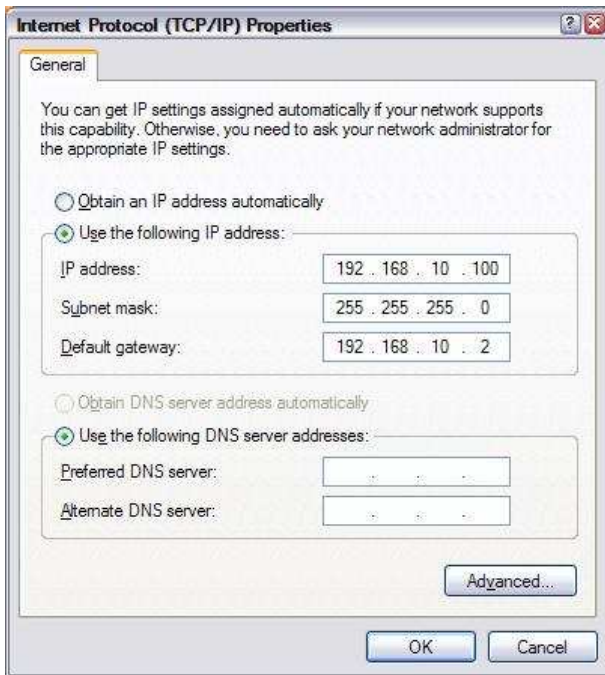
You can right-click on each connection and rename them as 'Internet' and 'Tangent'. This will help you remember which one is which when configuring the different ports. Change to the 'Details' view and you will see the status of each connection as either "Connected" or "Network Cable Unplugged". If you've connected the computer and control surfaces with an Ethernet cable, it will show as "Connected". To determine which connection is which, unplug the Ethernet cable from one port and see which one changes to "Not Connected".

Right-click on the 'Tangent' network connection and select "Properties".



In the list of items in the middle of the dialog box that opens, find the "Internet Protocol (TCP/IP)" entry. Select it and hit the "Properties" button.

In the next dialog, you can switch from "Obtain an IP Address Automatically" to "Use the following IP address".



Then fill in the IP address; 192.168.10.100, in this example.

The subnet will fill in automatically with 255.255.255.0.

If for some reason it doesn't, manually enter this.

For the gateway, enter; 192.168.10.2.

Hit OK to exit all the dialog boxes. There may be a slight delay while the system reconfigures the networking.

## ***Running SCRATCH***

Once the computer's Ethernet ports have been configured, run SCRATCH.

The display on the CP200-BK should change to say SCRATCH and show the build number.

Once you enter the Player, the panel's displays will activate and all the controls will be available.

You can modify the control surface mapping from the Player's SETTINGS menu. The CONFIGURE PANELS button is in the lower left corner of the SETTINGS menu.

Modifying the control surface mappings will be covered in the new User Manual.

## ***Troubleshooting Control Surface Problems***

If communication with the control surface is not working, check to be sure all of the entries in the 'cs\_devices\_init.xml' file are correct.

Also, be sure the computer's network settings are set up properly and they are set for the right physical connection.

On systems that have two Ethernet ports, remember that each port can be configured separately.

Be sure you have the Ethernet connection plugged into the proper port on the computer.

Most problems with the Ethernet control surfaces come down to a network configuration problem where the computer and the control surfaces have not been configured to use IP addresses from the same subnet or there is a physical issue between the computer and the control surfaces.

To check if there is proper communication between the computer and an individual panel, you can use a DOS command called 'ping'.

Open a DOS window by clicking on START and selecting Run...

Type in 'cmd' [without the quotes] and hit ENTER.

You'll get a DOS window.

At the DOS prompt, type 'ping 192.168.10.36' [again, without the quotes], or whatever IP address you set up in 'cs\_devices\_init.xml'.

You should start getting a response from the panel.

If you don't get a response then there is most likely a problem with the configuration of the IP addresses. Check the 'cs\_devices\_init.xml' file for possible errors.

Be sure that the 'cs\_devices\_init.xml' file is in the proper location. It should be located at C:\Program Files\Assimilate\Settings.

Also check the physical connections; verify that the cables are proper Ethernet cables, be sure you are using the proper Ethernet port on the computer and check that the cables are fully inserted into the Ethernet jacks on the computer and control surfaces.

It's sometimes necessary to reboot the computer for network changes to take effect.

Have the control surfaces connected and powered up when you reboot.

Finally, be sure you have run SCRATCH at least once. The control surfaces will not be properly configured until SCRATCH is running and you have at least entered a project and gone into the PLAYER.

The 'cs\_mappings\_init.xml' file will control the initial mapping of the panels. However, if you make any changes within SCRATCH, a new version of this file, called 'cs\_mappings.xml' will be placed in the User folder. This file will override the file in the Settings folder.

If you want to remove any modifications that you've made, just delete this file from the User folder and SCRATCH will revert back to the 'cs\_mappings\_init.xml' file in the Settings folder.

You can also take your panel mappings with you by copying the 'cs\_mappings.xml' file from the User folder onto a flash drive and then loading it into the User folder of another system. Take a copy of the 'cs\_devices\_init.xml' file as well so that you have a preset file that just needs the serial numbers changed for any new Tangent panels.

## ***Conclusion***

The external control surfaces can be a huge time saver when performing color grading, Pan and Scan operations and even shuttling/jogging through the timeline by allowing you to control multiple parameters simultaneously without the need to use the mouse and keyboard.

Experiment with the different functions of the control surfaces and create new groups and pairings to tailor the amount of control you have over SCRATCH for particular tasks.