



# Creo 2.0 Ninja Cabling™ Routing Procedure

## Create Cabling Assembly

Using standard assembly best practices (use templates, leverage shared geometry, control references, etc), create a new assembly to contain all connectors, components, and harness parts. Assemble connectors, back shells, related cable hardware creating references or datums as needed.

## Sketch Cable Pathways

Using standard sketched lines and curves, carefully sketch pathways wires and cables will follow using. Incorporate bend radii when possible. Keep sketches simple, yet meaningful. Sketches should capture design intent and leverage constraints to minimize dimensions.



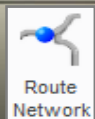
## Create Harness Part

Enter Cabling Mode (**Applications**→**Cabling**). Create a new harness part by selecting the icon shown. Name the harness part. The named harness appears in the model tree. All wires, cables, bundles, and networks are contained as *features* within the harness part.



## Create Network

Creo Cabling uses a **Network** to automatically route wires and cables. Create the network by selecting vertices along previously created sketched pathways (Tip: Create straight sections first). Work carefully and deliberately connecting the network. View simple techniques for network creation online at Planet PTC Community\* (URL below)



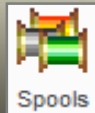
## Load Logical Reference

Load a Logical Reference file in PTC Neutral Wire Format by selecting **Import**. This file may be manually created or captured from another application (like Microsoft Excel). Details for creating and editing a logical reference file may be found online (URL below).\*



## Create Spools

Create or load spool definitions using the icon shown. When a logical reference file containing spool data has been imported, spools can be created quickly by selecting the icon shown followed by **Create**→**From Logical**→**Select All**→**Done**.



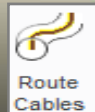
## Designate Connectors

Before routing begins, connectors and components (such as splices) must be *designated* by giving them a unique identifier. When a logical reference file containing connector definitions has been imported, the icon shown enables automated connector designation.



## Create/AutoRoute Wires

The icon shown enables wire/cable creation and routing. These functions may be performed simultaneously if desired. Automatic harness routing is performed by selecting the icon shown to open the **Route Cables** window. Choose the **Find** command to select the wires to route. Select **OK** to see a routing preview. Select **Apply** to accept the routing.

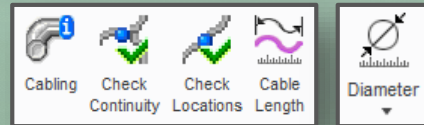


## Update Logical Reference

After the initial routing, changes to logical reference data can be propagated to the cabling assembly with these steps: (1) Delete all wires/cables from the previous harness being careful to leave the network intact (2) Import the modified logical reference file (3) Update the cabling assembly using the icon shown, (4) Re-autoroute to see the modified harness.

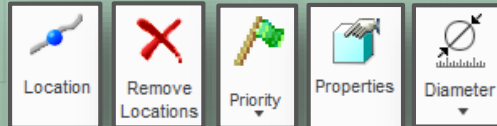


## Information & Diagnostic Tools



- General Harness / Routing Data
- Highlight Disconnected Networks
- Find Overlapping Locations
- Measure Cable Length (Dual Function)
  - Total Length on First Pick
  - Segment Length on 2<sup>nd</sup> + 3<sup>rd</sup> Pick
- Tip: Diameter Tool Can Also Be Used To Query Bundle Diameter

## Location Tools



- Add Location To Routing or Network
- Remove Location
- Set / Reset Routing Priority
  - Set First
  - Edit Properties to Change
- Edit Location Properties
  - **Grouping:** Round, Flat
  - Angle (Use to Untwist)
  - Max Diameter
  - **Shape:** Straight, Smooth
  - **Priority:** Primary, Secondary, Disallowed
- Set / Remove Max Diameter
  - Edit Properties to Change

## Helpful Tips

### Network Tips

- Use **Sketches** to define your network pathways
  - Reference networks to sketches:
    - Create network locations on sketch **vertices** to control bends with the sketch
    - Create network locations **on curve** and **drag** to control bends dynamically
  - Modify the sketch and regenerate to move the network
- Network routing is now **asynchronous**. You can route a network at any time – *even while you're routing a wire or cable*. Simply select the network icon, route network segments, and close the network tool to return to wire/cable routing.
- Select **Route** → **Network Path** → **Path** to apply a name to a section of network. Add the **Use Path** option to logical data to force routing along the named pathway.

### Logical Data Tips

- Use **Export** to generate logical data from previously routed assemblies. Then edit and reuse this data for other designs.
- Use **Update** to apply changes to logical data, then regenerate for **automatic** update of names, parameters, spools, and connectivity (for single entry ports).
- Adding/deleting spools, cable contents, adding/changing designations, and connectivity (multiple entry ports) require **manual** updates.

### Rerouting Tips

- Reroute** is more efficient than adding/removing locations
- Remove attached components before rerouting. The **Reroute** tool will not work for locations with attached components.

### Miscellaneous Tips

- Entry Ports may be pre-defined in your connector library using feature parameters
- Spools are **automatically** created upon wire creation. Skip the step of creating spools from logical data by simply routing your wires- the spools will create themselves.