Title: Working with NetGroup

Product: OrCAD Capture and Allegro DE CIS from version SPB 16.5

Summary: This application note describes how to define and work with NetGroup definitions in OrCAD Capture.

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1 Introduction

With Release 16.5 OrCAD Capture introduces the concept of the NetGroup that allows you to create groups of nets. A NetGroup can include a group of scalar nets, vector nets or a combination of both scalar and vector nets. A NetGroup can also include other NetGroups as Sub-NetGroups.

Note:
When you use NetGroup you can’t save the design in lower versions. Without using NetGroup you can use “Save As” to save Capture designs in lower 16.* formats.

For further information about NetGroups please see OrCAD Capture user Guide. You can find the PDF version after installation of OrCAD or Allegro tools in %CDSROOT%/doc/cap_ug

2 Named and Unnamed NetGroups

Named and unnamed NetGroups can be use for different cases and follow different rules.

Named NetGroups can be used to:
- Connect pages and blocks
- Export and Import to/from library
- Copy and paste between designs
- Can contain SubNetGroups

Unnamed NetGroups can be used to:
- If you need NetGroup for one-time use
- Connect pages and blocks
- Copy and paste between designs
- No SubNetGroups
3 Named NetGroups

3.1 Create Named NetGroup

Choose **Place > NetGroup** or NetGroup Icon.

The **Place NetGroup** Window appears

![Place NetGroup Window](image)

Click **Add NetGroup**.

![Add NetGroup](image)

Enter **NetGroup** Name and Click **Apply**.
Click **Add**, enter **Member Name** and **Member Type** and Click **OK**.

Repeat the above step to create a complete NetGroup. Use **Delete** and **Rename** Button to change or delete NetGroup members.

To move the position of the members, use **Up** and **Down** buttons.
3.2 Copy and Paste NetGroup

When you defined a NetGroup you can place a NetGroup Block. We will explain this later. This NetGroup Block and be copied to another design with Copy and Paste. All NetGroup definitions will also be copied.
3.3 Export NetGroups

Open a design and open NetGroup menu.

Select the NetGroup you want to export and click Export NetGroup button on right side.

Choose Folder and file name and select save.
3.4 Import NetGroups

From an open schematic page choose Place > NetGroup. Click Import NetGroup, browse to the *.xml which was created from another design.

All NetGroup definitions from XML file are imported to the current design.

3.5 Delete NetGroups

Open a design and open NetGroup menu.

Select the NetGroup you want to delete and click Delete NetGroup button on right side.
4 Working with Named NetGroups

4.1 Place NetGroup

Open **Place NetGroup** window.

Select a complete NetGroup or only some members of a NetGroup and click **OK**.

**DDR2[0..9]**

NetGroups are drawn as thick lines, like busses but thicker.

Use **Place > Auto Wire > Two Points** and **Place > Auto Wire > Connect to Bus** to connect component pins and wires to NetGroups.
4.2 Place NetGroup Block

Use the same function like Place NetGroup but enable Place NetGroup Block and click OK.

Define a rectangle like drawing a hierarchical block.

You can synchronize and connect NetGroups like hierarchical blocks.
4.3 Place hierarchical Ports

If you want to place a hierarchical port with NetGroup definition, use **Place > Hierarchical Port** and enable **NetGroup Port**. From drop down list choose the right NetGroup and click **OK**. You can connect this port like a normal port.

![Image of Place Hierarchical Port dialog box]

**Note:**
If you use hierarchical Ports or Offpage Connectors, place, connect and name port or connector before you connect wires to the NetGroup. This is important because port and connector name becomes part of net name.
4.4 Place off-page connector

If you want to place an off-page connector with NetGroup definition, use **Place > Off-Page Connector** and enable **NetGroup OffPage**. From drop down list choose the right NetGroup and click **OK**. You can connect this connector like a normal connector.

![Place Off-Page Connector dialog box](image)

**Note:**
If you use hierarchical Ports or Offpage Connectors, place, connect and name port or connector before you connect wires to the NetGroup. This is important because port and connector name becomes part of net name.
5 Unnamed NetGroups

5.1 Create Unnamed NetGroup

Choose Place > NetGroup or NetGroup Icon.

The Place NetGroup Window appears.

Enable Place Unnamed NetGroup, click OK and define a rectangle like drawing a hierarchical block.

5.2 Add a Scalar Members

Select unnamed NetGroup and go to Place > Hierarchical Pin.

Define pin Name and choose Scalar. Click OK to place the pin on unnamed NetGroup block.
5.3 Add a Bus Member

Select unnamed NetGroup and go to **Place > Hierarchical Pin**.

Define pin **Name** including size of bus and choose **Bus**. Click **OK** to place the pin on unnamed NetGroup block.

5.4 Place hierarchical Ports

If you want to place a hierarchical port with unnamed NetGroup definition, use **Place > Hierarchical Port** and enable **NetGroup Port** and **Show UnNamed NetGroup**. From drop down list choose the right NetGroup and click **OK**. You can connect this port like a normal port.
5.5 Place off-page connector

If you want to place an off-page connector with NetGroup definition, use **Place > Off-Page Connector** and enable **NetGroup OffPage** and **Show UnNamed NetGroup**. From drop down list choose the right NetGroup and click **OK**. You can connect this connector like a normal connector.

![Place Off-Page Connector](image)

5.6 Copy and Paste NetGroup

The unnamed NetGroup Block can be copied to another design with Copy and Paste. All NetGroup definitions will also be copied.
6 NetGroup Reuse

You can reuse NetGroups by creating a hierarchical part out of NetGroup and place them in other designs.

6.1 Create Hierarchical Part

Open a design or create new design. Create the NetGroup definitions you want to reuse. You can use named and unnamed NetGroups for reuse. Place the NetGroup as hierarchical port in the design. Add further elements like NetGroup block.

Save the Design. Select current design file in Project Manager and go to Tools > Generate Part.

![NetGroup Diagram](image)
Fill in Netlist/source files, Netlist/source file Type, Part name and Destination part library and click OK.

The Split Part Section Input Spreadsheet appears, click Save. The part is created in part library (OLB). You can place this part in any further design. All netlist definitions from source design are stored in the part and are copied to the destination design.
7 NetGroup Limits

7.1 NetGroups in Hierarchical Designs

We recommend using the **Bottom – Up Method** when creating hierarchical designs. How to place NetGroups as hierarchical ports is shown in this Application Note. Then use **Synchronize Up** to place the correct NetGroup pin in the hierarchical block. Currently (16.5 003) we have no function to set NetGroup pins in hierarchical blocks directly.

If you did any changes in NetGroup definitions use Tools > Synch NetGroup to synchronize hierarchical pins.