

EAD on Layout

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The Setup

Flow owner will set up and maintain the EAD configurations.

Release

For N7:

```
/wrk/BJCKTT3/angelf/EDA/EAD_N7/.cadence/dfII/EAD
```

For N16:

```
/wrk/BJCKTT3/angelf/EDA/EAD/.cadence/dfII/EAD
```

NOTE

The path may change. Please refer to the last updated path.

Steps

1. Just copy the EAD setup folder into local .cadence directory:

```
/the/path/to/working/dir/.cadence/dfII/EAD
```

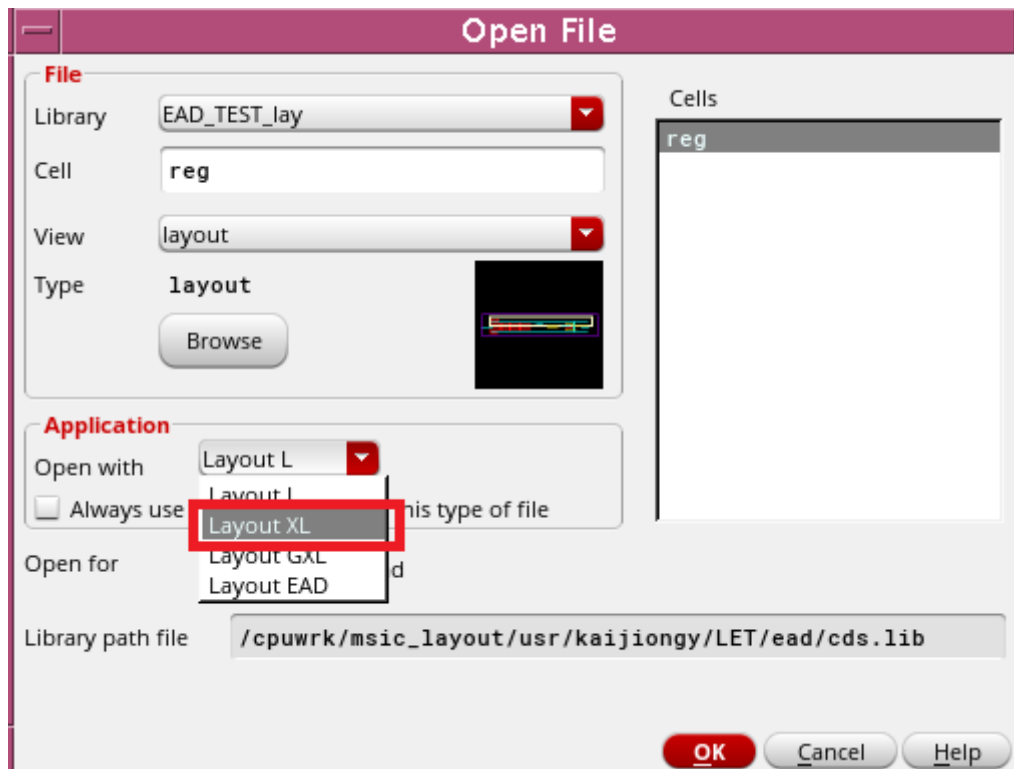
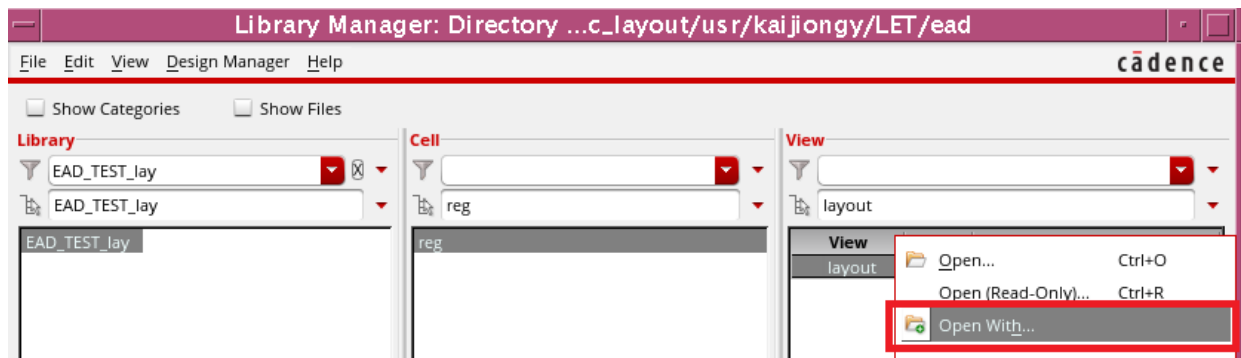
2. Then source layout environment and startup virtuoso, e.g. N7:

```
source /logic/kaijiongy/setup/N7/N7.cshrc
layoutPlus -log ~/CDS.log &
```

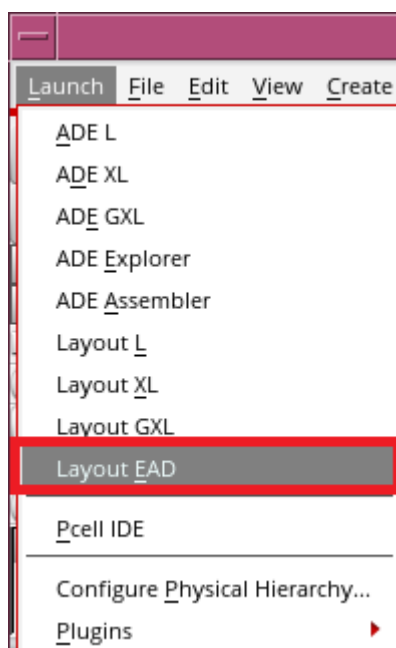
Launch

Set up the interface

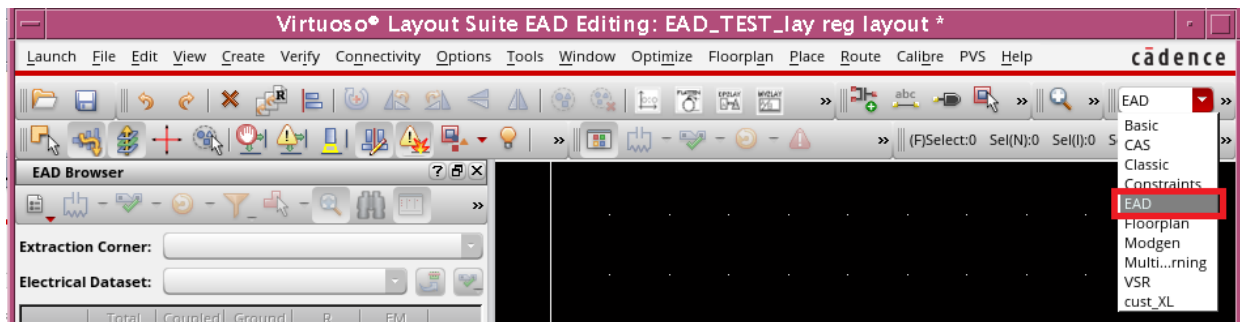
1. Open layout with **Layout XL**



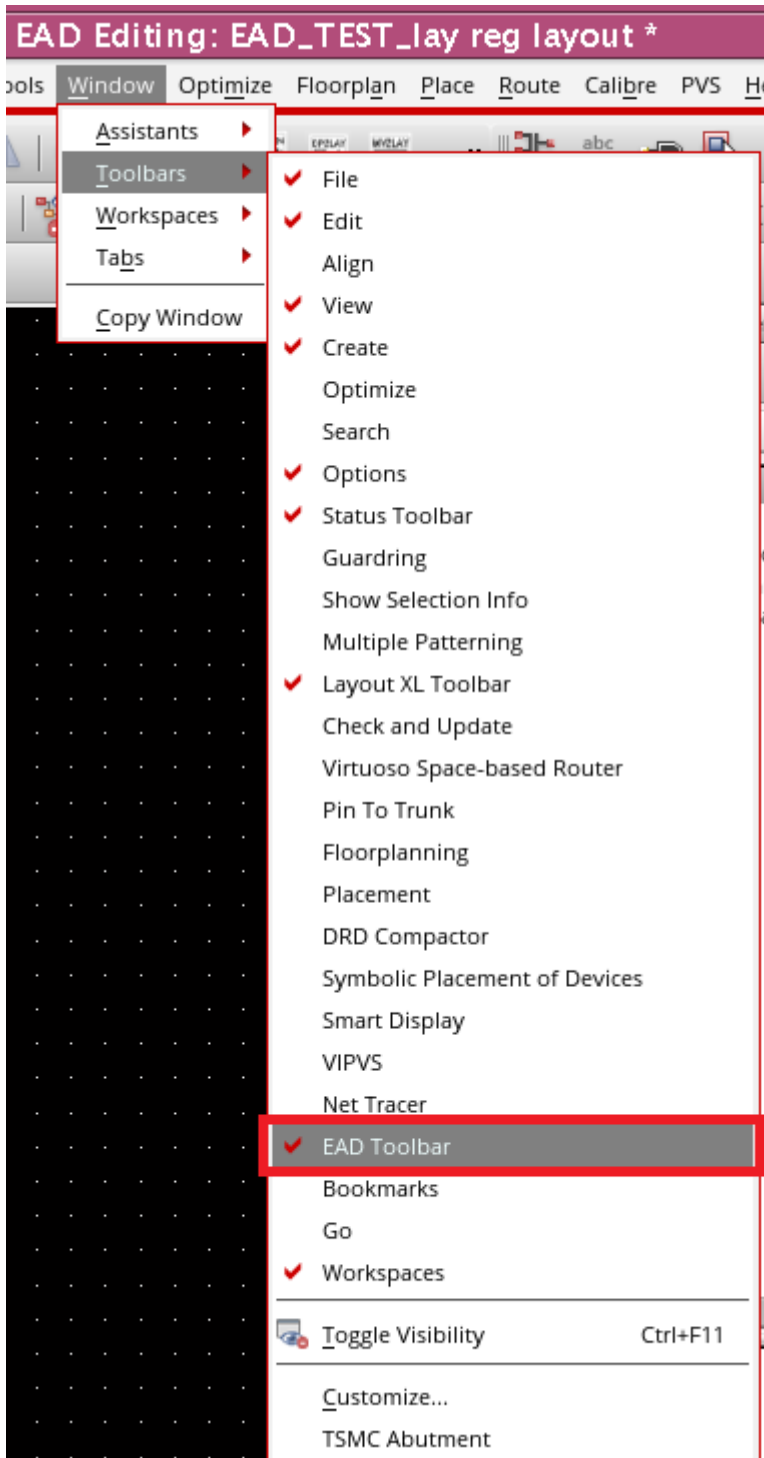
2. Lanch **Layout EAD**



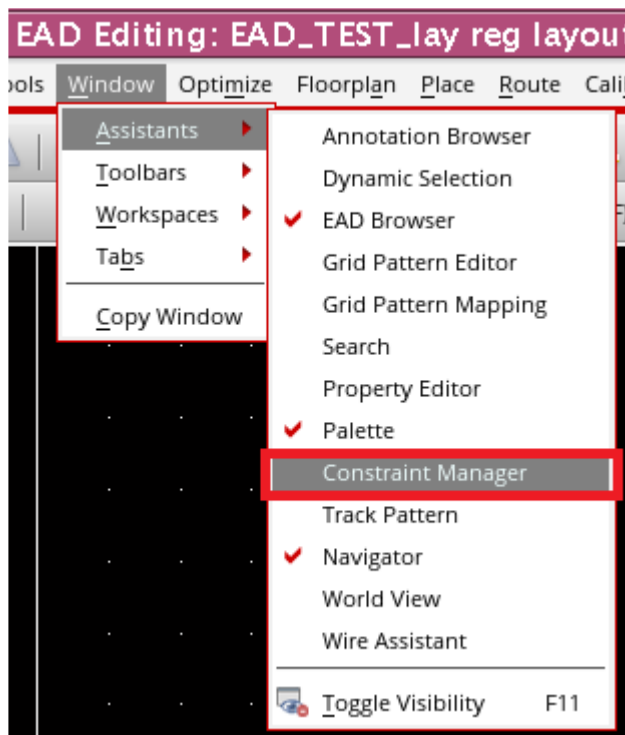
Or select **EAD** workspace



3. Show **EAD Toolbar**



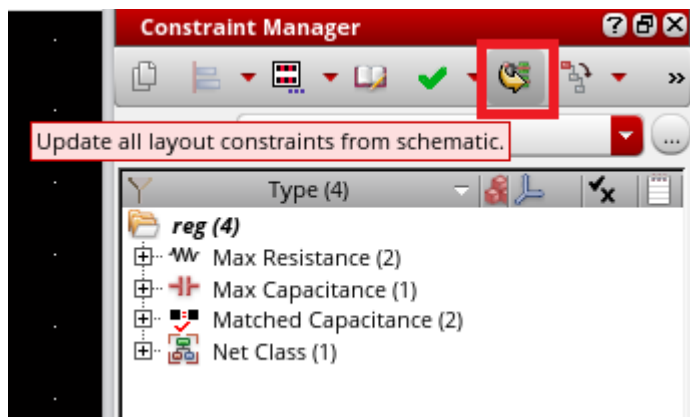
4. Show **Constraint Manager**



Constrain

Working on layout according to constraints

1. Update constraints firstly

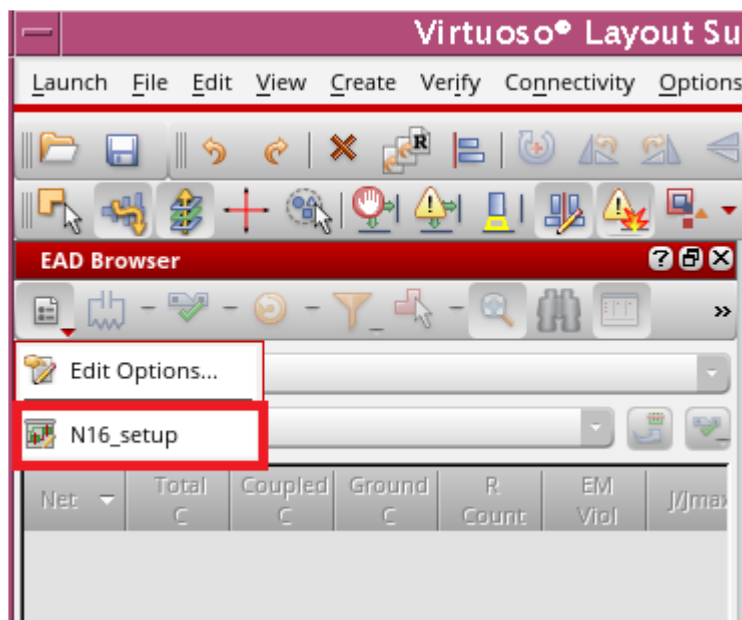


2. Check the items and details, obey the constraints to work on layout.

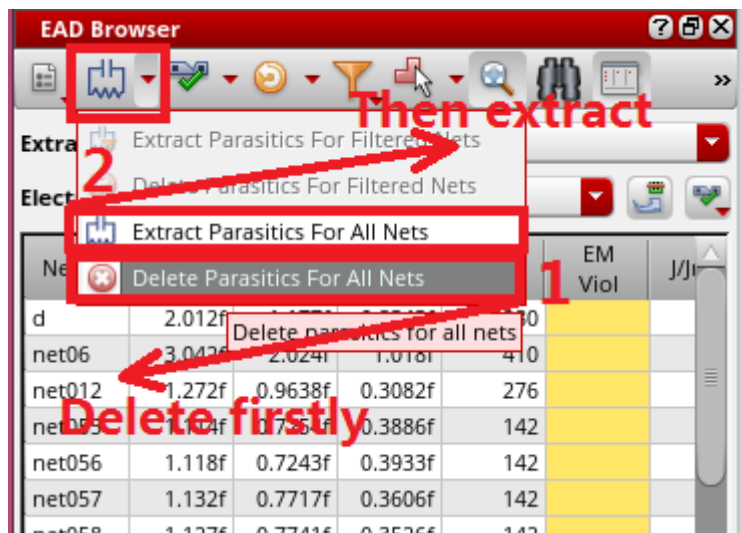
Extract

In design EM-IR check

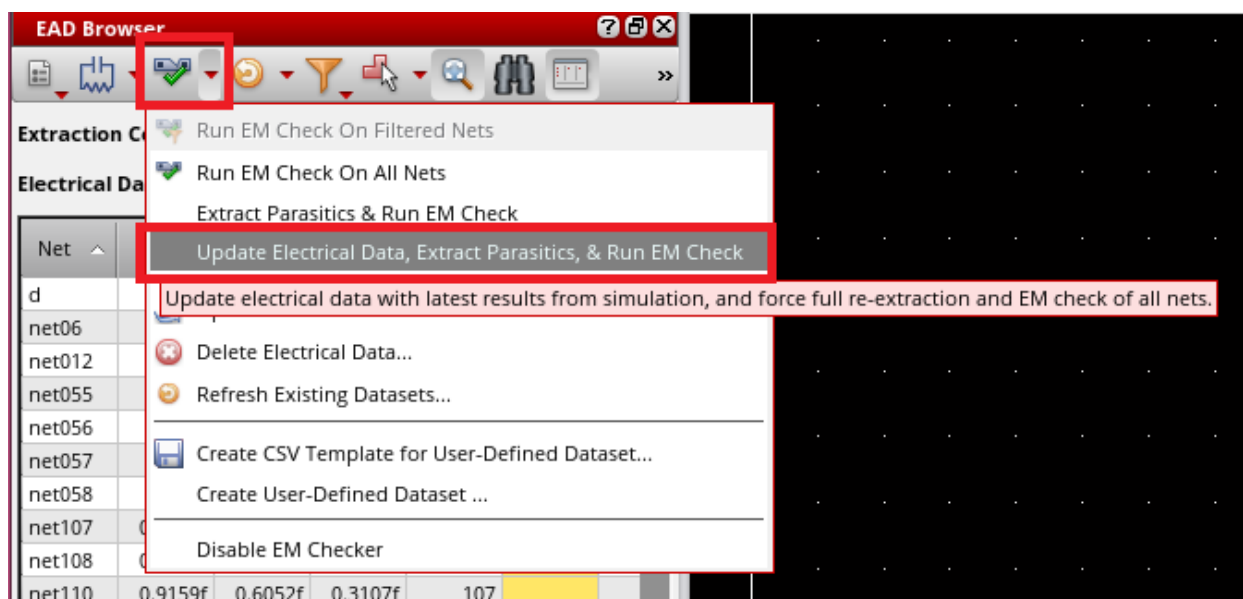
1. Load the setup in EAD Browser



2. Extract RC only



3. Run EM check after the designer have finished simulation and saved the results to dataset



Modify

Check the results and fix the violations

1. Click on the red item and fix the layout

EAD Browser

Extraction Corner: N16

Electrical Dataset: All

| Net | Total C | Coupled C | Ground C | R Count | EM Viol | J/Ji |
|--------|---------|-----------|----------|---------|---------|------|
| net110 | 0.9159f | 0.6052f | 0.3107f | 107 | | |
| net114 | 1.165f | 0.6369f | 0.5278f | 108 | | |
| net117 | 0.5549f | 0.2807f | 0.2742f | 56 | | |
| net120 | 0.0461f | 0.0406f | 0.0055f | 7 | | |
| net121 | 0.0442f | 0.0392f | 0.0049f | 7 | | |
| net122 | 0.0465f | 0.0409f | 0.0055f | 7 | | |
| net123 | 0.0478f | 0.0423f | 0.0055f | 7 | | |
| ph1 | 1.093f | 0.676f | 0.4172f | 75 | | |
| ph1b | 1.117f | 0.6866f | 0.4306f | 78 | | |
| qb | 0.4147f | 0.2876f | 0.127f | 50 | | |
| vdd0 | 2.948f | 1.555f | 1.393f | 272 | | |
| vss0 | 2.83f | 1.268f | 1.561f | 256 | | |

C R Compare EM IR Drop

Search

Capacitance By Net (net121, 0.0153f max, 0.0046f min)

| To Net | Total C | Count |
|--------|---------|-------|
| net117 | 0.0153f | 2 |
| ph1 | 0.0146f | 1 |
| net114 | 0.0046f | 1 |
| vdd0 | 0.0046f | 1 |

Coupling Caps (net121, 0.0392f coupled, 0.0049f ground)

| C | Layer | To Net | To Layer |
|---------|-------------------|--------|-------------------|
| 0.0146f | m0od_interconnect | ph1 | po_interconnect |
| 0.0145f | m0od_interconnect | net117 | po_interconnect |
| 0.0046f | m0od_interconnect | net114 | m0od_interconnect |
| 0.0046f | m0od_interconnect | vdd0 | m0od_interconnect |
| 0.0007f | m0od_interconnect | net117 | M0PO |

Navigator Palette EAD Browser

EAD Browser

Extraction Corner: N16

Electrical Dataset: All

| Net | Total C | Coupled C | Ground C | R Count | EM Viol | J/J1 |
|--------|---------|-----------|----------|---------|---------|------|
| net110 | 0.9159f | 0.6052f | 0.3107f | 107 | | |
| net114 | 1.165f | 0.6369f | 0.5278f | 108 | | |
| net117 | 0.5549f | 0.2807f | 0.2742f | 56 | | |
| net120 | 0.0461f | 0.0406f | 0.0055f | 7 | | |
| net121 | 0.0442f | 0.0392f | 0.0049f | 7 | | |
| net122 | 0.0465f | 0.0409f | 0.0055f | 7 | | |
| net123 | 0.0478f | 0.0423f | 0.0055f | 7 | | |
| ph1 | 1.093f | 0.676f | 0.4172f | 75 | | |
| ph1b | 1.117f | 0.6866f | 0.4306f | 78 | | |
| qb | 0.4147f | 0.2876f | 0.127f | 50 | | |
| vdd0 | 2.948f | 1.555f | 1.393f | 272 | | |
| vss0 | 2.83f | 1.268f | 1.561f | 256 | | |

C R Compare EM IR Drop

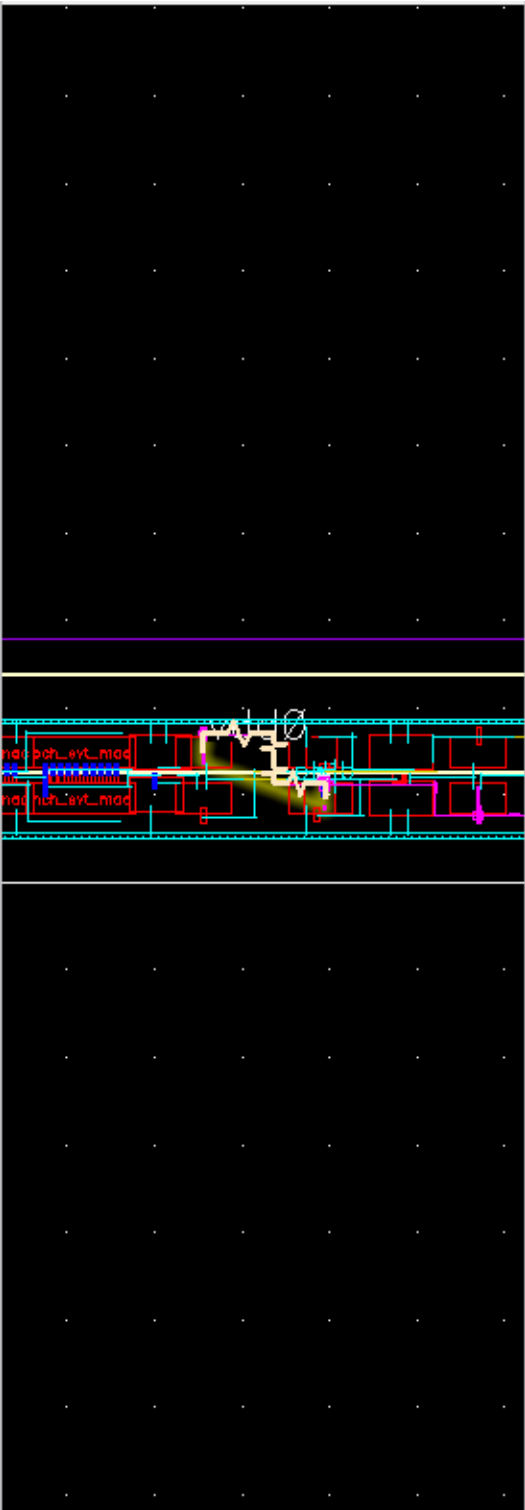
Resistance Paths (ph1, 5 paths, 656.4 max, 280.9 min)

| Total R | Count | From | To |
|---------|-------|-------|------|
| 656.4 | 26 | M0:G | M5:G |
| 280.9 | 10 | M5:G | ph1 |
| 375.5 | 16 | M0:G | ph1 |
| 348.7 | 24 | M10:G | ph1 |
| 487.1 | 34 | M14:G | ph1 |

Resistances (ph1, 26 values, 298.3 max, 1m min)

| R | Layer | W | L | Cuts | Cut Area |
|-------|-----------|-------|-------|------|-----------|
| 298.3 | po_int... | 0.016 | 0.2 | | |
| 23.87 | po_int... | 0.016 | 0.016 | | |
| 1.492 | po_int... | 0.016 | 0.001 | | |
| 159.1 | M0PO | | | 1 | 0.0002... |
| 1.455 | M0PO | 0.05 | 0.016 | | |

Navigator Palette EAD Browser



2. Show P2P summary using **EAD Toolbar**

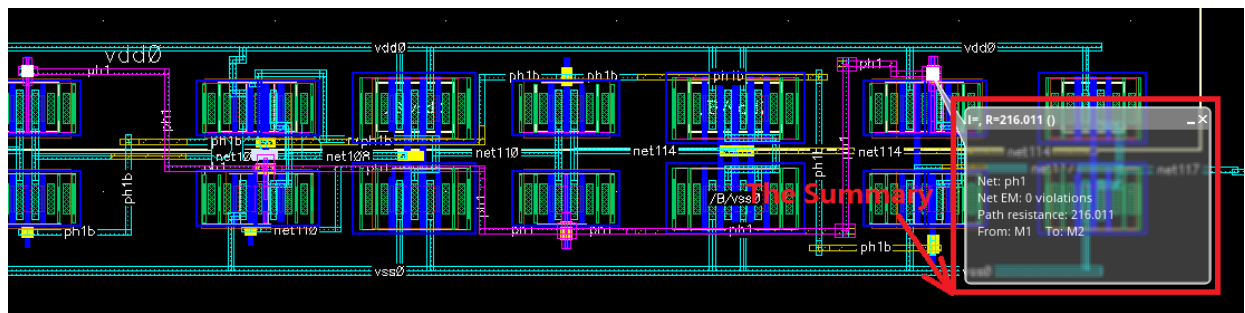
EAD Browser

Extraction Corner: N16

Electrical Dataset: All

EAD Toolbar

- Create New Point-To-Point Info Balloon
- Close All Point-To-Point Info Balloons
- Save All Point-To-Point Info Balloons...
- Load Point-To-Point Info Balloons...



The Summary