N3 Calibre LVS Deck Installation

LVSRCE/TSMC

Sep. 4, 2020

Install (I)

- For correct LVS installation, choosing a metal scheme is a **MUST**
  - Please always choose a metal scheme while installing for correct installation.

```
Please select the number of metal:
  6. 6M
  7. 7M
  8. 8M
  9. 9M
 10. 10M
 11. 11M
 12. 12M
 13. 13M
 14. 14M
 15. 15M
 16. 16M
 17. 17M
 18. 18M
>15
Please select the metal scheme:
  0. 15M_1X1Xa1Ya5Y2Yy2Yx2R
  1. 15M_1X2Xa1Ya4Y2Yy2Yx2R
  2. 15M_2X1Xa1Ya4Y2Yy2Yx2R
  3. 15M_2X1Ya4Y3Yy2Yx2R
  4. 15M_2X1Ya4Y3Yy2Yx2Z
  5. 15M_2X1Ya5Y2Yy2Yx2R
  6. 15M_2X1Ya7Y2Yy2Z
>0
```

- Why need to Install?
  - There are difficulties to support different metal schemes in LVS deck. Hence, the install program is used to solve these problems.
  - Modified LVS deck, RC mapping file and tool command files are generated at MAIN_DECK directory.
  - Please always use LVS_Install.pl to apply LVS settings.

Install (II)

- Install program: LVS_Install.pl
  - This install program can be used in the following three different modes.
  - **Interactive mode:** Type “LVS_Install.pl” in the terminal (shown in next page). And then, choose the metal scheme and correct settings to specify the LVS deck. After the interactive mode, the configure file “LVS_install.cfg” will be generated.

Install (III)

Interactive Mode snapshot

Reserved layers for pseudo color layers, please do not use.

```
>./LVS_Install.pl
**INFO: CCI mode detected
**INFO: T-N03-CL-SP-001-C1 (N3) Version 0.01a
Please select the number of metal:
 16. 16M
>16
Please select the metal scheme:
  0. 16M_1X1Xb1Xc1Xd1Ya1Yb5Y2Yy2Z
>0
* Process is N3
* Metal scheme is 1P16M_1X1Xb1Xc1Xd1Ya1Yb5Y2Yy2Z
Is it correct? (Y/N):
>y

<SPECIAL NOTICE> : Please do not use reserved layers (refer to MAIN_DECK/CCI_FLOW/reserved_layers_16M_1X1Xb1Xc1Xd1Ya1Yb5Y2Yy2Z)!
```

Install (IV)

Reserved layers info.

MAIN_DECK/CCI_FLOW/reserved_layers_16M_1X1Xb1Xc1Xd1Ya1Yb5Y2Yy2Z

```
**INFO : LAYER M3_Ai          33069 33070 33071 33072
**INFO : LAYER M3_Bi          33073 33074 33075 33076
**INFO : LAYER DUM3_Ai        33077 33078 33079 33080 33081 33082 33083 33084
**INFO : LAYER DUM3_Bi        33085 33086 33087 33088 33089 33090 33091 33092
**INFO : LAYER M4_Ai          33093 33094 33095 33096
**INFO : LAYER M4_Bi          33097 33098 33099 33100
**INFO : LAYER DUM4_Ai        33101 33102 33103 33104 33105 33106 33107 33108
**INFO : LAYER DUM4_Bi        33109 33110 33111 33112 33113 33114 33115 33116
**INFO : LAYER M6_Ai          33141 33142 33143 33144
**INFO : LAYER M6_Bi          33145 33146 33147 33148
**INFO : LAYER DUM6_Ai        33149 33150 33151 33152 33153 33154 33155 33156
**INFO : LAYER DUM6_Bi        33157 33158 33159 33160 33161 33162 33163 33164
**INFO : LAYER M7_Ai          33165 33166 33167 33168
**INFO : LAYER M7_Bi          33169 33170 33171 33172
**INFO : LAYER DUM7_Ai        33173 33174 33175 33176 33177 33178 33179 33180
**INFO : LAYER DUM7_Bi        33181 33182 33183 33184 33185 33186 33187 33188
**INFO : LAYER M8_Ai          33189 33190 33191 33192
**INFO : LAYER M8_Bi          33193 33194 33195 33196
**INFO : LAYER DUM8_Ai        33197 33198 33199 33200 33201 33202 33203 33204
**INFO : LAYER DUM8_Bi        33205 33206 33207 33208 33209 33210 33211 33212
**INFO : LAYER M9_Ai          33213 33214 33215 33216
**INFO : LAYER M9_Bi          33217 33218 33219 33220
**INFO : LAYER DUM9_Ai        33221 33222 33223 33224 33225 33226 33227 33228
**INFO : LAYER DUM9_Bi        33229 33230 33231 33232 33233 33234 33235 33236
**INFO : LAYER M10_Ai         33237 33238 33239 33240
**INFO : LAYER M10_Bi         33241 33242 33243 33244
**INFO : LAYER DUM10_Ai       33245 33246 33247 33248 33249 33250 33251 33252
**INFO : LAYER DUM10_Bi       33253 33254 33255 33256 33257 33258 33259 33260
**INFO : LAYER M11_Ai         33261 33262 33263 33264
**INFO : LAYER M11_Bi         33265 33266 33267 33268
**INFO : LAYER DUM11_Ai       33269 33270 33271 33272 33273 33274 33275 33276
**INFO : LAYER DUM11_Bi       33277 33278 33279 33280 33281 33282 33283 33284
**INFO : LAYER M12_Ai         33285 33286 33287 33288
**INFO : LAYER M12_Bi         33289 33290 33291 33292
**INFO : LAYER DUM12_Ai       33293 33294 33295 33296 33297 33298 33299 33300
**INFO : LAYER DUM12_Bi       33301 33302 33303 33304 33305 33306 33307 33308
**INFO : LAYER M13_Ai         33309 33310 33311 33312
**INFO : LAYER M13_Bi         33313 33314 33315 33316
**INFO : LAYER DUM13_Ai       33317 33318 33319 33320 33321 33322 33323 33324
**INFO : LAYER DUM13_Bi       33325 33326 33327 33328 33329 33330 33331 33332
**INFO : LAYER M14_Ai         33333 33334 33335 33336
**INFO : LAYER M14_Bi         33337 33338 33339 33340
**INFO : LAYER DUM14_Ai       33341 33342 33343 33344 33345 33346 33347 33348
**INFO : LAYER DUM14_Bi       33349 33350 33351 33352 33353 33354 33355 33356
**INFO : LAYER M15_Ai         33357 33358 33359 33360
**INFO : LAYER M15_Bi         33361 33362 33363 33364
**INFO : LAYER DUM15_Ai       33365 33366 33367 33368 33369 33370 33371 33372
**INFO : LAYER DUM15_Bi       33373 33374 33375 33376 33377 33378 33379 33380
...
```

Install (V)

- Configure mode: Use the configure file to generate LVS deck.
  > LVS_Install.pl -cfg LVS_Install.cfg

  The configure file looks like as follows.

  METAL_SCHEME: 16M_1X1Xb1Xc1Xd1Ya1Yb5Y2Yy2Z

- Bash mode: Type in command line directly to generate LVS deck.
  > LVS_Install.pl -m 16M_1X1Xb1Xc1Xd1Ya1Yb5Y2Yy2Z

Install (VI)

- **LVS Install Summary**
  - Generate LVS_Install.summary in either interactive mode or configure mode

```
**INFO: Generate deck DFM_LVS_CCI_CALIBRE_N3_1p16M_1X1Xb1Xc1Xd1Ya1Yb5Y2Yy2Z_ALRDL.0.01a at MAIN_DECK/CCI_FLOW
**INFO: COPY profile/CCI_FLOW/STAR_MAP/starrcxt_mapping_1p16m to MAIN_DECK/CCI_FLOW/starrcxt_mapping_1p16M_1X1Xb1Xc1Xd1Ya1Yb5Y2Yy2Z
**INFO: Generate Star-RCXT mapping file starrcxt_mapping_1p16m at MAIN_DECK/CCI_FLOW/starrcxt_mapping_1p16M_1X1Xb1Xc1Xd1Ya1Yb5Y2Yy2Z
**INFO: COPY profile/CCI_FLOW/DFM to MAIN_DECK/CCI_FLOW
**INFO: COPY profile/CCI_FLOW/query_cmd to MAIN_DECK/CCI_FLOW
**INFO: COPY profile/CCI_FLOW/star_cmd to MAIN_DECK/CCI_FLOW
**INFO: COPY profile/CCI_FLOW/pin_file.txt to MAIN_DECK/CCI_FLOW
**INFO: Install Successfully!

**INFO: Summary LVS Installation =>  LVS Install.summary
```

  - LVS_Install.summary context
    - If user doesn't assign switch option, it will show "freeze"
    - Do not assign LVS_Install.summary as configure mode input

```
TOOL: CCI
METAL_SCHEME: 16M_1X1Xb1Xc1Xd1Ya1Yb5Y2Yy2Z
USE_EDRAM: n
MIMCAP_OPTION: 0
SHDMIMCAP_OPTION: 0
SWITCH:
CCI_DFM_RULE freeze                          (default off)
DS_TO_PG_CHECK freeze                        (default on)
FILTER_DGS_TIED_MOS freeze                   (default off)
FILTER_MPODE freeze                          (default on)
FILTER_PODE freeze                           (default on)
FLOATING_WELL_CHECK freeze                   (default on)
GATE_TO_PG_CHECK freeze                      (default off)
LVSDMY4_CHECK freeze                         (default on)
LVS_DECK freeze                              (default on)
...
```

Install (VII)

- Options:
  - **See the usage:** Type “-h” to see the usage.
    > LVS_Install.pl -h