**Cadence PD Commands**

IC FB – Virtuoso (For Analog)

FE (First Encounter) -> EDI (Encounter Design Implementation) -> Innovus

The version depends on QOR (Quality of Results) – Timing (REG2REG), which finally determines the frequency, CTS, PV (Physical Verification) – DRC, and Number of Shorts.

**STORING THE DESIGN IN MEMORY**

Window -> Linux -> Tool Environment (TCL) -> Building the design -> Design element and attribute stored (ICC).

**INNOVUS TOOL COMMANDS**

* Base Commands
* SDC Commands (get\_pins, get\_cells etc) -> common across the tools.
* DB Commands (Extra in Cadence – highest precedence w.r.t tool preference) – we can access the binary location of the content stored.

**SEPARATING TWO WORDS**

**INNOVUS** – setPlaceMode (separated by caps) very few with the \_

**ICC –** clock-opt (separated by \_)

FE vs. Innovus –

Initially, they have DB commands – db \* (for a full list of commands)

Innovus – dbGet (Superset of everything) – using this single command majority of operations can be done.

**CHANGING THE ATTRIBUTE IN ICC**

* **list\_attribute –app -class <>** (list all the possible attributes for the given class)

Ex: If the class is a pin. Pin attributes are – it will write out for the user to identify.

* **get\_attribute <design element> <attribute\_name>** - list the value of attribute stored.

Ex: **get\_attribute [get\_cells macro 1] is\_fixed** – show if the placement of the macro is fixed or not

* **set\_attribute <design element> <attribute\_name> <new\_value>** - set the attribute value

Ex: **set\_attribute [get\_cells macro 1] is\_fixed true**

**CHANGING THE ATTRIBUTE IN INNOVUS**

* **list\_property**
* **get\_property <design\_element> <attr> <new value>**

Ex: **get\_property [get\_cells macro 1] is\_fixed**

* **set\_property <design element> <attr> <new value>**

Ex: **set\_property [get\_cells macro 1] is\_fixed true**

* **setAttribute -net <properties>** -> only for net

Ex: This command can be used to detour the net – either draws straight or not.

Ex: **setAttribute – net – avoid\_detour true**

Ex: **setAttribute -netname -skip\_routing true** (tool will not consider this net while routing) – t majority of these commands will be used for clock nets after CTSs nets are routed.

**Problem:** For a net that is not routed and we give this command. Then this net will not be routed in the entire database at any stage.

**In ICC –** freeze -> freeze the routing

**Innovus Ex:** **list\_property help \*place\*** -> to get all the commands with place keyword.

**Ex:** **setPlaceMode -help**

**Ex: man setPlaceMode** -> for manual for this command (common for both ICC and Cadence)

**INSTALLATION PATH FOLDERS - INNOVUS**

GIFT PATH – Contains all the TCL commands here.

DOC PATH - And all the documents are stored here for installation.

**BASICS OF DB COMMANDS**

* **db<tab>** -> give all the possible db commands
* **dbGet -help**

- **dbGet [-help] [-d] [-u] [-e] [-I <num>] [-p [<num>]] {<obj> | objlist | head | top | selected}} [.<objType>]…**

- [] -> command line code. As an argument – optional

- [[]] -> two times optional

- [-p[<num>]] -p is optional, num is also optional

- {} -> mandatory. dbGet must have an object list (like instance, net, cell …), top (your design), head (will contain all the design information – lib cells, layout, and extra information), selected (perform operations on the selected items)

- [-d] -> database units (1 X 5, 25.123 X 15.123 - complex) – integer multiplication is easy than floats; make everything integer. Ex- dim 1.444um X 1000 = 1455 – become an integer, making the tool easily process. It also helps with storage. Storing the floating-point numbers is difficult to store in the tool. Multiply any value in the database. 28 nm – 1000, 7 nm – 4000 (small nm will have a bigger number)

- [-u] -> list, sorting command. Remove all the duplicate objects.

- [-v] -> print everything except the pattern. Any value written will be written in the database unit.

- [- e]

- [- i] -> indexing (-I 5 – 5th element will be written)

- dbGet head \_ \_ or top or selected.

- <pointer> - binary address of object list