

Layout Verification Reporter (LVR) Errors and Warnings reference

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1 LVR Errors and Warnings

Each error/warning appears on its own page with a tailored description, impact, likely root causes, and step-by-step resolution guidance. This manual was constructed from source log format strings and categorized by module. Antenna, TCL, DFM, and PERC items were excluded per request.

1.1 Summary Index

Module	Code	Message (truncated)
DB	DB_ERR	Need to set number of cores as well before setting die_area
DB	DB_ERR001	Top cell is not specified
DB	DB_ERR004	Review and fix the DB loading errors and re-run LVR: DENSITY cannot proceed
DB	DB_ERR005	No DB instance found for {}, create a DB using init_tool.db command
DB	DB_ERR006	The file {} could not be opened
DB	DB_ERR007	LRF file not found
DB	DB_ERR008	Module-SPICE file not found
DB	DB_ERR009	Macro CDL Library not found
DB	DB_ERR010	DB for {} already exists
DB	DB_ERR011	Summary Report File not found
DB	DB_ERR012	Markers File not found
DB	DB_ERR014	Macro Timeout is less than 1 second
DB	DB_ERR015	Instance Matching Timeout is less than 60 seconds
DB	DB_ERR016	Number of OpenMP threads is invalid
DB	DB_ERR017	One or more input fields (LineEdits) are missing.
DB	DB_ERR018	Number of Cores is more than the available cores for this machine
DB	DB_ERR021	Max error is less than 1
DB	DB_ERR022	Max error (option) is less than 1
DENSITY	DENSITY_ERR001	Module {} not found in Layout DB for {}, DENSITY cannot proceed

DENSITY	DENSITY_ERR022	DENSITY has already been run, to re-run, create a fresh DB
DENSITY	DENSITY_ERR024	DENSITY DB has not been set, please initialize DENSITY DB to run density
DRC	DRC_ERR009	Module {} not found in Layout DB for {}, DRC cannot proceed
DRC	DRC_ERR023	DRC has already been run, to re-run, create a fresh DB
DRC	DRC_ERR024	DRC DB has not been set, please initialize DRC DB to run drc
ERC	ERC_ERR001	Pin {} of instance {} is shorted with power
ERC	ERC_ERR002	Pin {} of instance {} is shorted with ground
ERC	ERC_ERR003	Input pin {} of instance {} is unconnected
ERC	ERC_ERR004	Output pin {} of instance {} is dangling and unconnected
ERC	ERC_ERR005	Pin {} of instance {} is shorted to ground
ERC	ERC_ERR006	Pin {} of instance {} is shorted to power
ERC	ERC_ERR007	Net {} has multiple output drivers: {} and {}
ERC	ERC_ERR008	Power pin {} of instance {} is undriven
ERC	ERC_ERR009	Ground pin {} of instance {} is undriven
ERC	ERC_ERR017	Found short {} interacting with {} on layer {}
ERC	ERC_ERR019	The pin {} of instance of the layout {} is unconnected, this will lead to ERC mismatches
ERC	ERC_ERR020	Mismatch in pins and ports size for instance {}

ERC	ERC_ERR023	ERC has already been run, to re-run, create a fresh DB
ERC	ERC_ERR024	ERC DB has not been set, please initialize ERC DB to run erc
LVS	LVS_ERR003	Pin {} of instance {} is open and unconnected
LVS	LVS_ERR005	The instance {} of the schematic remained unmatched
LVS	LVS_ERR006	Macros cdl file not specified, LVS cannot proceed
LVS	LVS_ERR007	Module Spice file not specified, LVS cannot proceed
LVS	LVS_ERR009	Module {} not found in Layout DB for {}, LVS cannot proceed
LVS	LVS_ERR017	Found short {} interacting with {} on layer {}
LVS	LVS_ERR018	Open detected! Net {} is broken into {} disconnected parts
LVS	LVS_ERR019	The pin {} of instance of the layout {} is unconnected, this will lead to LVS mismatches
LVS	LVS_ERR020	Mismatch in pins and ports size for instance {}
LVS	LVS_ERR023	LVS has already been run, to re-run, create a fresh DB
LVS	LVS_ERR024	LVS DB has not been set, please initialize LVS DB to run lvs
LVS	LVS_ERR025	Required pin {} of instance {} is unconnected

LVS	LVS_ERR026	Required pin {} of instance {} is unconnected
LVS	LVS_ERR027	Required pin {} of instance {} is unconnected
LVS	LVS_ERR028	Required pin {} of instance {} is unconnected
MLVS	MLVS_ERR002	Mismatch for the Gate Pin of macro {}
MLVS	MLVS_ERR003	Mismatch for the Source Pin of macro {}
MLVS	MLVS_ERR006	Macros cdl file not specified, MLVS cannot proceed
MLVS	MLVS_ERR007	Module Spice file not specified, MLVS cannot proceed
MLVS	MLVS_ERR009	Module {} not found in Layout DB for {}, MLVS cannot proceed
MLVS	MLVS_ERR023	MLVS has already been run, to re-run, create a fresh DB
MLVS	MLVS_ERR024	MLVS DB has not been set, please initialize MLVS DB to run mlvs
SVS	SVS_ERR001	No perfect left-side matching found!
SVS	SVS_ERR002	No perfect right-side matching found!
SVS	SVS_ERR005	The instance {} of the schematic remained unmatched
SVS	SVS_ERR006	Macros cdl file not specified, SVs cannot proceed
SVS	SVS_ERR009	Module {} not found in Layout DB for {}, SVS cannot proceed
SVS	SVS_ERR010	Module Verilog file not specified, svcs cannot proceed

SVS	SVS_ERR011	Module Verilog file not specified, svs cannot proceed
SVS	SVS_ERR012	Module Spice file not specified, svs cannot proceed
SVS	SVS_ERR013	Module Spice file not specified, svs cannot proceed
SVS	SVS_ERR020	Mismatch in pins and ports size for instance {}
SVS	SVS_ERR023	SVS has already been run, to re-run, create a fresh DB
SVS	SVS_ERR024	SVS DB has not been set, please initialize SVS DB to run svs
SVS	SVS_ERR031	Mismatch in the number of instances , Left = {} , Right= {}
SVS	SVS_ERR032	Mismatch in the number of pins for the instance {}
SVS	SVS_ERR033	Mismatch in the number of ports for the instance {}
SVS	SVS_ERR034	Mismatch in the number of pin to net matching for the instance {}
XOR	XOR_ERR001	XOR Mismatch is found for a polygon on the layer {}
XOR	XOR_ERR009	Module {} not found in Layout DB for {}, XOR cannot proceed
XOR	XOR_ERR023	XOR has already been run, to re-run, create a fresh DB
XOR	XOR_ERR024	XOR DB has not been set, please initialize XOR DB to run xor_check

1.2 DB

1.2.1 DB_ERR

Message Template.

Need to set number of cores as well before setting die_area

Meaning.

General database configuration problem detected during validation.

Impact.

Requested operation cannot proceed until DB issues are resolved.

Typical Root Causes.

- Missing/invalid paths.
- Permissions.
- Corruption.

Recommended Resolution.

- Fix paths and permissions.
- Recreate DB if necessary.

Example Appearance.

DB_ERR: Need to set number of cores as well before setting die_area

1.2.2 DB_ERR001

Message Template.

Top cell is not specified

Meaning.

The top cell name required to anchor hierarchy was not specified.

Impact.

Modules cannot resolve a root for analysis; runs aborted.

Typical Root Causes.

- set_top not called.
- GUI form missing top-cell entry.

Recommended Resolution.

- Call set_top with correct cell.
- Populate forms with valid top cell.

Example Appearance.

DB_ERR001: Top cell is not specified

1.2.3 DB_ERR004

Message Template.

Review and fix the DB loading errors and re-run LVR: DENSITY cannot proceed

Meaning.

There were errors while loading inputs; modules depending on DB will not proceed.

Impact.

Subsequent runs (LVS/DRC/etc.) are blocked.

Typical Root Causes.

- Malformed or missing input files.
- Path/access issues.

Recommended Resolution.

- Fix the loading errors first (see detailed log).
- Re-run after inputs validate.

Example Appearance.

DB_ERR004: Review and fix the DB loading errors and re-run LVR:
DENSITY cannot proceed

1.2.4 DB_ERR005

Message Template.

No DB instance found for {}, create a DB using init_tool.db command

Meaning.

No active DB instance is present for the requested tool module.

Impact.

Module cannot access state or write results.

Typical Root Causes.

- init_tool.db not called.
- set_tool.db not used.

Recommended Resolution.

- Create and select a DB.
- Ensure correct toolName context.

Example Appearance.

DB_ERR005: No DB instance found for {}, create a DB using init_tool.db command

1.2.5 DB_ERR006

Message Template.

The file {} could not be opened

Meaning.

An input file could not be opened for reading.

Impact.

Run configuration is incomplete; module may fail early.

Typical Root Causes.

- Wrong path or filename.
- Insufficient permissions.
- File locked or corrupt.

Recommended Resolution.

- Correct the path.
- Fix permissions.
- Verify file integrity.

Example Appearance.

DB_ERR006: The file {} could not be opened

1.2.6 DB_ERR007

Message Template.

LRF file not found

Meaning.

LRF (layout rules file) not found where expected.

Impact.

Cannot run rule-driven checks.

Typical Root Causes.

- Path typo.
- File missing from repo.

Recommended Resolution.

- Point to correct LRF path.
- Restore the rule deck.

Example Appearance.

DB_ERR007: LRF file not found

1.2.7 DB_ERR008

Message Template.

Module-SPICE file not found

Meaning.

Module SPICE file not found by the input forms/checks.

Impact.

Dependent flows (LVS/ERC/SVS) cannot proceed.

Typical Root Causes.

- Path wrong.
- File removed.

Recommended Resolution.

- Fix SPICE path.
- Re-export SPICE.

Example Appearance.

DB_ERR008: Module-SPICE file not found

1.2.8 DB_ERR009

Message Template.

Macro CDL Library not found

Meaning.

Macro CDL library not found.

Impact.

Macro expansion blocked in flows requiring CDL.

Typical Root Causes.

- CDL path invalid or missing.
- PDK assets not installed.

Recommended Resolution.

- Supply correct CDL path.
- Install/restore PDK library.

Example Appearance.

DB_ERR009: Macro CDL Library not found

1.2.9 DB_ERR010

Message Template.

DB for {} already exists

Meaning.

A DB with the requested name already exists.

Impact.

May cause accidental overwrite or stale results.

Typical Root Causes.

- Reusing run identifiers.
- Concurrent jobs writing same DB.

Recommended Resolution.

- Choose unique DB name.
- Archive or remove old DB.

Example Appearance.

DB_ERR010: DB for {} already exists

1.2.10 DB_ERR011

Message Template.

Summary Report File not found

Meaning.

Summary report file not found when validating inputs.

Impact.

Report generation cannot proceed for that module.

Typical Root Causes.

- Report path not created yet.
- Wrong output directory.

Recommended Resolution.

- Set report output path first.
- Ensure directory exists.

Example Appearance.

DB_ERR011: Summary Report File not found

1.2.11 DB_ERR012

Message Template.

Markers File not found

Meaning.

Marker file not found while validating GUI/report options.

Impact.

Viewer cannot load markers; reporting degraded.

Typical Root Causes.

- Markers not yet generated.
- Wrong file path.

Recommended Resolution.

- Run checks to generate markers.
- Fix marker file path.

Example Appearance.

DB_ERR012: Markers File not found

1.2.12 DB_ERR014

Message Template.

Macro Timeout is less than 1 second

Meaning.

Macro timeout parameter is too small.

Impact.

Macro extraction may not complete.

Typical Root Causes.

- CLI value $\leq$ 1 second.
- Bad default.

Recommended Resolution.

- Increase macro timeout.
- Use recommended values in docs.

Example Appearance.

DB_ERR014: Macro Timeout is less than 1 second

1.2.13 DB_ERR015

Message Template.

Instance Matching Timeout is less than 60 seconds

Meaning.

Instance matching timeout is too small.

Impact.

Equivalence search may terminate early.

Typical Root Causes.

- Timeout $\leq$ 60 seconds.
- Large design with deep hierarchy.

Recommended Resolution.

- Increase timeout beyond 60s.
- Scale with design size.

Example Appearance.

DB_ERR015: Instance Matching Timeout is less than 60 seconds

1.2.14 DB_ERR016

Message Template.

Number of OpenMP threads is invalid

Meaning.

Number of threads/cores parameter is invalid (less than 1).

Impact.

Parallel engine disabled or errors out.

Typical Root Causes.

- CLI value 0 or negative.
- Form validation failed.

Recommended Resolution.

- Set cores ≥ 1 .
- Detect system cores dynamically.

Example Appearance.

DB_ERR016: Number of OpenMP threads is invalid

1.2.15 DB_ERR017

Message Template.

One or more input fields (LineEdits) are missing.

Meaning.

One or more required UI input fields are empty.

Impact.

Cannot validate or start run.

Typical Root Causes.

- Form not fully filled.
- Automation missing keys.

Recommended Resolution.

- Complete all required fields.
- Add validation in script.

Example Appearance.

DB_ERR017: One or more input fields (LineEdits) are missing.

1.2.16 DB_ERR018

Message Template.

Number of Cores is more than the available cores for this machine

Meaning.

Requested core count exceeds available machine cores.

Impact.

Scheduling will fail or be clamped.

Typical Root Causes.

- Hardcoded value too high.
- Container limits.

Recommended Resolution.

- Detect cores programmatically.
- Respect container quotas.

Example Appearance.

DB_ERR018: Number of Cores is more than the available cores for
this machine

1.2.17 DB_ERR021

Message Template.

Max error is less than 1

Meaning.

Max error count is set below 1.

Impact.

Error reporting suppressed unnaturally; runs may abort.

Typical Root Causes.

- Bad form value.
- Script setting 0.

Recommended Resolution.

- Set max error ≤ 1 .
- Use tool defaults.

Example Appearance.

DB_ERR021: Max error is less than 1

1.2.18 DB_ERR022

Message Template.

Max error (option) is less than 1

Meaning.

Option max error limit is set below 1.

Impact.

Option-related diagnostics suppressed.

Typical Root Causes.

- Incorrect parameterization.
- Form validation bug.

Recommended Resolution.

- Set option max error $\epsilon = 1$.
- Align with module defaults.

Example Appearance.

DB_ERR022: Max error (option) is less than 1

1.3 DENSITY

1.3.1 DENSITY_ERR009

Message Template.

Module {} not found in Layout DB for {}, DENSITY cannot proceed

Meaning.

Top module not found when preparing density windows; analysis cannot locate layout hierarchy.

Impact.

Density analysis halted; no coverage numbers.

Typical Root Causes.

- Wrong top cell name.
- Layout DB not loaded.
- Flattened hierarchy not matching expectations.

Recommended Resolution.

- Set correct top cell.
- Reload layout DB.
- Confirm windowing parameters.

Example Appearance.

DENSITY_ERR009: Module {} not found in Layout DB for {}, DENSITY cannot proceed

1.3.2 DENSITY_ERR023

Message Template.

DENSITY has already been run, to re-run, create a fresh DB

Meaning.

Density analysis already performed in this DB; re-run requires a fresh DB.

Impact.

Potential mixing of old/new markers; run blocked.

Typical Root Causes.

- Re-running in same workspace.
- Automations reusing DB.

Recommended Resolution.

- Create a new DB for the re-run.
- Purge prior artifacts.

Example Appearance.

DENSITY_ERR023: DENSITY has already been run, to re-run, create a fresh DB

1.3.3 DENSITY_ERR024

Message Template.

DENSITY DB has not been set, please initialize DENSITY DB to run density

Meaning.

Density DB not set for the session.

Impact.

Tool cannot instantiate windowing or collect metrics.

Typical Root Causes.

- Missing init/set of DB.
- Corrupt or moved DB path.

Recommended Resolution.

- Initialize DB and set active.
- Repair path or permissions.

Example Appearance.

DENSITY_ERR024: DENSITY DB has not been set, please initialize DENSITY DB to run density

1.4 DRC

1.4.1 DRC_ERR009

Message Template.

Module {} not found in Layout DB for {}, DRC cannot proceed

Meaning.

The requested module (top cell) was not found for DRC context, usually due to mismatched naming or missing GDS.

Impact.

DRC cannot target the intended block; run aborted.

Typical Root Causes.

- Wrong set_top name.
- GDS missing the cell.
- Import filters dropped the cell.

Recommended Resolution.

- Set the correct top.
- Re-stream GDS with full hierarchy.
- Check library map filters.

Example Appearance.

DRC_ERR009: Module {} not found in Layout DB for {}, DRC cannot proceed

1.4.2 DRC_ERR023

Message Template.

DRC has already been run, to re-run, create a fresh DB

Meaning.

A DRC run already exists in this DB; the tool enforces clean re-runs only.

Impact.

Stale markers/reports could confuse interpretation; run blocked.

Typical Root Causes.

- Re-run without cleaning DB.
- Shared DB across jobs.

Recommended Resolution.

- Create a fresh DB.
- Use unique run directories.

Example Appearance.

DRC_ERR023: DRC has already been run, to re-run, create a fresh DB

1.4.3 DRC_ERR024

Message Template.

DRC DB has not been set, please initialize DRC DB to run drc

Meaning.

DRC DB has not been initialized for the current session.

Impact.

Cannot load rule deck or write markers; DRC aborted.

Typical Root Causes.

- Missing init_tool_db or set_tool_db.
- DB path moved or not writable.

Recommended Resolution.

- Initialize and activate a DB.
- Fix permissions and paths.

Example Appearance.

DRC_ERR024: DRC DB has not been set, please initialize DRC DB to
run drc

1.5 ERC

1.5.1 ERC_ERR001

Message Template.

Pin {} of instance {} is shorted with power

Meaning.

A functional pin is accidentally tied to the power rail.

Impact.

Overdrive, leakage, or permanent assertion; can damage device.

Typical Root Causes.

- Labeling error, short shapes, or wrong tie cell.
- Incorrect net aliasing.

Recommended Resolution.

- Break the short; route through proper tie-high cell.
- Verify label layers and net connectivity.

Example Appearance.

ERC_ERR001: Pin {} of instance {} is shorted with power

1.5.2 ERC_ERR002

Message Template.

Pin {} of instance {} is shorted with ground

Meaning.

A functional pin is accidentally tied to ground.

Impact.

Signal stuck-low; dynamic paths disabled; possible damage.

Typical Root Causes.

- Metal short to ground ring/strap.
- Wrong tie-low usage.

Recommended Resolution.

- Remove short and use proper tie-low cell.
- Reroute away from ground domains.

Example Appearance.

ERC_ERR002: Pin {} of instance {} is shorted with ground

1.5.3 ERC_ERR003

Message Template.

Input pin {} of instance {} is unconnected

Meaning.

An input pin is left unconnected in the schematic or extracted layout.

Impact.

Floating input causes unpredictable logic levels and current draw.

Typical Root Causes.

- Missed wire, removed buffer, or port name mismatch.
- Conditional port excluded in one view.

Recommended Resolution.

- Connect to the correct driving net or tie cell.
- Re-export netlists to align port sets.

Example Appearance.

ERC_ERR003: Input pin {} of instance {} is unconnected

1.5.4 ERC_ERR004

Message Template.

Output pin {} of instance {} is dangling and unconnected

Meaning.

An output pin has no load or is not connected onward.

Impact.

Dangling output; potential power waste or missing function.

Typical Root Causes.

- Net cut by ECO, or sink removed.
- Port direction mismatch masking the connection.

Recommended Resolution.

- Reconnect to intended sinks.
- Check optimized netlists for pruned nets.

Example Appearance.

ERC_ERR004: Output pin {} of instance {} is dangling and unconnected

1.5.5 ERC_ERR005

Message Template.

Pin {} of instance {} is shorted to ground

Meaning.

A functional pin is shorted to ground (duplicate in messages may reflect detection at different stages).

Impact.

Permanent low; possible device stress.

Typical Root Causes.

- Physical short or aliasing of nets.
- Misplaced via stack crossing ground.

Recommended Resolution.

- Isolate shapes; correct alias/label.
- Validate with DRC short checks.

Example Appearance.

ERC_ERR005: Pin {} of instance {} is shorted to ground

1.5.6 ERC_ERR006

Message Template.

Pin {} of instance {} is shorted to power

Meaning.

A functional pin is shorted to power.

Impact.

Permanent high; crowbar risk with downstream logic.

Typical Root Causes.

- Short to VDD rail or well tie.
- Wrong tie-high usage.

Recommended Resolution.

- Remove short; use dedicated tie-high cells.
- Verify power domain boundaries.

Example Appearance.

ERC_ERR006: Pin {} of instance {} is shorted to power

1.5.7 ERC_ERR007

Message Template.

Net {} has multiple output drivers: {} and {}

Meaning.

A single net is driven by more than one output driver.

Impact.

Bus contention; reliability and timing hazards.

Typical Root Causes.

- Two outputs shorted together.
- Bi-directional pins both driving simultaneously.

Recommended Resolution.

- Insert tri-state controls or arbitration.
- Separate drivers or use wired-OR structures if supported.

Example Appearance.

ERC_ERR007: Net {} has multiple output drivers: {} and {}

1.5.8 ERC_ERR008

Message Template.

Power pin {} of instance {} is undriven

Meaning.

A power pin is not driven by any valid supply source.

Impact.

Undriven power pin makes cell behavior undefined.

Typical Root Causes.

- Missed ring/strap connection.
- Level-shifter domain not hooked to supply.

Recommended Resolution.

- Connect to correct rail via tap/strap.
- Check power intent (UPF/CPF) consistency.

Example Appearance.

ERC_ERR008: Power pin {} of instance {} is undriven

1.5.9 ERC_ERR009

Message Template.

Ground pin {} of instance {} is undriven

Meaning.

A ground pin is not connected to a ground network.

Impact.

Reference potential undefined; ESD and noise issues.

Typical Root Causes.

- Missing ground strap connection.
- Name mismatch of ground net (e.g., GND vs VSS).

Recommended Resolution.

- Connect to ground mesh and taps.
- Normalize ground net names.

Example Appearance.

ERC_ERR009: Ground pin {} of instance {} is undriven

1.5.10 ERC_ERR017

Message Template.

Found short {} interacting with {} on layer {}

Meaning.

A short is detected between two nets on a specific layer context.

Impact.

Electrical short; can cause functional failure.

Typical Root Causes.

- Metal overlap or insufficient spacing.
- Via misalignment bridging nets.

Recommended Resolution.

- Separate shapes or enforce spacing.
- Fix via enclosures and rerun ERC/DRC.

Example Appearance.

ERC_ERR017: Found short {} interacting with {} on layer {}

1.5.11 ERC_ERR019

Message Template.

The pin {} of instance of the layout {} is unconnected, this will lead to ERC mismatches

Meaning.

A layout instance exposes a pin that is not connected to any net, flagged at the ERC stage.

Impact.

Floating node; may cause leakage or undefined behavior.

Typical Root Causes.

- Missed ECO reconnect.
- Abstract LEF pin not realized in GDS.

Recommended Resolution.

- Connect or tie off per design intent.
- Update abstract and re-export.

Example Appearance.

ERC_ERR019: The pin {} of instance of the layout {} is unconnected, this will lead to ERC mismatches

1.5.12 ERC_ERR020

Message Template.

Mismatch in pins and ports size for instance {}

Meaning.

Generic tool error.

Impact.

Operation failed or halted.

Typical Root Causes.

- Configuration issue.
- Missing file.
- Incompatible options.

Recommended Resolution.

- Review logs.
- Provide required inputs.
- Correct parameters.

Example Appearance.

ERC_ERR020: Mismatch in pins and ports size for instance {}

1.5.13 ERC_ERR023

Message Template.

ERC has already been run, to re-run, create a fresh DB

Meaning.

Generic tool error.

Impact.

Operation failed or halted.

Typical Root Causes.

- Configuration issue.
- Missing file.
- Incompatible options.

Recommended Resolution.

- Review logs.
- Provide required inputs.
- Correct parameters.

Example Appearance.

ERC_ERR023: ERC has already been run, to re-run, create a fresh DB

1.5.14 ERC_ERR024

Message Template.

ERC DB has not been set, please initialize ERC DB to run erc

Meaning.

Generic tool error.

Impact.

Operation failed or halted.

Typical Root Causes.

- Configuration issue.
- Missing file.
- Incompatible options.

Recommended Resolution.

- Review logs.
- Provide required inputs.
- Correct parameters.

Example Appearance.

ERC_ERR024: ERC DB has not been set, please initialize ERC DB to
run erc

1.6 LVS

1.6.1 LVS_ERR003

Message Template.

Pin {} of instance {} is open and unconnected

Meaning.

A pin on a placed instance in the layout has no resolved connection in the extracted netlist. The schematic expects this pin to be tied to a net, but the layout leaves it floating.

Impact.

Connectivity mismatch leading to LVS failure; floating pins can cause functional indeterminism.

Typical Root Causes.

- Missing route/shape to the pin metal.
- Incorrect pin name mapping or case mismatch between layout and schematic.
- Pin disabled or pruned during export.

Recommended Resolution.

- Probe the reported instance/pin in the layout viewer and trace to the nearest net.
- Verify pin labels and layer mapping in the PDK/LVS deck.
- Reconnect or add the missing metal/via to complete the net.

Example Appearance.

LVS_ERR003: Pin {} of instance {} is open and unconnected

1.6.2 LVS_ERR005

Message Template.

The instance {} of the schematic remained unmatched

Meaning.

Generic tool error.

Impact.

Operation failed or halted.

Typical Root Causes.

- Configuration issue.
- Missing file.
- Incompatible options.

Recommended Resolution.

- Review logs.
- Provide required inputs.
- Correct parameters.

Example Appearance.

LVS_ERR005: The instance {} of the schematic remained unmatched

1.6.3 LVS_ERR006

Message Template.

Macros cdl file not specified, LVS cannot proceed

Meaning.

LVS requires a macro CDL library so that black-box macros can be expanded into devices for equivalence checking.

Impact.

Macros compare as unknown; LVS cannot descend hierarchy and will halt or skip comparisons.

Typical Root Causes.

- CDL path not set via `lvs_set_macros_cdl_file_name`.
- File missing or incompatible with selected technode.
- Access permission or path typo.

Recommended Resolution.

- Provide the correct CDL file for the technode.
- Confirm file readability and include paths.
- Re-run LVS after setting the CDL file.

Example Appearance.

LVS_ERR006: Macros cdl file not specified, LVS cannot proceed

1.6.4 LVS_ERR007

Message Template.

Module Spice file not specified, LVS cannot proceed

Meaning.

The primary schematic netlist (SPICE) is not provided for LVS.

Impact.

No reference graph to compare against; LVS cannot proceed.

Typical Root Causes.

- Forgot to set lvs_set_spice_file_name.
- Wrong file extension or path.
- Build flow relies on Verilog but SPICE output path not generated.

Recommended Resolution.

- Set the SPICE file path.
- If using Verilog→SPICE, generate the intermediate SPICE first.
- Validate file exists and parses.

Example Appearance.

LVS_ERR007: Module Spice file not specified, LVS cannot proceed

1.6.5 LVS_ERR009

Message Template.

Module {} not found in Layout DB for {}, LVS cannot proceed

Meaning.

The named module (top cell) cannot be found in the loaded layout database.

Impact.

Stop condition for LVS or module-level checks; top-of-hierarchy cannot be resolved.

Typical Root Causes.

- Incorrect top cell name in set_top.
- GDS file lacks the expected top cell.
- Stripped or renamed cell during stream-in.

Recommended Resolution.

- Open GDS and inspect library cell names; pick the correct top.
- Adjust set_top to the actual top cell.
- Re-import if the top was flattened or renamed.

Example Appearance.

LVS_ERR009: Module {} not found in Layout DB for {}, LVS cannot proceed

1.6.6 LVS_ERR017

Message Template.

Found short {} interacting with {} on layer {}

Meaning.

Two nets that should be isolated are found shorted in the layout extraction.

Impact.

Hard LVS mismatch; can imply catastrophic functional failure or reliability issues.

Typical Root Causes.

- Metal shapes touching due to spacing violation.
- Incorrect via enclosure overlapping adjacent net.
- Labeling error merging two distinct nets.

Recommended Resolution.

- Display short markers and separate polygons.
- Fix spacing/enclosure; re-run DRC to validate.
- Correct labels to ensure proper net separation.

Example Appearance.

LVS_ERR017: Found short {} interacting with {} on layer {}

1.6.7 LVS_ERR018

Message Template.

Open detected! Net {} is broken into {} disconnected parts

Meaning.

A single logical net is fragmented into multiple disconnected islands in the layout.

Impact.

Open circuit; signals cannot propagate; LVS mismatch.

Typical Root Causes.

- Missing stitch/route or omitted via.
- Disconnected pin after ECO.
- DRC-driven auto-fix broke continuity.

Recommended Resolution.

- Use connectivity highlight to find islands; route metal/via to bridge them.
- Check ECO diffs for removed segments.
- Re-run extraction and LVS.

Example Appearance.

LVS_ERR018: Open detected! Net {} is broken into {} disconnected parts

1.6.8 LVS_ERR019

Message Template.

The pin {} of instance of the layout {} is unconnected, this will lead to LVS mismatches

Meaning.

A pin of a layout instance is unconnected; typically reported with instance and pin names.

Impact.

Instance-level mismatch and potential functional failure at block pins.

Typical Root Causes.

- Pin shape not abutting target net.
- Pin suppressed in LEF or label mismatch.
- Hierarchical port not propagated.

Recommended Resolution.

- Ensure pin geometry overlaps metal of the intended net.
- Align naming conventions across abstract views.
- Export pins correctly from P&R.

Example Appearance.

LVS_ERR019: The pin {} of instance of the layout {} is unconnected, this will lead to LVS mismatches

1.6.9 LVS_ERR020

Message Template.

Mismatch in pins and ports size for instance {}

Meaning.

The count of pins/ports between compared entities differs (e.g., layout vs netlist or left vs right schematic).

Impact.

Graph isomorphism cannot be established; LVS comparison terminates with mismatch.

Typical Root Causes.

- Macro version mismatch (extra or removed ports).
- Conditionally compiled pins in netlist.
- Incorrect view (symbol vs implementation) used.

Recommended Resolution.

- Align library versions for both sides.
- Regenerate symbols/abstracts.
- Audit pin lists and update constraints.

Example Appearance.

LVS_ERR020: Mismatch in pins and ports size for instance {}

1.6.10 LVS_ERR023

Message Template.

LVS has already been run, to re-run, create a fresh DB

Meaning.

LVS is being invoked on a database where LVS results already exist, and the flow requires a fresh DB for a clean run.

Impact.

Stale artifacts may contaminate results; tool refuses to run.

Typical Root Causes.

- Re-run without clearing the DB.
- Sharing a DB across multiple runs.

Recommended Resolution.

- Create a fresh DB with `init_tool_db`.
- Use a new run directory per attempt.

Example Appearance.

LVS_ERR023: LVS has already been run, to re-run, create a fresh DB

1.6.11 LVS_ERR024

Message Template.

LVS DB has not been set, please initialize LVS DB to run lvs

Meaning.

The LVS module's database context is not initialized.

Impact.

LVS cannot load inputs or write outputs; run aborted.

Typical Root Causes.

- Forgot init_tool_db/set_tool_db.
- DB deleted or path moved.

Recommended Resolution.

- Initialize DB and set it active.
- Verify permissions and paths.

Example Appearance.

```
LVS_ERR024:  LVS DB has not been set, please initialize LVS DB to  
run lvs
```

1.6.12 LVS_ERR025

Message Template.

Required pin {} of instance {} is unconnected

Meaning.

A required pin reported by the LVS engine is unconnected, indicating incomplete connectivity for the instance.

Impact.

Mismatch at the device interface; LVS equivalence fails.

Typical Root Causes.

- Schematic pin present but layout metal missing.
- Name or direction mismatch prevents binding.
- Power/ground pins not tied correctly.

Recommended Resolution.

- Add missing connection in layout.
- Normalize pin names across views.
- Ensure P/G pins are connected per PDK.

Example Appearance.

LVS_ERR025: Required pin {} of instance {} is unconnected

1.6.13 LVS_ERR026

Message Template.

Required pin {} of instance {} is unconnected

Meaning.

A required pin reported by the LVS engine is unconnected, indicating incomplete connectivity for the instance.

Impact.

Mismatch at the device interface; LVS equivalence fails.

Typical Root Causes.

- Schematic pin present but layout metal missing.
- Name or direction mismatch prevents binding.
- Power/ground pins not tied correctly.

Recommended Resolution.

- Add missing connection in layout.
- Normalize pin names across views.
- Ensure P/G pins are connected per PDK.

Example Appearance.

LVS_ERR026: Required pin {} of instance {} is unconnected

1.6.14 LVS_ERR027

Message Template.

Required pin {} of instance {} is unconnected

Meaning.

A required pin reported by the LVS engine is unconnected, indicating incomplete connectivity for the instance.

Impact.

Mismatch at the device interface; LVS equivalence fails.

Typical Root Causes.

- Schematic pin present but layout metal missing.
- Name or direction mismatch prevents binding.
- Power/ground pins not tied correctly.

Recommended Resolution.

- Add missing connection in layout.
- Normalize pin names across views.
- Ensure P/G pins are connected per PDK.

Example Appearance.

LVS_ERR027: Required pin {} of instance {} is unconnected

1.6.15 LVS_ERR028

Message Template.

Required pin {} of instance {} is unconnected

Meaning.

A required pin reported by the LVS engine is unconnected, indicating incomplete connectivity for the instance.

Impact.

Mismatch at the device interface; LVS equivalence fails.

Typical Root Causes.

- Schematic pin present but layout metal missing.
- Name or direction mismatch prevents binding.
- Power/ground pins not tied correctly.

Recommended Resolution.

- Add missing connection in layout.
- Normalize pin names across views.
- Ensure P/G pins are connected per PDK.

Example Appearance.

LVS_ERR028: Required pin {} of instance {} is unconnected

1.7 MLVS

1.7.1 MLVS_ERR002

Message Template.

Mismatch for the Gate Pin of macro {}

Meaning.

Macro LVS pin mismatch at specific terminals (e.g., Gate, Source). The pin type does not align between macro representation and extracted view.

Impact.

Macro equivalence fails; downstream LVS may cascade mismatches.

Typical Root Causes.

- Symbol/abstract uses different pin naming or polarity.
- Process corner variant with different pins.

Recommended Resolution.

- Unify pin naming across macro views.
- Use correct macro variant for node.

Example Appearance.

MLVS_ERR002: Mismatch for the Gate Pin of macro {}

1.7.2 MLVS_ERR003

Message Template.

Mismatch for the Source Pin of macro {}

Meaning.

Macro LVS pin mismatch at specific terminals (e.g., Gate, Source). The pin type does not align between macro representation and extracted view.

Impact.

Macro equivalence fails; downstream LVS may cascade mismatches.

Typical Root Causes.

- Symbol/abstract uses different pin naming or polarity.
- Process corner variant with different pins.

Recommended Resolution.

- Unify pin naming across macro views.
- Use correct macro variant for node.

Example Appearance.

MLVS_ERR003: Mismatch for the Source Pin of macro {}

1.7.3 MLVS_ERR006

Message Template.

Macros cdl file not specified, MLVS cannot proceed

Meaning.

Macro CDL file not specified for MLVS run.

Impact.

Cannot expand macro internals; MLVS aborted.

Typical Root Causes.

- CDL path missing.
- PDK setup incomplete.

Recommended Resolution.

- Provide CDL path.
- Verify PDK installation.

Example Appearance.

MLVS_ERR006: Macros cdl file not specified, MLVS cannot proceed

1.7.4 MLVS_ERR007

Message Template.

Module Spice file not specified, MLVS cannot proceed

Meaning.

Macro SPICE file not specified for MLVS run.

Impact.

No reference netlist to compare; MLVS cannot proceed.

Typical Root Causes.

- Missing SPICE path.
- Wrong file referenced.

Recommended Resolution.

- Set SPICE file path.
- Check file exists and parses.

Example Appearance.

MLVS_ERR007: Module Spice file not specified, MLVS cannot proceed

1.7.5 MLVS_ERR009

Message Template.

Module {} not found in Layout DB for {}, MLVS cannot proceed

Meaning.

Macro top module not found in layout DB.

Impact.

MLVS cannot correlate macro instance.

Typical Root Causes.

- Wrong macro name.
- Layout import incomplete.

Recommended Resolution.

- Verify macro cell naming.
- Re-import GDS with macro library.

Example Appearance.

MLVS_ERR009: Module {} not found in Layout DB for {}, MLVS cannot proceed

1.7.6 MLVS_ERR023

Message Template.

MLVS has already been run, to re-run, create a fresh DB

Meaning.

MLVS was already run in this DB; clean re-run required.

Impact.

Stale markers confuse results.

Typical Root Causes.

- Re-run without fresh DB.
- Automation reusing workspace.

Recommended Resolution.

- Create new DB.
- Purge prior MLVS artifacts.

Example Appearance.

MLVS_ERR023: MLVS has already been run, to re-run, create a fresh DB

1.7.7 MLVS_ERR024

Message Template.

MLVS DB has not been set, please initialize MLVS DB to run mlvs

Meaning.

MLVS DB not set for current session.

Impact.

Run cannot start.

Typical Root Causes.

- init/set DB missing.
- Path invalid.

Recommended Resolution.

- Initialize and select DB.
- Fix paths.

Example Appearance.

```
MLVS_ERR024: MLVS DB has not been set, please initialize MLVS DB  
to run mlvs
```

1.8 SVS

1.8.1 SVS_ERR001

Message Template.

No perfect left-side matching found!

Meaning.

No perfect matching found on left/right side during bipartite matching of instances.

Impact.

SVS cannot produce a 1:1 correspondence.

Typical Root Causes.

- Ambiguous naming or topology differences.
- Graph isomorphism fails.

Recommended Resolution.

- Constrain matching with attributes.
- Ensure consistent hierarchy and parameters.

Example Appearance.

SVS_ERR001: No perfect left-side matching found!

1.8.2 SVS_ERR002

Message Template.

No perfect right-side matching found!

Meaning.

No perfect matching found on left/right side during bipartite matching of instances.

Impact.

SVS cannot produce a 1:1 correspondence.

Typical Root Causes.

- Ambiguous naming or topology differences.
- Graph isomorphism fails.

Recommended Resolution.

- Constrain matching with attributes.
- Ensure consistent hierarchy and parameters.

Example Appearance.

SVS_ERR002: No perfect right-side matching found!

1.8.3 SVS_ERR005

Message Template.

The instance {} of the schematic remained unmatched

Meaning.

General SVS configuration or matching error.

Impact.

SVS halted or mismatch flagged.

Typical Root Causes.

- Missing inputs.
- Structural mismatch.

Recommended Resolution.

- Provide required files.
- Align schematics.

Example Appearance.

SVS_ERR005: The instance {} of the schematic remained unmatched

1.8.4 SVS_ERR006

Message Template.

Macros cdl file not specified, SVs cannot proceed

Meaning.

Macro CDL library required by SVS is missing.

Impact.

SVS cannot resolve macro pin/device details.

Typical Root Causes.

- No CDL path set.
- CDL file not present for technode.

Recommended Resolution.

- Provide macro CDL path.
- Validate file exists and matches node.

Example Appearance.

SVS_ERR006: Macros cdl file not specified, SVs cannot proceed

1.8.5 SVS_ERR009

Message Template.

Module {} not found in Layout DB for {}, SVS cannot proceed

Meaning.

Top module not found in layout DB context when preparing SVS comparison.

Impact.

SVS cannot correlate hierarchy to schematic views.

Typical Root Causes.

- Wrong top cell.
- Layout not loaded.

Recommended Resolution.

- Set correct top or load layout DB.
- Confirm hierarchy names.

Example Appearance.

SVS_ERR009: Module {} not found in Layout DB for {}, SVS cannot proceed

1.8.6 SVS_ERR010

Message Template.

Module Verilog file not specified, svcs cannot proceed

Meaning.

Verilog files required for one/both SVS sides are not specified.

Impact.

SVS cannot build comparison graphs.

Typical Root Causes.

- Missing path arguments.
- Typo in file names.

Recommended Resolution.

- Provide required Verilog file(s).
- Check readability and format.

Example Appearance.

SVS_ERR010: Module Verilog file not specified, svcs cannot proceed

1.8.7 SVS_ERR011

Message Template.

Module Verilog file not specified, svcs cannot proceed

Meaning.

Verilog files required for one/both SVS sides are not specified.

Impact.

SVS cannot build comparison graphs.

Typical Root Causes.

- Missing path arguments.
- Typo in file names.

Recommended Resolution.

- Provide required Verilog file(s).
- Check readability and format.

Example Appearance.

SVS_ERR011: Module Verilog file not specified, svcs cannot proceed

1.8.8 SVS_ERR012

Message Template.

Module Spice file not specified, svcs cannot proceed

Meaning.

SPICE file(s) required by SVS are not specified.

Impact.

SVS cannot run in SPICE-based path.

Typical Root Causes.

- Missing SPICE output.
- Incorrect CLI usage.

Recommended Resolution.

- Generate or set SPICE file(s).
- Re-run after providing paths.

Example Appearance.

SVS_ERR012: Module Spice file not specified, svcs cannot proceed

1.8.9 SVS_ERR013

Message Template.

Module Spice file not specified, svb cannot proceed

Meaning.

SPICE file(s) required by SVS are not specified.

Impact.

SVS cannot run in SPICE-based path.

Typical Root Causes.

- Missing SPICE output.
- Incorrect CLI usage.

Recommended Resolution.

- Generate or set SPICE file(s).
- Re-run after providing paths.

Example Appearance.

SVS_ERR013: Module Spice file not specified, svb cannot proceed

1.8.10 SVS_ERR020

Message Template.

Mismatch in pins and ports size for instance {}

Meaning.

Instance-level mismatch in the number of pins or ports between compared schematics.

Impact.

Graph matching fails; SVS not equivalent.

Typical Root Causes.

- Different library versions.
- Conditional ports exist in one side only.

Recommended Resolution.

- Normalize library versions.
- Regenerate symbols/ports.

Example Appearance.

SVS_ERR020: Mismatch in pins and ports size for instance {}

1.8.11 SVS_ERR023

Message Template.

SVS has already been run, to re-run, create a fresh DB

Meaning.

SVS already run in this DB; requires fresh DB for clean re-run.

Impact.

Stale artifacts may mislead analysis.

Typical Root Causes.

- Reused DB.
- Incomplete cleanup.

Recommended Resolution.

- Create a new DB for SVS run.
- Automate workspace rotation.

Example Appearance.

SVS_ERR023: SVS has already been run, to re-run, create a fresh DB

1.8.12 SVS_ERR024

Message Template.

SVS DB has not been set, please initialize SVS DB to run svcs

Meaning.

SVS DB not initialized.

Impact.

Run cannot proceed.

Typical Root Causes.

- DB not created/selected.
- Path invalid.

Recommended Resolution.

- Initialize and set DB.
- Fix paths.

Example Appearance.

SVS_ERR024: SVS DB has not been set, please initialize SVS DB to
run svcs

1.8.13 SVS_ERR031

Message Template.

Mismatch in the number of instances , Left = {} , Right= {}

Meaning.

Structural mismatch: instance counts, pin counts, port counts, or pin-to-net mapping differ between schematics.

Impact.

SVS comparison fails; designs are not equivalent.

Typical Root Causes.

- Divergent versions of IP.
- Net aliasing or rename without propagation.

Recommended Resolution.

- Reconcile IP versions.
- Apply consistent renaming and regenerate netlists.

Example Appearance.

SVS_ERR031: Mismatch in the number of instances , Left = {} , Right=
{}

1.8.14 SVS_ERR032

Message Template.

Mismatch in the number of pins for the instance {}

Meaning.

Structural mismatch: instance counts, pin counts, port counts, or pin-to-net mapping differ between schematics.

Impact.

SVS comparison fails; designs are not equivalent.

Typical Root Causes.

- Divergent versions of IP.
- Net aliasing or rename without propagation.

Recommended Resolution.

- Reconcile IP versions.
- Apply consistent renaming and regenerate netlists.

Example Appearance.

SVS_ERR032: Mismatch in the number of pins for the instance {}

1.8.15 SVS_ERR033

Message Template.

Mismatch in the number of ports for the instance {}

Meaning.

Structural mismatch: instance counts, pin counts, port counts, or pin-to-net mapping differ between schematics.

Impact.

SVS comparison fails; designs are not equivalent.

Typical Root Causes.

- Divergent versions of IP.
- Net aliasing or rename without propagation.

Recommended Resolution.

- Reconcile IP versions.
- Apply consistent renaming and regenerate netlists.

Example Appearance.

SVS_ERR033: Mismatch in the number of ports for the instance {}

1.8.16 SVS_ERR034

Message Template.

Mismatch in the number of pin to net matching for the instance {}

Meaning.

Structural mismatch: instance counts, pin counts, port counts, or pin-to-net mapping differ between schematics.

Impact.

SVS comparison fails; designs are not equivalent.

Typical Root Causes.

- Divergent versions of IP.
- Net aliasing or rename without propagation.

Recommended Resolution.

- Reconcile IP versions.
- Apply consistent renaming and regenerate netlists.

Example Appearance.

SVS_ERR034: Mismatch in the number of pin to net matching for the instance {}

1.9 XOR

1.9.1 XOR_ERR001

Message Template.

XOR Mismatch is found for a polygon on the layer {}

Meaning.

Geometric XOR found a mismatch polygon on a specific layer.

Impact.

Masks differ between reference and test; fabrication risk if unintended.

Typical Root Causes.

- Missing or extra shapes in one database.
- Rounding/quantization differences after OPC or export.

Recommended Resolution.

- Inspect mismatch geometry and fix source database.
- Align export settings and grid.

Example Appearance.

XOR_ERR001: XOR Mismatch is found for a polygon on the layer {}

1.9.2 XOR_ERR009

Message Template.

Module {} not found in Layout DB for {}, XOR cannot proceed

Meaning.

The specified top module was not found in the layout DB while preparing XOR inputs.

Impact.

XOR cannot align hierarchies; run blocked.

Typical Root Causes.

- Wrong top name or missing GDS2 import.
- Incorrect library mapping.

Recommended Resolution.

- Verify top cell name.
- Re-import GDS with full hierarchy.

Example Appearance.

XOR_ERR009: Module {} not found in Layout DB for {}, XOR cannot proceed

1.9.3 XOR_ERR023

Message Template.

XOR has already been run, to re-run, create a fresh DB

Meaning.

An XOR run already exists in this DB; clean DB required for re-run.

Impact.

Old markers would pollute the result; run blocked.

Typical Root Causes.

- Re-run in same workspace.
- Leftover artifacts from previous job.

Recommended Resolution.

- Create new DB.
- Purge XOR outputs before re-run.

Example Appearance.

XOR_ERR023: XOR has already been run, to re-run, create a fresh DB

1.9.4 XOR_ERR024

Message Template.

XOR DB has not been set, please initialize XOR DB to run xor_check

Meaning.

XOR DB is not initialized.

Impact.

Run cannot start.

Typical Root Causes.

- init_tool_db not called.
- DB not active.

Recommended Resolution.

- Initialize and set DB.
- Check write permissions.

Example Appearance.

XOR_ERR024: XOR DB has not been set, please initialize XOR DB to
run xor_check