ArcGIS® Geodatabase Topology Rules

1. **Polygon**
   - **Contains point**
     - Lines in one feature class or subtype must not overlap with a point in another feature class or subtype.
   - **Boundary must be covered by**
     - Polygons in one feature class or subtype must be covered by points in another feature class or subtype.
   - **Must be covered by feature class of**
     - The polygons in one feature class or subtype must be covered by lines in the same feature class or subtype.

2. **Point**
   - **Must be properly inside polygons**
     - Points in one feature class or subtype must be properly inside polygons in another feature class or subtype.
   - **Must be covered by boundary of**
     - Points in one feature class or subtype must be covered by the boundary of polygons in another feature class or subtype.

3. **Line**
   - **Must not overlap**
     - Line errors are encountered when overlapping lines in one feature class or subtype.
   - **Must not have dangles**
     - Use this rule when you want lines in one feature class or subtype to be connected to one another.
   - **Must not have pseudocorners**
     - Use this rule to clean up stale data with inappropriate nodal structures.
   - **Must not self overlap**
     - Use this rule when lines should never occupy the same space with other lines.
   - **Must not self intersect**
     - Use this rule when you want lines to touch at their ends without touching at other locations.
   - **Must be single part**
     - Use this rule when you want line segments to be connected to one another with no breaks.
   - **Must be covered by feature class of**
     - Lines in one feature class or subtype must be covered by lines in the same feature class or subtype.
   - **Must cover each other**
     - Use this rule when you want the polygons from one feature class or subtype to cover the polygons from another feature class or subtype.
   - **Must overlap with**
     - Polygon errors are encountered when polygons in one feature class or subtype overlap with polygons in another feature class or subtype.
   - **Must overlap**
     - Must not overlap with another feature class or subtype.
   - **Must be larger than cluster tolerance**
     - This rule is applied to line and polygon features that participate in the topology.
   - **Endpoint must be covered by**
     - Use this rule when you want to ensure that the endpoints of lines are covered by the endpoints of other lines.
   - **Point must be covered by line**
     - Use this rule when you want points that are connected to lines to be associated with that line.

4. **Cluster Tolerance**
   - **Points in one feature class or subtype**
     - Use this rule when points are connected to one another in the same feature class or subtype.
   - **Lines in one feature class or subtype**
     - Use this rule when lines are connected to one another in the same feature class or subtype.

5. **Example of a valid topology rules**
   - The rule that you use should be able to create a single topology that is valid in all cases.

6. **Example of a case of the rule**
   - The rule must be able to create a single topology that is valid in all cases.

7. **Generalized description of when to use this rule**
   - Use this rule when you want lines to be composed of a single point for a contiguous feature.

8. **Violation of the rules that may occur**
   - Failures of the rule may occur where polygons in one feature class or subtype are not covered by all the polygons of another feature class or subtype.
   - Failures of the rule may occur where two features do not overlap.

9. **Considerations**
   - The rule must be able to create a single topology that is valid in all cases.
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10. **Conclusion**
    - The rule must be able to create a single topology that is valid in all cases.