# Dynamic Partition

Using Dynamic Session Partitioning capability, Power Center can dynamically decide the degree of parallelism. The [Integration Service](http://www.disoln.org/2012/09/understand-informatica-powercenter-Workflow-Designer.html) scales the number of session partitions at run time based on factors such as source database partitions or the number of CPUs on the node resulting significant [performance improvement](http://www.disoln.org/search/label/Performance%20Tips?&max-results=15).

## Dynamic Partitioning Methods

* **Based on source partitioning:** Determines the number of partitions using database partition information. The number of partitions is the maximum of the number of partitions at the source.
* **Based on number of CPUs:** Sets the number of partitions equal to the number of CPUs on the node that prepares the session. If the session is configured to run on a grid, dynamic partitioning sets the number of partitions equal to the number of CPUs on the node that prepares the session multiplied by the number of nodes in the grid.
* **Based on number of nodes in grid:** Sets the partitions to the number of nodes in the grid running the session. If you configure this option for sessions that do not run on a grid, the session runs in one partition and logs a message in the session log.
* **Based on number of partitions:** Sets the partitions to a number that you define in the Number of Partitions attribute. Use the *$DynamicPartitionCount* session parameter, or enter a number greater than 1.

## Dynamic Partitioning with Different Partition Types

**Pass-through partitioning :** If you change the number of partitions at a partition point, the number of partitions in each pipeline stage changes. If you use pass-through partitioning with a relational source, the session runs in one partition in the stage.

**Key range partitioning :** You must define a closed range of numbers or date keys to use dynamic partitioning. Dynamic partitioning does not scale partitions with key range partitioning on relational targets.

**Database partitioning :** When you use database partitioning, the Integration Service creates session partitions based on the source database partitions. This can be used only with Oracle and IBM DB2 sources.

**Hash auto-keys, Hash user keys, Round robin :** Use hash user keys, hash auto-keys, and round-robin partition types to distribute rows with dynamic partitioning. Use hash user keys and hash auto-keys partitioning when you want the Integration Service to distribute rows to the partitions by group. Use round-robin partitioning when you want the Integration Service to distribute rows evenly to partitions.

## Rules and Guidelines for Dynamic Partitioning

Use the following rules and guidelines with dynamic partitioning.

* Dynamic partitioning uses the same connection for each partition.
* You cannot use dynamic partitioning with XML sources and targets.
* Sessions that use SFTP fail if you enable dynamic partitioning.
* When you set dynamic partitioning to a value other than disabled, and you manually partition the session on the Mapping tab, you invalidate the session.