SQL Server Recovery Models

Recovery Model	Description	Transaction Log Behavior	Point-in-Time Recovery	Use Cases	Backup Considerations
Simple	The least complex recovery model, with minimal log maintenance.	- Transaction log space is automatically reclaimed to keep space requirements small. - Minimal logging for bulk operations.	**No**: Only recover to the end of the last backup.	- Best for development or test environments. - Databases where point-in-time recovery is not necessary. - Read-only databases.	- Full backups are required regularly. - Differential backups reduce the amount of data to be restored. - Transaction log backups are not possible or needed.
Full	The most comprehensive recovery model, with complete logging of all transactions.	- All transactions are fully logged in the transaction log. - Log space is not reclaimed until a transaction log backup is performed.	**Yes**: Recover to any point in time.	- Production databases where data integrity and recovery are critical. - Databases with frequent changes. - Situations requiring point-in-time recovery.	- Full backups should be taken regularly. - Transaction log backups are required to prevent the transaction log from growing too large. - Differential backups can be used.

Bulk-Logged	A middle ground between Simple and Full, offering reduced log space usage while maintaining some recovery options.	- Minimal logging for bulk operations, reducing log space usage. - Fully logs non-bulk operations.	**Yes**, but limited: Point-in-time recovery is not possible if bulk operations occurred since the last log backup.	- Databases with large bulk operations, like bulk imports or index rebuilds. - Environments where reduced log space usage is desirable.	- Full backups should be taken regularly. - Transaction log backups are required. - Cannot recover to a point in time if bulk operations occurred; recover to the end of the log backup.

Key Points:

- **Simple Recovery Model** is ideal when minimal logging and simple restore procedures are sufficient. However, it does not allow for point-in-time recovery, making it unsuitable for mission-critical production databases.
- **Full Recovery Model** is the most comprehensive, ensuring that every transaction is logged and allowing for complete point-in-time recovery. It is the best choice for critical databases where data integrity is paramount.
- **Bulk-Logged Recovery Model** offers a compromise between the Simple and Full models, reducing log space usage during large bulk operations while still allowing for some level of recovery. However, its recovery options are limited compared to the Full model.

Each model has its own benefits and trade-offs, so the choice of recovery model should align with your specific requirements for data integrity, recovery objectives, and performance.