**SQL Server Database Patching Checklist**

**Pre-Patching Checks (Preparation Phase)**

1. **Approval & Planning**
   * Obtain necessary approvals from business and stakeholders.
   * Schedule patching during the maintenance window.
   * Check for compatibility of the patch with SQL Server version and applications.
2. **Backup & Recovery Readiness**
   * Take full database backups (FULL, DIFF, T-LOG).
   * Backup master, msdb, model, and tempdb databases.
   * Backup SQL Server configuration (sp\_configure settings, sys.dm\_server\_registry).
   * Backup SQL Agent Jobs, Linked Servers, and SSIS packages.
   * Snapshot/Backup OS and SQL Server binaries if VM-based.
3. **Check Current System Health**
   * Verify database consistency (DBCC CHECKDB).
   * Run performance baseline reports (CPU, memory, disk I/O).
   * Capture running queries and active sessions (sp\_who2, sys.dm\_exec\_requests).
   * Check SQL Server error logs and Windows Event logs for issues.
   * Validate AlwaysOn Availability Group, Replication, and Mirroring status.
   * Check disk space availability (xp\_fixeddrives).
   * Validate SQL Server Agent and scheduled jobs.
4. **Disable Jobs & Features**
   * Disable SQL Server Agent jobs and maintenance tasks.
   * Stop dependent applications and services.
   * Disable database replication, log shipping, or AlwaysOn if applicable.
   * Ensure no active database transactions are running.

**Patching Process (Execution Phase)**

1. **Apply the SQL Server Patch**
   * Run SQL Server setup and choose the correct patch.
   * Follow on-screen instructions and monitor for errors.
   * Validate patch installation using SELECT @@VERSION.
2. **Monitor Upgrade Progress**
   * Track patch installation via setup logs (C:\Program Files\Microsoft SQL Server\xxxx\Setup Bootstrap\Log).
   * Ensure no errors or warnings are encountered.

**Post-Patching Checks (Validation Phase)**

1. **Verify SQL Server Services**
   * Ensure SQL Server services and SQL Server Agent are running.
   * Check SQL Server error logs for startup errors.
   * Validate cluster failover if in a cluster environment.
2. **Database Health & Performance**
   * Run DBCC CHECKDB on critical databases.
   * Execute baseline performance checks (CPU, Memory, Disk).
   * Check replication, mirroring, log shipping, and AlwaysOn availability groups.
3. **Validate Applications & Connectivity**
   * Test application connections to the database.
   * Run test queries to verify query execution performance.
   * Ensure Linked Servers, SSIS packages, and SQL Jobs are working fine.
4. **Re-Enable Jobs & Services**
   * Enable SQL Agent jobs and verify execution.
   * Start any dependent applications or services.
5. **Final Backup & Documentation**
   * Take a new full backup post-patching.
   * Document patching steps, issues, resolutions, and rollback plan if needed.

**Rollback Plan (In Case of Failure)**

1. Restore the system/database backups.
2. Revert to the previous SQL Server version (if needed).
3. Validate rollback success with application teams.

This checklist ensures a **smooth and risk-free** SQL Server patching process. Let me know if you need modifications based on your environment! 🚀