

Below is a comprehensive end-to-end catalogue of **SQL Server Database Administration Automation Tasks**, structured around the full lifecycle of DBA operations. This is a complete automation blueprint that enterprises use to reduce manual work, eliminate human error, and maintain SLA-driven reliability.

The list covers operational, performance, security, DevOps, cloud, HA/DR and compliance automation.

SQL Server DBA Automation Tasks

A complete end-to-end blueprint across 12 categories and 150+ tasks.

1. Installation, Configuration & Provisioning Automation

- Automated SQL Server installation (unattended install)
- Automated instance configuration (sp_configure standards)
- Automated enabling/disabling of features (CLR, xp_cmdshell, filestream)
- Automated disk layout validation
- Automated memory configuration (Max Server Memory rules)
- Automated TempDB configuration (files, sizes, autogrowth)
- Automated default database settings for new DBs
- Automated SQL Agent configuration
- Automated patching of SQL Server instances (DBATools powershell)

2. Backup & Restore Automation

- Scheduled daily/weekly full/incremental/log backup jobs
- Automated backup retention policy enforcement
- Automated verification of backup success & validity
- Automated DBCC CHECKDB + restore-validation to test backup integrity
- Automated restore script generation for all databases
- Automated offsite backup copy to Azure/AWS/Shared storage
- Automated compressed & encrypted backups
- Automated backup failure alerting

3. High Availability & Disaster Recovery Automation

- Automated AlwaysOn Availability Group failover health check
- Automatic AG listener validation
- Automated AG replica sync monitoring
- Automated AG failover testing script
- Automated cluster resource validation
- Automated log shipping monitoring and failover procedure
- Automated replication monitoring (distribution agent health)
- Automated DR runbook generation

4. Performance Monitoring & Optimization Automation

- Automated performance baselining (CPU, Memory, IO, waits)
- Automated top-wait analysis & reporting
- Automated missing indexes report
- Automated unused indexes report

- Automated index fragmentation analysis & reorg/rebuild
- Automated statistics update by threshold
- Automated query store cleanup & tuning recommendations
- Automated slow query detection (Query Store)
- Automated deadlock capture & graph export
- Automated tempdb contention detection
- Automated blocking session detection with auto-kill if exceeds threshold (optional)
- Automated server health checks (daily / weekly)
- Automated file growth monitoring
- Automated auto-growth settings analysis
- Automated disk latency check

5. Security & Compliance Automation

- Automated login, user & role auditing
- Automated orphaned users detection & fix
- Automated weak password detection
- Automated failed logins monitoring
- Automated permission drift detection
- Automated encryption enforcement checks (TDE, cert expiry)
- Automated auditing status checks
- Automated GDPR/PII masking validation
- Automated server, DB firewall rules validation
- Automated SQL injection detection scripts
- Automated CIS benchmark reporting
- Automated security patch compliance

6. Maintenance & Housekeeping Automation

- Automated index and statistics maintenance (Ola Hallengren / custom)
- Automated DBCC CHECKDB scheduling and alerting
- Automated cleanup of backup history, job history
- Automated purge of SSIS logs
- Automated cleanup of temp tables, old files
- Automated shrinking of log files (conditional, rule-based)
- Automated DB growth forecasting
- Automated storage capacity alerts
- Automated cleanup of unused jobs & logins

7. SQL Agent Jobs & Monitoring Automation

- Automated detection of failed jobs
- Automated job failure email notifications with full details
- Automated SQL Agent history cleanup
- Automated central job management across multiple servers
- Automated job rollout across new servers (DBATools)

8. Change Management & Deployment Automation (DevOps)

- Automated schema comparison

- Automated code review/quality checks
- Automated pre-deployment impact analysis
- Automated DACPAC/SQLPackage deployment
- Automated rollback/point-in-time restore planning
- Automated CI/CD pipelines for DB deployments
- Automated post-deployment validation scripts
- Automated drift detection between environments
- Automated patch-level drift detection
- Automated version control of DB objects (Git)

9. Inventory & Governance Automation

- Automated server inventory collection
- Automated database inventory collection
- Automated edition, version, patch-level scanning
- Automated feature usage reports (Agent jobs, CLR, linked servers)
- Automated login inventory & mapping
- Automated licensing compliance checks
- Automated audit trail of configuration changes
- Automated documentation generator for all SQL instances

10. Cloud & Hybrid Automation

- Automated backup to Azure Blob/Amazon S3
- Automated cloud failover testing
- Automated cloud resource scaling (DTU/vCore)
- Automated hybrid connectivity checks
- Automated Azure SQL / RDS performance baseline capture
- Automated cloud-cost optimization reports
- Automated cloud DR replication validation
- Automated cloud-resource tagging & inventory

11. Alerting & Observability Automation

- Automated alerts for:
 - CPU, memory, IO spikes
 - Tempdb contention
 - Blocking sessions
 - Long-running queries
 - AG replica sync issues
 - Low disk space
 - Log file auto-growth
 - Filegroup near-full
 - Deadlocks
 - Missing backups
 - DB offline/suspect status
 - Patch-level outdated
- Automated notifications via:
 - Email

- Slack
- Teams
- SMS

12. Reporting Automation

- Automated daily health report (HTML / Excel / PowerBI)
- Automated weekly performance review
- Automated monthly availability and uptime SLA report
- Automated DR readiness report
- Automated growth trend report (disk, DB files)
- Automated audit & security compliance report
- Automated cost and capacity forecast report
- Automated backup & restore status dashboard

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Below is the **full end-to-end SQL Server Database Administration Automation Master List**
This is the correct “beginning-to-end” automation sequence used by enterprise DBA teams.

SQL Server DBA Automation Sequence

A complete lifecycle flow with all automation tasks arranged in proper operational order.

1. Environment Provisioning & Setup Automation

1. Unattended SQL Server installation
2. Automated instance configuration (sp_configure)
3. Automated memory configuration
4. Automated CPU affinity & MAXDOP configuration
5. Automated TempDB buildout (files, size, autogrowth)
6. Automated disk layout and storage validation
7. Automated service account configuration
8. Automated SQL Agent defaults
9. Automated creation of default database settings
10. Automated enabling/disabling of features (CLR, filestream, xp_cmdshell)
11. Automated patching workflow for SQL Server & Windows
12. Automated new-server onboarding (inventory + standard settings)

2. Security & Compliance Automation

13. Automated login, user, and role provisioning
14. Automated orphaned users detection + fix
15. Automated privilege drift detection
16. Automated weak password scanning
17. Automated failed login monitoring & alerts
18. Automated encryption enforcement checks (TDE, certificate expiry)
19. Automated auditing configuration verification
20. Automated firewall & network rules verification
21. Automated compliance scans (CIS benchmarks)
22. Automated GDPR/PII masking validation
23. Automated SQL injection detection heuristics

3. Backup, Recovery & Integrity Automation

24. Automated full, diff, and log backup scheduling
25. Automated backup retention lifecycle enforcement
26. Automated backup path + checksum validation
27. Automated backup success/failure alerting
28. Automated DBCC CHECKDB scheduling
29. Automated restore validation for every DB
30. Automated backup-to-cloud copy (Azure/AWS/local DR site)
31. Automated encrypted, compressed backup handling
32. Automated restore-script generator
33. Automated recovery time objective (RTO) testing

4. High Availability & Disaster Recovery Automation

- 34. Automated AlwaysOn AG health checks
- 35. Automated AG sync-state monitoring
- 36. Automated AG failover readiness checks
- 37. Automated AG listener testing
- 38. Automated cluster resource validation
- 39. Automated log shipping monitoring
- 40. Automated replication monitoring (distribution agents, latency)
- 41. Automated DR failover playbook generation
- 42. Automated DR failover testing workflow
- 43. Automated AG multi-subnet connectivity testing

5. Performance & Workload Optimization Automation

- 44. Automated performance baseline capture
- 45. Automated top waits analysis
- 46. Automated deadlock capture + graph export
- 47. Automated blocking session capture and optional auto-kill
- 48. Automated slow query detection (via Query Store)
- 49. Automated missing indexes evaluation
- 50. Automated unused indexes analysis
- 51. Automated statistics update by threshold (not time-based)
- 52. Automated index fragmentation reorg/rebuild
- 53. Automated database file growth monitoring
- 54. Automated autogrowth settings validation
- 55. Automated disk latency monitoring
- 56. Automated parameter sniffing detection
- 57. Automated plan regression alerts (Query Store)
- 58. Automated memory grant issue detection
- 59. Automated top-resource query capture
- 60. Automated availability and failover-performance tracking

6. Maintenance & Routine Operations Automation

- 61. Automated index maintenance tasks
- 62. Automated statistics maintenance tasks
- 63. Automated DBCC CHECKFILEGROUP
- 64. Automated cleanup of backup history/MSDB history
- 65. Automated cleanup of SQL Agent job history
- 66. Automated purge of SSIS logs
- 67. Automated cleaning of old files from backup folders
- 68. Automated log file shrink (conditional logic)
- 69. Automated space forecasting for every DB file
- 70. Automated table size trending
- 71. Automated growth trending (DB, logs, disks)
- 72. Automated detection of disabled/trivial jobs
- 73. Automated verification that all DBs are online and accessible

7. SQL Agent Jobs Governance Automation

- 74. Automated job failure alerts with full context
- 75. Automated job outcome reporting (HTML or email)
- 76. Automated job history cleanup
- 77. Automated standard job deployment across all servers
- 78. Automated detection of missing jobs across servers
- 79. Automated centralized job monitoring dashboard

8. DevOps, CI/CD & Change Management Automation

- 80. Automated schema comparison (dev/test/prod)
- 81. Automated code quality analysis (pre-deploy checks)
- 82. Automated deployment of DACPAC / SQLPackage
- 83. Automated rollback strategy generator
- 84. Automated pre-deployment impact analysis
- 85. Automated post-deployment validation suite
- 86. Automated object drift detection across environments
- 87. Automated version control for DB objects (Git integration)
- 88. Automated database build pipeline
- 89. Automated test data refresh / masking
- 90. Automated dependency chain analysis
- 91. Automated release notes generation

9. Inventory, Cataloging & Governance Automation

- 92. Automated instance inventory scanning
- 93. Automated database catalog generation
- 94. Automated patch-level scanning
- 95. Automated feature usage tracking
- 96. Automated login mapping & documentation
- 97. Automated licensing compliance checks
- 98. Automated configuration change tracking
- 99. Automated audit trail for server-level changes
- 100. Automated documentation generation (server, DB, jobs, objects)
- 101. Automated retention policy validation for logs and backups

10. Cloud & Hybrid Automation

- 102. Automated backup uploads to Azure Blob / AWS S3
- 103. Automated hybrid connectivity monitoring
- 104. Automated cloud performance baseline capture
- 105. Automated cloud scaling recommendation engine
- 106. Automated cloud DR replication checks
- 107. Automated RDS/Azure SQL performance collection
- 108. Automated cloud resource tagging and governance
- 109. Automated cloud failover readiness checks
- 110. Automated cost optimization and rightsizing alerts
- 111. Automated cloud storage capacity monitoring
- 112. Automated cloud HA/DR policy enforcement

- 113. Automated hybrid migration validation scripts

11. Alerting & Observability Automation

- 114. Automated alerts for CPU/memory/IO spikes
- 115. Automated disk free-space alerts
- 116. Automated tempdb contention alerts
- 117. Automated blocking/long-running query alerts
- 118. Automated deadlock alerts with graphs
- 119. Automated AG health violation alerts
- 120. Automated log file full or growing too fast
- 121. Automated filegroup near-full alert
- 122. Automated job failure alert
- 123. Automated missing backup alert
- 124. Automated DB offline/suspect alerts
- 125. Automated service down alerts
- 126. Automated patch-level outdated alerts
- 127. Automated trace flag validation alerts

12. Reporting & Dashboarding Automation

- 128. Automated daily health report (email)
- 129. Automated weekly performance summary
- 130. Automated monthly capacity planning report
- 131. Automated patch-compliance report
- 132. Automated backup success/failure dashboards
- 133. Automated AG health dashboard
- 134. Automated endpoint and server connectivity report
- 135. Automated slow query trend report
- 136. Automated disk-growth forecast report
- 137. Automated security and audit compliance report
- 138. Automated SLA uptime reporting
- 139. Automated DR readiness report
- 140. Automated cost & resource optimization report (cloud environments)
- 141. Automated asset inventory report
- 142. Automated job execution outcome report
- 143. Automated SQL Agent service reliability report

13. Advanced Automation (Enterprise-grade)

- 144. Automated intelligent index tuning engine (AI-driven)
- 145. Automated auto-remediation of deadlocks/blocking
- 146. Automated intelligent cache optimization
- 147. Automated synthetic load testing engine
- 148. Automated configuration drift auto-correction
- 149. Automated multi-server fleet patching
- 150. Automated self-healing scripts for service failures
- 151. Automated cluster quorum validation
- 152. Automated database object-level telemetry

1 Full Checklist

Task ID	Task Name	Category	Owner	Status	Priority	Notes
1	Unattended SQL Server installation	Environment Provisioning	DBA Team	Not Started	High	Use standard configuration template
2	Automated instance configuration (sp_configure)	Environment Provisioning	DBA Team	Not Started	High	Configure memory, MAXDOP, cost threshold
3	Automated memory configuration	Environment Provisioning	DBA Team	Not Started	High	Ensure NUMA aware
4	Automated login, user, and role provisioning	Security	Security DBA	Not Started	High	Integrate with Active Directory
5	Automated full, diff, and log backup scheduling	Backup & Recovery	DBA Team	Not Started	High	Validate paths and retention
6	Automated AG health checks	HA/DR	DBA Team	Not Started	High	Check synchronization state and failover readiness
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2 90-Day Automation Roadmap

Goal: Implement SQL Server automation in 90 days with incremental delivery.

Week	Focus Area	Deliverables	Owner	Notes
1-2	Environment Provisioning	Standard server build template, unattended install scripts	DBA Team	Include TempDB, MAXDOP, memory config
3-4	Security & Compliance	Automated login/role provisioning scripts, weak password scan	Security DBA	Integrate with AD
5-6	Backup & Recovery	Backup scheduling scripts, validation, alerts	DBA Team	Include DBCC CHECKDB automation
7-8	High Availability & DR	AG health checks, failover readiness scripts	DBA Team	Log shipping monitoring
9-10	Performance Monitoring	Top waits capture, blocking session alerts, Query Store reports	DBA Team	Baseline current workloads
11-12	Maintenance & Jobs	Index/statistics maintenance automation, job monitoring dashboards	DBA Team	Clean up old jobs and logs
13-14	DevOps / CI-CD	DACPAC deployment automation, schema comparison, drift detection	DevOps DBA	Version control integration
15-16	Cloud & Hybrid	Cloud backup automation, cloud resource monitoring, hybrid DR	Cloud DBA	Azure/AWS integration
17-18	Reporting & Observability	Dashboards, SLA reports, automated alerts	DBA Team	Email/Teams integration
19-20	Advanced Automation	Self-healing scripts, intelligent index tuning	DBA Team	Optional AI-driven optimization

3 Automation Architecture Diagram

High-level architecture layers:

[SQL Servers (On-Prem / Cloud)]

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[Monitoring & Alerts Layer]

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[Automation Engine]

- PowerShell
- T-SQL
- SQL Agent Jobs
- DACPAC / DevOps Pipelines

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[Central Repository / Inventory DB]

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[Reporting & Dashboard Layer]

- PowerBI / SSRS / Custom Dashboards

Notes:

- Automation engine interacts with **all servers** via PowerShell/T-SQL.
- Inventory DB stores all **tasks, history, baseline metrics**.
- Alerts layer sends notifications via **Teams, Email, or PagerDuty**.
- Optional cloud integration for **Azure/AWS SQL resources**.

4 PowerShell + T-SQL Automation Toolkit

Toolkit structure:

A. Environment & Configuration

- PowerShell: Install-SQLServer.ps1 → unattended install, tempdb setup, MAXDOP
- T-SQL: sp_configure scripts for memory, CPU, stats

B. Security & Compliance

- PowerShell: Create-DBLogins.ps1, Audit-WeakPasswords.ps1
- T-SQL: ALTER LOGIN automation, orphaned user detection

C. Backup & Recovery

- PowerShell: Backup-AllDatabases.ps1
- T-SQL: DBCC CHECKDB, restore validation scripts

D. HA / DR

- PowerShell: AG-HealthCheck.ps1
- T-SQL: sys.dm_hadr_database_replica_states monitoring scripts

E. Performance & Maintenance

- PowerShell: Index-Optimize.ps1, Stats-Update.ps1
- T-SQL: Query Store capture, blocking/deadlock monitoring

F. DevOps / CI-CD

- PowerShell: Deploy-DACPAC.ps1, schema compare automation
- T-SQL: Pre/Post-deployment validation scripts

G. Reporting

- PowerShell: Collect metrics and output CSV/HTML reports
- T-SQL: Performance, backup, and HA dashboards queries

 Each script has parameterization for **server list, DB selection, schedule frequency**.

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