New as of 15 February 2023:

This matrix provides an overview of available VTD_EXEC that may be applied to supported systems with supported code level.

While all VTD_EXEC are typically recommended, not all VTD_EXEC are necessarily applicable.

Examples: Some VTD_EXECs only apply to systems in a GRID configuration.

                    Some VTD_EXECs only apply when upgrading code or making a configuration change.

                    Some VTD_EXECs only apply when a specific 3956 disk cache or a specific hardware feature is present.

Date	Description
2021-05-24:	Added vtd_exec.364 v1.00
2021-06-28:	Added vtd_exec.347 v1.04, vtd_exec.365 v1.03, vtd_exec.368 v1.00, vtd_exec.370 v1.00 and vtd_exec.372 v1.00
2021-07-26:	Added vtd_exec.331 v1.04, vtd_exec.364 v1.02 and vtd_exec.372 v1.01
2021-09-03:	Added vtd_exec.331 v1.05, vtd_exec.377 v1.00 and vtd_exec.901 v1.01
2021-09-27:	Added vtd_exec.188 v1.53 and vtd_exec.376 v1.00
2021-10-05:	Added vtd_exec.900 v1.03 and vtd_exec.901 v1.02
2021-10-27:	Added vtd_exec.256 v1.04, vtd_exec.269 v1.19, vtd_exec.347 v1.05 and vtd_exec.365 v1.04
2021-11-29:	Added vtd_exec.188 v1.54, vtd_exec.334 v1.03, vtd_exec.346 v1.04, vtd_exec.348 v1.00, vtd_exec.378 v1.00 and vtd_exec.900 v1.05
2021-12-10:	Added vtd_exec.901 v1.03
2022-01-31:	Added vtd_exec.347 v1.06, vtd_exec.900 v1.06 and vtd_exec.901 v1.04
2022-02-28:	Added vtd_exec.269 v1.21 and vtd_exec.372 v1.02
2022-03-07:	Added vtd_exec.384 v1.01
2022-03-30:	Added R5.2 Phase 1 PGA1 (8.52.101.12)
2022-04-13:	Added R5.2 Phase 2 PGA0 (8.52.200.111)
	Added vtd_exec.385 v1.02
2022-04-25:	Added vtd_exec.365 v1.05 and vtd_exec.372 v1.03
2022-06-27:	Added vtd_exec.269 v1.22
2022-07-11:	Added vtd_exec.384 v1.02, vtd_exec.900 v1.07, vtd_exec.901 v1.05, vtd_exec.902 v1.01
2022-07-28:	Added vtd_exec.372 v1.04
2022-08-29:	Added vtd_exec.205 v1.07, vtd_exec.279 v1.11, vtd_exec.387 v1.00, vtd_exec.900 v1.08
2022-09-15:	Added R5.2 Phase 1 PGA2 (8.52.102.13)
	Added R5.3 GA (8.53.0.63)
	Added vtd_exec.389 v1.04
2022-09-30:	Added vtd_exec.103 v1.91, vtd_exec.269 v2.00, vtd_exec.394 v1.00
2022-10-19:	Added vtd_exec.391 v1.00, vtd_exec.395 v1.00
2022-10-31:	Added vtd_exec.103 v1.92, vtd_exec.331 v1.06
2022-12-07:	Added vtd_exec.269 v2.01, vtd_exec.279 v1.12, vtd_exec.900 v1.10, vtd_exec.901 v1.08, vtd_exec.902 v1.03, vtd_exec.903 v1.02
2023-01-10:	Added vtd_exec.396 v1.00
2023-01-30:	Added vtd_exec.269 v2.02, vtd_exec.389 v1.06
2023-02-15:	Added R5.2 Phase 1 PGA3 (8.52.103.23)
	Added R5.3 PGA1 (8.53.1.21)

TS7700 Release Version	Code Version	VTD_EXECs
TS7700 R5.3 PGA1	**8.53.1.21**	**389_v1.06(preLoad)**
TS7700 R5.3 GA	8.53.0.63	103_v1.92(all) 269_v2.02(security) 279_v1.12(all) 389_v1.06(preLoad) 391_v1.00(actFinis) 394_v1.00 395_v1.00(TS1160encr) 396_v1.00(VED/BattDate) 903_v1.02(all)
TS7700 R5.2 Phase 2 PGA0	**8.52.200.111**	**103_v1.92(all) 269_v2.02(security) 279_v1.12(all) 331_v1.06(all) 365_v1.05(all) 372_v1.04(actPrep) 385_v1.02(fc5282remove) 387_v1.00(DS8k) 391_v1.00(actFinis) 396_v1.00(VED/BattDate) 902_v1.03(all)**
TS7700 R5.2 Phase 1 PGA3	**8.52.103.21**	**372_v1.04(actPrep)**
TS7700 R5.2 Phase 1 PGA2	8.52.102.13	103_v1.92(all) 269_v2.02(security) 279_v1.12(all) 372_v1.04(actPrep) 391_v1.00(actFinis) 395_v1.00(TS1160encr) 396_v1.00(VED/BattDate) 901_v1.08(all)
TS7700 R5.2 Phase 1 PGA1	8.52.101.12	103_v1.92(all) 269_v2.02(security) 279_v1.12(all) 331_v1.06(all) 372_v1.04(actPrep) 387_v1.00(DS8k) 391_v1.00(actFinis) 396_v1.00(VED/BattDate) 901_v1.08(all)
TS7700 R5.2 Phase 1	8.52.100.32	103_v1.92(all) 188_v1.54(all) 256_v1.04(all) 269_v2.02(security) 279_v1.12(all) 331_v1.06(all) 334_v1.03(grid) 346_v1.04(VEC) 347_v1.06(VED) 365_v1.05(all) 372_v1.04(actPrep) 376_v1.00(SDT) 377_v1.00(DS8k) 378_v1.00(VED) 387_v1.00(DS8k) 391_v1.00(actFinis) 396_v1.00(VED/BattDate) 901_v1.08(all)
TS7700 R5.1 PGA2	**8.51.2.12**	**103_v1.92(all) 205_v1.07(all) 269_v2.02(security) 279_v1.12(all) 331_v1.06(all) 372_v1.04(actPrep) 387_v1.00(DS8k) 391_v1.00(actFinis) 396_v1.00(VED/BattDate) 900_v1.10(all)**
TS7700 R5.1 PGA1	8.51.1.26	103_v1.92(all) 188_v1.54(all) 205_v1.07(all) 256_v1.04(all) 269_v2.02(security) 279_v1.12(all) 331_v1.06(all) 334_v1.03(grid) 346_v1.04(VEC) 347_v1.06(VED) 364_v1.02(cloud) 365_v1.05(all) 366_v1.02(all) 367_v1.00(VED) 368_v1.00(grid) 370_v1.00(all) 372_v1.04(actPrep) 376_v1.00(SDT) 377_v1.00(DS8k) 378_v1.00(VED) 387_v1.00(DS8k) 391_v1.00(actFinis) 396_v1.00(VED/BattDate) 900_v1.10(all)
TS7700 R5.1	8.51.0.63	103_v1.92(all) 182_v1.27(join/merge/ClusterRenumber) 188_v1.54(all) 205_v1.07(all) 256_v1.04(all) 269_v2.02(security) 279_v1.12(all) 331_v1.06(all) 334_v1.03(grid) 346_v1.04(VEC) 347_v1.06(VED) 355_v1.06(VEC) 358_v1.02(cloud) 364_v1.02(cloud) 365_v1.05(all) 366_v1.02(all) 367_v1.00(VED) 370_v1.00(all) 372_v1.04(actPrep) 377_v1.00(DS8k) 378_v1.00(VED) 387_v1.00(DS8k) 391_v1.00(actFinis) 396_v1.00(VED/BattDate) 900_v1.10(all)
TS7700 R5.0 PGA2	**8.50.2.6**	**103_v1.89(all) 182_v1.27(join/merge/ClusterRenumber) 188_v1.54(all) 205_v1.07(all) 256_v1.04(all) 269_v2.00(security) 279_v1.11(all) 334_v1.03(grid) 343_v1.07(all) 346_v1.04(VEC) 347_v1.06(VED) 348_v1.00(unjoin) 355_v1.06(VEC) 357_v1.01(VEC/actFinis) 358_v1.02(cloud) 363_v1.00(all) 364_v1.02(cloud) 365_v1.05(all) 366_v1.02(all) 367_v1.00(VED) 370_v1.00(all) 372_v1.04(actPrep) 377_v1.00(DS8k) 378_v1.00(VED) 384_v1.02(security) 387_v1.00(DS8k) 391_v1.00(actFinis) 396_v1.00(VED/BattDate)**

Note: Older 8.50.x.x versions are below the minimum level and must be updated to R5.0 PGA2 first.
Note: All 8.4x.x.x versions are below the minimum level and must be updated to R5.0 PGA2 first.

TS7700 Code Update Recommendation:
https://www.ibm.com/support/pages/node/6334607

Keys

16GbFICON	This vtd_exec must be installed on all TS7700 clusters with 16 Gb FICON adapters (FC 3402 or 3403)
8GbFICON	This vtd_exec must be installed on all TS7700 clusters with 8 Gb FICON adapters (FC 3438 or 3439)
actFinis	This vtd_exec must be applied during a code update between act_go and act_finis. Do not install it on clusters that have already been successfully updated
actPrep	This vtd_exec must be applied a couple of days ahead of planned code update to allow the possibly needed fix to be effective when actual code load is scheduled
all	This vtd_exec must be installed on all machines
BattDate	This vtd_exec must be installed on all TS7770 (3957-VED) with 3956-CSB where the backend disk cache battery VPD contains improper date stamp
cacheMES	This vtd_exec must be installed prior to starting a cache MES(adding drawers/strings/frames)
cloud	This vtd_exec must be installed on all TS7700 clusters with Cloud Attachment
ClusterRenumber	This vtd_exec must be installed prior to starting a cluster renumber
copy export/recovery	This vtd_exec must be installed prior to starting copy export recovery or copy export merge
CSA	This vtd_exec must be installed on all TS7700 clusters with CSA cache
CSB	This vtd_exec must be installed on all TS7700 clusters with CSB cache
DS8k	This vtd_exec must be installed on all TS7700 clusters with DS8000 Object Store
fc5282remove	This vtd_exec must be installed to remove FC 5282 from a TS7770 when the feature code is currently installed to allow FC 5283
frameMES	This vtd_exec must be installed prior to starting a frame replacement MES
grid	This vtd_exec must be installed on all machines if they are in a grid - it does not apply to standalone clusters
join/merge	This vtd_exec must be installed prior to starting a grid join or merge
LDAP	This vtd_exec resolves an issue that only effects machines configured for LDAP authentication
preLoad	This exec must be installed on system with R5.1 or R.52 before upgrading to 5.3 GA
SDT	This vtd_exec must be installed on all TS7700 clusters with Secure Data Transfer
security	This vtd_exec resolves a security vulnerability
see-details	This vtd_exec applies to specific scenarios. Read the detailed description of this vtd_exec to determine if it applies to your machine
standalone	This vtd_exec must be installed on all standalone clusters - it does not apply to machine in a grid
tapeAtt	This vtd_exec must be installed on all clusters attached to a TS3500 or TS4500 tape library (V07, VEB-T, VEC-T)
tapeAttMES	This vtd_exec must be installed prior to starting a Tape Attach MES
TPF	This vtd_exec applies to machines in TPF software environment
TS1160encr	This vtd_exec must be installed on all TS7700 clusters with TS1160 and encryption enabled
unjoin	This vtd_exec must be installed prior to starting a grid unjoin
VEC	This vtd_exec must be installed on all model VEC clusters
VEC join/merge	This vtd_exec must be installed prior to starting a grid join or merge with a VEC
VED	This vtd_exec must be installed on all model VED clusters

VTD_EXEC Reference List:

vtd_exec	version	released	comment	concurrent	description
vtd_exec.103	v1.92	10/31/2022	regularly updated as required	Yes	System Checkout updates
vtd_exec.182	v1.27	9/30/2020	regularly updated as required	Yes	Improvements to Grid join/merge
vtd_exec.188	v1.54	11/29/2021		Yes	Improvements to Call Home functionality
vtd_exec.205	v1.07	8/29/2022	regularly updated as required	Yes	Updates to system log collection tools
vtd_exec.256	v1.04	10/27/2021	regularly updated as required	Yes	Updates to system service menu
vtd_exec.269	v2.02	1/30/2023	regularly updated as required	Yes	Security Enhancement: Update internal Java components
vtd_exec.279	v1.12	12/7/2022	regularly updated as required	Yes	Security Enhancement: Update NTP
vtd_exec.331	v1.06	10/31/2022		Yes	Improvements for Grid Ethernet adapter MES, adapter remove/replace and FC 8083 MES
vtd_exec.334	v1.03	11/29/2021		Yes	Memory usage monitor
vtd_exec.343	v1.07	2/19/2021	obsolete with R5.1	Yes	Fixed issue that could result in Web UI to become unresponsive
vtd_exec.346	v1.04	11/29/2021		Yes	Various fixes for 3956-CSA backend disk cache
vtd_exec.347	v1.06	1/31/2022		Yes	Updated Firmware for HDD, SSD and cache controller module
vtd_exec.348	v1.00	11/29/2021		Yes	Improvements to Grid unjoin
vtd_exec.355	v1.06	12/23/2020		Yes	Improvements to handling of backend disk cache
vtd_exec.357	v1.01	8/31/2020	obsolete with R5.1	No	Fixed problem that could result in performance degradation after going online
vtd_exec.358	v1.02	4/30/2021	obsolete with R5.1 PGA1	No	Fixed problem where Cloud Storage Tier PG1 volumes don't get migrated properly
vtd_exec.363	v1.00	2/19/2021	obsolete with R5.1	No	Fixed problem to address potential memory leak when using SDT and grid copy issue
vtd_exec.364	v1.02	7/26/2021		No	Fixes for Cloud Storage Tier improving cloud recall/cloud premig handling
vtd_exec.365	v1.05	4/25/2022		Yes	Updated Firmware for server internal HDD and SSD
vtd_exec.366	v1.02	4/30/2021		No	Fixed issue that prevented DB reorg to run resulting in warning to be reported
vtd_exec.367	v1.00	4/30/2021		Yes	Fixed issue where disk cache capacity is improperly reported after installing R5.1
vtd_exec.368	v1.00	6/28/2021		No	Potential problem that can result in issues with volume ownership/damaged volume/hot token
vtd_exec.370	v1.00	6/28/2021		Yes	Improvements to handling of backend disk cache
vtd_exec.372	v1.04	7/27/2022		Yes	Proactive fix VEC/VED to solve Cross Mirror Condition in filesystems
vtd_exec.376	v1.00	9/27/2021		No	Fixed issue resulting in SSL certificate validation failure when using client CA certificate
vtd_exec.377	v1.00	9/3/2021		Yes	Increases number of objects that can be stored in TS7700 through DS8000 Object Store
vtd_exec.378	v1.00	11/29/2021		Yes	Add support for additional FCP adapter FRU
vtd_exec.384	v1.02	7/11/2022	regularly updated as required	No	Update to management interface for TS7700 code level R5.0 - see release notes for details
vtd_exec.385	v1.02	4/13/2022		No	FC 5282 removal in prepapartion of FC 5283 install
vtd_exec.387	v1.00	8/29/2022		No	Fileset Case Fix
vtd_exec.389	v1.06	1/30/2023		Yes	Code signing to be able to jump to 5.3
vtd_exec.391	v1.00	10/19/2022		Yes	Workaround SISSAS adapter not reporting HW location in the internal drives of pServer
vtd_exec.394	v1.00	9/30/2022		Yes	Mandatory Exec for CSB/CFC STRING MES CSB/CFC with code 5.3 and external encryption enabled
vtd_exec.395	v1.00	10/19/2022		Yes	Fix for the issue that data no encrypted when TS1160 tape drive using JE and JM media types
vtd_exec.396	v1.00	1/10/2023		Yes	Fix for improper date stamp in backend disk cache battery VPD of TS7770 with 3956-CSB
vtd_exec.900	v1.10	12/7/2022	regularly updated as required	Yes	Web Code Updater for TS7700 code level R5.1 - see release notes for details

vtd_exec.901	v1.08	12/7/2022	regularly updated as required	Yes	Web Code Updater for TS7700 code level R5.2 Phase 1 - see release notes for details
vtd_exec.902	v1.03	12/7/2022	regularly updated as required	Yes	Web Code Updater for TS7700 code level R5.2 Phase 2 - see release notes for details
vtd_exec.903	v1.02	12/7/2022	regularly updated as required	Yes	Web Code Updater for TS7700 code level R5.3 - see release notes for details

TS7700 Release Version   Code Version VTD_EXECs

Note: vtd_exec history for code level no longer maintained in the vtd_exec matrix page 2

TS7700 Release Version	Code Version	VTD_EXECs
TS7700 R5.0 PGA1	8.50.1.25	103_v1.86(all) 182_v1.27(join/merge/ClusterRenumber) 205_v1.06(all) 269_v1.16(security) 279_v1.10(security) 343_v1.04(all) 344_v1.01(all) 346_v1.02(VEC) 350_v1.00(all) 352_v1.01(all) 354_v1.01(all) 355_v1.03(all) 357_v1.01(VEC/actFinis)
TS7700 R5.0 PGA0	8.50.0.140	103_v1.86(all) 220_v1.06(copy export/recovery) 269_v1.16(security) 344_v1.01(all) 346_v1.02(VEC) 347_v1.00(VED) 352_v1.01(all)
TS7700 R5.0	8.50.0.134	103_v1.86(all) 220_v1.06(copy export/recovery) 269_v1.15(security) 332_v1.00(tapeAtt) 334_v1.01(all) 335_v1.00(VED) 337_v1.00(all) 339_v1.01(tapeAtt) 340_v1.00(16GbFICON) 342_v1.02(VED) 344_v1.01(all) 346_v1.02(VEC) 347_v1.00(VED) 352_v1.01(all)

| TS7700 R4.2 PGA2 | 8.42.2.12 | 103_v1.86(all) 182_v1.27(join/merge/ClusterRenumber) 205_v1.06(all) 220_v1.06(copy export/recovery) 256_v1.03(all) 269_v1.17(security/VEC) 279_v1.10(security) 314_v1.04(16GbFICON) 331_v1.03(all) 338_v1.01(all) 344_v1.01(all) 346_v1.02(VEC) 352_v1.01(VEC) |

| TS7700 R4.1 Phase 2 PGA1 | 8.41.201.4 | 103_v1.86(all) 182_v1.25(join/merge/ClusterRenumber) 202_v2.11(security) 241_v1.43(all) 244_v1.05(see-details) 256_v1.02(all) 264_v1.08(LDAP) 269_v1.16(security/VEC) 279_v1.10(security) 298_v1.03(all) 299_v1.07(16GbFICON) 304_v1.05(8GbFICON/16GbFICON) 316_v1.10(all) 317_v1.40(actFinis) 321_v1.0(all) 326_v1.03(all) 331_v1.03(all) 344_v1.01(all) |
| TS7700 R4.1 Phase2 | 8.41.200.113 | 103_v1.86(all) 182_v1.25(join/merge/ClusterRenumber) 188_v1.52(all) 202_v2.11(security) 220_v1.05(copy export/recovery) 241_v1.43(all) 244_v1.05(see-details) 269_v1.09(security) 279_v1.10(security) 297_v1.01(all) 298_v1.03(all) 299_v1.07(16GbFICON) 300_v1.01(actFinis) 301_v1.00(ClusterRenumber) 302_v1.00(tapeAtt) 304_v1.05(8GbFICON/16GbFICON) 307_v1.00(grid) 308_v1.01(grid) 309_v1.00(LDAP) 312_v1.00(all) 316_v1.10(all) 317_v1.40(actFinis) |

VTD_EXEC History List:
Note: list of old vtd_exec no longer maintained in the vtd_exec reference page 4

vtd_exec	version	released	comment	description
vtd_exec.202	v2.11	8/19/2019	obsolete with R4.2 and R5.x	Security Enhancement: PSIRT Advisories
vtd_exec.220	v1.06	4/24/2020	regularly updated as required	Improvements to Copy Export Recovery and Copy Export Merge
vtd_exec.241	v1.43	2/21/2019	obsolete with R4.2 and R5.x	Memory Usage Monitor
vtd_exec.244	v1.05	11/26/2019	regularly updated as required	Support for old DB versions for Join/Merge/Copy Export
vtd_exec.264	v1.08	10/3/2019	obsolete with R4.2 and R5.x	Improvements to LDAP support to allow wildcard lookup
vtd_exec.297	v1.01	6/13/2018	obsolete with R4.2 and R5.x	Disable sick-but-not-dead detection during dB reorg to prevent false positives
vtd_exec.298	v1.03	11/13/2018	obsolete with R4.2 and R5.x	Disable Surface EOT feature
vtd_exec.299	v1.07	5/17/2019	obsolete with R4.2 and R5.x	Fixed issue for 16Gb/s FICON adapter
vtd_exec.300	v1.01	6/29/2018	obsolete with R4.2 and R5.x	Improvements for code installation/activation process
vtd_exec.301	v1.00	6/25/2018	obsolete with R4.2 and R5.x	Improvements for cluster renumbering process
vtd_exec.302	v1.00	7/9/2018	obsolete with R4.2 and R5.x	Fixed issue that could result in unexpected cluster reboot
vtd_exec.304	v1.05	5/17/2019	obsolete with R4.2 and R5.x	Fixed issue in device driver for 8Gb/s and 16Gb/s FICON adapter
vtd_exec.307	v1.00	9/10/2018	obsolete with R4.2 and R5.x	Improvements to allow proper handling of new functions in mixed R4.2 and R4.1 Phase 2 Grid
vtd_exec.308	v1.01	10/18/2018	obsolete with R4.2 and R5.x	Fixed issue that could result in potential Service Prep hang
vtd_exec.309	v1.00	9/21/2018	obsolete with R4.2 and R5.x	Fixed issue that prevents IBM service user login when running R4.1 Phase 2 and LDAP enabled
vtd_exec.312	v1.00	10/18/2018	obsolete with R4.2 and R5.x	Fixed issue that could cause DB operations to fail
vtd_exec.314	v1.04	2/14/2020	obsolete with R5.x	Fixed issue for 16Gb/s FICON adapter for R4.2
vtd_exec.316	v1.10	9/26/2019	obsolete with R4.2 and R5.x	Fixed issue when canceling a Temporary Removal Threshold via TS7700 MI
vtd_exec.317	v1.40	5/9/2019	obsolete with R4.2 and R5.x	Fixed issue to improve First Time Install
vtd_exec.321	v1.0	4/2/2019	obsolete with R4.2 and R5.x	Fixed issue that could result in unexpected cluster reboot
vtd_exec.326	v1.03	11/7/2019	obsolete with R4.2 and R5.x	Fixed issue that could cause DB lockup and subsequent cluster hang
vtd_exec.332	v1.00	11/26/2019	obsolete with R5.0 PGA2	Fixed issue where active primary partitions was not always created for Tape Attach
vtd_exec.335	v1.00	11/26/2019	obsolete with R5.0 PGA2	Fixed issue that could result in performance degradation
vtd_exec.337	v1.00	11/26/2019	obsolete with R5.0 PGA2	Fixed issue that could result in host job abends
vtd_exec.338	v1.01	2/14/2020	obsolete with R5.x	Fixed issue that could result in false error indicating invalid compression type
vtd_exec.339	v1.01	2/27/2020	obsolete with R5.0 PGA2	Fixed issue that could result in backend tape drives to go offline
vtd_exec.340	v1.00	3/5/2020	obsolete with R5.0 PGA2	Fixed issue for 16Gb/s FICON adapter for R5.0
vtd_exec.342	v1.02	2/27/2020	obsolete with R5.0 PGA2	Fixed issue resulting in duplicate WWNN/WWPN
vtd_exec.344	v1.01	5/29/2020	obsolete with R5.0 PGA2	Fixed issue where network penetration scan tools could overwhelm TS7700 MI resources
vtd_exec.350	v1.00	6/12/2020	obsolete with R5.0 PGA2	Fixed issue that could result in performance degradation with large block sizes
vtd_exec.352	v1.01	6/30/2020		Fixed issue that could result in cancelled host jobs
vtd_exec.354	v1.01	6/30/2020	obsolete with R5.0 PGA2	Improvements to LWORM overwrite recovery