

ARB Memory (RAM) Requirements for the SILVA rRNA Databases

DB name	number of sequences	32-bit - 2 GB RAM		32-bit - 4 GB RAM		64-bit > 4 GB RAM	
		open DB	use PT_SERVER	open DB	use PT_SERVER	open DB	use PT_SERVER
SILVA SSU Parc 104	1.471k	no	no	no	no	yes (11.1 GB)	yes (1 pass, +>12 GB)
SILVA SSU Ref 104	512k	no	no	yes (2.5 GB)	no	yes (4.1 GB)	yes (1 pass, +6.1 GB)
SILVA SSU Ref 102	461k	no	no	yes (2.2 GB)	no	yes (3.8 GB)	yes (1 pass, +5.5 GB)
SILVA SSU Ref 100	410k	no	no	yes (1.9 GB)	no	yes (3.3 GB)	yes (1 pass, +4.8 GB)
SILVA SSU Ref 98	370k	yes (1.7 GB)	no	yes (1.7 GB)	no	yes (2.9 GB)	yes (1 pass, +4.4 GB)
SILVA SSU Ref 95	280k	yes (1.1 GB)	no	yes (1.1 GB)	yes (25 passes)	yes (2.0 GB)	yes (1 pass, +3.2 GB)
SILVA SSU Ref 102 NR	262k	yes (1.3 GB)	no	yes (1.3 GB)	yes (25 passes)	yes (2.2 GB)	yes (1 pass, +3.3 GB)
LTP SSU 102 (type strains)	8k	yes (55 MB)	yes (1 pass)	yes (55 MB)	yes (1 pass)	yes (140 MB)	yes (1 pass, +130 MB)
LTP LSU 102 (type strains)	0,8k	yes (21 MB)	yes (1 pass)	yes (21 MB)	yes (1 pass)	yes (80 MB)	yes (1 pass, +62 MB)
SILVA LSU Ref 104	19k	yes (150 MB)	yes (1 pass)	yes (150 MB)	yes (1 pass)	yes (250 MB)	yes (1 pass, +460 MB)
SILVA LSU Parc 104	208k	yes (850 MB)	no	yes (850 MB)	yes (5 passes)	yes (1.5 GB)	yes (1 pass, +2.2 GB)

This table is intended to give you a rough idea what is possible and what not. As soon as you enter the transition zone from yes to no, the final result strongly depends on your particular system.

The 32-bit test systems are both based on Ubuntu 9.04 (desktop).

The 64-bit test system is based on Ubuntu 10.04 LTS (a server with 128 GB of RAM).

For 32-bit systems, the required amount of RAM is only given for opening databases.

Please note that parallel starting of corresponding PT_SERVERs requires a significant amount of additional RAM, see above (only provided for SILVA SSU databases for 64-bit systems).

Please also note that the GB values required for BUILDING the PT_SERVERs could be higher than stated. Also the number of passes depends on the absolute amount of RAM available.

There are different symptoms for non-building PT_SERVERs. For example, the process can not be started at all or it crashes after the final pass - the behaviour depends on your particular system.

The larger amount of RAM required to open a database in a 64-bit environment is no typo! The 64-bit pointers are larger, therefore more RAM is required for the same task.

The larger amount of RAM required to open the SILVA SSU Ref 102 NR compared to the Ref 95 (which contains more sequences) is no mistake! The SILVA 102 release contains more metadata.

Provided by Ribocon, December 2010, v1.2