The following tests were designed to compare the performance of BackupAssist's Zip Engine with other popular ZIP compression applications: WinZIP and WinRAR. Tests were run against the same set of data to determine the encryption speed, transfer speed and compression level of the different ZIP technologies examined.

Hardware used

Windows Server 2008 with Intel Q9550 (Quad core 2.83GHz) processor, 8.00 GB RAM and dual SATA drives.

Software used

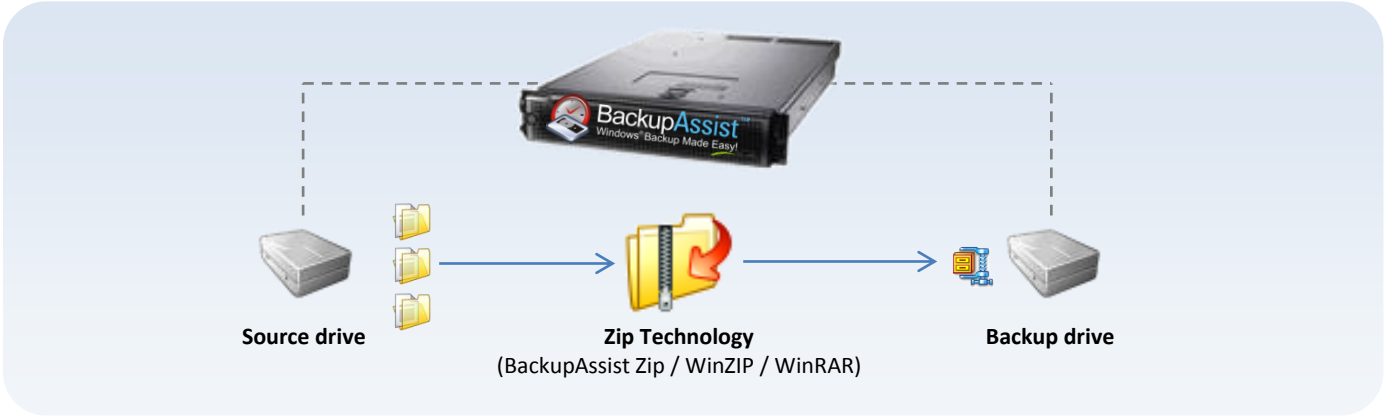
- **BackupAssist v6.0.0** – available for download here: http://www.backupassist.com/BackupAssist/download.php
  Backups were created using the BackupAssist Zip Engine.
- **WinZIP v 14.5** – available for download here: http://www.winzip.com/downwz.htm
- **WinRAR v3.93** – available for download here: http://www.rarlab.com/download.htm

File set used

2,207 files totaling 1.92GB:

- 2,199 files were less than 100MB in size
- 5 files were between 100 MB and 200MB in size.
- 2 files were between 200MB and 1GB in size.

Files were backed up from one locally installed SATA drive to another SATA drive on the same machine:



Test results

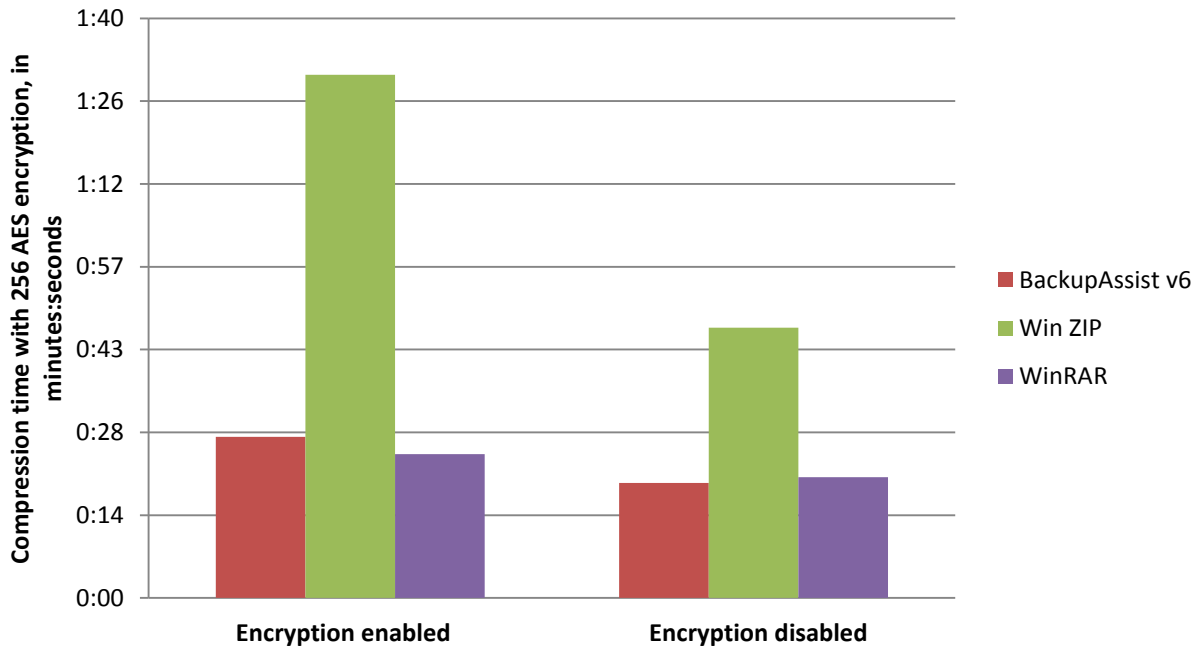
For the following tests, 2,207 files were selected from a live company network share and compressed using three different ZIP applications to a.ZIP archive. Files included typical office documents, such as MS Word, Excel spreadsheets and PowerPoint presentations, as well as images, PDF files, and larger files like .ISO images.

	Selected size (GB)	.ZIP archive size (GB)	Compression level	Compression ratio	Time taken (h:mm:ss)	Speed (GB/hr)
BackupAssist v6	1.92	1.70	Medium	1.13:1	0:00:34	179
WinZIP	1.92	1.68	Medium	1.14:1	0:01:47	56
WinRAR	1.92	1.62	Medium	1.19:1	0:06:19	15

In the above table we can see that the compression ratio achieved was very similar across all ZIP applications tested, but that the time taken to complete the backup varied, with BackupAssist being considerably faster when compressing the same set of data.

Encryption time

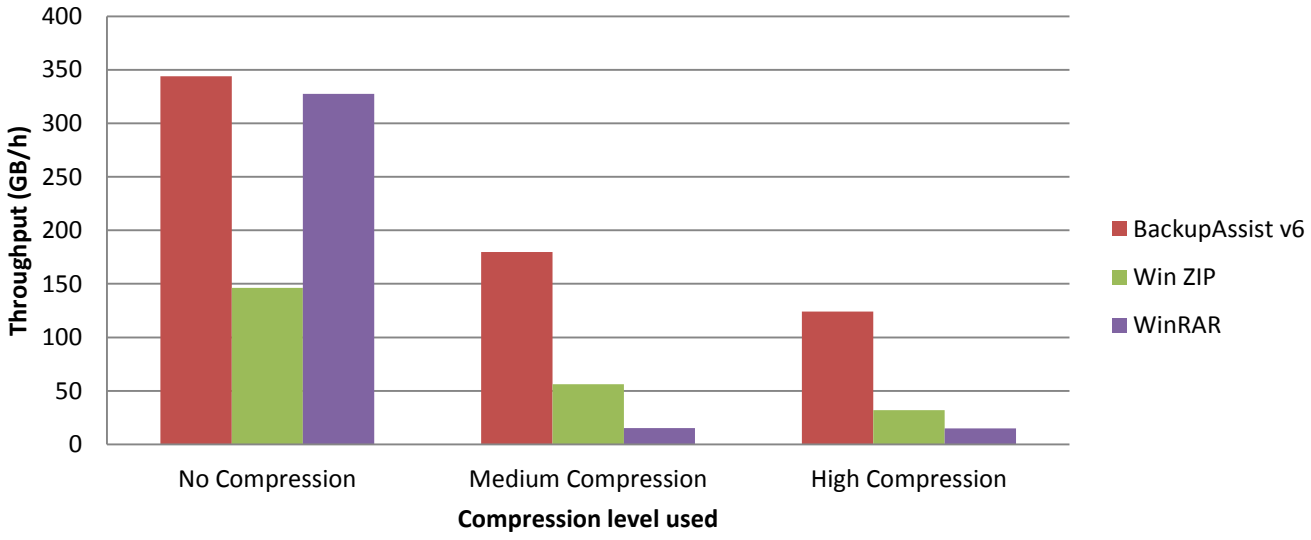
The following graph shows how password encrypting the .ZIP archive using AES 256-bit encryption effects the time taken to complete a backup. Compression was set to 0 for these tests to determine the effect of just encryption on backup times.



Testing shows that encryption has a relatively minimal impact on backup times for WinRAR and BackupAssist (20% and 40% respectively), but causes a 93% increase in compression time for WinZIP, increasing from 47 seconds to 91 seconds.

Throughput (GB/h) vs. Compression level

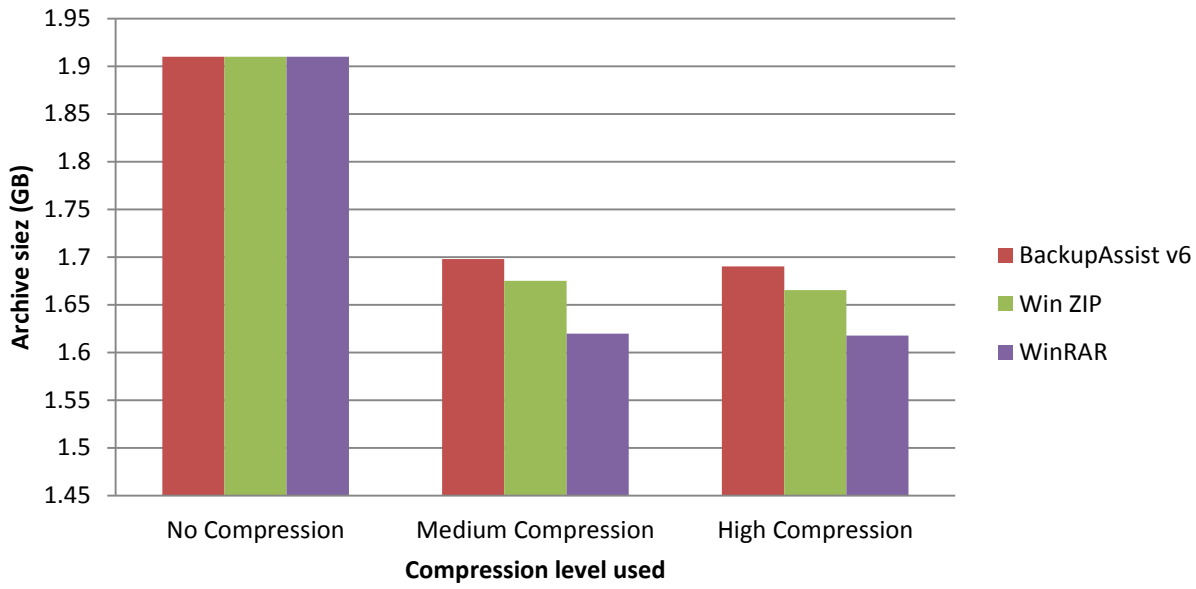
The following graph shows how the level of compression effects the speed of the backup. The same set of data was compressed using No Compression, Medium Compression and High Compression settings.



Testing shows that BackupAssist, which includes high performance multithreading architecture, outperforms both WinZIP and WinRAR when compression is enabled by up to 164GB/hour at Medium Compression levels and 109GB/hour at High Compression levels. While the compressed archives created by WinZIP and WinRAR were smaller in size than those created by BackupAssist, the difference in size was minimal (see the following graph) and did not account for the additional time taken to complete the backup.

Archive size (GB) vs. Compression ratio

The following graph shows how the level of compression applied effects the size of the backup. The same set of data was compressed using No Compression, Medium Compression (50%) and High Compression (100%) settings.



Testing shows that WinRAR outperforms both WinZIP and BackupAssist in terms of creating smaller compressed .ZIP archives. However, while BackupAssist archives were approximately 6% larger than those created using WinRAR, backup times in BackupAssist were up to 11 times faster, as show in the graph on page 2.

Summary / conclusion

Backup times with encryption enabled:

1. **WinRAR**: 20% increase, from 21 seconds to 25 seconds
2. **BackupAssist**: 40% increase, from 20 seconds to 28 seconds
3. **WinZip**: 93% increase, from 47 seconds to 91 seconds.

Throughput (GB/hour) with Medium Compression:

1. **BackupAssist**: 180 GB/hour
2. **WinZip**: 56 GB/hour
3. **WinRAR**: 15 GB/hour

Archive size with Medium Compression::

1. **WinRAR**: 1.62 GB archive (1.19:1 compression ratio)
2. **WinZip**: 1.67 GB archive (1.14:1 compression ratio)
3. **BackupAssist**: 1.7GB archive (1.13:1 compression ratio)

We can see from these test results that in terms of speed, BackupAssist's Zip Engine, which benefits from multithreading architecture, far outperforms both WinZip and WinRAR by up to a factor of 12 while still offering highly comparable compression ratios, making it a perfect solution for even the most demanding business backups. And with support for tape backups, the BackupAssist ZIP Engine is suitable for any organization: from the smallest business wanting a basic solution, to large enterprises needing long term data archival to tape.

For more details on BackupAssist's Zip Engine visit our Zip product tour page, which contains further links to whitepapers, brochures and fact sheets: http://www.backupassist.com/BackupAssist/tour_Zip.html