COMPARATIVE REVIEW

Competidores DOS

Compared with that of the February 1997 comparative, the line-up in this review is somewhat depleted. This is largely explained by the major anti-virus vendor barndance in the second half of 1997, meaning that *IBM* and *Dr Solomon's* no longer produce their own scanners.

Aside from that, while some regularly submitted products were not forthcoming, this review sees the return of *FRISK Software's* shareware *F-PROT* to *VB* reviews after representation by its various commercial incarnations for several years. The typical 'lottery' of the smaller developers – who seem to pick and choose their reviews – made up the balance of the sixteen products considered below.

In the preamble to that previous DOS comparative, it was noted that some developers were still shipping a separate macro virus scanner. While this still holds, all products reviewed herein have a standard scanner which detects macro viruses with the macro-only offering being an adjunct – perhaps as a matter of habit from those bygone days or as a *Windows* program, providing the user with a 'nicer', or at least more familiar, interface.

Recent months have seen a large increase in the use of polymorphism in macro viruses, and also the rise of the so-called 'class infector'. The latter is a form of *Word 97* macro virus that embeds its code in the default document stream in the OLE document file, rather than in its own module stream. This required many vendors to modify their macro virus detection routines.

Many class infectors were seen in the months and weeks leading up to the 26 October 1998 submission date for this comparative review, and as a large family of them (imaginatively named W97M/Class) combines this infection technique and polymorphism, a number of these were included in the viruses added to the usual *VB* test-sets.

Although no class infectors were listed on the October WildList (to which the In the Wild test-sets were updated) there have been clear indications of class infectors spreading successfully (see the News story, p.3 this issue), so effectiveness in detecting these new viruses is worth noting in the results.

Test Procedures

Speed tests in this review were carried out on a standalone workstation. Detection tests were facilitated by storing the virus test-sets in a read-only directory on a *NetWare* server with the tests run from a series of batch processes launched from the server's login script. The workstations were programmatically reset at the conclusion of each product's test-run, automatically logging in after the restart and seeking out the next product to test. Measures used in previous *VB* DOS comparatives to test samples individually were deemed too resource-intensive with the increasing size of the test-sets employed.

Where a product offered the choice between a command-line and a menu-driven scanner, the former was always used. All products tested provided this choice or had an option for driving the product non-interactively. Default scanner settings were used as far as possible, except that reporting was always enabled and if it was not the default behaviour, all tested files were logged.

Speed tests were conducted against a selection of clean files on a local hard drive. This most closely reflects 'typical' operation in the real world. The Clean test-set consists of 5500 executables, comprising approximately 540 MB. The contents have been culled from common DOS and *Windows* applications, and from publicly accessible collections of freeware and shareware utilities. As well as being a speed test, this doubles as a false positive test – there are no viruses in this collection, so none should be found.

Lastly, two diskettes, each holding 26 EXE and 17 COM files, were used to test diskette scanning speeds. On one diskette the files are clean, and on the other, the same files are infected with Natas.4744.

Alwil AVAST! v7.70.22 26 Oct 1998

ItW Boot	100.0%	Macro	94.5%
ItW File	99.6%	Polymorphic	97.4%
ItW Overall	99.6%	Standard	99.7%

A typically solid performance from *Alwil's AVAST!*, detecting all ItW boot viruses and samples of all ItW file viruses. Its downfall on the latter test-set is that, failing to scan SCR files (*Windows* screen savers) by default, it did not detect all samples of Win95/Marburg (see *VB*, November 1998, p.8) and TPVO.3783.A.

The VxD infector Navrhar was the only miss against the Standard test-set and the SCR and occasional EXE samples of Marburg accounted for the slightly less than perfect score against the Polymorphic set. Misses in the Macro test-set concentrated among the polymorphic, and particularly the newer class infectors.

The single-tasking nature of DOS means *AVAST!* may as well use the machine's full resources, rather than run as a low priority background thread (the approach of *AVAST32* for the *Windows* platforms). Returning a throughput rate of approximately 2 MB/s, *AVAST!* demonstrates that the core engine is no slug. No false positives occurred.

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On-demand tests	ItW Boot		ItW File		ItW Overall	Macro		Polymorphic		Standard	
	Number	%	Number	%	%	Number	%	Number	%	Number	%
Alwil AVAST!	82	100.0%	726	99.6%	99.6%	2483	94.5%	14189	97.4%	1031	99.7%
Command AntiVirus	79	96.3%	738	100.0%	99.6%	2592	98.7%	14438	99.1%	1031	99.7%
Cybec Vet Anti-Virus	82	100.0%	721	99.0%	99.1%	2196	83.6%	14035	96.2%	1024	99.2%
Data Fellows FSAV	82	100.0%	738	100.0%	100.0%	2597	98.9%	14415	99.8%	1040	100.0%
DialogueScience Dr Web	81	98.8%	738	100.0%	99.9%	2463	93.7%	14444	100.0%	1028	99.5%
ESET NOD32	82	100.0%	738	100.0%	100.0%	2580	98.1%	14381	99.5%	1039	99.7%
FRISK F-PROT	79	96.3%	738	100.0%	99.6%	2602	99.1%	14444	100.0%	1031	99.7%
Grisoft AVG	80	97.6%	721	98.3%	98.2%	1778	68.8%	14290	98.1%	1018	98.6%
H+BEDV AntiVir	79	96.3%	669	97.2%	97.1%	1913	74.2%	11930	81.9%	1008	97.9%
iRiS AntiVirus	82	100.0%	738	100.0%	100.0%	2359	90.0%	14433	99.1%	1040	100.0%
Kaspersky Lab AVP	82	100.0%	738	100.0%	100.0%	2596	98.6%	14444	100.0%	1040	100.0%
NAI McAfee VirusScan	82	100.0%	738	100.0%	100.0%	2575	98.2%	14337	98.0%	1040	100.0%
Norman ThunderBYTE	82	100.0%	729	99.6%	99.7%	2448	93.8%	14023	95.4%	1014	98.8%
Norman Virus Control	82	100.0%	738	100.0%	100.0%	2455	94.0%	14294	99.0%	1031	99.7%
Sophos Anti-Virus	82	100.0%	738	100.0%	100.0%	2409	92.2%	14444	100.0%	1021	99.2%
Symantec Norton AntiVirus	82	100.0%	738	100.0%	100.0%	2607	99.1%	14443	98.7%	1036	99.7%

Command AntiVirus v4.52 19 Oct 1998

ItW Boot	96.3%	Macro	98.7%
ItW File	100.0%	Polymorphic	99.1%
ItW Overall	99.6%	Standard	99.7%

This is the first *VB* test of *Command Software AntiVirus* (*CSAV*) for DOS based on the v3.x *FRISK* engine. Despite submitting a product with a scan string file dated 1 August, *CSAV* detected 100% of the ItW file samples. Three ItW boot infectors were missed, however – ones that have caused problems for others in the past – EXEBug.Hooker, Michelangelo and Quox.

The Navrhar VxDs and six samples of Cryptor.2582 were all that stood between *CSAV* and full detection of the Standard and Polymorphic test-sets respectively. Despite the relatively old SIGN.DEF file already mentioned, the equivalent file of macro virus identification data was dated 19 October. This, no doubt, accounted for the impressive 98.7% detection rate against the Macro test-set, which was only marginally bettered by three other products. Hard disk scanning speed is quite acceptable with a throughput just short of 2 MB/s.

Surprisingly for *CSAV*, one 'suspicious' file was found in the Clean test-set. The log produced from that run commented upon two files (one 'could be corrupted' and another 'could be destructive'). As files from the virus test-sets classed as 'suspicious' were counted as detections, this has to count as a false positive.

Cybec Vet Anti-Virus v9.90 20 Oct 1998

ItW Boot	100.0%	Macro	83.6%
ItW File	99.0%	Polymorphic	96.2%
ItW Overall	99.1%	Standard	99.2%

Detecting all the ItW boot samples was a good start, but *Vet's* failure to scan SCR files by default partly accounts for it missing a VB 100% award. The polymorphic macro virus W97M/Groov.B also played a part in this.

Similar factors largely accounted for *Vet's* misses against the Polymorphic test-set, with Marburg-infected SCRs and macro viruses XM/Compat, Groov.B and W97M/Splash.A taking their toll. As with several products in this review the Navrhar VxDs largely accounted for misses in the Standard

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	Scanning Speed						False Positives
	Diskette - Clean		Diskette - Infected		Hard Drive - Clean		
	Time (seconds)	Throughput (KB/s)	Time (seconds)	Throughput (KB/s)	Time (min:sec)	Throughput (KB/s)	
Alwil AVAST!	40	24	81	15	4:18	2070	0
Command AntiVirus	32	30	38	31	4:41	1901	1
Cybec Vet Anti-Virus	38	26	39	30	2:03	4342	1
Data Fellows FSAV	50	19	39	30	23:00	387	2
DialogueScience Dr Web	77	13	62	19	53:16	167	19
ESET NOD32	34	29	45	26	2:41	3317	0
FRISK F-PROT	32	30	37	32	4:10	2136	1
Grisoft AVG	53	18	62	19	8:57	995	10
H+BEDV AntiVir	47	21	55	21	3:31	2531	2
iRiS AntiVirus	41	24	35	34	7:55	1124	1
Kaspersky Lab AVP	51	19	39	30	22:45	391	2
NAI McAfee VirusScan	46	21	55	21	5:09	1729	0
Norman ThunderBYTE	28	35	31	38	1:28	6069	0
Norman Virus Control	53	18	55	21	5:10	1723	16
Sophos Anti-Virus	46	21	36	33	7:49	1139	0
Symantec Norton AntiVirus	45	22	47	25	8:05	1101	0

test-set. Results against the macro test-set were disappointing. With a definitions file dated 20 October, better detection of the newer viruses added to the test-set for this review was expected.

As usual, *Vet* was very near the top of the speed chart, although its throughput is noticeably lower than in the February 1998 DOS comparative. One false positive for an HLL virus was reported.

Data Fellows FSAV v3.0.125 24 Oct 1998

ItW Boot	100.0%	Macro	98.9%
ItW File	100.0%	Polymorphic	99.8%
ItW Overall	100.0%	Standard	100.0%

Data Fellows' F-Secure Anti-Virus attained VB 100% level performance against the combined ItW test-sets. Unlike *FSAV* for most other platforms, which combine the *FRISK* and *Kaspersky Lab* engines, the DOS incarnation of *FSAV* uses just the latter.

Detecting all the samples in the Standard test-set does not leave much room for comment. Most of the small number of macro viruses missed were those most recently added to the test-set. Detecting all but 21 of the 50 XM/Compat.A samples in the Polymorphic set and none of the eleven in the Macro test-set will require improvement if the *NT* product is to obtain a VB 100% award in the upcoming March comparative. This virus made it to the December 1998 WildList which will be the basis of the ItW File test-set used for that review.

The *AVP* engine is unlikely to be accused of high speed, and with a throughput slightly below 400 KB/s, this incarnation of it puts *FSAV* among the slowest three products. Suspicion of two 'Type_ComExeTSR' viruses in the Clean set is not unusual with products relying so heavily on emulators and heuristics, but is still undesirable.

DialogueScience Dr Web v4.03 23 Oct 1998

ItW Boot	98.8%	Macro	93.7%
ItW File	100.0%	Polymorphic	100.0%
ItW Overall	99.9%	Standard	99.5%

Ornate from the ItW Boot set was the fly in the ointment which prevented *Dr Web* from achieving a VB 100% award. This is a notable improvement over the performance of *DialogueScience's* Win32 scanner against much the same Boot set in the November 1998 comparative.

Perfect detection of the Polymorphic test-set samples has been something of a *Dr Web* speciality and it was one of only four products to achieve that level of performance here. The MemLapse.289 and Navrhar VxD samples were missed in the Standard set and the misses in the Macro set were mainly the newest of viruses to be added to that set.

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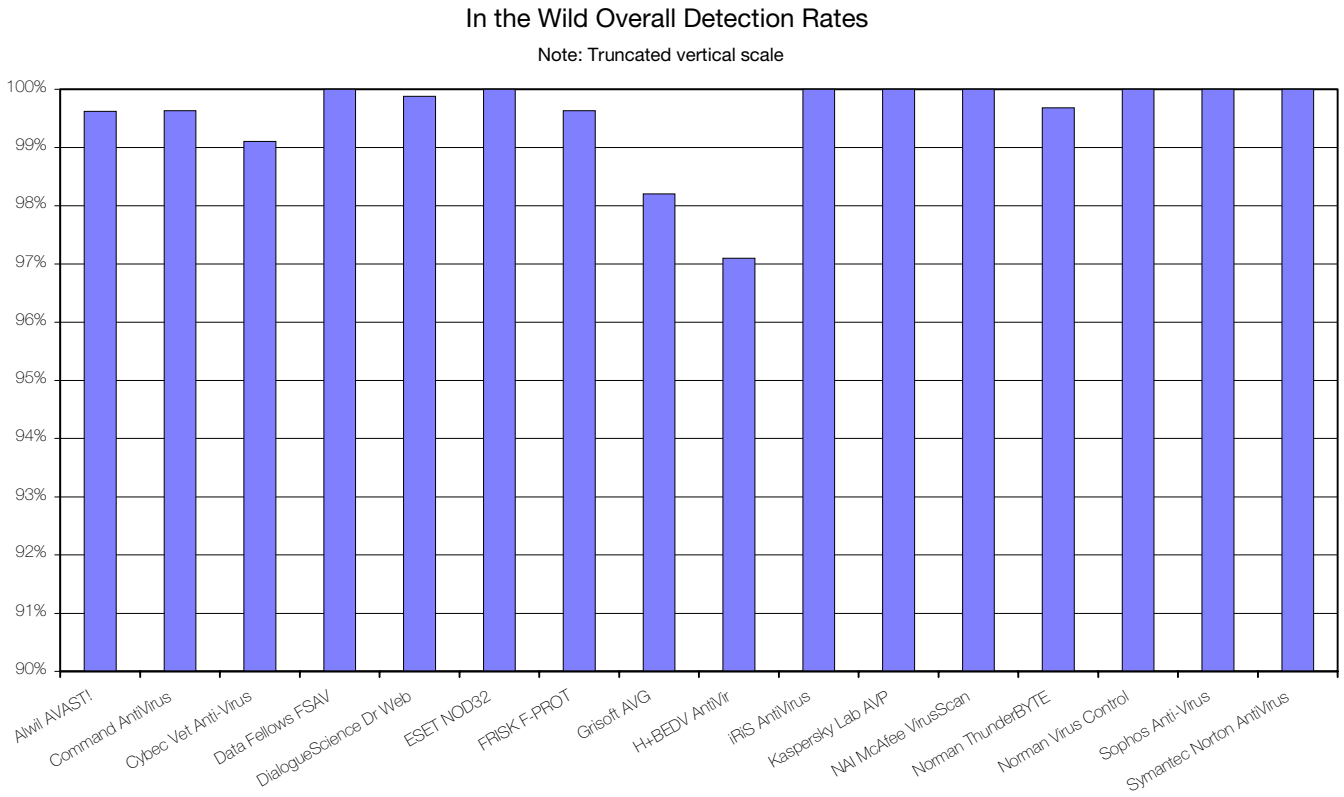

Dr Web seems destined to place slowest in *VB* Clean set speed tests and so it was in this review. As noted before, its near-glacial speed, resulting in a throughput of 167 KB/s, should be largely offset should it be used in association with *DialogueScience's* integrity checker. Nineteen false-positives is too many.

ESET NOD32 v1.11

ItW Boot	100.0%	Macro	98.1%
ItW File	100.0%	Polymorphic	99.5%
ItW Overall	100.0%	Standard	99.7%

ESET's little-known (at least, outside its native Slovakia) *NOD* continues its recent impressive showings in *Virus Bulletin* comparative reviews, picking up a VB 100% award here.

Power_Pump.1 was the only virus to elude *NOD32* in the Standard test-set, and the small number of the most recently received macro viruses missed in that set demonstrates how up to date the product was in that quarter. Analysis of the samples of the only virus missed in the Polymorphic test-set (W97M/Splash.A) reveals a potential design limitation in *NOD32* – it does not seem to handle large macros well.

W97M/Splash.A morphs itself by randomly inserting randomly-generated comment lines into its code. This has no ill-effect on the virus but makes the VBA code and associated structures in the host document file larger with each generation. The *Virus Bulletin* Polymorphic test-set contains 100 replicants, randomly selected from a set of 517 samples generated so that each was larger than its forebear. *NOD32* stopped detecting Splash as the document approached 250 KB, although the limiting factor is most likely the size of some internal structure in the document under examination or perhaps resources available to the scanner, such as memory.

It is almost a truism in the anti-virus field that you can have speed or good detection. However, *NOD32* is one of the products that bucks that idea, effectively coupling the two. It returned the third highest throughput on the Clean test and did so without false alarm.

FRISK F-PROT v3.03a 26 Oct 1998

ItW Boot	96.3%	Macro	99.1%
ItW File	100.0%	Polymorphic	100.0%
ItW Overall	99.6%	Standard	99.7%

The welcome return of *FRISK Software's F-PROT* to *VB* tests was not as triumphal as some may have expected. As with *CSAV*, three elderly and historical troublemakers in the ItW Boot test-set prevented *F-PROT* from turning in a performance worthy of a VB 100% award.

This similarity of perfomance should not be surprising, as the two employ the same engine. *F-PROT's* correct detection of all Cryptor samples is likely due to the more up to date SIGN.DEF file, with the five-day newer MACRO.DEF making the difference on the Macro test-set. Comments about other aspects of performance are the same as for the *Command* product.

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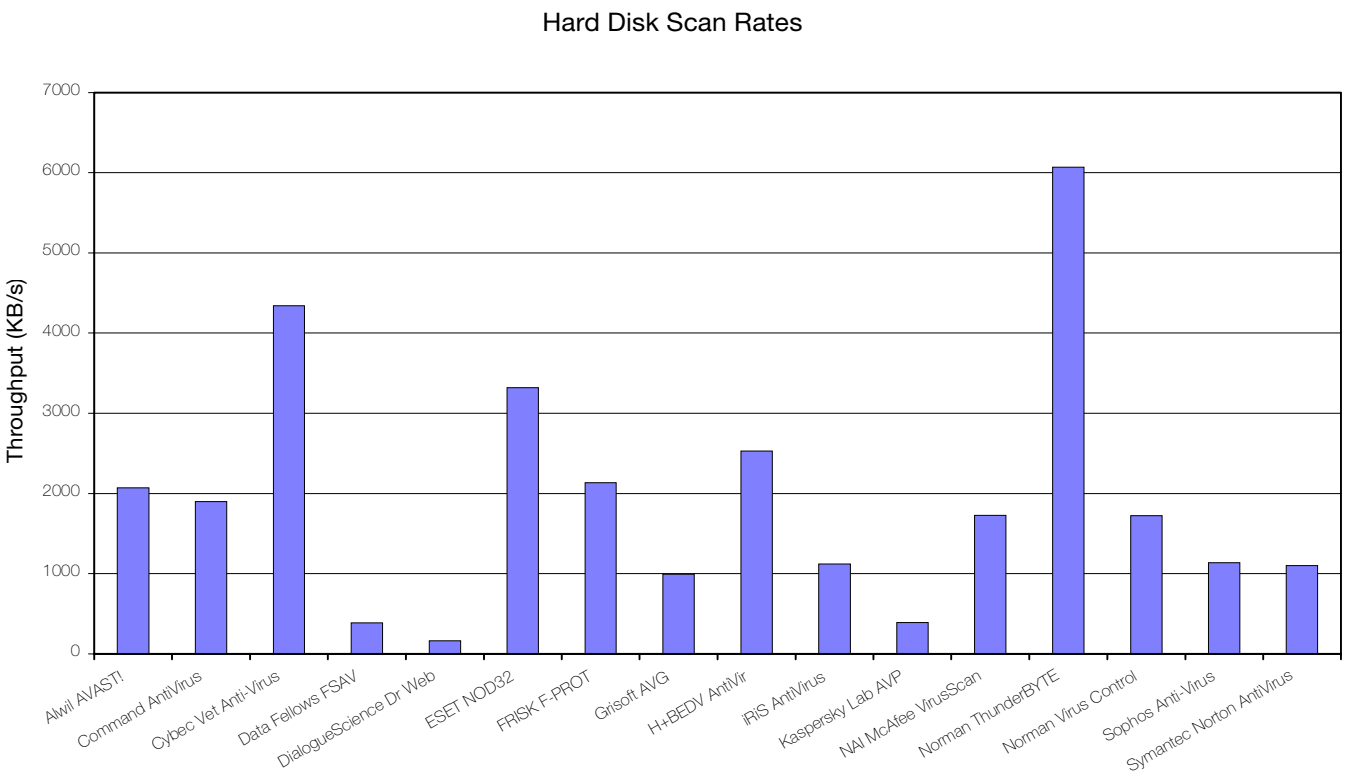

Grisoft AVG v5.0 (build 1234)

ItW Boot	97.6%	Macro	68.8%
ItW File	98.3%	Polymorphic	98.1%
ItW Overall	98.2%	Standard	98.6%

Missing ABCD and TPVO.3783.A from the ItW Boot set was not an auspicious start for *AVG*. However, then failing to detect three macro viruses from the In the Wild File set (WM/Nottice.A, WM/TWNO.AC and X97M/Extras.B) is probably not that surprising a result, as the Macro test-set was its weakest area of performance. With a detection rate lower than 70%, this must be an area of some concern, as in earlier *VB* reviews.

It is, however, encouraging to note *AVG's* marked improvement against the Polymorphic set where, apart from missing all X97M/Compat.A and W97M/Splash.A macro viruses, only four samples of Cryptor.2582 evaded *AVG*.

Ten false alarms against the *VB* Clean set is too many. This is especially so when five of them were against various different versions of Vernon Buerg's extremely popular, and therefore widely distributed, *List* utility and one against a version of *Microsoft's* DOS network client manager utility NET.EXE!

Scanning speed was neither remarkably fast nor grindingly slow, although nearer the latter. At approximately 1 MB/s, it was in the company of the products by *iRS*, *Sophos* and *Symantec*, although with those offerings the price of this somewhat pedestrian speed is offset by notably higher detection rates.

H+BEDV AntiVir v5.15.0.8

ItW Boot	96.3%	Macro	74.2%
ItW File	97.2%	Polymorphic	81.9%
ItW Overall	97.1%	Standard	97.9%

Somewhat confusingly, two commandline scanners are included in the *H+BEDV* product – AVScan and AVE32. The results here are those produced by the latter, as it had the higher detection rate. In general these rates are much as they have been in recent reviews.

While the product missed three viruses in the ItW Boot set, these were not the 'usual three' mentioned elsewhere, but ABCD, Lilith and Moloch. The misses against the ItW File set were mainly the more recent polymorphic additions to the set, including Marburg.

The slight improvement over recent performances against the Polymorphic set is largely due to *H+BEDV's* detection of all samples of two of the three macro viruses, with the more complex polymorphic executable infectors still defeating it. The recently added class infectors and several of the other polymorphic macro viruses only represented in the Macro test-set collectively took their toll on *H+BEDV's* detection rate against this set. Improvement here must be considered urgent given the continuing proliferation of macro viruses.

With a throughput of 2.5 MB/s, *H+BEDV* placed fourth fastest against the Clean test-set. Although a creditable speed, overall, higher detection and removal of the two false positives is to be desired.

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iRiS AntiVirus v22.14 26 Oct 1998

ItW Boot	100.0%	Macro	90.0%
ItW File	100.0%	Polymorphic	99.1%
ItW Overall	100.0%	Standard	100.0%

Longtime participants in *VB* tests, Israeli *iRiSAV* has been putting some consistently high detection scores in recent tests, and in this comparative collected its second VB 100% award.

Detection of the Macro test-set was down a little, mainly due to the large number of quite new viruses added for this test. Some of the early class infectors were detected, but some older polymorphic macro viruses, such as WM/JunkFace.C and W97M/Minimorph.A, were still missed and with the increasing use of polymorphism in macro viruses this is of some concern.

iRiSAV's speed is acceptable, displaying throughput a tad above 1 MB/s. The single false positive identification of HLLP-1F50 should be easily fixed.

Kaspersky Lab AVP v3.0.125 24 Oct 1998

ItW Boot	100.0%	Macro	98.6%
ItW File	100.0%	Polymorphic	100.0%
ItW Overall	100.0%	Standard	100.0%

The near-legendary detection capabilities of *AVP* did not fail it in this test, with it again performing at VB 100% award level when faced with the combined ItW Boot and File test-sets.

Normally there should be little to add to that already said of the *Data Fellows FSAV* product in commenting on *AVP*, as the same engine build level and identical virus definition (AVC) files were supplied with both products. Surprisingly, however, some macro viruses which *FSAV* detected *AVP* missed, and, contrarily, XM/Compat was reliably detected by *AVP*, thus explaining the latter's better score against the Polymorphic set. As always, *AVP* would not win any awards for its speed.

NAI McAfee VirusScan v4.0.1.4001

ItW Boot	100.0%	Macro	98.2%
ItW File	100.0%	Polymorphic	98.0%
ItW Overall	100.0%	Standard	100.0%

This is the first hybrid *VirusScan*, combining the *Dr Solomon's* virus detection engine with *NAI's* user interface code, to be tested by *VB*. Given that both its progenitors did so a year ago, all but the most cynical would have expected it to perform at VB 100% levels on the combined ItW test-sets. It did not disappoint in this regard.

In the Polymorphic test-set, eight Marburg-infected EXEs and all but one of the W97M/Splash.A samples were missed. The very newest macro viruses and a few of the complex polymorphic ones accounted for the misses in the Macro test-set.

No false positives were recorded against the Clean test-set and the scanning speed resulted in a quite acceptable 1.7 MB/s throughput.

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Norman ThunderBYTE v8.09 27 Oct 1998

ItW Boot	100.0%	Macro	93.8%
ItW File	99.6%	Polymorphic	95.4%
ItW Overall	99.7%	Standard	98.8%

A perfect detection score on the ItW Boot tests was not matched on the ItW File tests, so *ThunderBYTE* missed a VB 100% award for the second consecutive review. The culprits were four of the Marburg EXE samples, three TMC_Level-69 COM replicants and one sample of each of the CIH variants on the WildList.

Approximately a third of the Marburg samples in the Polymorphic test-set were also missed, as were all the Compat.A and Splash.A samples and three Mad.3544 replicants. Despite detecting many of the Class variants, other polymorphic macro viruses featured among the misses on the Macro test-set. The Navrhar VxDs and a few recent additions to the Standard set were mainly responsible for the less than complete detection there.

If outright speed is as important to you as good virus detection, then *TBAV* may well be your choice. Returning a throughput close to 6 MB/s it was more than twice as fast as all but two of its rivals, although this speed is close to 25% down on that recorded by v8.04 a year earlier. No false positives were recorded.

Norman Virus Control v4.60.19 26 Oct 1998

ItW Boot	100.0%	Macro	94.0%
ItW File	100.0%	Polymorphic	99.0%
ItW Overall	100.0%	Standard	99.7%

Another consistently good performer against the viruses on the WildList, the other *Norman* product *Norman Virus Control* (*NVC*) scoops up its sixth VB 100% award here.

As with its stablemate, *ThunderBYTE*, Navrhar was missed in the Standard and Macro test sets as was DNA.1206 in the Standard set. All the rest of *NVC's* misses were macro viruses, with it failing to detect Compat.A and Splash.A in the Polymorphic set and a slightly smaller subset of the newer and polymorphic viruses in the Macro test-set.

Scanning speed against the Clean test-set was a respectable 1.7 MB/s. Unusually for *NVC*, it reported 16 viruses in the Clean set. This should be easily fixed however, as only two 'viruses' are claimed to make up these sixteen reports –with two instances of Missilena.Trojan and the rest claimed as Zombie_II.7320 infections.

Sophos Anti-Virus v3.15 2 Nov 1998

ItW Boot	100.0%	Macro	92.2%
ItW File	100.0%	Polymorphic	100.0%
ItW Overall	100.0%	Standard	99.2%

Also in the running for its sixth VB 100% award, *Sophos Anti-Virus* was not let down by its DOS scanner. *SWEEP* also performed well against the Polymorphics, reliably detecting all samples of the macro viruses recently added to the set.

The large influx of very new macro viruses took something of a toll on *SWEEP's* detection on the Macro test-set when compared to its performance on recent comparatives. It did, however, detect some of the viruses in the Class family and other class infectors. It also detected most of the older polymorphic viruses in the Macro test set.

Speed tests achieved a throughput of about 1 MB/s. As with other products where a direct comparison can be made, *SWEEP's* speed against the Clean test-set has dropped modestly since the previous DOS comparative – an expected result given the large growth in virus numbers and similar test conditions. No false positives were recorded.

Symantec Norton AntiVirus v4.0 28 Oct 1998

ItW Boot	100.0%	Macro	99.1%
ItW File	100.0%	Polymorphic	98.7%
ItW Overall	100.0%	Standard	99.7%

Although sporting fewer 100% categories than some others, *Symantec's NAV* detected more samples and more viruses than any other product in this test. Importantly though, it missed none in the joint ItW test-sets, but its only miss in the Polymorphic set was a Marburg sample, and that is in the wild.

Its other misses were Win95/Boza.D in the Standard set and a smattering of very new strains amongst the macro viruses. Scanning speed was around the comfortable 1 MB/s rate and, correctly, no alarms were raised against the Clean set.

Closing Comments

It is encouraging to see most products catching up with the demands of newer viruses. One wonders whether the results against the class infectors and other polymorphic macro viruses might have been quite different had the tests been run against products just a few weeks older.

Technical Details

Test Environment: Server: *Compaq* Prolinea 590, 80 MB of RAM, 2 GB hard disk, running *NetWare 3.12*. Workstations: Three 166 MHz Pentium-MMX workstations with 64 MB of RAM, 4 GB hard disk, CD-ROM drive and a 3.5-inch floppy, all running MS-DOS 6.22 and *Novell* ODI/VLM drivers. The workstations could be rebuilt from image backups and the test-sets were in a read-only directory on the server. All timed tests were run on one workstation that was not connected to the network for the duration of the timed tests, but otherwise configured identically to the detection test condition.

Virus Test-sets: Complete listings of the test-sets used are at http://www.virusbtn.com/Comparatives/DOS/199901/test_sets.html. A complete description of the results calculation protocol is at http://www.virusbtn.com/Comparatives/Win95/199801/protocol.html.

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