instructions

→ Win Stone 98 ⇒ Better

→ Win Stone 97 as focus

→ Win 98 Box ⇒ has Jim seen?

→ John

→ Wake-On LAN

Uninstall

⇓

Tune-Up

Windows 98 Project Review

8/21/97

- Few Corps
- Lots Users

Low Risk ⇒ More Stable System

GOVERNMENT EXHIBIT 419

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Agenda:

- Win98 Schedule & Quality
- Win98 Performance
- Win98 Contents & Adoption

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Focus this review is on Win98 bits scheduled to RTM late this year. Give an update on where we are on schedule, quality, performance, and product contents

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Windows 98 Product Objectives

- Accelerate IE4 adoption
- Enable OEMs & HW partners
- Improve customer experience/satisfaction with Win95
- Retail upgrade revenue
- Windows platform advancements

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Win98 Schedule & Quality

Win98 Schedule

DR 1 - 12/20/96
DR 2 - 4/8/97
DR 3 - 4/30/97
Beta 1 - 6/30/97
Beta 2 - 7/30/97
IE4 Final Bits - 9/15/97
Beta 3 - 10/6/97
RC 1 - 11/6/97
RTM - 12/8/97

Assumptions:
- IE4 RTW 9/15
- Approx. 200 IE/Shell Bugs Fixed Between RTW & Win98 RC
- Minimal bug fixes after Beta 3

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Take the time to deliver quality

-> Minimal bugs fixes after Final beta

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Win98 Bug Stats Since 7/9

Not Including IE Databases

- The Bottom Line:
  - 1875 bugs currently active
  - At rates we have seen over last 6 wks, we will be at ~ 30 showstoppers in 4-5 weeks.
- What our bug rates look like:
  - Opened Bugs
    - 4647 bugs
    - 155 bugs/day
  - Resolve
    - 6825 bugs
    - 227 bugs/day
  - Fixed
    - 2151 bugs
    - 72 bugs/day

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Assuming 5 day work week....

Pathway to Convergence in 4-5 weeks

[redacted]	Opened R	MF Open	Resolve R	Fixed Rate	Close Rate	F:O Ratio	R:O Ratio	MF:O Ratio
2 Weeks	[redacted]	[redacted]	[redacted]	80.00	201.40	0.59	1.60	0.34
4 Weeks	[redacted]	[redacted]	[redacted]	72.50	188.35	0.51	1.81	0.37
6 Weeks	[redacted]	[redacted]	[redacted]	71.70	182.43	0.46	1.47	0.36
Since 6/15	[redacted]	[redacted]	[redacted]	63.31	163.38	0.43	1.37	0.34

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Critical Path Areas

- Setup
  - HW/Driver compatibility → detecting
- Performance/Size
- Shell integration & usability
  - Channels, WebView & ActiveDesktop
- HTML Help
- Broadcast Services
- WDM Audio
- HW Maturity (ACPI, AGP, 1394)

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Crystal Audio

→ rebalance of resources

Omnibook

→ PC Card

→ PCMIA

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Win98 Quality

- Quality Criteria
  - Upgrade-ability: Smoother upgrade then Win95 had
    - Windows 98 Upgrade status - 93% pass rate
    - OEM visit pass rates - 85% pass rate
      - failures includes prototypes and damaged hardware
    - Install Fair pass rates - 72% pass rate
      - primarily hardware issues
  - Applications Compatibility: Comparable to Win95
    - 96.7% overall pass rate - projected 98% pass rate.
    - 99.4% pass rate on priority 1 apps , 96.3% on priority two apps
  - Reliability: More reliable then Win95
    - Stress Tests - 94 to 96% pass rate since Beta2 as compared to 95% for Windows 95 at ship
    - MTTF - Win98 beta stays up over 1 hr. longer then Win95 under user scenario stress
    - Fixed 1786 Windows 95 bugs including 351 customer requested QFEs (eg. registry corruption)
  - Functionality:
    - Component testing - 95.7% pass rate on 87030 test variations

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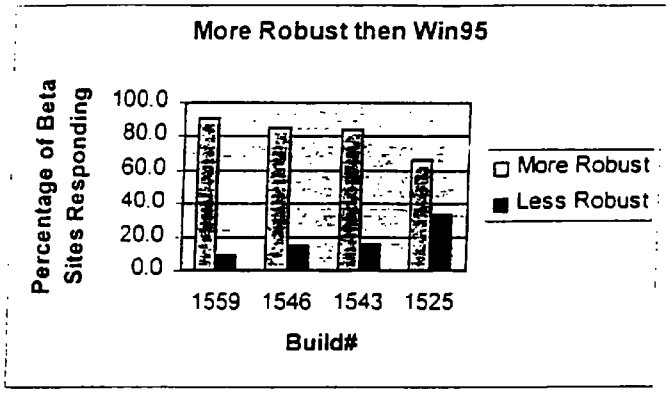
Beta Site Survey

What Do Beta Sites Say About Win98 Robustness?



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	More Robust		Less Robust		Total
1559	119	90.8%	12	9.2%	131
1546	1467	85.4%	250	14.6%	1717
1543	221	83.7%	43	16.3%	264
1525	325	66.7%	162	33.3%	487

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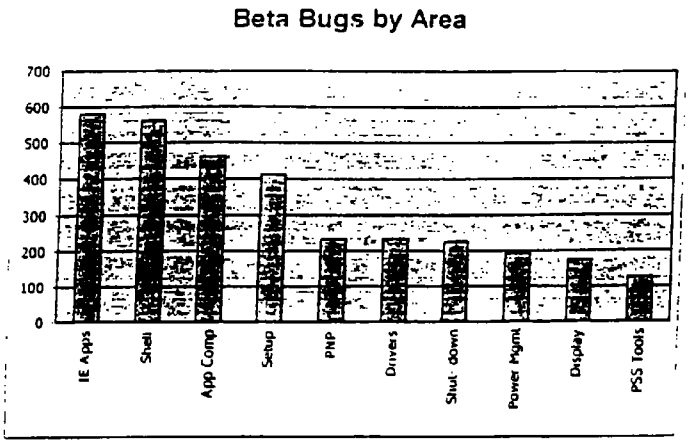
Top 10 Beta2 Bug Areas



Top 10 areas account for 72% of Beta2 bugs.

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Fixed Bugs in Beta:

QEMM97 - 12 Beta reports - RelNoted before beta. Fixed VMM and MapCache to correct.

Quicken BillMinder - 8 Beta reports - Could not start from Startup Dir Fixed by post-beta Shell drop from IE.

Managing Your Money - 10 Beta Reports - Scrolling problems. Fixed in USER EXE

Won't Fix:

Helix Buts and Bolts - 13 reports - Incompatible with USB Repros on Detroit and Helix is working on patch

Norton Util 2.0 - 14 reports - Incompatible with FAT32. Repro on OSR2. Patch available

Visual Basic 5 - 3 reports - Toolbox can't display in second monitor Incompatible with Multi-Mon

By Design:

Office 97 SP1 - 6 reports - Directly from the Web Site: Note. If you are currently running beta or preview copies of any Office applications, Internet Explorer 4.0, Windows NT 5.0 or Memphis, please do not install the Office 97 Service Release Patch

Active Bugs in Beta:

Areas:

Internet App Issues: Virtual Access 4.0 fault in mempory access reading Web Postings

Internet Phone works only for a short time, then shuts off

netscape WSASRV page fault in RNR20 DLL while using Netscape 3.0 16bit with ICQ

MultiMedia Issues: Intel Video Phone - Audio is missing from Video link.

Cakewalk 5 problems with MIDI devices

Shell Issues: Personal VB app crashes Explorer

Manmba Castanet Tuner displays abnormal menu behavior

Office 95 title bar display problem

Netscape:

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Product Checkpoints

- Beta1 -- 10,000 sites
- Beta2 -- 15,000 sites
- Beta3 -- 20,000 sites (+ 100,000 marketing preview sites)
- Install Fairs
- OEM & Corporate Visits
- Weekly External Releases To Top 750 Beta Sites

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-Drivers and associated functionality and what dependence they have.

Install fairs Issues

Sound

- upgrade issues, hw conflicts or drivers faulting
- wan_appe apps fail to run on system once installed

LAN

- (3) RealTek RTL8029 is not detected when it should find it. Took card out and then put back on subsequent reboot and it work fine.

Free disk space

- need to refine free disk space check, (2) Not enough to save system files but the system started file copy continue and failed at 89 % -re formatted and ok setup.

Emergency Boot Disk

- Creating startup disk it was looking for EAWIn98

Video

- driver support pulled for Matrox, buggy driver.
- Mis-detected diamond stealth 2000

Shut Down

- (6) The shutdown process would never get to the "shut off computer" screen just a black screen - Disabled fastshutdown

CD

- (3) Lost drive letter (reassignment between boots). Corrected during reboot with ebd.

Applications

- HIJAK Pro - caused GPF with explorer on SCLASS DLL - uninstalled and reinstalled worked fine.
- CDr making software "TO GO!" lost all functionality (vendor CoQuadrat) error msg - "GRI library for MMC compatible recorders performance invalid" - works in OSR2
- Corel Web Designer SimCity running together- Runtime Heap Error - Cyrix 586/24Mb
- WordPad (from Tuneup Wiz) failed opening release notes - ThinkPad 486/DX4/75
- MS Scanserver (anyone of them) preview error "wmps executed an invalid instruction in module mscmv.dll" Micron D6 Pentium
- Starting Windows - VPOWER initializing caused GPF - disabled APM worked fine - Compaq Presario 3000 customer left before getting Bios info
- Outlook fails due to uncorrect version of MAPI32.DLL - copied file from system directory to office directory and worked fine.

OEM Trips

- Visiting AST, Sony, IBM, Dell, Gateway, Compaq, Toshiba, DEC, NEC, Packard Bell, Micron, HP
- Dell: 20 machines, 100% pass rate
- Toshiba: 14 machines, 75% pass rate - issues identified:
  - modem blue screens at first boot, fixed
  - trimmer bug - IR application pre-installed by vendor, fixed
  - power managing hard drive when not expected, investigating
  - ATA Flash PC Card hanging system, investigating
- HP: 16 machines, 100% pass rate on installs - issues identified
  - all laptops failed to load the PCI IRQ routing tables. Investigating

Corporate Betas

- Weekly conference calls with key corps
- Dedicated MTS engineers focused on reviewing issues and pushing thru development team.
- will visit 5 OEM sites for further testing similar to OEM visits
- Using the focussed corporate betas as a testing bed for the retooled Corporate tools: PolEdit.exe, Batch Install, NetSetup.exe, OEM Preinstall Tools

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Win98 Performance

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Windows 98 Performance

- Is Windows 98 the fastest way to run with IE4?
  (comparison: Win95 IE4 AD+WV to Windows 98 AD+WV)
  - YES
- Is the Navigator user going to have a faster experience with Windows 98?
  (comparison: Win95 gold to Windows 98 with IE4 "classic mode" shell)
  - NO
- How has Windows 98 impacted perf independent of IE4?
  (comparison: Win95 gold vs Windows 98 without IE4)
  Faster in 5 areas, worse in 1 area, same in 1 area

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Shell Definitions

- **Web View with Active Desktop Mode**
- 1 WebView on. (View-->Folder Options-->Web Style)
- 2. Toolbar should only have standard buttons, address bar and text labels activated
- 3. Large icons activated.
- 4 Active Desktop activated. (right click Desktop-->View as Web page)
- 5. Wallpaper should be Internet wallpaper "c:\windows\web\wallpaper.htm"

- **Classic Mode – POR for Win98 default**
- 1. Classic Style On --> WebView Off.
- 2. Toolbar should only have standard buttons and address bar activated.
- 3. View As Web Page OFF.

- **Memphis without IE4**
- do not install following components: IE4, JAVA, ICW (Internet Connection Wizard), Connection Manager, Athena, Channels
- uses new shell but does not load some components at boot: SHDOCVW.DLL, URLMON.DLL, OLE32.DLL, SHLWAPI.DLL...

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System Metrics

- App launch time
- System shutdown time
- System boot time
- Thread latency
- Winstone97
- Disk I/O - throughput & CPU utilization
- Shell usage

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Windows 98 is...

- BETTER on
  - application start
  - system shutdown
  - thread latency
  - Winstone98 (unproven)
  - disk I/O
- EQUAL on
  - system boot
- WORSE on
  - Winstone97
  - shell actions

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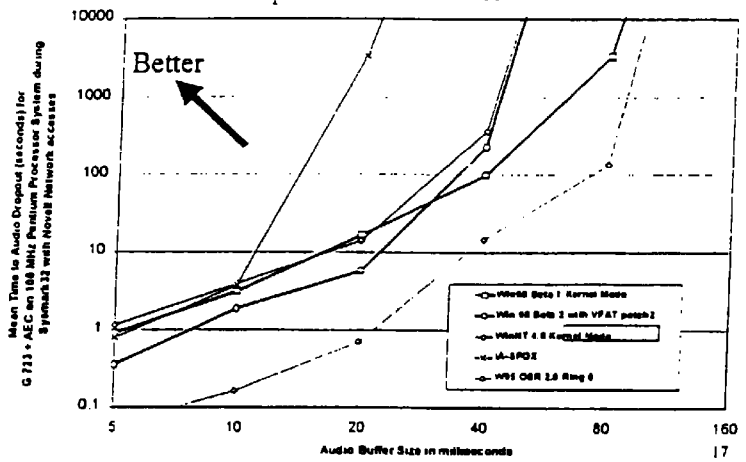
Windows 98 vs Win95

Latency

Independent of shell mode



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Windows 98 vs Win95

Disk I/O

Independent of shell mode

	Windows 98	Windows 95
Throughput	1.70 MB/s	1.60 MB/s
CPU %	25%	38%

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Full IE4: Windows 98 vs Win95

- Application launch time
  - 16MB: Windows 98 is avg of 24% faster
    - eg- Word is 4.5s vs 5.4s in Win95
    - was 24% slower on avg in bld1513
  - 32MB: Windows 98 is avg of 71% faster
    - eg- Word is 1.9s vs 3.6s in Win95
    - was 48% faster in bld1513
- Shutdown time
  - 16MB: <3s vs 20-30s (typical)
  - 32MB: <3s vs 20-30s (typical)

app launch times FAT32 after running Windows Tuneup

16MB Dell P5-200, 512k L2, USB, Powergraph 64 3D 2MB, WD AC22100H 2GB, Intel e100B PCI19

2 milliseconds
10 mi

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Full IE4: Windows 98 vs Win95

- System Boot time
  - 16MB: Windows 98 is on average equal to Windows 95 (37.8s)
  - 32MB: Windows 98 is on average equal to Windows 95 (35.2s)
  - net component change (vip.386) pending to remove1-2s from system boot
  - we were 10s slower than Win95 in bld1513

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Full IE4: Windows 98 vs Win95

- Winstone97
  - 16MB: Windows 98 is 1% better than OSR2 and 4% worse than Win95
  - 32MB: Windows 98 is 2% better than OSR2 and equal to Win95
- Shell usage
  - 16MB: Windows 98 is 16% slower
  - 32MB: Windows 98 is 9% slower

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IE3 or Nav user upgrading to Windows 98 with IE4

- Application launch time
  - 16MB: Windows 98 is avg of 50% faster
    eg. Word is 2.0s vs 3.5s in Win95
  - 32MB: Windows 98 is avg of 73% faster
    eg. Word is1.9s vs 3.6s in Win95
- Shutdown time
  - 16MB: <3s vs 20-30s (typical)
  - 32MB: <3s vs 20-30s (typical)

Win95 gold vs Memphis "classic mode" shell

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IE3 or Nav user upgrading to Windows 98 with IE4

- System Boot time
  - 16MB: Windows 98 is 3% slower (28.0s vs 27.1s)
  - 32MB: Windows 98 is 7% slower (27.3s vs 25.4s)
  - we were 8s slower than Win95 in bld1513
- Winstone97
  - 16MB: Windows 98 is 7% worse than OSR2 and 12% worse than Win95
  - 32MB: Windows 98 is 1% worse than OSR2 and 3% worse than Win95

Win95 gold vs. Memphis "classic mode" shell 23

This should be the focus

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IE3 or Nav user upgrading to Windows 98 with IE4

- Shell usage
  - 16MB: Windows 98 is 56% slower
    - 10 shell items average to 56% slower than the same actions on Win95 gold
  - 32MB: Windows 98 is 48% slower
    - 10 shell items average to 48% slower than the same actions on Win95 gold

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No IE4: Windows 98 vs Win95 gold

this build made for perf measurements only

- Application launch time
  - 16MB: Windows 98 is avg of 52% faster
  - 32MB: Windows 98 is avg of 79% faster
- Shutdown time
  - 16MB: <3s vs 20-30s (typical)
  - 32MB: <3s vs 20-30s (typical)
- System Boot time
  - 16MB: Windows 98 is 14% faster (23.3s vs 27.1s)
  - 32MB: Windows 98 is 9% faster (23.0s vs 25.4s)

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Windows 98 with no IE4 vs Win95 gold

- Winstone97
  - 16MB: Windows 98 is 1% better than OSR2 and 4% worse than Win95
  - 32MB: Windows 98 is 2% better than OSR2 and equal to Win95

Win95 gold vs Win95 with IE4 classic shell

- Shell Actions
  - 16MB: IE4 is 31% slower than Win95
  - 32MB: IE4 is 34% slower than Win95

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Pending perf items

- Remove MYDOCS.DLL, OLEAUT32.DLL and MSVCRT.DLL from loading at boot
- WININET to no longer load crypto code
- Fix extraneous registry accesses
- Mapcache tuning
- Fix GDI hotspots
- Improve opening folders
- Legoize shell for loading documents
- Pending Regression For "Classic Mode":
  - Put Channels On The Desktop
    - 4-5 seconds perceived impact on boot
    - ~3% impact on Winstones

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Win98 Contents & Adoption

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Win98 Content: HW Advances

- OnNow/ACPI
- AGP
- DVD
- Broadcast Services
- Multi-monitor
- DirectX5a
- All OSR2 Capabilities (eg. FAT32)
- Smart Card Support
- WheelMouse Support
- New Updated Drivers (3662 drivers vs. 1874 in Win95)
- WDM Classes
  - Still Image
  - Video Capture
  - HID
  - Audio
  - USB
  - 1394
  - Kernel Mode Streaming

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Win98 Content: Net & Comm

- Automatic IP Address Assignment
- TAPI 2.1 Desktop ⇒ Net ⇒ PBX
- PPTP
- RSVP
- Winsock 2.0
- Updated ISDN Support
- IP Perf enhancements
- Multi-link support
- IGMP 2.0 ⇒ better multi-cast support over dial-u
- Better multi-homed support ⇒ RIP
- NDIS 5
- ATM LAN support

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guaranteed bw

JohnLu: NetMeeting multiple point to point

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Win98 Content: Utilities

- Win98 Tune-Up
  - Performance logger
  - FAT32 conversion
  - File clean-up
- Windows Update
- New back-up w/ disaster recovery
- New Task Scheduler
- My Document refinements
- Windows Scripting
- Registry Repair Tool
- PWS 4.0
- All Plus! elements & add'tl themes from Kids Plus!
- Updated Policy Editor
- Better Corporate Deployment tools
- ICM 2.0
- New PSS Troubleshooters

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→ ICW

→ Common dlg

→

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Win98 Content:
Visual Enhancements & Supportability

- Gradient title bars
- Improved Per User & Log-on
- Accessibility Enhancements
- Fixed focus stealing problems
- Animated menus
- Dimmed menu titles for windows w/o focus
- 256 color icons

- Enhanced Support Tools
  - Improved Sysedit
  - CabView
  - Updated MSInfo
  - System file & driver verification
  - Proactive modem logging
  - Improved Dr. Watson
  - Bug Reporting Tool
  - Registry Rollback
  - Un-Install
- Forced EBF creation
- Real Mode CD-Rom drivers

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Win98 Content: Other Key Advancements

- IE4 and all associated capabilities including:
  - Updated Shell & Browser
  - Updated NetMeeting
  - Updated DirectShow
- HTML Help
- Integrated, Seamless Setup
- Performance Work
- Core WMI Support
- OLE/DCOM
  - w/ DCOM/HTTP → difficult for firewalls w/o HTTP

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What Is In Win98 That Is Not Available On The Web?

- All HW Advances
- Integrated Setup
- All Performance Enhancements
- All Win98 Utilities
- All Win98 Visual Enhancements & Supportability Tools
- Some Networking & Communications Advancements

Highest Quality Experience For Win95 customer

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Best of Web
Best of PC Advancements

– Highest quality –

– Most Support –

– Step forward → in functionality

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Windows 98 Product Objectives

- ✓ Accelerate IE4 adoption
- ✓ OEM adoption
- ✓ Improve customer experience/satisfaction with Win95
- ✓ Windows Platform Advancements
- ? Retail Upgrade Revenue

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Strategic Issues

- How Compelling Is The Retail Upgrade?
  - Many features given away for free
  - Shell defaults
    - Performance
    - Usability concerns (e.g. single-click, confusion on channel bar, AD, etc.)
- Win98 Branding W/ IE4 Web Presence

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Back-Up Slides

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Do you find Memphis more or less robust than Win95?	More Robust	Less Robust	Total
Build			
1559	119	12	131
1546	1467	250	1717
1543	221	43	264
1525	325	162	487
Replies	2132	467	2599
Total Replies			2762
Total Replies From Other Builds			163

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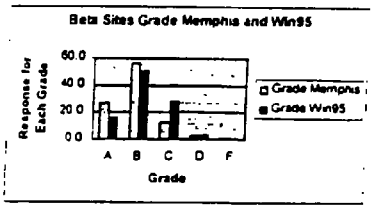
How Do Beta Sites Grade Win98 vs. Win95?



Grade for Memphis

	A	B	C	D	F	Total
1559	47	77	10	1	1	136
1546	546	1012	185	46	14	1807
1543	88	157	32	15	4	275
1535	63	262	111	28	9	513

Grade for Win98

	A	B	C	D	F	Total
1559	20	68	43	6	0	137
1546	307	881	539	62	10	1799
1543	41	143	75	15	1	275
1535	84	294	123	14	1	516

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Was it easy to install?	Very easy	Relatively Easy	Not at all	Total
Builds				
1559	109	19	3	131
1546	1341	375	61	1777
1543	201	62	12	275
1525	317	176	31	524
Replies	1968	632	107	2707
Total Replies				2878
Total Replies From Other Builds				171

Do you view Memphis as an internet friendly operating system?	Yes	No	Total
Build			
1559	134	2	136
1546	1711	91	1802
1543	262	10	272
1525	467	38	505
Replies	2574	141	2715
Total Replies			2885
Total Replies From Other Builds			170

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Do you have any problems running any of your software applications on Memphis?	Yes	No	Total
Build			
1559	25	105	130
1546	408	1343	1751
1543	79	191	270
1525	166	341	507
Replies	678	1980	2658
Total Replies			2826
Total Replies From Other Builds			168

Is all of you hardware functioning properly?	Yes	No	Total
Build			
1559	113	23	136
1546	1441	369	1810
1543	216	57	273
1525	419	95	514
Replies	2189	544	2733
Total Replies			2902
Total Replies From Other Builds			169

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Did you experience any problems running setup?	Severe	Major	Minor	No Problem	Total
Builds					
1669		17	37	82	136
1646		219	611	992	1822
1643		32	99	245	376
1626		89	138	250	477
Replies		357	885	1569	2811
Total Replies					2928
Replies From Other Builds					117

If problems were this due to	1. setup before rebooting	2. 1st boot, after copy	3. hardware conflicts	4. functional problems after setup	5. Other	
Builds						
1669	10	14	14	7	10	55
1646	128	196	221	124	167	###
1643	25	29	27	23	31	###
1626	41	61	76	49	57	###
Replies	204	300	338	203	265	###
Total Replies						###
Total Replies From Other Builds						79

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Shell Actions

16MB

ACTION	OSR2	OSR2 + IE4 classic	OSR2 + IE4 AD/WV	Memphis classic	Memphis AD/WV		classic shell IE4 slower than OSR2	Mem slower than IE4	Mem slower than gold shell	AD/WV shell IE4 slower	Mem slower
Open My Computer	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		68%	5%	77%	207%	31%
Open Explorer from Start Menu	1.05	2.00	2.83	3.45	4.08		90%	73%	229%	170%	44%
Open Control Panel	1.18	1.42	1.83	1.61	2.18		20%	13%	36%	55%	19%
Open C	0.61	0.84	0.93	0.98	1.21		38%	14%	57%	52%	30%
Open My Computer Again	0.63	0.81	1.35	0.89	1.47		29%	10%	41%	114%	9%
Open Local Directory	1.02	1.18	1.37	1.25	1.33		16%	8%	23%	34%	-3%
Open Local Directory Again	0.95	1.08	1.22	1.17	1.32		12%	10%	23%	28%	8%
Copy Files/Folders locally	10.22	9.95	9.78	9.65	11.37		-4%	-2%	-6%	-4%	16%
Expand Folder (+)	0.84	0.84	1.10	1.07	1.09		31%	27%	67%	72%	-1%
Open XLS in EXCEL 95	4.88	5.48	7.34	5.23	5.92		13%	-5%	8%	45%	-18%
TOTAL	22.88	25.03	30.37	28.91	33.87	AVG.	31%	18%	58%	77%	14%
% slower from OSR2	0	13%	37%	22%	52%						
Memphis slower than OSR2					11%						

Memphis build 1566, IE4 build 1112

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Shell Actions

32MB

ACTION	OSR2	OSR2 - IE4 classic	OSR2 - IE4 AD/WV	Memphis classic	Memphis AD/WV		classic shell: IE4 slower than OSR2	classic shell: Mem slower than IE4	classic shell: Mem slower than gold shell	AD/WV shell: IE4 slower than OSR2	AD/WV shell: Mem slower than IE4
Open My Computer	0.99	1.38	2.70	1.58	1.76		39%	14%	60%	172%	7%
Open Explorer from Start Menu	1.00	1.69	2.49	2.68	3.00		69%	42%	169%	149%	20%
Open Control Panel	0.93	1.35	1.66	1.44	1.52		45%	7%	55%	79%	4%
Open C	0.59	0.84	0.97	0.91	0.99		42%	8%	54%	64%	7%
Open My Computer Again	0.60	0.87	1.33	0.83	1.41		35%	2%	38%	122%	9%
Open Local Directory	0.83	1.17	1.36	1.18	1.37		41%	1%	42%	64%	1%
Open Local Directory Again	0.77	1.02	1.28	1.08	1.33		32%	6%	40%	68%	4%
Copy Files/Folders locally	8.63	8.55	9.75	8.27	8.98		-11%	8%	-4%	-1%	-8%
Expand Folder (+)	0.63	0.65	0.87	0.83	0.88		35%	-2%	32%	38%	1%
Open XLS in EXCEL 95	5.14	4.78	4.48	4.69	4.64		-7%	-1%	-9%	-13%	3%
TOTAL	21.11	22.82	28.8	24.5	27.28	AVG	34%	9%	49%	74%	4%
% slower than OSR2	0	8%	27%	16%	29%						
Memphis slower than OSR2					1%						

Memphis build 1566, IE4 build 1112

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Boot Progress since last BillG review

System Boot Time

- VMOUSE initialization reduced by 0.8s
- Floppy enumeration reduced by 1.7s
- IE4 browser components account for 3.9s
- removed 1.8s boot delay for F8 menu
- delayed drawing "Start" menu from boot to when button clicked for 0.8s

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BootSnap
16meg

High-End Scenario (Jeff)	Win95	Win95 + 1565, WebView & AD	Memp1559 Classic	Memp1565 WebView & AD	Memp1559 No IE4	Win95 + 1565, WebView & AD vs Memp1565 WebView & AD		Win95 vs Memp1559 Classic		Win95 vs Memp1559 No IE4	
System Start Time	-5.89	-8.32	-6.10	-5.70	-6.13	2.62	31.49%	0.21	-3.57%	0.24	-4.07%
WIN.COM Time	-1.66	-2.23	-2.42	-2.19	-2.23	-0.04	1.79%	0.76	-45.78%	0.57	-34.34%
Windows Start Time	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00%	0.00	0.00%
BEGIN_PM_APP Time	8.40	8.32	7.29	5.80	6.78	1.52	18.27%	1.31	15.60%	1.62	19.29%
Bootsapp start time		20.16	21.25	23.36	17.06	-3.20	-15.87%	-21.25	NA	-17.06	NA
System Idle Time	21.19	24.39	21.79	24.68	17.15	-0.29	-1.19%	-0.59	-2.75%	4.04	15.07%
Total system boot time	27.39	32.73	28.02	30.15	23.29	2.58	7.88%	-0.93	-3.43%	3.80	14.03%

16meg, Toshiba Equim 6200D P6-200, 256k l2, 2.95 gb EIDE, USB, S3 Virge 2mb, Intel e100b PCI

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BootSnap
32meg

High-End Scenario (Jeff)	Win95	Win95 + 1559, WebView & AD	Memp1559 Classic	Memp1559 WebView & AD	Memp1559 No IE4	Win95 + 1559, WebView & AD vs Memp1559 WebView & AD		Win95 vs Memp1559 Classic		Win95 vs Memp1559 No IE4	
System Start Time	5.52	-7.97	-6.13	-5.54	5.70	2.43	30.49%	0.87	-12.14%	0.18	-3.26%
WIN.COM Time	-1.46	-2.22	-2.43	-2.19	-2.14	0.17	-8.42%	0.94	-44.38%	0.68	-46.58%
Windows Start Time	3.00	3.00	3.00	3.00	3.00	0.00	0.00%	0.00	0.00%	0.00	0.00%
BEGIN_PM_APP Time	7.69	9.24	7.21	6.35	5.72	1.29	16.87%	0.48	6.24%	0.77	10.01%
Bootsapp start time		20.29	21.26	23.56	17.28	3.27	15.15%	2.56	NA	-17.28	NA
System Idle Time	19.85	24.31	21.33	23.92	17.30	0.49	2.02%	-1.24	-6.25%	2.55	12.85%
Total system boot time	25.37	32.29	27.29	29.39	23.01	2.90	8.98%	-1.92	-7.57%	2.36	9.30%

32meg, Toshiba Equim 6200D P6-200, 256k l2, 2.95 gb EIDE, USB, S3 Virge 2mb, Intel e100b PCI

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16meg Appstart 97

High-End 16meg (Greener)	Win95	Win95 + 1555 WebView & AD	Memp1555 Classic	Memp1555 + WebView & AD	Memp1555 Re184	Memp1555 Classic vs Win95		Memp1555 + WebView & AD vs Win95 + 1555 WebView & AD		Memp1555 Re184 vs Win95	
Excel	2.47	3.42	[illegible]	3.55	3.9	0.60	32.3%	3.54	16.8%	3.56	30.5%
Word	3.54	5.37	2.02	4.53	1.97	1.52	75.0%	0.84	18.5%	1.57	79.7%
PowerPoint	3.35	5.14	2.28	3.47	2.34	1.07	46.9%	1.67	48.2%	1.01	43.0%
Access	3.16	4.93	2.17	4.22	2.03	0.99	45.6%	0.61	14.0%	1.13	55.5%
Totals	12.51	18.87	8.33	15.27	9.23	4.18	50.1%	3.66	24.1%	4.28	52.0%

16Meg, DEC Personal WS, P6-200, 256k L2, USB, Matrox Mill. 4meg, DEC RZ1CB-BA SCSI 3gb, Intel e100b PCI

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32meg Appstart 97

High-End 32meg (Greener)	Win95	Win95 + 1668 WebView & AD	Memp1668 Classic	Memp1668 + WebView & AD	Memp1668 No IE4	Memp1668 Classic vs. Win95		Memp1668 + WebView & AD vs Win95 + 1668 WebView & AD		Memp1668 No IE4 vs Win95	
Excel	2.51	2.24	[illegible]	[illegible]	[illegible]	0.89	54.6%	0.58	35.1%	0.84	50.0%
Word	3.64	3.52	[illegible]	[illegible]	[illegible]	[illegible]	93.1%	1.74	93.0%	2.29	168.8%
PowerPoint	3.43	3.41	[illegible]	[illegible]	2.22	1.38	64.9%	1.42	71.1%	1.20	54.2%
Access	3.17	3.21	[illegible]	[illegible]	[illegible]	1.40	79.2%	1.46	82.7%	1.30	69.1%
Totals	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.39	73.3%	5.20	71.3%	5.63	78.9%

32Meg, DEC Personal WS, P6-200, 256k L2, USB, Matrox Mill. 4meg, DEC RZ1CB-BA SCSI 3gb, Intel e100b PCI

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16meg Appstart 97

refrag is not run

ActiveDesktop+WebView

High-End 16meg (Greener)	Win95 WebView & AD 1116	Memp1569 WebView & AD, No Refrag	Memp1569 WebView & AD, No Refrag vs Win95 WebView & AD 1116	
Excel	3.33	3.41	-0.08	-2.40%
Word	4.80	5.06	-0.25	-5.29%
PowerPoint	4.41	4.77	-0.35	-7.95%
Access	4.37	4.35	0.02	0.35%
Totals	16.91	17.58	-0.67	-3.96%

16Meg, DEC Personal WS, P6-200, 256k L2, USB, Matrox Mill. 4meg, DEC RZ1CB-BA SCSI 3gb, Intel e100b PCI

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32meg Appstart 97

refrag is not run

ActiveDesktop+WebView

High-End 32meg (Greener)	Win95 WebView & AD 1116	Memp1569 WebView & AD, No Refrag	Memp1569 WebView & AD, No Refrag vs Win95 WebView & AD 1116	
Excel	2.37	2.41	-0.04	-1.7%
Word	3.55	3.36	0.19	5.4%
PowerPoint	3.31	3.34	-0.03	-0.9%
Access	3.23	2.48	0.76	23.4%
Totals	12.46	11.58	0.88	7.0%

32Meg, DEC Personal WS, P6-200, 256k L2, USB, Matrox Mill. 4meg, DEC RZ1CB-BA SCSI 3gb, Intel e100b PCI

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Dadlabs 97

Low and High-End platforms

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16meg Dadlabs 97

High-End 16meg (Greener)	Win95	Win95 + 1985 WebView & AD	Memp1585C lease	Memp1585 + WebView & AD	Memp1585 No IE4	Memp1585Clease vs Win95		Memp1585 + WebView & AD vs Win95 + 1985 WebView & AD		Memp1585 No IE4 vs Win95	
Word	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.05	[illegible]
Word w/typical	4.45	3.89	[illegible]	[illegible]	2.55	[illegible]	49.80%	1.32	22.34%	1.80	87.32%
Word w/Complex	4.52	[illegible]	[illegible]	[illegible]	[illegible]	1.37	42.13%	1.08	17.71%	1.53	49.46%
Excel	[illegible]	3.36	[illegible]	[illegible]	[illegible]	0.47	22.73%	0.92	27.21%	0.62	31.97%
Excel w/typical	3.53	[illegible]	[illegible]	[illegible]	[illegible]	0.37	11.82%	0.17	4.07%	0.40	12.91%
Excel w/Complex	4.71	3.33	[illegible]	[illegible]	[illegible]	0.43	10.57%	[illegible]	[illegible]	0.42	[illegible]
Access	2.98	[illegible]	[illegible]	[illegible]	[illegible]	0.82	37.79%	0.87	16.71%	1.01	51.18%
Access w/typical	4.53	3.59	[illegible]	[illegible]	[illegible]	0.86	23.47%	[illegible]	[illegible]	0.92	25.38%
Access w/Complex	4.56	[illegible]	[illegible]	[illegible]	[illegible]	0.77	20.27%	[illegible]	[illegible]	0.97	27.32%
PowerPoint	8.49	3.59	[illegible]	[illegible]	[illegible]	0.77	9.64%	0.82	9.17%	0.94	12.47%
PowerPoint w/typical	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.41	11.92%	[illegible]	3.28%	[illegible]	[illegible]
PowerPoint w/Complex	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.03	1.33%	[illegible]	[illegible]	[illegible]	[illegible]

16Meg, DEC Personal WS, P6-200, 256k L2, USB, Matrox Mill, 4meg, DEC RZ1CB-BA SCSI 3gb, Intel e100b PCI

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32meg Dadlabs 97

High-End 32meg (Greener)	Win98	Win98 + 1985 WebView & AD	Memp1985C Iomke	Memp1985 + WebView & AD	Memp1985 No IE4	Memp1985Clomke vs Win98		Memp1985 + WebView & AD vs Win98 + 1985 WebView & AD		Memp1985 No IE4 vs Win98	
Word	1.03	[illegible]	[illegible]	[illegible]		2.33	125.41%	1.10	52.18%	1.94	113.34%
Word w/Typical	4.24	4.23	[illegible]	[illegible]	2.54	1.77	86.48%	1.72	39.74%	1.80	68.11%
Word w/Complex	4.68	4.56	[illegible]	[illegible]	[illegible]	1.88	56.10%	1.37	34.42%	[illegible]	38.98%
Excel	2.52	[illegible]	39	[illegible]	[illegible]	0.83	32.37%	0.83	26.08%	0.82	32.32%
Excel w/Typical	2.45	3.04	[illegible]	[illegible]	[illegible]	0.71	28.11%	0.23	8.27%	0.32	18.01%
Excel w/Complex	4.80	4.21	[illegible]	[illegible]	3.38	0.83	21.86%	0.82	19.20%	0.72	16.59%
Access	2.94	3.09	[illegible]	[illegible]	[illegible]	1.21	70.37%	1.48	48.89%	1.15	64.00%
Access w/Typical	4.49	4.54	[illegible]	[illegible]	[illegible]	1.38	43.30%	1.42	31.30%	1.23	37.89%
Access w/Complex	4.52	4.42	[illegible]	[illegible]	[illegible]	1.38	44.10%	1.30	29.34%	1.24	37.74%
PowerPoint	3.84	3.24	[illegible]	[illegible]	[illegible]	1.14	15.82%	1.23	14.84%	1.11	13.10%
PowerPoint w/Typical	[illegible]	3.48	[illegible]	[illegible]	[illegible]	0.81	18.43%	0.47	13.37%	0.39	18.30%
PowerPoint w/Complex	3.84	3.87	[illegible]	[illegible]	3.58	0.17	4.80%	0.31	8.98%	[illegible]	[illegible]

16Meg, DEC Personal WS, P6-200, 256k L2, USB, Matrox Mill. 4meg, DEC RZ1CB-BA SCSI 3gb, Intel e100b PCI

MS7 001268
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Winstone 97
16meg

High-End 16meg (Honker)	Win98	Win95 + 1545 WebView & AD	Memp1545 Classic	Memp1545 + WebView & AD	Memp1565 No IE4	1565 WebView & AD vs Memp1565	Memp1565 Classic vs Win98	Memp1565 No IE4 vs Win98
Database	3.71	[illegible]	3.55	3.34	3.30	3.4%	-4.2%	5.4%
Publishing	3.51	3.01	3.01	2.99	3.34	-4.2%	-14.2%	-4.7%
Winstone 97	37.30	33.33	32.83	31.97	35.70	-4.3%	-12.0%	-4.3%
WP/SS	3.86	3.55	3.34	3.33	3.58	-7.4%	-13.4%	-7.0%

16meg Dell XPS M200s MMX P5-200, 512k l2, USB, Powergraph 64 3D 2mb, WD AC22100H 2gb, Intel e100b PCI

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Winstone 97
32meg

High-End 32meg (Honker)	Win95	Win95 + 1565 WebView & AD	Memp1565 Classic	Memp1565 + WebView & AD	Memp1565 No IE4	1566 WebView & AD vs Memp1566	Memp1566 Classic vs Win95	Memp1566 No IE4 vs Win95
Database	4.43	4.19	4.56	4.78	5.08	12.4%	9.6%	14.6%
Publishing	4.71	4.66	4.43	4.50	4.54	-3.5%	-5.9%	-3.5%
Winstone 97	43.60	42.27	42.10	42.20	43.50	-0.2%	-3.4%	-0.2%
WP/SS	4.19	4.07	3.94	3.97	4.20	-2.5%	-5.9%	0.2%

32meg Dell XPS M200s MMX P5-200, 512k l2, USB, Powergraph 64 3D 2mb, WD AC22100H 2gb, Intel e100b PCI

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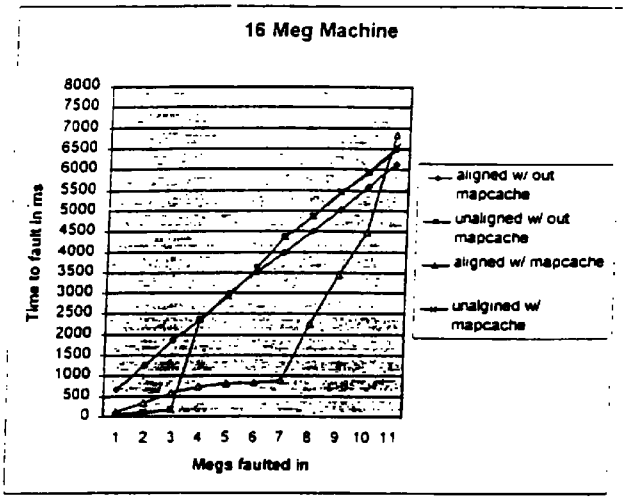
Benefit of mapcache

time required to load pages into memory



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Win3.1 Upgrade: What Will Be Done

- Dev:
  - Bug fixing -- the setup engine intact
- Test:
  - App migration
    - Real-mode nets, real mode apps, utilities
  - HW migration
    - Disk, video
  - Large beta cycle (~20,000 sites):
    - home & corporate
- Ship 120 days after Memphis RTM

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Win98 Disk Footprint Analysis

	Disk Space (MB)	Growth	Temp Space
• Windows 95 typical install	37		
• Windows 98 minimal install	103		10
• Windows 98 typical install	123		10
•			
• **Windows 98 Disk Footprint**			
• Base Components	103	76.7	
• Default optional components	20	15	
• Other optional components	104	50	
• Swap file growth	16.7	14	

• **Base Components**

• Name	Files	Total Size	%
• IE4	163	18.0	17%
• Java	23	7.7	7%
• DirectX	38	6.4	6%
• DirectShow	25	4.9	5%
• Athena	57	3.2	3%
• Modems	176	4.8	5%
• Networking	161	2.9	3%
• Other Win98	1048	55.7	53%
Totals	**1691**	**103.5**	**98%**

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Things Delivered Subsequent To Memphis RTM

- Win31 Upgrade
- DS client
- CSC
- Integrated app installer (Darwin)
- Key HW Features

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Key Win95 Problem Areas

(As defined by PSS Issues)

- HW Configurations
  - PnP BIOSes
  - PCI Bridging
  - Multi-Function
- Device Drivers
  - Better coverage & better detection
  - Updating via Windows Update
- Usability
  - Mail client
  - Start menu Drag & Drop
  - SetForeground window
  - Internet Access
- Registry Corruption
  - Eliminated registry corruption problems
  - Created registry repair tool
- Setup
  - Re-ordered detection
  - Fewer questions of user
  - Creation of EBF
- Efficient gathering of technical data
  - PSS Tools

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