

RESCUE for the HELPDESK

A White Paper on the Impact of Windows® 95

*A comprehensive study of the operations of F100 Helpdesks with
projections of the business benefits that will accrue when
the users migrate to Windows 95.*

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Table of Contents

| | |
|---|-----------|
| EXECUTIVE SUMMARY..... | 3 |
| <i>Background of the Study.....</i> | <i>4</i> |
| <i>Methodology.....</i> | <i>6</i> |
| <i>Research process.....</i> | <i>6</i> |
| RESEARCH RESULTS..... | 7 |
| <i>Research Goals.....</i> | <i>7</i> |
| <i>Helpdesk Position in the Organization.....</i> | <i>7</i> |
| <i>Helpdesk Functions and Responsibility.....</i> | <i>8</i> |
| <i>Helpdesk Problems.....</i> | <i>9</i> |
| <i>Helpdesk Problem Mix.....</i> | <i>10</i> |
| CONCLUSIONS AND SAVINGS WITH WINDOWS 95..... | 11 |
| IMPLEMENTED RESULTS..... | 12 |
| CORPORATE BUSINESS GAINS..... | 16 |
| <i>Cost Savings.....</i> | <i>16</i> |
| <i>Productivity.....</i> | <i>18</i> |
| <i>Customer on site differences.....</i> | <i>20</i> |
| <i>Helpdesk 95 technology improvement.....</i> | <i>21</i> |
| <i>Helpdesk calculations template.....</i> | <i>24</i> |

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Executive Summary

Over the last four months, WorkGroup Technologies undertook a comprehensive study of 14 Helpdesks in F100 firms having large numbers of installed PCs. After extensive research and evaluation of each Helpdesk's experiences with Windows 3.x and Windows for Workgroups 3.x, we have determined that Windows 95 will provide substantial Helpdesk savings for high volume users who switch to Windows 95.

The payback period on the Windows 95 upgrade cost is well less than one year and annual savings will continue for the life of the product.

The research program consisted of in-depth discussions with 14 Helpdesk managers (10 of whom provided the call detail reports) in F100 companies representing over 120,000 PC users and more than 1.4 million Helpdesk calls per year. After analyzing more than forty-seven thousand individual Helpdesk call reports and having extensively evaluated and used Windows 95 for the past four months, WorkGroup Technologies is able to identify many areas where Windows 95 will offer significant Helpdesk operations impact. Our analysis has shown that, in a steady state environment, users should see a reduction in volume of PC Helpdesk calls of between 7% and 14% annually due to Windows 95 robustness and ease of use. Using an example average site (based on this study), with 8733 PCs¹, the reader could anticipate an elimination of 457 calls per month for a potential savings of \$9,140 per month. Alternatively, existing Helpdesk resources would be able to handle more users with no increase in Helpdesk staff. Obviously, savings will vary based on site population as well as other variables.

From our analysis, WorkGroup Technologies projects this average size Helpdesk (serving 8733 PC users) will also see a reduction of 30% to 56% from the previous number of onsite visits. In this average sized site (8733 PCs), WorkGroup Technologies projects a further savings of \$305,400/month due to on-site visit avoidance of 1018 visits per month. Technicians will be able to use Windows 95 remote management and other advanced features to fix the call via the network. Windows 95 features such as remote management, remote communications access, hardware and software plug & play support, user and configuration registry and improved network and systems security features all contribute to reductions in onsite technician visits through centralized access, control and diagnostics. This savings, due to both call avoidance and onsite visit avoidance, will generate an estimated monthly savings of \$314,540.

We should point out this is for the steady state condition after the users have passed the learning curve of using Windows 95. The savings cited above are for larger computer sites; however, we feel the results can be extrapolated to different sized sites and your results should vary proportionately. It was readily apparent from our research that each organization's Helpdesk varies considerably in the types and range of problems encountered, as well as costs associated with resolving the problems. See the spreadsheet at the back of this document for use in auditing your own site-specific Helpdesk data and calculating estimates for your organization. WorkGroup Technologies is available to help the reader through this exercise.

In addition to the obvious cost savings, there are also business and productivity benefits that accrue through increased user satisfaction, less end user downtime and improved confidence in system reliability.

¹ Based on the average size of the sites WorkGroup Technologies studied for this report

Study Background

Helpdesks are moving from an expense center to an integral part of the technology implementation matrix.

WorkGroup Technologies was retained to quantify potential Helpdesk benefits that might be derived through the major operational enhancements that will be delivered as part of Windows 95. Examples of these enhancements include: Remote Access Communications Service, hardware and software Plug & Play extensions, simple and intuitive user interface, support for long file names and User Configuration information centralized in a registry, etc.

If your Helpdesk is like most support organizations today, it is probably being asked to do more with less. Demand for support has risen sharply, but staff levels have either remained flat or dropped. For this reason, the future of successful support rests in a user's ability to interface with a Helpdesk possessing complementary support tools that take advantage of broad open-system standards which facilitate the required technology interfaces.

Increased desktop complexity and networking have driven call growth volume geometrically.

Client server system implementations have brought an unexpected dark side - the cost of technical support. Many times the customer bought the vision of re-engineered, open, flexible client server systems as the way to reduce cost and increase service to all users. Frequently, what users have experienced has been increasing complexity, sometimes unmanageable application development, soaring support costs and less-than-effective implementations.

Many times users inadvertently brought down their systems by deleting files or altering settings.

As more advanced networked applications have been deployed over the past five years, the cost of the Helpdesk and technical support has grown geometrically. The desktop user effectively became a desktop (and larger) systems manager. Many times users inadvertently brought down their systems by deleting files or altering settings that ultimately required a technician's visit to complete a repair. Microsoft has addressed a significant number of these operational issues with Windows 95. The result will be a reduction in the number of user calls to the Helpdesk due to more intuitive ease of use, as well as functional improvements, making systems more crashworthy and controllable.

Previous cost of ownership reports from a variety of different sources indicate the cost of technical support for DOS and Windows 3.x PCs exceeds the software cost of purchase every year of the product's life. Based on our study findings, we expect the payback period on the cost of upgrade to Windows 95 will be less than one year and annual Helpdesk savings will exceed the cost of upgrade every year over the product's life.²

Windows 95 prevents and assists in the resolution of a wide range of user problems.

This paper reviews the Helpdesk operations of a number of large existing Windows 3.x users, identifies the types of problems they are currently experiencing and then isolates those problems that Windows 95 will

² Assuming an upgrade cost of \$100 per user.

either prevent or assist in resolving more efficiently. It is the objective of this white paper to provide reasonable quantitative estimates of how the inclusion of Windows 95 functional enhancements deliver productivity improvements to users, while lowering customer's internal and external support costs. The paper will also supply a method and worksheet that can be used by the reader to estimate their own savings using their data.

Primary white paper objectives are to:

- Analyze existing Helpdesk loads and costs of running Windows 3.x or Windows for Workgroups 3.x.
- Project steady state cost and productivity benefits when the organization migrates to Windows 95.
- Note the estimated cost savings that users should experience.
- Provide a methodology that can be extrapolated to a customer's current Helpdesk environment.
 - Note user productivity gains through improved Helpdesk efficiency.

Site Selection and Qualification

To achieve the objective of this study, WorkGroup Technologies recruited large user sites from a variety of industries among both large Microsoft Windows 3.x installed users and the F500. Ten sites were chosen, representing a wide range of industries, with no more than two users in any one industry. The study was limited to sites in the USA; however, we expect similar results where local language versions of Windows 95 are used. Users were screened to determine if they met certain criterion. In order for sites to qualify, they had to:

- Operate a centralized Helpdesk.
- Utilize electronic logging of call reports or tickets.
- Support 1000 or more PC users.
 - Be willing to provide 6 months of call reports.

The study participants included firms engaged in the following types of business:

Aerospace Manufacturer
Full Service Bank
Major Consulting Firm
Retailer
Chemical Company
Stock Brokerage Firm

Food & Beverage Manufacturer
Process Manufacturing Company
Life Insurance Company
Automotive Company
Financial Services Company

Data collection process

During our research, we analyzed, in detail, more than 47,000 individual PC call reports.

After qualifying and selecting the sites, WorkGroup Technologies provided a briefing package of documents that outlined the research program's objectives and the type of information we were seeking. We

then conducted telephone interviews to determine the structure of their Helpdesk operation and to acquire demographics on users, desktop device base, business problems and general information about their Helpdesk. We requested call report summary information and up to 6 months of call report detail for our analysis. During the call report analysis phase, we evaluated, in detail, more than 47,000 individual PC-related calls. We identified common trouble call clusters and then coded the call reports along a common schema so we could develop a comparative matrix. Specific call types were then analyzed to determine if Windows 95 would either eliminate the call or contribute materially to a faster, more efficient resolution. The results of this detailed analysis provided the call ticket counts used to generate the improvement figures cited throughout this report.

Research Results

Helpdesk Goals

The existence of a Helpdesk clearly has a singular purpose - to assist users in resolving difficulties they incur while using their PCs. Every Helpdesk subscribes to the following three goals:

Call avoidance

The best call is no call at all!

Obviously, the best call is no call at all. The majority of Helpdesks, today, attempt to do everything possible to eliminate calls, from assisting in the selection of a more reliable product to conducting in-depth training for users. Any product or methodology that will result in a reduction of calls is examined closely. Windows 95 is clearly such a product.

Rapid problem resolution; either on-the-phone or via the network

The goal is problem resolution in 1 hour or less in 80% of the cases.

If a call cannot be avoided, then the Helpdesk's goal is to resolve the call as effectively and quickly as possible. Simply put, user downtime is unproductive time. While our sample achieved an average repair time of less than one hour 61% of the time, all indicated their goal was to achieve a better than 80% rate. Systems or software that allow easy remote access to a user's PC for diagnostics, rebooting, remote loading of software, remote management and lockdown are very effective methods of resolving problems without the overhead of a site visit. Again, Windows 95 offers a rich set of features that responds to these requirements.

The goal is to also reduce site visits to an absolute minimum.

Technician visit prevention by reducing events that will cause visits

Finally, while site visits will always be a necessity, substantially reducing the number of visits as well as their duration is a major goal given the costs associated with field calls. Remote access features (described above) is but one method. While onsite, Windows 95 offers additional features that significantly improve the technician's ability to render a repair more

quickly. Further, many current site visit problems encountered by users will be either eliminated or shifted to remote repair categories with the implementation of Windows 95.

Typical Helpdesk Position in the Organization

The Helpdesk has long been considered part of the MIS backwater; a service organization that was typically treated as an expense center. However, we found the Helpdesk is increasingly an integral part of the IT organization as shown in Figure 1 and is usually centrally funded from the IT budget. Regardless of how a company implements a Helpdesk function, Windows 95 offers substantial potential savings.

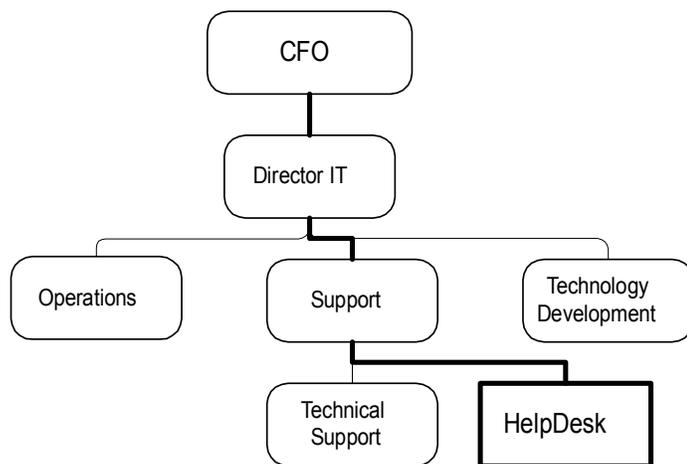


Figure 1

Helpdesks are evolving from reflex response to proactivity.

The evolution is from an organization historically noted for simple reflex response to one that is becoming extremely proactive and integral to technology employment decisions. It is not unusual, today, to have the Helpdesk staff evaluate a product for serviceability and reliability as well as provide input to user training programs.

Whether internally provided or outsourced, call savings are very similar.

For many of the sites we worked with, at least some portion of the Helpdesk and technical support function was outsourced to a third party organization. Often, the outsourcing was done on a flat per call basis, especially for onsite technician visits. Although usually providing very effective support, it is clearly not in the third party's best interest to effect sharp reductions in call or visit volume.

Helpdesk Functions and Responsibility

Most sites operated a three level Helpdesk structure. The first level usually qualified the call, logged it and tried simple remedies for the most frequently observed problems. If unsuccessful in resolving the problem, the call is escalated to level two. Level two technicians investigate the

problem and do everything possible short of visiting the site to effect a fix. If a fix is not possible after an hour or two, the job is handed over to a field technician to resolve at the user's site. If the fix requires new hardware or parts, the technician frequently has to make a return visit with the new part to complete the repair.

Top problem call generators require immediate, proactive remedial programs.

The three levels of Helpdesk responsibility are:

- Dispatch, qualifying, fixing easy problems
- Technical support working via network or dial-in access
 - Field Technician or third-party dispatch sent to site

There is also a management layer that handles human resources as well as proactive problem identification and prevention. In nearly every site, there are proactive measures taken to seek out the top problem call generators and fix them through special training or by changing systems to reduce recurring problems. Many Helpdesks also provide direct input to the development of user training courses.

Current Helpdesk Problems

After analyzing over 47,000 call detail reports from ten Helpdesks (responsible for more than 1.4 million Helpdesk calls per year), WorkGroup Technologies has gained significant insight into the types and frequencies of problems experienced by users. The size of the sample base is more than adequate to achieve statistically significant results.

Believe it or not, stolen SIMMs accounted for more than 10 calls in one month at one company.

During our analysis, we segmented the customer call reports into the following categories:

Hardware — All hardware attributable problems including descriptions such as: “burned out monitor, squealing hard drive, paper jams, broken keyboard, dead mouse, memory failure, stolen mouse, disk failure, need hardware installed, stolen SIMMs, smoke coming out of monitor...”

Printing — Printing software difficulties described as: “can't print, printing garbage, can't connect to printer, printer queue is stalled, won't print right, pagination is not right, won't print the right fonts, can't get application to print, printer not accessible, print job hangs...”

Password failure is an euphemism for “I forgot my password.”

Networking — Network related problems show on the call reports as: “Netware password failure, can't access server, cannot connect to host, network down, TCP/IP address problems, can't connect via dial-in, slow response, network application locks up, can't get network response, log me out...”

Application — Application software related problems such as typical “How To” questions as well as: “can't open file, can't import file, application freezes the PC, out of memory...”

Operator error, not the operating system, is far more often the real culprit.

Operating System — Operating system software difficulties frequently described by the users as: “General Protection Faults, won’t boot, out of memory, out of heap space, crashes, lost files, can’t start Windows, can’t run DOS, lost application groups, out of GDI resources, not enough, stuff in autoexec.bat bad, system crashes or locks up...”

Other — Other problems that did not fit in the above categories such as: “need audiovisual equipment, need LCD panel, need new telephone number, need voicemail setup, projector broken, need carrying bag for laptop, need new battery for laptop, etc.”

Analysis of data from the sites

We were able to qualify 10 sites, conduct in depth interviews with the Helpdesk managers and acquire large volumes of call detail reports which we analyzed in detail. Table 1 provides information that we captured during our interviews and Table 2 provides Helpdesk information on throughput and staffing.

ics

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Average |
|-----------------|------|------|-------|-------|-------|-------|------|------|------|------|---------|
| ported | 5200 | 1350 | 10450 | 15100 | 15450 | 30000 | 4530 | 3525 | 917 | 810 | 8733 |
| all count | 7100 | 3000 | 30000 | 2000 | 2000 | 15000 | 5500 | 3000 | 1000 | 1000 | 6960 |
| staff | 10 | 13 | 60 | 6 | 4 | 60 | 8 | 10 | 16 | 10 | 20 |
| non. | 710 | 231 | 500 | 333 | 500 | 250 | 688 | 300 | 63 | 100 | 367 |
| Network | 20% | 80% | 55% | 100% | 85% | 100% | 35% | 35% | 40% | 13% | 56% |
| PC and calls | 1420 | 2400 | 16500 | 2000 | 1700 | 15000 | 1925 | 1050 | 400 | 130 | 4253 |
| ills fixed in 1 | 60% | 65% | 20% | 20% | 10% | 84% | 80% | 30% | 85% | 85% | 54% |
| ills fixed in 4 | 60% | 75% | 70% | 90% | 60% | 94% | 95% | 70% | 85% | 95% | 79% |

Table 1

Helpdesk Demographics

| Site | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Average |
|--------------------------------|------|------|-------|-------|-------|-------|------|------|------|------|---------|
| # PC Supported | 5200 | 1350 | 10450 | 15100 | 15450 | 30000 | 4530 | 3525 | 917 | 810 | 8733 |
| Monthly call count | 7100 | 3000 | 30000 | 2000 | 2000 | 15000 | 5500 | 3000 | 1000 | 1000 | 6960 |
| HD staff per 1000 user | 1.92 | 9.63 | 5.74 | 0.40 | 0.26 | 0.26 | 2.00 | 1.77 | 2.84 | 2.84 | 2.76 |
| HD calls per user/month | 1.37 | 2.22 | 2.87 | 0.13 | 0.13 | 0.50 | 1.21 | 0.85 | 1.09 | 1.23 | 1.16 |
| PC & Net calls/user/month | 0.27 | 1.78 | 1.58 | 0.13 | 0.11 | 0.50 | 0.42 | 0.30 | .44 | 0.16 | 0.57 |
| % of Calls with tech on site | 40% | 57% | 40% | 20% | 80% | 15% | 80% | 30% | 70% | 20% | 45% |
| # Calls with tech onsite/month | 2840 | 1710 | 12000 | 400 | 1600 | 2250 | 4400 | 900 | 700 | 200 | 2700 |
| # PC & Net calls onsite/month | 568 | 1368 | 6600 | 400 | 1360 | 2250 | 1540 | 315 | 280 | 26 | 1471 |

Table 2

The most consistent problem areas are printing, applications and operating systems followed by networking. Hardware shows substantial swings due primarily to age and equipment configurations.

Clearly, Windows 95 will have impact upon the OS, networking and printing categories and will provide some relief for hardware and application based problems. The nature of how Windows 95 impacts each of the problem categories is described below.

Benefits and Savings with Windows 95

There are a very large number of functional and product improvements in Windows 95 that will allow end users to run Windows 95 more effectively and reduce the number of trouble calls. As indicated in the table below, there are many areas where Windows 95 can prevent and/or easily resolve problems that present users are experiencing.

| Class of Problem | Areas Where Windows 95 Prevents and Solves Problems |
|---------------------|---|
| How to problems... | Intuitive and easy to use interface. Improved File system, long names, short cuts to applications, disks or any tool in the system or network. Extensive On-line Help. Help wizards that guide the user easily through tasks. |
| Printer problems... | Hardware detection senses the hardware and installs the right software to get a running system. Plug & Play support enables easy printer or other hardware changes. Feedback from network printers to let the user know progress. |

| | |
|-----------------------------|--|
| | Networked print management to ease network printing. |
| Systems hangs or crashes... | Memory protection and memory management prevent system crashes and provide for smother operations. Preemptive multi-tasking, allows more applications to be running at the same time, hence more throughput. Full 32 bit robust software architecture takes advantage of the new Intel chip architectures for more dependable operations. |
| Password problems... | Embedded network clients for Novell, Windows NT Server and E-MAIL server allow the user to login once and have Windows 95 negotiate the services from a server, hence reducing the multiple logins problems. Users should only have to remember a single password. |
| Networking... | Supports multiple network protocols for easy connection to existing network systems. Supports hot switching of communication stacks to allow the users to dock or undock systems without shutting down the power. Supports hot connecting of PCMCIA network cards. Hardware detection eases installations and changes, e.g. docking or undocking. Embedded clients provide robust 32 bit network software clients, for faster throughput and more dependable communications. Supports multiple simultaneous communications protocols enabling multiple types of network connections concurrently. Mobile computing support that greatly improves the chances of getting a remote dial in connection to work. |

Projected Results Running Windows 95

Based on our knowledge and working experience with Windows 95, as well as the in-depth analysis of calls experienced by users in this study, WorkGroup Technologies has projected how these types of calls would have been resolved if the users were running Windows 95. We then grouped these resolutions by the categories as defined below. We expect a portion of the calls would not have happened with Windows 95, which we classified as avoidable. We then identified calls that would be fixed by the Helpdesk operator, or the Helpdesk technician via the network, or fixed by a technician visiting the site. There was also another class of calls where Windows 95 would be of no help, e.g. smoke coming out of monitor, etc. By individually examining each of the call reports, we projected which problems will be resolved by Windows 95 and at what level in the Helpdesk organization. Table 3, below, outlines the detail of these projections.

Avoidable — One of the first areas of benefit comes from the class of problems that will be avoided, where the user is able to perform the tasks correctly without help. This class of problems that occur under Windows 3.x systems should be entirely eliminated due to design improvements in Windows 95. These problems should never occur with Windows 95 due to a simpler and more intuitive user interface, better

file system with long filename support and search tools, crashworthiness due to improved memory management, system wizards to help users easily complete complex tasks, improved communications and networking connectivity, hardware plug & play and simpler user environments due to lockdown and central registry improvements in Windows 95.

Fixed by Helpdesk — This class of problems can be solved via the first level Helpdesk operator. This includes logging the call, qualifying the call and providing remedies for the most frequent recurring problems.

Based on our analysis of individual call reports, we anticipate that between 7% and 14% of the total volume of Helpdesk calls can be completely avoided through the employment of Windows 95. This means that your Helpdesk should be able to handle more users with Windows 95 without increasing staff.

Helpdesk Technician — This class of calls will be solved by the technician working both with the end user by phone and via network connections, running remote network tests and checks of the user's system to try to locate and correct the problems. Now, with Windows 95 robustness, plug & play, central registry, network policy files and remote manageability, many of the calls can be fixed over the network, avoiding travel to the user's site. The technician may ask for assistance from the user to try to get the PC running and connected to the network or walk the user through a self help process to locate the problem.

Technician Visit — These problems will continue to require a field service technician to visit the site. The technician will often reload software or replace parts to get the PC up and running. This activity may include swapping out the whole unit if the problems cannot be rectified.

No Help — There were a class of problems, many times hardware outages, where Windows 95 could not solve the problem. These calls could include paper jams in the printer, dead monitor, broken keyboard, dead mouse, etc.

WorkGroup Technologies analyzed over 47,000 calls and was able to project how each of the various problems can be avoided and/or more easily fixed with Windows 95. While there may be some "hindsight effect" that makes it easier to fix a problem after you know what the problem is, the vast majority of problems are directly impacted by Windows 95.

It should be noted that the results of our research are specific to the companies that participated in the program. It is clear from the research that every company encounters significant differences in Helpdesk call make up, as well as costs, due to variations in hardware, software and peripherals populations. For this reason, the figures shown are for

illustrative purposes only, although it is reasonable to assume, due to the sample size, that similar savings ratios will apply to most organizations. In an effort to make this information easier to relate to your specific situation, WorkGroup Technologies has provided a worksheet and instructions, so you can see both the areas of benefit as well as the projected cost savings for migrating to Windows 95.

| Problem Categories Percentages | | | | | | | | | | | |
|--------------------------------|------|------|-------|-------|-------|-------|------|------|------|------|---------|
| Site | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Average |
| # PC Supported | 5200 | 1350 | 10450 | 15100 | 15450 | 30000 | 4530 | 3525 | 917 | 810 | 8733 |
| Monthly call count | 7100 | 3000 | 30000 | 2000 | 2000 | 15000 | 5500 | 3000 | 1000 | 1000 | 6960 |
| % PC Hardware | 49% | 31% | 1% | 5% | 2% | 13% | 26% | 21% | 19% | 7% | 17% |
| % PC Printing | 9% | 7% | 2% | 12% | 3% | 2% | 15% | 9% | 17% | 8% | 8% |
| % PC Networking | 5% | 5% | 19% | 8% | 6% | 35% | 2% | 33% | 22% | 11% | 15% |
| % PC Application | 8% | 24% | 37% | 47% | 61% | 29% | 20% | 16% | 33% | 29% | 30% |
| % PC Operating System | 27% | 29% | 41% | 28% | 23% | 8% | 36% | 19% | 8% | 15% | 23% |
| % Other | 2% | 4% | 0% | 0% | 5% | 13% | 1% | 2% | 1% | 30% | 6% |

Table 3

We can see that application and operating systems calls are the most frequent running at 30% and 23% respectively. Although we set out to acquire PC Helpdesk calls, we see variations in our call samples. In some cases, the hardware calls were subcontracted out or handled by another portion of the Helpdesk and, hence, that hardware calls are not included in sites 3, 4, 5 and 10. While in other samples, sites 1, 2, 3, 4 and 7 included other kinds of calls, e.g. telephone changes, adds, moves and repairs, requests and reservations for LCD plates, projectors and other shared equipment. As a result, we should be careful about the conclusions at individual sites. Other variations in Helpdesk call make up, as well as costs, may exist due to variations in hardware, software and peripherals populations. For this reason, the figures shown are for illustrative purposes only, although it is reasonable to assume, due to this large sample size, that similar savings ratios will apply to most organizations. We shall use only the group average information for the rest of our analysis. Table 4 summarizes how we expect various calls would be resolved in the Windows 95 environment. It also shows the average number of calls that will be avoided and the number of visits that will be avoided for an average sized site with some 8733 PC users.

| How calls are Fixed | | | | | | | | | | | |
|--|-------|------|-------|-------|-------|-------|------|------|------|------|-------------|
| Site | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Average |
| # PC Supported | 5200 | 1350 | 10450 | 15100 | 15450 | 30000 | 4530 | 3525 | 917 | 810 | 8733 |
| Monthly call count | 7100 | 3000 | 30000 | 2000 | 2000 | 15000 | 5500 | 3000 | 1000 | 1000 | 6960 |
| % Call Avoidance | 8% | 7% | 11% | 9% | 12% | 11% | 12% | 14% | 12% | 8% | 10% |
| # of Calls per month that should be avoided | 113.6 | 168 | 1815 | 180 | 204 | 1650 | 231 | 147 | 48 | 10 | 457 |
| % Calls fixed by Helpdesk | 23% | 23% | 21% | 46% | 35% | 12% | 40% | 10% | 10% | 25% | 25% |
| # Calls per month fixed by Helpdesk | 327 | 552 | 3465 | 920 | 595 | 1800 | 770 | 105 | 40 | 33 | 861 |
| % Calls fixed by Helpdesk technician | 30% | 45% | 65% | 38% | 45% | 50% | 23% | 50% | 57% | 30% | 43% |
| # Calls per month fixed by Helpdesk technician | 426 | 1080 | 10725 | 760 | 765 | 7500 | 443 | 525 | 228 | 39 | 2249 |
| % Calls fixed by field tech. | 38% | 25% | 2% | 6% | 2% | 14% | 24% | 24% | 20% | 6% | 16% |
| # Calls per month fixed by field tech. | 540 | 600 | 330 | 120 | 34 | 2100 | 462 | 252 | 80 | 8 | 453 |
| % Calls where no help | 1% | 0% | 1% | 1% | 6% | 13% | 1% | 2% | 1% | 31% | 6% |
| # Calls per month where no help | 14 | 0 | 165 | 20 | 102 | 1950 | 19 | 21 | 4 | 40 | 242 |
| Site Visits Avoided | | | | | | | | | | | |
| # Tech visits per month with Windows 3.x | 568 | 1368 | 6600 | 400 | 1360 | 2250 | 1540 | 315 | 280 | 26 | 1471 |
| # Tech visit per month with Windows 95 | 540 | 600 | 330 | 120 | 34 | 2100 | 462 | 252 | 80 | 8 | 453 |
| # Saved tech visits per month | 28 | 768 | 6270 | 280 | 1326 | 150 | 1078 | 63 | 200 | 18 | 1018 |
| % Reduction in visits | 5% | 56% | 95% | 70% | 98% | 7% | 70% | 20% | 71% | 70% | 56% |

Table 4

Comments on the site specific data

At the individual site level there is considerable variance in the call detail reports we received due to different modes of operation, organizations, metrics, outsourcing, data capture tools being used and other factors.

WorkGroup Technologies believes that the average of results are indicative of general industry trends and these will be used in any conclusions for this report. For further background information about each of the sites, the reader is referred to the appendix.

In Table 5, we have summarized the cost savings (for the average site of 8733 PCs) of \$9,140 per month for the 457 calls that are avoided and \$305,400 per month for the 1018 visits avoided. This should provide a resulting \$432 cost savings per user if the users were all running Windows 95 versus Windows 3.x.

Expected Cost savings

| | | | |
|--------------------------|------|--------------------|-------------|
| Calls avoided per month | 457 | \$20 ³ | \$9,140 |
| Visits avoided per month | 1018 | \$300 ⁴ | \$305,400 |
| \$/month | | | \$314,540 |
| \$/year | | | \$3,774,480 |
| \$/yr./user | | | \$432 |

Table 5

The reader is also encouraged to check out the worksheet in the appendix for use with their own data to estimate their own savings, both in the areas of benefits as well as the projected cost savings.

Other Corporate Business Gains

Another major corporate benefit is the increase in productivity due to the reduction of end user downtime. Further, new users will be able to use the Windows 95 system with less training or learning time. This increases their ability to use their PC effectively and efficiently. While not a quantifiable factor for this report, our experience clearly points to significant gains in this area as well.

Summary

A 7%-14% reduction in Helpdesk calls is possible.

After analyzing thousands of Helpdesk call reports, talking to 14 Helpdesk managers in F100 companies supporting over 120,000 PC users, with more than 1.4 million calls per year and having studied and used Windows 95 for the past four months, WorkGroup Technologies has been able to identify areas where we expect Windows 95 will offer significant operational impact. Our analysis has shown that, after the initial learning curve, user organizations should see a reduction in the total number of PC Helpdesk calls of 7-14% due to Windows 95 robustness and ease of use. This may also mean that your existing Helpdesk resources may be able to handle 7-14% more users with no increase in staff. In our example, in an average site with 8733 PCs, we

³ Cost to fix a call at the Helpdesk level as per Helpdesk Institute 1994 Survey.

⁴ WorkGroup Technologies estimated cost for field repair of a PC problem.

estimate a reduction of approximately 457 calls per month because of calls avoided due to Windows 95 ease of use and system robustness, resulting in an estimated savings of \$109K per year. We expect proportional savings in other larger and smaller installations.

Based on our analysis of individual call reports, we feel that a reduction of between 30% and 56% in onsite visits will occur through the use of Windows 95 due to the shifting of problems to lower level resolution. With an average cost of \$300, the savings can be significant.

We also expect to see a reduction in the number of calls that will require a technician to visit the users site, as more problems are solved through the network using Windows 95 remote management, remote communications access, hardware and software plug & play support, central registry and improved network and systems security features.

From our analysis, WorkGroup Technologies expects Windows 95 will significantly reduce the number of calls that will require a technician to visit the user's site. For typical installation with 8733 PCs, we expect there will be 30-56% reduction in the calls needing site visits, corresponding to 1018 calls per month, generating an estimated savings of \$3.66 million per year. Both the calls avoided and the visits avoided should generate an estimated annual savings of \$3.77 million for the average site with 8733 PC users.

In addition to these substantial projected cost savings, there may also be business benefits due to reduced end user downtime.

Bottom line - Based on the average call volume savings and their attendant costs we have observed across these 10 sites, WorkGroup Technologies estimates the resulting savings at \$432 per user per year. This will more than pay for the cost of the upgrade and these savings should accumulate over the life of the product.

Appendix

Comments on the site specific data

At the individual site level, we saw considerable variance in the call detail reports due a wide variety of factors. Here, we will provide notes and comments on what we observed.

Site 1

- a) Higher percent of hardware calls than average
- b) Lower calls rates
- c) Mostly engineering and manufacturing users
- d) Appears to skilled users

Site 2

- a) Call rates per user running 3 times average
- b) Head quarters location with executive support needs
- c) Helpdesk staff numbers running above average to handle high call rate
- d) May be trading off more Helpdesk resources for less training resources

Site 3

- a) Inner city site
- b) Call rates running 3 times average per user
- c) Very high numbers of password reset calls
- d) All on-site visits were outsourced
- e) High 50% of all calls were status calls
- f) High 40% of calls outstanding for more than one day

Site 4

- a) Very low call rates running about 1/8 average rate
- b) Some problems took a long time (3 weeks) to repair
- c) High 90% of all calls fixed by phone

Site 5

- a) Low call rates
- b) Data here only from the outsourced Helpdesk function
- c) Low staffing due to outsourcing the workload

Site 6

- a) Call rates are average
- b) Helpdesk staffing does not include management heads
- c) Very large user site
- d) Excellent data capture and coding process
- e) Call details also included 13% of other non-PC related calls
 - f) Calls included PC hardware, software and networking details

Site 7

- a) High portion (26%) of hardware calls
- b) Helpdesk staffing is low due to outsourcing
- c) All PC calls are outsourced
 - d) PC hardware calls are then referred back to corporation for repair

Site 8

- a) PC call rate at 1/2 of industry average

Site 9

- a) Smaller site
- b) Calls for PCs, and point of sale and Mainframe
- c) Helpdesk staffing appears to be 10 times the industry average

Site 10

- a) Smaller site
- b) Low PC call rate, about 1/4 industry average
- c) Hardware is outsourced
 - d) High portion 30% of non-related calls analyzed, e.g. telephone changes, adds fixes and deletes

Windows 95 Technology improvements

User Interface improvements

Taskbar - Easily allows user to manage a number of tasks and applications. Start button has been shown to reduce application start times 3X-9X faster. Taskbar 'start' button provides the capability to run a number of applications at the same time. The task bar will show all open applications and make it easier to switch between applications by touching a button in a simple consistent location. Instead of using different kinds of tools like Program Manager, File Manager, Print Manager and Control Panels, the user in Windows 95 can gain access to all system resources from the Taskbar.

Recycle Bin - An electronic dumpster where you drag your trash; however, you can peck and sort through the trash to find something that was just thrown out.

Network Map - Intuitive maps your networking neighborhood -- your highways and byways.

My Computer - A simpler and more intuitive way to organize files -- Disks, folders, documents and files in a Mac-like fashion.

Long Filenames - The combination of organizing your documents in project folders (with drag and drop) and then using long file names makes your work more easily organized and more easy to share and browse.

Short Cuts - It is easy for the user to create 'aliases' or short cuts to frequently accessed networked documents or applications. These can be dragged to the desktop or stored in your own favorite folder for quick and easy access.

Undo - This provides the user an easy way to undo some of the latest file operations (such as rename, move or deletion of files) if they find they made an error or simply want to change their mind.

Wizards - These help wizards can be invaluable in guiding a new user through multi-level tasks and show the user 'English sign posts' choices to complete complex tasks as a series of simple steps. They are crash proof and allow the user a way to trail run extensions to their system without the fear of crashing the system.

On-line Help - An improved, context sensitive help system with a lot of graphics, provides more intuitive on-line help.

Windows Explorer - A more concise way for the power user to explore and navigate documents and applications on their system or network.

Properties - Property sheets are available for all documents, files, folders, applications, disk drives and other elements in a user's system. These are areas where users can modify the behavior of these elements in their computing environment. It is where they can modify the personality of their computing system.

Right clicking - This function triggers a series on context sensitive menu Pop-ups that can greatly reduce the number of mouse clicks required to perform common tasks. This item will be a great boon for the power users.

Control Panel - Much improved control panel is the main user interface to all computer hardware. It includes the new utilities for hardware detection, plug & play, networks, printers, multimedia, install & uninstall and the ability to switch communications stacks and any hardware drivers on a live system. This function will be of great assistance in both preventing problems and in solving technical on-line with the user.

Quick Viewer - This viewer easily allows users to browse through network documents and see a preview of the document even if they do not have that application installed. This is great for sharing attachments in E-mail with other users.

Systems Management Improvements

Registry - The central registry consolidates and replaces a lot of the *.ini, *.sys and *.bat files that used to exist in Windows 3.1. and is built into the operating system. User preferences, hardware profiles and system policies information may be contained here for control and ease of use. These files provide the systems administrators a level of control and security, while being able to offer the end users some control over the personality of their computing environment. User information, system information and Network policy information can be managed separately to provide an optimum environment for the roving user, mobile user, shared PC and all who operate within the IT polices and security.

System Management - Windows 95 is designed to be either centrally or locally managed. This will save an enormous amount of time in fixing technical problems, performing installs or moving user's data without going to the site. Other useful items for central or local systems management include: **Control panels, Property sheets, Plug & Play, Registry editor, Systems policies editor and DMI agent.**

Remote Administration Security - These set of capabilities enable desktop systems to be tested, configured, fixed and updated via the network and, hence, are key in reducing the time to fix distributed PCs.

Hardware Profile - Hardware detection can be run by the user of network administrator to generate a log of the hardware configuration that will be stored in the registry. This will be used by both the user and support personnel in fixing or making changes to user desktop software. This is key in de-skilling the PC support function and enabling end users to correct problems and prevent trouble calls.

Systems Policies - These are a set of files that are typically downloaded from a server to override and enforce a level of compliance and security on certain classes of users. These may include controls on the user interface, network, desktop configuration, sharing capabilities, etc.

System Performance Monitor - Windows 95 includes a performance monitor that can be used by PC Helpdesk persons to quickly get an accurate picture of the performance the user experiences. It can be helpful in tuning a system to meet the local workload demands.

Remote Procedure Calls - These are the electronic hooks that are used to enable central control of a users PC to enable the on-line diagnosis and the administration of the prescription to fix a desktop system.

Tape Backup - These embedded tools make it easier for the local PC user to be able to move data in and out of their system as well as archive/restore information for storage management and data protection.

Network Management - Windows 95 includes a number of key network agents or clients to allow the user to access and use network servers, e.g. Netware client for print and file services, Windows NT Servers - for LAN manager enterprise scaleable file and print services, E-Mail client for access to future Back Office services, NTAS servers for access to structured data from SQL databases, SNMP client for connection to a Network management system, e.g. Netview.

Netwatcher - It allows local and remote management of users connections to network data and services. This enables the network administrator and Helpdesk to test, modify and control user network access for both problem resolution and normal operations.

Administrate File Systems - This feature allows the network manager to take control of your local system, to test and reconfigure all the file systems and other resources.

SNMP (Simple Network Management Protocol) Agent - This is now a common industry standard that is part of Netview (IBM & DEC), Openview (HP). It provides an industry standard mechanism to remotely (via the network) manage desktop machines and enable the Helpdesk diagnosis and control of a local desktop machine.

DMI (Desktop Management Interface) Agent - This is an emerging standard for the support of remote desktop management. This will enable new capabilities in the future.

User Management - This set of features captures the user's identity through a logon procedure and then will configure the system to reflect the personal preferences that that user has set up. These preferences can be set to follow the user if he/she logs on from another desktop in the network. This logon information can be used as a user's master key to access a range of other network services, e.g. Netware files. The user management services will include other information such as **User Profiles, System Policies** and **Server Based Security**.

User Profiles - User profiles, part of the registry, are maintained to allow shared PCs to quickly change their personality to fit the specific user preferences, such as desktop settings, backgrounds, colors, shortcuts, file system behaviors, network access, etc.

System Policies - System policies, part of the registry information, are designed to override any user settings to allow the network or PC manager the ability to customize control over the Windows 95 users environment and grant the appropriate level of privileges. These capabilities include control of the users **interface, network capabilities, desktop configuration, sharing capabilities, applications access**, etc. Users can be locked into a standard user interface, restricted to only a select set of applications, prevented from loading their own applications and prevented from futzing with the PC setups and causing a lot of extra Helpdesk calls.

Server Based Security - The system policy tool enables a way to control access and security polices in a networked group or campus environment. The system policy file, part of the registry, is managed from the server and down loaded to each desktop when they are started. All user namespace management, user logon authentication, is maintained in Windows 95 and can also be used to gain access to other network services. This 'control' hook enables the effective IT control of desktop systems in a more automated and efficient way than ever before.

The 'Fix' for printing problems with Windows 95

Easier to use - There are a range of new Windows 95 features that will make it easier for users to install, setup, configure, access and manage their printing environments easily and efficiently. These include a number of elements as outline below.

32-bit print subsystem - The new 32-bit preemptive print subsystem is able to ride through DOS partition crashes and still deliver a more reliable and manageable set of print services.

Enhanced print spooling - Provides faster return to application times for better user productivity and smooth background printing.

Deferred printing for mobile users - Enables mobile users to work on the road and get their printouts after they get to a network or back to their home office.

Color matching - Uses Kodak color matching technology for better WYSIWYG publishing with predictable color control.

Installing and configuring - Plug & Play printer detection for more than 800 printers and device installation wizard support assures easy and accurate installation of new printers and setup of network printing.

Managing print jobs - Provides the ability to easily manage both local and networked print jobs.

Network Integrated Printing - Provides for full network support of either Netware printing or VT Windows server printing.

Remote administration of printing - With the appropriate access privileges, remote printing can be managed on remote printers, including ability to hold, cancel or resume jobs. This enable printer queues to be managed from a central sites. Program or operator monitoring of network printers could check if they are stopped and dispatch resources before it becomes a production problem.

Improved Performance - The new Windows 95 print spooler operates as a background task and now offers faster return to application times so users can continue work sooner.

Helpdesk Calculations Template

This template worksheet is supplied to help you estimate what your annual cost savings will be when your organization migrates from a Windows 3.x or Windows for Workgroups 3.x environment to one running Windows 95.

You will use your trouble call detail reports and your cost numbers to arrive at an estimate of your annual savings.

1. Take a large 1000-2000 sample of your trouble call detail reports.
2. Analyze these reports and determine the percent of calls that should be avoided due to a simpler more intuitive user interface, better file system with long file name support and search tools, crashworthiness due to improved memory management, system wizards to help user complete complex tasks, improved communications connectability and simpler user environments due to lockdown and central registry improvements in Windows 95.
3. Analyze this same sample of calls and count the percentage of calls that could have been fixed via the network if running Windows 95 rather than sending a technician to site. These should include calls where technical support should be able to solve the call over the network due to the remote management, built-in networking and central registry improvements.
4. Fill in the table below for a cost savings estimate.

A. Your cost per call

| | |
|---|-----------|
| What is your annual loaded cost for PC Helps desk operations? | \$500,000 |
| How many PC Helpdesk calls do you handle per year? | 25,000 |
| Calculated cost per call (costs/# calls per year) | \$20 |

B. Your cost per visit

| | |
|---|-----------|
| What is your annual loaded cost for PC repair technicians? | \$300,000 |
| How many sites visits do they perform per year? | 1000 |
| Calculated cost per PC field repair visit (costs/# visits per year) | \$300 |

C. Call avoidance

| | |
|--|-----|
| From your sample, what percentage of calls may be avoided? | 10% |
|--|-----|

D. Visit avoidance

| | |
|---|----|
| From your sample, what percentage of visits may be avoided? | 3% |
|---|----|

E. Projected savings if your users are running Windows 95

| | |
|--|------------------|
| Your savings due to calls avoided (cost per call * number of calls avoided) | \$50,000 |
| Your savings due to calls avoided (cost per call * number of visits avoided) | \$225,000 |
| Your estimated annual helpdesk costs savings | \$275,000 |