



# **The Facts on Filters**

**A Comprehensive Review of 26 Independent  
Laboratory Tests of the Effectiveness of Internet  
Filtering Software**

**By David Burt**



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## Introduction

In their 1997 decision striking down the Communications Decency Act as unconstitutional, the Supreme Court pointed to filtering software as a less restrictive means for controlling access to pornography on the Internet.<sup>1</sup> The years since that 1997 decision have led to steady growth in the use of software filters. According to the latest research, in the year 2001, 74% of public schools<sup>2</sup>, 43% of public libraries<sup>3</sup>, 40% of major U.S. corporations<sup>4</sup>, and 41% of Internet-enabled homes with children<sup>5</sup> have adopted filtering software.

As filters have become more widely accepted, there has been an ongoing debate in public policy circles regarding the effectiveness of filtering software. The debate over filter effectiveness has often been politicized, frequently with little or no empirical data to document claims made about filtering software.

While the debate has continued, a rich body of non-partisan laboratory testing literature has developed. A total of 26 published laboratory tests of filtering software effectiveness have been identified in technology and consumer print publications including PC Magazine, Info World, Network Computing, Internet World, eWeek, and Consumer Reports from 1995-2001. Ten separate software laboratories, such as ZD Net Labs, Consumer Reports Labs, Camden Associates, and IW Labs conducted the tests.

The aggregated results of the independent research indicate that Internet software filters are largely effective, though not perfect at blocking web sites. Of the 26 tests of filtering, 19 found filters effective, 4 found them of mixed effectiveness, and 3 found them ineffective.

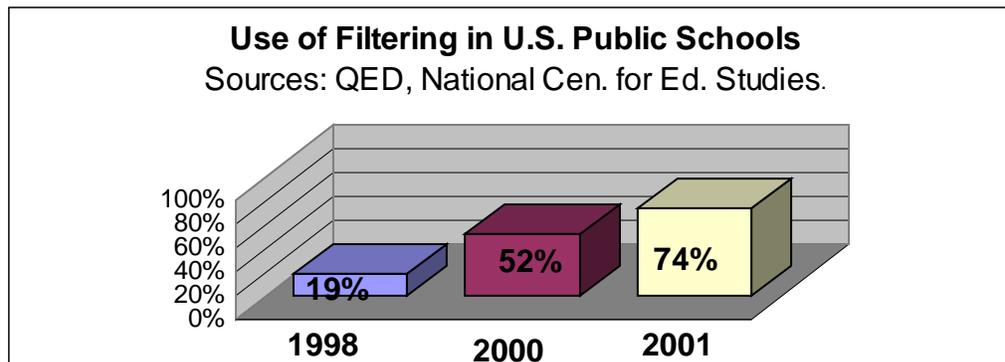
The general finding of filter effectiveness by nearly three-quarters of these 26 tests, combined with the steady growth leading to widespread adoption of filters, leads to the conclusion that filters are, in general effective blocking tools -- and are here to stay.

## Filtering in Homes, Businesses, Schools, and Libraries.

The adoption of filtering software in the U.S. has followed a similar pattern in businesses, schools, homes, and libraries. Penetration levels have grown rapidly from around 20% or less in 1997 to close to 50% or more in 2001.

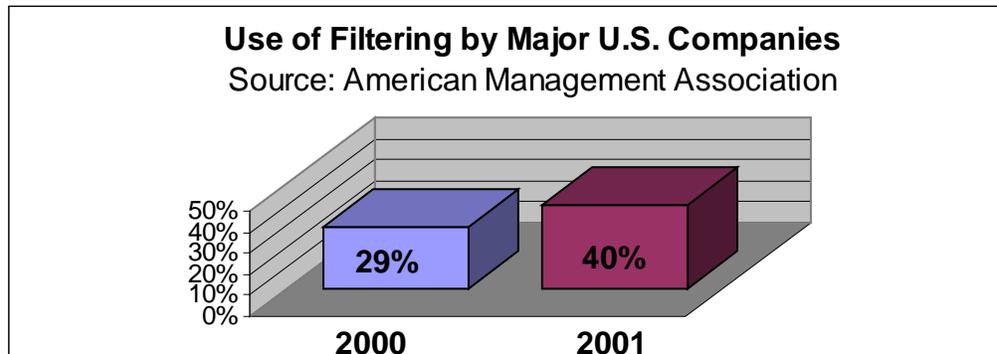
### Schools

The most dramatic growth has occurred in public schools. In May 1998, Quality Education Data surveyed school districts with Internet access and found that for the 1998 school year, 19% of schools were using filters.<sup>6</sup> Just one year later, QED found that the use of filters had increased to 52.5%.<sup>7</sup> The most recent data on school filter use comes from a May, 2001 study by the National Center for Education Studies, which found 74% of public schools are now using filtering software<sup>8</sup> -- an increase of nearly 400% in just three years.



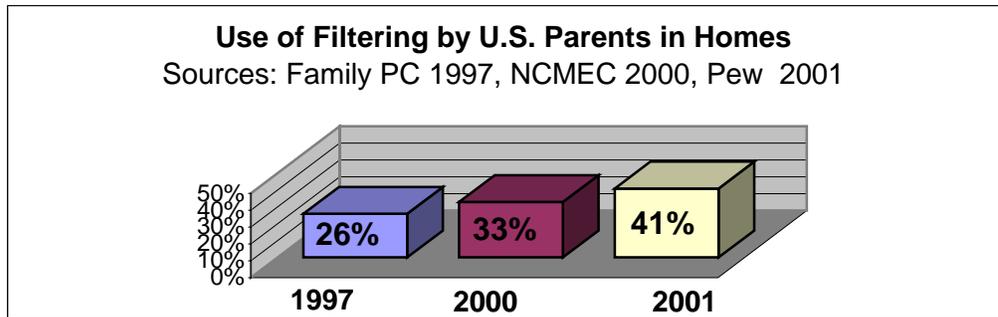
### Major Corporations

In 2000, the American Management Association surveyed major U.S. companies and found that "29 percent block Internet connections to unauthorized or inappropriate Web sites."<sup>9</sup> In a similar survey one year later, the AMA found that number had grown to 40%<sup>10</sup> -- a 38% increase in one year.



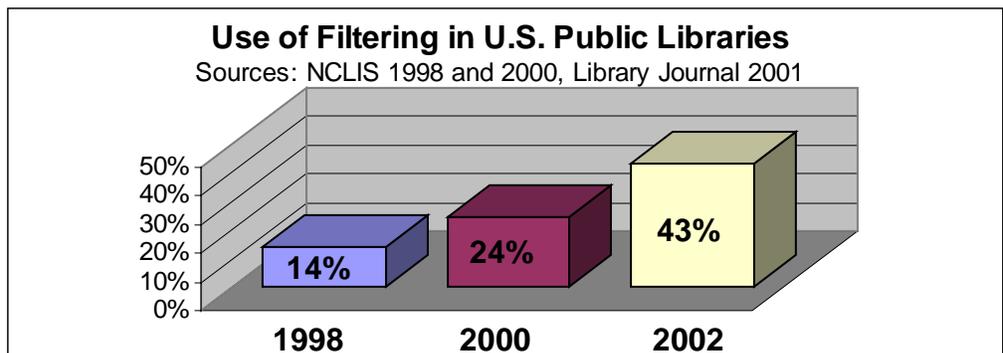
**Homes with Children and Internet Access**

A 1997 survey of parents on the Internet, by Family PC found that "26 percent used some form of parental-control software."<sup>11</sup> A 2000 study by the National Center for Missing and Exploited Children found the number had increased to 33 percent.<sup>12</sup> The Pew Internet and American Life Project reported in June of 2001 that filtering by parents had increased to 41 percent.<sup>13</sup>



**Public Libraries**

The National Commission on Library and Information Science surveyed public libraries in 1998, and found that 14 percent were using filters<sup>14</sup>. By 2000, NCLIS conducted a second survey that found the number had risen to 24 percent.<sup>15</sup> Near the end of 2001, Library Journal conducted a survey that found the number had increased to 43 percent<sup>16</sup>-- an increase of over 300% in three years.



## Laboratory Tests of Filtering Software Effectiveness

In order to accurately identify tests of filtering effectiveness, a set of criteria was established for identifying independent, lab research on filtering effectiveness.

First, searches were conducted for literature that contained tests or reviews of filtering software in the three largest periodical databases, Lexis/Nexis, ProQuest, and InfoTrac for the years 1994 through 2001. A group of about 60 candidate articles were retrieved.

The majority of these articles were dropped from the sample because they were reviews of filtering software that included no tests of filter effectiveness. Several more articles were dropped because they contained testing of filters that were conducted by individuals, and obviously were not lab tests.

The final sample of 26 tests were all articles that were conducted by ten professional software testing laboratories: ZD Net Labs, Consumer Reports Labs, Camden Associates, IW Labs, eWeek Labs, the PC World Test Center, the Info World Test Center, MacWorld Labs, Network World Test Alliance, and Real-World Labs. The 26 tests included 108 individual product tests.

Most of the 26 articles easily fit into one of three categories, "found filters effective", "found filters of mixed effectiveness" and "found filters ineffective." An overall finding of the test results was usually readily determinable by statements in the introductory or concluding paragraph. In the few cases where an overall finding was not readily apparent, an overall finding was determined by evaluating each comment about effectiveness, and these "borderline" articles were mostly placed in the "found filters of mixed effectiveness" category.

A total of 19 tests contained statements like "all of these products provide solid blocking capabilities," and "All the products lived up to filtering expectations, staying out of the way except when necessary to block access," and were placed into the "found filters effective" category.

A total of four tests where the overall verdict was clearly mixed, such as "While each of the products is sold for the explicit purpose of blocking objectionable material, only three are able to do that with reasonable certainty", or came to no conclusion and offered mixed

evidence of effectiveness were placed in the "found filters of mixed effectiveness" category.

A total of three articles found filters overall to be ineffective. These articles contained summary comments such as "Most of the products we tested failed to block one objectionable site in five."

## Tests Finding Filters Effective

### PC Magazine Tests

PC magazine is probably the best known, and among the most highly regarded sources of software testing. Since 1982, PC Magazine has published thousands of software tests. PC Magazine's test laboratory, ZDNet Labs, is described as performing "Comprehensive performance and functionality testing. Our objective, precise, and repeatable testing methods--utilizing benchmarks accepted by the industry."<sup>17</sup>

PC Magazine has conducted more formal testing of filters than any other publication. The testing laboratories employed by PC Magazine conducted eight rounds of testing multiple filters, for a total of 47 product tests from 1995 to 2001. The first test conducted in 1995 gave filters a mixed review (see section "Tests finding filters of mixed effectiveness"), but the next seven rounds of testing were largely positive.

The second PC Magazine test of filtering software effectiveness was conducted in April of 1997. Seven filters for the home market -- Cyber Patrol, CyberSitter, CyberSnoop, Net Nanny, Rated PG, SurfWatch, and X-Stop were examined. ZDNet Labs " tested how well each product filters words and sites," and found that "all of the products performed well in their areas," concluding that "these products can be a valuable tool in the process of parental monitoring of a child's computer activity."<sup>18</sup>

One month later, in May 1997, PC Magazine tested five filters designed for the workplace, and found that "LittleBrother, SmartFilter, and SurfWatch all provide solid blocking capabilities, and ON Guard's real strength is monitoring; WebSense is the only product that provides full functionality in both areas " <sup>19</sup>

In March of 1998, PC Magazine for a fourth time had ZDNet Labs test filtering software blocking effectiveness. Ten products were tested: Cyber Patrol, Cyber Sentinel, Cyber Snoop, Cyber Sitter 97, Net Nanny, SurfWatch, Time's Up!, WatchDog, WebChaperone, and X-Stop. PC Magazine provided a summary:

*Our tests involved trying to access extensive lists of URLs, words, and phrases while using each of the products. We tried to access well-known pornography sites as well as less obviously objectionable sites, some of which made no reference to sex...Our testing confirms that these packages principally block sites with pornography, obscenity, and sexually explicit content--and they do a pretty good job.<sup>20</sup>*

In May 1999, PC Magazine tested filters for a fifth time, this time with an emphasis on business products, testing Cyber Patrol, Little Brother Pro, SmartFilter, and Websense. In this test, ZDNet Labs "created a list of 100 URLs in nine categories and then tried to browse them through these products," and concluded:

*The software packages in this roundup have matured as the demand for them has increased--and in more ways than the addition of productivity categories... All in all, these products delivered as advertised, though some do so with more panache than others.<sup>21</sup>*

A sixth test of filters, this time for home software, was conducted in the April 2000 issue of PC Magazine. BAIR, Cyber Sentinel, eyeguard, SOS KidProof, and X-Stop were tested. PC Magazine concluded:

*Regardless of which you choose, once you install a parental filtering utility, your kids can explore the world of the Web without wandering into a virtual red-light district.<sup>22</sup>*

The seventh PC Magazine test occurred in the September 2001 issue. This was the most extensive test to date, involving twelve filters: AOL Parental Control, CyberSitter, CyberSnoop, Internet Guard Dog, Net Nanny, Norton Internet Security, IM Web Inspector, Super Scout, Surfin Gate, 8e6, Iprism, and NetSpective. PC Magazine concluded:

*In testing, most products blocked more than 85 percent of objectionable content—good enough to make a serious dent in inappropriate Internet usage.<sup>23</sup>*

The eighth and most recent test was conducted by PC Magazine in November 2001, and involved a single product, WebSense 4.3. PC

Magazine found that "We weren't able to fake out Websense filtering with a random sampling of sites."<sup>24</sup>

### Info World Tests

Info World is one of the leading technology publications, and provides "in-depth technical analysis on key products, solutions, and technologies for sound buying decisions and business gain."<sup>25</sup> Like PC Magazine, Info World conducts regular software testing through a professional testing laboratory, the InfoWorld Test Center:

*The InfoWorld Test Center differentiates itself by providing the most real-world approach to testing. Our tests, which are conducted by the most knowledgeable analysts in the industry, focus on products and solutions as they are used and exist in IT environments.*<sup>26</sup>

From 1997 to 2000 the InfoWorld Test Center conducted four tests of filtering software blocking effectiveness. In the August 1997 issue, InfoWorld tested WebSense, and found that, "Every time I tried to access a blocked site, I was presented with my customized "access denied" message."<sup>27</sup>

In February 1998, InfoWorld tested Cyber Sentinel, and concluded, "Cyber Sentinel proved quite adept at flagging all of my attempts at accessing offensive material."<sup>28</sup> In November 1998, InfoWorld tested SOS Pro, and found that "offensive sites were blocked successfully."<sup>29</sup> In May 2000, InfoWorld tested WebWasher, and found the product "prevents offensive materials from being brought into the office via the company's Internet connections," and noted "WebWasher's effectiveness."<sup>30</sup>

### PC World Tests

PC World is the world's largest computer magazine, with a readership of nearly 6.9 million. Like PC Magazine, PC World has conducted thousands of software tests through its testing laboratory, the PC World Test Center. PC World conducted two tests of filtering effectiveness in 1997 and in 2001. The 1997 test produced mixed results (see section "Tests finding filters of mixed effectiveness"), but a January 2001 test of Net Nanny found that "In testing, Net Nanny blocked unsuitable content fairly well and appropriately."<sup>31</sup>

### MacWorld Tests

MacWorld has been testing software for 17 years in its MacWorld Labs facility.<sup>32</sup> MacWorld conducted two tests, a 1997 test that found filters effective, and a 2001 test that found them ineffective (see section "Tests finding filters ineffective").

MacWorld's November 1997 issue tested Cyber Patrol, SurfWatch, and X-Stop and found that "All the products lived up to filtering expectations, staying out of the way except when necessary to block access."<sup>33</sup>

### Internet Magazine Tests

In December 1997, ZD Internet Magazine used the ZD Net testing labs to measure the effectiveness of eight filters: Bess, Cyber Patrol, CyberSitter, SafeSurf, SurfWatch, WebSense, X-Stop and Cyber Snoop. ZD Net Labs found the majority of them effective. Internet Magazine reported that SafeServer and CyberSnoop were less effective, but did find the majority of the products effective:

*During our tests, Bess performed well, blocking all the pornographic and objectionable sites on our test list.*

*In our testing, Cyber Patrol performed fairly well, blocking access to most of the sites on our list. All the pornographic sites were blocked effectively.*

*During our testing, CYBERSitter 97 blocked access to most of the pornographic sites on our testing list.*

*SurfWatch was the best performer on our site-blocking test, blocking access to all the pornographic sites we tested, as well as adequately blocking attempts to search for obscene words with Yahoo! and other search engines.*

*In our tests, WebSENSE performed exceptionally well.*

*In our site blocking tests, X-Shadow performed quite well, preventing access to almost all the pornographic sites, as well as preventing searches on obscene words.<sup>34</sup>*

### Network World Tests

Another well-known technology publication, Network World, conducted a round of filter tests through its Network World Test Alliance network of testing labs. Network World frequently tests software, and is described as "the premier source of objective, authoritative reviews in the network market."<sup>35</sup> Network World tested seven filters: LittleBrother Pro, WebSense, WizGuard, SOS, and NNPro. Network World found that "All the products with predefined databases allow you to customize their lists, but we found that locating inappropriate sites the vendors didn't include was a challenge."<sup>36</sup>

### Network Computing Tests

Network Computing is another leading technology publication that regularly tests software. As described on the company website, "Network Computing performs hands-on product reviews in our Real-World Labs co-located on the sites of two large universities, a Fortune 100 corporation, as well as bench-test facilities."

Real-World Labs tested SurfControl Super Scout, Elron Internet Manager, Little Brother, SmartFilter, Iprism, WebSense, and N2H2: *We installed and configured each product to monitor and block Web traffic on our production network. We then configured each product to block traffic to unproductive or "improper" sites while letting productive uses of Web, e-mail and FTP traffic go past...We visited a broad range of improper Web sites to evaluate each product's content policies and, if applicable, dynamic policy rules. Our test results showed that network administrators can choose from many effective content-monitoring solutions capable of stifling the most adamant of browsers.*<sup>37</sup>

### Internet Week Tests

The now-defunct technology publication Internet Week tested a variety of security software applications in the April 2000 issue. The Camden Associates labs conducted the tests. Among the products tested was Cyber Patrol Proxy. Internet Week's test found that "Cyber Patrol Proxy for Microsoft's Proxy Server does an excellent job of blocking undesired sites."<sup>38</sup>

### **eWeek Tests**

Another popular technology publication is eWeek, which regularly tests software through the eWeek Labs. In the February 2001 issue, eWeek Labs tested the effectiveness of SmartFilter, and concluded that, "We were impressed with the quick response from SmartFilter when we tried to access Web sites that were in the "Deny" ACL."<sup>39</sup>

### **Computer Shopper Tests**

Computer Shopper is a widely distributed technology trade publication that has conducted thousands of software tests. In the November 1997 issue, CyberSitter was tested through ZD Net Labs: *Although installing Cybersitter is a smart way to keep your children safe on the Internet, keep in mind that nothing is foolproof. Although it took several hours, we were able to bring up three sites with inappropriate content ourselves...However, for those times when you need a quick way to tame the World "Wild" Web for young cyber surfers, Cybersitter 97 is a good start.*<sup>40</sup>

## Tests Finding Filters of Mixed Effectiveness

### Internet World Tests

Since 1995, Internet World has been one of the leading Internet technology publications, and regularly tests Internet software in IW Labs. In September 1996, Internet World examined InterGo, Cyber Patrol, Net Nanny, Net Shepherd, Specs for Kids, CyberSitter, and Surfwatch:

*To evaluate how well the current programs work, IW Labs rounded up every available commercial product and tested them under controlled laboratory conditions...While each of the products is sold for the explicit purpose of blocking objectionable material, only three (Cyber Patrol, InterGo, and Specs for Kids) are able to do that with reasonable certainty.*

| Category | Inter go  | Cyber Patrol | Net Nanny | Net Shep | Specs for Kids | Cyber sitter | Surf watch |
|----------|-----------|--------------|-----------|----------|----------------|--------------|------------|
| Drugs    | Excellent | Excellent    | Poor      | Fair     | Excellent      | Fair         | Good       |
| Sex      | Excellent | Excellent    | Fair      | Fair     | Excellent      | Good         | Poor       |
| Violence | Excellent | Excellent    | Poor      | Fair     | Excellent      | Excellent    | Poor       |

Ratings reflect the success of each product in blocking three main categories of objectionable material based on 100 test sites using the package's most stringent level of controls.<sup>41</sup>

### PC Magazine Tests

As mentioned earlier, PC Magazine's testing is among the extensive and widely read in the technology industry (see earlier section, "Tests finding filters effective: PC Magazine tests"). The first of eight rounds of filter testing were conducted in November 1995, and this is believed to be the first laboratory test of filtering software, when filtering was in its infancy.

The November 1995 issue tested CyberSitter, Net Nanny, and SurfWatch, and found Net Nanny "ineffective", but noted that CyberSitter "comes with a thorough database of objectionable Internet resources," and concluded that "In the end, none of the cybersmut censors are totally reliable at preventing access to questionable resources."<sup>42</sup>

### PC Week Tests

PC Week is another widely circulated technology publication. Using the eWeek Labs testing facility, PC Week tested Websense in the April 1997:

*WebSense is a good choice for companies that want a simple, effective method for monitoring or controlling employee use of the Internet...But while the filters blocked obvious sites, such as Playboy, we could easily get to other pornographic sites by going to the picture indexes at the Yahoo site.*<sup>43</sup>

### PC World Tests

As mentioned earlier, PC World's laboratory testing is extensive and widely read in the technology industry (see earlier section, "Tests finding filters effective: PC Magazine tests"). In October 1997, PC World tested five home filters --SurfWatch, Cyber Patrol, CyberSitter, Net Nanny and Net Shepherd:

*Internet-blocking software is neither as easy to use nor as foolproof as parents and developers would like...Among the five programs we tested, two (Cybersitter and SurfWatch 1.6) effectively filtered out all 10 of our bellwether adult-oriented pages.*"<sup>44</sup>

## Tests Finding Filters Ineffective

### Consumer Reports Tests

Consumer Reports conducts software tests in professional laboratories, though software testing appears to be only a tiny portion of total testing. An index of reviews on the Consumer Reports website shows only eight software reviews in the four years of 1998-2001.<sup>45</sup>

In May 1997, Consumer Reports tested four home filters, CyberSitter, Net Nanny, SurfWatch, and Cyber Patrol. Consumer Reports recommended none of the filters, and concluded:

*We set each to maximum protection, then noted its ease of use and effectiveness in keeping us from viewing 22 easy-to-find web sites we had judged inappropriate for children...None is totally effective.*<sup>46</sup>

In March 2001, Consumer Reports issued a second evaluation of filtering software. Consumer Reports evaluated AOL Parental Controls, Cyber Patrol, Cyber Sitter, Cyber Snoop, Internet Guard Dog, Net Nanny, and Norton Internet Security 2001. Consumer Reports concluded:

*Filtering software is not a substitute for parental supervision. Most of the products we tested failed to block one objectionable site in five.*<sup>47</sup>

The 2001 Consumer Reports test is the only laboratory test to generate a public controversy. The giant Information Technology Association of America (ITAA), which represents 26,000 corporate members in 41 countries, issued a press release criticizing the testing methodology:

*The Information Technology Association of America (ITAA) today said that an article in Consumer Reports magazine analyzing filtering software falls short in fairly characterizing the utility of these consumer tools, and raised questions about the methodology of the analysis.*<sup>48</sup>

### MacWorld Tests

MacWorld has been laboratory testing software for 17 years. MacWorld conducted two tests, a 1997 test that found filters effective, and a 2001 test that found them ineffective (see section "Tests finding filters effective").

For the May 2001 issue, MacWorld tested filters again:

*We installed three of the more user-friendly filtering applications: Content-Barrier, from Intego; KidSafe, from Apple; and AOL 5.0's parental controls. We used each program's most restrictive settings--turning on all 26 of ContentBarrier's filtering categories; selecting the Children 12 And Under filter in AOL's Web-surfing controls; and using KidSafe's default setting, which lets you visit only sites OK'd by a panel of educators. Then we visited sites that we thought were squeaky-clean. The results? Either the Web is a lot more risqué than we imagined, or Internet-filtering software needs a healthy dose of parental common sense to be truly helpful.*<sup>49</sup>

## Conclusion

The aggregate research of the independent laboratory tests of filter effectiveness strongly suggests that Internet filtering software is largely effective. Of the 26 lab tests, 19 found filters effective, over 70% of the total tests.

While four tests found filters to be only of mixed effectiveness, it is worth noting that all of these tests occurred in the early development of filters, during the years 1995-97. It is also worth noting that of the three tests that found filters ineffective, two were conducted by a Consumer Reports, a facility that has little experience in software testing, and used a methodology that was heavily criticized by the IT community.

Further, the continued, steady growth of filtering software across multiple markets -- businesses, schools, libraries, and homes, also reflects the effectiveness of filtering products. It is difficult to believe that tens of thousands of IT directors and systems administrators would increasingly purchase software that is as ineffective as the critics of filtering software claim.

None of the filtering tests claimed that filters worked perfectly. Most of the tests finding filters effective contain a disclaimer along the lines of "while no filter is fool proof."

Yet the tests do find filters, in general to be effective tools at blocking pornographic and offensive materials. And their growth will likely continue, as filtering software becomes part of the normal daily Internet experience for millions of Internet users worldwide.

## About the Author

David Burt is the manager of public relations for N2H2, Inc. Mr. Burt joined N2H2 in 2000 after nearly three years as president of Filtering Facts, an organization devoted to the study and promotion of Internet filtering software. Mr. Burt is recognized as a leading expert on Internet filtering, having provided expert testimony on both the effectiveness of filtering software, and the problems generated by Internet pornography. Mr. Burt possesses a Masters degree in Library and Information Science from the University of Washington, and is a former librarian.

## Footnotes

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