# Fast Track *to*

# THE INTERNET

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The **Origin**

**Browsers**

**Peer -To- Peer**

Internet **Beware!**

**Tools** and **Utilities**

**Portable** Internet

**101** Most Useful **Websites**

**YOUR HANDY GUIDE TO EVERYDAY TECHNOLOGY**

# Fast Track
## to
# The Internet

By Team Digit

# Credits

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# The Internet

Only a few years ago, checking results or getting admissions for professional courses meant standing in long queues and braving the rain. Although standing in queues has not been eliminated totally, information about colleges and their admission procedure is now available online.

Being 'online' or using the Internet is a term now commonly used during conversations between students, professionals and even homemakers. Want to be the first to know your university exam results? Get the latest market quotes? Want the best recipes? Just go online!

Before it became ubiquitous, nobody believed that the common man could have access to the Internet. Only corporate users and researchers in universities were among the lucky few to have access. Thankfully, all this has changed for the better.

Awareness, for one, has increased a great deal and people are constantly in touch with the latest happenings around the planet. The Internet is omnipresent and people ignoring it or trying not to use it are considered thick.

Today, Internet connections are not restricted to merely the dial-up kind and users are fast moving on to broadband, although its penetration is still limited. Nonetheless, the good part is that people are now more connected than ever before.

But who fuels this? Where is the Internet based? More importantly, what really is this Internet? How did it suddenly become such an integral part of our lives? Is it a bad thing or a good thing? Is it going to last? Is it helping us?

In this book, we will talk about all this and more but in a manner that will make you understand what it is and how you can use it best. We will also talk about future technologies that will transform the manner in which we use the Internet today.

So if there was ever a question you had about the Internet, but didn't know whom to ask, you're holding the right book!

# Contents

# The Origin Of The Internet



Yes, there is an origin to the Internet. And we will tell you what happened exactly. This chapter will interest those readers who know the Internet only as it is present today. Think about this chapter as your time machine that takes you back when it all started. And get ready for the ride, which we promise is going to rock you!

# 2.1 Evolution

Everything has a "start". The Internet, as we know it today, also had a very humble but interesting beginning.

J C R Licklider of the Massachusetts Institute of Technology (MIT) envisioned the Internet as far back as August 1962 in a series of memos written by him that talked about social interactions that could be enabled through networking, a concept that he termed his "Galactic Network".

According to this concept, all computers across the planet would be interconnected and by this, everyone could quickly access data and programs from any 'site'. This is what actually happens today. J C R Licklider joined DARPA (Defence Advanced Research Projects Agency http://www.darpa.mil/) in October 1962 and was its first research head. In due course at DARPA, he convinced his successors, Ivan Sutherland, Bob Taylor, and MIT researcher Lawrence G Roberts, of the importance of this networking concept.

In late 1966, MIT researcher Lawrence G Roberts went to DARPA to develop the computer network concept and quickly put together his plan for the "ARPANET" (Advanced Research Projects Agency Network related to the US Department of Defence) publishing it in 1967. Roberts presented his paper at a conference, where, incidentally, Donald Davies and Roger Scantlebury of NPL (National Physical Laboratory) from the UK presented a paper on a packet network concept.

Earlier during his research, Leonard Kleinrock at MIT convinced Roberts of the feasibility of using packets rather than circuits to transfer data, which, by itself was a major leap forward in the area of computer networking. To prove this, Roberts, with Thomas Merrill in 1965, connected the TX-2 computer in Massachusetts to the Q-32 computer in California using an extremely low-speed dial-up telephone line creating the first (though small) wide-area computer network ever built.
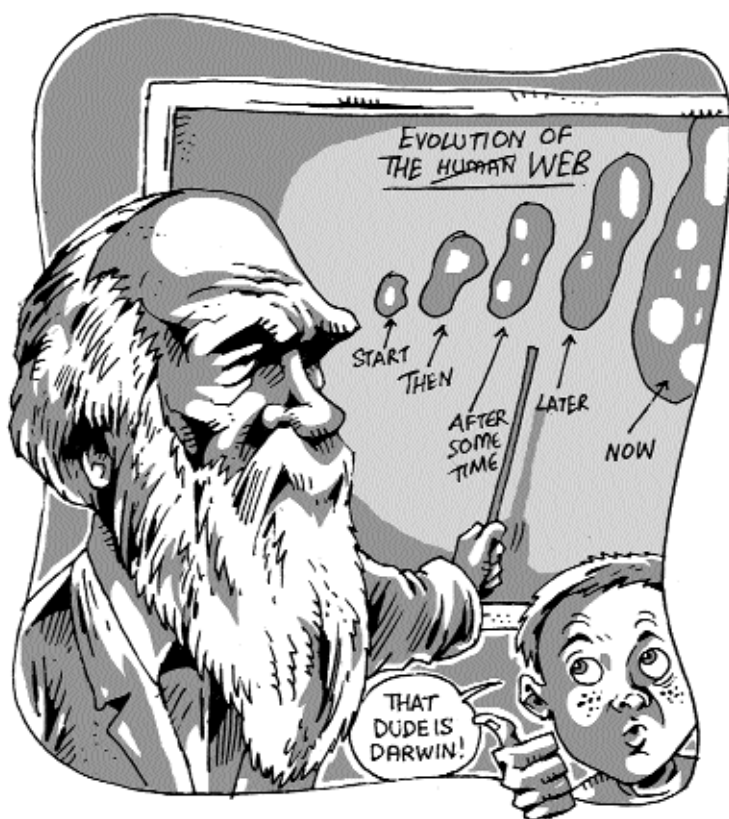
This confirmed Kleinrock's theory of the need for packet switching since the circuit-switched telephone system was insufficient for the job. This also proved another aspect, which was that time-shared computers could work well together and running programs or retrieving data could be carried out without any issues.

The word "packet" was adopted from the work at NPL and the proposed line speed to be used in the ARPANET design was upgraded from 2.4 kbps to 50 kbps.

This was just the start. By August 1968, Roberts and DARPA funded community refined the overall structure and specifications for ARPANET. This led to a release of a 'Request For Quotation' by DARPA to manufacture packet switches called Interface Message Processors, which, was fulfilled by a firm called BBN. Bob Kahn from BBN worked on the IMP's while Roberts worked on and optimised the network topology and economics. At the same time, Kleinrock's team at UCLA prepared a network measurement system.

Kleinrock's Network Measurement Center at the University of California at Los Angeles (UCLA) was selected to be the first node on the ARPANET. All this finally came together in September 1969 when BBN installed the first IMP at UCLA and the first host computer was connected.

Stanford Research Institute was selected as the second node and when SRI was connected to the ARPANET, the first host-to-host message was sent from Kleinrock's laboratory to SRI. Two more nodes were added at UC Santa Barbara and University of Utah and at the end of 1969 four host computers were connected into the initial ARPANET, and the fledgling Internet came into existence.

Bob Kahn organised a large and successful demonstration of the ARPANET in October 1972 at the International Computer Communication Conference (ICCC) which was also the first time that this completely new networking technology was demonstrated in front of the general public. In the same year, the electronic mail or e-mail, as we know it, was introduced. Ray Tomlinson from BBN wrote a very basic e-mail 'read and send' software that was later developed further by Roberts. The development was driven by the need of ARPANET developers to coordinate amongst themselves but by the next decade, e-mail became the largest network application to have ever hit the internet.

## The Digital Wave

ARPANET was transformed into the Internet as we know it today. The technology involved in this was a very basic packet switching network that later moved to include packet satellite networks, ground-based packet radio networks and other networks. The basic idea behind using the Internet was connecting multiple independent networks of rather arbitrary design, beginning with the ARPANET that, in other terms, follows a technical idea of open architecture networking.

Until that time, there was only one method of networking, which was the circuit switching method. In this method, networks interconnecting at the circuit level passed individual bits on a synchronous basis along a portion of an end-to-end circuit between a pair of end locations.

What this means, is that in the circuit switching mode, there is a dedicated path by which data travels from the source to the destination. In packet switching mode, this is not the case. The hub or the router, which acts as the intermediary, decides the best path for sending or receiving the data packets that gives this process more flexibility with increased efficiency.

The future of networking was based on this skeleton. Further down the line, the TCP/IP (Transmission Control Protocol/Internet Protocol) was developed since the Network Control Protocol of NCP, which was in use at that time, did not have the ability to address networks (and machines) further downstream than a destination IMP. This was the main driving force behind the development of another protocol which we know as TCP/IP, today.

Further, down-the-line applications such as Telnet were developed, which is a very basic application for remote logging and file transfer. However, e-mail remained the biggest and single most innovation from that era. Other applications being developed at that time included packet-based voice communication (the precursor of Internet telephony), various models of file and disk shar-

ing, and early "worm" programs that showed the concept of agents (and, of course, viruses).

This form of the Internet, though, was very limited and soon the commercialisation of the fledgling Internet seemed to be a very real possibility.

### The Early Years

In the 1980s there was a widespread development and use of LAN's, PC's and workstations. This allowed the Internet to flourish. By 1985, the Internet was refined and well-established as a technology and although it was still limited, mostly to researchers and developers, regular computer users started using it for daily activities. Electronic mail or e-mail was the most used application and its interconnection between different mail systems was demonstrating the utility of broad based electronic communications between people.

Until this time, networking protocols were still being developed. However, the major protocol that was polished at the time was TCP/IP. In fact, by 1990, the ARPANET was decommissioned and TCP/IP had displaced most other Wide Area Networking (WAN) protocols and was fast becoming the accepted protocol for internetworking.

After a while, the World Wide Web came into existence. A consortium called the World Wide Web Consortium (W3C) was also formed which was led initially by Tim Berners-Lee (the inventor of the WWW) and Al Vezza. The W3C is the consortium that has taken on the responsibility for evolving the various protocols and standards associated with the web. This happened in 1992.

Soon after this, the commercialisation of the Internet started taking place. There was a marked increase in the number of communities across the Internet. Bulletin Board Services and Usenet groups were now home to more computer users than ever before. With the advent of such information, corporations and businesses

also started looking at the Internet in terms of business viability.

In 1994, Pizza Hut started offering pizza ordering on its Web page while First Virtual, the first 'cyberbank', launched its online presence. By this time, there were more than 3,864,000 hosts on the Internet. Since then, the Net has grown rapidly and the process continues to this day.

### India And The Internet
The Internet hit India in the late 1980s, although it was again deemed fit only for researchers and scientists. In 1987, the first dial-up e-mail network was set up between NCST and IIT-Mumbai. In 1988, an international dial-up e-mail network connected NSCT in Bombay to a host in Amsterdam. In 1994, a satellite communications network was set up with assistance from the United Nations Development Programme (UNDP). Later in August 1995, VSNL introduced commercial Internet access in India, with a student shell account becoming available for Rs 750 while a TCP/IP account cost somewhere in the vicinity of Rs 15,000-16,000.

After VSNL's Internet access monopoly was curbed by the Indian government on November 6, 1998, there was a major spurt in the number of ISPs including Mantra Online, Dishnet DSL and others who became major players. Some of these ISPs are now either defunct or have been bought over by other companies.

Today, Internet in India has ballooned and India has become a giant in the ITES or IT Enabled Services field. With failing Internet access costs and increasing users, India's ranking in terms of Internet users is rising fast. According to statistics, more than 50 million Internet users are abound in India with a large number of potential users waiting to go online.

One of the major influences of India being in the mammoth "Internet ready" stream is the increasing advancements in infrastructure and innovations in technology making it easier for even people in rural parts of the country to have access to the Internet.

Today, India has turned into a major outsourcing hub for a large number of Internet-related jobs, which are outsourced to India, courtesy a rapidly rising Internet-user base.

### Right Now!
Right now, the Internet is growing and at an amazing rate. This rate could perhaps be second only to the burgeoning population of third world countries. Internet use across the planet has grown at a whopping 146 per cent since 2000 and is continuously moving upwards.

The main reason for this is that the Internet has now become an accepted part of the mainstream urban life. The Internet is used for almost everything imaginable from recreation and entertainment to learning about rocket science.

However, for every good thing, a million bad ones hit you. The same has happened with the Internet. The Internet is a huge resource for everything under the sun; however, not all the data available is harnessed in the right way or in the right direction.

There is an information overload and within a small time, you can turn from a learner to a researcher. Another factor is that all data that is available on the Internet is not true and should not be accepted at face value, which users normally do.

This has been happening since the time Internet came into existence. With more and more users getting online everyday, it has become difficult for searching and sifting through data. Not all results provided by search engines are the one you are look-ing for. Depending on the search engine used, results provided could be based on which advertiser pays the most. For the stat-istician in you, here are a few to gulp.

Research to find out the number of Web sites visited by users residing in the US showed that the total number of users in a month was 164,961 out of which, Yahoo!, Time Warner and MSN were the most-visited domains. The Entertainment category comprised a total of 128,863 users whose most visited Web sites were Viacom Online, AOL Entertainment, Yahoo! Music and Windows Media in that order. And these figures are just for a month for users surfing the internet in the US! If we start col-lating data from other countries, we will definitely achieve a mind-boggling figure. So where do we go from here?

### Coming Soon

The Internet is not limited to the PC anymore and has percolated down to various devices thanks to the advancement in technolo-

gies. You can now receive mail on your mobile phone and watch videos on it, thanks to GPRS. This, though, is just the start.

With every passing year, devices are converging. The idea of the refrigerator interfacing with your mobile to control the temperature within for optimum cooling is a reality and thanks to the Internet, you can control this from wherever you are on this planet.

# Browsers
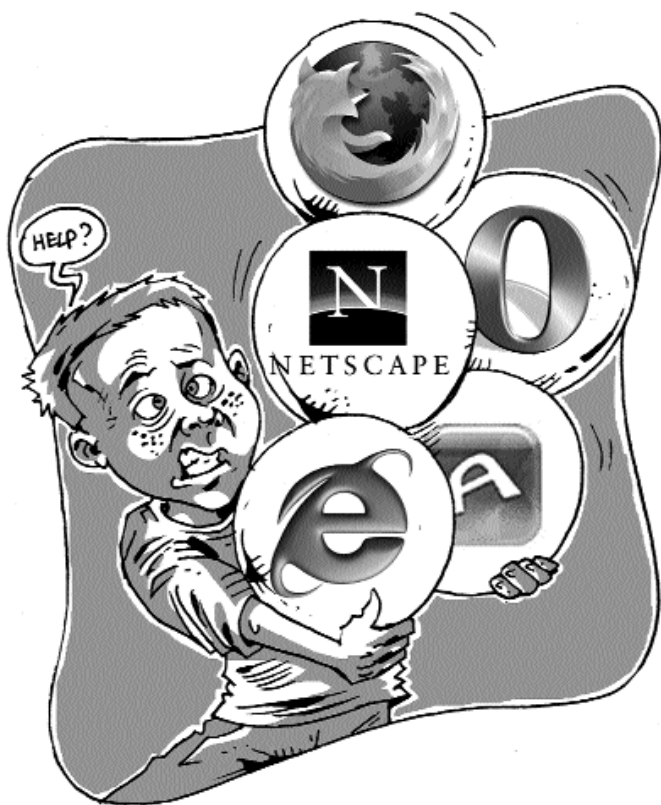


Whenever we use the terms 'logging on to the Internet', 'browsing', or 'surfing the Internet', we generally mean using the system's browser. The word "browser" has had a circumstantial coining since the Internet as a whole is a collection of Web pages, and when we surf the Internet we actually browse a variety of Web pages—hence the word browser. In this section, we will talk about the most popular browsers today.

# 3.1 The First Browser – WorldWideWeb (Nexus)



The WorldWideWeb (Nexus) Browser

Tim Berners-Lee invented the World Wide Web or WWW as we know it today in 1989, deploying a working system by 1990. Berners-Lee was the first to invent the browser, and it was simply called WorldWideWeb since it was the only way to see the Web. Tim later rechristened this browser 'Nexus', to distinguish between the program and the abstract information space "www" which was typed in the Uniform Resource Locator (URL). WorldWideWeb was written in Objective-C and it would let users browse "http:", "news:", "ftp:" and local "file:" spaces.

Tim wrote the program for this browser on a NeXT computer. The browser was the best at the time, since it was the only one. If you look at the browser closely, you will see that buttons and features in the browser look similar in Internet Explorer. Here's a brief low-down on the functionality of the browser.

The menu bar looked like a primitive version of the Windows Desktop, and clicking on it would provide a list of options similar to the Windows of today. The Navigate menu had things such as "Back", "Next" and "Previous", and the last two were useful when you followed a link from a list of links—they meant "go back a step and then take the next link from the same page."

The "Link" menu had options such as "Mark all" which would remember the URL of the current page where you were. "Mark selection" would make a link target for the selected text, give it an ID, and remember the URL of that fragment. "Link to Marked" would make a link from the current selection to whatever URL you had last marked. So making a link involved browsing to some-where interesting, hitting [**Command**] + [**M**], going to the document you were writing and selecting some text, and then hitting [**Command**] + [**L**]. "Link to new" would create a new window and prompt for a URL, and then make a link from the selection to the new document. You never saw the URLs—you could of course always find documents by following the link to them.

Using the "Style" menu, you could load a style sheet to define how you wanted your documents (Web pages) rendered. You could also set the paragraph style to an HTML element's style such as heading1, heading 2, list element, etc., and then this implied an HTML structure in which the document was written back.

At that time, the "X" close box was unique to NeXT, and accord-ing to Tim, Windows copied it. The broken X in the "Tim's home page" window means that the document was in the process of being edited and was unsaved. Now that we have talked about the first Web browser, lets move on to find more about other browsers.

# 3.2 Microsoft Internet Explorer



Internet Explorer for Windows

Internet Explorer arrived at a time when Netscape was the master of the game. Internet Explorer 1.0 debuted with the second version of Microsoft Windows 95 that was called, simply enough, "Windows 95 with Internet Explorer." When Windows 95 first made its appearance in July 1995 it included inbuilt support for dial-up networking and TCP/IP (Transmission Control Protocol/Internet Protocol) plus other key technologies for connecting to the Internet. However, it still depended on third party browsers, which at that time meant Netscape. With growing acceptance of the Internet, Microsoft suddenly realised the potential of bundling in its own browser and thus Internet Explorer (IE) was born. Internet Explorer technology was originally shipped as the Internet Jumpstart Kit in Microsoft Plus! For Windows 95. Internet Explorer replaced the need for cumbersome, manual installation steps required by many of the existing shareware browsers.

Internet Explorer 2.0 arrived in November 1995 and was the first cross platform browser released by Microsoft and worked on both Macintosh and 32-bit Windows. Internet Explorer 2.0 technology introduced Secure Socket Layer (SSL) protocol as well as support for HTTP cookies, Virtual Reality Modeling Language (VRML), and Internet newsgroups.

The next big Microsoft browser release was Internet Explorer 3.0 in August 1996, which had a completely rebuilt core and considered one of the best browsers of the time. This browser was designed for Windows 95 and included features that users immediately took to such as Internet Mail and News 1.0 and Windows Address Book. Later, Microsoft NetMeeting and Windows Media Player were also released. Internet Explorer could now display
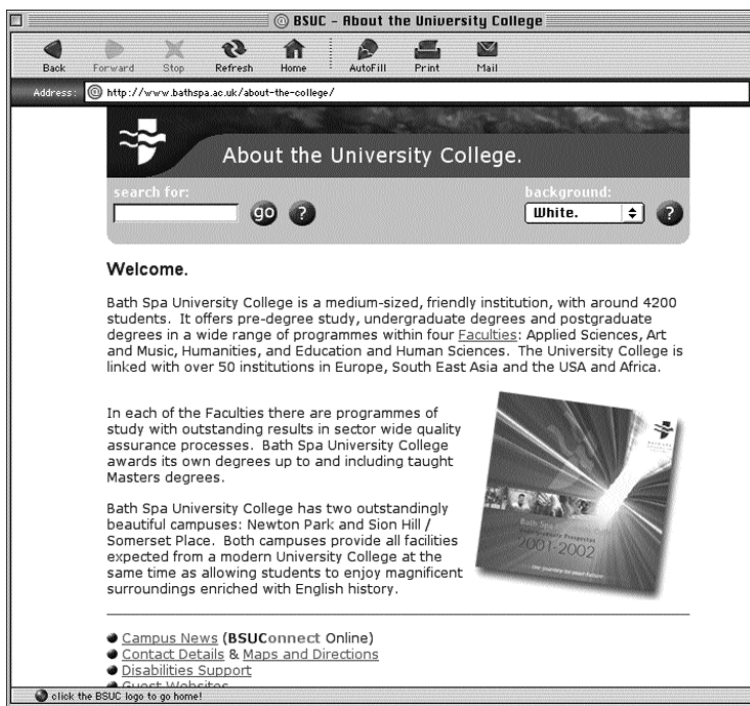


**Internet Explorer for Macintosh**

GIF and JPG files, play MIDI sound files and streaming audio files without the assistance of other applications. For Web programmers, though it was a different story altogether, since IE3 allowed for a choice of scripting languages and also Cascading Style Sheets (CSS).

Moving onwards, Internet Explorer 4 made its debut in 1997 and was designed for Windows 95, Windows 98, and Windows NT. Another major add-on to the release of IE4 was Outlook Express, which would be installed in the default installation and was an upgrade from the previous Internet Mail and News application. This was the first offering from Microsoft to compete with Netscape Communicator in terms of a mail client being installed with a browser.

This was also a major release for Web programmers since the introduction of DHTML as a scripting language in IE4, Web pages could be designed more dynamically. Users could now expand menus with a click or drag images and objects around on a Web page. The Web started to look more like the applications and games that people were accustomed to and less like a static series of pages.

In September 1998, Internet Explorer 5 was released. DHTML functionality was improved with more features and with emerging Web commerce ideas.

Internet Explorer 6 was first released in 2001 with the release of Windows XP operating system. Later on, IE 6 was released for other Windows flavours. One of the major improvements in IE6 was the implementation of privacy and security functionality of the browser. Since privacy and security had become customer priorities, Microsoft implemented tools that support Platform for Privacy Preferences (P3P), a technology under development by the World Wide Web Consortium (W3C).

Internet Explorer has also been available for the Macintosh for a long time. Although Netscape Navigator was the browser bundled with the Mac OS for a long time, it stopped in 1997 when Internet Explorer became the default browser for the Mac. But with the release of Safari browser for the Mac OS, development of IE for the Mac was stopped.

Today, for any Windows user logging on to the Internet for the first time, the blue "e" icon sitting on the desktop is the gateway to the Internet with the default installation of Windows. To use any other browser, you will need to download or source it from somewhere and then install it. The little "e" on the other hand is ubiquitous, and all you need to do is double-click.

So where do we go from here?

IE 7 which was scheduled for release along with Longhorn will now be released prematurely. Newer browsers such as Firefox (which we will be talking about soon) will be present, but let's face facts, Internet Explorer is here to stay, never mind the anti-trust lawsuits.

## 3.3 Netscape



The latest version of Netscape

Netscape has quite some history behind it as a browser. Netscape started out as collaboration between Silicon Graphics founder Jim Clark and Marc Andreessen in mid-1994 to form Mosaic Communications. Mosaic Communications later went on to be renamed Netscape Communications. Andreessen had been a leader in University of Illinois in a software project called Mosaic. With the advent of the Internet, both Jim and Marc saw the oncoming wave of the Internet, and understood that browsers would be the primary tool to access it, thus making Web-browsing software a huge poten-tial money-spinner. Within a brief half-year period, many of the orig-inal people from the NCSA Mosaic project were working for Netscape, and Netscape was released to the public in December 1994.

Netscape became a big success within months of its release. And some of the contributing factors to its success were the pace

with which software releases took place. New innovations and improvements were constantly being made to the browser and that made it "the" browser to browse the Internet with. Newer HTML capabilities were added with every release to Netscape and in most cases, these enhancements and improvements were much, much better than any other browser could provide at that time. By the summer of 1995, it was a good bet that if you were browsing the Internet, you were doing so with a Netscape browser—by some accounts Netscape had over 80 per cent market share, and Netscape's browser helped cement their own dominance.

Enter Windows 95 and Internet Explorer, and Netscape met with their first worthy competitor. Microsoft made Operating Systems for a living, and browsers were a spin-off from the OS. For sometime though, Internet Explorer played second fiddle to Netscape and was always playing catch up. There were two advantages that Netscape could not deny that Microsoft had. First that Microsoft was way above Netscape in terms of market penetration, and secondly, Internet Explorer was free while Netscape was not.

Netscape wanted to counter this situation in a manner that would impress its clients and in March 1996 launched Netscape 2. With the launch of Netscape 2 a bevy of must-have breakthrough features (frames, Java, Javascript and Plug-ins) which helped distance it from the pack. To counter the "free" Internet Explorer browser issue, Netscape gave it away for free to carefully selected target audiences, such as students and teachers which helped immeasurably to spread the word and to ensure Netscape's dominance.

Netscape 3 rolled out in August 96 at almost the same time as Internet Explorer 3.0 and this flared off a war amongst the two mammoths. Although, Netscape was still the dominant one in the browser market, Internet Explorer by then started making their first dents in the browser market and eating into the Netscape pie.

One of the improvements that Netscape 3 browser boasted off was "mouseover" which means showing one image when a link is highlighted and a different one when it is not. At the time, Netscape 3 was considered the benchmark for all other browsers and if you wanted to be in the browser market, you would be better off supporting all features that Netscape 3 supported.

June 1997 saw the release of Netscape 4 while IE 4 was released in October 1994 and things started to go wrong for Netscape. Both browsers used DHTML (the changing of CSS by means of JavaScript), but had their own implementations and did not pay attention to how the other browser worked. Suddenly Web sites that used DHTML (or CSS with JavaScript) could be displayed in Netscape and not in IE and vice versa. But Microsoft acting mostly on hindsight went back to the drawing board and wrote the code right from the scratch for IE 4 in the process doing away with the legacy code.

On the other hand, Netscape tried to add the new features on top of Netscape 3's code engine, a decision that was to have grave consequences. Another factor was that Microsoft's DHTML implementation was user friendly and attracted both Web designers and developers alike who could write or design programs without having to refer to textbooks. Netscape's implementation of DHTML though remained in the realm of elite programmers who had code for lunch, dinner and sex.

The Internet in 1997 was looking up with mass sales of computers and new users wanting to hook up to the Internet. They did not want to know what software to download, what software to use as a browser; all they wanted was the Internet "installed" in the computer, for them to click on. As mentioned earlier, Microsoft was in the business of making OSes and Windows was by far the only OS that most non-geek users were happy with. With Internet Explorer being freely available along with the OS, Netscape suffered a major setback in their browser business.

These surges of new users were unburdened with the history of the WWW and along with that the existence of Netscape as a browser, and as a result Netscape came crashing down from the once dominating Internet browser market. As a last ditch effort, Netscape did away with the shareware tag and made Netscape a completely free browser killing their main source of income. However, this solution did not turn out to be Netscape's saviour. The newer code of Netscape 4 incorporated in the Netscape 3 core started showing bugs and extremely odd ones at that. Netscape was going down, and fast! Finally, Netscape announced that it was going open source. This was the re-birth of Mozilla as an open source project, but the deliverables were still about 4 years away, making the wait too long for most.

Currently, Netscape has been sidelined by the barrage of new browsers such as Firefox and Opera. Features such as tabbed browsing, which was the mainstay of Netscape, has found new homes in these other browsers. The current version of Netscape is 8.0.2 and is based on the Mozilla Firefox core. For now, Netscape is dependent on the Mozilla Project and the real work actually happens there rather than at Netscape. More about this when we talk about Mozilla!

# 3.4 Opera



The Opera Browser

Opera has always been seen as a browser for users who do not trust IE and want something faster and lighter than Netscape. The Opera browser was started in 1994 as a research project in Norway's telecom company Telenor. Two engineers from the same company developed the browser Opera for the company's intranet. On July 14th 1996, Opera's co-founder Jon von Tetzchner made the first public announcement of Opera on UseNet and Opera came into being for the general public.

Opera was written from a scratch and is not based on the NCSA Mosaic code or interface methodology (as Internet Explorer or Netscape are.) This gives it some unique browsing features such as page zoom, a multi-document interface browsing environment and mouse gestures. It has an extremely small footprint and boasts of an impressive feature set, with great sup-

port for HTML, XML, WML, CSS (one of the best implementations), JavaScript, DOM and Java.

Opera Series 1 was not released for the public and was called MultiTorg Opera. This version was used for the Telenor Intranet.

The first public version of Opera was the Series 2. The first version is a Norwegian demo version of Opera 2.0 that was included with a PC Magazine and loaded only local Norwegian pages.

Series 3 was the first coming in terms of acceptance for Opera worldwide. Version 3.62 was the first version of Opera in terms of features, stability and speed. CSS support was exceptional in this version of Opera.

Opera Beta 4 was released in March 2000 and had support for most of CSS2, all of CSS1, HTML4, XML, and WML. This version was based on a cross-platform core and facilitated the release of Opera for different Operating Systems. A new integrated e-mail client was also included in this version. The first versions of Opera 4 were quite stable and buggy and it was after the release of 4.02 that the browser actually became useful.

The Opera 5 release was noticed by the general public, since this time the browser was not on a 30-day trial period but was ad-supported hence people could use the browser long after the 30-day period. New features that were added to this release were mouse-gestures, Instant Messaging features hot list panels and an integrated search. In fact, many users are still using this version of the browser till date.

The long awaited Unicode support was introduced in the Opera 6 release and a new SDI/MDI interface was also introduced in the same release. The Opera 6 series was one of the most stable and it was with this release that Opera garnered its own fans and a cult following, but was still miles away from making a dent in either Netscape's or Internet Explorer's market shares.

Opera 7 was released in early 2003 and featured a brand new rendering engine called Presto. This engine enhanced and expanded its support for standards and included W3C DOM and the Small Screen Rendering technique for handheld devices. The interface was redone entirely with a custom cross-platform skinning system which significantly reduced resource usage, keyboard shortcuts, mouse gestures, menus and toolbars. Other new features that were included in this release were features such FastForward, Notes and Slideshow, which made the user experience even more enjoyable. A new news and mail client called M2 was introduced in this version as well as a RSS news reader and an IRC chat client.

Opera 8 was released in early 2005 and is currently in version 8.0.1. The major reason for Opera being accepted publicly was not because of its compliance in standards with other browsers, but because of the non-standard browsing enhancements that were absent in its competitors. It is light weight and has its own cult of fans. It has innovative features and is one of the most used browsers on mobile devices.

Currently, Opera has started making inroads in other embedded systems platforms as well. Opera's market share is starting to make a bit of a dent with users sticking to this alternative browser rather than using Internet Explorer or Netscape. Plus, many of Opera's innovative features are finding their way into other browsers as well. One of them is FireFox, the browser that we will be talking about next.

## 3.5 Mozilla FireFox



**Mozilla Firefox**

Mozilla Firefox is the hottest new browser on the scene and it has taken computers users worldwide by storm. Firefox has made a measurable depression in the market share of the world's favorite browser and that too in an era when users are taking to computers like a duck to water.

Firefox has quite a history of its own, a very young but interesting history. Firefox began not as Firefox, but as Phoenix, which was made available to the public on September 23, 2002. The first build of the browser which was the 0.1 version was not available as an installer, but as an executable. You needed to click on the executable to start the browser. The Phoenix browser used a large amount of Mozilla source code and the initial release was code-named "Pescadero", Spanish for "angler". Feature-wise it was extremely primitive, but it still contained some useful features

such as a popup blocker, tabbed browsing and an integrated download manager. However, shortcut features such as writing the URL then pressing [**Ctrl**] + [**Enter**] to automatically fill in the "www." and ".com" parts of the URL were not available in version 0.1.

Phoenix 0.2 was released a few days later on 10 October 2002 and had plenty of more features compared to the previous release. The major change in this version was the tool bar which had undergone a complete change. The side bar made its first appearance in this version. Other enhancements were implemented including new options to the preferences section. Now users were able to disable Java and edit some tabbed-browsing options. Phoenix 0.2 also introduced the ability to add extensions and themes to the browser.

Phoenix version 0.3 was the first release of Mozilla that had an integrated search engine by default in the toolbar. The Mozilla team at the time was concentrating on enhancing the browser and spent most of their time on doing that. Although this release had bug fixes, it was still buggy and unstable.

The next major change came with the release of the Firebird browser. Yes, Mozilla changed the name of the browser from Phoenix to Firebird. This was done to avoid trademark issues with a company called Phoenix Technologies, which makes a browser of its own. After months of brainstorming, the Mozilla team rested on a new name, Firebird. However, the name Firebird had to be changed again later because Firebird was the name of an open source development project that makes a relational database.

The general look and feel of the browser was also changed to support the name change. The term "Preferences" turned into "Options", and the Options window obtained some eye candy. If Firebird 0.6 crashed, the user was now able to submit a message to the developers about this error. The downside to this new browser was the increase in the file size which was an increase by about 6MB.

With all the other bug fixes and releases happening in a span of over a few months, the next change was the re-christening of the browser, again. As mentioned earlier, Firebird was the name of an open source development project that makes a relational database and to avoid the legal issues the Mozilla team settled for the name Firefox after some further brain-storming and research in trademark names. This was mainly because it was closely similar to its previous name, Firebird. With the new name came a new logo: the now famous image of the Flaming Red Fox wrapped around the Globe. Staying true to the logo, the browser spread like wildfire in the coming days.

Firefox 0.8 was the first release to feature a Windows installer. All the previous versions were zip files containing an executable. The theme of the browser remained the same, almost. However, improvements were made to the toolbar features. The default search engine was Google and you also had the option of installing (adding) newer search engines. The installer was also unique since it gave users the option to install the browser with or without the developer tools.

Soon, Firefox PR 0.10 was released. This was the first build to let users use RSS feeds to read in their bookmarks. Other default search engines such as Google.com, Dictonary.com, Ebay.com, Amazon.com and Yahoo were also added to this version of the browser. Other improvements in this release were a lot of bug fixes and security patches.

Finally, version 1.0 codenamed Phoenix was released in November 9, 2004. It had support for English, French, Chinese, Hebrew, Japanese, Italian and hordes of other languages. As soon was this was made available, downloads of this browser reached a peak and it was downloaded over 1 million times in one day! This speaks oodles about the quality of the browser and the acceptance level of Firefox among users worldwide.

Currently as we write, the latest version of Firefox is 1.0.4. The strongest point of this browser is that it is open source. You can

make a million modifications to it, customise it and just keep adding... There are thousands of extensions, themes and add-ons available for Firefox and with each passing day, the number grows. However, this may also be a drawback, as sometimes too many extensions can cause problems as well.

# 3.6 Safari



Apple Safari for Macintosh

This is one browser that is dedicated to the Mac Operating System. For the general public, Macintoshes have always been computers that you want to own, but not necessarily use for work. However, there are a niche set of users who swear by the Macintosh for their daily tasks.

Safari was a browser that toppled Internet Explorer as the default browser in the Macintosh. It made its debut on June 23, 2003 and was the default browser in the OS X v 10.3 operating system. With the release of Mac OS X v10.4, Safari is the only Web browser included with the operating system.

Safari uses Apple's WebKit application framework for rendering Web pages and for running JavaScript. WebKit is comprised of two other frameworks which are WebCore an HTML parser based on KHTML and JavaScriptCore which is based on KJS.

The Safari browser is a delight to use. It has a bookmark management scheme, contains the integrated Apple QuickTime multimedia technology (obviously!) and also features tabbed browsing. The Google search engine box is the default search engine for the browser. Other features include software that automatically fill out Web forms and spell check entries into Web page text fields.

The latest version of Safari was released on April 29, 2005 and includes a built in RSS and Atom reader. It also includes a private browsing mode (which does not record any information of your Web visit) and Parental Controls. It now also has the ability for saving Web sites completely as Web Archives.

In this section, we have talked about browsers from the past and those available currently. A browser, as mentioned earlier, is the first gateway to the Internet for any user across the planet—irrespective of the OS used. Browser evolution is a constant and consistent process, and newer browsers such as Avant and Deepnet provide more functionality to your browsing without weighing down your computer resources. For now, you should choose the browser that best suits your needs.

# What You Can Do?



The Internet is a technological marvel that has now morphed into a cultural tool. Its advent has transformed the way we communicate, opening up new avenues and bringing together people of different nationalities and ideologies. The Internet also offers the individual the luxury of relative anonymity. The communication possible via the Internet has spawned a variety of allied businesses and activities. Online trading and gaming, and obtaining information and communication using the Internet are some of the things we take an overview of in this chapter.

# 4.1 Staying In Touch
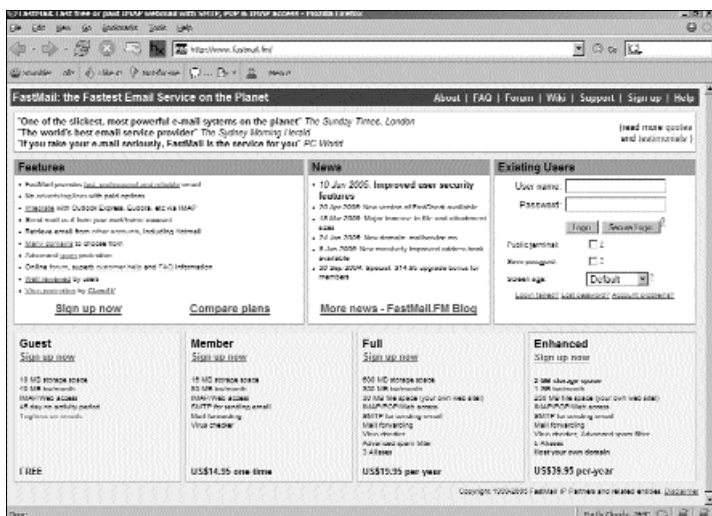


E-mail has become the killer app of the Internet

### 4.1.1 E-mail

Electronic mail has all but replaced most forms of written communication. When was the last time you received snail-mail from someone? Banks don't count!

Contrary to popular belief, e-mail was present before the Internet was created. In fact, the tools used for e-mail today were the building blocks of the Internet. E-mail moved from being just another application of a network to becoming the killer app of the ARPANET and later, the Internet. So how does e-mail work? Well, it's not rocket science, but a detailed explanation would require more than a chapter. In a nutshell, messages (mails) are exchanged between hosts using the Simple Mail Transfer Protocol (SMTP) with software such as Sendmail. Users download their messages (received mails) from servers, usually using either the POP or IMAP protocols.
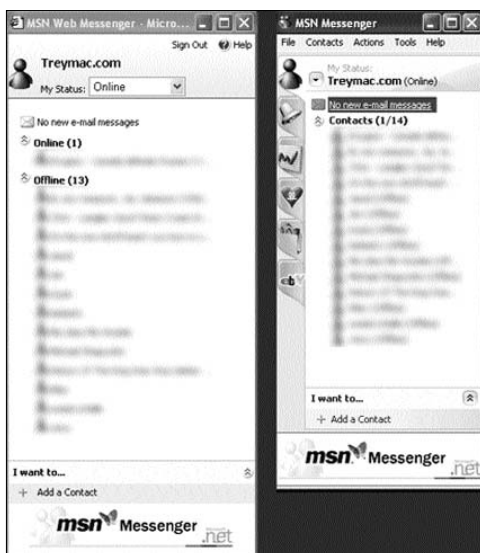
With the increasing number of Internet users, e-mail services, too, have undergone drastic changes. One of the most apparent changes has been the explosion in storage space. With Google entering the mail arena with its free Web mail service, GMail, most providers are now in the race to provide more and more mail storage space. Though the Internet has innumerable number of mail service providers, Yahoo!, GMail and Hotmail remain the most widely used.

### 4.1.2 Instant Messengers

A cousin of e-mail, an Instant Messenger (IM) is a client that allows you to send an 'instant' text message to anyone on your list of friends. The caveat is that the receiver must be online and using the same service to be able to receive your message. This relay of a message in real-time and the presence awareness feature—what lets you know whether your contact is online—are some of the differentiating features of IMs from e-mail. IMs have evolved from IRC (Internet Relay Chat) to their present form, where you can transfer voice and files as well.

In many ways, the Instant Messenger can be regarded as the predecessor of VoIP (Voice over Internet Protocol)



Messengers help keep in touch in real-time

and video conferencing. MSN Messenger, Yahoo! Messenger and ICQ are some of the most popular IMs today.

### 4.1.3 VoIP

Voice over IP, also called Internet Telephony, is the routing of voice conversations over the Internet or any IP (Internet Protocol) network. VoIP can be used on any network connection, including ones



Voice over IP is being touted as the new revolution in telephony

that do not have an Internet connection. VoIP has a number of advantages and it is widely believed that this will replace the PSTN (Public Switched Telephone Network)—present telecom protocols.

Using VoIP, one can send and receive data files and messages and have a conversation at the same time. VoIP also supports conference facilities. However, the biggest advantage that VoIP has is the low calling cost and its ability to work on your existing hardware setup. Also, the functionality is based on a software (protocol), so constant upgrading of your system is not essential.

But will VoIP be the next big killer app of the networked world? Not until a few niggling issues are ironed out. VoIP-based commu-

nication is reliant on your computer, broadband modem and other hardware that needs a constant power supply to keep running. In case of a power outage, you'd be left with no communication service. Traditional phone lines do not rely on the electric grid. Moreover, the nature of VoIP makes it difficult to geographically locate a user. This makes emergency calls an impossibility as of now, though ideas to fix this are being thought up.

Sound quality is also inferior as compared to the conventional telephone lines due to the high compression techniques required to conserve bandwidth. Some of the more commonly used VoIP networks are Babble, BroadVoice and Skype. Skype is a free VoIP network that uses an IM-type client and has grown in popularity by leaps and bounds since its introduction.

The success of VoIP will depend on whether the issues regarding accessibility and voice quality are addressed. Also, major telecom companies have already pumped in billions of dollars into mobile networks. This will make them reluctant to switch to a new system. In fact, there is already a fight on to ensure that VoIP dies as soon as possible.

## 4.2 Searching For Information



Chances are there is some reference to it on the Internet on just about everything on the Internet

The Internet was developed as a tool to communicate and share information. It also acts as a repository of information. This means it has become your one-stop source of information for any kind. Got a dissertation? Get your data off the Net. Need to research for a presentation? Well, the Internet is there. So much so, that a lot of colleges and universities are converting their books into online reference material. So the question is, what sort of information can we find on the Net?

To put this in perspective, there are 8 billion (800 crore) Web pages that Google 'crawls'. Of this, we can assume that around 70 per cent of the pages are giving out some sort of information. Some of the most common and reliable methods of looking up information in this humongous pile of information is to scour through an online encyclopaedia like Wikipedia, or just search for

it on a search engine such as Google. Sites such as howstuffworks.com and answers.com are special catalogue sites that dispense information depending on the query. While howstuffworks.com has a Q&A format, answers.com has a search engine-type interface.

Some other sites that give out specific data are dictionary.com, which, as the name suggests, is an online dictionary; and xe.com, which is an online currency conversion site. We will take a look at various search tools in chapter 7.

# 4.3 Downloading Data



Sites like Download.com offer a variety of downloads

As we've seen in the earlier section, the Internet is a vast source of information. We can of course view all this data off the Web itself, but at times it becomes necessary to store the information on our personal computers, or at some place where it is easily retrievable. Also, some data, such as video files, cannot be viewed as a streaming file if your Internet connection isn't fast enough. Another major need is that of downloading applications or software onto your computer. All this brings us to the question—where is the one site that will give us all the data that we need?

The answer is, as of now, there is no site from where you can download anything under the sun. That would be tantamount to downloading the entire Internet. The Net has a number of sites that cater to specific download needs. Softpedia.com and Download.com are some of the more popular destinations. A large number of sites also offer screensaver and wallpaper downloads.

Downloading music or movies without paying for them is illegal, and is a copyright violation. The same holds for downloading text or PDFs of books, whose copyrights are not in the public domain. The download facility has been one of the largest reasons for the proliferation of software, music and movie piracy. Some downloaders available today are able to restrict illegal downloads.

A spin-off of the popularity of downloads has been P2P file sharing networks. Technically, these are similar to regular download techniques. In case of a download from a major Web site, you would be accessing their server and download manager. In a P2P network, you download data from a peer's computer. With stricter implementations of IPR (Intellectual Property Rights) all over the world, the world of downloading anything for free might just end.

# 4.4 Networking And Collaboration



Networking and collaboration tools have helped professionals no end

A relatively new phenomenon, online networking and collaboration has caught on fast because of its impact on small businesses and professionals. Networking sites such as Ryze.com and Orkut.com have developed into business networking sites from simple 'get to meet more people' sites. These sites let you browse through individual profiles separated into different categories.

There are also sites targeted at specific professions, such as Writer.net which is aimed at writers and potential publishers. Others, such as deviantart.com, concentrate on visual art.

There are other sites aimed at programmers and computer professionals. Apart from networking and getting various employment or work-related opportunities, these sites also allow interaction within the community and lead to the birth of new ideas.

A related development on the Web is the birth of sites such as twiki.org and jotspot.com, which act as online project management sites. They act as the user's own private intranet. The wiki in these sites make them very easy to modify and customise as per the user's need. Twiki, for example, is an online enterprise collaboration site. It is designed to run a project development space, a document management system, a knowledge base, or any other groupware tool on an intranet or on the Internet.

The increasing use of technology in small business and projects has lead to a large exchange of ideas, and has given birth to collaborative efforts such as wikipedia.com and Wikinews. This has also transcended the virtual world and has gone into mainstream media. Daily newspapers such as Ohmynews of Korea are testament to the fact that collaborative efforts from the Internet can be carried forward into the real world.

# 4.5 News And Updates

One of the major gains of the Internet has been the fast dispensing of information. The direct fallout of this connected environment has been on news. Because of the nature of the connected world, there is always an audience for news at any given point in time.



What started off as an appendage to the existing media has gone on to become as big, or in some areas, larger than conventional media. It is very common to find people getting their daily news updates from the Net, and today's hectic work schedules has only increased this.

Media houses and news agencies around the world have woken up to this reality and have effectively tailored their

**Prompt News Updates Are One Of The Biggest Gains From The Internet**

layout and presentation styles to meet the Netizens' requirements. Sites such as Salon.com and Slate.com provide exemplary coverage of current affairs; they also have columnists writing features on a variety of subjects. One major advantage of being an online publication is that you can get a wider range of people to contribute, and thus readers are exposed to a variety of opinions.

A lot of sites focusing only on news have come up in the last couple of years. A few such as Reuters.com and NDTV.com also provide streaming video content.

New technologies such as RSS and Podcasting are also revolutionising the way we receive our news updates. Using feed readers (as explained in the June 2005 issue of *Digit*), we can get a regular

update of any RSS feed on the Internet. Most news sites have syndicated feeds in either Atom or RSS format. A few blogs that are updated on a regular basis can also be added onto your feed reader. These blogs—such as Gizmodo.com or Slashdot.org—are good news sources, and focus on gadgets and hardware news.

Podcasting is a phenomenon that's fast catching the fancy of many Netizens. Podcast players such as Odeo can upload and play podcasts; users can subscribe to a specific podcast. The content varies from music to interviews to news by radio stations.

# 4.6 Conduct Business And Shop Online



Online shopping has turned many of us into shopaholics

E-commerce was touted as the next big economic miracle that would make instant millionaires. Anyone who had a half-baked idea jumped onto the e-commerce bandwagon. What it did was turn out a lot of wise young men and faulty business models. All those who burnt their fingers in the dot-com bust can now give a safe Internet practices lecture!

A few, however, have stuck it out and made those proverbial pots of gold. Business plans and revenue models have been tweaked and worked upon, and conducting business online is no longer as risky as it once was. All it requires is planning and a systematic approach.

One type of online business that's doing reasonably well is online shopping, with sites such as Amazon.com raking in millions of dollars in revenue annually. Auction sites such as eBay and Apple's iTunes music download site have also shown that a business model based entirely off the Internet is viable. Online shopping has also become safer thanks to better encryption techniques and payment methods such as PayPal. Surveys have also shown that people around the world are increasingly opening up to the idea of buying items off the Web.

Spurred on by these successes, many individuals are venturing back into the once-forbidden dot-com business sector. A number of collectives are also looking at the Internet to further their business interests. Content providers for the media, Web site developers and Flash programmers form a major chunk of Web professionals. Sites such as Hungama.com and C2W.com conduct their entire business on the Internet.

With technology spreading into different spheres, it has become easier for people to conduct business transactions on the Internet. Will this actually kick off the e-commerce boom? Or will we learn a few more lessons from the school of hard knocks? Our guess is only as good as yours!

# 4.7 Entertainment

Imagine the Internet being just a scientific tool. No bells and whistles, no movies and music. No games and no interesting software to download. Just scientific network. Well, that's what it started off as, and if it hadn't been for all the music and movies and games available on it, the Net would have lived out its entire life in relative obscurity.

We all know that sharing music illegally has been clamped down on hard; we've all seen Napster being hauled into court and then destroyed. We've also caught on to the lure of applications such as BitTorrent that lets us share our files with peers. Most of the shared files are music, movies or videos.


Entertainment: The Cornerstone Of The Internet

It's a forgone conclusion that entertainment is a must for any medium to survive. A television that aired only documentaries and news would not catch on to the general population.

The Internet today has become this vast database of most things under the sun. Movies, video clips, sound bytes, music. You name it, and the Net will have scores of sites offering these, some of them legally for a price, some illegally.

Online radio stations by portals such as Yahoo! with their Launchcast service, too, are attracting customers. These services are free if you subscribe for a basic version—you can always pay for the more advanced, customisable ones.

New technologies such as Apple's iTunes music download service, and Podcasting, too, give you your daily dose of entertainment off the Net. However, entertainment on the Internet, a la television, is yet to kick off due to bandwidth and revenue model issues. Who would want to catch their daily soap on the Net where it would get chopped halfway due to a bad connection?

The gaming industry, too, is waiting for ISPs to resolve the issues concerning supplying the user with static broadband. Once that is taken care of, you can be assured of a shoot fest, a movie, and the news all streaming into your home PC.

# 4.8 Gaming



Ah... the games people play

Ask any teenager or college-goer about the biggest advantage of having a computer at home, and in all probability, he'll say it's gaming. The gaming industry today stands at over $20 billion (Rs 87,000 crore) in annual revenue. That, say many pundits, is bigger than Hollywood. So just mate the Internet, which is a behemoth of unaccountable proportions, with the gaming industry, and what you get is an unimaginable giant.

Gaming on the Internet, as of today, is restricted largely to Flash-based games or simple arcade games of the '80s. Sites such as Addictinggames.com and Liquidgeneration.com give a wide variety of games to choose from. Most of these games, at best, are stress relievers or two-minute shootouts.

The idea of making a game to promote a movie or a product has caught on in India only recently, with sites such as Hungama.com and C2W.com creating these customised games. Most of these can be played online. Sites such as Indiagames.com

and Mauj.com, too, are exclusive gaming sites from where you can download games both onto your computer as well as your mobile phone.

Gamer communities also populate the Net, most of them giving out cheat codes and walkthroughs for the games available in the market. You will also get CD cracks for almost all games around, and even though it's illegal, everyone has searched for those at some point or the other.

Multi Player Online Gaming—and by online, we mean the Internet, not a LAN—is yet to take off in India, and no prizes for guessing the reason: no broadband. Massively Multiplayer Online Gaming sites such as Ogaming.com are aimed at giving the hardcore gamer, armed with broadband and a powerhouse PC, a chance to pit his skills against some of the best from around the globe. We guess we'll have to wait for our turn.

# 4.9 Online Trading



Online trading has a lot of people hooked on to the markets

A general reader might be forgiven for thinking that apart from online shopping and corporate Web sites, the Internet is just a teenager's paradise. This is not true, though—the get-rich-quick brigade has found that the Internet is a very nifty tool to dabble around in the stock market.

Sites such as 5paisaonline.com and ICICIDirect.com let you sell and buy shares online. All you need to do is open a trading account with them. The Internet also allows you to buy and sell shares live as the market moves without the help of the broker. All you have to do is install software from a broking house such as Sharekhan, and lo and behold, you have a trading terminal. You can now go and make those much-desired millions or lose all your money to the vagaries of the stock market.

Trading live is possible as both the major exchanges in India, the BSE and the NSE conduct their entire business online. Most broking houses that set up trading terminals on your home PC also help you understand the software. While you make your quick buck, remember to get out once you've achieved it!

# 4.10 Blogging



Blogging: The most versatile application on the Internet?

'Blog' is Internet lingo for a 'Web log'. As the name suggests, it's for logging your activities on the Net, something like your personal Web diary. To put it more elaborately, a blog is a Web-based publication consisting primarily of periodic articles (usually in reverse chronological order). Although most early Web logs were manually updated, tools to automate the maintenance of such sites made them accessible to a much larger population, and the use of some sort of browser-based software is now a typical aspect of 'blogging'.

Blogs cover a wide range of topics, from individual diaries to political campaigns, media programs, and even audio updates like a radio station. A blog may be authored by a single individual or by a collaboration of a large community of writers.

Sites such as Gizmodo.com are essentially blogs. Many blogs enable visitors to leave public comments, which can lead to a community of readers centred on the blog. Like any technological com-

munity, the bloggers' community, too, has developed a language of its own. The totality of Web logs or blog-related Web sites is often called the blogosphere.

When a large amount of activity, information and opinion erupts around a particular subject or controversy in the blogosphere, it is sometimes called a blogstorm or blog swarm. So who were the precursors of these phenomena? Electronic communities existed before internetworking. For example, the Associated Press newswire was, in effect, similar to a large chat room where there were 'wire fights' and electronic conversations.

Another pre-digital electronic community—amateur (or 'ham') radio—allowed individuals who set up their own broadcast equipment to communicate with others directly. Ham radio also had logs called 'glogs', which were personal diaries made using wearable computers in the early 1980s.

Before blogging became popular, digital communities took many forms, including Usenet, e-mail lists and bulletin boards. In the 1990s, Internet forum software such as WebX created running conversations with threads. Many of the terms from Web logging were created in these earlier media. The term 'Weblog' was coined by Jorn Barger in 1997. The shorter version, 'blog', was coined by Peter Merholz. One of the most popular blogging tools, Blogger, was developed at around this time by Pyra Labs. Google purchased this sometime in 2003 and launched blogspot.com, one of the world's most extensively used blog sites.

Blogging rose to major prominence during the aftermath of the tsunami that struck South-east Asia in December 2004. A number of relief operations were co-ordinated using blogs. This led to blogs gaining prominent media status. The idea of distributed journalism also caught on because of this.

Blogging today is something as common as using e-mail. Moreover, a number of news sources are looking at tapping the

ever-increasing number of journalists who use their blogs as points for dispensing information.

The Indian government, too, has decided to grant press status to a few select bloggers.

# Peer 2 Peer



P2P is a strange topic to talk about since in normal network jargon it refers to connecting computers across the network to share resources and in some cases, to work as one (cluster computing).

In this section, we will talk about P2P software and its history. What attracts users across cyberspace to this and what is the software available and why are the authorities working overtime to make P2P a thing of the past? All that and more as we move on.

# 5.1 Evolution & Functionality

The traditional way of networking is client-server architecture. In this type, there are dedicated computers (servers) which let other computers (clients) access it and use its resources. In the P2P type, all computers are connected to a network and at any point of time any computer can act as a server and another computer that uses its resources is the client.

Peer-to-peer file-sharing is based on this protocol. When you install software such as Napster or Kazaa on your computer and access the Internet, it connects to other computers to download any stuff that you have searched using the client.

Based on this protocol, Napster was launched in May 1999. This was the first P2P software but not in the truest sense of the word. This was because it still needed users to connect to a central server and once the client was identified, further file transfer was passed on to the nodes. This was furthered by software such as Kazaa and eDonkey. However, with each new software came a different implementation of the technology. We will talk about this when we go and pick apart each of the software.

Since 1999, there have been many changes in the P2P world. Napster has since closed down owing to a ruling by the American courts. Napster is still available, but in a form where it is no longer attractive enough for P2P users.

Newer P2P software such as BitTorrent has reared its head in recent years and is the latest rage amongst P2P users. Filling the gap between Napster and BitTorrent was eDonkey, which was going strong until BitTorrent appeared. eDonkey is still pretty much available, but its favourite rating amongst users has dropped to a very large extent.

In the coming section, we will discuss the most used P2P software worldwide and how to use them. But before you start read-

ing it, remember that downloading illegal stuff of the Internet such as movies or music you do not own or do not have a copyright of is illegal.

We do not condone such activities and the information provided here is only for the sake of informing you as a reader and not to give you ways of downloading stuff illegally. Please be aware of what is legal on the Internet and steer clear of activities that could potentially land in you in jail.

With that said lets look at the software mentioned above and understand how it works.

## 5.2 Napster



The new look Napster

Two college students, 19-year-old Shawn Fanning and 20-year-old Sean Parker founded Napster in May 1999. They originally just wanted to trade music over the Internet with their friends, however, other users latched onto this software and soon, it became a global phenomenon. In February 2001, it had 29.4 million registered users who shared 2.79 billion files in the same month. However, the major drawback of Napster was the need to connect to a central server to authenticate and then pass the control back to the nodes for further file transfer. In this kind of a system, the server maintains directories of what is stored in each peer computer. The central server directs the connections between peers. Thus, while the connection is made directly from peer to peer, a server is still necessary.

When a new user installs the client software in the computer

and then goes online using the software, he is first connected to the central server. Once connected, he can then search for a specific song and sends his search on the server.

On the server side, it has indexed files that are available on other nodes connected to the server. Depending on the search you have sent, you will find a list of files or results. Now you can sort the results according to the bit rate, file size, artist name or any of the other factors important to you and get a more relevant file list.

Once you have chosen what file to download, the Napster software on the other end of the line will upload the file directly to them. The locations of all the music files of the users that are currently online are kept on the central network, but the files themselves stay on the users' computers until another computer asks for it.

The main advantage of a network such as Napster is the easy access provided to users for searching any music. Once connected, all you needed to do was send a search-and a specific one at that-to get whatever you want.

Another factor is that unlike Web search results that are not updated from time to time, results obtained from Napster are current and available. One click and the download is on! Moreover, downloads are multi-threaded, so all available parts from sources are to be downloaded first instead of a sequential download. This multi-threaded downloading principle is currently implemented in newer P2P software and even in software such as Mass Downloader and Flashget which let you make HTTP downloads faster.

In case of Napster, the system makes available a massive variety of music, because the users provide the files, not Napster. Napster just provides the software and network infrastructure, and users provide the content. This system inherently provides more benefit to the users the more popular it becomes. Popularity in this case is a direct result of improving content.

Napster's revenue plans included selling advertising space on their Web site and use their brand equity to sell T-shirts. But the revenue generated using such an idea amounted to peanuts and so Napster was considered a free service and users just kept logging on and downloading.

However, there was one slight problem. The music industry in America is one of the biggest worldwide. Napster only dealt with music files and not with any other types such as documents or applications. This kept it out of the legal roadblocks but eventually the music industry's feathers were ruffled.

Using legal resources, the Napster service was shut down by the American Music Industry that cited several reasons including artists not receiving their rightful dues due to the Napster service. Finally, Napster was shut down and merged with Bertelsmann (BMG Music). In its current avatar, Napster is charging an access fee for all their services and is now selling music online as well.

But this was not the end of the world for P2P users. By the time Napster got into a legal tangle with the authorities, networks such as KaZaA and eDonkey had already arrived and users were switching to these networks, fast.

# 5.3 KaZaA



**The KazaA Web site**

Kazaa is a file-sharing software similar to Napster barring minor differences. Firstly, Kazaa is second-generation P2P software and is not based on the centralised server principle. This particular software is based on the FastTrack network and is currently owned by the Australia-based Sharman Networks. Niklas Zennstrom from Sweden and Janus Friis from Denmark, though, were the original programmers who invented KaZaA. The FastTrack network supports other P2P clients such as iMesh, Grokster and Kazaa Lite K++.

The principle utilised in the FastTrack network is simple. There is no centralised server. Instead of a central indexing server, the FT net-

work dynamically assigns indexing features to other connected nodes or peers based on criteria such as machine uptime, data availability and system performance. These peers are called Supernodes and it is to these machines that other peers or nodes are connected. There are a large number of supernodes present on a network at any given time and clients or peers connect to any available Supernode irrespective of the priority of the client. As long as there is a Supernode available on the network, you can be connected. The principle of having a Supernode on the network increases scalability without affecting network performance and also catering to a large number of users at the same time.

### Kazaa Vs. Napster

The difference between download options offered by Kazaa and Napster was massive. While Napster only indulged in song swapping, Kazaa was a virtual pirate bay. Any application-music, video, documents-that was shared on a computer could be accessed (as long as the data was kept in "My Shared Folder" in the Kazaa directory. Plus, an improvement in the network performance due to a decentralised system allowed users to download anything they wanted with ease.

Users who could understand file-sharing had a lethal and potent software at their disposal, which would get them everything that they wanted without paying a penny in the process (of course, not considering the Internet access charges). Suddenly, everything was on the Internet. You want Windows XP, connect and download it. You want Shrek the movie, connect and download it. You want Sheryl Crow's music, connect and download! Everyone had everything and the share and share alike adage was catching on like bushfire.

What also got Kazaa going was a deluge of Web sites that were dedicated on making Kazaa the only place to get software and other stuff. Links on these websites could be clicked on and would be automatically added to the software saving users the pain of sifting through junk results thrown up by the internal search in Kazaa.

Nevertheless, there was an inherent problem that users were

not aware of and which became public only later. The Kazaa client that users installed in their computers had a spyware that would pass on personal, sensitive information to Sharman Networks. When this became public, there was a huge public outrage and people suddenly started using alternatives such as iMesh, Grokster and Kazaa Lite K++. While iMesh and Grokster were similar software using the same network, Kazaa Lite K++ was a hacked Kazaa without the spyware and all the modifications which made it one of the best P2P clients ever. However, there was one problem. Sharman Networks quickly made this software illegal and users using this software started getting low results and download speeds were capped making it excruciatingly slow for users of Kazaa Lite K++.

However, other software such as iMesh and Grokster kept users enticed and downloads all over the planet reached a peak in 2003 with over 140 million PCs connected to the network at any given time using one or the other version of software. Other than the spyware issue, there were many other issues plaguing Kazaa users. Primary amongst these were the fake files that people started getting after finishing a download. Other issues included viruses and spyware planted in downloaded programs which only became evident after programs started malfunctioning or the system started misbehaving. There was no solution for this and the only solution was to download and scan and check all software.

Music companies by this time were hopping mad and soon enough, they started closely monitoring the FastTrack network, which is being carried on even at this point in time. Eventually, music companies started flooding the network with fake music files with authentic tagging information to discourage downloads. Software companies followed suit and the legal battle ensued. The battle rages to this day with the recent MGM versus Grokster case, where the Supreme Court ruled that Grokster was actually violating copyright laws and issued an order against it.

Soon enough, users started trying other software, which included eDonkey and the recent BitTorrent.

# 5.4 eDonkey2000
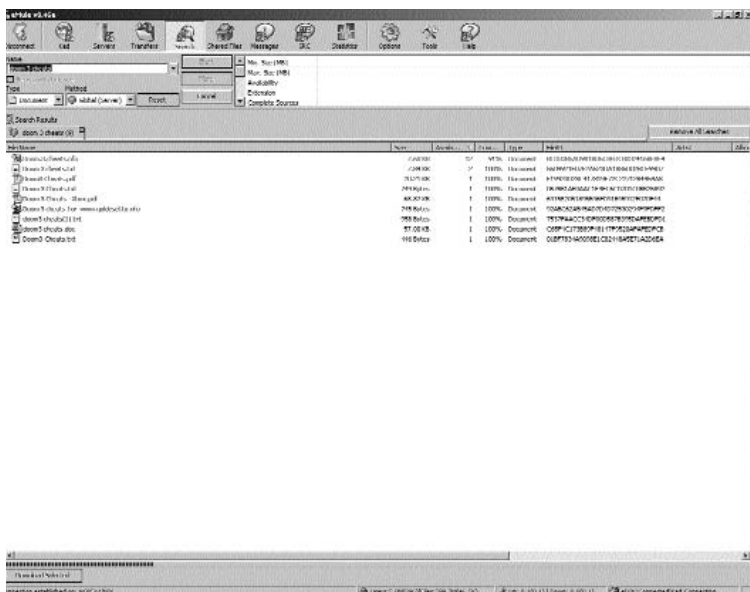


Emule, a freeware client for the eDonkey 2000 network

eDonkey was released in September 2000 and was hence tagged with the name eDonkey2000. It started out as a very small community but the subsequent fall of Napster and growing problems on the Kazaa network, suddenly made this software one of the most viable clients for the P2P network.

What took off slowly suddenly became a storm that brought down the P2P planet. If you were one of the hip crowd, you just had to know what eDonkey2000 was!

eDonkey2000 was a third generation P2P software by a small developer group who called themselves MetaMachine. eDonkey was based on the same centralised server concept as Napster, but there was one vital difference.

Napster had all their servers located at a single location in Silicon Valley, CA. MetaMachine, though, went the opposite direction and released their server software in the community. It was akin to letting salt dissolve in water with the water being the P2P community. Now it became the community's responsibility to take care of the server and update it with the latest information to attract more users to use the software. MetaMachine develops the technology, but it is the responsibility of the community to maintain the network.

The eDonkey network requires some maintenance for operating at optimum levels. First, every user needs to install the eDonkey2000 client and then download the server.met file from a specified website. This file contains the latest information of all the servers available and provides server address to the client software so that it can connect to faster and live servers.

Once that is done, the client makes a connection with a server and gets connected to the network. Now you can use the integrated search box in the client to search for whatever you want ranging from applications to movies to albums to just about anything.

Other applications that are modified eDonkey2000 clients and utilising the same network are eMule, Shareaza, aMule, eMule plus, Morpheus and many more for the Windows platform. For Macs, you can use software such as hydranode, iSwine and of course eMule and aMule versions for Macs. Similar clients are also available for Linux.

The eDonkey network set the standard for hashing files. What is file hashing? Hashing is the transformation of a string of characters into a usually shorter fixed-length value or key that represents the original string. Hashing is used to index and retrieve items in a database because it is faster to find the item using the shorter hashed key than to find it using the original value. So, if you have a database of Digit magazines consisting of records of articles from June 2001 to July 2005, trying to access data by typ-

ing in "Digit-February 2002-Insight-Quick Start-30 Minutes Expert" you will be better off by giving this a shorter value such as "DigFeb02-IN-QS-30". Not only will the search be faster but also be better indexed which will let retrieve data faster.

Now imagine the same thing being done with over a billion files on a network. There is bound to be confusion and ultimately chaos. Therefore, what happened was each file that was uploaded to the edonkey network was hashed uniquely and checked and then made available.

This made downloads simple, quicker and reliable. But the same problems that affected the Kazaa network, which were spyware, viruses and Trojans, also affected the eDonkey network. To overcome this, the community came out with Web sites that listed verified content that was being made available on the eDonkey2000 network. Since all of these downloads were verified and checked, there was a large reduction in the number of fake applications and the network survived.

Once again, though, the RIAA (Recording Industry Association of America) and MPAA (Motion Picture Association of America) swung into action and started proceedings for legal action against several network communities and the process still goes on. With all of this going on, something was coming and it promised to revolutionise P2P. BitTorrent suddenly crept in on P2P users and proved to be the saviour for those who feared that the best was already over.

# 5.5 BitTorrent
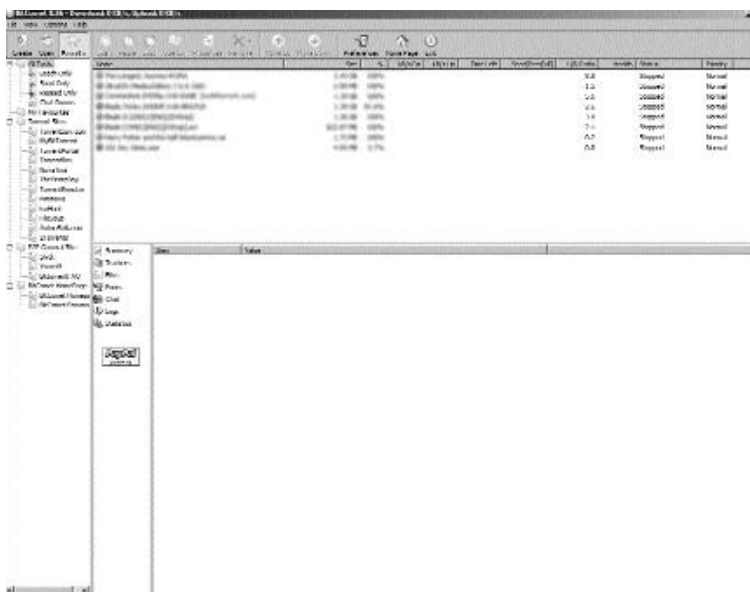


BitComet, a BitTorrent client.

BitTorrent is another p2p application that has fast caught on the fancy of the p2p community. It uses the same concept of networking but is a little different in the way it needs to be operated.

Even with BitTorrent, you will need to download and install the software before you start using it. Once you have installed the software, you will need to locate a Web site that will let you download an archive header or a .torrent file. There are a number of such sites that have updated file lists and let you download the header files, which add to the client software and then download the complete archive. This file contains a location that tells the BitTorrent client where to go to find the tracker that manages the uploading and downloading of the archive.

Once you have downloaded the .torrent file, your BitTorrent client will kick in and connect to a managing computer that then connects you to others who have the files. So why would you want to go to Web sites first to download the header file? What makes this network different from any other?

Speed. This is the biggest advantage on the Torrent network. Unlike earlier P2P networks, downloading using this network is a dream since you are only limited by bandwidth and the number of seeds available. If both are high, rest assured, downloading giga-bytes of data is all in a day's work.

The Web sites listing the torrents are called indexing sites and have become very popular. Their popularity has come at a cost, though with the MPAA and law enforcement agencies shutting them down. There is also no shortage of sites to go to so long as you know which are currently being used, as they come and go rather quickly these days. Most indexing sites have a system of list-ing the number of Seeders and Leechers for a particular archive.

Seeder(s) are those users who have at least one complete copy of the archive with them and are sharing it on the BitTorrent net-work. However, for any user's download to complete, you will need at least one seeder who has the complete copy. Under certain cir-cumstances though, there may be no one seeder but enough peo-ple with all the parts to make up the whole archive, which is called a distributed copy.

Leecher is a user who starts downloading from the BitTorrent network and then carries on downloading by connecting to differ-ent seeders. In the BitTorrent network, though, a leecher is part of the network and is uploading as well, many times more KB than they download. This ensures that all users on the network get an equal opportunity to download the file.

BitTorrent and eDonkey2000 are the most used networks today. Web sites and forums that support the use and expansion of

this network and community are available and there are new users getting their first taste of P2P every single day. However, there is a concern regarding the existence of these software and community. How long will these networks survive given the legal system (read American hegemony) and big American corporations worldwide who are trying to put an end to P2P once and for all.

### The "Digital Millennium Copyright Act Of 1998"

The Digital Millennium Copyright Act (DMCA) was enacted in 1998 and is an extension of the World Intellectual Property Organization (WIPO) conference.

Simply put, this act lets US companies protect their works from being abused in any manner using legal action. There are certain clauses in the law that let companies take individuals or organisations to court, who they think are infringing on the copyrights of their artists or their work.

The main benefactors of this act are the Recording Industry Association of America (RIAA) and Motion Picture Association of America (MPAA) who have their legal eagles keep an eye on the P2P community. There have been a number of instances where the DMCA Act has led to the closure of a number of P2P Web sites and individuals and groups have been sued and sentenced by the court, thanks to the DMCA act.

However, some countries, especially the Nordic and Asian ones do not have a legal framework in place that will prevent the distribution of software or applications or music using the network. These countries are the ones responsible for keeping the P2P community alive. But with growing US pressure, the future seems uncertain.

Is this warranted, though? To an extent, yes. If you are someone who burns the midnight oil to get a fantastic music album out on the streets only to find it being pirated and sold online or downloaded for free by people, our guess is you will go the legal way. But that does not mean P2P is illegal.

There are Web sites available that let you download 100 per cent legal software, movies and music. Agreed, these are few in number, but it is a beginning. Another factor that makes business sense is the downloading of software that takes place from Web sites. Using BitTorrent, this can be done much faster and also be spread to other users. Therefore, the bottomline is that P2P software can be put to good use. Will it catch on? That is a question, which can be answered only a few years on from now.

# Internet Beware



"Pitfalls along the way!", "Dangerous elements ahead", "Tread with caution". These signs are plastered all over the information superhighway. The Internet has no watchdog or regulatory authority. Its very nature makes it a veritable playground for mischief makers. In this chapter, we look at the potential hazards lurking around every corner on the World Wide Web.

## 6.1 Spam
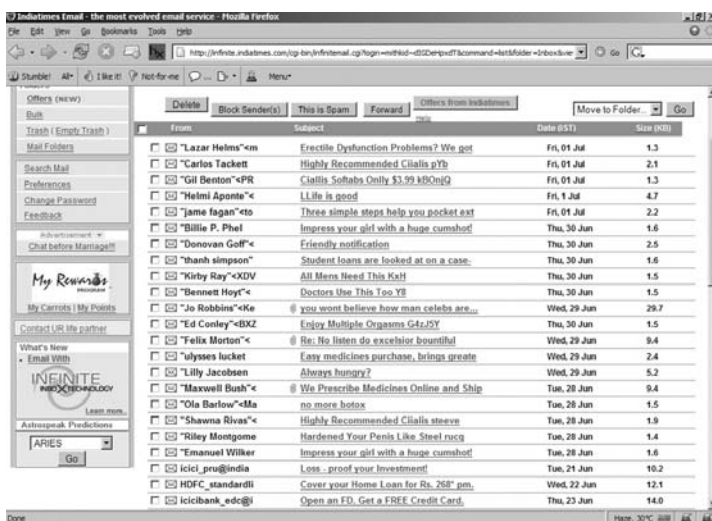


**Spam Mails Clog The Inbox**

Spamming can be defined as "unsolicited and usually commercial e-mail sent to a large number of addresses". While spam may be defined as indiscriminate mailing, it is almost always associated with commercially-oriented unsolicited mailing. Today, the most common form of spam is e-mail spam. Though the idea of bulk mailing people with commercial pamphlets is not new, the advent of newer means of communication has opened up more vistas for spammers. Spammers have, thus, developed a variety of spamming techniques varying only in the media they operate in. Apart from e-mail spam, they also indulge in instant messaging (IM) spam, search engine spam, spamming a blog with comments, and mobile phone messaging spam.

E-mail spam, though, is the most common form of spamming on the Internet. When e-mail spamming, a spammer sends bulk mails to a large number of recipients. What differentiates legitimate commercial e-mail from spam is the simple fact that spam is

sent to a recipient without his or her consent. These mails also use a lot of tricks to hoodwink your spam filter.



Source: www.excogitate.co.uk
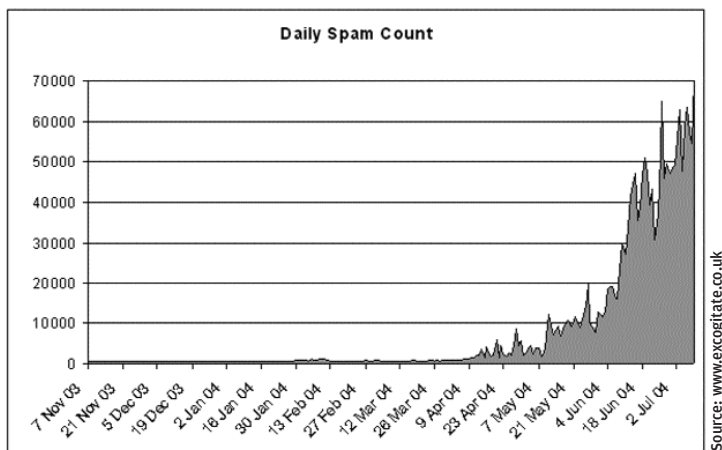
The graph shows the exponential increase in spam from November 2003

So how do these spammers obtain your e-mail addresses? There are various tools that can be used to harvest e-mail addresses. Some of the most common ones are using a spider or a 'bot' to crawl the Web and collect e-mail ids. These Web spiders go around looking for e-mail addresses all over the Web. The most common targets are sites where you give out your e-mail address for purposes of registration, or a Web site where you put up your mail id so that other members of that site/group can contact you. It is, however, possible to fool the Web spider by substituting the '@' symbol with 'at' or any such other symbol while posting an e-mail ID. For example, instead of posting your e-mail address as abc@xyz.com, you could try abc(at)xyz(dot)com. Spammers also use techniques such as a dictionary attack, where they guess common names at known domains.

These so-called "spambots" are a major producer of e-mail spam. Some of the worst spammers create e-mail viruses that transform an unprotected PC into a "zombie computer"; this

zombie will then inform a central unit of its existence, and the central unit will command the zombie to send a low volume of spam. This allows spammers to send high volumes of e-mail without being caught by their ISPs or being tracked down by anti-spammers; a low volume of spam is instead sent from many locations simultaneously.

With stricter legislation being enforced to combat the nuisance of spam, spammers are going to great lengths to conceal the origin of their messages. They do this by spoofing e-mail addresses. In spoofing, the spammer modifies the message so that it looks as if it is coming from another e-mail address. On the other hand, a lot of spammers make their mails easily identifiable as spam. Who would have a name like "ChewTheCigar", or some such arbitrary word string?

Spammers also use a lot of tricks to circumvent the filter settings. One of the most common tricks is to intentionally misspell common spam filter trigger words. For example, "gambling" might be spelt as "gamblin", or symbols may be inserted into the word, as in "g/a/m/b/l/i/n/g".

Other major sources of spam are pornographic Web sites, online pharmacies and casinos. These spammers employ spam rings and make a great deal of money by spamming people's inboxes. One of the biggest concerns with regards to spamming, apart from the threat to privacy, is the huge waste of bandwidth due to the junk e-mailing. Since it costs next to nothing to send an e-mail, even a small number of spammers can saturate the Internet with junk mail. As with any crime, here too, the spammers are a step ahead of your enforcement agencies and ISPs, coming up with newer methods of exploiting the loopholes.

To curb this nuisance, it is best to report any spam to your ISP and be cautious about putting up your e-mail address on a Web site. If you must give out your e-mail, it is prudent to make sure that the site has adequate privacy measures in place.

## 6.2 Viruses



Virus attacks harm the internet community

Every computer user is aware of the damage a virus can inflict on their system. Part of the legendary status a computer virus enjoys today is thanks to the way it is depicted in fiction; whether movies or books. So what really is this virtual being that can damage your system and spread from one computer to another quite in the same way as its real world counterpart?

The main criterion for classifying a piece of executable code as a virus is that it should spread by means of 'hosts'. A virus can only spread from one computer to another when its host is taken to the uninfected computer; in most cases, by a user sending it over a network. Additionally, viruses can spread to other computers by infecting files on a network file system or a file system that is accessed by another computer.

In many cases, viruses are confused with worms. A worm, however, can spread itself to other computers without needing to be transferred as part of a host. Many personal computers are now con-

nected to the Internet and to local-area networks, facilitating the spread of worms. However, with networks such as the World Wide Web in place, running services such as e-mail and file sharing systems such as P2P, viruses can spread seemingly without a host. This has led to a blurring of the line between viruses and worms.

Viruses can infect different types of hosts. The most common targets are executable files that contain application software or parts of the operating system. Viruses have also infected the executable boot sectors of floppy disks and script files of application programs. Additionally, viruses can infect files in other ways than simply inserting a copy of their code into the code of the host program. For example, a virus can overwrite its host with the virus code, or it can use a trick to ensure that the virus program is executed when the user wants to execute the host program. For a virus to replicate, it must be allowed to execute the code and write to memory. This is the prime reason why many viruses attach themselves to executable files that may be part of a legitimate program. When a user attempts to use the program, the code may be executed before the actual program runs.

"Elk Cloner", a virus written by Rick Skrenta is recorded as the first computer virus to appear "in the wild" that is, outside the single computer or lab where it was created. Written in 1982, it attached itself to the Apple DOS 3.3 operating system and spread by floppy disk.

Before computer networks became widespread, most viruses spread on removable media, such as floppy disks. Some viruses spread by infecting programs stored on these disks, while others installed themselves into the disk boot sector, ensuring that they would be run when the user booted the computer from the disk.

As bulletin board systems and online software exchange became popular in the late 1980s and early 1990s, more viruses were written to infect popularly traded software.

As against their biological counterparts, computer viruses do not evolve on their own. They have to be specifically created by a programmer or virus-creating software. Contrary to popular perception, bugs in a program cannot morph into viruses, though they can leave problems that virus makers (or viruses) can exploit.

Viruses can be divided into two types; on the basis of their behaviour when they are executed: Resident and Non-resident viruses.

Non-resident viruses immediately search for other hosts that can be infected; infect these targets, and finally transfer control to the application program they infected.

Resident viruses do not search for hosts when they are run. Instead, a resident virus loads itself onto memory upon execution and transfers control to the host program. The virus stays active in the background and infects new hosts when those files are accessed by other programs or the operating system itself.

In order to avoid detection, viruses employ different ways of hiding or camouflaging themselves. Older viruses, especially those working on the MS-DOS platform, made sure that the "last modified" date of a host file remained the same when the file is infected by the virus. Some viruses can infect files without increasing their sizes or damaging the files. They accomplish this by overwriting unused areas of executable files. These are called cavity viruses.

Recent viruses avoid any kind of detection by forcefully killing the tasks associated with the virus scanner before it can detect them. Other viruses try to fool anti-virus software by intercepting its requests to the OS. This method is known as the stealth method. A virus can hide itself by ensuring that a request of anti-virus software to read an infected file is passed to the virus, instead of to the OS. The virus can then return an uninfected version of the file to the anti-virus software, so that it seems that the

file is "clean". Modern anti-virus software employs various techniques to counter stealth mechanisms of viruses.

Other malware such as worms and Trojans have also been instrumental for a number of Internet outages in the past. Unlike viruses and worms, Trojans cannot replicate and spread on their own.

The term 'Trojan' is derived from the classical myth of the Trojan horse. Towards the end of the siege of Troy, the Greeks left a large wooden horse outside the city. The Trojans, convinced that it was a gift, moved the horse to a place within the city walls. As it turned out the horse was hollow and had Greek soldiers hiding inside it. These soldiers then opened the city gates of Troy at night, making it possible for the Greek army to pillage the city. A Trojan is a malicious program that is disguised as legitimate software. The useful, or seemingly useful, functions serve as camouflage for the undesired operations that the software performs.

Recently written Trojans also contain functions and strategies that enable them to spread. This moves them closer to the definition of computer viruses, and it becomes difficult to clearly distinguish such mixed programs between Trojan horses and viruses.

A number of anti-virus software are available in the market today, each employing multiple methods to detect, and if possible, eliminate the program. In the next chapter on 'Tools and Utilities', we shall take a brief look at the various anti-virus software available, and understand their generic functions.

# 6.3 Phishing
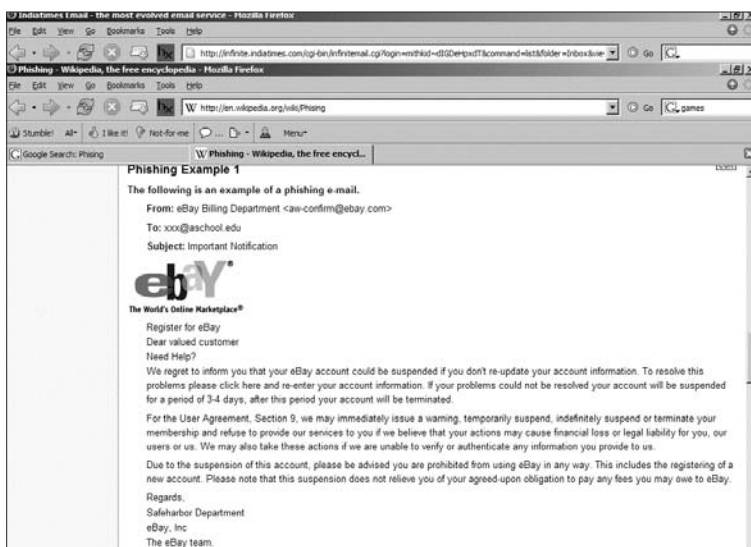


**Mail Intended To Phish The Recipient's eBay Account Information**
—source Wikipedia

Phishing, also called spoofing, is the act of attempting to fraudulently acquire sensitive information, such as passwords and credit card details, by masquerading as a trustworthy person or business with a real need for such information in a seemingly official electronic notification or message. The e-mail directs the user to visit a Web site where they are asked to update personal information, such as passwords and credit card, social security, and bank account numbers, that the legitimate organisation already has.

Such attacks are classified as social engineering attacks because perpetrators acquire the details by gaining the victims trust. As is obvious, the term phishing comes from the fact that these Internet scammers use sophisticated lures as they "fish" for users' financial information and password data.

The term Phishing was coined in the mid 1990s by crackers who attempted to steal account details from AOL. The modus operandi would be very simple: an attacker would pose as an AOL staffer and send an IM to a potential victim asking him to give out his password to verify his account or confirm his billing. Once the password was given away the attacker could access the victim's account and use it for criminal purposes, such as spamming.

Now, if Phishing is actually fishing for a victim, why is it spelt with a "Ph"? Hackers and crackers are very nostalgic people. The term is a take on the original form of hacking called 'phone phreaking'. Now 'Ph' has become a common hacker replacement for 'f'.

Phishing has now become one of the major threats on the Internet today because of the rise in financial transactions being conducted online. A number of companies have filed cases against these unknown attackers claiming millions in damages.

It's not all bleak, though. There are a few anti-phishing software available. These programs are often integrated with Web browsers and e-mail clients as a toolbar that displays the real domain name for the visiting Web site. This prevents the most common form of phishing attack called spoofing.

Another variant of this form of fraudulent attack is Pharming, where, instead of setting up a similar Web site for spoofing, the DNS server software is exploited and the hacker acquires the domain name of a site and redirects traffic from that site to another Web site. This site is then used to steal or "phish" a visitor's account details, or even the payment information. However, such an attack is only possible if the site is not SSL (Security Socket Layer) protected. To be on the safer side, it is advisable not to ignore the security certificate warnings attached with a Web site.

Many experts feel that Pharming is far more potent as compared to Phishing, since, in Pharming, the criminals can get many

IDs and personal details information in one go. In Phishing, every victim is approached individually, as it were. Smaller scale Pharming attacks can also be conducted by viruses that are e-mailed. These viruses rewrite the local host files on individual computers. Host files convert normal URLs into the numeric strings that a computer understands. A computer with a rewritten host file will go to the wrong Web site even if the user types in the correct URL.

The easiest way to avoid being a victim of such attacks is to be cautious as to where you divulge your personal details such as credit card numbers, passwords and other payment or billing information such as bank account numbers or credit card details.

# 6.4 Pornography

What percentage of the Internet is made up of pornography? Some say almost half the Internet is porn! While this may be an exaggeration, close to 20 per cent of the Web sites on the World Wide Web are dedicated to pornography.

Pornography is not only images, but also videos and stories. Pornographic material is also one of the most-searched for on the Internet. According to Google, 68 million searches are made every day for some variation of the word "porn".



**Pornography Is Morphing Into A Menace**

So why is pornography regarded as a threat? It is not pornography per sé that is harmful to the user. It's not a virus or a worm that would destroy or corrupt an important file on your computer. Neither is it some software that would 'phish' out your personal details. The reason behind pornography being vilified is the fact that it becomes highly addictive. Being freely available in abundance on the Internet makes it the most surfed content. Excessive viewing of pornography has a detrimental effect on an individual's personal and social life.

Most of the successful Internet entrepreneurs are those who own pornographic sites. So much so, that post the dot com bust, of all the start ups that actually made profits, a large percentage were pornography providers. With rapid technological advancements in interactive software development, some sites offer inter-

active game-like entertainment apart from the conventional photographic and video pornography. The Internet also provides easy access of porn to consumers in those countries where pornography is illegal—such as India or China.

Pornographic Web sites are also some of the biggest spammers on the Internet today. If you do not believe in this statistic, just have a look at your junk mail folder. The other major issue raised against pornography is the showcasing of illegal material such as child pornography and bestiality. Doctored pictures of celebrities also abound the Internet. With tools such as digital video cameras and camera phones, anybody's picture can be morphed into a pornographic image. You can imagine the implications of having a nude picture of you posted on the Net.

Another major gripe against Internet pornography is the usurping of domain names. Sites such as Whitehouse.com attracted a lot of unsuspecting surfers, hoping to get some information about the US government. They, however, were treated to some explicit nude images of err... 'interns'. Thankfully the site has since been stopped, but such threats can be worrisome, as unsuspecting underage people might end up wandering into such sites.

There are various ways to tackle pornography. You can install software such as Net Nanny that monitors your computer and restricts users from visiting unauthorised Web sites. Browsers, too, have inbuilt restrictive features that can be used to prevent viewing of certain sites. The next chapter includes a section on 'Porn Blockers' that can be used to specifically block pornographic Web sites.
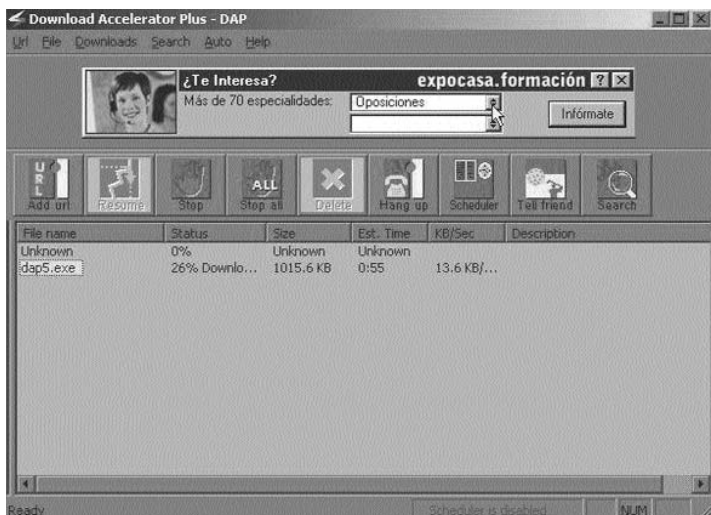
# Tools And Utilities



As we have seen, there's a lot you can do on the Internet. The question is how to do it safely. There are a number of tools available, both on the Internet and off the shelf that enable us to enhance our browsing experience, for example, download managers and search tools, firewalls and anti-virus software keep our system safe from the nasties out there.

In this section we give you a brief roundup of a few essential tools. Surf's up!

# 7.1 Download Managers



**Download managers facilitate quicker downloads**

Imagine how boring the Internet would be if it weren't for all the songs and movies you can download... Games and software and utilities downloaded from the Internet probably take up most of the space on your hard disk. Now what would you do if you had a dial-up connection that tripped all the while? Would you reconnect and start your downloads all over again, or would you tear out your hair in frustration?

To help maintain your sanity and not loose your hair, some really geeky geeks came up with a piece of code that went on to become what we call The Download Manager.

Download manager is a software that downloads files from the Internet with support for resuming downloads if the connection breaks. For broadband users, download managers can help download 100+ megabyte files by resuming broken downloads and by limiting the download capacity used, so that the user's browsing

is not affected much and the server is not overloaded, or by automatically browsing a site and downloading content specified by the user. Most download managers integrate seamlessly with browsers, and have an easy-to-use interface. Clicking on a link in a browser automatically starts the download in the download manager. Download managers also have additional features, such as scheduling, traffic shaping, virus-checking, and cataloguing.
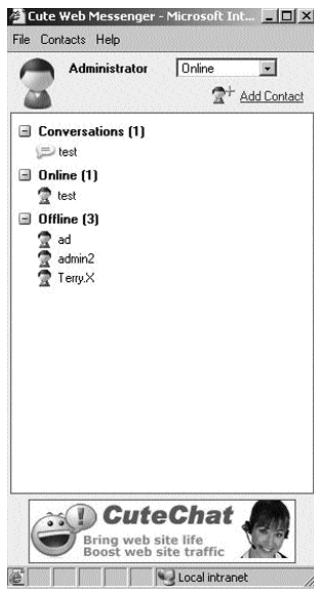
Download managers have evolved from being standalone barebone applications. Some downloaders are optimised for a certain function. For example, Offline Explorer is designed to download entire Web sites; Go!zilla was one of the earliest to use adware for its interface. Also related to the download managers are peer-to-peer sharing applications such as KaZaa, Gnutella and BitTorrent. Increasingly, a lot of software companies and content providers are using downloaders to wield control over their software downloads, especially freeware.

# 7.2 IM Tools

The messenger, as discussed in chapter 4, is a client that allows instant text communication between two or more people over a network. Instant messaging differs from e-mail in that conversations happen in real-time. IM services also have a 'presence awareness' feature, indicating whether people on one's list of contacts are currently online. Instant messaging applications may also include the ability to post an 'away' message, the equivalent of the message on a telephone answering machine.



**MSN Messenger**

Popular instant messaging services on the Internet include MSN Messenger, Yahoo! Messenger, and ICQ. These services owe many ideas and the seed technology to the older online chat medium known as Internet Relay Chat (IRC). An early form of instant messaging was implemented on the PLATO system in the early 1970s. ICQ was the first general instant messenger introduced to the Internet, in November 1996. After its introduction, a number of variations of instant messaging have arisen in parallel, and each application has its own protocols. The phrase 'instant message' was coined by Paul M A Linebarger in the science-fiction stories he wrote in the 1960s.



**Trillian Multi client messenger**

Instant messaging has been fragmented because of a number of dif-

ferent protocols in use. There have been several attempts to create a unified standard for instant messaging: IETF's SIP (Session Initiation Protocol) and SIMPLE (SIP for Instant Messaging and Presence Leverage), PRIM (Presence and Instant Messaging Protocol), and the open XML-based XMPP (Extensible Messaging and Presence Protocol). Attempts at creating a unified standard for the major IM providers has failed as each continues to use its own proprietary protocol.



**A typical MSN messenger chat window**



**ICQ-One of the world's earliest chat clients**

There are a number of tools available off the Net for the sole purpose of messaging. The popular ones like Yahoo! Messenger and MSN Messenger can be downloaded from their respective Web sites for free. Apart from these, you also have Windows Messenger, which is almost exactly the same as the MSN IM client. A few multi-protocol clients such as iChat, Miranda and Trillian exist. These clients can support several of the popular chat clients such MSN and ICQ at the same time.

ICQ was the world's first IM computer program, and with over 300 million downloads, ICQ has been the most popular download at download.com for seven consecutive years.
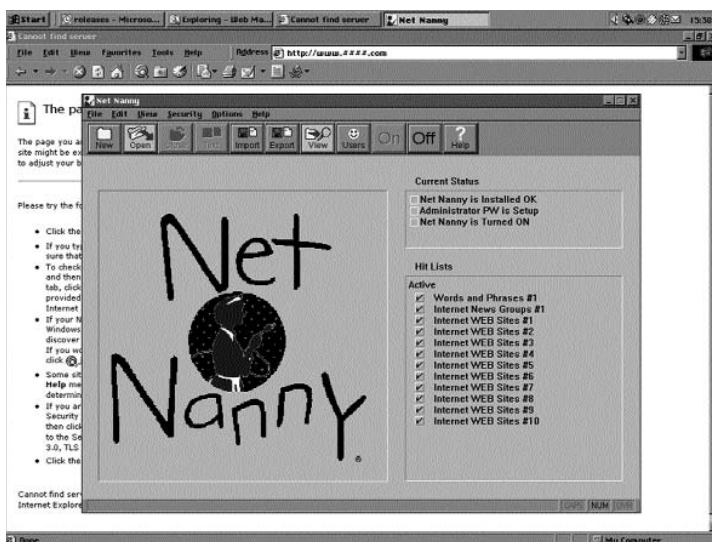
# 7.3 Porn Stoppers

Everyone in a household hopes that no other member is exposed to porn on the Internet, for various reasons. Because of its easy availability and abundance, the threat of Internet porn addiction is a constant threat. Corporate houses too would not want their employees to access porn while at work, as this affects both productivity and bandwidth. To tackle these issues, software companies have developed a number of applications.



**Porn Blockers keep the smut off your computer**
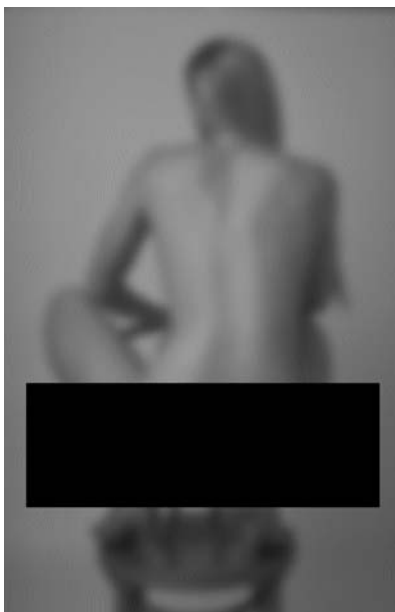
Net nannies keep a track of all the sites you visit, but this is, at best, a prohibitive system. Other systems like setting up filters help. A filter, however, restricts access to the Internet if it is set to a very high sensitivity level, and at medium and low levels, which are conducive for surfing the Net, the filters aren't as effective. To tackle this problem, a blocker is used. A blocker is the inverse of a filter - instead of blocking everything like the filter does, it lets everything else pass and blocks only what is specified. This lets you regulate the sites that can be viewed by the user. Blockers can be used to block specific IP addresses, images or even text. Many ISPs, too, provide blocking services. At times a specific block can become as restrictive as a high level filter.

Software such as Net Nanny keep a tab on browsing habits

Porn blockers are marketed by a number of companies. Each of these is highly customisable. They allow you to filter all types of Internet content and let you determine what Internet content enters your home or business. They come with maximum protection and preset monitoring functions, which you can easily customise to meet your family's or employee's unique needs. You set controls for each family member or employee, and the software blocks those sites that do not meet your standards. A few of the more commonly used blockers are Netmop and Content Watch.

# 7.4 Search Tools



Google has now entered the arena of desktop search

The Internet, as we've already stressed, is a vast repository of information. Now, to scour through this huge collection of data, we need effective search tools. Today, search is almost synonymous with Google, so much so that 'to google up something' is fast replacing the phrase 'to look up something'. Google has also launched a desktop search tool that indexes all the files on your computer while your PC is idle. This ensures that you get results quick whenever you type in a query. This is a major development from the earlier approach, where the search tool started searching only after the query was posted.

On the Internet, too, there are a number of search engines employing a number of different techniques. The first Web search engine was Wandex, a now-defunct index collected by the World Wide Web Wanderer, a Web crawler developed by Matthew Gray at MIT in 1993. The earliest search engine project

to become a major commercial endeavour was Lycos, which was started at Carnegie Mellon University. Soon, many search engines appeared and vied for popularity. These included WebCrawler, Hotbot, Excite, Inktomi, and AltaVista.

Sites such as Yahoo! initially offered directories instead of search. Later, the directories integrated or added on search engine technology for greater functionality. Before the advent of the Web, there were search engines for other protocols or uses, such as the



**With Google ruling the roost MSN and Yahoo are still lagging behind in the search race**

Archie search engine for anonymous FTP sites and the Veronica search engine for the Gopher protocol.

Search engines today face a number of hurdles in their effort to index the entire Web. The Web is growing much faster than any present-technology search engine can possibly index. Many Web pages are updated frequently which forces the search engine to revisit them periodically. Dynamically-generated sites may be slow or difficult to index, or may result in excessive results from a single site.

Web search engines work by storing information about a large number of Web pages. These pages are retrieved by a crawler, also known as a spider. The content of every page is then analysed to determine its indexing. Some search engines, such as Google, store all or part of the source page (referred to as a cache) as well as information about the Web pages. When a user submits a query by giving keywords, the engine looks up the index and provides a listing of best-matching Web pages according to its criteria.

The usefulness of a search engine depends on the relevance of the results it gives. While there may be millions of Web pages that include a particular word or phrase, some pages may be more relevant, popular, or authoritative than others. Most search engines employ methods to rank the results to provide the 'best' results first. How a search engine decides which pages are the best matches, and what order the results should be shown in, varies widely from one engine to another. The methods also change over time as Internet usage changes and new techniques evolve.

# 7.5 Anti-virus Software



Anti-virus software are a must on any networked system

As discussed earlier, being connected to any network means being in the line of fire from any individual intent on creating mischief or harming your system. Some of the most common forms of attack are by viruses or worms - these can cause widespread damage in a very short while.

Nowadays, all personal computers and networks are protected by utilities such as anti-viruses and firewalls. A typical anti-virus is software that has a two-pronged approach to tackle any attack or suspected activity: the dictionary definition method and the suspicious behaviour approach.

In the dictionary definition approach, the anti-virus examines a file and refers to the latest virus definitions loaded on the system. After this it either deletes the infected file, or quarantines it so the virus cannot spread, or attempts to repair the file. For your system to be safe it is imperative that you update your virus definitions on a regular basis. Any individual who is somewhat technically inclined can send files that they think are infected by a new virus, to anti-virus software writers for inclusion into the definitions.

The suspicious behaviour approach does not attempt to identify known viruses, but monitors the behaviour of all programs. If one program tries to write data to an executable program, for

example, the anti-virus software can flag this suspicious behaviour, alert the user and confirm an action. Unlike the dictionary approach, the suspicious behaviour approach can provide protection against brand-new viruses that do not exist in any virus dictionaries. On the flip side, it also cries wolf a number of times, which leads to the user being desensitised to all warnings. This problem has worsened over the last few years as a number of non-malicious programs were made to modify other .exe files without regard to this false positive issue. This has led to most anti-virus programs focusing on the dictionary definition approach.

A number of software vendors specialise in anti-virus software. All of them also tackle other intrusions such as Trojans and
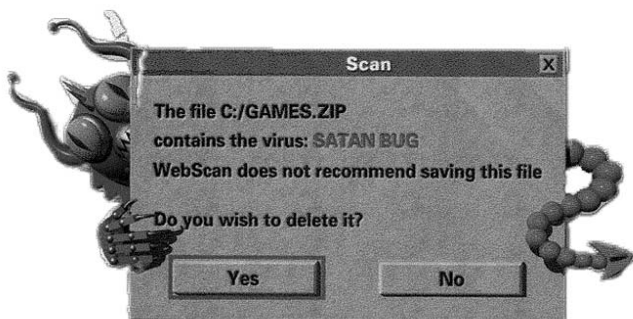


**Viruses are getting deadlier and difficult to tackle.**

worms. Though a few anti-virus software are resource-hungry, these programs are increasingly being made to consume fewer resources. Some of the more widely-used anti-virus software are McAfee, Norton, AVG and Avast.

The easiest way to protect your computer is to take precautionary measures such as not downloading suspicious attachments without a virus scan. Also, it is advisable to not download software and other .exe files from suspicious Web sites.

# 7.6 Firewalls
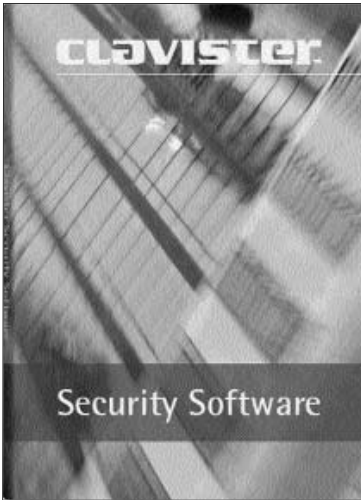


Firewalls have become a de-facto safety net for any network

The chief function of a firewall is to prevent communications forbidden by a certain security policy. Unlike an anti-virus, a firewall can be either hardware or software. The basic duty of a firewall is to control traffic between two different 'zones of trust' such as the Internet and an intranet, with the Internet being a no-trust zone and the intranet a high-trust one.

There are roughly three types of firewalls:
## Personal Firewalls
These are software that filters through information entering or leaving a single computer. Network Firewall is a firewall setup on a dedicated network device or computer positioned on the boundary of two or more networks.

## Network and Application layer firewalls
A network layer firewall works at a low level of the TCP/IP protocol stack. This means only those data packets that comply with the predefined rules, or the rules set up by the network administrator, will be allowed to pass. Today, network firewalls are built into most computer operating systems and network appliances. Modern firewalls filter traffic based on many information packet attributes such as the source IP, destination IP, and destination services such as WWW or FTP.

An application layer firewall, as the name suggests, works on the application level of the TCP/IP stack. This is to say that it works on all browser traffic or all telnet or ftp traffic. It may also intercept all packets travelling to or from an application. In principle, application firewalls can prevent all unwanted outside traffic from reaching protected machines.

Finally, depending on the state of traffic packets, there exists stateful or stateless firewalls.

' A stateful firewall can hold in memory significant attributes of each connection. These attributes, collectively known as the state of the connection, may include details such as the IP addresses. A processor-intensive checking is performed at the time of setup of the connection. All packets after that are processed rapidly because it is simple and fast to determine whether it belongs to an existing, pre-screened session.

'A stateless firewall treats each packet of information in isolation, and there is no way by which it could know if the packet is part of a larger set or just a rogue packet.
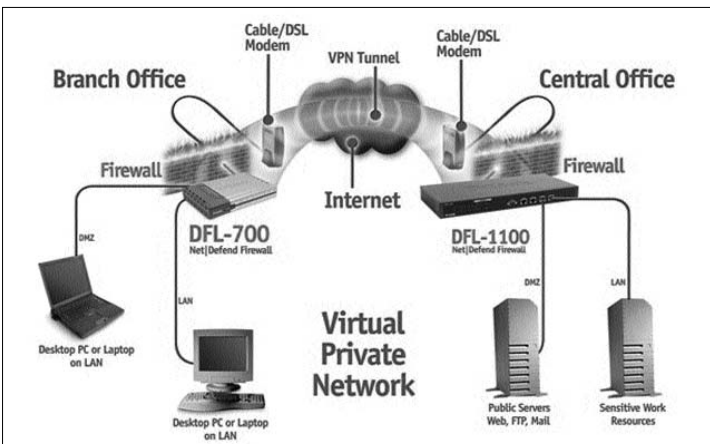


A virtual private network set protected by a firewall

There is a generous amount of overlap between the different types of firewalls. Some of the most commonly used firewalls are the Cisco PIX, IPFilter and VPN-1, which are network layer stateful firewalls, and Symantec enterprise firewall, which is an application-layer firewall. Apart from these, all the major anti-virus service providers have personal firewall software for single-computer protection.

# Portable Internet



The Internet is no more a technology that is constrained due to physical limitations of cabling. All you need to have is a device that can latch on to these waves flowing through ether at all times and guess what, you're connected!

In this section, we will look at the technologies that help enable Internet connectivity on your favorite cell phone. How were they devised? Why are there so many technologies? And more importantly how do you gain?

# 8.1 Technologies

Mobiles are based on two distinct connectivity technologies-Global System for Mobile Communications (GSM) and Code Division Multiple Access (CDMA). GSM mobile phone companies were the first to set up their networks in India while CDMA networks are quite recent. For instance, Orange is a GSM service provider while Reliance is a CDMA service provider. At this point, we need not delve into the intricacies of the two different networks. What we do is talk about the technologies used for Internet access in the two different forms of service. Let's start with the GSM type of networks.

### GPRS

GPRS is an acronym for General Packet Radio Service. This technology allows information to be sent back and forth across a mobile network. It is an addition to today's Circuit Switched Data (CSD) and Short Message Service (SMS) services. Some of the exclusive features of GPRS are given below:

### Speed

The maximum theoretical speed that can be achieved is up to 171.2 kilobits per second (kbps) using all the eight timeslots at the same time. This is approximately three times faster than the currently available fixed telecommunications networks. This may also be cost effective as GPRS allows information to be transferred extremely fast, almost immediately with a high rate of efficiency across a mobile network.

### Instantaneous

GPRS lets you stay connected as information can be sent or received immediately as the need arises, depending on the signal strength and coverage. This feature comes into play when you are checking cricket scores on your cell using the Internet or for applications such as online shopping which needs credit card authentication.

### Application Development

GPRS lets mobile application developers develop newer, faster and better mobile applications that haven't been available due to

previous technology speed limi-
tations. Applications that have
been developed for a GPRS
enabled mobile phone range
from the basic browser for surf-
ing the Internet to online chat
applications, file transfer appli-
cations, and so on. Future
applications will include the
ability to remotely access and
control in-house appliances
and machines.

### Requirements

To use GPRS, there are some pre-
requisites that you need to satisfy.

1. Primarily, you should have a
   GPRS enabled phone. Phones
   such as the Nokia 7610 and the
   Motorola A80 have a GPRS functionality. There are
   many other models available from different vendors. When pur-
   chasing a mobile phone make sure it supports GPRS.

2. Ensure that your service provider also provides GPRS service. For
   instance, the Orange Network in Mumbai supports GPRS.

3. You should also take care of the data charges levied by the serv-
   ice provider as data is downloaded on to your phone when you
   browse the Internet. Another factor is knowing how to access
   and use the GPRS functionality in your phone.

### Limitations

No new technology is foolproof and there are downsides. Even in
all the new and exciting features that go into making GPRS one of
the most accessible technologies for the common person, there
are some large limitations.

# 8.2 Overloading

GPRS as a technology means a newer and faster way for transferring data and as with all networks, data transfer consumes bandwidth and clogs the network. Voice and GPRS data transfers are bound to affect network performance. Similar to the "Network Not Available" message that you may sometimes receive when trying to make a call at peak hours, data transfer speeds are also affected during peak hours. While GPRS and voice channels use the same network resources, the GPRS technology is intelligent to manage or allocate the channels dynamically allowing a reduction in peak time signaling channel loading by sending short messages over GPRS channels instead.

### Lower Speeds

The theoretical speed of the GPRS data transmission speed is 172.2 kbps (dependent on the networks and terminals used) but this is only possible in a scenario when one single user without any error protection is hogging all the timeslots. Any service provider will obviously not allow this and in all probability you will be able to access only one or two time slots that will limit the amount of bandwidth available to you. This translates into lower data transmission speeds.

### No Store And Forward Mechanism

The main advantage of SMS is the store and forward mechanism. What this essentially means is that any SMS that you send using your mobile first goes to a central server and is then forwarded to the destination phone number. In case that number is switched off or unavailable, the message is stored on the server for some amount of time. This is absent in the GPRS standard.

### Data Transit Speeds

GPRS data transfer takes place using a simple principle. Data sent from the sender is transmitted to the recipient using different paths. The probability of the data being lost or corrupted during transit is high and hence the GPRS standard includes data integrity and retransmission strategies. Nevertheless, due to this, poten-

tial transit delays can occur and hence a better, faster standard needs to be implemented.

In scenarios such as live Webcasts, where broadcast quality video is transmitted, GPRS will be of little use and a technology such as High Speed Circuit Switched Data (HSCSD) can be used in which the user can takeover up to four separate channels at the same time. In a technology such as HSCSD, transmission delays are less likely as there is an end-to-end connection between the sender and recipient. The downside to HSCSD is the high cost involved.

Due to these limitations, newer technologies are being looked upon and one of the most promising technologies is EDGE.

## EDGE

The Enhanced Data Rates for GSM Evolution popularly known as EDGE is a new technology that delivers broadband-like data speeds to mobile handhelds. Using this technology, users can browse the Web on a mobile device at almost the same speeds as they would on a regular broadband connection on a desktop computer. Advanced mobile services such as video and music clips that are currently viewed on broadband connections can now be viewed using a mobile and also downloaded if needed.

EDGE can provide more than three times the data capacity over GPRS and network operators using EDGE can handle three times more users than GPRS. This is because EDGE enables GSM operators to offer higher speed mobile data services and serve more mobile data customers, and in the process free up GSM network capacities to accommodate additional voice traffic. Either way, it's a win-win situation.

EDGE is also known as EGPRS or Enhanced GPRS. This technology theoretically offers over 473.6 kbps and a dedicated capacity of 384 kbps (dependent on the networks and terminals used), ideal for video services and other multimedia.

GPRS and EPGRS or EDGE use the same packet handling proto-cols thus making EPGRS easy to implement over existing networks and hence do not require further capital investment as the exist-ing infrastructure (base stations) must be modified to implement this technology.

The EDGE technology is supported by GSM operators world-wide. The status of EDGE used in a network depends on the imple-mentation of the 2G or 3G classes. Remember, there is a differen-tiation between devices that are classified as Class 3 and Class 4. Class 3 and below devices are not 3G while class 4 and above devices perform at a higher bandwidth than other technologies conventionally considered as 3G. However, with the promising speeds and content that are readily available for download on the Internet, EDGE seems to be a very apt answer to users who want the Internet in the palm of their hands!

### CDMA

CDMA or Code Division Multiple Access is a technology that has been developed by Qualcomm Networks Inc. In a nutshell, CDMA is a technology that classifies voice and data to be just data. Unlike GSM networks, there is no differentiation between voice and data. CDMA provides better capacity for voice and data communications since it allows many users to occupy the same time and frequency allocations in a given band. CDMA assigns unique codes to each communication to differentiate it from others in the same band thus enabling more people to share the airwaves at the same time.

The intention here is the same-to provide users with the fastest possible way to get connected using their handhelds or mobile devices without clogging the network.

CDMA is a substantially improved technology over GSM net-works whereas connectivity standards such as GPRS and EDGE are still to be accepted widely among users. On the other hand, most CDMA phones have the capability to let you browse the Internet if the network operator provides the service. This makes CDMA a

much more substantial option over GSM. Moreover, CDMA is the platform on which 2G and 3G advanced services are built.

In this chapter we have enclosed technologies that are being currently touted not only to sell phones but also to entice people to get online anytime. Whatever technology you opt for, GSM or CDMA, the only limiting factor would be the money factor since accessing the Internet on your mobile will cost a lot. But if that's not an issue, all we can say is, surf's up!

# 100+ Useful Websites
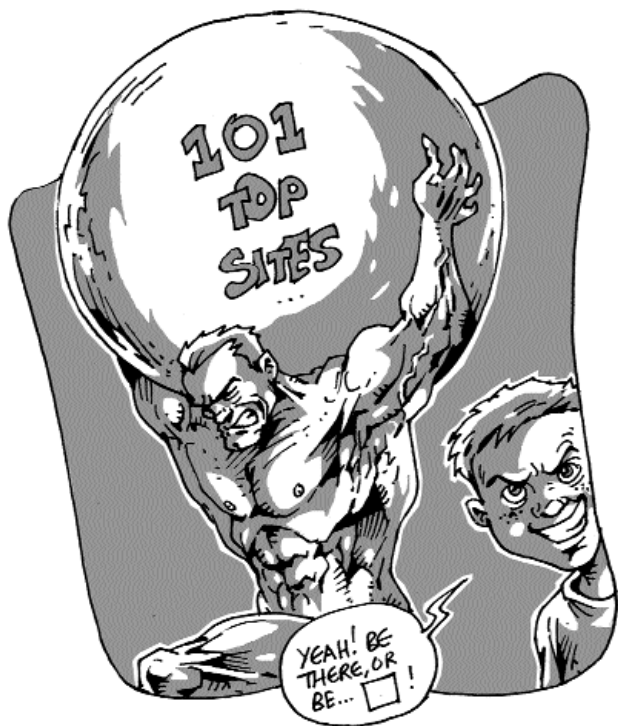


We know Google or any other search engine can throw up almost any site that you want, or rather zillions of sites pertaining to your topic of interest. Giving out a list of 100 odd websites then seems to be a rather futile task. What we've done is pick out the choicest of those sites which we think might be useful, entertaining, informative, a plain waste of time, or all of the above. Let's look at it this way, the list might just make your next one hour on the Internet a little more than emailing and chatting.

# 9.1 News & Features

Keeping tracks of all the current affairs has never been easier. Thanks to the Internet we have a number of websites to cater to different tastes in news. Yes such a thing exists.

### www.bbc.co.uk

The beeb rules the roost when it comes to broadcast, not surprisingly it also is one of the most innovative news websites. What really takes the cake though is the wide gamut of services and information the site provides. Right from a Hitch Hiker's Guide to the Galaxy club to a section dedicated to understanding the functioning of the Human Body. Need to get your daily dose of '*gyan*' log onto the beeb on the net.



### www.reuters.com

The news wire service has one of the freshest and precise news coverage on the net. With a refresh rate of 2 minutes the site makes sure you can always be in the loop and know the news as they break across the globe. Another add-on feature is the availability of streaming video content. A little more of anything can't be too harmful, can it?.

**www.news.google.com**

The bot magic is at work on the news front as well. No human element in the selection process says Google. Thank you very much, says us. With the latest news culled from the sites across the Internet, Goggle News is as fresh as they come.



**www.wikinews.org**

Look around you, everything is going wiki. Your enclyclope-dia, your travel news, your dictionary. Can your news be far behind? Wiki News allows you to let the world know what's happening around



you...in your own words. Take a view, make a stand. Wiki your way to journalistic glory.

## www.ndtv.com

We used to love watching "The World This Week". We still tune into NDTV for a quick news roundup. www.ndtv.com is easily one of the most reliable Indian news sites. The site also carries a lot of features on travel and other such areas, giving a very rounded feel to the site. What really gets us onto the site is the breaking news flash that appears at the top and the ticker that streams across the top banner.

## www.wired.com

Wired is a technology site, it's a pioneering technology magazine but it is always one of the most informative news websites on the web. We're not going around town singing paens about the wide coverage but rather the depth in each feature. Need to know more than just what happened when...get wired.

### www.salon.com

A dream venture for any clutch of journalists and free-lance writers, Salon has become one of the premier websites focusing on feature articles. Though the advertising is a tad too intrusive, the quality of the articles more than makes up for any shortcomings.

### www.news.rediff.com

There is more to Rediff than just email and chats. Quick updates and innovative feature presentation makes rediff.com an interesting site to visit. What really scores for them is the photo feature presentation.

## www.guardian.co.uk

The left-liberal Guardian is one of the most respected dailies of the world. The website makes sure that it maintains that credo. With incisive and in-depth articles guardian.co.uk makes sure you're not left with any ambiguity about a particular issue.



## www.nyt.com

The grand old lady of New York, The New York Times is perhaps one of the most respected broadsheet dailies in the world. It is also one of the most influential papers in the world. With a wide and insightful coverage of the news from both the Americas and across the Atlantic the NY Times website is one of the best maintained daily news sites.

### www.economist.com

If there is a magazine that gives you the best coverage of all the fiscal policies from across the world it's The Economist. The website with al it's features is a must visit site. The content is divided into Premium and normal, with subscription fee for the premium content. I for one wouldn't mind paying that extra buck to read such brilliant features.



### www.instapundit.com

If there is a blog that has achieved the status of a reliable news source it has to be Instapundit. With a different take on the news features that abound the net, Glenn Reynolds takes us to viewpoints that the mainstream media would avoid. Though the features are America centric, the tangents are absolutely juicy.



### www.onion.com

If you liked MAD you'd love the Onion. Called America's premier satire magazine, the Onion is a perfect read for those gloomy days or the time at work when all you want to do is doze off. Oh yeah it also gives you something witty to talk about...for the evening at least.

## 9.2 Utilitarian

One of the prime reasons for longevity of the Internet, apart from the ease in communication, is the ready access to different information and also because we can optimise our experiences by using tools available on the net. Here we take a look at some of the most useful sites that abound the Internet

### www.softpedia.com
An endless source of all the freeware on the Internet, softpedia.com is really a free downloads encyclopedia. With every



freeware from drivers to mobile applications, game trailers to anti-virus updates, the site, with its pleasing and intuitive interface remains our favourite download center.

## www.driverguide.com

The big daddy amongst all the driver download sites, driverguide.com has drivers for almost all the hardware that the industry ever produced. Everything from a printer/MFD driver to a 33.6 Kbps modem driver this site makes sure that it remains your one shop stop for driving around your hardware.



## www.howstuffworks.com

The gyan center of the Internet claims to be the site that tells you how everything works. Detailed lucid explanation on topics ranging from automobiles to shopping makes howstuffworks.com a very informative and easy read. The wide gamut of topics covered also makes it a single point source to most of your queries.

### www.wikipedia.org

This online encyclopedia has revolutionised the way people look up data on the Internet. The wiki concept, which allows the reader to edit or add any portion to an existing piece, adds to novelty of the site. This is not to say that the website is not a good encyclopedia. With over 600,000 articles Wikipedia has become the encyclopedia of choice for many sufers.



### www.fabmall.com

India's largest online store let's you purchase anything from accessories to wine. All of these at a decently marked down price. Though the range of products may not be as impressive as other superstores such as Walmart, Fabmall still maintains a decent enough portfolio to cover your first purchases.

## www.ebay.in

The biggest auction site in the world now has its own Indian site. Called bazee.com earlier, www.ebay.in has perhaps the widest range of products to choose from. Also by virtue of being an auction site the prices for first hand goods are almost always below the market price. Quite easily it can be regarded as a bargain site.



## www.google.com

Need we elucidate the utility of a search site and the best one at that?

### www.gutenberg.org

For all the book-lovers out there Project Gutenberg was nothing short of manna from heaven. A site that lets you download almost any book, whose copyright is available in the public domain, for absolutely no cost, must be truly welcome. With close to 16,000 free electronic books in its collection Gutenberg.org has quietly played out the transition that the Gutenberg press had.
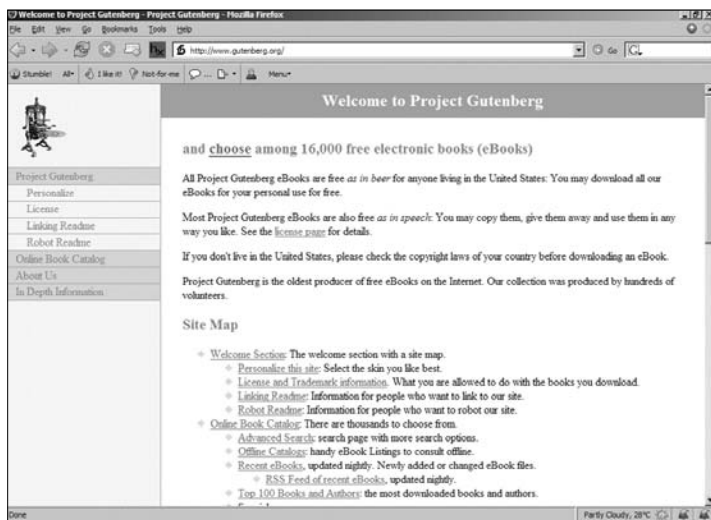
### www.dictionary.com

A site which gives you the right synonym or definition of a word in a jiffy, lets you look up a thesaurus and also search the web is definitely a very useful site. Dictionary.com also gives the root and the correct pronunciation. The last service though is available only on subscription.
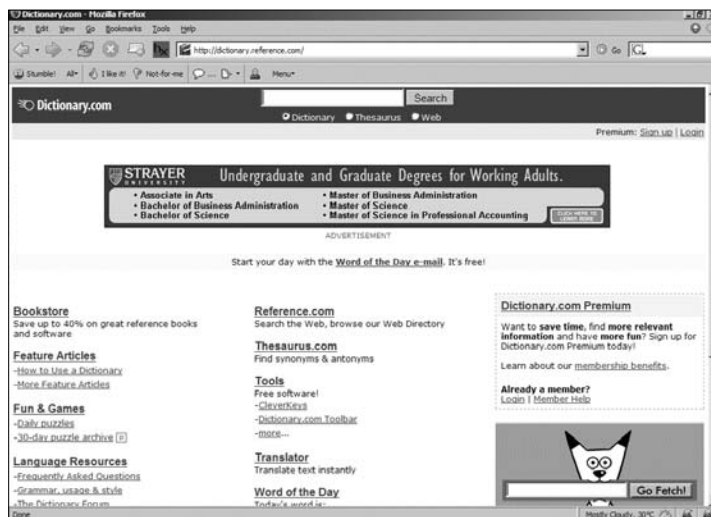
## 9.3 Sports

Live scores, brilliant pictures of petite tennis players, news updates from the leagues around the world. You ask for it and there you have it, almost anything to do with sport and its there on the Internet. Need a little *'gyan'* as to which website is the most comprehensive to each particular sport? Read on.

### www.cricinfo.com
One of the most comprehensive Cricket news sites, cricinfo.com is the result of a merger of cricinfo.com and Wisden Online. The site features the regular ball by ball commentary and a live score card. Apart from this it also hosts a number of feature articles which make an interesting read.

### www.sportsillustrated.com

For those who love the new glamourised avatar of sports, Sports Illustrated is just what the doctor ordered. A website from the most famous Sports Magazine is surely full of the relevant news and features alright. The site also has a generous dose of gossip about celebrity sportspersons. So for those Maria Sharapova fans who are interested in knowing more about her wardrobe and personal life we've dug up this site just for you.

## www.f1racing.net

What can you do on f1rac-ing.net? Well, you can buy F1 tickets if you have the moolah, buy some merchandise for a little bit more, enter contests and watch videos. All of this is in addition to all the news, views, reports and interviews. A very comprehensive site. We like it, think you just might.
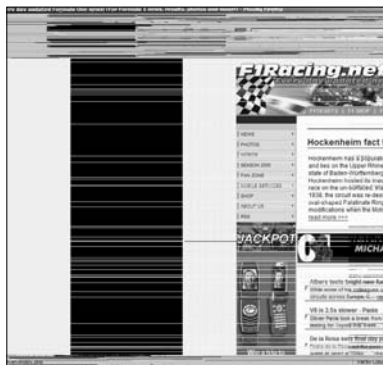


## www.uefa.com

The world's favourite sport and its more watched league need a website that's good enough. With an online magazine, merchandise store, news articles and the latest scores from all over the European league, uefa.com is by and far the most comprehensive and authoritative website on European club football. Yeah we know that Brazil are the world champions and Argentina is right up there but then all their top players play for E u r o p e a n clubs…uefa.com shows you just why.

### www.espnstar.com

The biggest sports broad-caster may be low on the Indian viewer's radar because of their lack of cricket coverage, the Australian tour of England notwithstanding. However as far as putting up the latest in sports is concerned this site is right up there. With a coverage of almost all the sports that's played on the planet, espnstar.com is the beeb among sports web sites.

### www.sports.yahoo.com

The big daddy of horizontal portals also has a decent enough sports website. Though the leaning is more towards American games Yahoo Sports does give a good enough overview of the sports around the world.

### www.fifa.com

Because it is not a World Cup year the Fifa website is not exactly hot property. The website however is a veritable encyclopaedia of the game. Every aspect, right from History of the game to the various trivial questions that can be answered regarding football can be found here. The site is also the best

place to keep track of international football matches and tournaments like the Confederation Cup and the recently concluded Youth World Cup.

## www.atptennis.com & www.wtatour.com

These official websites are your best guide to the men's and women's tour respectively. These sites serve up all the updates of the tournaments and exhibition matches that are taking place across the globe. Davis Cup, Federation Cup, The Masters Tour or the Grand Slams, you'll have all your tennis fill from here.



## www.chessclub.com

We've scoured the web for some of the best chess sites and come up with one that is really good, both in terms of information and play. You can actually log into the site, for a fee of course, and play games against various opponents, some of who could also be Grandmasters. Go on check your mate...er or something like that.

### www.fihockey.org

Hockey is India's national sport. The sport however is overshadowed on the net by NHL, the North American Ice Hockey League. The most informative and impressive site dedicated to field hockey was the official website of the International Hockey Federation. A good enough site for a die-hard hockey fan or a casual browser.

# 9.4 Music

It would be safe to say that the availability of music and other forms of entertainment on the Internet has driven large number of users to the Internet. Free downloads earlier, and downloads for a nominal fee per song, that is how music downloads have traversed along the Internet timeline.

### www.odeo.com

This by invitation only website, a la Gmail, has been rated by Forbes a one of the most promising Internet businesses. A relay of podcasts by normal folk is what Odeo is all about. The site has also attracted a number of major American radio stations. Needless to say the site plays out the latest music and more. Will Odeo be the next big thing...let's just wait and watch.

### www.apple.com/itunes

iPod came along and gave a new meaning to portable music play-ers. iTunes did the same for music downloads. At 99 cents a download, almost 500 million music downloads have be done from the site. If there is anything driving Apple's profits its iTunes. Tune in already would you.



### www.rollingstone.com

The high fashion magazine of the music world, that's what RollingStone's all about. With insightful articles on all things music and more the website makes you a smarter reader.

### www.vh1.com

We all love the channel and the no advert no VJ combination. The website gives you all the dope from the music world and unlike the RollingStone this one caters to a younger set. Way better than any MTV site.

### www.gigpad.com

Are you interested in knowing more about Indian rock acts? Do you frequent the college music scene and head bang to Iron Maiden covers played my Earthclan? Well then Gigpad is the place you need to visit. And if you want to pick up a fight with some just log on to their forums, rockers are always ready for a good fistcuff or a verbal volley. Take it all out, we say.

### www.music.yahoo.com

One of the earliest online radio stations. They have a wide variety of stations for people to choose from, some of which are free. Music genres from Classical to Classic Rock, R&B and Hip Hop, each have stations dedicated to them. Plug in and peace out.

### www.lyrics.com

The most comprehensive web directory that has the lyrics of almost all the songs you can think of. The next time you want to sing along Feel Good Inc by Gorillaz you know here to source your lyrics from. Lip synching was never easier.

### www.nme.com

NME (New Musical Express) is U.K's oldest and most prestigious music magazine. Founded by legendary music critic Clinton Sheppard in the mid 1970's the website of the magazine features some of the best reviews of classic albums. The contents of the website expand from garage band to some of rock n roll's most popular band.

### www.q4music.com

Q Magazine is to Europe what Rolling Stone is to US music scene. The website has indepth coverage of what is happening in the various genre of music. In the website's shopping store one can find some of the rarest pieces of music collection. Q radio plays some of the most progressive and genre defining tunes.

## www.worldmusic.net

If you're not interested in music of the world, this website is the one for you. It has ample information of various artists from around the world making world music. It has several sections dedicated on music styles of various countries including Indian Classical. A very good website if you are interested in expanding your musical horizons.

## www.guitarworld.com

This website is a shrine for upcoming and expert guitar players. You can download tabs, notes and other details which may help you improve on your style of playing. The website features comprehensive information on amps, distortion pedals and various types of guitar. You can get first hand information on the website's message board.

# 9.5 Lifestyle

Want to know what's the hippest and coolest swish set upto? The lifestyles of rich and the famous, does that interest you? We get a few sites that define what Cool is all about. As Dizzy Gillespie used to say, Cool.

### www.ftv.com

Those of you who want to know the ins and outs of basic fashion this is the site for you. Everything from haute couture to the prêt line that the world looks upto ftv.com is more than just a website of a television channel. So get hooked to the fashion from across the globe.



### www.favouritewebsiteawards.com

This is a Mecca for all flash lovers. With a monthly pick of the best flash site or micro site FWA has become a veritable directory of the best flash sites around. Websites belonging to diverse genre such as arts, sports, travel, entertainment and even experimental sites are covered. If you are a flash freak or if good aesthetics appeal to you, this is the site for you to link to.

## www.porsche-design.com

The guys who give you the mean beasts that scorch the road have more than cars up their sleeve. At Porsche Design you can take a look at the various prototypes and parallel design endeavours, just
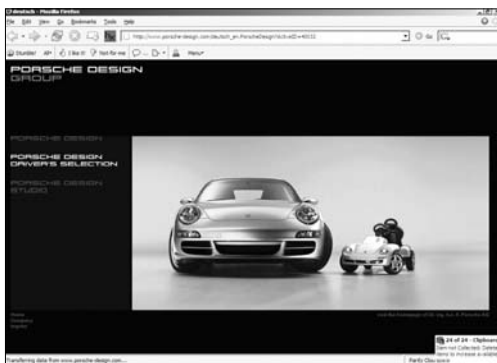


check out their consumer designer range to see the versatility of this car manufacturer.

## www.eonline.com

The site is all the glam drama played out in full public view. All the Hollywood and American television gossip, plots and the latest buzz from the entertainment world at the click of a mouse.

### www.ferrari.com

If there is a car company that has a widespread cult like status it is the one with a prancing horse as a symbol. Ferrari seems to have cashed in on this quite well, the website gives the user diverse areas to browse through from racing to design and of course have a dekko at their gallery of cars. The site also offers paid membership to the Y&F club (You & Ferrari) club and a free membership to the Ferrari community.



### www.apple.com

If there is any geek tool that is the epitome of cool it's a Mac. No wonder that the Apple site makes it to our lifestyle list. Let's face it, not everyone can afford to live in style and still have a Mac. The Rolls among computers also brings along with it the favourite toy of the Yuppies, the iPod. So go on and ogle at the design and intuitive interface.

### www.fashiondig.com

Do you dig fashion? You're guide to be a fashion God, that's what the sites all about. If nothing the visuals and the layout of the site scream out "ART". Very well done with links that help you locate fashion stores from across the globe, to telling you what is hot and what style is in vogue. Did we tell you about the bookshop that has numerous categories and genres in fashion to choose from. You can also pick the latest fahion magazines from across the world. Go ahead learn how to spot a Louis Vitton and a Bvlgari without checking out the tab.



### www.lonelyplanet.com

The de-facto travel guide for tourists the Lonely Planet does indeed have an impressive website. Stunning pictures from various locations, in depth information about the different countries that you'd like to visit all come together to give you a site that is a must visit before you embark on any trip. What really got our attention was section that gave tips on how to get to those places that are not on an average tourists' map. Time to plan that next big leave from work, what say?
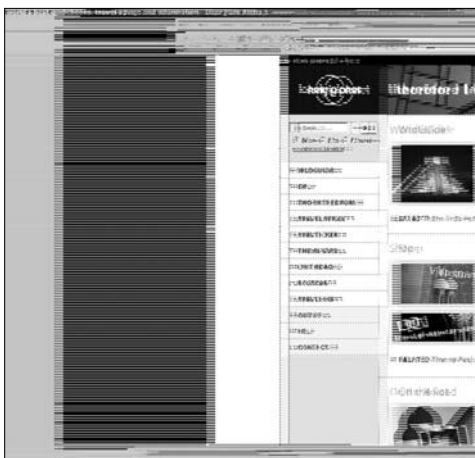
### www.boystoys.co.uk

You've seen these babies on television. How about a catalogue of all them and more of course the eye popping prices would make you gripe every time you get you rather measly pay check. Some stuff may be affordable...a few years from now until then just do what we did. Surf and ogle



### www.levis.com

The first name in jeans or any form of denim clothing has a very interesting website to boot. With micro sites that cover all the countries that have Levi's clothing stores this site gives you a very relevant style check. Services like the store locator and options to view the latest in denim fashion attracts a lot of eyeballs to the site. Keep up with latest in fashion trends and Levi's events fro across the globe.
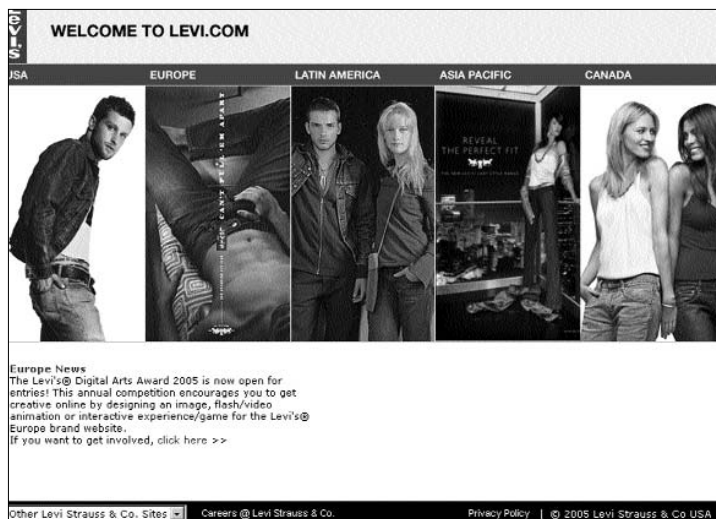
# 9.6 Children's Sites

### www.kids.discovery.com

Discovery channel's wonderful website for kids. Lots of useful information can be found here which are both entertaining and informative. Apart from exclusive web-content one can find schedules of Discovery TV Channel of different global regions.



### www.foxkids.com

This website is a global provider of children's entertainment and merchandise licensing. Foxkids, functions as a vertically integrated children's entertainment company. Ideal for a lazy Sunday afternoon.

### www.nationalgeographic.com/kids

National Geographic provides a content rich website for kids that is not only informative but expands the reasoning and understanding of kids of their habitat. The sections are intuitive and encourage children to expand on their creativity.



### www.4kids.org

This site claims to be the "Tecknowledgy" site for kids. True to its name the site covers a number of areas from 'fun' stuff to how to surf safely. The KidQuest challenge also encourages the children to find answers to a variety of questions by surfing the web.

### www.big6.com/kids

Targeted at kids from different age groups, this site offers every thing a school going child would want. You can find videos, homework related queries, help with academic work and also provides wholesome



entertainment. And for those first time crushes you can also check whether your crush likes you.

### www.haringkids.com

The official Keith Haring website for children. This fun interactive website has a lot of activities to inspire a love of learning and art. The site also has sections dedicated to online books, authorised art shows.

## www.fbi.gov/fbikids.htm

FBI's very own website which gives lots of interesting information based on various real life cases solved by FBI. It is designed for inspiring kids who want to have a career on Police and Forensic sciences.



## www.sciencenewsforkids.org

As the name suggests this site is a perfect children's science encyclopedia. Anyway when we are children anything we do not understand is Science (with the capital S). Covering a wide range of subjects from Agriculture to Weather, the site explains every small thing in a very lucid manner. Guess I will be frequenting this site now.

## www.familyfun.go.com

Family Fun is an ideal website to plan family activities. The Organise and Decorate section gives good tips on how to decorate kids' rooms. It also gives tips on painting, stenciling and choosing a theme for the room. In addition to these the site also has a number of recipes for various food stuff that children would appreciate. An ideal site for parents to plan those birthday bashes for their children.



## www.thekidzpage.com

A typical children's website, Thekidzpage has all the usual sections such as games, puzzles, downloads, learning and even other activity based areas such as colouring and clip art. A good site to pass away a little bit of time and learn a few new tricks.

## 9.7 Movie Websites

Who doesn't like to watch movies? Old or new, good or bad, everyone has a favourite movie they would want to watch, repeatedly. This section is devoted completely to websites that give you the latest and the best on movie news. From the vintage to the just released, if you want any information check these websites out.

### www.apple.com/trailers

Every movie begins with a trailer. So we thought we will carry on with the same tradition and so this site comes first. This is one of the favorite website of the Digit Crew, since we get to watch the latest trailers here and check out the amazing movies which are about



to hit the big screen. After all, the trailer gives us the barometer rating of the movie. The hotter the trailer, the more anticipated the movie is. Of course, you can also browse through older movie trailers and watch them free. There are options for both broadband and low band, so if you have a dial-up access you can still watch the trailers on the website. However, there is one pre-requisite, you will need to have Quicktime installed on your computer.

## www.Atomfilms.com

This is an excellent website with news, views and more on every available topic on movies. Movies are categorized under several headings and includes comedy and animation so your kids can also browse this website without hesitation. Independent movies also get their share of the pie but make sure that some sections of the website are kept away from the kids. Trailers are available for viewing and is similar to the manner that we have seen on the Apple website, except that you don't need to have Quicktime installed on your computer. The latest version of Windows Media Player is more than enough.



## www.digitallyobsessed.com

This website is crammed with information. The first thing that strikes you when you reach the website is the amount of information that is present in every nook and cranny right from the top of the page down to the bottom. Information includes film reviews, DVD reviews, TV serial reviews, you name it and they have it. You can also register and put up your own reviews of movies that you have seen on DVD or on screen. You also stand to win lotsa stuff if your review gets selected by the judges on the website. An extremely useful website for computer users who are hooked to movies.

## www.ew.com

Want the latest headlines and gossip of Hollywood, then you've come to the right place. This website will fill you in with all the gossip and news that you'll need on Hollywood sitting in the comfort of your home. TV gossip, yup, its there. DVD reviews, sure thing. Music and rock stars, you got it. After all the name is Entertainment Weekly, isn't it? The website is extremely well designed and information is categorized in a very sensible manner. You can choose any category that you like and get right into the pie. All you need is the right plug ins to start viewing the videos available on the website.

## www.ifilm.com

The heaven for downloading free independent studio movies and, yes, regular movie trailers too. This website is dedicated for users who like independent movies. Downloads are pretty fast and all you need to do is have a software such as Mass Downloader to get the trailers downloaded in no time. Movies are categorized and you can choose the clips that you want to download depending on your liking. Other than this, regular features such as movie news and features are available, but then this site is not famous for its news and gossip, is it?

## www.indiafm.com

Yes, we know that you are frustrated by checking out the Hollywood websites that are available a dime a dozen, and so this website does not speak about Hollywood, but hamara Bollywood. This was one of the first movie portals that was dedicated to Bollywood and remains one of the most visited website on the net for anything Bollywood. This site is known for good wallpapers and chances are, you must have definitely seen a wallpaper downloaded from this website, adorning the desktop of your colleague or relative at one point of time or the other.

Other than wallpapers, you can also find the news on your favorite celebrities, be it on film or TV, updates and guides on almost everything that is celluloid. This is a one-stop website to keep you updated on the latest happening on everything Bollywood.

## www.indiaglitz.com

This website is one website that has information of Hindi, Telugu and Tamil celluloid industries. This website has been designed with pizzazz and looks very classy. Latest news and information on celebrities and movies, videos and trailers, songs, the music industry, the website covers the entire gamut of the industry. All the latest happenings including premieres and stage shows are talked about here. Movie reviews are

extensive and have the edge that makes it unbiased. Yes, there are wallpapers here too.

The site design is quite similar for all the three types of industries but it does take some time to load due to the heavy flash content.

### www.movies.com

As the name implies, this website is dedicated to movies but only Hollywood movies. The latest news comes to this website and yes, they are exclusive. For those discerning users who always want to be on top of Hollywood, be it news or gossip, it's all there. You can also check local theatres for movies that are currently on and book tickets over the internet. Check the latest trailers, upcoming movies, directors comments, behind the scenes, box-office results, the critics point of view and more all at one place. This is one website which you wouldn't want to give a miss!



### www.pocketmovies.com

This is one website from where you can download the latest TV commercials. Yes, some of the most famous TV commercials can be downloaded from this website. Plus, you can also download free indie movies and also submit your own. Another feature of this website is the very informative forums that let you communicate with other users and get more information regarding the movie world. There is DVD FAQ corner,

if you want more information regarding DVD's. A very informative and utilitarian website that is sure to enhance your knowledge, and perhaps help you step into making your first indie movie.

### www.inetfilm.com

This is an independent movie website with lots of free movies for download with an excellent repertoire. Some of the best independent movies who have gone on to receive worldwide recognition made their debut on this website. If you are a person who is interested in the intricacies of movie making, then this website



will give you a good start. You also get to buy DVD's and other movie stuff from this website, but that's a sidey. The main attraction remains the independent movies, and after watching them you can surely see that these guys still have a trick or two up their sleeve which mainstream directors can use when making their movies.

### www.rottentomatoes.com

Okay, now that we have been to the sunnier side of Hollywood, lets get a reality check and see if the movie was a shiner or a goner. www.Rottentomatoes.com is one website where you will find movies dissected left, right and center. In fact, some movie reviews will actually make you flinch and probably enlighten you about why so many movie studios suddenly stop making movies. Make no mistake, this website presents you with the minutest details about why the movie was good or bad. You can use this website for light-hearted reading or if you are a budding critic you can proba-bly learn the finer nuances of becoming a movie critic

The website also talks about games and DVD's and also fea-tures a forum where you can exchange your thoughts with other users.

# 9.8 Gaming Websites

Games and technology are two things that drive our imagination. A look at the top gaming sites and forums is just what we think is necessary to get the adrenaline pumping.

### www.ign.com

The first web site to check for the latest gaming news. Okay, the web site may be biased but they get all the news before most other sites. They also have an extensive database of games, movies and music. Reviews and previews abound and the latest updates and patches are always on this website. You also have categories for each type of game and the platform for which they are released. You also have a section dedicated to cheats and walkthroughs for games and yes, the forums where you can discuss your gaming stuff with other fellow gamers.

So, if you are a game freak, you know which site to visit first!

### www.gamespot.com

This is the big momma among all gaming websites. Everything on this website is accentuated by design. More than the game reviews, it's the website that grabs your attention. Talk about any platform,



cheats, codes, walkthroughs, game video downloads, updates, patches and more. You name it, they have it. However, for the ad-free version of the website you will need to subscribe since some content is only available for subscribers, content such as video reviews and detailed walkthroughs. There is a hardware review centre too, for you to know about the latest hardware that gets its pants beaten off by the latest games. This gaming website is sure to keep your attention for hours in a day!

### www.actiontrip.com

This website is crammed with information about games, games and only games. Yes, it also has comics, hot babes, and forum's full of wierdos. The number of previews that you have for the upcoming games is amazing. You can also access the archives for the last 24 months and check on what games were predicted to be hot and became a not. You also see a features and offbeat section which makes the site more interesting. Regular information from game publishers and the people associated in making games are also featured here. The website also provides file downloads for the latest games and yes the updates and patches, too. Make yourself at home!

## www.justadventure.com

This website is dedicated to only adventure games. This website has the record of all the adventure games from the time they hit the gaming market. Reviews are un-biased and are extremely well done. Latest news on all adventure games is available on this website. You also have a forum section where gamers who like the adventure gaming genre can get together and talk about the games they love the most. There is also a free download section from where you can download a printable magazine in the .pdf format for free and read it at leisure. So if you are one of those gamers who still like to play adventure games, this is your one stop shop for the latest and the best on adventure gaming.

## www.eurogamer.net

If you like the dry, British sense of humor, then this website will serve you well. It is similar to the above websites that we have mentioned but with a distinctively European touch. European games are stressed upon and the latest news on the developments is made known as and when they are available.

The website by itself is well-designed, but cluttered to an extent. However, games are categorized according to the platforms and also includes on the latest and newest Xbox 360 and PlayStation 3 platforms. As usual you also have a forum and you can even configure your RSS client to get the latest headlines from the website.

### www.gametab.com

This is an excellent website when you want to just get the latest news from all the well-known websites and read them at your leisure. This website lists the latest news from more than 20 gaming websites across all categories and platforms. The page may look cluttered; however the information is available at your fingertips. Plus you can also take a look at the reviews done by various websites



on the latest games or preview upcoming releases. You also have the option to view either the latest game news or reviews, in that order. This is an extremely resourceful website, which will let you keep abreast of the latest gaming news in an instant.

### www.gamespress.com



The tagline of this website goes "The resource for games journalists" and this is absolutely right. This website is designed to cater more to those people who work behind the scenes rather than the average game lover. There is a job tab that lets you find vacancies in the gaming industry while the PR contact tab lets get information about the PR firms that handle the various game publishing houses. You also have the latest information, hot off the press from the game developer houses on this website. All platforms and all categories of games are covered. If you are interested in making a career in the gaming industry, this is one website that needs to be in your Favorites folder at all times.

### www.gamevideovault.com

If you have a fast broadband connection and have a liking for games, then you will enjoy this website. This website has the



reviews on the latest games and yes also an archive for older games? So how is it different from the other websites? Well, for starters this website has only video previews. Clear, succinct voices telling you why a game is bad or good and how it fares overall. No more straining your eyes, not at least for reading small text on web pages but pure simple streaming video, which in most cases is good. The reviews are extremely well done and seeing someone playing a game live, in most cases has a different kick all together.
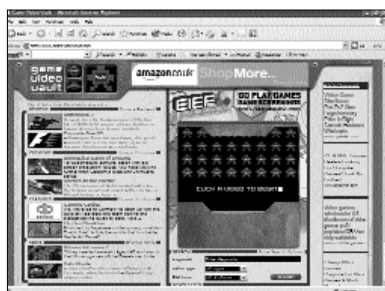
## www.gameaholic.com



Don't be shocked when you get to this website. No, you are not seeing the wrong page. The website actually talks about games such as Quake, Quake 2 and Quake 3 Arena. Yes! This site caters to those games of yore, which we still play (with everything turned on at the highest resolutions), today! You have all the sections including demo downloads and mods for the games. Screenshots are aplenty and we actually wondered if the games did look great at the time. This website will make your wheezing TNT2 feel proud. This is one website that you have to visit, if not for the games, then at least for the nostalgia that it evokes. Check it out!

## www.miniclip.com

Okay, enough with the big gaming websites already! What if you don't want to install a game and just have some fun online? This



website will definitely satisfy your needs. Most games available on this website are flash based or small games available for download and they are extremely fun to play. You can find all sorts of games here including tennis and pool to Mahjongg. You can either download the little flash games to your PC or play online if you want. Just the right way to spend some time for recreation when you are online.

# 9.9 Technology Websites

Lastly we take a look at afew technology websites that Team Digit keeps refering back to. Here's a list of our all time favourite tech web sites.

### www.tomshardware.com

One of the most visited websites worldwide. This website has a host of sections and entices the novice and professionals alike. Articles related to hardware and software upgrades, reviews, whitepapers and buying guides; you name it and its there. A complete and very useful resource website.



### www.extremetech.com

Extremetech has been a primary source of reviews and articles for millions of computer users worlwide and is still going strong. Similar to tomshardware.com this website features articles and reviews for everything that is even remotely related to computers.

## www.anandtech.com

Anandtech was founded by Anand Lal Shimpi and is now considered to be a mecca of articles, reviews in-depth analysis of all hardware and you also have editors picks which are some of the coolest products that you will probably get to see in computer hardware.

## www.hardocp.com

The Hardocp website is also a regular website with lots of reviews and articles however it is more indulgent for the gamer with more reviews and articles dedicated to gaming hardware and their performance. The forums on this website are excellent for novice and professionals alike.

## www.techreport.com

Techreport is another website which provides us with excellent articles for anything related to computers. Be it the cooling fans that you buy for your CPU or the latest Windows XP 64-bit Professional Edition review, its all there.



## www.sharkyextreme.com

Similar to the other websites mentioned above, plenty of articles and reviews, news and buying guides and all the regular stuff.
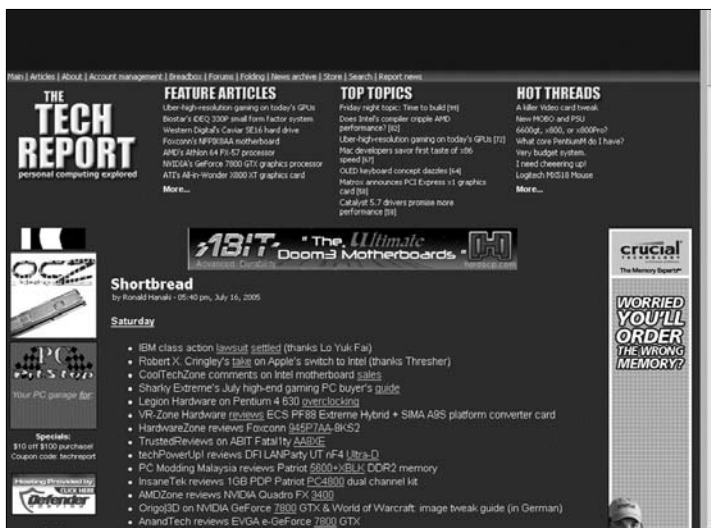
### http://support.microsoft.com

You will probably wonder why we are mentioning this website. Well for starters, this is the support website for 90% people using

Windows worldwide. Extensive help pages with an excellent search system dedicated to each version of Windows lets any user navigate to their needed solution in no time. All you need to is put in the keywords of your error message.



In addition, if you don't find the required solution, you can always send an email to Microsoft for your issue.

### www.cdrinfo.com

Excellent website with lots of articles, reviews and news but the speciality of this website is its articles and research on optical drives. Anything and everything related to CD/DVD hardware and software is discussed in fine detail on this website.

### www.designtechnica.com

This is a lifestyle website and leans more towards the fun toys part of computers. Laptops, PDA's, cell-phones, speakers and hi-fi equipment, they are all there. This website offers us a look at stuff that we can do with our computer and more, if we can afford it.



### www.gizmodo.com

Another one amongst the favorite websites of the Digit Crew. This website is dedicated to gizmos and gadgets and in fact features some gadgets that seem to be absurd. There is a section where you get to know what gadgets and gizmos Hollywood celebrities possess while another section is completely dedicated to the up and coming gadgets of the future. If you are a user who changes his gadgets according to the cycle of the seasons, make a beeline for this website.