

LAN Monitoring Using Web

Smit Jethwa¹ Akshay Chudasama² Priyank Mehta³ Tapan Lathiya⁴

^{1,2,3,4}Department of Computer Engineering

^{1,2,3,4}Thakur Polytechnic, Mumbai, India.

Abstract— The most extremely demanding task in the field of IT industries is the efficient computer network management. There are many urgent issues or requests related to such networks which network manager needs to solve immediately for avoiding the any kind of interruptions. But sometimes, network managers may be situated at different places, so in such cases there is not possible to resolve any urgent issues with the office network tasks. Thus in order to solve such problems in this project we describes the architecture of a novel tool for network management using GPRS /Web mobile devices. In a concern, computers are grouped together to form a network. To manage and control the activities of the network while in office is an easy task. But, while you are outstation / away from home, office, how do you go about with monitoring and controlling of network? Instead of depending on third party information, you can always have your mobile phone serve the perseverance. Just load the project in your mobile phone, login anytime to the application and see who is busy with what in the office and home. Consider a LAN setup with the server machine connected to Web service. The interaction between the clients and the wireless media happens through this server. At the end, it shows results by depicting the screen of several mobile devices, which provide network management information. Many organizations have a huge network of LAN which is difficult to manage by a single system administrator manually. The LAN Monitoring with Web system will monitor all the physical devices i.e. PC's from handheld from Website. The system has shutdown, Restart, Logoff, process list, net view modules to trace and keep track of various client activities. The targeted users are labs in colleges and various other organizations.

Key words: LAN, Network Management, Administration, Web, server, SOAP

I. INTRODUCTION

Network management is a complicated task. It requires the co-ordination of quite a lot of issues, such as different hardware, software and communication environments. A Network Management System (NMS) is a set of software and hardware tools for the monitoring and management of a network. Sometimes, we think that Wide Area Networks (WANs) are harder to manage than Local Area Networks. Modern Local Area Networks (LAN) are so difficult that the difficulty of handling them is similar to, or even bigger than, the difficulty of handling a Wide Area Network (WAN).

Nowadays, almost every IT department settles Service Level Agreements (SLAs) with their users, which requires additional resources in network monitoring systems. Network monitoring has many disciplines, such as installation, integration, and the coordination of hardware, software and human resources for the monitoring, test, configuration, analysis and evaluation. The final goal is to control the network in real-time, knowing its resources, its performance, and then comparing this information with the

user requirements. All these tasks should be executed within an acceptable budget.

Technology development in the mobile communications area has been growing substantially in recent years. The success of Global Systems for Mobile technology is a fact and the continuous growth of the Internet creates opportunities for the mobile cell companies to offer new data services, mostly Internet and Intranet access for mobile users.

Currently, two technologies have appeared as big players in the wireless arena. One is the result of the development and migration of LAN technologies, standardized by the IEEE as 802.11 or Wireless Fidelity (Wi-Fi). The other is General Packet Systems Radio (GPRS). GPRS was created to fulfil the needs for transmitting data packets over cellular telephony. Other technologies like Code Division Multiple Access - 1 x Radio Transmission Technology (CDMA - 1xRTT) and movements toward standardization with Universal Mobile Telecommunications Systems (UMTS) make it clear that a big market for wireless access is coming. This work is centered on mobile devices with GSM/GPRS connectivity to provide network management facilities, despite having more limitations than standard computers. [1]

II. EXISTING SYSTEM

- In the present generation systems, there is a need for the administrator has to go all around the network in order to terminate any system that is left non-terminated. [1][2]
- The processes that are running in a particular system can be viewed in website.
- We can kill that process from website also.
- The processes that are running in a particular system can be viewed only in that system itself by using the present generation software's. [2]
- In order to convey a message to the network user the admin has to go to the user if he is within the network. Or can write a message from the Server machine through various chat messengers. But if the admin is far by the location of the Network the administration is not possible. [2]

III. PROPOSED SYSTEMS

The disadvantages of existing systems can be overcome using the proposal systems.

- Using the **LAN Monitoring with Web** can control the operations of the remote system from his Server system as well with the mobile phone itself.
- The administrator can get the configuration & process list of the remote (client) system from the server system itself using this software or through the GPRS on his phone.

- The administrator can able to view of all the users currently online from remote (client) location on the mobile phone.
- The administrator can obtain the current process details of the remote systems.
- Admin can send Broadcast & Unicast messages to the users for the communication through the Application.
- Admin can issue system level call (restart, shutdown...) from the remote server or the mobile phone.

IV. TECHNICAL OVERVIEW

Here aim is to develop a user interface, using which we can interface with several PCs connected in LAN by sending web Request to perform large number of operations on them. It is a tool which can be used in various fields. Using mobile computer communication using Web we can operate any PC with particular IP address in LAN. Suppose administrator wants to shut down any computer connected to the LAN he/she need to send Web Request to the Client connected to the server. Client continually read for any new Web Request if he found new Request then command stated in the Request will be executed by the client and client will shut down the stated computer.[2] Numbers of operations that can be performed by administrator are as follows:

Process Management:

- Shut down.
 - Admin of the application can shut down the user PC.
- Restart.
 - Admin of the application can restart the system.
- Logoff.
 - Admin of the application can logoff the system.
- Kill the process.
 - Admin of the application can kill the process of the application.
- View the list of running processes.
 - Admin can view the list of the running processes.

Diagram:-

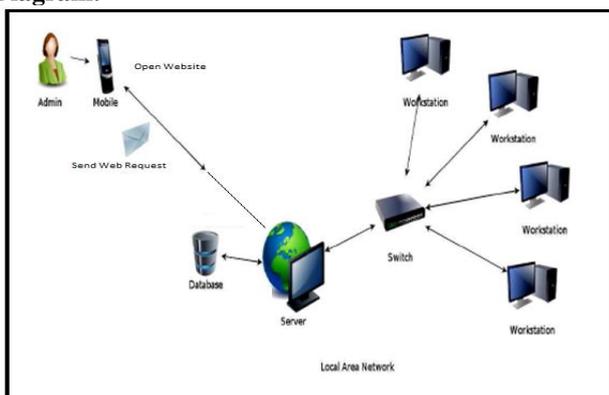


Fig. 1: Diagrammatic representation

V. DESIGN OF SYSTEM

A. Design of system characterized into three modules: Client module, Server Module, Web Server module and Web Service Module,

- Server Module:

Administrator is having an application installed on his Server machine, using this application he can send command.

- **Client:**
The client or user on the network requests for information (kill, shutdown, Restart) to access, requests for rights & privileges to access.
- **Web Server:**
The requests received are analysed by server. Then server performs the respective action as directed by the Administrator.
- **Web service:**
Request is send to the client machine is done by Web service.

VI. TECHNOLOGY USED

A. Why VB.NET Instead of C#?:

The new language created by is Microsoft: C# (pronounced "C-Sharp"). This is often a brand new language, supported C/C++. C#, like VB.NET, is made specifically for the .NET Framework, and far has been written concerning it. Given all the publicity, some folks may surprise why they must opt for VB.NET over C#. Although each VB.NET and C# comes square measure created within the Visual Studio.NET atmosphere, VB.NET was created specifically for VB developers and contains a range of distinctive options that build it a good selection for building .NET applications. VB.NET continues to be the sole language in VS.NET that features background compilation, which suggests that it will flag errors like a shot, whereas you kind. VB.NET is that the solely .NET language that supports late binding. In the VS.NET IDE, VB.NET offers a dropdown list at the highest of the code window with all the objects and events; the IDE doesn't provide this practicality for the other language. VB.NET is additionally distinctive for providing default values for elective parameters, and for having a set of the controls obtainable to the developer. C#, like its C and C++ brethren, is case sensitive, one thing that drives most seasoned VB developers crazy. Additionally, C# uses completely different symbols for equality (=) and comparison (==). Finally, if you recognize VB, you're any down the road with VB.NET than you're with C#. Advantages of VB.NET [2][3]

VII. ADVANTAGES OF VB.NET

A. Build Robust Windows-based Applications:

With new Windows Forms, developer's mistreatment Visual Basic.Net will build Windows-based applications that leverage the made computer programme options on the market within the Windows software system. All the fast application development (RAD) tools that developers have returned to expect from Microsoft are found in Visual Basic .NET, together with drag-and-drop style and code behind forms. Additionally, new options like automatic management resizing eliminate the necessity for complicated size code. New controls like the in-place menu editor deliver visual authoring of menus directly inside the Windows Forms Designer. Combined with larger application responsiveness, moreover as simplified localization and accessibility, these new options in Windows Forms build Visual Basic .NET the selection for today's Visual Basic developers. [3]

B. Resolve Deployment and Versioning Issues Seamlessly:

Visual Basic .NET delivers the solution to any or all of your application setup and maintenance issues. With Visual Basic .NET, problems with element Object Model (COM) registration and DLL overwrites area unit relics of the past. Side-by-side versioning prevents the overwriting and corruption of existing elements and applications. XCOPY readying permits Windows-based applications to be deployed to consumer machines just by repetition files into the specified application directory. Additionally, the auto-downloading of applications for Windows makes the readying of wealthy Windows-based applications as straightforward as deploying an internet page. [3]

C. Create Web Applications with a Zero Learning Curve:

Using the new net Forms Designer in Visual Basic victimisation the new net Forms Designer in Visual Basic .NET, Visual Basic developers will apply the abilities they need nowadays to make true thin-client Web-based applications. Drag-and-drop net kind creation delivers Visual Basic for the net whereas code behind forms permits developers to switch restricted scripting capabilities of the past with the total power of the Visual Basic .NET language. New intelligent rendering capabilities and server-side net Forms controls offer net applications that render on any browser running on any platform. The new hypertext mark-up language designer delivers Microsoft IntelliSense statement and tag completion for hypertext mark-up language documents. Additionally, separation of hypertext mark-up language mark-up and code modify additional economical team-based development. [3]

D. Improved Coding:

You can code quicker and a lot of effectively. A mess of enhancements to the code editor, together with increased IntelliSense, good listing of code for larger readability and a background compiler for period of time notification of syntax errors transforms into a fast application development (RAD) cryptography machine. [3]

VIII. WHAT IS AN XML WEB SERVICE?

XML internet services are the elemental building blocks within the move to distributed computing on the net. Open standards and therefore the concentrate on communication Associate in nursing collaboration among individuals and applications have created surroundings wherever XML internet services have become the platform for application integration. Applications are made victimization multiple XML internet services from varied sources that job along despite wherever they reside or however they were enforced. [4]

There are probably as many definitions of XML Web Service as there are companies building them, but almost all definitions have these things in common:

- XML Web Services expose useful functionality to Web users through a standard Web protocol. In most cases, the protocol used is SOAP.
- XML Web services provide a way to describe their interfaces in enough detail to allow a user to build a client

application to talk to them. This description is usually provided in an XML document called a Web Services Description Language (WSDL) document.

- XML Web services are registered so that potential users can find them easily. This is done with Universal Discovery Description and Integration (UDDI).

A. SOAP

Soap is that the rule for XML internet services. Once SOAP is represented as a rule, the general public consider DCOM or CORBA and begin asking things like, "How will SOAP do object activation?" or "What naming service will SOAP use?" whereas a SOAP implementation can most likely embody this stuff, the SOAP normal does not specify them. SOAP may be a specification that defines the XML format for messages—and that is regarding it for the desired elements of the spec. If you have got a grammatical XML fragment enclosed in an exceedingly few SOAP components, you have got a SOAP message. [5][6]

B. What about Security?

One of the primary queries newcomers to SOAP raise is however will SOAP affect security. Early in its development, SOAP was seen as associate degree HTTP-based protocol that the assumption was created that HTTP security would be adequate for SOAP. After all, there are thousands of internet applications running these days victimization HTTP security thus for certain this is often adequate for SOAP. For this reason, this SOAP commonplace assumes security could be a transport issue and is silent on security problems. [6][7]

IX. VB.NET FEATURES

Visual Studio .NET is currently designed on prime of the .NET Framework. The .NET Framework takes application development to viewing the net as your new package. Your applications can not acknowledge hardware as a boundary limitation. This is often AN evolution of the Windows deoxyribonucleic acid model. This new framework is constructed on open web protocols for a homogenous ability between platforms and programming languages. The .NET Framework will enable the creation of recent forms of applications. Applications can currently run mistreatment the Common Language Runtime (CLR). All .NET applications can use these same runtime surroundings, which permit your Visual Basic applications to run on equal ground with different languages. [3]

The CLR permits Visual Basic to supply inheritance and free threading, whose absence created 2 obvious limitations to Visual Basic Applications. Visual Basic .NET is object-oriented. Everything is currently AN object, and each object is familial from a regular base category.

Another good thing about the CLR may be a common sort system, which implies that everyone programming languages share a similar sorts. This greatly will increase ability between languages.

The Internet has entered a replacement section. First, it absolutely was wont to show static sites. Businesses presently found that this failed to facilitate them considerably. Next, the web evolved to dynamic content and permitting electronic

commerce. Succeeding step is to maneuver towards complete applications running on the web. Visual Basic .NET promotes these new internet applications.

Web services permit objects to be placed anyplace on the web and to be referred to as from any application across the web (no additional attempting to urge DCOM configured). Of course, extending applications across the web can increase security risks. The .NET Framework has several safety features integral to that to safeguard your applications.

Type safety is currently implemented. This prevents code from accessing memory locations that it doesn't have authorization to access. This enables you to outline however your objects square measure accessed. Before code is run, it's verified to be type-safe. If it's not type-safe, it'll solely run if your security policies give it.

Microsoft has additional important new practicality to form developers work additional effectively, while not requiring them to be told entirely new ways that of doing their jobs.

If you have got seen earlier versions of Visual Basic, the IDE for VB.NET can look terribly acquainted. However if you have got additionally worked with InterDev within the past, even additional of the new interface are going to be recent hat. That's as a result of the new IDE used for VB.NET has integrated the simplest concepts from each environments to supply a simpler approach of obtaining work done. [3]

X. REQUIREMENT ANALYSIS

A. Feasibility Study:

The feasibility study plays a major role in the analysis of the system. The very decision of the system analyst, to design a particular system depends whether the system is feasible or not. Hence, the feasibility study forms the very basic of the system. [8]

The feasibility study can be categorized into:

- **Technical Feasibility**

It has been determined that the technology required for the planned system is accessible which this technology may be integrated into the appliance. Technical analysis has conjointly evaluated the present system to seek out that it can't be upgraded keep with the user's wants. Hence, we'd like to make a complete new system that caters to the particular wants of the user. The tip user may be equipped with the pre-mentioned hardware and code necessities. [7][8]

- **OPERATIONAL FEASIBILITY**

There are two aspects of operational feasibility for the system. One aspect is that of technical performance and other is of acceptance.

It has been determined that the system can provide correct and timely data required for the end user needs. Also it has been determined that the system will be accepted by both users with and without technical knowledge.

- **ECONOMIC FEASIBILITY**

The economic practicableness of the system is principally involved with its money aspects. It determines whether or not the project is economically possible.

As the hardware and computer code are already out there simply within the market, no more investment is to be created therein direction, the sole price concerned is that of implementing the system. The side system is made in jdk1.5.0

that is freely out there. The backend is built in MS Sql server that the is made out there with straightforward efforts and lower price. Also since the appliance works on inferior phones it's not necessary to pay lots of cash in getting a phone.

It was decided that the project was technically feasible because of the following:

- Necessary technology exists to do what is suggested.
- The system would be expandable if so decided.
- The system can be integrated with other networking tools and output of the system can be provided to other tools for high end analysis.
- This system is technically more secure.

B. Software Development Model Used:

- Software method model deals with the model that we tend to area unit aiming to use for the event of the project. There area unit several software system method models offered however whereas selecting it we must always select it consistent with the project size that's whether or not it's trade scale project or huge scale project or medium scale project. [8]
- Accordingly the model that we elect ought to be appropriate for the project because the software system Process model changes the price of the project additionally changes as a result of the steps in every Software method model varies.
- This software system is build mistreatment the falls mode. This model suggests work cascading from step to step sort of a series of waterfalls. It consists of the subsequent steps within the following manner. [8]

XI. WATERFALL MODEL

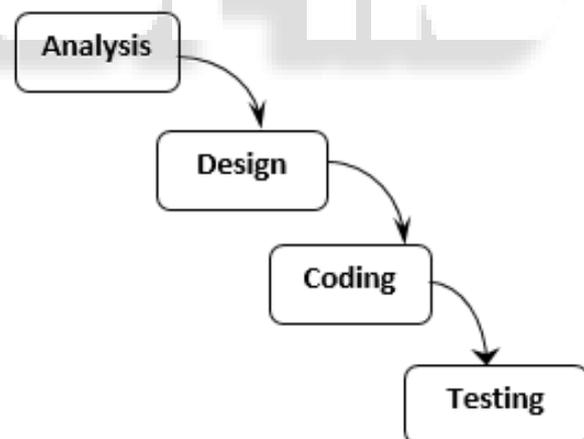


Fig. 2: Diagram Of Waterfall Model

Analysis Phase: To attack a problem by breaking it into sub-problems. The objective of analysis is to determine exactly what must be done to solve the problem. Typically, the system's logical elements (its boundaries, processes, and data) are defined during analysis.

Design Phase: The objective of design is to determine how the problem will be solved. During design the analyst's focus shifts from the logical to the physical. Data elements are grouped to form physical data structures, screens, reports, files and databases.

Coding Phase: The system is created during this phase. Programs are coded, debugged, documented, and tested. New hardware is selected and ordered. Procedures are

written and tested. End-user documentation is prepared. Databases and files are initialized. Users are trained.

Testing Phase: Once the system is developed, it is tested to ensure that it does what it was designed to do. After the system passes its final test and any remaining problems are corrected, the system is implemented and released to the user.

XII. HARDWARE AND SOFTWARE REQUIREMENT

Hardware Requirement

- LAN
- PCs (At least two)
- Network Cards

Software Requirement

- Microsoft Visual studio 2008
- Mobile Processing
- AT Command set

XIII. CONCLUSION

The main objective of this project is to deliver most details concerning the network to the administrator on their itinerant, once he/she is far from workplace / goes out station.

Today, the globe is quickly dynamic the statement "We area unit within the world" to "World is in our hands". The most aim of our project is to manage and monitor the computer network from our wireless hand-held device i.e. cellular phone from anyplace regardless of distance.

Say, you have got a computer network setup at your workplace. Sitting reception you would like to be told the computer network standing. You'll do thus by storing this project in your cellular phone and execution identical.

An innovative approach conferred and enforced during this paper makes info.

REFERENCE

- [1] "A Review of the Basic Components of a Local Area Network (LAN)". NetworkBits.net. Retrieved 2008-04-08.
- [2] "Application Level Energy and Performance Measurements in a Wireless LAN". The 2011 IEEE/ACM International Conference on Green Computing and Communications. Retrieved 2014-08-11.
- [3] "Option Explicit and Option Strict in Visual Basic .NET and in Visual Basic". Support. Microsoft. 19 March 2008. Retrieved 22 August 2013.
- [4] "Extensible Markup Language (XML) 1.1 (Second Edition)". W3.org. Retrieved 22 August 2010.
- [5] "Microsoft Visual Basic 6.0 Migration Resource Center". MSDN. Microsoft. Retrieved 9 November 2014.
- [6] "Evaluating SOAP for High Performance Business Applications: Real-Time Trading Systems". Tenermerx Pty Ltd University of Technology, Sydney. 2011-11-30. Retrieved 2013-03-14
- [7] "SOAP Version 1.2 Part 1: Messaging Framework (Second Edition)". www.w3.org. Retrieved 2016-09-14.
- [8] Barry Boehm (1996., "A Spiral Model of Software Development and Enhancement". In: ACM SIGSOFT Software Engineering Notes (ACM) 11(4):14-24, August 1986