



ISSN: 2319-5967

ISO 9001:2008 Certified

International Journal of Engineering Science and Innovative Technology (IJESIT)

Volume 2, Issue 2, March 2013

Configuring Labview for Remote Communication Using Web Architecture

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Abstract: This paper presents remote transmission of Patients Physiological parameters to remote doctor for analysis and diagnosis using web architecture based on LabVIEW .Web services enable the invocation of a method on a remote target using standard Web-based protocols. A client sends a request to a remote server, which processes the request and replies with a response, which is then interpreted and displayed by the client application. One relies on this communication method for everyday activities such as browsing the Web, checking e-mails, etc .Telemedicine is a rapidly developing application of clinical medicine where medical information is transferred through internet and other networks for the purpose of consulting and remote medical procedures or examinations. Telemedicine generally refers to the use of communication and information technology for the delivery of clinical care. Telemedicine includes delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities .Telemedicine facilitates the provision of medical aid from a distance. It is an effective solution for providing specialty healthcare in the form of improved access and reduced cost to the rural patients and the reduced professional isolation of the rural doctors. Telemedicine can enable ordinary doctors to perform extraordinary tasks.

Index terms: Client, Lab view, Protocol, Remote, Server, Telemedicine Etc.

I. INTRODUCTION

The following are the components of a Web service:

- **Server** – An application responsible for parsing a request, executing the appropriate method or action, and sending a response to the client
- **Client** – An application that sends a request to the server and waits to receive a response, which is then interpreted by the client
- **Standard protocols** – Web-based protocols such as HTTP route data over physical networks from the client to the appropriate server method and then back to the client
- **Network** – The physical layer, such as Ethernet or IEEE 802.11, over which data is transmitted

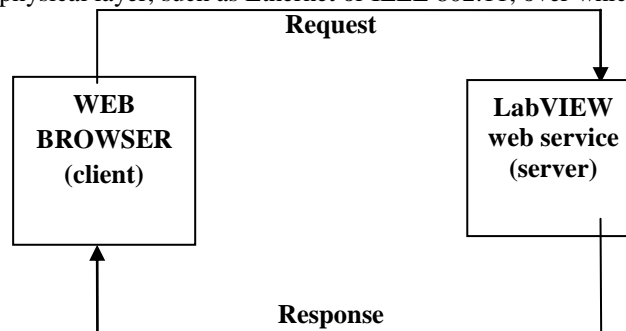


Fig. 1 Request Response Model

Any time we click on a link or type in a URL, our browser (the client) is sending a request to a remote server, which processes the information and sends a response. Our browser does not need to know anything about the server's infrastructure etc, it just interprets the response and displays the result to the user. Web-based



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communication is actually composed of several protocol layers, the data is actually sent over to the layers used to encode the message and route it to the appropriate method.

The remote panels are configured using the following two steps

1. Enable the Lab VIEW Web Server on the server machine.
2. Connect and execute remote panels on the client machine.[11]

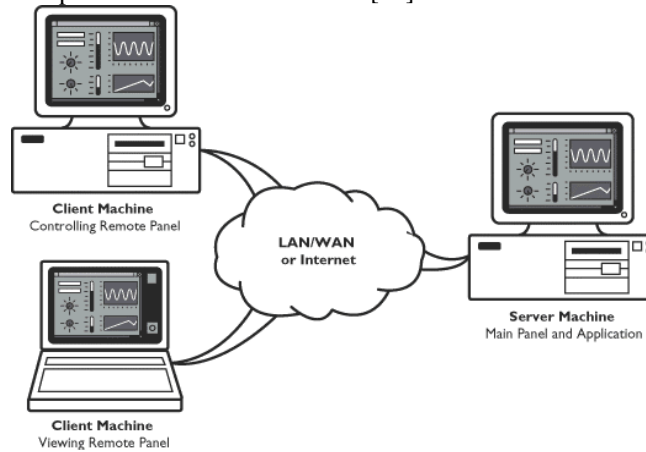


Fig. 2 Distributed Applications [11]

II.ALGORITHM

- Do you need guaranteed data transfer of every data point?
 - Are you transferring data to another LabVIEW application?
- 1) If yes, stream data or send commands with network.
 - 2) If no, Transfer data with communication applications like TCP /UDP
 - 3) Is data displayed in web browser
 - 4) Publish data with LabVIEW web services

LabVIEW is a graphical programming language that uses icons instead of lines of text to create applications .LabVIEW has provided communication tools, including ActiveX, TCP, UDP, and Data Socket. In this paper, we have mainly utilized TCP and the related functions. The signal processing is mainly completed using the signal processing nodes. An important and commonly used web service is the World Wide Web service .the World Wide Web service is the universe of available information on internet. The access protocol of internet is TCP/IP protocol. With TCP/IP communication can be done over single network or over internet. The Internet Protocols (IP) contains addressing information and some control information for packet routing.TCP provides reliable transmission of data.[8].Lab VIEW web server can create HTML documents open front panel in web browser. The front panel can be remotely monitored and controlled through the web browser using TCP/IP services .This feature greatly expands the application as several persons sitting at different locations can simultaneously access the same front panel. [11][5].

III. CONFIGURING LABVIEW FOR REMOTE COMMUNICATION

The default port number for the web server is 80. In general, port numbers 49152 through 65535 are dynamic/private ports recommended for custom TCP/IP applications. Other options that you can set include the root directory for the server HTML files, the timeout for reading by the web server, and log file enabling to record information pertaining to client connections.



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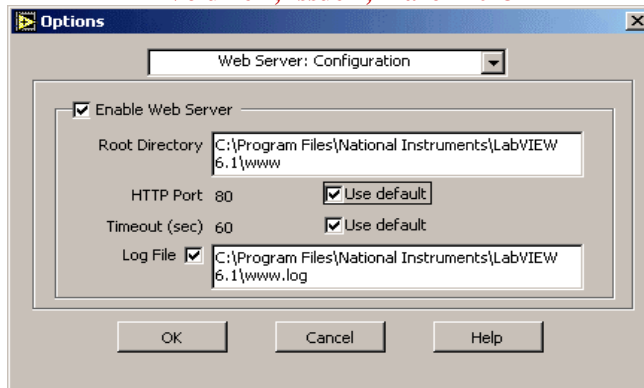


Fig 3. Web Server Configuration [11]

The next step is to specify a list of client IP addresses that are allowed to access the Web Server. Each IP address may be granted controlling privileges, viewing only privileges, or denied access.

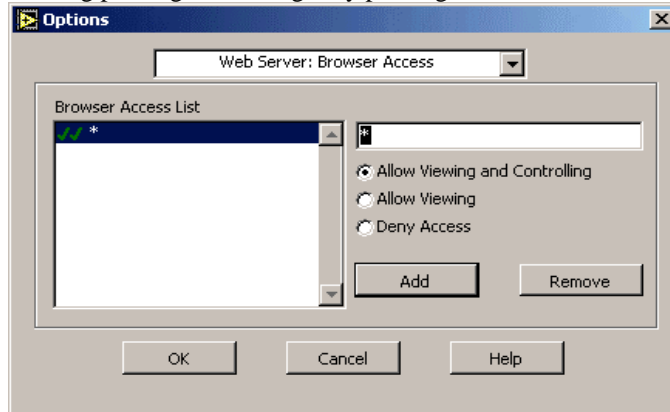


Fig 4. Configuring Browser Access List [11]

The final step is to specify a list of VIs that can be accessed remotely. One can set control time limits for each VI in the list. This control time limit is very useful if your VI will be accessed by multiple users. If there is no control time limit, a single user could monopolize control of the application, preventing other users from assuming control.

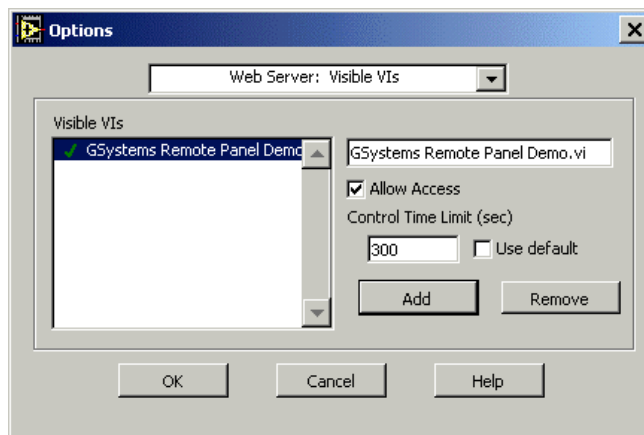


Fig 5. Configuring VI accessible on Web [11]



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IV.WEB BROWSER OUTPUT

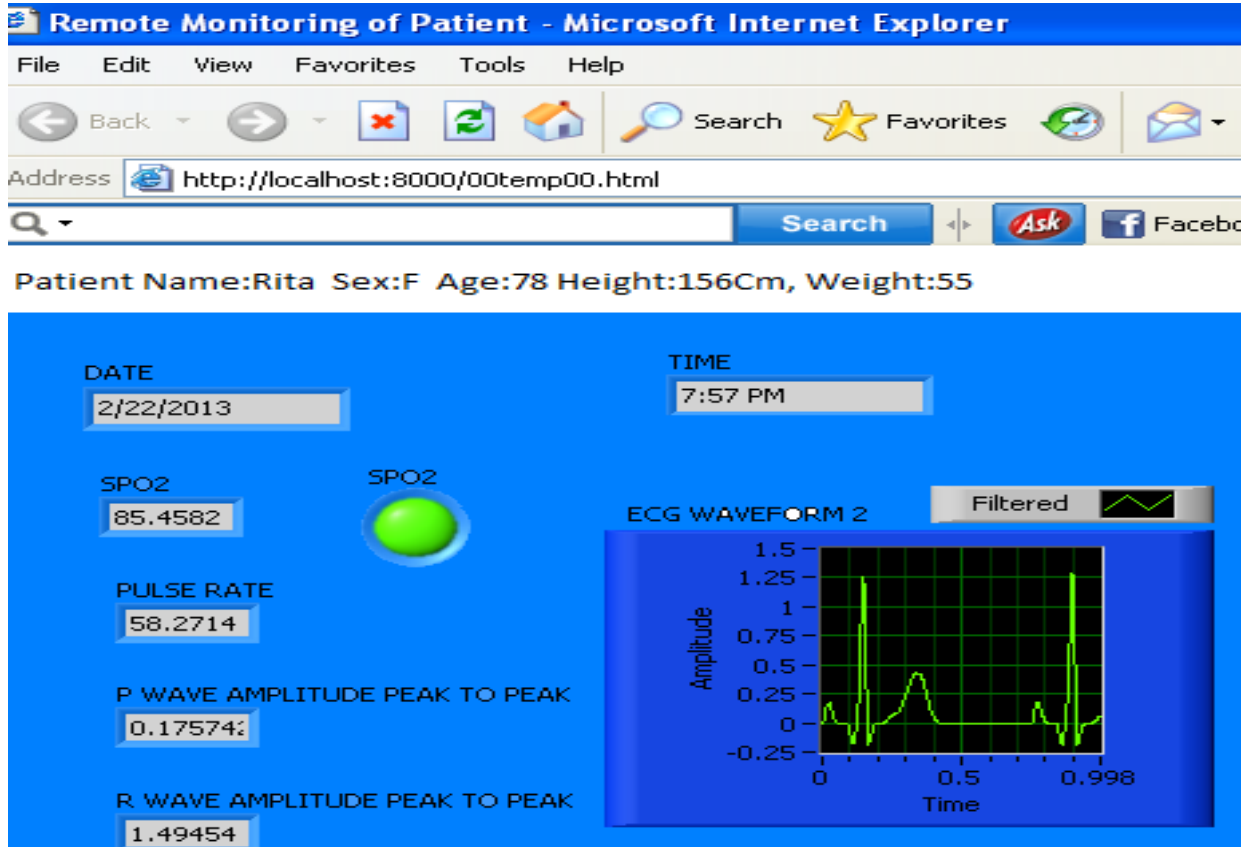


Fig 6.Patient details on Web

V.CONCLUSION

A LabVIEW application deployed across a distributed system provides features such as shared variables for establishing communication, but many developers need a way to communicate with these applications from devices that do not have LabVIEW using standard Web-based communication. With Lab VIEW Web services, you can:

- Communicate with embedded Lab VIEW applications from any Web-enabled device
- Establish machine-to-machine communication using standard HTTP protocols
- Remotely monitor and control LabVIEW applications.

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