WMIC in the Remote Monitoring System

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***Abstract*— Windows-WMI technologies used by WMIC command to access and manage resources and to obtain the Windows Server System parameters required ,you can quickly find the value of various controlling parameters at the same time. The results of redirect WMIC saved to the database. This paper presents a technique based on WMIC to collect the data of surveillance server system and to achieve the key monitoring data, experimental results show that enterprises is more easily accepted in this way.**

Keywords-component; WMI; WMIC; HTMLPARSER; remote monitoring

I. INTRODUCTION

With the growing size of computer networks and the structure become increasing complexity. It is appears to massive variety of web-based application. The people face the. puzzle how to manage the larger and more complex network of computer efficiently.

Remote monitoring technology currently used mainly in the following categories: CGI, Server API, Plug-ins. The traditional CGI and Server API method, data processing on the server side, this formation is thin clients and nothing in the server-side .implementation. Thus it is inefficient and slow; Plug-ins need to write plug-in by themselves which costs higher;

The WMIC extensions to WMI provide a batch command script from the command line interface and the implementation of system management support. Before the appearance of the WMIC, if you want to manage WMI system, WMI must use some specialized applications, such as using WMI script programming API, or use as a tool like CIM Studio. If you are not familiar with C + + programming language, or like a scripting language like VBScript, WMI namespace, or do not have the basic knowledge, to use the WMI management system is very difficult. WMIC alias mechanism has changed the situation for the WMI namespace and has provided a powerful, friendly command line interface. By the client / server approach shows the results to the user, this complex calculation and graphical display of work completed to the client, formed on B / S structure of the fat client, thin server systems, in order to reduce the burden on the server, improve the efficiency of the enterprise system. Therefore, A solution based on concept of combinationWMIC and HtmlPARSER is proposed in this paper to improve the remote server monitoring system, WMIC command statement so powerful , low-cost and simple that enterprises can realize remote monitoring system quickly.

II. THE RELATED TECHNOLOGIES OF REMOTE MONITORING

A. *WMI principle*

WMI is the Microsoft implementation of Web-Based Enterprise Management (WBEM), and it has been an integral component of the Windows operating system since Windows 2000. WMI is an object-oriented repository that provides data about managed hardware and software. Central to WMI is the Common Information Model Object Manager (CIMOM) and a storage area called the CIM repository. CIMOM offers a unified programming interface for accessing data stored in the repository. CIMOM also offers a plug-in model for providers that expose objects to be managed. The operating system includes a number of providers allowing access to and management of hardware drivers, event logs, registry keys, performance counters, network settings, threads, processes, and so on【1】,.Figure 1 is expressed by WMI architecture diagram.

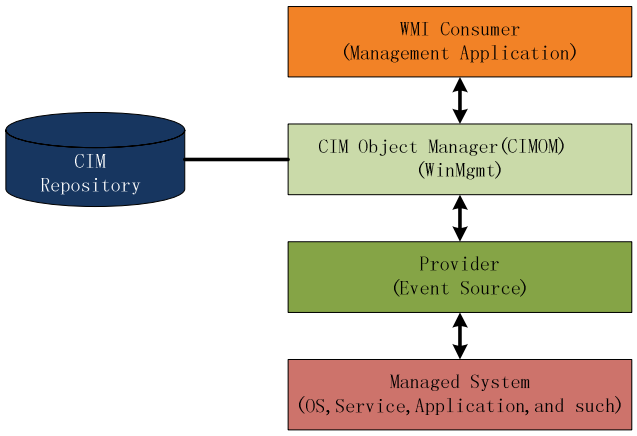

Figure 1 WMI Architecture

B. *WMIC principle*

You can access instances of Speech Server WMI classes using the Windows Management Instrumentation command-line (WMIC), a Windows utility that can be run in interactive or non-interactive modes. In interactive mode, you start WMIC

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at the command prompt and then enter commands. In non-interactive mode, you run the WMIC command with all necessary switches and values from the command prompt. When WMIC execution is complete, it returns you to the command prompt. Either way, WMIC provides a quick way to query WMI objects, set properties, and execute methods without scripting. WMIC have the following advantages:

- Browse WMI plans, check their class and instance, often use the "alias" or "friendly name", which seems to make WMI more intuitive.
- Only one command to the local computer, remote computer or computers to work together.
- Custom aliases and output formats to meet your needs.
- Create and execute a script based on WMIC (batch file)

C. *HTMLPARSER Technology*

HTML Parser is a Java library used to parse HTML , it does not depend on other java libraries. Primarily used for transformation or extraction of html text. Main applications: text extraction, for use as input for text search engine databases for example; link extraction, for crawling through web pages or harvesting email addresses; resource extraction, collecting images or sound; URL rewriting, modifying some or all links on a page ;in which Figure 2 shows the htmlparser through html page on treatment of data structures

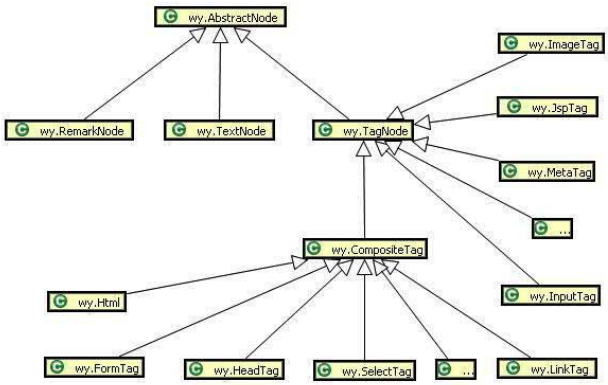

Figure 2 Htmlparser on the html page to process the data structure

As shown, HtmlParser Composite using the classical model,
by RemarkNode, TextNode, TagNode, AbstractNode and Tag to describe the elements of Html Page.

III. REMOTE MONITORING SYSTEM DESIGN AND IMPLEMENTATION

A. *Design principles*

These principles [6] have been taken into consideration in the preparation of the design: support for remote computer monitoring and control of resources, but mainly for the monitoring. and alarm; multiple heterogeneous operating systems server can be managed from a single platform; monitoring parameters as comprehensive as possible; Saving the data to review ; high availability of control systems; Easy to use, easy to expand; General is the low-cost, high-performance integrated system software design.

B. *Realization of monitoring function*

The server are able to operate in the same way with local machine, monitoring objectives requentments: management server system availability and performance; Monitoring and Performance Statistics, such as: memory utilization, disk free space, the process of implementation, CPU utilization; monitor both file and registry changes caused by software installations; The collected data will be stored in Mysql. Through Figure 3 represent the remote monitoring system structure.

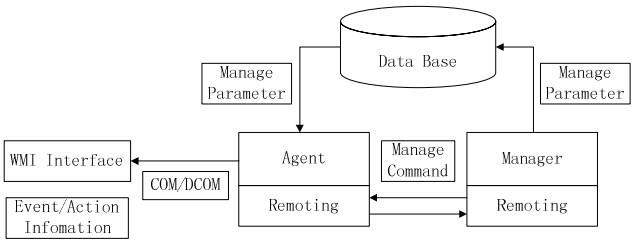

Figure 3 Represent the remote monitoring system structure

IV. WMIC -BASED SPECIFIC IMPLEMENTATION OF MONITORING SYSTEM

WMIC-based monitoring system principle is that by the client / server approach to achinve. We start the Remote Procedure Call, and two Windows Management Instrumentation services, Supporting for masking of underlying heterogeneous systems by the Applications Manager, which to be added the monitor, to implement the goal of data sharing and seamless integration of associated data.

A. *The basic information obtained*

WMI supports multiple programming languages to access, including VBScript, C + +, Delphi and other high-level language, based on rapid implementation and simple language, we use the WMIC command line to achieve.

a) The operation of remote connection is as follows:

wmic:root\cli>/node: "objective IP" /USER： " domain" \username
Enter password: xxxxxxxx

b) To achieve disk management

wmic:root\cli>diskdrive get caption, name, size, description// Read the disk parameters
shown in Figure 4

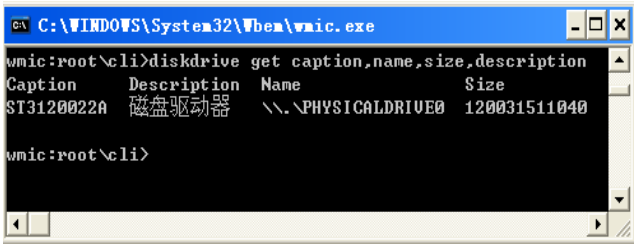

Figure 4 Show the result of reading the disk parameters

2) WMIC results will be redirected to the HTML in Figure 5

Figure 5. WMIC redirected to the HTML of the results

B. WMIC acquisition results of storage

Remote monitoring system to get the various states and data by monitoring equipment.

It can seen that the combination of JAVA and WMIC to get information on a remote system is relatively simple and easy to inplement. As I described in this article ,First of all, to obtern some data by the monitoring process and save them in the database.The following procedure is parsing out the results and save to the database.

```
public class ScrubSelectedWeb {
    public static void main(String[] args)  throws Exception{
            ScrubSelectedWeb s = new ScrubSelectedWeb();
                Map map = s.getData();
                s.add(map);
    }

    public Map getData() throws Exception{
          URL url = new URL(" file:///F:\\file1.htm");
          URLConnection conn = (URLConnection)
                    url.openConnection();
       BufferedReader reader = new BufferedReader
                                (new
    InputStreamReader(conn.getInputStream(),"unicode"));

       StringBuilder doc = new StringBuilder();
       String line = null;
          while ((line = reader.readLine()) != null){
                doc.append(line);
            }
              reader.close();

       Map<String, String> map = new HashMap();
       Parser parser = new Parser();
       parser.setInputHTML(doc.toString());
       NodeList tables = parser.extractAllNodesThatMatch(new
TagNameFilter("table"));
       Node table = tables.elementAt(0);
       NodeList rows = table.getChildren();
              for (int i = 2; i < rows.size(); i ++){
              Node node = rows.elementAt(i);
                    if (node.getChildren().size() == 2){
                    String                attrName                =
                    node.getChildren().elementAt(0).toPlainText
                    String();
                    String                attrValue               =
                    node.getChildren().elementAt(1).toPlainText
                    String();
                     map.put(attrName, attrValue);
              }
       }
          return map;
}
        public void add(Map<String, String> map) throws
                            Exception{
          Connection conn1 = null;
          ResultSet result = null;
           Class.forName("com.mysql.jdbc.Driver");
          String jdbc;
           Stringurl1="jdbc:mysql://192.168.26.32:3306/test?
            useUnicode=true&amp;characterEncoding=UTF
                  8&amp;autoReconnect=true";
           String user="uniframework";
           String password="uniframework";
    conn1                                                    =
DriverManager.getConnection(url1,user,password);

          String filds = "";
          String values = "";
               for (Entry<String, String> e : map.entrySet()){
                    if (accept(e.getKey())){
                         filds += e.getKey() + ",";
                         values += "'" + e.getValue() + "',";
                    }
               }
           filds =filds.substring(0, filds.length() - 1);
           values =values.substring(0, values.length() - 1);
           String sql = "insert into TEST_WMIC("+ filds
            + ") values(" + values + ")";
           System.out.println(sql);
            conn1.createStatement().executeUpdate(sql);
           conn1.close();
       }
}
```

Through Figure 6, said data storage results

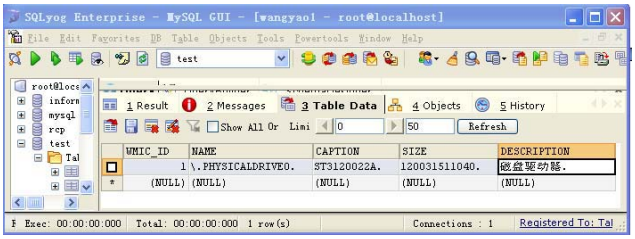

Figure6. The results of data storage

Through this operation, we can see that using WMIC, the command performance on the different needs only a simple command can achieve a lot of action, thus greatly reducing the burden of programmers, so programmers can focus on the realization of system functions. So WMIC Fast Implementation of remote monitoring system is an important improvement

Conclusion

With the current continuous research and increasing requirements on systems management, It plays an important role in the Windows system management. Java language have a good expansion and high efficiency in a distributed system ,which holds an important position.

Above all, it is a very useful manipulation try and economic instrument that combine WMIC and java for remote monitor in this syetem.

So far, this technology has been applied to a business office resources management system. And has made outstanding contributions to enhance the overall management including reasonable using resources, increasing the service response rate, and ensure the quality of services. This system is easy, secure and reliable and of the promotion of meaning, it is possible to be applied to various of offices resources management.

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