Application of Skype API to Control Working Time

Julian Vasilev [1]

[1] *Varna University of Economics, Kniaz Boris I, Varna, Bulgaria*

Abstract **– The purpose of this article is to present an innovative approach to monitor and control working time. A special software program is developed by Delphi implementing Skype API functions. This article shows three different approaches to control working time using the Skype_API program. It automatically detects when an employee goes to his working place and when he leaves work. Moreover it can check periodically weather an employee is at work. The proposed ideas are written for the first time. They may be applied easily in many enterprises with very low costs.**

Keywords **– Skype, Skype API, Delphi, control of working time.**

1. Introduction

Monitoring compliance with the working time nowadays can be done in many different ways. Popular examples are: the use of cards for personal access to premises or staff recognition by fingerprint, iris, or the veins of the arm. In all these examples the use of hardware resources to identify a person, servers, databases and specialized software are used. This paper presents the use of software tools with a BSD license, namely the Skype API [1], [4], [5]. One of the possible applications is aimed at monitoring compliance with the working time.

The creators of Skype provide sample program, which describes the use of the Skype API (Application Programming Interface). Skype API allows third parties (software companies) to communicate with the software product Skype. Using Skype Public API for commercial and non-commercial use is free.

2. Getting automatically information from Skype through Skype API by using a special software program

To illustrate and demonstrate the communication between Skype and another program, we have built a sample program in Delphi [6]. The idea of the sample program to connect to Skype and to intercept messages received from a Skype server [2]. For example, messages can concern the status of a subscriber:

*-> USER v***_v*** ONLINESTATUS ONLINE*

If Skype is used to send messages through facebook, it is possible to track users of facebook:

*-> USER xmpp:-739******@chat.facebook.com ONLINESTATUS ONLINE*

If a user changes his (her) status in Skype or facebook, our sample program (we'll call it Skype_API) intercepts the message, for example:

*-> USER v***_v*** ONLINESTATUS OFFLINE*
*-> USER xmpp:-739******@chat.facebook.com ONLINESTATUS OFFLINE*

It should be noted that the sample program Skype_API works in parallel with Skype as an intranet application [3]. From technology perspective, the communication between the program Skype_API and Skype is done by Windows messages. By the use of the built-in Windows function “Post Message”, it is possible to send messages from the application Skype_API to Skype. Feedback (from Skype to Skype_API) is done by messages that are generated by Skype and sent automatically to the program Skype API.

The Skype_API sample program accepts messages from Skype and it shows them in a memo box.

*** Attach pending*
*** Attach success*
-> CONNSTATUS ONLINE
*-> CURRENTUSERHANDLE j****
-> USERSTATUS ONLINE
-> PROTOCOL 8
-> SKYPEVERSION 5.8.59.158
*-> USER xmpp:-116***@chat.facebook.com ONLINESTATUS ONLINE*
*-> USER xmpp:-100***@chat.facebook.com ONLINESTATUS ONLINE*
-> GROUP 266 NROFUSERS 73
-> GROUP 266 NROFUSERS 73

*-> USER xmpp:-1000***@chat.facebook.com ONLINESTATUS OFFLINE*
-> GROUP 266 NROFUSERS 75
-> USER kati_1006 ONLINESTATUS ONLINE
-> GROUP 266 NROFUSERS 74
*-> USER xmpp:-533***@chat.facebook.com ONLINESTATUS ONLINE*
*-> USER xmpp:-100***@chat.facebook.com ONLINESTATUS ONLINE*

3. Getting specific user information through our new Skype_API program

As it can be seen, the program Skype_API accepts messages from Skype automatically – without human intervention. It is possible to send a message to Skype through the Skype_API program to get specific information. For example, if you are interested in personal information of a Skype user (for instance birth date, hometown, gender and online status) it is possible to send consequent messages (via the built-in function "PostMessage").

*<- get user v*** birthday*
*-> USER v*** BIRTHDAY 19720327*
*<- get user v*** city*
*-> USER v*** CITY Varna*
*<- get user v*** country*
*-> USER v*** COUNTRY bg Bulgaria*
*<- get user v*** sex*
*-> USER v*** SEX MALE*
*<- get user v*** onlinestatus*
*-> USER v*** ONLINESTATUS ONLINE*

After sending the requests (lines starting with "<-") from the Skype_API program, it immediately receives a reply (lines starting with "->") from Skype. The presented approach of operation of the program Skype_API allows retrieval of data for one or multiple users. Let us return to the subject of this article – control of working time. The program Skype_API allows the user to receive information about the status of users (automatically or by a query) – both on demand and automatically in the case of changing his (her) status. The program Skype_API can be used to monitor working time.

4. Monitoring and controlling working time

When an employee goes to work, he (she) should start Skype and sign in it. The Skype_API program automatically registers the arrival at the working place. At the end of the working day the employee stops Skype. The Skype_API program automatically registers the departure from work. Such an approach is appropriate to use for people with disabilities or employees who work from a home computer. There are several approaches to monitor employees.

1. The Skype_API program may be used to record each change in the status of an employee. Data may be saved automatically in a text file or in a database :

```
procedure TForm1.RecvCommand(Cmd: String);
var
  Status,
  UserName : String;
  F : textFile;
begin
  Memo1.Lines.Add('-> ' + Cmd);
  if ( get_field( cmd, 0, ' ' ) = 'USER' ) and
    ( get_field( cmd, 2, ' ' ) = 'ONLINESTATUS' ) then
    begin
      AssignFile( F, 'skype_log.txt' );
      Append( f );
      UserName := get_field( cmd, 1, ' ' );
      Status  := get_field( cmd, 3, ' ' );
      WriteLn( F, UserName + #9 + Status + #9 + DateTimeToStr( Now ) );
      CloseFile( F );
    end; // if
end; // RecvCommand
```

The program logic is as follows. If the first field of the received message (The message is a string. Fields in a record are separated by a space) contains the word "USER", the third "ONLINESTATUS", the user name (second field in the record), status (fourth field in the record) and the current date and time are saved in the text file. If we need to send a request to add data in the database (if we do not want to write in a text file, but in a database), the program logic is as follows :

```
Sql := 'insert into skype_log values ("%s", "%s", "%s")';
Sql := format( sql, [ UserName, Status, DateTimeToStr( Now) ]);
```

2. Using the program Skype_API, it is possible to check the status of employees in the morning at 08:00 (if at 8 a.m. begins the working day) and in the afternoon at 16:30 (if at 4:30 p.m. the workday ends). In this case, employees need to make sure that at 08:00 they are at work, and at 16:30 they have left work. Information is retrieved from Skype by the Skype_API program twice a day. Data is stored as a list in a text file or in a database. Consequent messages are sent from the program Skype_API to

Skype (through a simple cycle by employees) to check their status.

*get user v*** onlinestatus*
*USER v*** ONLINESTATUS ONLINE*
*get user p*** onlinestatus*
*USER p*** ONLINESTATUS ONLINE*
*get user j*** onlinestatus*
*USER j*** ONLINESTATUS ONLINE*

Results should be recorded in a database. They can be used for further control. It is possible through the Skype_API program to inspect the status of employees at work in different time points in order to monitor compliance with the working time.

3. The program Skype_API may be used to automatically receive a message with text example "I have come to work" or "I'm going home." In this case, the program Skype_API has retrieved the following information :

*-> CHAT #j***/$m***;9dc44db955c03068 ACTIVITY_TIMESTAMP 1337091811*
-> CHATMESSAGE 1653001 STATUS RECEIVED
-> CHATMESSAGE 1653001 STATUS READ

It is possible the Skype_API program to send back information to the employee “m***” :

*<- message m*** Thanks for sending us info about you.*
-> CHATMESSAGE 1652937 STATUS SENDING
*-> CHAT #j***/$m***;9dc44db955c03068 ACTIVITY_TIMESTAMP 1337091705*
-> CHATMESSAGE 1652937 STATUS SENDING
-> CHATMESSAGE 1652937 STATUS SENT

According to the recent information published on the Skype web site “The Desktop API is no longer supported and some of its features will be gradually discontinued” the Skype_API software application is still working correctly.

5. Conclusion

This paper presents an innovative approach for monitoring compliance with the working time. Compliance with the working time is monitored only by using software tools. The developed Skype_API program automatically receives messages for starting work and leaving work without the use of hardware devices and biometric data. The examples can be adapted in a number of domestic and foreign enterprises.

References

[1]. https://support.skype.com/en/faq/FA214/what-is-the-desktop-api (Date accessed: 03.09.2013).

[2]. Vasilev, J. , *Guidelines for Improvement Information Processes in Commerce by Implementing the Link Between a Web Application and Cash Registers*, Theory and Applications of Mathematics & Computer Science, North America, 2, Nov. 2012. Available at: <http://www.uav.ro/applications/se/journal/index.php/TAMCS/article/view/63/46>. (Date accessed: 03 Sep 2013.)

[3]. Vasilev, J. (2013), *A Web-Based Software System for Downloading Extra Documents with Personalized Access in an Intranet Environment*. // International Journal of Applied Science and Technology, Vol. 3, No. 2, pp. 22-25.

[4]. Nappa, A., Fattori, A., Balduzzi, M., Dell’Amico, M., & Cavallaro, L. (2010) , *Take a deep breath: a stealthy, resilient and cost-effective botnet using skype* , Detection of Intrusions and Malware, and Vulnerability Assessment , pp. 81-100. Springer Berlin Heidelberg.

[5]. Zivkov D. at all, *Integration of Skype client and performance analysts on television platform*, MIPRO, 2012 Proceedings of the 35th International Convention. pp. 479-482.

[6]. Embarcadero Technologies, Delphi XE. San Francisco, California, 2013. Available at: http://www.embarcadero.com/br/products/delphi (Accessed on: Oct. 24, 2013.)

Corresponding author: Julian Vasilev
Institution: Varna University of Economics, Bulgaria
E-mail: vasilev@ue-varna.bg