



# User Localization using Citrix MetaFrame and SolutionSoft TimeMachine



## Revision History

Revision	Change Description	Updated By	Date
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# 1 Overview

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While server-based computing using Citrix MetaFrame is a powerful way to deploy applications to a widely dispersed user base, there are unique challenges with regards to certain settings that are customized for each individual user. One of the most challenging is that of user-specific settings such as time zone, keyboard layout, and date formats.

By default, a user whose applications are served from a MetaFrame server uses the time zone configured on the server. Therefore, all users must standardize on the same time zone and perform manual workarounds for time and date-sensitive applications. With scheduling applications like Microsoft Outlook, this is clearly not a user-friendly solution when users are in different time zones than the servers. Furthermore, configuring servers in different time zones can be inefficient and decreases the effectiveness of Citrix Load Balancing Services.

In terms of other localized variables like keyboard layout and date format, these settings are usually adjusted using the Windows control panel. In most situations, allowing users access to the control is not feasible even though certain settings may need to be changed on a per-user basis.

Citrix Consulting Services has assisted several application service providers (ASPs) with these issues, and this white paper is intended to describe how these issues were resolved.



## 2 SolutionSoft TimeMachine

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SolutionSoft, an ISV that is part of the Citrix Business Alliance, has created a workable solution to the problem of user-specific time zones. Their TimeMachine product, originally created as a Y2K testing tool, has been adapted for use in Citrix MetaFrame environments. TimeMachine functions as a Windows service, intercepting calls to the system clock by individual users, and performing manipulations based on the user's time zone. In this way, applications like Microsoft Outlook can be served to users in Los Angeles and New York from a MetaFrame server in Denver, while maintaining the integrity of each user's specific time and date.

Time Machine is typically licensed on a per-server basis, with the per-server cost ranging from \$600 - \$1000.

Time Machine has two versions for distribution. Time Machine v 3.9.7 and earlier work on a "differential" hour/minute method, whereby a call to the system clock by each user results in an alteration in hours and minutes. Time Machine v 4.0 and later work on a "virtual time zone" method. In this way, users in time zones with non-standard daylight savings time will work seamlessly under Terminal Server. For example, Arizona and Jamaica do not observe daylight savings time. Under Time Machine 3.9.7, users in these areas would have to adjust their "differential" twice yearly from the server's time zone (presuming it is not also in the Arizona and/or Jamaica time zones).



### 3 The Localization Tool – for Time Machine 3.9.7 and earlier

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While SolutionSoft has created an effective solution to managing end user time zones, the interface for a user to maintain this is not a “user-friendly” one. SolutionSoft provides a DOS command-line interface that requires the end user to know the server’s time zone, and the hour/minute differential between their and the server’s time zone. Furthermore, the time zone maintenance utility would need to be run manually each time the user logged in to the MetaFrame server.

Citrix Consulting Services (CCS) has created an application that acts as a GUI front-end to the Time Machine user maintenance tool (tmuser.exe). This tool allows the user to select the time zone they are located in, and the tool will store this information in the user’s HKCU registry hive under

HKCU->Software->Citrix->Timezone.

With a roaming profile stored in a central location, the hour and minute offset are reloaded upon each login to a server. The logon script is then modified to read these registry keys and run the Time Machine maintenance tool each time the user logs in.

With a hybrid profile, logon and logoff script changes are required to support exporting the proper registry keys upon logoff, and loading them back in upon logon. Sample code to place in the login/logoff scripts is provided in the next section.

The Localization Tool also supports setting of keyboard layout and date format on a per-user basis without having to open access to the control panel for all users. The tool then updates the HKEY\_CURRENT\_USER keys appropriately for these settings.



## 4 Installation Instructions

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The following step-by-step instructions can be used to install and configure Time Machine and the Localization Tool. This example illustrates a situation where a server is configured in Greenwich Mean Time. If desired, the source code for the Localization Tool could be easily modified to support any server time zone. The source code for the Localization Tool is provided below.

### 4.1 TimeMachine

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Set the server's time zone to Greenwich Mean Time.

Unzip the following zip file to the server c:\program files\solutionsoft systems\time machine folder.

When prompted for a license, enter the value in the file TimeMachineLicense.txt, which is for demo purposes only:



Place the MetaFrame server in install mode and run the timemachine.msi program. This will install the application to the "c:\program files\solutionsoft systems\time machine" folder.

Once the installation has completed, locate the TimeMachine service in the Control Panel->services applet (NT4) or Start Menu->Administrative Tools->Services (W2K). Configure this service to start automatically.

Run the "c:\program files\solutionsoft systems\time machine\tmuser\_setup.exe" program. This is a one-time setup step for each server configured with Time Machine.

### 4.2 Localization Tool

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Copy the following executable to the "c:\program files\localization tool" folder. This is the only installation that is necessary.



EnvPreferences.exe

The localization tool should be made accessible to end users as a published application or available in a full-desktop session.

### 4.3 Login/Logoff Script Modifications – Roaming Profile

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```
Public Sub TimeZone()  
    On Error Resume Next  
    If WshShell.RegRead("HKCU\Software\Citrix\Timezone\Enabled") <> "1" Then  
        'Prompt user to select environment preferences  
        WshShell.Run chr(34) & ApplicationPath & "\TimeZone\EnvPreferences.exe" & chr(34), 1, True  
    Else  
        'Load TimeMachine program  
        Hours = WshShell.RegRead("HKCU\Software\Citrix\TimeZone\Hours")  
        Minutes = WshShell.RegRead("HKCU\Software\Citrix\TimeZone\Minutes")  
        WshShell.Run chr(34) & ApplicationPath & "\TimeZone\tmuser.exe" & chr(34) & _  
            " -a -h " & CStr(Hours) & " -m " & CStr(Minutes), 0, False  
    End If  
End Sub
```



## 4.4 Login/Logoff Script Modifications – Hybrid Profile

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With a hybrid profile, specified registry keys are exported at logoff time and stored in a centralized location so that they may be imported upon the next login. The following change would need to be implemented to the logoff script (this code requires that the CCSUtility DLL be installed on the MetaFrame server).

```
Function TimeMachineRegDump(logfile)
    RegHive = "HKEY_CURRENT_USER"
    StartString = "Software\Citrix\Timezone"

    ' Note that the W: drive is mapped to the user's home directory on the file server

    sExportPathName = "W:\Admin\tm.reg"
    set LogFile = fso.createtextfile(sExportPathName, ForAppending)
    logfile.writeline "Windows Registry Editor Version 5.00"
    logfile.writeline

    logfile.writeline "[" & RegHive & "\" & StartString & "]"

    Call RecursiveSearch(RegHive, StartString)
    LogFile.Close
End Function
```

The following change would need to be implemented to the logon script:

```
Function LoadTimeMachineSettings()

    Dim Hours
    Dim Minutes
    Dim CommandString
    Dim cmdstring

    'Load Registry file
    'Note that the W: drive is mapped to the user's home directory on the file server

    If (FSO.FileExists("W:\Admin\tm.reg") = True) then
        cmdstring = "%systemroot%\regedit /s W:\Admin\tm.reg"
        WshShell.Run cmdstring ,1, True
    End If

    'Load TimeMachine program

    Hours = WshShell.RegRead("HKCU\Software\Citrix\TimeZone\Hours")
    Minutes = WshShell.RegRead("HKCU\Software\Citrix\TimeZone\Minutes")

    CommandString = chr(34) & "C:\Program Files\SolutionSoft Systems\TimeMachine\tmuser.exe" & _
        chr(34) & " -a -h " & CStr(Hours) & " -m " & CStr(Minutes)

    ' Run the TimeMachine command to set the user's time zone offset
    WshShell.Run CommandString, 0, False

End Function
```



## 5 Known Time Machine Issues

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During the test and rollout of the Time Machine software some issues have been observed that should be kept in mind during deployments. Since Time Machine intercepts all calls to the system clock, it is possible that some services will not react well to it. Specifically, it was noted that some SNMP monitoring services were getting caught in loops with the Time Machine service and causing the processor of the machine to maintain 100% usage (rendering the server unusable). Solution-Soft resolved the issue by enhancing the Time Machine product to "ignore" these services.



## 6 MetaFrame 2.0 Time Zone Enhancements

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Citrix has recognized the need for built-in MetaFrame functionality for user-specific time zones. The release of MetaFrame 2.0 will provide easier deployment of user-specific time zones. At this time it is unclear whether localized variables like keyboard layout and date format will be supported.