Solution-Soft®

WHITE PAPER

LAUNCHING EC2 RHEL INSTANCE WITH TIME MACHINE® USING SOLUTION-SOFT BYOL AMI

USING VIRTUAL CLOCKS FOR TIME SHIFT TESTING

Time Machine creates virtual software clocks that allow you to time travel applications into the future or the past, and in that way perform time shift testing of date and time sensitive application logic, such as month-end, quarter-end, year-end processing, billing cycle, debt aging, regulation change date, etc.

TIME MACHINE AND AMAZON WEB SERVICES (AWS)

Time Machine is cloud ready and can be used just as efficiently in the cloud, as it is used on premise.

To make Time Machine deployment in AWS easier and more convenient for our customers, Solution-Soft offers Amazon Machine Images (AMIs) in the AWS marketplace, from which you can easily launch Elastic Compute Cloud (EC2) instances with Time Machine pre-installed.

Time Machine is fully functional upon license activation, which can be done manually via Solution-Soft support, or automatically via Time Machine Floating License Server that can also be hosted in AWS.

This document describes the process of creating a Red Hat Linux EC2 instance with Time Machine pre-installed from a Solution-Soft BYOL AMI available from the AWS Marketplace.

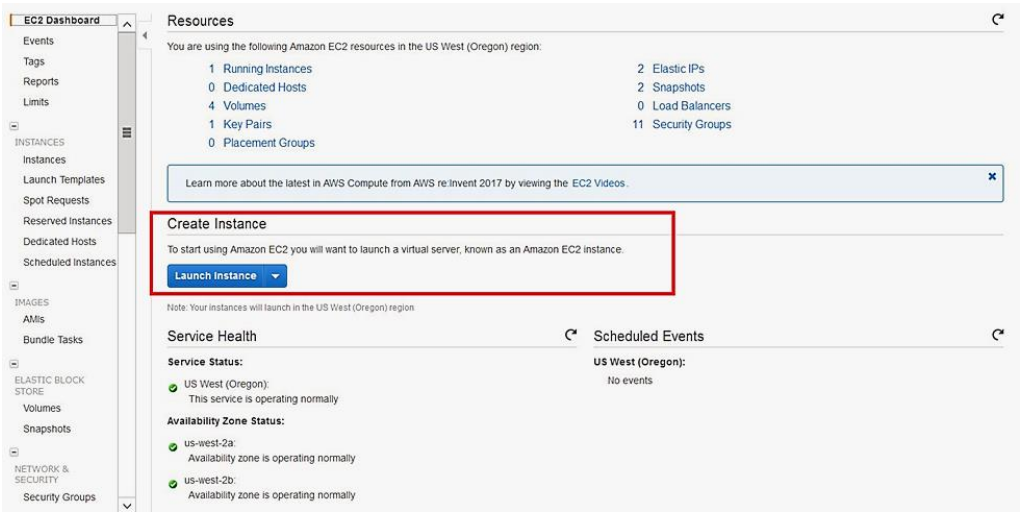
The document also describes manual licensing of Time Machine via Solution-Soft support. For more information on how to deploy and use TM Floating License Server to license TM in AWS EC2 instances, please contact Solution-Soft support.

Finally, creating virtual clocks in the newly created instance is described in the document both via command line and the Enterprise Management Console (GUI).

PROVISIONING A NEW RHEL INSTANCE WITH TIME MACHINE PREINSTALLED

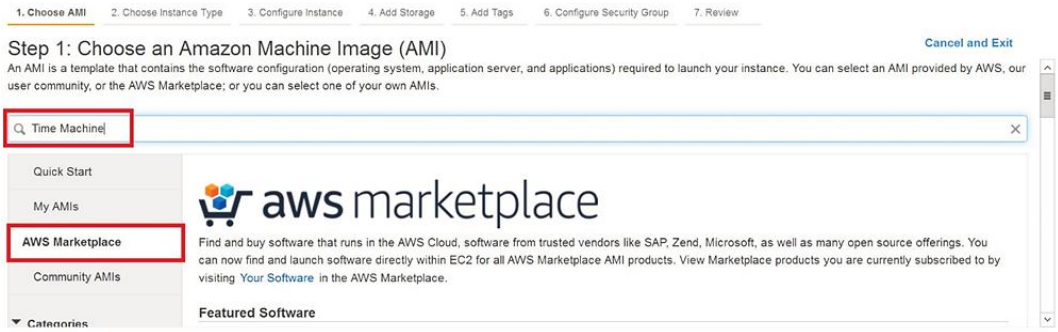
For the purpose of this document, we will create a *t2.micro* Amazon Red Hat Linux instance with Time Machine preinstalled, using a Solution-Soft BYOL AMI from the AWS Marketplace. In order to do so, you can follow the steps described below:

Log in to the Amazon EC2 console and then click on the **Launch Instance** button:



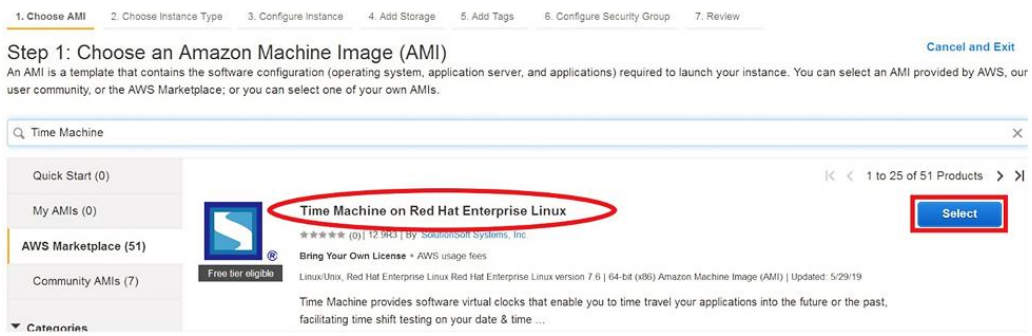
GRAPHIC 1

Next, you need to click on the AWS Marketplace link on the left and then use the search box to locate Time Machine AMIs in the AWS Marketplace, as shown on the image below:



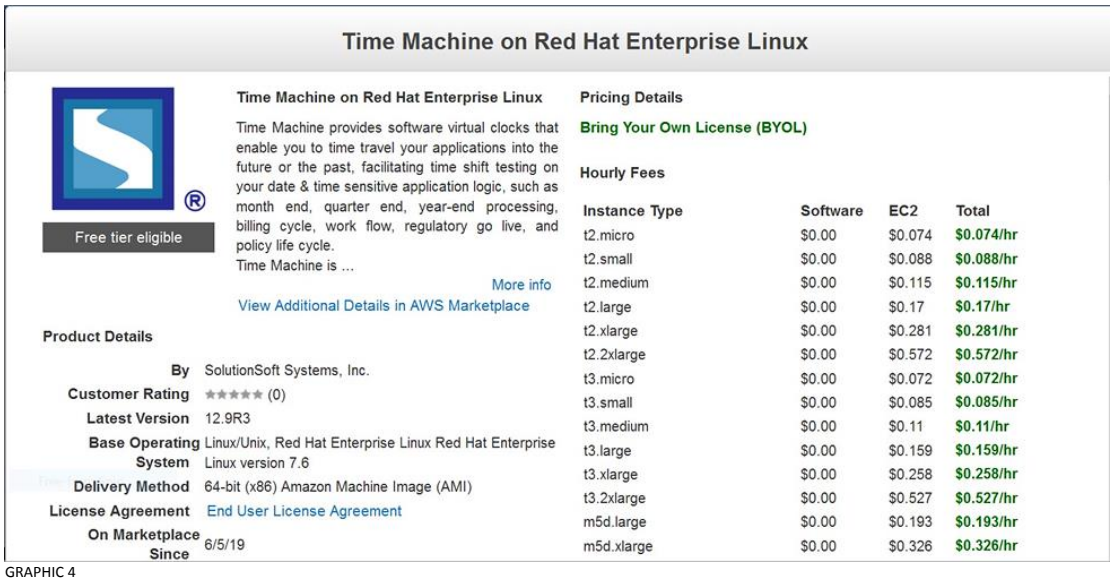
GRAPHIC 2

In the displayed list of search results locate Time Machine on Red Hat Enterprise Linux AMI, and click on **Select**:



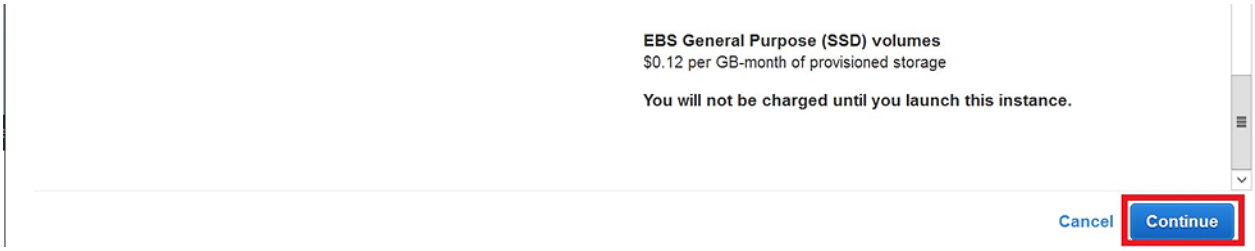
GRAPHIC 3

The next window displayed provides basic information about Time Machine on Red Hat Enterprise Linux BYOL AMI:



GRAPHIC 4

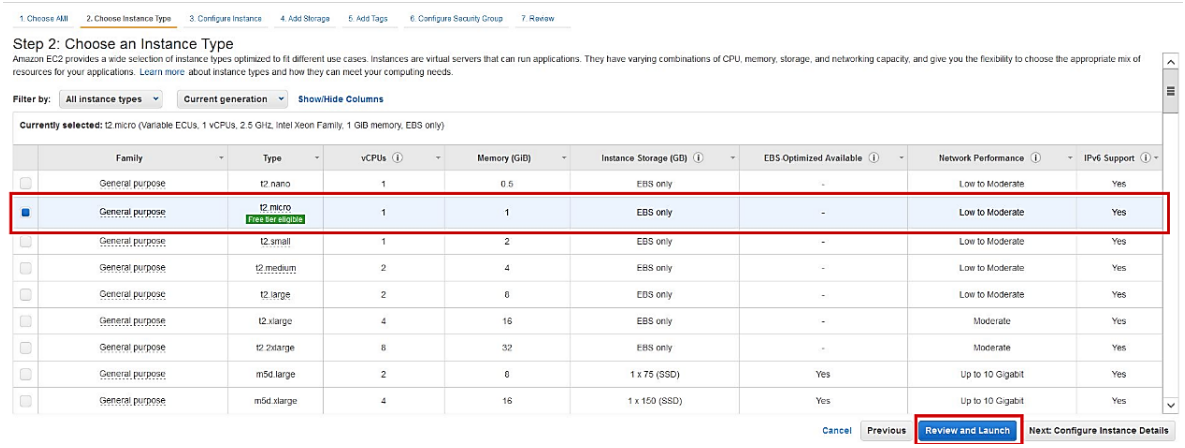
After scrolling down you should click on the **Continue** button:



GRAPHIC 5

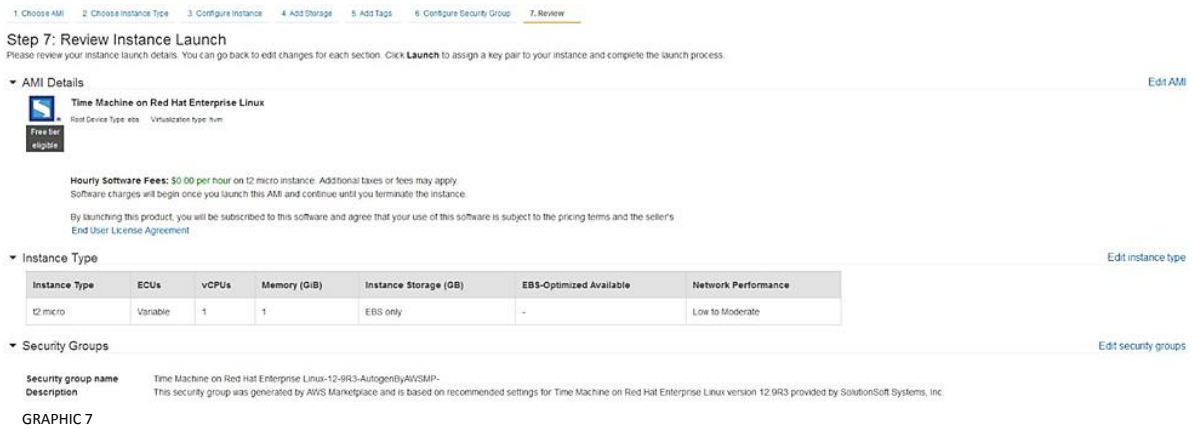
Now we have to choose the instance type, which defines the combination of CPU, memory storage and networking capacity, depending on what your instance will be used for.

As mentioned earlier, we will choose the default option of *t2.micro*, and click on the Review and Launch in the bottom of the page:



GRAPHIC 6

In the next step you can review the configuration, storage, tagging, and security settings that have been selected for the instance:



GRAPHIC 7

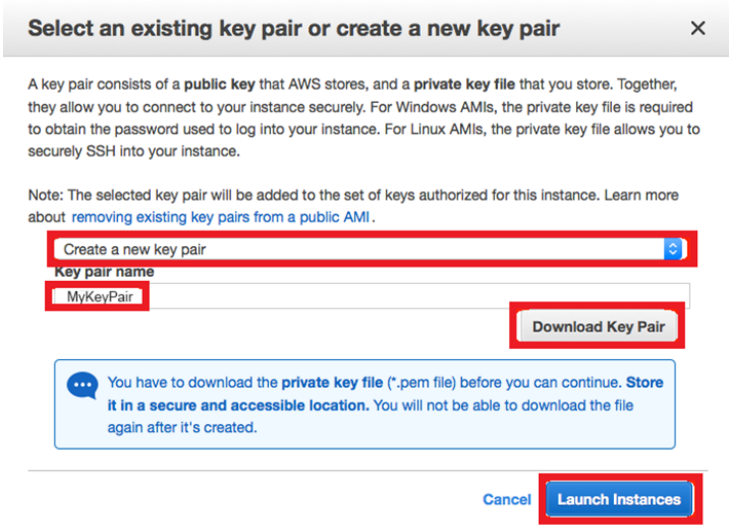
The Security Group selected by default already has the port 7800 open that is used by other products from the Time Machine Suite to remotely connect to the Time Machine, like TM Enterprise Management Console (GUI you can install and use from your local machine to connect to Time Machine running in the Cloud), or the Sync Server which is used to simultaneously time travel multiple targets/systems whether solely located in the Cloud or partly on premise.

The port 22 is also kept open to allow you to use SSH to manage your EC2 instance, or simply use the command line to create virtual clocks with Time Machine.

For the purpose of this document, we won't change anything on this screen, and will directly click on the **Launch** button.

On the next screen you will be asked to choose an existing key pair or create a new key pair, which is used to securely access your Linux instance using SSH.

Select **Create a new key pair** and name it. Next click the **Download Key Pair** button.

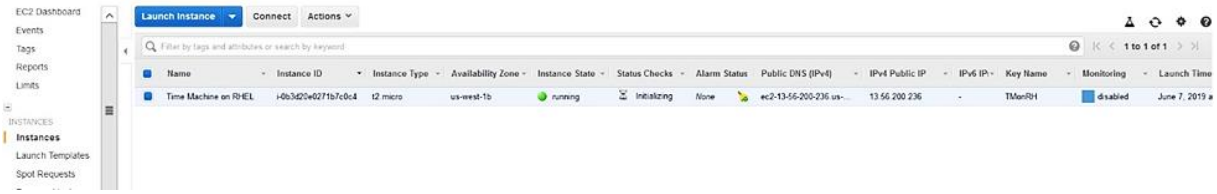


GRAPHIC 8

After you download the key, store it in a secure location. If you lose it, you won't be able to access your instance. If someone else gets access to your key, they will be able to access your instance.

Finally, you'll see that your new instance is being launched, and you can click on the **View Instances** to see its progress.

You can also assign a name to it by clicking on right side of the empty field (icon of a pencil) under the column **Name**:



GRAPHIC 9

CONNECTING TO A NEWLY CREATED EC2 INSTANCE AND LICENSING TIME MACHINE

After we launch the Linux instance, the next thing would be to connect to it via SSH protocol, as the user named **ec2-user** using the private key we previously saved.

Once you access the command line of the new instance, in the home directory of the ec2-user, you'll find a txt file with licensing instructions:
[ec2-user@ip-172-31-22-49 ~]$ ls
tmreadme_AWS_AMI.txt

Basically, what you need to do is to run the command "/etc/ssstm/ssslicmgr -k", copy & paste the output and email the output (similar to the one below) to support@solution-soft.com

[ec2-user@ip-172-31-22-49 ~]$ /etc/ssstm/ssslicmgr -k
ssslicmgr: v7.24 Solution-Soft License Manager
Manage Licenses for Solution-Soft Products
Copyright (c) 2000-2019 SolutionSoft Systems, Inc. All rights reserved.

Machine Name : ip-172-31-22-49.us-west-1.compute.internal
Network Domain Name : Unknown
Network Domain Name : Unknown
Network Domain Name : us-west-1.compute.internal
Network Domain Name : us-west-1.compute.internal
System info found : (1CE88C34:00000000;f7f7d685;1CE88C34:00000000)
Hardware ID : f7f7d685f
Number of Processors: 1
Number of Processors configured: 1
Number of cpu sockets : 1
Number of cpu cores : 1
Hyperthreading : off

System Type : x86_64
OS & OS Version : Linux #1 SMP Thu Oct 4 20:48:51 UTC 2018 3.10.0-957.el7.x86_64
ISA : x86_64
Platform Name : x86_64
Red Hat Enterprise Linux Server release 7.6 (Maipo)

In your email to the Solution-Soft support team, you should specify that you need a license key for an EC2 Instance created from a BYOL AMI, and also include some additional information, such as: your name, company name, email address, phone number and what kind of key is requested (e.g. demo/extension/permanent key).

Once you receive the license key, you'll need root privileges to apply it, like shown below:
[ec2-user@ip-172-31-22-49 ~]$ sudo /etc/ssstm/ssslicmgr
ssslicmgr: v7.24 Solution-Soft License Manager
Manage Licenses for Solution-Soft Products
Copyright (c) 2000-2019 SolutionSoft Systems, Inc. All rights reserved.
Enter license key or [help|done]:0426032032B97838049DC34002BDFBE802E07AF7052FD88000999D0503473BC0
Preparing to install a 14 day rental key license for Time Machine Unix
Checking Host ID ... Passed.
Checking Authorized CPU Tiers Level ... Passed.
Check lic status: -704
Enter your name or main contact point at your company:New Tester
Enter Your Company or Organization Name:New Company
Enter Your Phone Number:123456
License installation successful.
Action successful.

CREATING VIRTUAL CLOCKS ON A EC2 INSTANCE VIA COMMAND LINE

Since we have successfully applied the license key, we can use the command line access to create a virtual clock for the **ec2-user**. To do so, we'll use the **tmuser** command, like in the example below which will time travel ec2-user 15 years to the future:
[ec2-user@ip-172-31-22-49 ~]$ ***tmuser -a -u ec2-user -y 15***
Copyright(c) 1997 - 2019 SolutionSoft Systems, Inc. All Rights Reserved.
Time Machine tmuser utility version 12.9R3 for Linux Kernel 2.6 or up,
for managing virtual clocks at the command line.
Time Machine is licensed to New Company.
Unauthorized use by other entity is strictly prohibited.
tmuser: uid 1000 has been added with a Running virtual clock: Wed Jun 7 13:50:36 2034

If we want to double check whether ec2-user was correctly time traveled, we can use the **date** command to see that he actually sees virtual time:
[ec2-user@ip-172-31-22-49 ~]$ ***date***
Wed Jun 7 13:50:41 UTC 2034

To revert back to system time, we simply need to delete the existing virtual clock by issuing the following command:

[ec2-user@ip-172-31-22-49 ~]$ ***tmuser -d -u ec2-user***
Copyright(c) 1997 - 2019 SolutionSoft Systems, Inc. All Rights Reserved.
Time Machine tmuser utility version 12.9R3 for Linux Kernel 2.6 or up,
for managing virtual clocks at the command line.
Time Machine is licensed to New Company.
Unauthorized use by other entity is strictly prohibited.
tmuser: report: Virtual clock for uid 1000 has been deleted

And to show that we're back on system time, we'll use the **date** command once more:

[ec2-user@ip-172-31-22-49 ~]$ ***date***
Fri Jun 7 13:51:02 UTC 2019

CREATING VIRTUAL CLOCKS ON A EC2 INSTANCE VIA MANAGEMENT CONSOLE

If you prefer using a GUI to manage Time machine and create virtual clocks, you can do so by installing Time Machine Enterprise Management Console on your local server/desktop/laptop machine.

You can download the latest version of TM Enterprise Management Console from the following location:
ftp://ftp.solution-soft.com/pub/tm/tmconsole/enterprise/

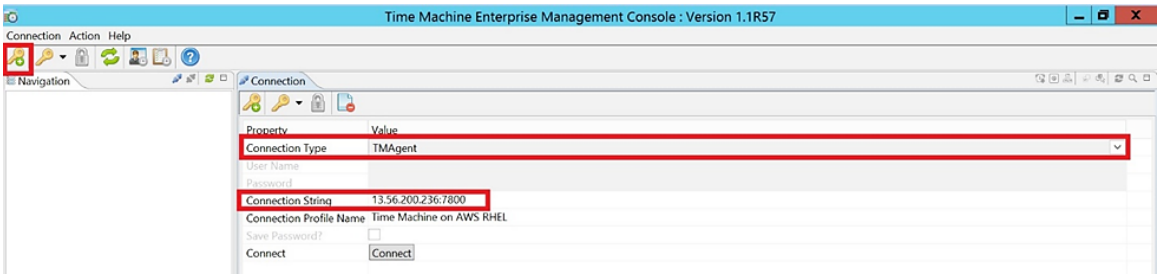
In the same location you'll find a readme file with the installation and licensing instructions.

Once you have your Enterprise Console licensed and running, you need to connect to the remote TM Agent (Time Machine component used to communicate with other TM Suite products).

To do so, first click on the **Add Connection** button (icon of a key with a green plus sign in the top left part of the window, as marked in the picture below).

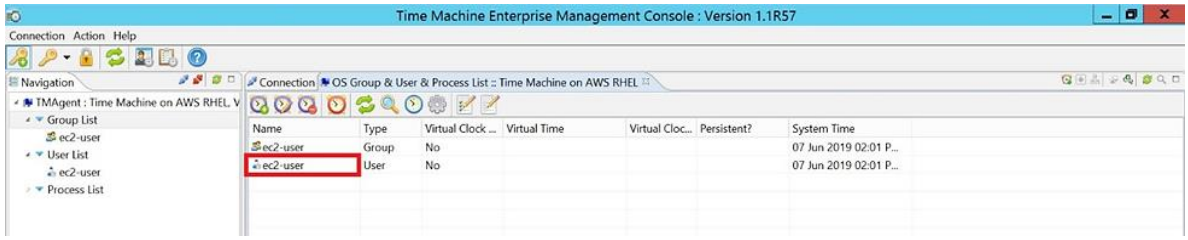
Next, in the central part of the window, you need to specify the **Connection Type**, by choosing the ***TMAgent*** type in the drop down menu.

Finally, you need to enter the **Connection String**, which consists of the IP Address of your EC2 instance, and the port on which the TM Agent is listening on (by default it's 7800, just like in the example below).



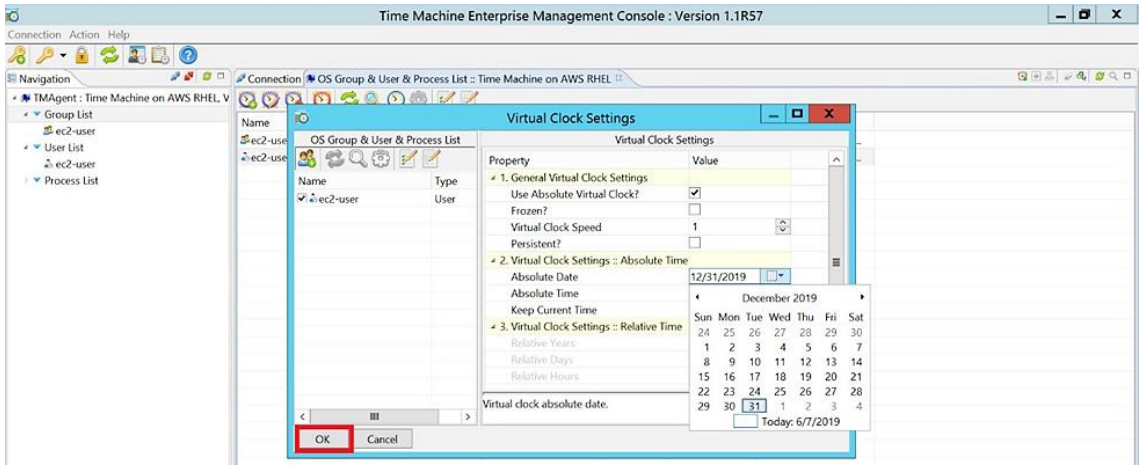
GRAPHIC 10

After you connect to the TM Agent running on your EC2 instance, to create a virtual clock for a particular user, you only need to double-click on that user in the central part of the window. In our case, we're going to create a virtual clock for ec2-user, like in the picture below:



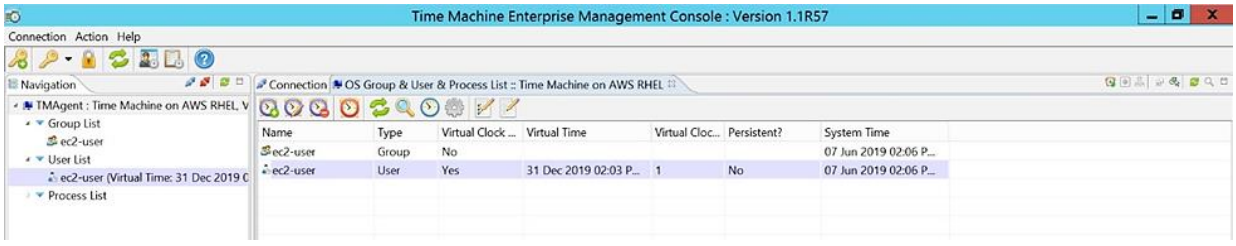
GRAPHIC 11

A Virtual Clock Settings window will appear where you can specify basic features of a virtual clock (absolute or relative virtual clock – showing exact virtual time or a virtual offset to the system time, clock speed, persistence, etc.), like in the picture below:



GRAPHIC 12

After you click on the **OK** button to confirm what you specified, a running virtual clock will be displayed in the Console:

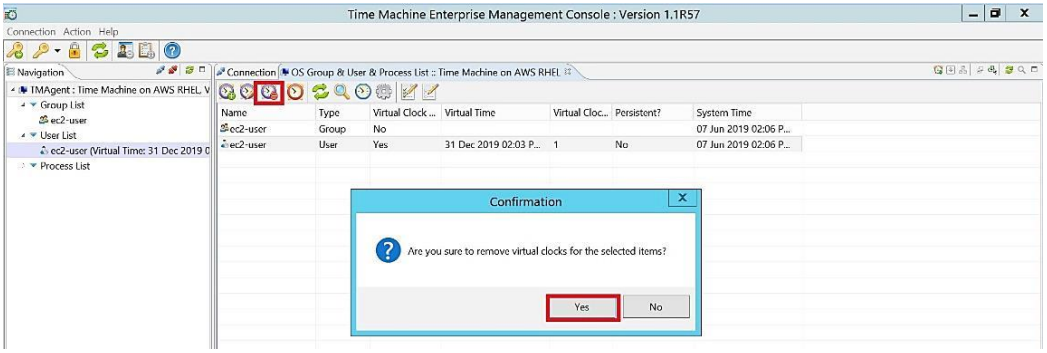


GRAPHIC 13

To double check if the ec2-user correctly sees virtual time, we can once again use the date command from the command line:

[ec2-user@ip-172-31-22-49 ~]$ date
Tue Dec 31 14:04:45 UTC 2019

To remove the virtual clock, you need to mark the virtual clock in the central part of the window and click on the **Remove Virtual Clock** button (icon of a clock with a red 'minus' sign, like in the picture below), and finally confirm you want to delete it.



GRAPHIC 14

To confirm that ec2-user is back on system time, we'll go to the command line again:

[ec2-user@ip-172-31-22-49 ~]$ date
Fri Jun 7 14:10:34 UTC 2019

USING TIME MACHINE FLOATING LICENSE SERVER TO LICENSE MULTIPLE EC2 INSTANCES

For more information on how to deploy and use Time Machine Floating License Server to automatically license Time Machine in multiple EC2 instances, please contact Solution-Soft support.

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