How to Deploy RUEI to Oracle Cloud and Monitor E-Business Suite

Step-by-step instructions for deploying Real User Experience Insight (RUEI) as an app on Oracle Cloud Marketplace and monitor E-Business Suite Demo application

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PURPOSE STATEMENT

This document provides an overview of features and enhancements included in Real User Experience Insight (RUEI) App on Oracle Cloud Marketplace 1.01. It is intended solely to help you assess the business benefits of using RUEI App 1.01 and to plan your I.T. projects.

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Due to the nature of the product architecture, it may not be possible to safely include all features described in this document without risking significant destabilization of the code.

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ABOUT THIS WHITEPAPER

Oracle Real User Experience Insight (RUEI) monitors real-user experience, defines Key Performance Indicators (KPIs) and Service Level Agreements (SLAs), and trigger alert notifications when thresholds are crossed.

This white paper introduces RUEI as an app in Oracle Cloud Marketplace, and showcases how easily and quickly you can deploy, and start the monitoring of E-Business suite Demo application (Oracle E-Business Suite 12.2.9 Demo Install Image) that is also running in the Oracle Cloud.
INTRODUCTION

Oracle Real User Experience Insight (RUEI) is a utility that reports real-user traffic from business-critical applications. For more than a decade, RUEI has been helping enterprises to maximize the value of their on-premise based Web infrastructures, by delivering insight into real end-user experiences. On the other hand, many customers requested us for a simple way to install RUEI in the Cloud and monitor Cloud applications. To respond to the increasing customer demand, we have made the product available as an app on Oracle Cloud Marketplace.

RUEI App in the Oracle Cloud Marketplace is a pre-configured stack contains RUEI server and repository, deployed on a single Linux host. By following the steps described in this paper, you can deploy RUEI product on an OCI compartment without undergoing traditional RUEI installation steps. This is one of the benefits of using the app, as it drastically simplified the product installation process.

As for the sample application monitored by RUEI, we used E-Business Suite Demo application (Oracle E-Business Suite 12.2.9 Demo Install Image) that is also an app in Oracle Cloud Marketplace, deployed on the same Virtual Cloud Network (VCN).

Once the RUEI App and E-Business Suite App deployments are completed, there are additional steps to configure Virtual Ethernet Network TAP and Layer Two Tunneling Protocol (L2TP) tunnel, so that the traffic flows from the EBS instance, to RUEI instance.
DEPLOY RUEI APP TO YOUR ORACLE CLOUD COMPARTMENT

There are two high-level steps involved in the setup of the RUEI app; Deploy the app, and Setup the tunneling.

This section provides instructions on deploying the RUEI app on the existing compartment in the Oracle Cloud. First, we will configure the Virtual Cloud Network, then launch the app from the Marketplace. Approximate time to complete the RUEI app deployment is 30 min.

Configure Virtual Cloud Network

1. Go to Oracle Cloud console using the URL provided in the Welcome email. Enter user name and password to log in.

![Oracle Cloud login screen](image)

Figure 2. Oracle Cloud login screen

2. From the Main menu, select “Networking”, then “Virtual Cloud Networks”. In the Virtual Cloud Networks page, select the compartment from the pull-down menu.

![Main menu - Virtual Cloud Networks](image)

Figure 3. Main menu - Virtual Cloud Networks

3. Click “Start VCN Wizard”.

![Virtual Cloud Networks in RUEI demo Compartment](image)

Figure 4. Virtual Cloud Networks in Compartment screen
4. “VCN with Internet Connectivity” is selected by default. Click “Start VCN Wizard”.

![Start VCN Wizard screen](image)

**Figure 5. Start VCN Wizard screen**

5. The “Create a VCN with Internet Connectivity” page opens. Enter the basic information such as VCN name and compartment. In the example below, VCN name is “RUEI_VCN” and the compartment is “RUEI_demo”, which is created in our tenancy.

**NOTE:** To create a new compartment, select main menu Identity > Compartments, then Click “Create Compartment”

![Create a VCN with Internet Connectivity screen](image)

**Figure 6. Create a VCN with Internet Connectivity Screen**
6. Scroll down to find “Configure VCN and Subnets” section. Modify or accept the default values. Click Next.

Figure 7. Create a VCN with Internet Connectivity Screen

7. Review the configuration and click “Create”.

Figure 8. Create a VCN with Internet Connectivity Screen
8. Once the check marks are updated, click “View Virtual Cloud Network”.

![Create a VCN with Internet Connectivity Screen](image)

**Figure 9. Create a VCN with Internet Connectivity Screen**

**Configure Security List settings**

9. Once the VCN is created, click “Security List”, which is located under “Resources”.

![Virtual Cloud Network page](image)

**Figure 10. Virtual Cloud Network page**
10. Click “Default Security List for < VCN name>” link from the table. This is the default security list for your public subnet.

![Figure 11. Security Lists screen in VCN page](image1)

11. Select “Ingress Rules” link. Ensure that there is a security rule configured for the port 22 by default. Click “Add Ingress Rules”.

![Figure 12. Default Security List for VCN page](image2)
12. The “Ingress Rule” page opens. Enter the following entries to create new rules, then click “Add Ingress Rules”.

- **Stateless: no, type: CIDR, source: 0.0.0.0/0, protocol: TCP, destination port: 443, description: web-https**
- **Stateless: no, type: CIDR, source: 0.0.0.0/0, protocol: L2TP, description: L2TP**

![Add Ingress Rules Screen – HTTPS](image13)

**Figure 13. Add Ingress Rules Screen – HTTPS**

![Add Ingress Rules Screen – L2TP](image14)

**Figure 14. Add Ingress Rules Screen – L2TP**

13. Review the configuration change in the Ingress Rules screen for the default security list.

![Ingress Rules Screen](image15)

**Figure 15. Ingress Rules Screen**
Deploy RUEI App

14. Next, we will deploy RUEI App from the Marketplace. From the main menu, select “Marketplace”, then “Applications”.

![Main menu – Marketplace, Applications](image)

Figure 16. Main menu – Marketplace, Applications

15. In the Marketplace page, enter “Real User Experience Insight” to search for the RUEI App in the All Applications section. Click the RUEI App.

![Marketplace page](image)

Figure 17. Marketplace page

16. Select the compartment, agree to the term and restrictions, and click “Launch Stack”

![RUEI Application page](image)

Figure 18. RUEI Application page
17. Enter the Name and Description. Optionally, you can select tags. Click Next.

![Create Stack page 1/5](image1)

**Figure 19. Create Stack page 1/5**

18. In the “General Settings” section, select region, target compartment and availability domain.

![Create Stack page 2/5](image2)

**Figure 20. Create Stack page 2/5**
19. In the “RUEI reporter details” section, enter the RUEI password, select Instance shape, and enter SSH Public key. You will need the SSH key in order to access RUEI instance. How to create SSH key, please refer to Creating a Key Pair section in OCI document.

![Figure 21. Create Stack page 3/5](image)

20. In the “Networking details for RUEI and Oracle Database” section, select compartment, VCN and subnet. Select the VCN you created above. A Public subnet is selected in this example. Click Next.

![Figure 22. Create Stack page 4/5](image)
21. Review the configuration and click “Create”.

![Create Stack page 5/5](image)

22. The “Resource Manager Job” screen opens, and the Job starts to run. This takes approximately 10 to 12 minutes to complete.

![Resource Manager Job page – In Progress](image)
23. Once the job is completed, wait for few seconds and refresh the page. Repeat this until you see the “Application Information” tab. Alternatively, click the “Stack Details” in the breadcrumb. Then click the “Application Information” tab.

24. Click the “Open RUEI” button. You can also see the RUEI URL on the screen.
25. This opens the RUEI login page in a new browser tab. Alternatively, you can copy the public IP address from the screen in the previous step, and type https://<public IP address>/ruei/ in the address bar. Enter “admin” as a Username. Password is the RUEI password, which you specified during the app deployment.

![RUEI login page](image)

Figure 27. RUEI login page

26. You are logged into RUEI deployed on Oracle Cloud. Congratulations!

![RUEI landing page](image)

Figure 28. RUEI landing page
DEPLOY E-BUSINESS SUITE APP

Next you will need an application that you monitor with RUEI. In this example, we will use Oracle E-Business Suite 12.2.9 Demo Install Image to create another instance in the OCI compartment. The image includes EBS 12.2.2.9 and Oracle Database 19c running on Oracle Linux 7.

The deployment of the EBS 12.2.9 Demo App is not in the scope of this paper, but the details are documented in the tutorial provided in the Oracle online documentation; “Provision a New Oracle E-Business Suite Installation on a Single Node on Oracle Cloud Infrastructure”.

1. The step-by-step guide will walk you through the whole process. It gives you the right information for how to find E-Business Suite 12.2.2.9 Demo image from the Oracle Cloud Marketplace, configure VCN and deploy the EBS App. Approximate time to complete the process is 30 minutes.
2. While going through the setup, the VCN and subnet have to be configured. In our example, E-Business Suite App is configured on the same VCN with the RUEI app to simplify the security list settings. This way EBS web entry port can be added to the same security list which RUEI reporter uses.

**NOTE:** See the EBS app set up document, section 1, step 3 for more details on configuring VCN for the EBS App.

![Create Compute Instance](image)

**Figure 31. Configure Network screen in the EBS 12.2.9 Demo Install setup page**

**Figure 32. Ingress Rules screen in the Security List Details page**

![Ingress Rules Table](image)
3. The EBS app is configured as host + domain “app.example.com” by default. This is not an example, although it could look like one. It is the actual domain name you need to refer to in the browser’s address bar, in order to logon to the EBS application.

4. The EBS app provides an option to modify the web entry information including the host and domain. In our example, host + domain is “ebsdemo.demo.com”. This is the actual domain that has to be configured in RUEI Web interface, that we discuss in the later in this paper.

   **NOTE:** See the EBS app set up document, section 2, step 6 for more details on how to modify the web entries.

5. Once the EBS app is deployed, you will be able to login to the application using the browser.
SET UP TUNNELING

Tunnel Setup for RUEI

You have now successfully deployed RUEI and EBS app by following the steps in the previous sections. However, at this point RUEI is not collecting the data yet. In this section, we will set up Virtual Network TAP and L2TP tunnel, which allows traffic to flow from the EBS application to the RUEI instance. Please note that the steps in the section are specific to setting up RUEI App and EBS App in the Oracle Cloud. For more information on tunneling, please refer to the RUEI Administration guide Appendix B, "Setting Up a Virtual Network TAP and L2TP Tunnel". Approximate time to complete this step is 30 minutes.

1. Login to OCI. From the main menu, select “Compute”, then “Instances”.

2. You will see two instances, if you deployed the EBS and RUEI in the same compartment. Click the RUEI reporter instance link.

3. In the RUEI reporter instance page, note down the Public & Private IP address. You will need the information later.
4. Next, you will need to connect to your RUEI instance using Secure Shell (SSH). In this example, Unix-style operating system is used (E.g., Linux or Mac OS). For how to connect to the running Linux instance from a Windows systems, please refer to the OCI document “Connecting to Your Instance”.

Open a terminal window, type the SSH command in the following format:

```
$ ssh -i <private_key> <username>@<public-ip-address>
```

For example,

```
$ ssh -i “/Users/demo/rsa/id_rsa” opc@158.101.16.xxx
```

5. Open the tunnels.conf file with an editor (E.g., vi editor).

```
$ cd /opt/ruei/tunnel/receive/conf
$ sudo vi tunnels.conf
```

Add a line with the private IP addresses for your RUEI and EBS, in the following format:

```
<Private IP of RUEI instance> <Private IP of EBS instance> - -
```

For example, if the private IPs for RUEI and EBS instances are 10.0.0.2 and 10.0.0.3, add a line as shown below.

```
10.0.0.2 10.0.0.3 - -
```

6. Save the conf file, then reload the service.

```
$ sudo systemctl reload ux-tunnel-receive
```

Now the service is started in the RUEI instance.
Next, you will need to copy the **RUEI Virtual Ethernet TAP and L2TP tunnel transmit helper tooling RPM (ux-tunnel-transmit)** to the EBS instance. The ux-tunnel-transmit RPM is already extracted in: `/root/ruei/rpms/ux-tunnel-transmit-*.rpm`. The suggested approach to copy the RPM is through the "scp" from the RUEI Reporter instance.

7. On the RUEI Reporter instance, as the "root" user, execute the following command to generate SSH identity:

```
$ sudo su
$ ssh-keygen
```

Then execute the following command to display the generated key:

```
$ cat ~/.ssh/id_rsa.pub
```

8. Copy the content of `id_rsa.pub` to your clipboard (note that the content of this file consists of one line). You will need this SSH identity in order to copy the RPM to the EBS instance in the next section. Do not close the terminal window yet.

```
[root@rueireporter20210103091537 ruei]# cat ~/.ssh/id_rsa.pub
```

```
Figure 40. Command line interface – ssh key 1/2
```

```
[root@rueireporter20210103091537 ruei]# cat ~/.ssh/id_rsa.pub
```

```
Figure 41. Command line interface – ssh key 2/2
```
Tunnel Setup for EBS

9. Next, you will need to connect to the instance of the application that is monitored by RUEI. In this example, we use EBS application running in the same compartment. Login back to OCI, from the main menu, select “Compute” > “Instances”, and select EBS instance. Note down the Public and Private IPs.

From the screen, click the VCN name link, which is located next to “Virtual Cloud Network:”. In this example, VCN is “RUEI_VCN”. This will open the VCN page. Click “Security Lists” from the VCN page, then select “Default Security List” link.

![EBS instance page](image1)

10. In this example, L2TP is already set because the same VCN is used for both RUEI and EBS instances. If you have different VCN set for the EBS instance, add new ingress rule for the L2TP protocol. Please refer to the “Configure Security Settings” section in this white paper (page 7) for how you can do this.

![Ingress Rules screen](image2)
11. Open a terminal window, connect to the EBS instance using the below format.

   $ ssh -i <private_key> <username>@<public-ip-address>

   For example,

   $ ssh -i "/Users/demo/rsa/id_rsa" opc@129.146.107.xx

12. On the EBS instance, as the "opc" user, open ~/.ssh/authorized_keys in an editor. (E.g., vi editor).

   $ vi ~/.ssh/authorized_keys

13. Notice there is already at least one entry. Paste the contents of the id_rsa.pub file, which you copied from the RUEI Reporter instance on a new line. If needed go back to the step 8 to copy the SSH identity to your clipboard.

   ![Figure 44. Command line interface – Authorized keys 1/3](image)

   ![Figure 45. Command line interface – Authorized keys 2/3](image)
14. The key is copied to the file. Save the file.

15. Go back to the terminal window of the RUEI instance. As the "root" user, copy the RPM to the EBS instance, by executing the following commands.

```
$ sudo su
$ scp /root/ruei/rpms/ux-tunnel-transmit-*.rpm opc@<EBS_IP>:~/
```

For example,

```
$ sudo su
$ scp /root/ruei/rpms/ux-tunnel-transmit-*.rpm opc@129.146.107.xxx:~/
```

The RPM will be available under "/home/opc" in the EBS instance.
16. Go back to the terminal window of the EBS instance. Go to /home/opc to ensure you have the RPM.

```bash
$ cd /home/opc
$ ls
```

Figure 48. Command line interface – Confirm Transmit RPM

17. Install the tunnel helper.

For example,

```bash
$ sudo rpm -ivh ux-tunnel-transmit-13.4.1.0.1-<version>.x86_64.rpm
```

18. Create the configuration file.

```bash
$ cd /opt/ruei/tunnel/transmit/conf
$ sudo cp tunnel.conf.example tunnel.conf
```

19. Open the tunnel.conf file with an editor (E.g., vi editor).

```bash
$ sudo vi tunnel.conf
```

Add a line with the private IP addresses for your RUEI and EBS, in the following format:

<Private IP of RUEI instance> <Private IP of EBS instance> <Mirror Network Interface> i<webserver port>

For example, if the private IPs for RUEI and EBS instances are 10.0.0.2 and 10.0.0.3, add a line as in the example below.

```
10.0.0.2 10.0.0.3 ens3 i8000
```

20. Install `iproute-tc`. This step is required for Linux 7, which is configured in the EBS app image.

```bash
$ sudo yum install iproute-tc
```

21. Stop the service (if started), then start the service.

```bash
$ sudo systemctl stop ux-tunnel-transmit
$ sudo systemctl start ux-tunnel-transmit
```

Upon completing the steps above, HTTP traffic flows between the instances. If you see any errors running command above, please consult the RUEI Administration guide Appendix B, "Setting Up a Virtual Network TAP and L2TP Tunnel", "Diagnostics" section for the troubleshooting tips.
SET UP EBS MONITORING IN RUEI WEB INTERFACE

Now you are all set on the RUEI and EBS deployment and the tunnel setup. The final step before you start the monitoring is to configure the EBS suite in the RUEI web interface. This section walks you through these steps;

i. Create a “Suite” for EBS, which provides out-of-the-box monitoring capabilities for Oracle packaged applications,  
ii. Create a dashboard, to visualize the monitoring information, and  
iii. Enable “Full session replay”, which allows you to deep dive into the page details.

Create a Suite for EBS

1. Open a browser tab, login to the RUEI page, with the URL “https://<public IP address>/ruei/”.

2. Click the Configuration Tab, then click “Protocols” link, which is located at the second row in the table.

   ![Figure 49. RUEI Configuration page](image)

3. Click “HTTP”.

   ![Figure 50. Protocols screen](image)

4. Add “8000”, click Save.

   ![Figure 51. Edit profile ports screen](image)
5. Click “Applications”. This opens the Application pane. Then click “Suites”.

Figure 52. RUEI Configuration page

6. Click “New Suite” icon.

Figure 53. RUEI Configuration page – Suites

7. Enter the Suite name, domain and port. By default, EBS 12.2.9 App sets “app.example.com” as it’s domain. You can customize this value during the EBS App setup. In this example, the domain name is “ebsdemo.demo.com”. Click Next.

NOTE: “app.example.com” is not an example, but the actual domain set by the EBS app. Please see the EBS app set up document, section 2, step 6 for more details on how to modify the web entries.
8. Verify the entries for the “Suite” you created for the EBS application.

![Suite overview screen](image)

**Figure 55. RUEI Configuration page – Suite overview screen**

**Create a Dashboard**

9. Click the “Dashboard” tab. Then click “Default”, located under “Templates”.

![New dashboard screen](image)

**Figure 56. RUEI Dashboard page – New dashboard**

10. Enter a name of the dashboard, select “Suite-specific” for Data access, “E-business Suite” for Suite type, and the suite name you specified for the EBS above, for application. Click “Save”.

![Add Dashboard screen](image)

**Figure 57. Add Dashboard screen**
11. The Dashboard is created. Note it may take up to 5 minutes (by default) to see the traffic on the RUEI screen.

Figure 58. RUEI Dashboard page

Enable Full Session Replay

12. Optionally, you can enable Session Replay to store the complete user session data, which allows you to review each page viewed by the users during the session. Click “Configuration” tab. Select “Security”, then “Replay logging policy”. Click the text “No replay”.

Figure 59. RUEI Configuration page – Replay logging policy screen

13. “Edit default replay action” window opens. By default, the session replay setting is disabled. Click the pulldown menu, then change the value from “No replay” to “Complete logging”. Click Save.

Figure 60. Edit default replay action screen
14. Click “Browse Data” tab. Select “All sessions” from the pulldown menu at the lower left side of the screen, then select “Session Diagnostics”. Select your EBS suite for the “Application” filter, and SYSADMIN (or a user used for logging into EBS) for the User ID. Click “Search”.

![Figure 61. RUEI Browser data page - Session diagnostics, Search filters screen 1/3](image)

15. The session information is displayed. Select the date/time link under the “Period” column.

![Figure 62. RUEI Browser data page - Session diagnostics screen 2/3](image)
16. Select any session link to narrow down to the session details, or click the camera icon to view the session replay.

17. Here is the sample session replay page with the rendered HTML view.
CONCLUSION

Real User Experience Insight is a passive monitoring utility that enables IT stakeholders to develop shared understanding into their application users’ experience. It can be deployed to production, without a need of modifying or instrumenting of the application. By using the RUEI App in Oracle Cloud Marketplace, you can deploy Oracle Real User Experience Insight on Oracle Cloud with configuration process, and quickly start the monitoring of their cloud applications.