LEAPP TO RHEL 8: ISV Guidance Document

As a valued ISV partner, we want to better support your Red Hat Enterprise Linux (RHEL) migration and certification strategy. We know these can be substantial projects, but we have taken steps to simplify your journey of moving to the latest version using LEAPP, the Red Hat in-place upgrade tool. LEAPP enables you to move to the latest version of RHEL in less time and with less resources than traditional re-deployment projects.

What does an in-place upgrade mean for you?
- Accelerating your RHEL certification process for today and in the future
- Supporting timely migration and upgrade projects for our mutual customers
- Decreasing costs by reducing the support matrix for your application on RHEL

Utilize this guide to help ensure the continuity of ISV software and systems in general. You no longer need to create brand new RHEL environments to port your applications and our mutual customers no longer need to re-deploy and re-configure their entire infrastructure once a new major version of RHEL is released.

How does an in-place upgrade from RHEL 7 to 8 generally work?
The upgrade process has two distinct stages:

- Pre-upgrade assessment
  - Pre-flight checks ensure the upgraded system will not end up in a deteriorated state.
  - Remediations that can be executed to automatically solve found problems such as configuration changes, package dependency issues, etc.
- Upgrade
  - Replace system packages, generate new ramdisk, adjust boot entries.
  - Migrate configuration and other files to new formats to preserve functionality.

Each of those stages can be used for a different purpose, with the overarching principles being safety & simplicity of the whole process. Note that the preupgrade assessment is a viable option even if customers plan to redeploy their systems and not use the upgrade stage.
The output of the preupgrade assessment is a report that can be viewed either using the web console or in a text form.

What does ensuring your application migration is smooth mean?
To simplify the process, we have created a decision chart that will help you decide what action you need to take during your upgrade journey.
STEP 1 : PREPARING FOR AN UPGRADE

The tool to upgrade systems from RHEL 7 to 8 is called LEAPP. The tool can be located in the RHEL 7 extras repository.

Take a RHEL 7 system and ensure that it is on the latest minor version of RHEL 7.

# yum update

Download the tool on this machine.

# yum install leapp

Then, run the pre-upgrade analysis on an updated RHEL 7 system.

# leapp preupgrade

STEP 2 : PRE-UPGRADE ANALYSIS REPORT

Take a look at the produced report and identify the packages that pertain to your application that are listed as <no upgrade path available for these>. Your goal is to create an upgrade path for these packages.

STEP 3 : UNDERSTANDING THE RESOLUTION PROCESS

In order to ensure that an in-place upgrade runs smoothly between RHEL 7 and 8 with your applications installed, you may have to make some contributions or adjustments to the upgrade tooling. The number of challenges specific to upgrades is just a subset of what needs to be done anyway to support RHEL 8 as an initial deployment target. Below is a list of possible deliverables, each with different areas of interest and guidance that Red Hat provides:

- RHEL 8 compatible RPM packages
  - This could entail solving dependency problems due to packaging changes [Solution: PES DATA]
  - Solving regressions caused by removed/changed system APIs [Solution: Considerations when adopting RHEL8 Doc]
- RHEL 8 compatible repositories
  - This is pretty straightforward once the RHEL 8 packages are built, the main problem is the availability of these repositories at the time of RHEL GA [Solution: Talk to ISV representatives]
RHEL 8 compatible build
  ○ If the software uses different delivery model than RPM/repositories like static builds, chroots, containers or upstream package managers refer to [Solution: Considerations when adopting RHEL 8 Doc]

STEP 4: CHOOSING THE RIGHT SOLUTION FOR YOUR APPLICATIONS
While the main point of upgrades is getting newer versions of packages, this doesn't necessarily need to apply to software provided by a particular ISV. In general we recognize two scenarios.

1. The same version of the software is shipped for both RHEL 7 and RHEL 8
   ○ myProduct v1.0 in both RHEL 7 and RHEL 8
     In this scenario, there will be very little work required apart from building and testing the initial deliverables. Most incompatibilities should be solvable using RPM scriptlets or equivalent. If more control is needed over what happens in which phase of the upgrade [Solution: Write an actor].

2. A different version of the software is shipped for both RHEL 7 and RHEL 8
   ○ myProduct v1.0 in RHEL 7, and myProduct v2.3 in RHEL 8
     In this scenario the RHEL 7 package has a different version than its RHEL8 counterpart. Assuming that the two versions are compatible to begin with, all points from the first scenario still apply here. If, however, there are compatibility issues that require more attention [Solution: Write an actor].

STEP 5: WRITING AN ACTOR
Actors are basic building blocks of the upgrade tooling and facilitate the entire upgrade process. Some common scenarios and their implementations:

- Configuration format changed from XML to JSON
  ○ Write an actor that will create a report entry listing the files that can be automatically converted and request and provide a remediation to do the conversion

- Removed functionality is being used (configuration, command line)
  ○ Write an actor that can detect that removed functionality is being used and depending on the reported risk factor can raise an inhibitor and/or offer an remediation

- Switching source-based applications (Python, Perl, Ruby, PHP...) to a different interpreter
  ○ Write an actor that either selects an alternative interpreter or checks out an updated version of the application

- Removed deprecated packages before the upgrade
  ○ Write an actor that marks the specific packages for removal

Templates for common actors are available in the isv-repo linked below.
What does upgrade certification mean?

- You have tested the in-place upgrade between RHEL 7 and RHEL 8
- You run an in-place upgrade with your application installed, the upgrade is successful, and the application is preserved
- You have checked your “actor” if applicable, to the github project
- You are constantly testing this as you verify newer versions of RHEL
- Follow contribution guidelines at https://github.com/oamg/isv-repositories to contribute your actors

What to do if you run into issues?

If you run into issues, feel free to raise a Bugzilla against the “LEAPP” component. If you have questions about the process itself, please use the following link to submit your questions: https://forms.gle/XQEoWjUWamM3vppq9