Fedora 25

Release Notes

Release Notes for Fedora 25

Edited by The Fedora Docs Team

Abstract

This document provides the release notes for Fedora 25. It describes major changes offered as compared to Fedora 24. For a detailed listing of all changes, refer to the Fedora Technical Notes.

1. Welcome to Fedora 25

1.1. Welcome to Fedora

You can help the Fedora Project community continue to improve Fedora if you file bug reports and enhancement requests. Refer to *Bugs And Feature Requests*[1], on the Fedora wiki, for more information about bug and feature reporting. Thank you for your participation.

To find out more general information about Fedora, refer to the following pages, on the Fedora wiki (*http://fedoraproject.org/wiki/*):

- *Fedora Overview*[2]

- *Fedora FAQ*[3]

- *Help and Discussions*[4]

- *Participate in the Fedora Project*[5]

1.1.1. Need Help?

There are a number of places you can get assistance should you run into problems.

If you run into a problem and would like some assistance, go to *http://ask.fedoraproject.org*. Many answers are already there, but if you don't find yours, you can simply post a new question. This has the advantage that anyone else with the same problem can find the answer, too.

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[1] http://fedoraproject.org/wiki/BugsAndFeatureRequests

[2] http://fedoraproject.org/wiki/Overview

[3] http://fedoraproject.org/wiki/FAQ

[4] http://fedoraproject.org/wiki/Communicate

[5] http://fedoraproject.org/wiki/Join

You may also find assistance on the **#fedora** channel on the IRC net **irc.freenode.net**. Keep in mind that the channel is populated by volunteers wanting to help, but folks knowledgeable about a specific topic might not always be available.

1.2. Overview

As always, Fedora continues to develop (*Red Hat contributions*[6]) and integrate the latest free and open source software (*Fedora 25 Features)*[7]. The following sections provide a brief overview of major changes from the last release of Fedora.

For more details about the features that are included in Fedora 25 refer to the individual wiki pages that detail feature goals and progress at *https://fedoraproject.org/wiki/Releases/25/ChangeSet*.

1.3. Hardware Overview

Fedora 25 provides software to suit a wide variety of applications. The storage, memory and processing requirements vary depending on usage. For example, a high traffic database server requires much more memory and storage than a business desktop, which in turn has higher requirements than a single-purpose virtual machine.

1.3.1. Minimum System Configuration

The figures below are a recommended minimum for the default installation. Your requirements may differ, and most applications will benefit from more than the minimum resources.

1GHz or faster processor
1GB System Memory
10GB unallocated drive space

Low memory installations

Fedora 25 can be installed and used on systems with limited resources for some applications. Text, VNC, or kickstart installations are advised over graphical installation for systems with very low memory. Larger package sets require more memory during installation, so users with less than 768MB of system memory may have better results preforming a minimal install and adding to it afterward.

For best results on systems with less than 1GB of memory, use the DVD installation image.

[6] https://fedoraproject.org/wiki/Red_Hat_contributions
[7] https://fedoraproject.org/wiki/Releases/25/ChangeSet

1.3.2. Display resolution

Graphical Installation requires 800x600 resolution or higher

Graphical installation of Fedora requires a minimum screen resolution of 800x600. Owners of devices with lower resolution, such as some netbooks, should use text or VNC installation.

Once installed, Fedora will support these lower resolution devices. The minimum resolution requirement applies only to graphical installation.

1.3.3. Graphics Hardware

1.3.3.1. Minimum Hardware for Accelerated Desktops

Fedora 25 supports most display adapters. Modern, feature-rich desktop environments like GNOME3 and KDE Plasma Workspaces use video devices to provide 3D-accelerated desktops. Older graphics hardware may *not support* acceleration:

Intel prior to GMA9xx
NVIDIA prior to NV30 (GeForce FX5xxx series)
Radeon prior to R300 (Radeon 9500)

1.3.3.2. CPU Accelerated Graphics

Systems with older or no graphics acceleration devices can have accelerated desktop environments using LLVMpipe technology, which uses the CPU to render graphics. LLVMpipe requires a processor with SSE2 extensions. The extensions supported by your processor are listed in the `flags:` section of `/proc/cpuinfo`

1.3.3.3. Choosing a Desktop Environment for your hardware

Fedora 25's default desktop environment, GNOME3, functions best with hardware acceleration. Alternative desktops are recommended for users with older graphics hardware or those seeing insufficient performance with LLVMpipe.

Desktop environments can be added to an existing installation and selected at login. To list the available desktops, use the **dnf grouplist** command:

```
# dnf grouplist -v hidden | grep desktop
```

Install the desired group:

```
# dnf groupinstall "KDE Plasma Workspaces"
```

Or, use the short group name to install:

```
# dnf install @mate-desktop-environment
```

1.4. Feedback

Thank you for taking the time to provide your comments, suggestions, and bug reports to the Fedora community; this helps improve the state of Fedora, Linux, and free software worldwide.

1.4.1. Providing Feedback on Fedora Software

To provide feedback on Fedora software or other system elements, please refer to *Bugs And Feature Requests*[8]. A list of commonly reported bugs and known issues for this release is available from *Common F25 Bugs*[9] on the wiki.

1.4.2. Providing Feedback on Release Notes

If you feel these release notes could be improved in any way, you can provide your feedback directly to the beat writers. There are several ways to provide feedback, in order of preference:

- If you have a Fedora account, edit content directly at *Docs-Beats*[10] page on the wiki.

- Fill out a bug request using *http://bugzilla.redhat.com/*[11] - *This link is ONLY for feedback on the release notes themselves.* Refer to the admonition above for details.

- E-mail the Release-Note mailing list at `relnotes@fedoraproject.org`

2. Changes in Fedora for System Administrators

2.1. Installation

2.1.1. Fedora Media Writer as Primary Downloadable

Fedora Media Writer is a multiplatform tool which allows anyone to easily and quickly download installation ISO images and use them to create a bootable USB drive. This saves you the effort of manually downloading an ISO image, verifying its checksum, and using **dd** or similar to write the image to an USB drive. Starting with the final release of Fedora 25, this tool will be offered as the primary download solution on *https://getfedora.org/* instead of ISO images (ISO images will continue to be provided on the download website as well). Before the final release, you can visit *https://stg.getfedora.org/en/workstation/prerelease/* to get the application. The **Media Writer** is available on Linux (RPM), Mac and Windows, and provides the same experience on all systems. Sources are available on GitHub: *https://github.com/MartinBriza/MediaWriter*.

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[8] http://fedoraproject.org/wiki/BugsAndFeatureRequests
[9] http://fedoraproject.org/wiki/Common_25_bugs
[10] http://fedoraproject.org/wiki/Docs/Beats
[11] https://bugzilla.redhat.com/enter_bug.cgi?product=Fedora Documentation&component=release-notes
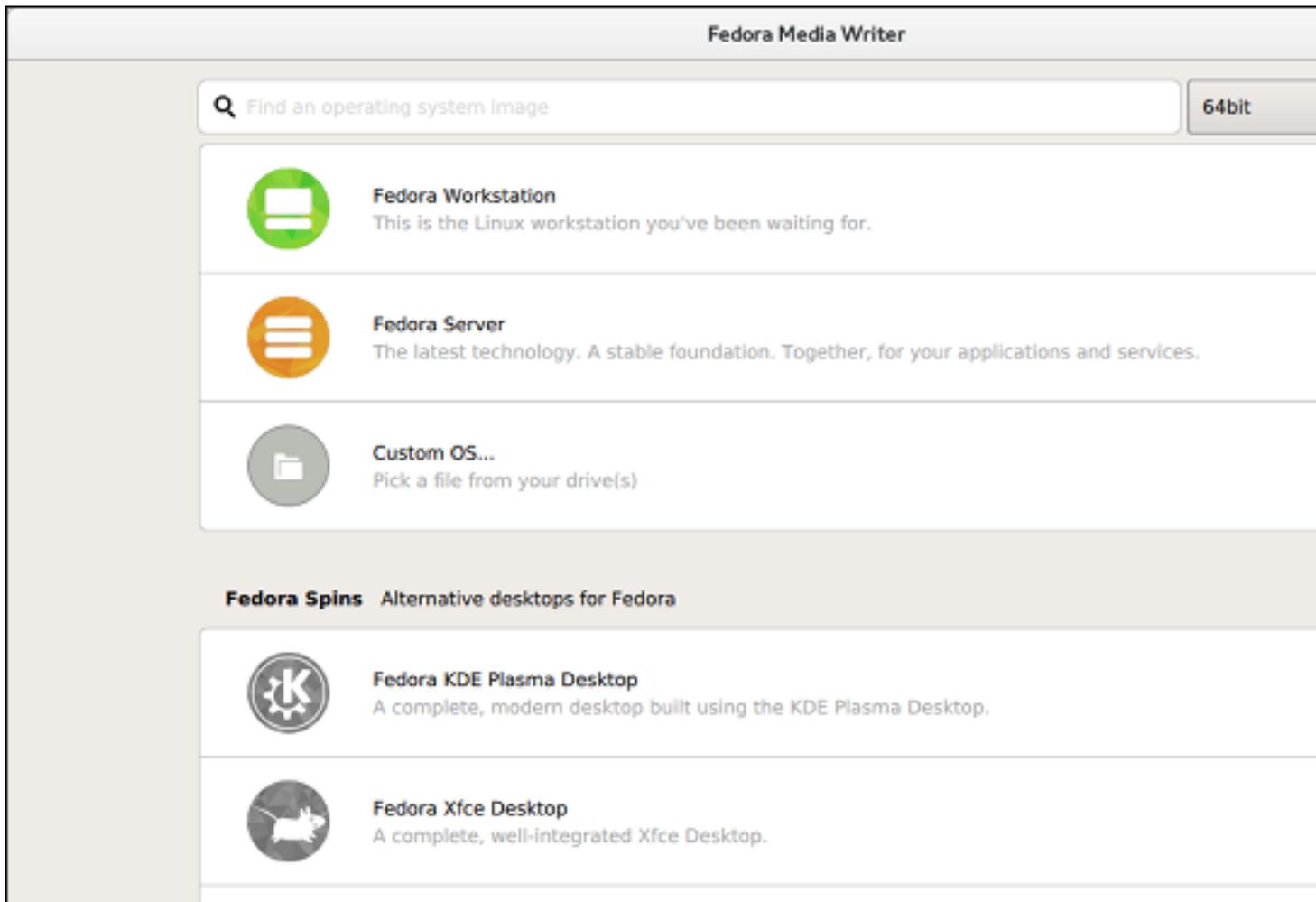
Figure 1. Fedora Media Writer

> ⚠️ **Warning**
>
> Using this tool will destroy any data on the flash drive as well as overwrite its partition layout. Make sure you back up any important data off the drive first. After you finish installing Fedora from the drive, you can use the **Media Writer** again to restore a single-partition FAT32 layout on the device, which will allow it to be used on all systems as a normal flash drive again.

2.1.2. Installer Changes

This section lists important changes made in this release to the **Anaconda** installer and related components such as *pykickstart*, *blivet*, or *initial-setup*.

2.1.2.1. General Installer Changes

Static routes configured during installation are now automatically configured on the installed system
   Previously, static route configuration files were not copied from the installation environment to the installed system. Consequently, static route configuration during installation was lost after the installation finished. These files are now copied, and static routes configured during installation are automatically configured on the installed system.

Screen Access Manager is now available in Anaconda
> A Screen Access Manager (SAM) has been added to Anaconda. The SAM controls which screens will be shown and records spokes visited into a configuration file. This enables tools running before **Anaconda** to hide specific screens if needed, and post-installation tools can in turn read the list of visited screens and avoid asking the user to configure the same settings twice.
>
> The configuration file specification is available on GitHub: *https://github.com/rhinstaller/anaconda/blob/master/docs/user-interaction-config-file-spec.rst*.

The Anaconda repository now has contribution guidelines
> The **Anaconda** repository on GitHub now contains a `CONTRIBUTING` file, which provides guidance for anyone wishing to contribute to the repository. Anyone thinking of making a contribution to the installer is strongly encouraged to familiarize themselves with the file at *https://github.com/rhinstaller/anaconda/blob/master/CONTRIBUTING* before submitting a pull request.

2.1.2.2. Changes to Anaconda Interfaces (GUI and TUI)

Host name is no longer being set automatically when not specified
> Previously, if you did not provide any host name in the **Network & Hostname** screen (or in Kickstart), **Anaconda** set the target system's host name to one that was obtained during installation. In Fedora 25, the **Network & Hostname** no longer automatically pre-fills the host name; instead it always defaults to `localhost.localdomain`, which effectively that the installed system will obtain a host name from **NetworkManager** during configuration/activation of network devices after the installation finishes. At the same time, the **Network & Hostname** now displays the current host name for the installation environment next to the host name configuration field, and a new **Apply** button has been added which can change the host name during the installation.

NTP configuration is now supported in the text-based interface
> The text-based interface now allows you to configure NTP servers similar to the **Date & Time** screen in the graphical interface.

2.1.2.3. Kickstart Changes

The timezone command can now be used without specifying a time zone
> Starting with Fedora 25, you can use the `timezone` Kickstart command without actually specifying a time zone, which was mandatory in previous releases. Every possible option for this command is therefore optional; however, if the command is present in the Kickstart file, at least one of the options must be used.

New option: network --no-activate
> The `network` command has a new option: `--no-activate`. Use this option to prevent the configured device from activating automatically.

Commands targeting disk devices can now specify targets in multiple variants
> Storage-related commands which target disk devices, such as `clearpart`, `part`, or `ignoredisk`, can now have their targets specified in multiple variants using the pipe ("`|`") delimiter. For example:

```
part / --device=sd*|hd*|vda,/dev/vdc
```

> The above example will match either of `sd*`, `hd*`, or **vda** *and* `/dev/vdc`. The specified variants are processed from left to right, and at least one of them must match an existing device in order for the command to succeed.

The bootloader command now behaves differently when the --boot-drive option is not specified
If you use the **bootloader** command without specifying a drive using the **--boot-drive=**
option, the bootloader will now be installed on a drive determined by the following rules in this
particular order:

1. If the **--driveorder=** option was used, the boot loader will be installed on the first valid
   device specified

2. The first present and valid disk containing a **/boot** partition will be used

3. If none of the above apply, then the first valid disk from the list of all detected disks will be
   used

2.1.2.4. Changes in Boot Options

New option: inst.nosave=
You can use the **inst.nosave=** option to control which installation results will be saved to
the installed system. Installation results are files generated after the installation, such as the
anaconda-ks.cfg autogenerated Kickstart file. This option is useful when using **Anaconda**
to create a disk image, as it allows you to prevent potentially sensitive information such as
installation logs and internal URLs from being saved in the disk image.

Valid values for this option are **input_ks** (do not save the original Kickstart file), **output_ks** (do
not save **anaconda-ks.cfg**), **all_ks** (save neither Kickstart file), **logs** (do not save log files),
and **all** (do not save any of the previous).

New option: inst.singlelang
This option allows you to run the installation in single language mode - in other words, it disables
language selection for the installer as well as for the installed system. If a language is specified
at the same time as this using the **inst.lang=**, the specified language will be used during
installation and configured on the target system. If no language was specified, **Anaconda** and the
installed system will default to **en-US.UTF-8**.

2.1.2.5. Miscellaneous Changes in the Installation Process

Initial Setup now logs unhandled exceptions to journal
The **Initial Setup** utility now logs unhandled exceptions to journal in order to simplify debugging in
the event of a fatal crash.

Driver updates can now replace already loaded modules
Drivers loaded from a Driver Update Disk (DUD) using the **inst.dd=** boot option can now replace
already loaded drivers in addition to providing new ones, as long as the original driver/module is
not in use.

Logs describing the system's original state are now saved before Anaconda starts
In order to preserve logs describing the system's original state, Anaconda now saves several logs
(outputs of the **lsblk**, **dmesg**, and **lvmdump** commands) immediately upon starting, before it
makes any changes to the system. This can provide additional debugging information as these
logs describe the initial state of the system.

2.2. Directory Server

2.2.1. 389 Directory Server version 1.3.5

389 Directory Server is an LDAPv3-compliant server and a set of related administrative tools, used around the world for Identity Management, Authentication, Authorization, and much more. It is also the foundation of the FreeIPA project's server. Fedora 25 provides version 1.3.5 of the **389 Directory Server**.

For a list of most important changes in the new release, see the announcement at Fedora Magazine: *https://fedoramagazine.org/whats-new-389-directory-server-1-3-5/*. Also see the project's own release notes for a full list of bug fixes and enhancements: *http://www.port389.org/docs/389ds/releases/release-1-3-5-13.html*.

3. Changes in Fedora for Desktop Users

3.1. Desktop

3.1.1. Wayland default display server

Wayland gives a much better way of isolating applications from each other and the system.

Detailed Description:

GDM uses Wayland by default for GNOME. The code will automatically fall back to Xorg in cases where Wayland is unavailable (like NVIDIA). Users will be able to disable the use of Wayland for GDM by setting WaylandEnable=false in /etc/gdm/custom.conf. Users can also select the legacy X11 for their session by using the menu on the login screen. Enter the login name, and then choose the settings icon to select a different session from the default.

For more information about the switch to the Wayland display server, please visit: *http://fedoraproject.org/wiki/Changes/WaylandByDefault*, *https://fedorahosted.org/fesco/ticket/1615*, and *https://wayland.freedesktop.org/*

3.1.2. Gnome 3.22: Karlsruhe

Gnome 3.22 will be the version integrated into Fedora 25 and multiple new features:
• Flatpak: A new application distribution tool

• Multiple file renaming

• Photo sharing

• Improved Software application

• Improved Files Application (nautilus)

• Batch file renaming in Files (nautilus)

• Redesigned keyboard settings

• Redesigned dconf editor

• And many more

For more detailed information please visit the Gnome project release notes page for version 3.22 at: *https://help.gnome.org/misc/release-notes/3.22/* and you can visit the Fedora Magazine article about Gnome 3.22 here: *https://fedoramagazine.org/gnome-3-22-released/*

3.2. Productivity

3.2.1. Firefox 49

Fedora 25 provides the latest version of **Mozilla Firefox**, the world-famous web browser. The powerful and extensible web browser is kept up to date to provide the most secure and enjoyable web browsing experience.

Some new features of Firefox 49 are:

- Removed Firefox Hello

- Reader mode has been improved to make it easier to read

- Context menu controls for html5 audio and video that allows looping of media or playing it back at 1.25x speed.

- *Security Fixes*[12]

- *Web Speech API*[13]

For detailed information about the 49 release please visit the *Firefox Release Notes*[14].

3.3. Internationalization

3.3.1. Input Methods

`ibus-libpinyin` users can now press `Ctl`+`Shift`+`d` to remove a remembered user phrase. When in double pinyin mode, pressing `I` will use a lua script extension.

> **Third level modifier key**
>
> The XKB option `ISO_Level3_Shift` key is not available in the **Keyboard** panel of **Gnome Control Center**. Use **gnome-tweak-tool** to enable the third level chooser key.

3.3.2. New Internationalization Packages

Fonts
- *adobe-source-serif-pro-fonts*: Source Serif Pro is a set of OpenType fonts to complement the Source Sans Pro family.

- *oflb-coval-fonts*: Derivation of other free of charge fonts.

- *astigmatic-grand-hotel-fonts*: Script retro style fonts.

- *typetype-molot-fonts*: Display sans-serif fonts.

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[12] https://www.mozilla.org/en-US/security/known-vulnerabilities/firefox/#firefox49

[13] https://developer.mozilla.org/en-US/docs/Web/API/Web_Speech_API#Speech_synthesis

[14] https://www.mozilla.org/en-US/firefox/49.0/releasenotes/

Libraries

- *sharpfont*: Cross-platform FreeType bindings for .NET

- *libXfont2*: X11 font support library

- *nodejs-os-locale*: To get the system locale

- *nodejs-y18n*: The bare-bones internationalization library used by yargs

3.3.3. IBus Typing Booster Multilingual Support

The **IBus typing booster** is an imput completion method to speed up typing. In Fedora 25, *ibus-typing-booster* is updated to provide the ability to use several languages at once in a single engine, as documented on the project's GitHub page: *https://mike-fabian.github.io/ibus-typing-booster/documentation.html#multilingual-input*.

At the same time, the graphical setup tool has been updated in order to make setting up multiple languages for the booster much simpler.

3.3.4. IBus Emoji Typing

The version of IBus provided in previous releases of Fedora allowed you to write special Unicode characters by pressing `Ctrl`+`Shift`+`U` and then writing a hexadecimal code for the character. In Fedora 25, a similar functionality is added to IBus for inserting emoji. You can now press `Ctrl`+`Shift`+`E` and start typing a word (e.g. `smile`); IBus will offer you a list of emoji based on what emoji annotation (*http://unicode.org/emoji/charts/emoji-annotations.html*) you wrote. Press **Space** to confirm the selected emoji and continue typing.

> **Note**
>
> Only English emoji keywords are supported in this release.

4. Changes in Fedora for Developers

4.1. Development

4.1.1. Ruby on Rails 5.0

Developers will get support for a system-packaged **Ruby on Rails** of the latest version. The update to Rails 5.0 will bring:

- Action Cable: A new framework that seamlessly integrates WebSockets in a Rails application.

- API mode: Rails applications can be created by using rails new backend --api

- Action Record attributes with a type on a model.

- Exclusive use of **Rails** CLI over Rake.

- Test Runner: enhanced abilities to run tests from Rails.

- Sprockets 3

- Turbolinks 5

A helpful guide for upgrading Ruby on Rails can be found at: *http://guides.rubyonrails.org/ upgrading_ruby_on_rails.html*

For more information about Ruby on Rails 5, and sources of this information can be found at: *https:// fedoraproject.org/wiki/Changes/Ruby_on_Rails_5.0*, *http://weblog.rubyonrails.org/2016/6/30/Rails-5-0- final/*, and *http://guides.rubyonrails.org/5_0_release_notes.html*.

4.1.2. Go 1.7

With Fedora 25, the *golang* packages, which include the **Go** programming language compiler, have been upgraded to upstream version 1.7, which provides a number of bug fixes and enhancements over the previous version. Notably, this update provides support for IBM System z, and significant performance improvements. For the full list of changes, see the *Go 1.7 Release Notes*[15] upstream.

4.1.3. Rust

Fedora 25 provides the **Rust** compiler and its **Cargo** package management tool. **Rust** is a fast compiled programming language, which prevents segmentation faults, ensures thread safety, and supports both functional and imperative-procedural paradigms. For more information, see *Rust upstream documentation*[16].

4.1.4. The GNU C Library Version 2.24

The **GNU C Library** (*glibc*) is updated to version 2.24 in Fedora 25. This version provides increased performance, many bug fixes, improvements to POSIX compliance new locales, and other changes. See the NEWS at *https://sourceware.org/git/?p=glibc.git;a=blob;f=NEWS;hb=refs/heads/release/2.24/ master* for a full list of changes in this version.

This version is backwards compatible with the version shipped in Fedora 24. No packaging changes are necessary.

4.1.5. Erlang 19

The **Erlang** programming language is updated to version 19 in Fedora 25. Notable changes include:

- A new state machine behavior: `gen_statem`

- A new experimental plug-in to `mnesia` that allows use of external storage solutions such as `leveldb`: `mnesia_ext`

- Improved dirty NIF schedulers (see the writeup at *https://medium.com/@jlouis666/erlang-dirty- scheduler-overhead-6e1219dcc7*)

- Experimental support for Unix Domain Sockets, opening the door for native `journaldy`, `systemd- notify`, and `DBus` implementations

For full information about **Erlang** version 19, see the upstream release notes at *http://www.erlang.org/ news/105*.

This change also aims to improve Erlang packaging (as well as the packaging guidelines at *https:// fedoraproject.org/wiki/User:Peter/Erlang_Packaging_Guidelines*), making packagers' lives easier.

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[15] https://golang.org/doc/go1.7
[16] https://www.rust-lang.org/en-US/documentation.html

4.1.6. GHC 7.10

The **GHC** Haskell compiler is updated to a major new version 7.10.3 in Fedora 25. Notable changes include:

- GHC has implemented the "Applicative Monad Proposal" and the "Burning Bridges Proposal", which may require some changes to code. See *https://ghc.haskell.org/trac/ghc/wiki/Migration/7.10* for help on migrating to 7.10.

- GHC now has support for 'partial type signatures', which give you the ability to add 'holes' to a type signature that the compiler can later infer.

For detailed information about **GHC** version 7.10, see the upstream release notes at *http:// downloads.haskell.org/~ghc/7.10.3/docs/html/users_guide/release-7-10-1.html*.

4.2. Development Tools

4.2.1. Unicode 9.0

Unicode is an international encoding standard. With each release Unicode adds support for new scripts and characters. The Unicode Version 9.0 update brings these capabilities to Fedora users and developers. Specifically Unicode Version 9.0 adds 7,500 characters, including six new scripts and 72 new emoji characters. Unicode Version 9.0 also adds support for new additional languages:
- Osage

- Nepal Bhasa

- Fulani plus other additional African languages

- The Bravanese dialect of Swahili

- The Warsh orthography for Arabic

- Tangut

For more information please visit the Unicode release notes for Unicode Version 9.0: *http:// unicode.org/versions/Unicode9.0.0/*,

A. Contributors

A large number of people contribute to Fedora each release. Among these are a number of writers and translators who have prepared these release notes. The following pages list those contributors.

A.1. Writers

Fedora Documentation Project

B. Revision History

Revision 25.02-1	**Tue Oct 11 2016**	**Fedora Docs Project** *docs AT lists.fedoraproject.org*
GA F25 publication		

Revision 25.01-1	**Tue Oct 11 2016**	**Fedora Docs Project**
		docs AT lists.fedoraproject.org
First F25 publication		

Index

B

Bug Reporting, 2

F

FAQ
   Fedora, 2

H

Help, 2

R

Reporting
   Bug and Feature Request, 2

W

Wiki
   Fedora, 2