Red Hat Certified System Administrator

File umask

File Permissions

Permissions on a file are set using octal notation.

```
4 - Read
2 - Write
1 - Execute
```

File Permissions

For example

```
-rw-------. 1 root root 1579 Oct 21 13:21 anaconda-ks.cfg
```

This file has read and write permissions in the owner, and no permissions for any other user. This would be notated as 600.

```
-rw-r--r--. 1 root root 1627 Oct 21 13:28 initial-setup-ks.cfg
```

This file has read and write for the user, and read permissions for both the group and all other users. This would be notated as 644.

Default Permissions

When a file or directory is created it has to have some set of default permissions. Linux by default assigns Read and Write permissions on the user, group, and other sets, for files, but does not assign any execute permissions.

Directories, however, get assigned Read, Write and Execute permissions to all sets by default.

Masking

Default permissions are fine, but it would be tedious to change them for every new file created. We can hide a permission from the default view by setting a mask. So if we set a mask of 222 we get the following:

```
666 - default
222 - mask
---
444 - result

666 - default
022 - mask
---
644 - result
```

Masking Directories

Directories are similar - we just add the execute bit into the default. Remember that directories need the execute bit so a user can navigate into the directory.

```
777 - default
222 - mask
---
555 - result

777 - default
027 - mask
---
750 - result
```

Setting the mask

Setting the mask can be done using the `umask` command.

`umask` is not persistent. It can be set for a specific task in a script, meaning that all new files created during the script will have their permissions masked differently than the default.

Persistent Settings

Two files - `/etc/profile` and `/etc/bashrc` control the `umask` settings for both interactive and login shells.

Note that the method they do so contains a conditional statement - so root and other system accounts have a different `umask` from normal user accounts.