

Essay no 1: "Change Management Documentation"

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1 Change Proposal Summary

The proposed change is a major upgrade of the home entertainment machine's, from here on referred to as *Media Center*, operating system (OS). During the upgrade it will be necessary with at least one complete reboot of the machine. During this period all services will be unavailable. This means that no iTunes client, or iOS device, will be able to connect and stream music, or videos, from the shared iTunes library.

After the OS upgrade there may be necessary to upgrade 3rd party packages before all services are gracefully brought back up.

2 Services

2.1 Service Checklist

Table 1 lists the running services on affected machine, their customers or users as well as their package dependencies.

Service	Vendor	Customers	Dependencies
iTunes [2]	Apple	All users	HandBreak
HandBreak [4]	HandBreak Project	iTunes	VLC
VLC [5]	Videolan	HandBreak	None

Table 1: Service checklist and dependencies

2.2 Compability Verification

iTunes iTunes is developed and maintained by Apple and supported versions will become available through the Mac's built in *Software Update* application prior to upgrading the new OS itself. It is critical that this particular application supports the new OS as this is the sole purpose of the machine.

3rd party applications HandBreak and VLC can be upgraded from the application itself by launching their respective GUIs. It is also possible to check the vendor's website. Since the two 3rd party applications only are used for converting videos they are not critical to the main function of the machine.

2.3 Service Tests

VLC Open VLC to make sure that it's still found on the machine and is running properly. This is best tested by attempting to play back a video in full screen making sure that there is none undesired lagging or lost frames.

```
$ open -a VLC
```

HandBreak Open HandBreak using the following command to check that all necessary presets are still present. HandBreak will check that all depending libraries are available and that it is in fact operating normally.

```
$ HandBrakeCLI -z
```

iTunes iTunes should automatically start up after boot. If there are any upgrades to iTunes, which was not installed prior to the upgrade, you will be prompted immediately upon startup - click "*Install Now*" to install these. If iTunes is not automatically started after reboot; run the following command. Verify that everything seems to be working properly and that media files are located properly by playing a few random ones.

```
$ open -a iTunes
```

iTunes Home Sharing uses TCP port 3689 and UDP port 5353 to communicate with shared iTunes libraries [6]. Simply ping these from a remote host in order to verify that iTunes is listening for incoming connections.

```
$ telnet MediaCenter.local 3689
```

In order to guarantee that the iTunes service is fully functioning, launch the iTunes client on a PC or an iOS device and connection to the shared library. Start streaming music, or a video in order to verify that the quality is as expected and that buffering starts right away.

3 Back-out Plan

3.1 Triggers

The back-out plan, as described later in Section 3.2, should be initiated no later than 15 minutes after any of these indicators have been identified:

1. A version of iTunes compatible with the new OS can not be found.
2. The machine no longer boots up properly.
3. Instability during operation with sudden service outages.
4. iTunes service test fails.

3.2 Rollback

The process of backing out is to do a complete rollback to a known good state for the machine just before the OS upgrade was attempted and is done in the following way:

1. Choose Apple menu and then Restart. Hold down the *Command* and *R* keys while the computer restarts.
2. Select Restore from a Time Machine Backup, and then click Continue.
3. Select the Time Machine backup disk named "*Machintosh HD2*".
4. Select the most recent backup.
5. Follow the onscreen instructions.

The machine will now reboot and the system, as it was before the attempted upgrade, will now be present. The whole process of rolling back is estimated to take no longer than 60 minutes.

4 Shedule

4.1 Maintenance Window

Since the Media Center has it's usage peak between 6 PM and 9 PM it is preferable that upgrades are scheduled in the morning. Preferably between 9 AM to 2 PM when it is no one at home.

A successful upgrade should take no more than 60 minutes to complete, this includes the actual time it takes to run the upgrade. If the upgrade is

unsuccessful additional 60 minutes will be needed in order to successfully back-out and roll back. This gives us that a maintenance window of 120, or 2 hours, is needed.

4.2 Inform users

Since the only affected user will be my roommate - an informal verbal information over the dinner table will be sufficient. Preferably 2 or 3 days prior to the upgrade taking place and on the following morning when the upgrade is carried out.

The intent of the upgrade as well as affected services, and any adjustments necessary for the customer after the upgrade has been completed, must be explained in a step by step manner.

5 Upgrade

5.1 Redines Test

All service tests must pass before an upgrade may be attempted as noted in Figure 1.

5.2 Upgrade Procedure

First a Time Machine backup must be triggered to ensure that all files and folders are properly backed up.

```
$ tutil startbackup --block
```

Before upgrading to the new major version all minor upgrades to the OS must be applied. This is done through the built in *Software Update* application - click "*Install Now*". A reboot of the machine will be necessary, so click "*Reboot Now*" when prompted.

All major upgrades are applied through the *App Store* application. Launch it, locate the appropriate version to install, and click "*Install Now*". All files will be downloaded before the upgrade is started. Everything from here on will be handled by the installer.

5.3 Acceptance Test

The system is now in an *Unknown State* and must be thoroughly checked using the Service Tests as described in Section 2.3.

If the iTunes test fails the back-out procedure described in Section 3.2 must be executed in order to bring the system back to a known good state.

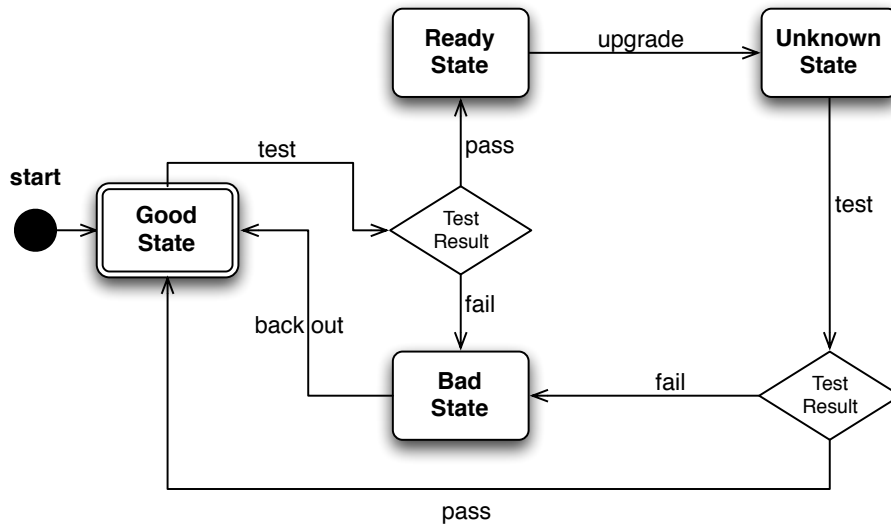


Figure 1: State diagram for the machine being upgraded.

6 Completion

6.1 Inform users

The outcome of the Acceptance Test mentioned in Section 5.3 must be relayed back to the customer in order to inform them on how the upgrade went. In case test failed, a brief summary on why it failed is worth mentioning.

6.2 Analyze

Regardless of the outcome there is always room for improvement. Reflect back on how the upgrade went. Should there be added any new steps to any of the tests, verifications or procedures in order to improve the quality? The experience from this upgrade should be digested back into this procedure to be better prepared for the next upgrade.

References

- [1] Limoncelli, Hogan and Chalup, *Practice of System and Network Administration, Chapter 18 and 19*, Second Edition, 2010
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