ERDOSMILLER

System Test Descriptions

RT Installer
Erdos Miller

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Revision History

Version	Primary Author(s)	Description	Date Completed
1.0	Antonio Alexander	First Release	

1 Introduction

1.1 Purpose

The purpose of this document is to provide different tests that together provide 100% requirements coverage and test out all functionality represent in the application in multiple situations. Each test description should be performed with a pass, fail or pass with exceptions noted, commented and signed by the client and EM personnel. The requirements traceability matrix can be used to determine what requirements are covered by what test description(s).

All of these tests should be done on a built application in the LabVIEW runtime and not in the development environment.

1.2 References

- Requirements Document
- Requirements Traceability Matrix
- Test Description Worksheets

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2 Test Descriptions

2.1 TD-001: Test Post Installer

Purpose

The purpose of this test description is to confirm that the post installation application works as expected, for a clean install on a machine that doesn't have any of the dependencies installed, this is a must for the remainder of the test descriptions to be successful.

Pre-Setup

All the dependencies should be tested at least once, but any dependency you must test should be uninstalled, preferably the application is uninstalled, the machine rebooted and the folder in which the item was installed deleted (this is the 'most' clean starting point).

Procedure

Step		Expected Output	Failure Condition
1	Run the post installer, it is in the same folder as the 'RT Installer' executable.		
2	Select the option for custom installation	Custom post installer UI loads	
3	Select the dependency you wish to test		
4	Click the Install button	Dependency should install	Install doesn't start or fails
5	After install, the installed column should update to show that the dependency has successfully installed		
6	Repeat steps 3-5 for each dependency you want to test.		

Failure Conditions

Most of the dependencies use the presence of registry keys to verify if its installed. In general, it's up to the developer to ensure that its verification function always fails (never shows installed) or does a 100% job of confirming installation.

Expected Output

All dependencies should install correctly and ask for admin access where necessary, if there is a detectable error, use feedback should allow identification of the problem if not pointing to an outright solution.

2.2 TD-002: Test Software Activation

Purpose

The purpose of this test description is to confirm that software activation works as expected. Currently its very simple in that there's only three possible levels of software activation: full, trial and null.

There are four possible modes of operation in terms of software activation:

- Full Developer - Has access to everything
- Full Client Plus - Has access to everything except creating configurations
- Full Client - Can only deploy configurations
- Trial Developer - Has access to everything but USB filtering is forced on

Pre-Setup

Ideally this is a clean computer where the application has never been installed, but close to clean installation will require:

- The current license be deactivated (possible via software activation window)
- The software license configuration xml be deleted (location in data\license)
- The software restarted
- Four 'test' licenses:
  - Full - Developer
  - Full - Client Plus
  - Full - Client
  - Trial - Developer
- This test requires internet connectivity for initial validation

Procedure

Step		Expected Output	Failure Condition
1	Open the application	Application should prompt to configure trial or full mode	
2	Select trial mode when prompted for license configuration		
3	Activate the application with trial license	Application tells you how many days remain in your trial	Negative feedback
4	Navigate to Automatic actions		
5	Click on the new automatic deployment configuration		
6	Enter username/password for authentication		
7	Click on target in the table, then click on the add/edit button, Observe targets	USB filtering should be active and disabled	

Step		Expected Output	Failure Condition
8	Cancel and close the application		
9	Open the application	It should tell you how many days remain in your trial	
10	Navigate to software activation		
11	Deactivate the license	Application should close automatically	
12	Open the application	Application should prompt to configure trial or full mode	
13	Cancel the selection of trial/full, observe interface	No access to manual/automatic mode	
14	Navigate to software activation		
15	Click on configure and select full if not configured for full		
15	Activate the application with a full license	Software activation is automatically closed	
16	Observe the application interface	Access is provided to manual/automatic mode.	
17	Navigate to software activation		
18	Deactivate the license		
19	Open the application		
20	Navigate to software activation		
21	Click on configure and select full if not configured for full		
22	Activate the application with a full license		
23	Observe the application interface	Application interface should reflect the access provided by license	
24	Deactivate the license		
25	Repeat steps 19 - 24 for each additional full license		

Post-Setup

Be sure to de-activate the license, both on the machine and on the server for re-use

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2.3 TD-003: Manual Functions

Purpose

The purpose of this test description is to test simple manual functions to both ensure basic functionality works as expected and to ready a target for online creation of the online automatic deployment configuration (TD-005).

Pre-Setup

You only need a target (preferably local and USB) and have installed an appropriate version of NI RIO to support it (drivers and software). This test description doesn't require a built startup application. The application must be activated.

Procedure

Step		Expected Output	Failure Condition
1	Open the activated application		
2	Navigate to manual mode		
3	Click the format button		
4	Select a target and click the select button		
5	Enter the username and password for authentication		
6	Enter 'FORMAT' in the confirmation input and click the Format button		
7	Observe the interface and wait for feedback	Positive feedback	Negative feedback
8	Click the reboot button		
9	Select a target and click the select button		
10	Enter the username and password for authentication		
11	Click yes to reboot into installation mode		
12	Enter 'REBOOT in the confirmation input and click the Reboot button	Positive feedback	Negative feedback
13	Click the reboot button		
14	Select a target and click the select button		
15	Enter the username and password for authentication		
16	Click no when prompted to reboot into installation mode		
17	Enter 'REBOOT in the confirmation input and click the Reboot button	Positive feedback	Negative feedback
18	Navigate to manual installation		
19	Click on the software set button		
20	Select a target and click the select button		
21	Enter the username and password for authentication		
22	Select a software set and expand		

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Step		Expected Output	Failure Condition
23	Click the select button	Positive feedback	Negative feedback
24	Click on the software components button		
25	Select a target and click the select button		
26	Enter the username and password for authentication		
27	Select a component and expand		
28	Click the select button	Positive feedback	Negative feedback

Failure Conditions

Generally, the only negative feedback you may experience is that the username/password is incorrect, the prompts should direct you to what you should do.

Expected Output

The software installed should now be present on the target, you can verify by going to MAX or reading a target in the automatic deployment edit interface.

2.4 TD-004: Manual FPGA Installation

Purpose

The purpose of this test description is to install an FPGA bitfile onto a target and confirm functionality.

Pre-Setup

This test requires an FPGA bitfile compiled for the specific target, preferably one with a blinking LED to be able to visually inspect and confirm deployment. Using the FPGA main in the sample application is probably the easiest.

Procedure

Step		Expected Output	Failure Condition
1	Open the activated application		
2	Navigate to manual actions		
3	Navigate to manual installation		
4	Click on the FPGA button		
5	Select a target and click the select button		
6	Enter the username and password for authentication		
7	Click on the Add FPGA bitfile button		
8	Select an FPGA bitfile specific to the selected target	List should update with new bitfile	
9	Click the select button, observe application		
10	Enter 'INSTALL' in the confirmation input and click the Install button	Bitfile should be installed and target rebooted	Negative feedback
11	Navigate to manual actions		
12	Click on the erase FPGA button		
13	Select a target and click the select button		
14	Enter the username and password for authentication		
15	Enter 'ERASE' in the confirmation input and click the Install button	FPGA application should be erased and target rebooted	Negative feedback

Failure Condition

There's a strong opportunity for file permissions issues if the directory being written to isn't the default directory, take this into consideration.

2.5 TD-005: Manual Firmware Update

Purpose

The purpose of this test is to test firmware (BIOS) updating. Generally, this only needs to be done once per target.

Procedure

Step		Expected Output	Failure Condition
1	Open activated application		
2	Navigate to manual actions		
3	Navigate to manual settings		
4	Click on the firmware button		
5	Select a target and click the select button		
6	Enter the username and password for authentication		
7	Select an appropriate firmware for your target		
8	Enter 'UPDATE' in the confirmation input and click the Update button		Negative feedback

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2.6 TD-006: Manual Startup Application Installation

Purpose

The purpose of this test is to install a startup application onto a target

Pre-Setup

This test requires a startup application be built with a component definition file, this is easiest through the sample application, but any startup application will work, preferably blinking an LED.

Procedure

Step		Expected Output	Failure Condition
1	Open an activated application		
2	Navigate to manual actions		
3	Navigate to manual install		
4	Click on the startup application button		
5	Select a target and click the select button		
6	Enter the username and password for authentication		
7	Select a startup application and click OK		Negative feedback

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2.7 TD-007: Create Online Automatic Deployment Configuration

Purpose

The purpose of this test is to verify the process of creating an automatic deployment configuration from an online target

Procedure

Step		Expected Output	Failure Condition
1	Open activated application		
2	Navigate to automatic actions		
3	Click on the create button		
4	Enter the username and password for authentication		
5	Click on configuration at the top of the list		
6	Click on the add/edit button		
7	Enter information for name/common and click the select button, observe interface	Table should update with entered information	
8	Click on and expand targets		
9	Click the add/edit button		
10	Select a target and click select	The configuration counter should increment by one	
11	Right click the new target and click open all items		
12	Select software set and click add/edit		
13	Select a software set and click select	Table should update with selected software set	
14	Select Components and click the read button		
15	Select a target and click the select button, observe the interface	Table should update with components installed on the selected target	
16	Click the remove button	All components should be removed from the table	
17	Select Components and click add/edit		
18	Select one or more software components and click select	Table should update with	

Step		Expected Output	Failure Condition
		selected software components	
19	Select Startup and click add/edit		
20	Select a startup application and click select	Table should update with selected startup application	
21	Select Network and click add/edit		
22	Configure network adapter(s) and click select	Table should updated with configured adapters	
23	Select an Adapter on the left and click the copy button		
24	Click on an adapter on the right and click the add/edit button		
25	Configure the adapter and click the OK button		
26	Select firmware and click add/edit		
27	Select a firmware and click select	Table should update with selected firmware	
28	Select FPGA and click add/edit		
29	Select an FPGA bitfile and click select	Table should update with selected FPGA	
30	Click Save, pick a location and enter a filename		Negative feedback
31	Close the automatic deployment configuration editor		
32	Click on the edit button and select the configuration just created	Table should populate with previous configuration	

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2.8 TD-008: Deploy Online Automatic Configuration

Purpose

The purpose of this test is to confirm the ability to deploy an automatic deployment configuration to a single target

Pre-Setup

This requires an automatic deployment configuration to be setup and ready, this is easiest to do after TD-007.

Procedure

Step		Expected Output	Failure Condition
1	Open activated application		
2	Navigate to automatic actions		
3	Click on the Install button		
4	Select an automatic deployment configuration from the file dialog created in TD-007		
5	Select a single target and click the select button		
6	Enter the username and password for authentication		
7	Observe interface and wait until deployment completes.		Negative feedback

Failure Conditions

Generally, this depends specifically on how ‘well’ the automatic deployment configuration you’re using is setup, errors may arise if there is missing software (e.g. different version of NI RIO used on the machine that created the configuration versus the machine deploying it), these should be simple to troubleshoot.
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2.9 TD-009: Create Offline Automatic Deployment Configuration

Purpose

The purpose of this test is to confirm that the offline software database works as expected and the ability for the 'RT Installer' to create an automatic deployment configuration for multiple targets using offline data.

Pre-Setup

This test requires at least two targets, they can be the same kind of target or two different targets.

Procedure

Step		Expected Output	Failure Condition
1	Open activated application		
2	Navigate to the configuration		
3	Click on the database removal button, observe any targets that have already been synchronized and click cancel		
4	Click on the database update button, select a target whose configuration you want to synchronize		Negative feedback
5	Repeat step 4 for each kind of target you want to use for the configuration		
6	Close configuration		
7	Navigate to automatic actions		
8	Click on the create automatic deployment configuration button		
9	Click on the source button to enable database mode		
10	Click on target in the table and click the add button	Should see a list of products	
11	Select a target and click the select button		
12	Select software set and click add/edit		
13	Select a software set and click select	Table should update with selected software set	
14	Select Components and click the read button		
15	Select a target and click the select button, observe the interface	Table should update with components installed on the selected target	
16	Click the remove button	All components should be	

Step		Expected Output	Failure Condition
		removed from the table	
17	Select Components and click add/edit		
18	Select one or more software components and click select	Table should update with selected software components	
19	Select Startup and click add/edit		
20	Select a startup application and click select	Table should update with selected startup application	
21	Select Network and click add/edit		
22	Configure network adapter(s) and click select	Table should updated with configured adapters	
23	Select an Adapter on the left and click the copy button		
24	Click on an adapter on the right and click the add/edit button		
25	Configure the adapter and click the OK button		
26	Select firmware and click add/edit		
27	Select a firmware and click select	Table should update with selected firmware	
28	Select FPGA and click add/edit		
29	Select an FPGA bitfile and click select	Table should update with selected FPGA	
30	Repeat steps 11-29 for each unique product type		
31	Click Save, pick a location and enter a filename		Negative feedback
32	Close the automatic deployment configuration editor		
33	Click on the edit button and select the configuration just created	Table should populate with previous configuration	

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2.10 TD-010: Deploy Offline Automatic Configuration

Purpose

The purpose of this test is to confirm the ability to deploy to multiple targets created with the offline software database.

Pre-Setup

Currently the application requires that multiple target deployments have the same username/password combination. The two targets being used should have the same authentication to successfully deploy.

Procedure

Step		Expected Output	Failure Condition
1	Open activated application		
2	Navigate to automatic actions		
3	Click on the Install button		
4	Select an automatic deployment configuration from the file dialog created in TD-009		
5	Select at least two targets and click the select button		
6	Enter the username and password for authentication		
7	Observe interface and wait until deployment completes.		Negative feedback

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2.11 TD-011: Test USB target filtering

Purpose

The purpose of this test is just to confirm that the USB target filtering works.

Pre-Setup

This works to have either one target with a USB and non-USB network access, or two targets, one with USB and the other with non-USB network access.

Procedure

Step		Expected Output	Failure Condition
1	Open activated application		
2	Navigate to configuration		
3	Click on the USB filtering icon and select yes for USB filtering		
4	Close configuration		
5	Open configuration and verify that the USB filtering icon shows that it is enabled.		
6	Close configuration		
7	Navigate to manual actions		
8	Navigate to manual settings		
9	Click on the network button		
10	Verify that the USB filtering button is set		
11	Click on the USB filtering button and set it to no USB filter, verify the targets that are shown		
12	Click on the USB filter button and set it to USB filter, verify the targets that are shown		

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2.12 TD-012: Manual Network Configuration

Purpose

The purpose of this test is to perform a manual network configuration

Procedure

Step		Expected Output	Failure Condition
1			

Expected Output

All dependencies should install correctly and ask for admin access where necessary, if there is a detectable error, use feedback should allow identification of the problem if not pointing to an outright solution.

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