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**Cherry Bomb:
Cherry Blossom Cherry Tree Upgrade
Test Procedures**

For Cherry Blossom Version 5.0

**(CDRL 14b)
(U)**

Prepared for US Govt. by:

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For contract:

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Cherry Bomb Program

Cherry Blossom Cherry Tree Upgrade Test Procedures

Revisions

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1.0	Initial draft – derived from Cherry Blossom System FAT Procedures (CDRL 14)	7 September 2010
1.1	Added OWT test	21 October 2010
1.2	More specific test procedures for reboot tests. Moved FAT test to end.	19 November 2010
1.3	Added start and stop CT services to delete Flytrap test. Added acronyms section.	2 December 2010
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1 Introduction

1.1 Purpose

This document describes the test procedures to be followed when upgrading the Cherry Tree product (software) on the Cherry Blossom production servers. The test procedures in this document should only be performed by qualified contractor personnel.

This document should be used in conjunction with the Cherry Blossom Cherry Tree Upgrade Verification and Validation Report (CDRL 15-b) -- referred to as VVR hereafter. When running the tests described in this document, update VVR with appropriate date/tester/version/pass-fail information. Test numbers in this document map to those in VVR. Note that this document derives from the "TestProcedures.doc" of the Cherry Blossom project.

For further context, see the Cherry Bomb Quality Assurance Plan (CDRL 3).

1.2 Applicable Documents

The following table shows related documents:

- Cherry Bomb Contract
- Cherry Bomb Statement of Work
- Cherry Bomb Quality Assurance Plan (CDRL 3)
- Cherry Bomb: Cherry Blossom Installation Guide
- Cherry Bomb: Cherry Blossom User's Manual (CDRL 12)
- Cherry Bomb: Cherry Blossom Test Plan (CDRL 13)

1.3 Conventions

The documentation for each individual test contains:

- **Description** – a short description of the test
- **Context** – (optional). If the test requires additional lengthy contextual information, include it here.
- **Setup** – procedures for setting up the test.
- **Run** – procedures for running the test.
- **Pass/Fail** – description of how to determine if a test passed or failed

1.4 Prerequisites

The test procedures in this document should only be performed by qualified contractor personnel.

1.5 Acronyms

The following acronyms are used throughout this document:

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Cherry Bomb Program	Cherry Blossom Cherry Tree Upgrade Test Procedures
CBomb	Cherry Bomb
CBlossom	Cherry Blossom
CB	Cherry Blossom
CT	CherryTree
CW	CherryWeb (User interface for CherryTree)
CDRL	Contract Documents Requirements List
COTR	Contracting Officer's Technical Representative
FAT	Factory Acceptance Testing

2 Production Server Installation and Upgrade Tests

This section describes tests that must be run after an installation/upgrade is performed on the production servers.

In most cases, the tests should be run sequentially (starting with test 2.1) after the backend servers (cb-cc master, cb-cc slave, cb-vpn master, cb-vpn slave) have been upgraded.

NOTE: that for more major upgrades (e.g., OS change), it may be desirable to have an easy “fallback” position, which typically means the slave server is not immediately upgraded, but kept at the current version so it could easily be switched to the master. In this case, tests that pertain to the master (excluding failover tests) should be run first. If all of these tests pass, then the slave can be upgraded, and tests pertaining to the slave and failover should then be run.

These tests require one contractor personnel logged on to a control terminal.

NOTE: it is desirable to perform all CherryWeb actions (e.g., planning and assigning Missions) as a “Test” user (as in section 2.6) to avoid potential clutter of Missions/etc. See the Cherry Blossom User’s Guide for instructions on creating a Test user.

2.1 Reboot “master cb-cc server” Test

Description: Tests that the cb-cc master server can be rebooted and that on power-up, proper services are running, and the firewall and routing rules for each PoP are properly configured.

Setup: From a control terminal, open an ssh console (using PuTTY) to the master cb-cc server as root (consult “CB Installation Guide” for IP address and root linux user credentials). Dump the iptables rules to a file (`/sbin/iptables -L -n > ~/iptables_before_reboot.out`), and dump the routing entries to a file (`/sbin/route > ~/routes_before_reboot.out`). Gracefully reboot the system (`/sbin/reboot`).

Run: Verify that the sponsor SNMP monitoring system is reporting the cb-cc master server down. Once the server is back online, verify that the sponsor SNMP monitoring system is reporting the cb-cc master server up. Dump the iptables rules (`/sbin/iptables -L -n > ~/iptables_after_reboot.out`) and the routing entries (`/sbin/route > ~/routes_after_reboot.out`) and compare to the respective *_before_reboot files. Verify that the server role is “master” by running the `/usr/local/bin/check_cb_role` script. Verify mysql by running the `/usr/local/bin/check_cb_mysql` script (should report “master”, mysql up with no errors). Verify CherryTree by running the `/usr/local/bin/check_cherrytree.sh` script (should report “CherryTree OK”). Verify CherryWeb by running the `/usr/local/bin/check_cherryweb.sh` script (should report “CherryWeb OK”). Verify no errors were reported to the log files during startup (visually inspect `/var/log/cherrytree/CherryTree.log`,

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`/var/log/cherrytree/CherryTree_error.log,`
`/var/log/cherryweb/CherryWeb.log` for errors).

Pass/Fail: The test passes if all verification steps pass.

2.2 Reboot “slave cb-cc server” Test

Description: Tests that the cb-cc slave server can be rebooted and that on power-up, proper services are running, and the firewall is properly configured.

Setup: From a control terminal, open an ssh console (using PuTTY) to the slave cb-cc server as root (consult “CB Installation Guide” for IP address and root linux user credentials). Dump the iptables rules to a file (`/sbin/iptables -L -n > ~/iptables_before_reboot.out`), and dump the routing entries to a file (`/sbin/route > ~/routes_before_reboot.out`). Gracefully reboot the system (`/sbin/reboot`).

Run: Verify that the sponsor SNMP monitoring system is reporting the cb-cc slave server down. Once the server is back online, verify that the sponsor SNMP monitoring system is reporting the cb-cc slave server up. Dump the iptables rules (`/sbin/iptables -L -n > ~/iptables_after_reboot.out`) and the routing entries (`/sbin/route > ~/routes_after_reboot.out`) and compare to the respective *_before_reboot files. Verify that the server role is “slave” by running the `/usr/local/bin/check_cb_role` script. Verify mysql by running the `/usr/local/bin/check_cb_mysql` script (should report “slave”, mysql up with no errors). Verify CherryTree (on the master) by running the `/usr/local/bin/check_cherrytree.sh` script (should report “CherryTree OK”). Verify CherryWeb (on the master) by running the `/usr/local/bin/check_cherryweb.sh` script (should report “CherryWeb OK”).

Pass/Fail: The test passes if all verification steps pass.

2.3 Reboot “master cb-vpn server” Test

Description: Tests that the cb-vpn master server can be rebooted and that on power-up, proper services are running, and the firewall is properly configured.

Setup: From a control terminal, open an ssh console (using PuTTY) to the master cb-vpn server as root (consult “CB Installation Guide” for IP address and root linux user credentials). Dump the iptables rules to a file (`/sbin/iptables -L -n > ~/iptables_before_reboot.out`), and dump the routing entries to a file (`/sbin/route > ~/routes_before_reboot.out`). Gracefully reboot the system (`/sbin/reboot`).

Run: Verify that the sponsor SNMP monitoring system is reporting the cb-vpn master server down. Once the server is back online, verify that the sponsor SNMP monitoring system is reporting the cb-vpn master server up. Verify that CherryTree (java service cherrytree) is running. Dump the iptables rules (`/sbin/iptables -L -n > ~/iptables_after_reboot.out`) and the routing entries (`/sbin/route > ~/routes_after_reboot.out`) and compare to the respective *_before_reboot files.

Pass/Fail: The test passes if all verification steps pass.

2.4 Reboot “slave cb-vpn server” Test

Description: Tests that the cb-vpn slave server can be rebooted and that on power-up, proper services are running, and the firewall is properly configured.

Setup: From a control terminal, open an ssh console (using PuTTY) to the slave cb-vpn server as root (consult “CB Installation Guide” for IP address and root linux user credentials). Dump the iptables rules to a file (/sbin/iptables -L -n > ~/iptables_before_reboot.out), and dump the routing entries to a file (/sbin/route > ~/routes_before_reboot.out). Gracefully reboot the system (/sbin/reboot).

Run: Verify that the sponsor SNMP monitoring system is reporting the cb-vpn slave server down. Once the server is back online, verify that the sponsor SNMP monitoring system is reporting the cb-vpn slave server down. Note that CherryTree (java service cherrytreeservice) should not be running on the slave cb-vpn server. Dump the iptables rules (/sbin/iptables -L -n > ~/iptables_after_reboot.out) and the routing entries (/sbin/route > ~/routes_after_reboot.out) and compare to the respective *_before_reboot files.

Pass/Fail: The test passes if all verification steps pass.

2.5 Cherry Web Logon Test

Description: Tests that a user on a control terminal can successfully logon to CherryWeb.

Setup: From a control terminal, point a browser (firefox) to CherryWeb (on the cb-cc master server -- consult “CB Installation Guide” for CherryWeb URL).

Run: At the CherryWeb authentication screen, enter the appropriate user/password (consult “CB Installation Guide” for CherryWeb credentials), and verify correctness of the CherryWeb Overview page. Click all of the links on the left menu pane, and verify they render properly. Verify the ticker at the bottom of the screen is refreshing periodically (every 10 seconds). Verify you can change the number of table rows in the left menu pane.

Pass/Fail: The test passes if all verification steps pass.

2.6 Cherry Web Operation Creation Test

Description: Tests that a CherryWeb user can successfully create a Test user. This test also attempts to partition any test data from production server data by creating and performing all subsequent tests under the Test Operation.

Setup: From a control terminal, point a browser (firefox) to CherryWeb (as in 2.5).

Run: On CherryWeb, go to the Administer->Operations page, and create a new Operation, giving the Operation a unique name that indicates the user was created to run system tests and to partition system test data from the production system's real data. **IMPORTANT:** be sure to run/configure all subsequent tests (where relevant) as the new Test Operation.

Pass/Fail: The test passes if CherryWeb acknowledges the new Test Operation.

2.7 UTC Time Test

Description: Tests that the production servers are using UTC time and that UTC time is correct.

Setup: From a control terminal, point a browser (firefox) to CherryWeb (as in 2.5). ssh to the master and slave cb-cc and cb-vpn servers (as in 2.1 through 2.4).

Run: Verify that the CherryWeb ticker is showing the proper UTC time. From the ssh terminals, verify the master and slave cb-cc and cb-vpn servers are showing the proper UTC time using the "date" command.

Pass/Fail: The test passes if all verification steps pass.

2.8 SNMP Monitoring Test

Description: Tests that the sponsor's SNMP monitoring system is properly monitoring the cb servers.

Setup: Have the sponsor bring up the SNMP monitoring (nagios) screen.

Run: Verify that the SNMP monitoring (nagios) screen is reporting UP (green) for all SNMP monitoring tests. Verify the CherryWeb monitoring task is enabled and is reporting UP (green). Stop the CherryTree process on the cb-cc master (service cherrytree stop). Verify that the SNMP monitoring (nagios) screen is reporting DOWN (red) for the CherryTree SNMP monitoring tests. Start the CherryTree process on the cb-cc master (service cherrytree start). Verify that the SNMP monitoring (nagios) screen is reporting UP (green) for the CherryTree SNMP monitoring tests. Repeat stopping/starting for CherryWeb (cherryweb) and mysqld.

Pass/Fail: The test passes if all verification steps pass.

2.9 Catapult Test

Description: Tests that the cb-cc master server can successfully interface with the sponsor's Catapult notification system.

Setup: Give the sponsor's Catapult maintainers a heads-up about the test. From a control terminal, point a browser (firefox) to CherryWeb (as in 2.5).

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Run: Logon to CherryWeb as an admin user (cadmin). Go to the Administer -> Catapult page. Verify that "Alert Forwarding to Catapult Enabled" is set the "Yes" and that other settings are correct. Click the "Send Alert Notification" button. Verify with the sponsor's catapult maintainer that Catapult received a Cherry Blossom Alert message. Click the "Send Initial Beacon Notification" button. Verify with the sponsor's catapult maintainer that Catapult received a Cherry Blossom Initial Beacon message.

Pass/Fail: The test passes if Catapult successfully receives a Cherry Blossom Alert message and a Cherry Blossom Initial Beacon message.

2.10 OWT Test

Description: Tests that the cb-cc master server can successfully generate an OWT report.

Setup: From a control terminal, ssh to the cb-cc master server (as in 2.1).

Run: Change directory to the runOWT.sh directory:

```
cd ~cbuser/CherryBlossom/CherryTree/Release
```

Run the OWT script for a previous FAT test Operation (note 'Operation' was formerly called 'Customer' – see CherryWeb Administer -> Operations for previous test Operations):

```
./runOWT.sh -c <PREVIOUS_TEST_OPERATION>
```

Validate OWT data in the "Reports" subdirectory.

NOTE: if runOWT.sh generates little or no data, check the last time an OWT report was generated for this Operation with the '-p option':

```
./runOWT.sh -c <PREVIOUS_TEST_OPERATION> -p
```

Then re-generate the last report using the -w option (or specify a start time with the -s option):

```
./runOWT.sh -c <PREVIOUS_TEST_OPERATION> -w
```

Pass/Fail: The test passes if the runOWT.sh generates valid OWT data in the Reports subdirectory.

2.11 Database Replication Test

Description: Tests that the cb-cc master server is successfully replicating its database on the cb-cc slave server.

Setup: From a control terminal, establish ssh terminals to the cb-cc master and slave servers (as in 2.1 and 2.2).

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Run: Verify the databases and the copy data on the cb-cc master and slave are in sync.

Pass/Fail: The test passes if the databases and the copy data on the cb-cc master and slave are in sync.

2.12 cb-cc Server Failover and Failure Recovery/Resynchronization After Server Failover Test

Description: Tests the cb-cc server failover procedure and recovery/resynchronization of cb-cc server data after a failover event.

Setup: From a control terminal, establish ssh terminals to the cb-cc master and slave servers.

Run: Follow the Failover and Server Recovery instructions in the CB Installation Guide. Verify that failover successfully occurs. Verify that at least one GTR Test Flytrap has beacons through each PoP. Verify the new slave is actively replicating data from the new master server (i.e., repeat the "Database Replication Test"). Verify that the sponsor SNMP monitoring system is reporting the cb-cc new master server up. Dump the iptables rules (`/sbin/iptables -L -n > ~/iptables_after_failover.out`) and the routing entries (`/sbin/route > ~/routes_after_failover.out`) and compare to the respective *_before_reboot files (on the previous cb-cc master). Verify that the server role is "master" by running the `/usr/local/bin/check_cb_role` script. Verify mysql by running the `/usr/local/bin/check_cb_mysql` script (should report "master", mysql up with no errors). Verify CherryTree by running the `/usr/local/bin/check_cherrytree.sh` script (should report "CherryTree OK"). Verify CherryWeb by running the `/usr/local/bin/check_cherryweb.sh` script (should report "CherryWeb OK"). Verify no errors were reported to the log files during startup (visually inspect `/var/log/cherrytree/CherryTree.log`, `/var/log/cherrytree/CherryTree_error.log`, `/var/log/cherryweb/CherryWeb.log` for errors).

Pass/Fail: The test passes if the server failover happens successfully, GTR Test Flytraps have beacons to the "new" master server through all PoPs, and the new slave server is actively replicating data from the new master server, and all verification steps pass.

2.13 cb-cc Server Failover and Failure Recovery/Resynchronization After Server Failover Test II (Failover to Original Master)

Description: Tests the cb-cc server failover procedure and recovery/resynchronization of cb-cc server data after a failover event (really to just restore the original master server to the role of master).

Setup: From a control terminal, establish ssh terminals to the cb-cc master and slave servers.

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Run: Follow the Failover and Server Recovery instructions in the CB Installation Guide. Verify that failover successfully occurs. Verify that at least one GTR Test Flytrap has beacons through each PoP. Verify the new slave is actively replicating data from the new master server (i.e., repeat the “Database Replication Test”). Verify that the sponsor SNMP monitoring system is reporting the cb-cc (original) master server up. Dump the iptables rules (/sbin/iptables -L -n > ~/iptables_after_failover2.out) and the routing entries (/sbin/route > ~/routes_after_failover2.out) and compare to the respective *_before_reboot files (on the previous cb-cc master). Verify that the server role is “master” by running the /usr/local/bin/check_cb_role script. Verify mysql by running the /usr/local/bin/check_cb_mysql script (should report “master”, mysql up with no errors). Verify CherryTree by running the /usr/local/bin/check_cherrytree.sh script (should report “CherryTree OK”). Verify CherryWeb by running the /usr/local/bin/check_cherryweb.sh script (should report “CherryWeb OK”). Verify no errors were reported to the log files during startup (visually inspect /var/log/cherrytree/CherryTree.log, /var/log/cherrytree/CherryTree_error.log, /var/log/cherryweb/CherryWeb.log for errors).

Pass/Fail: The test passes if the server failover happens successfully, GTR Test Flytraps have beacons to the “new” master server through all PoPs, and the new (original) slave server is actively replicating data from the new (original) master server, and all verification steps pass.

2.14 Delete Flytrap Test

Description: Tests the delete Flytrap script and cleans the production server of Test Flytrap data.

Setup: From a control terminal, establish an ssh terminal to the cb-cc master server.

Run: Stop the CT services (“~cbuser/bin/disable-server.sh”). Run the runDeleteFlytrap.sh (“~cbuser/CherryBlossom/CherryTree/Release/runDeleteFlytrap.sh) script on the Test Flytrap. Start the CT services (“~cbuser/bin/enable-server.sh”). Verify the Flytrap is no longer in the system (CW View -> Flytraps page). Have the Flytrap Beacon/Alert. Verify the Flytrap is again in the system. Stop the CT services (“~cbuser/bin/disable-server.sh”). Run the runDeleteFlytrap.sh (“~cbuser/CherryBlossom/CherryTree/Release/runDeleteFlytrap.sh) script on the Test Flytrap. Verify the Flytrap is no longer in the system (CW View -> Flytraps page).

Pass/Fail: The test passes if the delete Flytrap script runs successfully, the “deleted” Flytrap can beacon again successfully, and then the Flytrap can again be deleted.

2.15 Operational Flytraps of Previous svn Revision Test (If Applicable)

Description: Tests that “operational” Flytraps (i.e., Flytraps that are being used or are slated to be used) having earlier svn revisions can successfully perform the core CB functions).

Setup: From a control terminal, logon to CherryWeb. Assign the Flytrap a Mission with H enabled, a few Targets, some with W actions, some with Copy actions.

Run: Have the Flytrap beacon, and then generate an Alert which launches the W action and Copy action. Verify a successful W action.

2.16 FAT Procedures

Description: Verifies that all major CB features are working with the upgraded Cherry Tree servers by running through the [FAT](#) tests of “Cherry Bomb: Cherry Blossom FAT Procedures [CDRL-14]” for at least one Flytrap.

Setup: See “Cherry Bomb: Cherry Blossom FAT Procedures [CDRL-14]”.

Run: As in “Cherry Bomb: Cherry Blossom FAT Procedures [CDRL-14]”.

Pass/Fail: The test passes if all “Cherry Bomb: Cherry Blossom FAT Procedures [CDRL-14]” pass.