REDHAWK Architect™
Version 7.2-1
Release Notes

December 2016

0898600-7.2-1

READ ME BEFORE INSTALLING THIS PRODUCT

CONCURRENT

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1.0. Introduction

This document provides release information and installation instructions for Concurrent Computer Corporation's RedHawk Architect™ Version 7.2-1.

1.1 Product Description

RedHawk Architect is an easy-to-use GUI interface for configuring, building and flashing embedded solutions.

RedHawk Architect greatly simplifies the following tasks to create and maintain a runtime and development environment for single board computers (SBCs):

- installing custom configurations of the CentOS® or Red Hat® Enterprise Linux distribution

- installing and configuring the RedHawk™ Linux® operating system

- installing NightStar™ RT application development tools

- maintaining and reconfiguring an SBC's root file system

- deploying root file system images to target systems

1.2 Related Publications

The following table lists Concurrent documentation for RedHawk Architect and the components that can be installed using RedHawk Architect. Depending upon the document, they are available online on RedHawk Linux systems or from the Concurrent documentation web site at **http://redhawk.ccur.com/docs**.

RedHawk Architect	Pub. Number
RedHawk Architect Release Notes	0898600
RedHawk Architect User Guide	0898601
RedHawk Linux	
RedHawk Linux Release Notes	0898003
RedHawk Linux User's Guide	0898004
RedHawk Linux FAQ	N/A
NightStar RT Development Tools	
NightView User's Guide	0898395
NightTrace User's Guide	0898398
NightProbe User's Guide	0898465
NightTune User's Guide	0898515

1.3   Syntax Notation

The following notation is used throughout this document:

italic
Books, reference cards, and items that the user must specify appear in *italic* type. Special terms may also appear in *italic*.

list bold
User input appears in **list bold** type and must be entered exactly as shown. Names of directories, files, commands, options and man page references also appear in **list bold** type.

`list`
Operating system and program output such as prompts, messages and listings of files and programs appears in `list` type.

`[]`
Brackets enclose command options and arguments that are optional. You do not type the brackets if you choose to specify these options or arguments.

2.0.   Prerequisites

Architect 7.2-1 can be installed on host systems running one of the following Linux distributions:

- RedHawk 7.0 and 7.2 (both CentOS and RHEL bases supported)
- RHEL 7.0 and 7.2 (Workstation and Server)
- CentOS 7.0 and 7.2
- Fedora 18, 19, 20, 21, 22 and 23.

Note that only 64-bit host systems are supported and only 64-bit target images can be created.

Architect 7.2-1 supports creating both RedHawk 7.0 and RedHawk 7.2 target images.

It is also important to be aware of the following host system assumptions:

- The host system is assumed to be a separate system than the target system. In particular, the host system must have a working DVD/CD drive in order to load the media required for target installation. In addition, it is expected that the host system will have a free USB port for use in flashing the target image.

- If you are going to be configuring custom kernels using the Kernel Manager page in Architect, the host system must have the "Qt Development" and possibly "Qt Core" RPMs installed or you will not be able to successfully build custom kernels.

- At this time Architect has not been made to work seamlessly with SELinux. It is recommended that the host system should set SELinux to *disabled* or *permissive* mode when Architect is being installed and used. If SELinux must be enabled, you may experience "suspicious behavior" alerts during the normal operation of Architect. These alerts can generally be ignored as they do not affect the functionality of the tool.

- The network installation and diskless deployment features of Architect require network access between the host system and the targets. It is recommended that any firewall on the host be disabled during all network deployments. If disabling the host firewall is not permitted at your site, the system administrator must ensure that the DHCP, TFTP and NFS protocols are allowed in both directions through the host firewall.

- By default Architect root images are placed under the `/var/lib/architect` directory. In addition, network installation and diskless deployment target images are placed under `/var/lib/tftpboot`. To avoid disk space problems it is recommended that Architect host systems have adequate space configured for the host system's `/var` disk partition.

- It is necessary to run Architect on the host system with root permissions. To do this it is recommended that `sudo(8)` be properly configured and used on the host system. If using `sudo` is not an option, you may log in as root or alternatively issue the `su` command.

3.0. Target Boards

3.1 Supported Target Boards

In addition to creating target images that work with generic hardware configurations, RedHawk Architect Version 7.2-1 provides optimized support for the following target boards:

- Concurrent Technologies TP 442/34x (CompactPCI)

- Concurrent Technologies VP 426/231 (VME)

- Concurrent Technologies VP 717/08x (VME)

- Concurrent Technologies VP 92x/01x (VME)

- Concurrent Technologies VP 92x/41x (VME)

- Concurrent Technologies VP B1x/msd (VME)

- GE Fanuc V7812 (VME)

- GE Fanuc V7865 (VME)

- GE Fanuc mITX-945E-P (Mini-ITX)

- Intel Desktop Board D945GCLF2 (Mini-ITX)

3.2 Board Support Packages

Many Single Board Computers (SBCs) require a Board Support Package (BSP) to enable devices that are not supported by the standard RedHawk kernels.

This software is typically proprietary and cannot be distributed as source code. It usually requires a special agreement between Concurrent Computer Corporation and the copyright holder.

For example, a board support package might be required to enable a PCI-VME bridge chip or for utilities such as EEPROM flash programs.

Contact Concurrent Computer Corporation (see "Direct Software Support" on page 11) for more information on obtaining board support packages.

4.0. Changes in This Release

The following changes have been made in Version 7.2-1 of RedHawk Architect:

- Added support for choosing distribution package base environments.

- Reduced the minimum size of target images.

- Optimized file system configuration page for clarity.

- Improved on-target handling of missing disks during installation.

- Allowed some NightStar servers to be installed even if other NightStar servers could not be installed due to missing package dependencies.

- Various minor enhancements and bug fixes.

The following changes have been made in Version 7.2 of RedHawk Architect:

- Added support for RedHawk 7.2 target images.

- Added support for RedHawk 7.2, CentOS 7.2 and Red Hat Enterprise Linux 7.2 hosts.

- Added support for Fedora 23 hosts.

- Added support for NightStar 4.5 installation in target images.

- Added various features to help reduce the size of target images.

- Updated on-target installation kernel to support installations on a wider range of target hardware.

- Added support for GPT formatted disks.

- Added support for target systems with UEFI firmware.

- Various minor enhancements and bug fixes.

The following changes have been made in Version 7.0-1 of RedHawk Architect:

- Added support for Concurrent Technologies VP B1x/msd family of VME boards, including the VP B14/443-42.

- Added support for configuring **systemd** services in a target image.

- Added support for read-only file-systems when using advanced partitioning.

- Added support for editing kernel boot options in the Kernel Manager.

- Added support for editing QEMU command-line options for Virtual Machine deployment.

- Modified PXE installer to mount host NFS file-system with **tcp** option.

- Better integration with the GNOME desktop media auto-mounting feature.

- Added new user preference to exclude optional packages when selecting Base Distro package groups.

- Updated the PXE installer kernel to support a wider range of target systems.

- Various minor enhancements and bug fixes.

The following changes have been made in Version 7.0 of RedHawk Architect:

- Added support for RedHawk 7.0 target images.

- Added support for RedHawk 7.0, CentOS 7.0 and Red Hat Enterprise Linux 7.0 hosts.

- XFS is now the default file system used for all partitions.

- Various minor enhancements and bug fixes.

5.0.   Installation Procedures

Perform the following installation steps as the root user.

1. Insert the installation CD in the CD-ROM drive.

2. Execute the **mount** command with the mount point that is designated in
    /etc/fstab.

    NOTE: /media/cdrom is used in the examples in this section; e.g.:

    mount /media/cdrom

    If the entry is not in **/etc/fstab**, executing the following command will
    mount the cdrom device at **/media/cdrom**:

    mount /dev/cdrom /media/cdrom

3. Change the current working directory to the directory containing the
    installation script:

    cd /media/cdrom

4. Invoke the installation script:

    ./install-architect

    When prompted, you must accept EULA to continue.

5. When installation is complete, change the current working directory
    outside of **/media/cdrom**:

    cd /

6. Unmount the CD-ROM device (may be required to remove the installation
    CD from the CD-ROM device):

    umount /media/cdrom

6.0. Software Removal

Should you desire to uninstall RedHawk Architect, perform the following steps as the root user.

1. Insert the installation CD in the CD-ROM drive.

2. Mount the CD-ROM drive:

   mount /media/cdrom

   Note: Your CD device mount point may be different.

3. Change the current working directory to the directory containing the installation script:

   cd /media/cdrom

4. Invoke the uninstall script:

   ./uninstall-architect

5. When the uninstall is complete, change the current working directory outside of **/media/cdrom**:

   cd /

6. Unmount the CD-ROM device (may be required to remove the installation CD from the CD-ROM device):

   umount /media/cdrom

7.0.   Known Issues

Special consideration should be given to the following areas.

Architect session file version compatibility

Session files created by versions of Architect older than Architect 7.0 are *not* compatible with Architect 7.2-1. Only session files created by Architect 7.0, 7.0-1, 7.2 and 7.2-1 can be used with Architect 7.2-1.

However, note that Architect 7.2-1 session files are *not* compatible with any previous versions of Architect and may only be used with Architect 7.2-1.

Whitespace characters in directory names breaks building custom kernels

The Linux kernel Makefiles do not correctly handle whitespace characters in directory names; if you plan to build custom kernels in a target image, you cannot choose an Image Name with any embedded whitespace characters, and you cannot have any embedded whitespace characters in any directory of the image's leading path.

Desktop media automounting might confuse Architect

Recent versions of the GNOME desktop automatically mount loopback-mountable media images (e.g. ISO images and virtual machine hard drive images). This feature can confuse Architect because Architect also needs to periodically mount and unmount media images.

Architect has been modified to be more compatible with automatic media image mounting, and these changes are discussed in "GNOME/MATE Desktop Integration" on page 10 of this document.

Chroot shell limitations on some host distributions

When Architect is run using **sudo** or **su** in a desktop session belonging to a non-root user, the Chroot Shell feature may not work when **gnome-terminal** is selected for the Terminal Emulator. This is known to be a problem on RHEL/CentOS 7.2 and Fedora 23 hosts, but not on RHEL/CentOS 7.0 and Fedora 20 hosts.

8.0. GNOME/MATE Desktop Integration

When running on GNOME and MATE desktops, Architect attempts to automatically disable and enable the desktop media automounting feature when it would interfere with Architect usage. Architect does this by manipulating the `/org/gnome/desktop/media-handling/automount` or `/org/mate/desktop/media-handling/automount` **dconf** key for the current desktop session. See **dconf**(7) for more information.

Architect will always manage media automounting correctly if the current desktop session is initiated by the root user. However, some issues may be encountered if **sudo** or **su** is used to run Architect from a desktop session belonging to a non-root user.

To ensure that Architect can manage media automounting correctly when the desktop session belongs to a non-root user, start Architect using one of the following techniques:

1. Run **sudo** with the *preserve user environment* option, as in the following example:

   ```
   # sudo -E architect
   ```

2. Run **su** without a *dash character* option (e.g "-"); that is, do not separately invoke this command to become root before invoking Architect:

   ```
   # su -          ← Incorrect
   ```

   and instead use the **su** *command* option, as in the following example:

   ```
   # su -c architect
   ```

Alternatively, you can choose to simply disable the media automounter by issuing one of the following commands as the desktop session user:

```
$ dconf write /org/gnome/desktop/media-handling/automount false
$ dconf write /org/mate/desktop/media-handling/automount false
```

If desired, you can re-enable the media automounter after you have exited Architect by issuing one of the following commands:

```
$ dconf write /org/gnome/desktop/media-handling/automount true
$ dconf write /org/mate/desktop/media-handling/automount true
```

9.0.   Software Updates and Support

9.1   Direct Software Support

Software support is available from a central source. If you need assistance or information about your system, please contact the Concurrent Software Support Center at our toll free number 1-800-245-6453. For calls outside the continental United States, the number is 1-954-283-1822. The Software Support Center operates Monday through Friday from 8 a.m. to 5 p.m., Eastern Standard Time.

Calling the Software Support Center gives you immediate access to a broad range of skilled personnel and guarantees you a prompt response from the person most qualified to assist you. If you have a question requiring on-site assistance or consultation, the Software Support Center staff will arrange for a field analyst to return your call and schedule a visit.

You may also submit a request for assistance at any time by using the Concurrent Computer Corporation web site at **http://www.ccur.com/isd_support_contact.asp**.

9.2   Software Updates

Updates to Concurrent software can be obtained via Concurrent's Software Portal. There are three ways of installing product updates:

- Using the Network Update Utility (NUU) installed on your RedHawk system

- Manual installation after browsing and downloading individual RPMs from Concurrent's software repositories

- Building a customized Update CD using Concurrent's web site for immediate download

9.2.1 Updating via NUU

NUU supports installation and updating of software products from Concurrent software repositories over a network. NUU utilizes Yum and the RPM subsystems to install and update software.

NUU is installed automatically with RedHawk, however, you should configure it to include all of the Concurrent software products installed on your system.

Clicking on the "Updates (NUU)" icon on your desktop launches NUU to check to see if Concurrent updates are available for your system.

Instructions for configuring NUU can be found in the **QuickStart.pdf** document available at **http://redhawk.ccur.com/updates/QuickStart.pdf.**
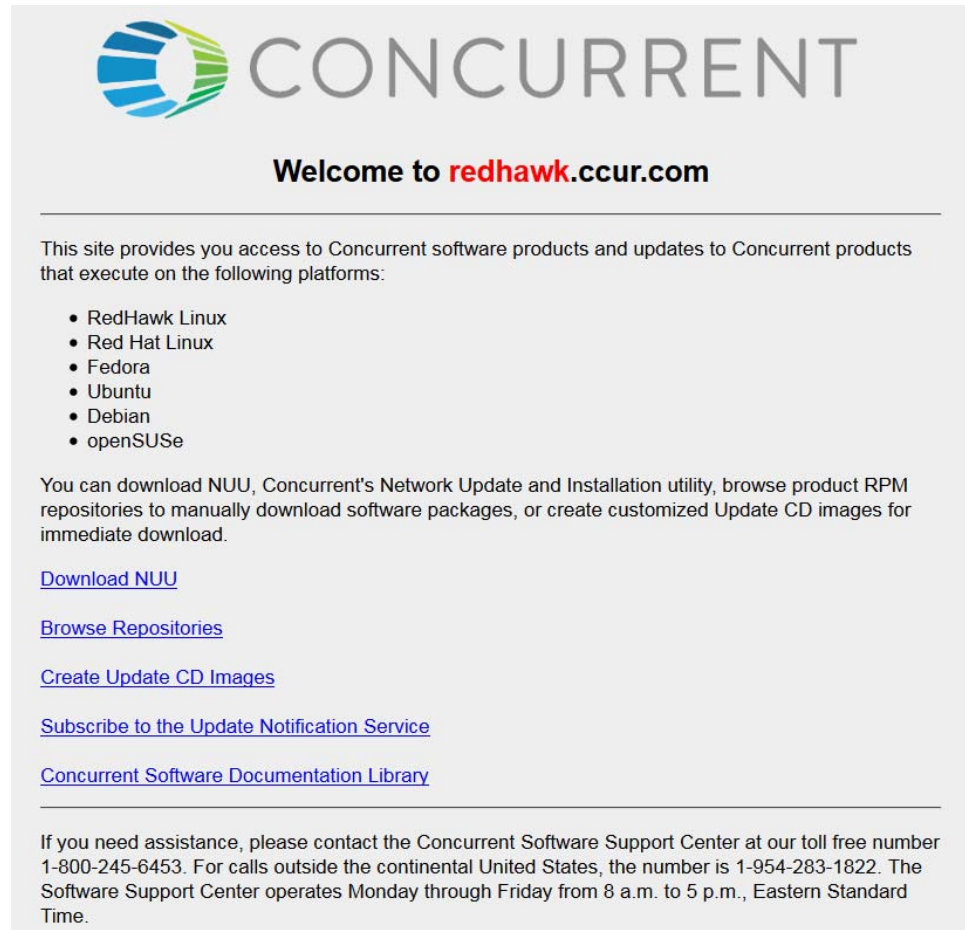
The first time you invoke NUU you will need to specify your redhawk.ccur.com Login ID and Password that were provided in the shipping documents accompanying your system. If you require assistance, refer to "Direct Software Support" on page 11.

Before using NUU to install any updated software modules, check for NUU updates separately. Apply any NUU updates and then restart NUU before applying any other updates.

9.2.2 Installing Manually Downloaded RPMs
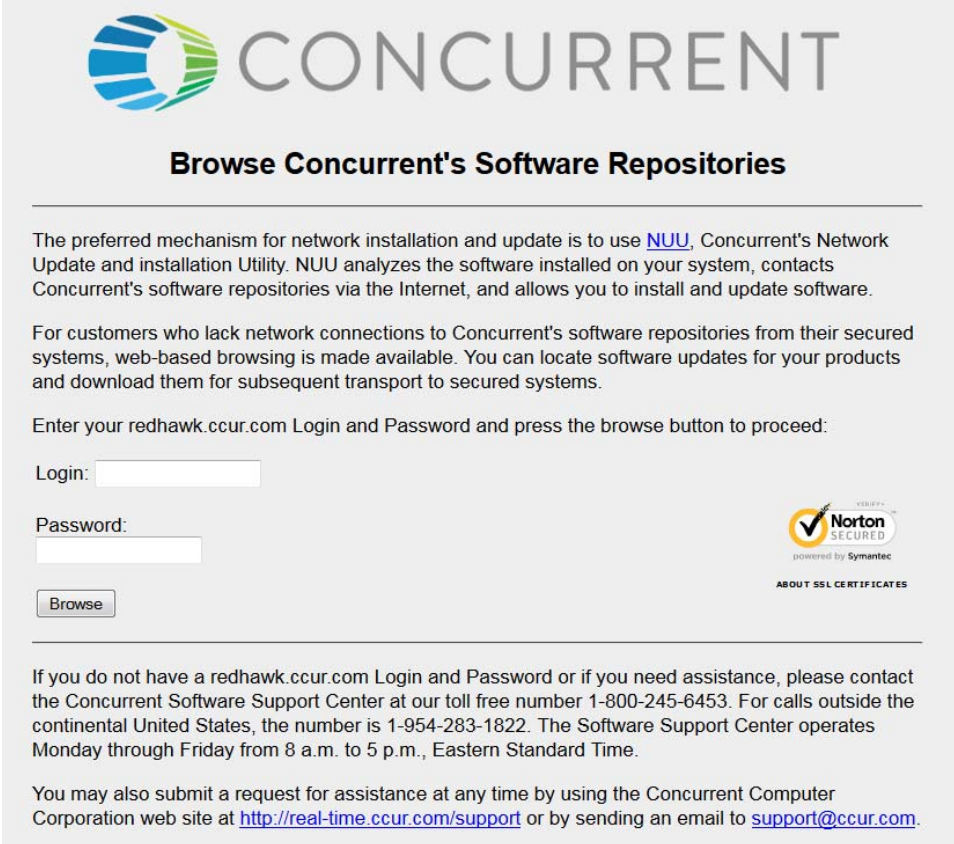
You can browse Concurrent's software repositories to locate updated RPMs and download them for manual installation.

Access the RedHawk Updates web site (**http://redhawk.ccur.com**) by clicking on the "Concurrent Software Portal" icon on the desktop. Accessing this web site displays the following screen:

Clicking on the **Browse Repositories** link takes you to an authentication page.

Enter your redhawk.ccur.com Login ID and Password and click the Browse button.

Select the products of interest and architecture from the following pages to see the list of RPMs in the product software repository.

To locate the latest RPMs in the repository, click on the Last modified column header to sort by date. You may need to click twice to set the sort order to newest-to-oldest.

After locating the RPMs of interest and downloading them to your system, you can manually install them.

To install newly downloaded packages, follow these steps:

1. Log in as root and take the system down to single-user mode:

    a. Right click on the desktop and select Open Terminal.

    b. At the system prompt, type **init 1**.

2. Change directory to the location of the updates and issue the following command:

        rpm -Uvh *.rpm

   The time it takes to install will vary depending on the number of updates being installed.

3. When complete, exit single-user mode (Ctrl-D).

NOTE

If you have installed an update containing new RedHawk kernels on a system that has post-installation loadable modules present, those modules must be recompiled for the new kernel; for example, an NVIDIA driver that is a later version than the one included with RedHawk or any third party package that uses loadable modules.

9.2.3 Customized Update CDs

You can use Concurrent's Software Portal to create a customized Update CD for your system which you can then download and burn onto physical media, or simply mount as an ISO9660 image.

Update CDs have customized copies of product software repositories and a simple graphical interface for selecting packages for update and installation. These CDs use NUU (described above) to talk to the CD to obtain packages -- no network access is required during installation via Update CDs.

Access the RedHawk Updates web site (**http://redhawk.ccur.com**) by clicking on the "Concurrent Software Portal" icon on the desktop, then click on Create Update CD images.

You will need to enter your redhawk.ccur.com Login ID and Password and then you can select the products to update. A CD image is built as part of the web session. At the end of the session, you can immediately download it for subsequent installation.

9.2.4 Automatic Notification of Available Updates

When updates, incremental releases or major releases occur, those who have subscribed to Concurrent's automatic notification service are automatically sent an email with a link to the redhawk.ccur.com site describing the updates relative to your company. Multiple email addresses can be subscribed per customer site.

To subscribe, unsubscribe or change notification options, click on the "Subscribe to the Update Notification Service" link on the **redhawk.ccur.com** site.

9.3   Documentation Updates

For the latest documents, including updated FAQ, Release Notes and User Guides, go to Concurrent's documentation web site at **http://redhawk.ccur.com/docs**.