Luminosity v5.1.1 BETA Release Notes

LynxOS-178 v2.2.4 BETA

DOC-2071-BETA-00

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CHAPTER 1 Overview

Luminosity combines the Eclipse IDE and Eclipse C/C++ IDE from the Eclipse Foundation with the Lynx Cross-Development Environment to facilitate the development of embedded applications on LynxOS-178 targets.

The *Luminosity v5.1.1 BETA Release Notes* provide information on the following topics:

- Luminosity features for this release.
- Error messages that can be displayed on attempt to communicate with targets via LOCI and the description of possible troubleshooting actions.
- Known issues and limitations for this release.

For detailed information on the Eclipse IDE and Eclipse C/C++ IDE, please refer to the online Eclipse documentation installed with the Luminosity product or visit `http://www.eclipse.org`

Supported Host and Target Systems

The following table provides a summary of the supported host and target configurations for this release of Luminosity.

Table 1-1: Supported Host and Target Configurations

Supported Host Systems	Supported Target Systems	Supported Target System Hardware
Red Hat Enterprise Linux 6.2 (64-bit)	LynxOS-178 2.2.4	PowerPC
Windows 7 (64-bit)	LynxOS-178 2.2.4	PowerPC

Host System Requirements

Software Requirements

The following software must be installed on the host to provide access to all facilities of Luminosity:

- To enable the online help:
  - Mozilla or Firefox for the Linux Host
  - Microsoft Internet Explorer version 6.0 or higher for a Windows Hosts
- Lynx Cross-Development Environments for LynxOS-178.

  For instructions on how to install the LynxOS-178 Cross-Development Environment, please refer to the respective Lynx Software Technologies, Inc. documentation:
  - *LynxOS-178 2.2.4 BETA Installation Guide*
- The LOCI 5.1.1 host components installed on the development or intermediate host. Additionally, LOCI 5.1.1 target components should be installed in the Cross-Development Environment. For instructions on how to install the LOCI components, please refer to the *LOCI v5.1.1 BETA Release Notes*.
- If access to the SpyKer tracing tool is desired, SpyKer 5 target components should be installed in the Cross-Development Environment. Refer to the *SpyKer 5.1.1 BETA Release Notes* for instructions on how to install the SpyKer tracing tool.
- The `expect`, `telnet`, `ssh`, `bash`, and `xterm` utilities accessible from the `PATH` variable if direct access to targets is required (on the Linux host only).

NOTE: Luminosity does not require Java VM installed on the target. Luminosity installs JRE 1.7 in its own installation directory and uses it while running.

Hardware Requirements

Depending on a host system, the Luminosity product requires the following amount of free hard disk space:

- 280 MB on a Linux host system
- 260 MB on a Windows host system

The host system should have at least 256 MB of RAM. To get better results, 512 MB or more of RAM is recommended.

Luminosity is a Java application; therefore, a 1 GHz (or more) host processor is recommended.

Target System Requirements

Before using Luminosity, make sure that a target system meets the requirements described in the following subsections.

Kernel Requirements

The subject kernel configuration must include the following:

- A TCP/IP layer enabling network connections (Ethernet), if the network-based connection with the target will be used
- Depending on the desired number of open sessions, a sufficient number of pseudo tty devices (at least 1)
- Serial port driver, if the target does not support network connection or the subject console should be available from the Luminosity workbench

Other Requirements

Other subject system requirements include the following:

- Sufficient file system space must exist to support the downloading and developing of target components and applications on the target.
- If a network is used for target connection, Cross-Development tools (such as `inetd/xinetd` and optionally `sshd`) must be installed and configured on the target.
- The LOCI target components must be installed and configured on the target.

NOTE: If the LOCI target component is absent, the full set of facilities provided by Luminosity is not available for the user. However, it is possible to manage projects, edit, compile, and link code using Luminosity. In this case, all target connections must be made manually.

New Features

The following new features are supported in this release of Luminosity comparing with the releases 4.0.x:

- A new baseline — Eclipse IDE 4.4.0 and Eclipse CDT 8.4.0
- Support for LynxOS-178 v2.2.4 BETA target systems
- Kernel-level debugging

Version Information

This release of Luminosity contains Eclipse IDE 4.4.0 and Eclipse C/C++ IDE 8.4.0 for the following:

- Linux platforms and the GTK windowing system
- Windows 7 platform

Typographical Conventions

The typefaces used in this manual, summarized below, emphasize important concepts. All references to filenames and commands are case-sensitive and should be typed accurately.

Kind of Text	Examples
Body text; *italicized* for emphasis, new terms, and book titles	Refer to the *Luminosity v5.1.1 BETA Release Notes*
Environment variables, filenames, functions, methods, options, parameter names, path names, commands, and computer data	`ls -l myprog.c /dev/null`
Commands that need to be highlighted within body text, or commands that must be typed as is by the user are **bolded**.	`login:` **`myname`** `#` **`cd /usr/home`**
Text that represents a variable, such as a filename or a value that must be entered by the user, is *italicized*.	`cat` *`<filename>`* `mv` *`<file1>`* *`<file2>`*

Blocks of text that appear on the display screen after entering instructions or commands	`Loading file /tftpboot/shell.kdi into 0x4000`
	`.....`
	`File loaded. Size is 1314816`
	`© 2015 Lynx Software Technologies, Inc. All rights reserved.`

Keyboard options, button names, and menu sequences	**`Enter`**, **`Ctrl-C`**

For More Information

For more information, refer to the following documentation:

- *Luminosity 5.1.0 Installation Guide*

  This document contains details on supported Host and Target System requirements as well as procedures for installing and uninstalling Luminosity.

- *Luminosity 5.1.0 User's Guide*

  This document contains details on Cross-Development Environment administration, creating application projects, as well as importing, building, running, and debugging all associated projects using the Graphical User Interface (GUI).

- *SpyKer 5.1.1 BETA Release Notes*

  This document contains details on the features and late-breaking information about the current release of SpyKer.

- *SpyKer 5.1.0 Target Guide*

  This document outlines the procedures on how to prepare, statically link, and dynamically install a SpyKer Device Driver. Other information contains instructions on how to build Kernel and File System Images for LynxOS-178 targets in both Development Mode and Production Mode.

- *LOCI 5.1.1 BETA Release Notes*

  This document contains details and late-breaking information about the current release of LOCI.

- *LOCI 5.1.0 User's Guide*

  This document outlines the procedures on how to run the LOCI proxy, the LOCI boot service daemon, and the LOCI server. It further contains important information on how to build LOCI enabled target images.

Technical Support

Lynx Software Technologies handles support requests from current support subscribers. For questions regarding Lynx Software Technologies products, evaluation CDs, or to become a support subscriber; our knowledgeable sales staff will be pleased to help you. Please visit us at:

http://www.lynx.com/corporate/contact/support.php3

How to Submit a Support Request

When you are ready to submit a support request, please include *all* of the following information:

- First name
- Last name
- Your job title
- Phone number
- Fax number
- E-mail address
- Company name
- Address, City, State, ZIP, Country
- LynxOS-178 version number [LynxOS-178 v2.2.4 BETA]
- Target Platform (for example, PowerPC)
- Board Support Package (BSP)
- Current Service Pack Revision
- Development Host OS version
- Detailed description of the problem that you are experiencing:
  - Is there a requirement for a US Citizen to work on this issue?
  - Priority of the problem — Critical, High, Medium, or Low?
  - Test Cases or Log Files that substantiate or elaborate the problem?

Where to Submit a Support Request

By E-mail:

Support, Europe	tech_europe@lynx.com
Support, worldwide except Europe	support@lynx.com
Training and Courses	USA: training-usa@lynx.com Europe: training-europe@lynx.com

By Phone:

Training and courses	USA: +1 408-979-4353 Europe: +33 1 30 85 06 00
Support, Europe (from our Paris, France office)	+33 1 30 85 93 96
Support, worldwide except Europe and Japan (from our San José, CA, USA headquarters)	+1 800-327-5969 or +1 408-979-3940
Support, Japan	+81 33 449 3131

By Fax:

Support, Europe (from our Paris, France office)	+33 1 30 85 06 06
Support, worldwide except Europe and Japan (from our San José, CA, USA headquarters)	+1 408-979-3945
Support, Japan	+81 22 449 3803

Special Notes

The following notations highlight any key points and cautionary notes that may appear in this manual.

NOTE: These callouts note important or useful points in the text.

CAUTION! Used for situations that present minor hazards that may interfere with or threaten equipment/performance.

Additional resources are available at the following web sites:

- `http://www.lynx.com`
- `http://www.eclipse.org`

CHAPTER 2 *Known Issues and Limitations*

This chapter provides a summary of the known issues and limitations within this release.

General Issues

- Although the *Luminosity User's Guide* and the *Luminosity Installation Guide* may mention versions of the product as "v5.1.0" and/or "LynxOS-178 v2.2.3, these documents are applicable to "v5.1.1" and "LynxOS-178 2.2.4 BETA".

  When working with LynxOS-178 2.2.4 BETA, follow the instructions that are outlined for LynxOS-178 v2.2.3.

- If Luminosity runs on Centos 6.6 with a `cairo` version that is less than 1.9.4 and a GTK version that is greater or equal to 2.24, Luminosity may crash when printing the following error message:

  ```
  java: cairo-misc.c:380:
  _cairo_operator_bounded_by_source: Assertion
  'NOT_REACHED' failed
  ```

  In order to fix this, add the following line in the end of the *<inst_dir>*`/eclipse/luminosity.ini` file:

  ```
  -Dorg.eclipse.swt.internal.gtk.cairoGraphics=false
  ```

  where *<inst_dir>* is a Luminosity installation directory.

- The Luminosity IDE must be started in the native host environment. That is, the Luminosity IDE **shall not** be started from the shell where the `SETUP.bash` command is executed to access the Cross-Development Environment.

Installation Issues

- Uninstallation of the Luminosity IDE can fail if another user has made a previous attempt. Should this occur, remove the Luminosity installation directory from the command prompt.

Build Issues

- In external projects if the active configuration is changed and the project is rebuilt, information about the executable format displayed in the **Project Explorer** view may be incorrect. To avoid this, collapse the project in the **Project Explorer** view before rebuilding it.
- Sometimes a project can be built twice if the **Build Automatically** option is switched on in the main **Projects** menu.
- A project is not automatically re-built after the D2U conversion. Use the **Clean Project** menu item to rebuild it.
- Driver project build can fail if the driver entry points duplicate names already present in the Kernel.
- Clicking the **Apply** and **OK** buttons in the **LW Project Properties** dialog while build is running may cause the Luminosity IDE hanging for a few minutes.
- If a Kernel project is built the `Duplicate paths` warning can appear in the **Problems** view. This warning is generated because the **Release** and **Debug** configurations have the same output directory for Kernel projects. Safely ignore this message.
- On the Windows hosts when a very first project is created and built, the `Program g++/gcc not found in PATH` error messages is displayed in the **Problems** view. Delete this message or ignore it.

Project Issues

- When a Cross-Development Environment is removed from the list of platforms supported by a Kernel project the corresponding directories are not deleted.
- `all` and `clean` are reserved for target names in project `Makefiles` and cannot be used as project names.
- `Mutex` cannot be used as a project name.
- Names such as `memory`, `streambuf`, and `strings` are reserved for C++ header files and cannot be used as project binary names. Refer to the **Window->Preferences->C/C++->File Types** dialog for the full list of the reserved names.
- A project cannot be created in a read-only directory. No error messages will be displayed.
- In the VCT editor for LynxOS-178 Kernel projects, if a value set by the `NumOfVms` variable differs from the number of present VM sections a dialog printing the following message will appear:

  ```
  The following errors were detected on parsing and will be
  fixed:

  The value of NumOfVms parameter does not equal to number of
  VM sections. Are you sure that you want to continue?
  ```

  Clicking the **OK** button will adjust the variable to the number of sections. The same situation occurs if the number of DDD sections is not equal to the `NumOfDdds` value or number of FS sections is not equal to the `NumOfFs` value.
- In the editor, the built-in C/C++ parser may show errors that are not printed by the compiler on a project build. Ignore these errors as they will disappear after the Luminosity IDE is relaunched.
- The `Makefile` files in the Kernel and managed driver projects are read-only. On attempt to change them, a dialog suggesting to allow write access privileges appears. Should the user agree to allow write access privileges, all changes will then be lost.
- The Luminosity spec editor does not support spec files with m4 directives. Do not change these files in the Luminosity Kernel projects by using either external or internal editors after the pure spec files without m4 directives are produced by the project build. Instead, change the pure spec file.

- The Luminosity VCT editor does not support VCT files with m4 directives. Do not change these files in the Luminosity Kernel projects by using either external or internal text editors after the pure VCT files without m4 directives are produced by the project build. Instead, use the **Remote System Configuration -> Edit VM Configuration**... item in the context menu to change VM configuration.
- Kernel images built by the Luminosity Kernel and driver projects do not display information about the build date and the Operating System version upon initial booting.
- In LynxOS kernel projects, if a kernel spec file contains `aclspec` directive, the `$ENV_PREFIX/etc/groups` file should be included in the target file system. Otherwise ACL permissions will be ignored.

Debug and Run Issues

- If the **Luminosity IDE** or **Debug** view is closed while the debug session is still running, the application being debugged may continue running, therefore preventing a subsequent upload. As a workaround, close the application on the target before uploading.
- If the standard debug engine is used, the line pointer may have a color that does not correspond to color of threads being debugged. This can occur if more than one thread is stopped on the same line. Move one of the threads ahead and the line pointer color will be updated properly.
- Variables in the **Variables** view might be displayed with an error mark and the subscription `Target is not suspended`. When the application stops, this error mark disappears.
- An attempt to debug applications built for another platform may cause the `Target selection failed` error message.
- When multi-thread applications are debugged, the selection in the **Debug** view may be lost.
- Each time the debug session is launched, the involved project is rebuilt.
- The premium features are not supported if the DSF debug engine is used.
- The DSF debug engine is not supported for kernel projects at this time.
- Debugging and running applications via the serial line may run unusually slow. Use the network connection if it is possible.

- The tracepoints functionality is not complete at this time, and therefore may produce errors.
- If the DSF debug engine is used and the **Terminate** button is clicked while in the debug session, the application process may continue running on the target. Kill the application process on the target manually.
- The exited debug session may show an unanticipated `gdb` exit code in the **Debug** view.
- When the debugger is stopped inside a function without source code available, the **Editor** view shows the message `No source available for (<function>())` and the source of the debugged project disappears. Position the calling stack to move toward the frame with source.
- The **Modules** and **Signals** views are not supported for the DSF debug engine at this time.
- Opening the debug session may occasionally fail. Should this occur, initiate the operation again.
- A debug session can fail to launch if the **Binaries** folder is not displayed in the **Project Explorer** view. Switch between workspaces to restore the folder.
- Serial port sharing between the console and kernel debugger does not work at this time.
- The **Message Queues** view may display incorrect information for LynxOS-178 targets.
- The **Conditional Variables** view may not properly display the correct count value for LynxOS-178 targets.
-
- Kernel debugging may at times be very slow. The debug session may not perform correctly if an action is started before the previous action completes. Enable the **Verbose** option to examine if messages are exchanged between the host and the target. Start a new action such as **Step Into**, **Step Over**, etc. only after the messages stop printing.
- The target may hang if kernel debug session is open and a breakpoint is set while the kernel is in a running state.
- Within the kernel debug session, some threads may be marked as `Out of control.`

- Kernel debugging does not work on LynxOS vpx6_185 and LynxOS bs77 targets at this time.
- The first watchpoint in a debug session does not work on LynxOS xp5400_p3041 targets at this time.
- The debug control buttons in **Debug** view may inadvertently become enabled before the debug session is fully established.
- Hardware watchpoints are not supported on LynxOS-178 v2.2.3 cwdy4_183 targets at this time.
- If a variable name is entered in the **Add Monitor** dialog, the **Memory** view may display incorrect content when the DSF debug engine is used.
- Debugging is not supported for LynxOS-178 targets running in Production Mode.

Host Shell

- The Host Shell view does not support `ncurses` based applications.
- The **Delete** button works the same way as the **Backspace** button.
- The Host Shell icon can be disabled on the toolbar. To enable it, click a project or its subdirectory in the **Project Explorer** view.

Host File System

- A file selected in the **Project Explorer** view cannot be dragged and dropped in the **Host File System** view if the **Host File System** view has the selection on a file entry.
- On the Windows Host, changing the read only attribute of a folder is not supported.

Direct Access

- On Redhat Linux 6.x, if SELinux is installed, the direct access to targets/hosts may not work if the `selinux-policy` RPM package has version 3.7.19-126. Update the packages to version 3.7.19-154 or higher.
- Direct access is not supported for LynxOS-178 targets running in Production Mode at this time.

Remote File System View

- The contents of a directory where the current user has read only permissions is not displayed.
- Working with the **Remote File System** view via a serial line may run unusually slow. Use a network connection if possible.
- If the **Remote File System** view is closed while obtaining information from the target, an error message may be displayed.
- The **Remote File System** view is not supported for LynxOS-178 targets running in Production Mode at this time.

Remote Target System Viewer

- Working with the **Remote Target System Viewer** via a serial line may run unusually slow. Use a network connection if possible.
- The **Remote Target System Viewer** reports errors if started while a kernel debug session is open.
- The **Control terminal** column is empty in the **Processes** view if the LynxOS-178 target is running in Production Mode.
- The **Process** view displays double `lwsrvr` process entries if the **Show process hierarchy** option is enabled.
- The **CPU ID** column is empty in the **Process** view if the LynxOS-178 target is running in Production Mode.
- In the **Summary** view, load average values may be incorrect on LynxOS-178 targets.

- If a target is rebooted when the **Target System Viewer** is running, the connection may break and the **Reconnect** button is displayed. If clicking this button does not restore the connection, close all views using the **Close All** button and click the **Remote Target System Viewer** icon again.
- The **Remote Target System Viewer** may stop running intermittently showing the `Connection is lost` message. Use the **Reconnect** button to restore connection with the target. This situation can occur if the date is set incorrectly on the target.
- The Preference setting of views that should be opened in the **Remote Target System View** can be safely ignored.

SpyKer

- After the **Zoom** tool is used, the ruler may contain no time labels. Scroll the event panel to the left or to the right to show the nearest time label.
- Events with the same timestamp cannot be viewed by the SpyKer tool separately from each other and are always "aggregated" in the display.
- For wrapped traces the SpyKer tool may mislabel the name of a thread when the original thread exits and the thread ID is reused by a new thread.
- To allow the SpyKer tool to load large traces (>2.5 MB), the Java heap size should be no less than 25 times the trace size. To increase the Java heap size, restart Luminosity using the following command:

  `./luminosity -vmargs -Xmx<size>m`

  where *<size>* is the Java heap size in MB.

NOTE: Even larger heap may be required to perform various operations with the trace. If the Java `out of memory` error message appears, restart Luminosity with an increased Java heap.

- When a trace is opened, the following warning maybe displayed:

```
Warning:there is no one-to-one correspondence between the
Interrupt events in the trace. The following GUI features may
work improperly:
* IRQ detailed information (the IRQ tasks)
* ISR state indication
```

```
* ISR Histogram
```

This means that there is not a one-to-one correspondence between the `Interrupt` and `Return from Interrupt` events in a trace.

In most cases these warnings can appear if there are overruns during trace capture or if the triggers are used.

- SpyKer can display the following warning messages for traces with the Wrap mode event:

  ```
  Warning: no supervisor/user mode change events for <thread
  name> thread after hole.
  ```

  This means that SpyKer cannot detect the actual state of the *<thread name>* thread and will assume that this thread is always in the system state.

- If library calls are traced, but the **Capture Arguments** box is not checked, the trace display tool reports arguments as zero.
- The **Measure** tool does not resize the measure bar after resizing the window.
- After using the tool, the scroll bar position does not match an updated window.
- In the **Memory Usage** panel, if the Kernel memory value is negative, the user memory histogram can be outside of the top or bottom edge of the panel.
- Collecting a SpyKer trace via serial line is slow. Use a network connection if possible.
- When a trace is being searched then after the last event is detected, and the trace is clicked, the vertical line which marks the found event disappears and "Event not found" is shown in the bottom string. One more click starts searching from the point of the trace that is clicked.
- In a SpyKer on-line document, the links may not work if a keyword search is performed.
- When a new event is added in the SpyKer **Events** preference dialog, to enable the buttons located on the right, click an existing event in the appropriate table.
- The SpyKer trace collection may fail if the target is heavily loaded.

- Once a trace is collected and the **Display** button is clicked, the `Disconnected I/O` error message can appear in the **Log** box. This message may be safely ignored.
- Only 4 CPUs are marked in a SpyKer trace with color.
- The library instrumentation feature is currently unsupported for LynxOS-178 targets.

GUI Issues

- The **Cross-Development Platform Configuration** dialog contains an additional **External BSPs** box and the **Manage** button which are not described in *Luminosity User's Guide*. They are used only in case the Cross-Development Environment supports BSPs external to the system tree.
- The appearance of the **Remote Target Configuration** dialog differs from the one present in the *Luminosity User's Guide*. All controls described in the Guide are present but are located in **General**, **Network,** and **Serial** sub-tabs.
- **Remote File**, **Remote File System**, **Target System Viewer**, **SpyKer**, **Remote Shell**, **Application Debugged**, and **Host Shell** views if opened using the **Window -> Show View** menu item do not display any contents. Use corresponding Lynx menu items or toolbar icons to open these views.
- The Luminosity IDE may hang for a few minutes if a large binary is expanded in the **Project Explorer** view.
- If a view is maximized and then minimized the right ruler containing minimized icons may disappear and the view becomes unavailable. Use the **Window -> Reset Perspective** main menu item to make it available again.
- Icons on the toolbar of the **Target System Viewer** view may sometimes appear absent. Resize the workbench window in order to make them visible.

Targets View

- Switching to a new workspace removes the default target selection.
- Currently, different remote target entries may not have the same MAC address.

Remote Copy

- When a file is copied to a remote target, the progress bar remains empty not displaying the operation progress.
- Copying files via the serial line may appear slow. Use a network connection if possible.
- Copying files is not supported for LynxOS-178 targets running in Production Mode at this time.

Target Login

- Target Login is not supported for LynxOS-178 targets running in Production Mode at this time.

Import

- The Luminosity IDE may not operate properly if an attempt to import a Luminosity project using the **Import -> General** menu item is made. Use the **Import -> LW Projects** menu item instead.
- Import of Kernel and driver projects is not supported.

Miscellaneous

- A diskless target may print the `No space left on the device` error message when the user attempts to debug or run an application. Rebuild the KDI reserving more free space in the file system.

- If localhost (`127.0.0.1`) is not specified in the **No Proxy for** list in the **Edit->Preferences->Advanced->Proxies** Mozilla dialog, switching between local Online Help and Internet pages is not supported. Specify the localhost in the **No Proxy** for list.
- If the Luminosity IDE ends incorrectly (by receiving a signal), the `lwproxy` process can remain running, thus preventing successful validation of a remote target in the subsequent Luminosity session. Disable this process before launching Luminosity again.
- SSH and FTP types of connection with the target do not work if the user account has no password.
- The **Help -> Check Update** dialog produces an error. This function is not supported.
- If License Manager is running with a cross platform that is registered in Luminosity IDE during the precise moment that Luminosity starts, an error message may be displayed. You can safely ignore this error message.