

Description

The LONWORKS Bundle Deployment Kit is a software package for designing, installing, operating, and maintaining multi-vendor, open, interoperable LONWORKS networks connected to Open Services Gateway Initiative (OSGi™) enabled service gateways. The kit includes ready-to-use LONWORKS support bundles, example device service bundles, utilities, tools, and documentation.

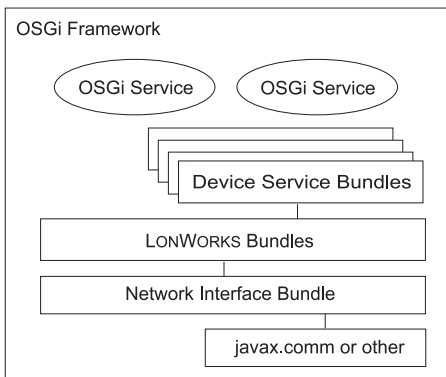
The LONWORKS Bundle Deployment Kit provides a complete LONWORKS network service delivery solution for telcos, cable operators, utilities and other service gateway operators. Delivery platforms include set top boxes, multimedia gateways, DSL and cable modems, web pads, home appliances, and PCs.

The LONWORKS Bundles (described below) may be installed, upgraded, started, stopped and removed from a remote location such as the service gateway operator's service center, thus permitting complete software life cycle management without truck rolls. Since the LONWORKS bundles do not include any native code or other OSGi Framework-specific dependencies, the LONWORKS bundles may be run in the OSGi Framework of the service gateway operator's choice.

LONWORKS Bundles

Three bundles, known as the LONWORKS Bundles, provide the standard support for all LONWORKS devices attached to the service gateway. Device service bundles for individual LONWORKS device types (described below) use the services provided by the LONWORKS Bundles to communicate with the physical LONWORKS devices. The LONWORKS Bundles physically connect to the LONWORKS network using a Network Interface Bundle (described on the next page).

One of the LONWORKS Bundles includes all of the LONMARK® standard network variable type (SNVT) and standard configuration property type (SCPT) formats. These formats are used by device service bundles to render LONWORKS messages sent to and from the LONWORKS network. Since many deployments may not require all of these formatting definitions, this formatting bundle may be reduced in size to fit the formatting requirements. Easy-to-use tools to reduce the size of this formatting bundle are included in the kit.



- ▼ Integrates everyday LONWORKS devices into any service gateway that includes an OSGi Framework
- ▼ Support for all types of ANSI/EIA 709.1 (LONWORKS) devices on any media including ANSI/EIA 709.2 Power Line Communications and ANSI/EIA 709.3 Free Topology Communications
- ▼ Uses low-cost, commercial off-the-shelf hardware components to connect to the LONWORKS network
- ▼ Designed to work with any OSGi Framework
- ▼ Compatibility tested with these OSGi Frameworks: Sun Microsystems® Java™ Embedded Server™ (JES™), IBM® System Management Framework™ (SMF), and Gatespace™ Distributed Service Platform
- ▼ Enhanced support for devices that comply with the LONMARK® Interoperability Association design guidelines
- ▼ Efficient bundle design for minimal memory and processor resource consumption in the service gateway
- ▼ Local monitoring and control capability when the service gateway is not connected to the service center
- ▼ Supports connections from a remote LNS® management application through the service gateway to the LONWORKS network attached to the gateway
- ▼ Browser-based administration of the LONWORKS Bundles using the OSGi Framework's built-in web server
- ▼ Operator-grade solution including LNS based service center software that operates over broadband (cable modem or DSL) or dial-up networks
- ▼ Extensive documentation
- ▼ Example device access bundle source code for several popular LONWORKS devices
- ▼ Training and technical support available

Device Service Bundles

A device service bundle is the OSGi software representation of a single physical device in one of the networks that attach to the service gateway. In order to speed the development of device service bundles for LONWORKS devices, example device service bundles for several popular LONWORKS devices are included. Under the control of the service gateway operator, the input and output network variables on devices can be bound to the service gateway using network variable connections, thereby eliminating polling and minimizing network delays. Especially for bandwidth-constrained media such as ANSI/EIA 709.2 Power Line, using the LONWORKS network variable connection service provides the highest reliability with minimum bandwidth utilization.

Network Interface Bundle

The Network Interface Bundle connects the LONWORKS Bundles with the underlying LONWORKS network interface hardware and software drivers. Off-the-shelf LONWORKS network interfaces, such as Echelon's PL-SLTA Power Line Serial LonTalk® Adapter, SLTA-10 Serial LonTalk Adapter or LTS-20 LonTalk Serial Interface Module are supported with a ready-to-use serial Network Interface Bundle (included in the kit) that connects to the standard Java Communication API (javax.comm package) that is available for virtually all Java enabled hardware platforms.

As an alternative to using the off-the-shelf network interface hardware described above, a custom network interface hardware design may be created. Echelon can provide assistance with the development of a custom Network Interface Bundle to support a custom network interface. Contact Echelon for details.

Complete LONMARK Support

One of the three LONWORKS Bundles provides access to the LONMARK objects, network variables and configuration properties on LONMARK devices, thus simplifying the creation of device service bundles for LONMARK devices.

The LONMARK device support includes the latest LONMARK features, including the latest LonMark definition and data formats.

The LONMARK objects on LONMARK devices can be easily controlled, allowing a device service bundle to override, enable, test, or disable individual objects on a device. Network variables can be read or updated (as appropriate) either by their device name or by their member name within a LONMARK object. LONMARK configuration properties are available to be read, and can be accessed as easily as network variables, even if the configuration properties are stored in the device's memory and not exposed as network variables.

Service Gateway Requirements

Component	Description
Service Gateway Environment	OSGi compatible framework (conforming to the v1.0 guidelines or higher), and including at minimum these services: Device Manager, Driver Locator, Log, HTTP and ServiceTracker. Echelon provides an implementation of ServiceTracker for OSGi 1.0 frameworks. OSGi 2.0 frameworks include ServiceTracker.
Compatible Network Interfaces	Models 735xx SLTA-10 Serial LonTalk Adapter* Model 76000 PL-SLTA Power Line Serial LonTalk Adapter* Model 65200-300 LTS-20 LonTalk Serial Interface Module* Integrated LONWORKS network interface hardware (contact Echelon for details)
Java Virtual Machine	Sun Microsystems J2SE Java Runtime Environment (JRE) v1.2.2-006 or higher and certified compatibles Sun Microsystems J2ME CDC with Foundation Profile v1.3 or higher and certified compatibles
Maximum Dynamic Network Variables on the Gateway	4,096
Maximum LONWORKS Device Service Bundle Types per Service Gateway	Unlimited
Maximum Active LONWORKS Device Service Bundles per Service Gateway	1,024
Maximum LONMARK Objects per device	16,384
Maximum network variables per device	4,096 maximum per host-based device including on the service gateway 62 minimum per Neuron® Chip-hosted device

*EIA-232 serial port with Java Communications API (javax.comm) support required when using these network interfaces.

Network variable and configuration property values on LONMARK devices are read and written using standardized formats to simplify user interaction. Formatting can be based on standard LONMARK resource files for SNVTs and SCPTs, or manufacturer-specific resource files for user-defined network variable types (UNVTs) and user-defined configuration property types (UCPTs).

Service Center

For scalability in large service gateway deployments that may exceed a million service gateways, the LONWORKS Bundles operate independently of the service gateway operator's remote service center most of the time. Major configuration changes to the LONWORKS network attached to the service gateway, such as commissioning new devices or changing network variable connectivity, are performed by LNS based software in the service center.

Since service gateway operators are providing a value-added service by managing the networks attached to the gateway, whether or not a LONWORKS device is incorporated into the LONWORKS network necessarily must be under the control of the gateway operator. In addition, open media (such as power line or radio frequency) installation requires that the operator provide logical separation service so that devices nearby in other premises do not logically interfere with other managed networks.

This kit includes a fully functional service center application that can be integrated with the service gateway operator's systems. The source code for this application is also provided.

Licensing

Licensing terms and conditions may be obtained from <http://www.echelon.com.com/products/osgi>.

Service Gateway Operator Service Center Requirements

Component	Description
Server	Windows® XP or Windows 2000; LNS Server redistribution version 3.07 or higher; <i>Minimum hardware:</i> Pentium 200; 128MB RAM; 50MB available hard drive space; Internet Protocol (IP) connection
Maximum Service Gateway Stores	
Supported per Server	Unlimited
Simultaneously Active Service Gateway	
Connections per Server	100

Documentation

The following documentation is included with the Model 34611 LONWORKS Bundle Deployment Kit. Comprehensive on-line help is also included.

Document	Echelon Part Number
LONWORKS Bundle Deployment Kit User's Guide	078-0192-01A



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