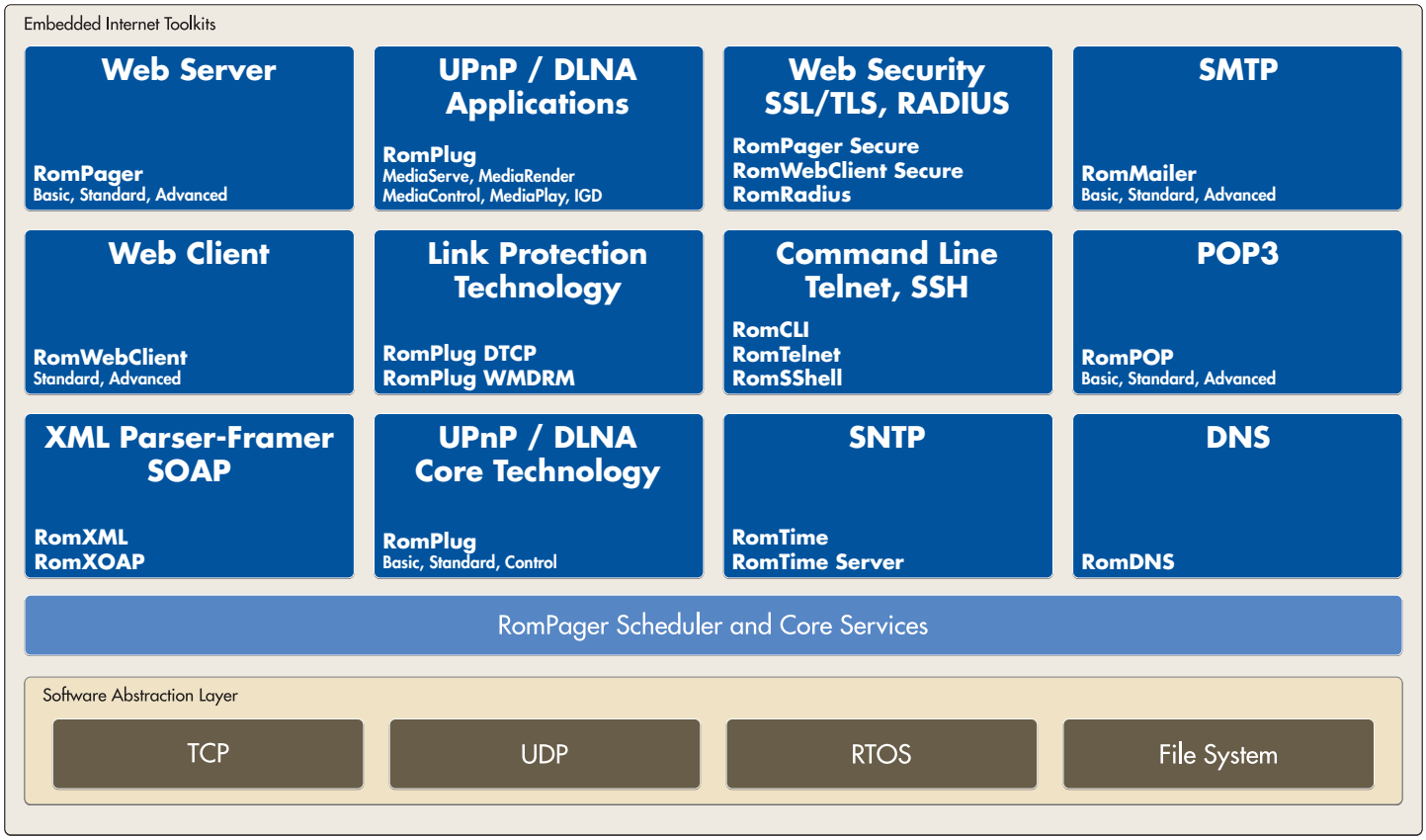
RomPager® Product Family

Embedded Internet Application Source Code Toolkits

Today, the Internet connects over 1 billion users worldwide, and is an integral part of how most people can work, play, communicate and conduct commerce. Research shows that trillions of "smart" devices will become active members of the networked world busily collecting and distributing all forms of data in the not too distant future. Servicing the manufacturers of these networked "smart" devices, Allegro is a premier OEM provider of Internet software for embedded applications.

The RomPager® Product Family brings powerful Web, email and Internet services to embedded devices. Virtually any networked embedded device can leverage RomPager toolkit capabilities to implement standards-based Internet applications. Allegro's RomPager Product Family toolkits deliver field-proven standard protocols to serve Web pages, images or applets, retrieve files from Web servers, send and receive email, exchange XML data and create certified UPnP™ / DLNA® embedded devices.

Shipping in excess of 100 million products in over 275 design wins worldwide, Allegro is a leading OEM supplier of embedded networking technology. The entire RomPager Product Family is delivered as ANSI-C source and has been ported to all major processor and RTOS platforms. Integration files for the leading RTOS environments are provided with all toolkits. All products utilize a field-proven software abstraction layer to provide an interface to any RTOS, TCP/IP and file system environment. In fact, all of the Allegro protocol products can run in devices without an RTOS. Delivered as a pre-integrated suite or as standalone products, Allegro's toolkits offer unprecedented design flexibility and scalable Internet networking solutions for your design needs. Sophisticated compiler option flags allow size, speed and code-sharing options to provide the best executable image for your embedded application.



Allegro's RomPager® Product Family

Embedded Web Server

RomPager®
Basic, Standard, Advanced

The Basic toolkit offers a HTTP 1.0/1.1 Web Server with CGI-style user exit support and optional file support. RomPager Basic is ideal for low-end devices needing a powerful and small footprint server. The Standard toolkit adds the PageLoader offline compiler for importing Web pages, applets and any type of graphics into the device. The Advanced toolkit provides additional HTTP 1.0/1.1 features, an internal security database and the PageBuilder offline compiler. The PageBuilder compiler provides full support for HTML (2.0, 3.2 and 4.0), XHTML, Javascript, object compression, application compression and international languages with dynamic phrase dictionaries.

RomWebClient™
Standard, Advanced

The Standard toolkit is an HTTP 1.0/1.1 client that can retrieve and store objects from any remote Web server using the HTTP protocol. Objects can be in any format and are stored in memory or in an optional file system. The Advanced toolkit adds caching, cookies and pipelining capabilities.

RomPager® Secure
RomWebClient™ Secure

These toolkits provide SSL 3.0 and TLS 1.0 secure server and client sessions. The encryption protocols interoperate with any secure browser or server and include RSA, RC4, DES, 3DES, SHA and AES algorithms. Both RomPager Secure and RomWebClient Secure offer drop in integration with the Web server and Web client toolkits.

Embedded XML / SOAP

RomXML®
RomXOAP®

The RomXML toolkit is a small e***X***tensible ***M***arkup ***L***anguage (XML) implementation that enables your embedded device to send (frame) and receive (parse) XML documents. Using XML in your embedded designs provides for free-format interchange of data and is widely accepted in the device management, remote sensing and enterprise IT communities. Allegro's RomXML has been designed from the ground up for use in embedded devices that often have limited resources. Written in ANSI-C, the toolkit offers built in capabilities to convert internal data between C language structures and XML documents. The RomXOAP toolkit builds upon the capabilities of RomXML and offers design engineers a comprehensive solution for creating connectivity between embedded designs and enterprise IT environments utilizing standards based SOAP technology. Available as standalone toolkits or tightly integrated with the other RomPager family of products, RomXML and RomXOAP provide the foundation for enabling embedded devices with XML, SOAP, XML-RPC and Web Services capabilities.

Embedded UPnP™ / DLNA®

RomPlug®
Basic, Advanced, Control

The Basic toolkit enables your embedded device to fully comply with the UPnP Working Committee's definition of a Basic Device. Delivered as ANSI-C source code the toolkit provides the Device Discovery (SSDP), Description and Presentation sections of the UPnP architecture. The Advanced toolkit adds Control and Eventing capabilities with full support for XML, SOAP and GENA protocols allowing you to build fully certified UPnP and DLNA devices. The RomPlug Control toolkit provides a comprehensive solution for creating devices that will discover and control UPnP or DLNA devices.

RomPlug®
MediaServe, MediaRender, MediaPlay, MediaControl, IGD

Allegro offers five optional application toolkits to further assist in creating a certified UPnP or DLNA device. Each toolkit offers specific implementations to support UPnP IGD, Media Renderer, Media Server, Media Player and Media Controller devices or DLNA DMS, DMP, DMC and DMR devices. The RomPlug products also benefit from Allegro's membership in the UPnP Forum and DLNA with routine and extensive interoperability testing performed at plug fests.

RomPlug DTCP™
RomPlug WMDRM™

When commercial content is made available for use with DLNA devices, the content must be protected from unauthorized copying and use. These toolkits enable your development team to efficiently support the two approved methods for DLNA Link Protection, DTCP-IP and WMDRM-ND.

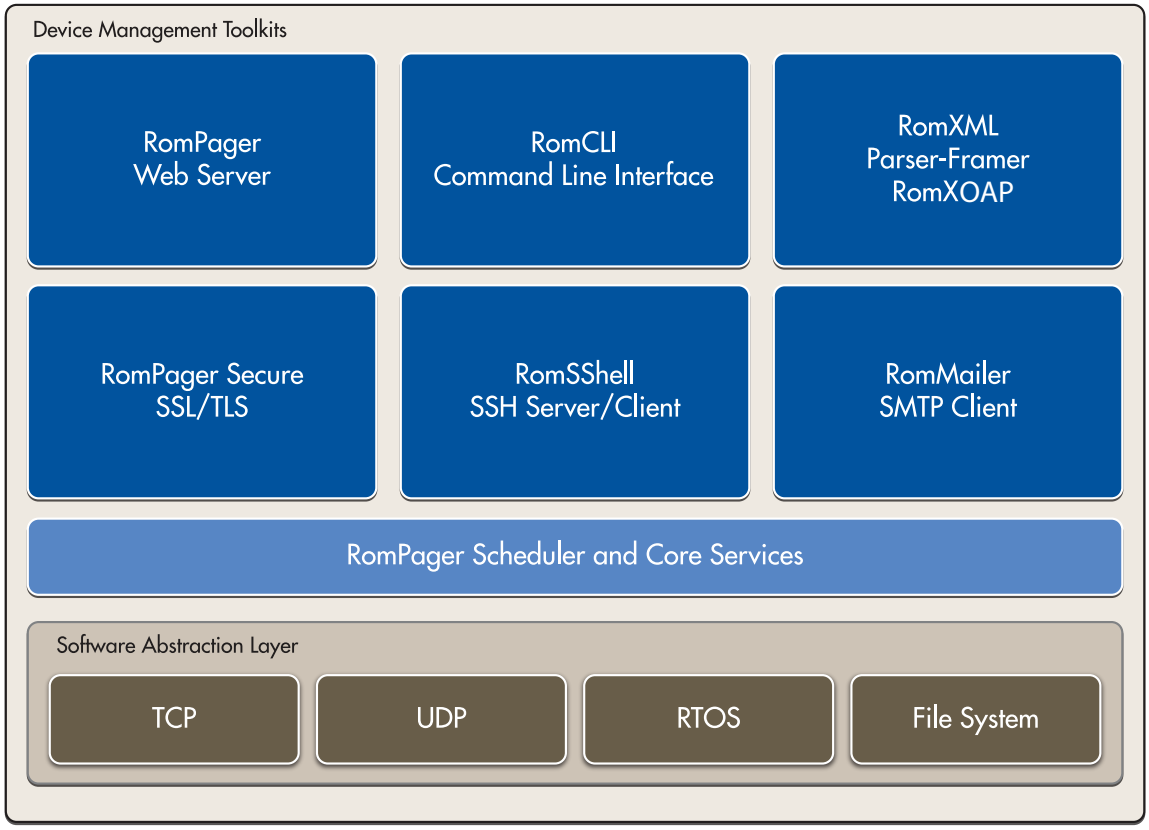
UPnP™ FORUM MEMBER

dlna℠®

Embedded Device Management

RomCLI™
RomSShell™

This toolkit is used to build Command Line Interfaces (CLI) similar to Cisco IOS-based products. The RomCLI toolkit includes the CliBuilder offline compiler for preparing command definitions in addition to RomTelnet, a Telnet server, and RomConsole to support serial communications. A unique variable access structure allows your embedded development team to use the same access functions for RomPager, RomCLI and SNMP. Security is always a concern when connecting embedded devices to a network. Used as a standalone product or integrated with RomCLI, RomSShell provides a SSHv2 server for securing your embedded communications.



Embedded Device Management Architecture

Embedded Mail

RomMailer™

Basic, Standard, Advanced

Allegro's RomMailer toolkit enables your engineering team to add the capability to send emails from a networked embedded device. The Basic toolkit is a Simple Mail Transfer Protocol (SMTP) client that provides the capability for an embedded device to send Internet email text messages. The Standard toolkit adds support for attachments using MIME and UUENCODED formats. The Advanced toolkit further extends embedded email capabilities by adding Delivery Status Notification and Message Delivery Notification support. When RomMailer is used in conjunction with RomPager Advanced, HTML messages with dynamic variable insertion and embedded graphics are supported. Additionally this feature allows the same content to be either presented by the RomPager embedded Web server or sent via email.

RomPOP™

Basic, Standard, Advanced

The Basic toolkit provides a Post Office Protocol version 3 (POP3) client for embedded devices to receive Internet email text messages. The Standard toolkit adds support for attachments encoded using MIME and UUENCODED formats. The Advanced toolkits adds support for Delivery Status Notification and Message Delivery Notification.

Embedded Utilities

RomDNS™

The RomDNS toolkit provides a Domain Name Services (DNS) client allowing embedded devices to perform lookups of a variety of DNS records. Used standalone or integrated with RomMailer and RomPOP, RomDNS can be used to simplify configuration and to convert site names to IP addresses.

RomTime™
RomTime Server

The RomTime and RomTime Server toolkits offer Network Time Protocol (NTP) client and server functionality for embedded devices. The RomTime toolkit provides NTP client capability for an embedded device to receive time services from network time servers. The RomTime Server toolkit provides time services to NTP clients. With the RomTime and RomTime Server toolkits embedded networked devices can all use the same network time and do not have to be set manually.

RomRadius™

The RomRadius toolkit is a client implementation of the RADIUS protocol that provides secure authentication services from RADIUS servers. With RomRadius, an embedded device can use the widely installed RADIUS protocol to provide additional access protection.

Since 1996, Allegro has been providing superior products to the embedded industry. Many companies have discovered the advantages of connecting devices to the Internet and working with Allegro to meet their networking needs. Allegro customers include many of the leading developers of computer systems and networking equipment such as 3Com, Agilent, American Power Conversion, Andover Controls, Casio, Cisco, D-Link, Honeywell, HP, IBM, Microsoft, Motorola, Nortel, Philips, Roku, Siemens, Sony, Sun, Xerox and Yamaha. These customers, and others have found that the RomPager Product Family is well suited for embedding in devices like printers, routers, fax servers, RAID disk arrays, UPS systems, automated building control systems, remote access servers and networked digital media products. With over 300 design wins and over 100 million deployed devices worldwide, Allegro delivers robust and field proven Internet software for your embedded device.

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