

# RomWebClient™ Feature Overview



## *Web Client Toolkits for Embedded Devices*

The RomWebClient toolkits (Standard, Advanced and Secure) are a group of embedded HTTP 1.0/1.1 client toolkits that provide devices the ability to send and retrieve objects from any Web server using the HTTP protocol. The toolkits may be used to allow devices to download configuration files, retrieve software updates, retrieve "print-by-reference" documents or send status notifications. RomWebClient also allows devices to initiate XML-based request/response protocols such as the Simple Object Access Protocol (SOAP), a vendor-independent initiative supported by many computer manufacturers.

The RomWebClient toolkits can send and receive HTTP objects in any format. The format is indicated using a MIME definition such as `text/plain` or `image/gif`. The RomWebClient toolkits include MIME definitions for all the standard MIME object types, as well as allowing use of non-standard MIME types. The HTTP objects are sent to and from internal memory buffers or optionally a file system may be used to store and retrieve objects.

The RomWebClient toolkits are compliant with the HTTP 1.0 (RFC 1945) and HTTP 1.1 (RFC 2616) protocol definitions and support the following HTTP methods: GET, POST, HEAD, PUT, OPTIONS and TRACE. The HTTP GET method is used to retrieve an object, the POST method sends an object to the Web server and may retrieve an object with the same request. The PUT method stores an object on the Web server and usually does not receive an object response. The HEAD, and OPTIONS methods usually receive only HTTP headers as responses and are used to determine Web server capabilities. The TRACE method returns an object containing the HTTP request headers and is used for examining network request flows.

Both HTTP direct requests and proxy server requests are supported, allowing use in any network environment. HTTP 1.0 and 1.1 persistent connections are supported which allow multiple requests and responses inside a single TCP connection.

Authentication is supported with all the toolkits with support for both the HTTP Basic and Digest methods. The RomWebClient toolkits are compliant with RFC 2617 which describes the Basic and Digest Authentication techniques.

The RomWebClient Advanced toolkit adds built-in object caching support, pipelined request support, proxy authentication support, large object data streaming support and HTTP Cookies support. HTTP Cookies are a non-standard addition to the protocol that was developed by Netscape to support maintaining state information over multiple transactions.

Additional security is available with the RomWebClient Secure option. This toolkit adds support for the SSL 3.0 and TLS 1.0 encryption protocols to RomWebClient or RomWebClient Advanced. With the included cryptography libraries and certificate services a device can participate in secure communications with any secure Web server.

The RomWebClient toolkits include integrated retrieval and transmission of XML objects when used in conjunction with the RomXML toolkit. The RomXML toolkit provides embedded devices the ability to translate XML documents from compact internal formats to various external XML formats. XML objects provide machine-independent computer-to-computer data exchange with a syntax that is easily read by humans.

The Simple Object Access Protocol (SOAP) is an XML request-response protocol that uses HTTP to make requests and receive responses. SOAP is the foundation of many Web services applications. With the use of the RomWebClient and RomXML toolkits, an embedded device can make SOAP requests and receive SOAP responses, thus allowing devices to be more easily integrated with corporate information systems.

The RomWebClient toolkits use a single task from the host operating system and uses asynchronous calls, so that the device may perform other tasks while the HTTP request is being serviced. The toolkits are designed to use minimal device resources. The RomWebClient Standard toolkit, for instance, uses as little as 10Kb of ROM depending on compilation options. The RomWebClient toolkits are provided in ANSI-C source code and use a Software Abstraction Layer to provide portability to any RTOS, TCP/IP and file system environment. The toolkits have been ported to all major processor/OS platforms and are delivered with interface files for the leading OS environments.

**RomWebClient Standard** includes:

- HTTP 1.0 and HTTP 1.1 protocol support
- GET, POST, PUT, HEAD, OPTIONS and TRACE methods
- Basic and Digest Authentication
- Memory-only model or file system model
- Proxy server support
- Optional header control
- URL decode support
- Persistent connection support
- Integrated XML object support

**RomWebClient Advanced** includes all of the above features and adds:

- HTTP Cookies support
- Object caching support
- Pipelined object support
- Proxy authentication support
- Large object data streaming support

**RomWebClient Secure** is an option for one of the above toolkits and adds:

- SSL 3.0 support
- TLS 1.0 support
- Default certificate providing compatibility with standard secure servers
- Encryption libraries compatible with standard secure servers