streamed. The ports preserve the message boundaries. Simply put, you can send and receive messages using ports. The subsystems create ports with well-known names. The client processes that need to invoke services from the subsystems open the corresponding port using the well-known name. After opening the port, the client can communicate, with the server, over the port.

1.4 HTML & SCRIPTING LANGUAGES

HTML, an initializes for **Hypertext Mark-up Language**, is the predominant markup language for web pages. It provides a means to describe the structure of text-based information in a document—by denoting certain text as links, headings, paragraphs, lists, etc.—and to supplement that text with interactive forms, embedded images, and other objects. HTML is written in the form of "tags" consisting minimally of "elements" surrounded by angle brackets. HTML can also describe, to some degree, the appearance and semantics of a document, and can include embedded scripting language code (such as JavaScript) that can affect the behavior of Web browsers and other HTML processors. History of HTML

Origins

In 1980, physicist Tim Berners-Lee, who was an independent contractor at CERN, proposed and prototyped ENQUIRE, a system for CERN researchers to use and share documents. In 1989, Berners-Lee and CERN data systems engineer Robert Cailliau each submitted separate proposals for an Internet-based hypertext system providing similar functionality. The following year, they collaborated on a joint proposal, the WorldWideWeb (W3) project, which was accepted by CERN. In his personal notes from 1990 he lists, "some of the many areas in which hypertext is used", and puts an encyclopaedia first.

First specifications

The first publicly available description of HTML was a document called HTML Tags, first mentioned on the Internet by Berners-Lee in late 1991. It describes 22 elements comprising the initial, relatively simple design of HTML. Thirteen of these elements still exist in HTML 4. HTML is a text and image formatting language used by web browsers to dynamically format web pages. The semantics of many of its tags can be traced to early text formatting languages such as that used by the RUNOFF command developed in the early 1960s for the CTSS (Compatible Time-Sharing System) operating system, and its formatting commands were derived from the commands used by typesetters to manually format documents.

Berners-Lee considered HTML to be, at the time, an application of SGML, but it was not formally defined as such until the mid-1993 publication, by the IETF, of the first proposal for an HTML specification: Berners-Lee and Dan Connolly's "Hypertext Markup Language (HTML)" Internet-Draft, which included an SGML Document Type Definition to define the grammar. The draft expired after six months, but was notable for its acknowledgment of the NCSA Mosaic browser's custom tag for embedding in-line images, reflecting the IETF's philosophy of basing standards on successful prototypes. Similarly, Dave Raggett's competing Internet-Draft, "HTML+ (Hypertext Markup Format)", from late 1993, suggested standardizing already-implemented features like

tables and fill-out forms.

After the HTML and HTML+ drafts expired in early 1994, the IETF created an HTML Working Group, which in 1995 completed "HTML 2.0", the first HTML specification intended to be treated as a standard against which future implementations should be based. Published as Request for Comments 1866, HTML 2.0 included ideas from the HTML and HTML+ drafts. There was no "HTML 1.0"; the 2.0 designation was intended to distinguish the new edition from previous drafts.

Further development under the auspices of the IETF was stalled by competing interests. Since 1996, the HTML specifications have been maintained, with input from commercial software vendors, by the World Wide Web Consortium (W3C). However, in 2000, HTML also became an international standard (ISO/IEC 15445:2000). The last HTML specification published by the W3C is the HTML 4.01 Recommendation, published in late 1999. Its issues and errors were last acknowledged by errata published in 2001.

HTML version timeline

November 1995

HTML 2.0 was published as IETF RFC 1866. Supplemental RFCs added capabilities:

- November 1995: RFC 1867 (form-based file upload)
- May 1996: RFC 1942 (tables)
- August 1996: RFC 1980 (client-side image maps)
- January 1997: RFC 2070 (internationalization)

In June 2000, all of these were declared obsolete/historic by RFC 2854.

January 1997

HTML 3.2 was published as a W3C Recommendation. It was the first version developed and standardized exclusively by the W3C, as the IETF had closed its HTML Working Group in September 1997.

HTML 3.2 dropped math formulas entirely, reconciled overlap among various proprietary extensions, and adopted most of Netscape's visual markup tags. Netscape's blink element and Microsoft's marquee element were omitted due to a mutual agreement between the two companies. A markup for mathematical formulas similar to that in HTML wasn't standardized until 14 months later in MathML.

December 1997

HTML 4.0 was published as a W3C Recommendation. It offers three "flavors":

- Strict, in which deprecated elements are forbidden,
- Transitional, in which deprecated elements are allowed,
- Frameset, in which mostly only frame related elements are allowed;

Initially code-named "Cougar", HTML 4.0 adopted many browser-specific element types and attributes, but at the same time sought to phase out Netscape's visual markup features by marking them as deprecated in favor of style sheets.

April 1998

HTML 4.0 was reissued with minor edits without incrementing the version number.

December 1999

HTML 4.01 was published as a W3C Recommendation. It offers the same three flavors as HTML 4.0, and its last errata were published May 12, 2001.

May 2000

ISO/IEC 15445:2000 ("ISO HTML", based on HTML 4.01 Strict) was published as an ISO/IEC international standard.

As of mid-2008, HTML 4.01 and ISO/IEC 15445:2000 are the most recent versions of HTML. Development of the parallel, XML-based language XHTML occupied the W3C's HTML Working Group through the early and mid-2000s.

Drafts

October 1991

HTML Tags, an informal CERN document listing twelve HTML tags, was first mentioned in public. November 1992.

July 1993

Hypertext Markup Language was published by the IETF as an Internet-Draft (a rough proposal for a standard). It expired in January 1994.

November 1993

HTML+ was published by the IETF as an Internet-Draft and was a competing proposal to the Hypertext Markup Language draft. It expired in May 1994.

April 1995 (authored March 1995)

HTML 3.0 was proposed as a standard to the IETF, but the proposal expired five months later without further action. It included many of the capabilities that were in Raggett's HTML+ proposal, such as support for tables, text flow around figures, and the display of complex mathematical formulas.

A demonstration appeared in W3C's own Arena browser. HTML 3.0 did not succeed for several reasons. The pace of browser development, as well as the number of interested parties, had outstripped the resources of the IETF. Netscape continued to introduce HTML elements that specified the visual appearance of documents, contrary to the goals of the newly-formed W3C, which sought to limit HTML to describing logical structure. Microsoft, a newcomer at the time, played to all sides by creating its own tags, implementing Netscape's elements for compatibility, and supporting W3C features such as Cascading Style Sheets.

January 2008
HTML5 was published as a Working Draft by the W3C.

Although its syntax closely resembles that of SGML, HTML 5 has abandoned any attempt to be an SGML application, and has explicitly defined its own "html" serialization, in addition to an alternative XML

XHTML versions

XHTML is a separate language that began as a reformulation of HTML 4.01 using XML 1.0. It continues to be developed:

- XHTML 1.0, published January 26, 2000 as a W3C Recommendation, later revised and republished August 1, 2002. It offers the same three flavors as HTML 4.0 and 4.01, reformulated in XML, with minor restrictions.
- XHTML 1.1, published May 31, 2001 as a W3C Recommendation. It is based on XHTML 1.0 Strict, but includes minor changes, can be customized, and is reformulated using modules from Modularization of XHTML, which was published April 10, 2001 as a W3C Recommendation.
- XHTML 2.0, is still a W3C Working Draft. XHTML 2.0 is incompatible with XHTML 1.x and, therefore, would be more accurate to characterize as an XHTML-inspired new language than an update to XHTML 1.x.
- XHTML5, which is an update to XHTML 1.x, is being defined alongside HTML5 in the HTML5 draft.