

DATA SHEET

APACHE (BS2000) Version 2.2

WWW-server for BS2000 systems

Issue November 2017

Pages 4

APACHE (BS2000) is a WWW (HTTP)-server for BS2000 systems

Version 2.2 of the product is a porting of the Apache Software Foundation's Apache httpd 2.2.29 World Wide Web server.

APACHE (BS2000) V2.2 constitutes a secure information system and is structured in such a way as to facilitate ease of access to information in the form of hypertext and hypermedia links. Access is based on the client/server principle using the HTTP protocol (Hypertext Transfer Protocol). Text information is stored on the APACHE server in the form of HTML (HyperText Markup Language) files.

APACHE (BS2000) V2.2 can also transfer WWW pages in encrypted form on the basis of the SSL protocol and so make BS2000 server suitable for sensitive application areas. The SSL support is contained in the standard delivery. In addition, any files can also be transferred over the net from the WWW server, and CGI (Common Gateway Interface) programs can be started and user inputs processed.

Like the previous version APACHE (BS2000) V2.2 is available free of charge.

For OSD V11.0 TOMCAT is no longer delivered.



WWW-server
APACHE

Functional description

The HTTP protocol forms the basis for overall communication on the web, if necessary together with the SSL protocol, with the APACHE (BS2000).

APACHE possess the essential features of an HTTP resp. HTTPS server. This includes provision of the following functions:

- *Virtual directories:*
The APACHE server maps real directories onto virtual URI's (Uniform Resource Identifiers), differentiating data accesses from gateway calls.
- *Virtual Hosting:*
Multiple mutually independent web contents (websites) can be presented per host name on one APACHE server.
- *Access restrictions:*
Certain content can be protected by means of passwords against unauthorized access.
- *Encryption:*
For the symmetric encryption method, a separate key is used for each connection. The data to be transferred is encrypted using this key.
- *Logging:*
Frequency and access to specific documents can be logged.
- *Flexibility and expandability:*
In order to ensure a high degree of flexibility and

expandability, the APACHE web server contains a programming interface.

Virtual directories

The APACHE server administers an internal list of virtual directories and the real directories assigned to them. It also stores information on how the data is to be returned when a file in the particular directory is accessed. Virtual directories are specified when the server is accessed, and the server then reads the data from the real directories.

If the URI (Uniform Resource Identifier) refers to a program instead of to a real file, this program is invoked by the APACHE server to generate the requested data. The program that generates the data is called a CGI program, CGI script or CGI process. When called, such programs receive the user entries from the various control elements in an HTML form and generate the required content on the basis of the user entries.

Virtual Hosting

Virtual hosting enables multiple web contents (websites) to be presented independently of each other on the same Apache web server. Virtual hosting means running a number of virtually independent web servers with a single Apache web server program. The server shows different contents depending on which host name is used to address it. Virtual hosting is based on IP addresses, IP port numbers or host names and is HTTP/1.1-compliant.

Access restrictions

Restriction of access to the site can be handled by the APACHE server at directory/file level.

The server administers a list of user names and passwords for each virtual directory.

APACHE possesses functions that make up a kind of firewall. Access to a virtual directory is granted or rejected not on the basis of user names, but on the basis of the Internet address of the requesting client.

Encryption

The SSL protocol is characterized by three basic principles:

- A connection is private.
Following an initial connection handshake, a session key is defined for use as a key for a symmetrical encryption method which is used to encrypt the data that is to be transferred (keyword: AES (Advanced Encryption Standard)).
- Authentication of server and client is supported. An asymmetrical or public key method is used (keyword: RSA (Rivest, Shamir, Adleman)).
- A connection is reliable, as the integrity of the transferred data is verified by a MAC (Message Authentication Code) (keyword: SHA-1 (Secure Hash Algorithm)).

Logging

The APACHE server records every request for a document by the client in a logfile. Alongside the names of the documents requested, a record is kept here of when access took place and for how long processing lasted. The operator can configure and analyze the logfiles very flexibly.

Modularity

In order to ensure a high degree of flexibility and expandability, the APACHE web server contains a programming interface with which custom-developed modules can be integrated into the server.

Some functions make the APACHE of particular interest to webmasters who place special value on their server having maximum flexibility.

- Virtual hosting is based optionally on IP addresses or on host names and is HTTP/1.1-compliant.
- Persistent connections / Keep alive
Keep alive means that a connection does not have to be set up afresh for each document and each image.
- Performing
Dynamic load adjustment raises the number of waiting processes as required.
- Extended Server Side Includes (XSSI)
In addition to include functionality, dynamic page generation allows pages to be individually adapted to the client profile.
- Content negotiation (type, language)
Enables the server to adapt its pages dynamically to the user profile and in this way to deliver pages in the appropriate language of the client.
- Spelling correction
Optionally corrects upper/lower case or simple keyboarding errors made by the caller.
- The PHP server-side scripting language.
PHP5 permits, for example, the direct dynamic generation of graphics at runtime or direct access to an LDAP server.

Enhancements in Version 2.2 :

- APACHE (BS2000)
is based on the Apache httpd 2.2.8 World Wide Web server of the Apache Software Foundation. Over 60 Apache httpd standard modules are included in the package shipped.
- For OSD V11.0 Tomcat is no longer delivered.
Complete Java-Servlet support through Tomcat
Apache Tomcat 5.5 provides a runtime environment for Java code (servlets) which can be addressed via the web;

in other words, it is a servlet container. With the aid of the Jasper JSP compiler, it can also convert Java server pages (static content such as e.g. HTML with embedded Java code) into servlets, which can then be executed.

Tomcat features two connectors: HTTP connector and AJP connector. The first is used for direct access or for operation behind a web server proxy (e.g. Apache with mod_proxy). The AJP connector serves for high-performance connection to a web server which independently handles the delivery of static content.

In this way APACHE V2.2 enables support via Tomcat for JAVA servlets and JAVA server pages in your web presentation.

JAVA servlets are JAVA applications which run in the server's JAVA environment. This allows access to all the local resources of the server, e.g. to SESAM or Oracle databases with JDBC ("Java Database Connectivity"). The result of the JAVA application is transferred in the form of HTML code to the client, which consequently has no need for a JAVA runtime environment. In this case the JAVA code is compiled automatically at the time of the first call. JAVA applets, by contrast, are JAVA applications which are transferred from the server to the client and execute in the client's JAVA environment.

Tomcat 5.5 can also be deployed independently of APACHE (BS2000).

- Perl scripting language
PERL 5.8 (Practical Extraction and Reporting Language) is an universal scripting language particularly well suited to processing and manipulation of text files. The mod_perl module is a Perl interpreter which is fully integrated in APACHE. This results in faster processing of PERL scripts by removing the laborious process of starting an external interpreter each time a script is called.
PERL 5.8 can also be used as a standalone independently of APACHE (BS2000).
- PHP port to SESAM and Oracle databases
SESAM-specific calls have been added to the PHP 5.2.5 server-side scripting language, and the calls in PHP are available for accessing Oracle databases. This enables the contents of SESAM and Oracle databases to be put on the Web. Read permission, and, if need be, write permission too, can be set up on a role-specific basis.
- WebDAV (Web-based Distributed Authoring and Versioning)
WebDAV is an extension of the HTTP protocol. It enables documents/directory trees to be processed on a distributed basis.
- Unicode extension
APACHE (BS2000) V2.2 also supports the BS2000-specific Unicode variant UTF-E (modified UTF-8), the various 8-bit EBCDIC-DF04, the 7-bit equivalent national EBCDIC-DF03 code variants and the 8-bit ISO codes 8859-x, together with a host of other standardized character sets, as well as the conversion between these code sets during input and output.
- Modular installation
At installation time, only those product components selected and required by the customer are installed, thereby avoiding unnecessary use of memory space.
- Interactive installation
Thanks to the new interactive installation, the basic configuration can already be carried out while POSIX is being installed, so the APACHE web server can optionally be started immediately upon completion of the installation. When the add-on modules for providing PHP and Perl support are installed, the newly installed module will be activated immediately on request and so will be instantly available.
- Optimized SX support
To optimize throughput, SPARC code is now executed on SPARC-based machines.

Additionally, there is a fullness of further functions and improvements, that in the White Paper 'APACHE Web Server in the BS2000' in the Internet under <http://docs.ts.fujitsu.com/dl.aspx?id=77a0b7eb-1384-47e1-8c8d-383b5bef97ac> can be looked up.

TECHNICAL DETAILS

APACHE (BS2000) V2.2

Technische Voraussetzung Hardware

APACHE V2.2 can run on all current mainframes supported by BS2000.

Technische Voraussetzung Software

LE: BS2000-GA	V 9.0	And higher
LE: OSD/XC	V 9.0	And higher
LE: POSIX-BC	V 0.0	And higher
LE: ONETSERV	V 3.5	And higher

Function-dependent correction releases

APACHE function	Software requirements
Perl and Tomcat	POSIX-BC V6.0A39 and higher resp. V7.0A39 and higher
Tomcat	JENV V5.0 and higher
Oracle-Interface	Oracle V10g and higher
SESAM-Interface	SESAM V5.0 and higher

Operating mode

Interactive dialog

Implementation language

C

User interface

Webmaster via command line interface

Installation

Installation according to the release notice is the responsibility of the user.

Documentation

Online documentation in HTML format (in English) is supplied with APACHE.

APACHE Web server in BS2000:

http://ts.fujitsu.com/products/bs2000/software/networking/inter_net_services/apache_bs2000_osd.html

Demands on the user

A basic knowledge of the World Wide Web

Conditions

The product is supplied free of charge for BS2000 systems. Support and any debugging assistance that may be necessary are provided as a chargeable service. A suitable maintenance agreement can be concluded.

Ordering and delivery

This software product may be obtained from your local Fujitsu Technology Solutions regional office.

APACHE (BS2000) can also be downloaded directly from the web server.

License notices:

This product includes software developed by the Apache Group for use in the Apache HTTP server project (<http://www.apache.org>).

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This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software developed by Ralf S. Engelschall (rse@engelschall.com).

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