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Apache http server setup

These conflicting services include other WWW servers, some firewall implementations, and even some client applications (such as Skype) which will use port 80 to attempt to bypass firewall issues. Setting it up in a Windows environment is relatively straightforward. BEFORE using any encryption software, please check your country's laws, regulations and policies concerning the import, possession, or use, and re-export of encryption software, to see if this is permitted. The above files are optional and may be removed if the cryptographic functionality is not desired or needs to be excluded from redistribution. ServerName localhost:80802. Grant the account read and execute (RX) rights to all document and script folders (htdocs and cgi-bin for example). The LocalSystem account has no privileges to your network via any Windows-secured mechanism, including the file system, named pipes, DCOM, or secure RPC. I'll be demonstrating on Ubuntu Server. If you specify a name during the install, you have to also specify it during any other -k operation. Go to the Apache Lounge website to download the latest version of the Apache HTTP Server. Create a normal domain user account, and be sure to memorize its password. #... When Apache starts it reads the httpd.conf file from that directory. SEE: How to Host Multiple Websites on Linux with Apache (TechRepublic Premium) The difference between Apache on Ubuntu and Red Hat-based distributions The reason why I have to specify what Linux distribution I'm using is because Ubuntu- and Red Hat-based variants Apache differently — from installation to configuration. In order to see what is really causing the problem you should follow the instructions for Running Apache for Windows from the Command Prompt. Popular options for deploying Apache httpd, and, optionally, PHP and MySQL, on Microsoft Windows, include: Apache Lounge Bitnami WAMP Stack WampServer XAMPP Apache is configured by the files in the conf subdirectory. Within the child process each request is handled by a separate thread. DocumentRoot "C:/Apache24/htdocs"5.Directory: Update the directive to match the DocumentRoot. Listen 803.ServerName: Specify the server name and port. or open the command prompt as administrator and type the following command. A virtual host is a fancy name for a website that's served by Apache. Distribution packages of Apache httpd that include the word "nossl" in the package name have been created without the above files and are therefore not subject to this notice. Apache for Windows contains the ability to load modules at runtime, without recompiling the server. If you cannot compile the Apache HTTP Server yourself, you can obtain a binary package from numerous binary distributions available on the Internet. This distribution may include software that has been designed for use with cryptographic software. After that command succeeds, you then must reload Apache (which will only reload the configuration files, not restart the web server) with the command: sudo systemctl reload apache2 Now, if you point your browser to (where SERVER_IP is the IP address of the server) you should see the same "Hello, TechRepublic!" welcome as you did with the basic index.html file, only it's being served from our newly-created virtual host. Note that Apache cannot load ISAPI Filters, and ISAPI Handlers with some Microsoft feature extensions will not work. Platform specific notes can be found in README.platforms. This built-in path is relative to the installation directory. If nothing happens or you get an error, look in the error.log file in the logs subdirectory. Important Configuration Changes1.ServerRoot: Set the server root to the directory where Apache is installed. Removing an Apache service is easy. The following provides more details on the included files that may be subject to export controls on cryptographic software: Apache httpd 2.0 and later versions include the mod_ssl module under modules/ssl/ for configuring and listening to connections over SSL encrypted network sockets by performing calls to a general-purpose encryption library, such as OpenSSL or the operating system's platform-specific SSL facilities. If you have modified httpd.conf, the new child may not start or you may receive unexpected results. Any operations in progress are allowed to complete without interruption. Step 3: Configure Apache1. Let's change it. To do that we'll create the test.conf file with the command: sudo nano /etc/apache2/sites-available/test.conf In that file paste the following: ServerAdmin ServerName example.com ServerAlias www.example.com DocumentRoot /var/www/html/test ErrorLog ${APACHE_LOG_DIR}/error.log CustomLog ${APACHE_LOG_DIR}/access.log combined The most important line above begins with DocumentRoot, as that instructs Apache where the files for the virtual host will be found. You can install Apache as a Windows NT service as follows from the command prompt at the Apache bin subdirectory: If you need to specify the name of the service you want to install, use the following command. Before starting Apache as a service by any means, you should test the service's configuration file by using: httpd.exe -n "MyServiceName" -t You can control an Apache service by its command line switches, too. For example, to activate the status module, use the following (in addition to the status-activating directives in access.conf): LoadModule status_module "modules/mod_status.so" Information on creating loadable modules is also available. Some object code distributions of Apache httpd, indicated with the word "crypto" in the package name, may include object code for the OpenSSL encryption library as distributed in open source form from . Now that we have a directory created for our site, lets have an HTML file in it. You can specify a configuration file on the command line in two ways: -f specifies an absolute or relative path to a particular configuration file: httpd.exe -f "c:\my server files\anotherconfig.conf" or httpd.exe -f files\anotherconfig.conf -n specifies the installed Apache service whose configuration file is to be used: httpd.exe -n "MyServiceName" In both of these cases, the proper ServerRoot should be set in the configuration file. Because the configuration file lives in sites-available. To restart Apache, either press Control-Break in the console window you used for starting Apache, or enter if the server is running as a service. If the Apache console window closes immediately or unexpectedly after startup, open the Command Prompt from the Start Menu --> Programs. Access to files over the network can be specified using two mechanisms provided by Windows: Mapped drive letters e.g., Alias "/images/" "Z:/" UNC paths e.g., Alias "/images/" "//imagehost/www/images/" Mapped drive letters allow the administrator to maintain the mapping to a specific machine and path outside of the Apache httpd configuration. If the Apache service is running already, the shortcut doesn't do anything. Options Indexes FollowSymLinks AllowOverride None Require all grantedOptional Step: Change Port and Root DirectoryIf you want to change the default port and root directory for serving files, follow these steps: 1. Change Port:Open httpd.conf and find the Listen directive.Change the port number to the desired value (e.g., 8080).Listen 8080Update the ServerName directive to reflect the new port. To do that, issue the command: sudo systemctl enable apache2 You can verify your installation by opening a web browser and pointing it to (where SERVER_IP is the IP address of the server hosting Apache). The official Apache Welcome Page running on Ubuntu Server. If this file contains a ServerRoot directive which contains a different directory from the one obtained from the registry key above, Apache will forget the registry key and use the directory from the configuration file. Details of the latest version can be found on the Apache HTTP server project page. The server will exit in a few seconds. ThreadsPerChild: This directive is new. ServerName localhost:804.DocumentRoot: Set the directory where your web files will be located. You have to do this if you have several different service installations of Apache on your computer. This document assumes that you are installing a binary distribution of Apache. If you did not do a binary install, Apache will in some scenarios complain about the missing registry key. Note for people familiar with the Unix version of Apache: these commands provide a Windows equivalent to kill -TERM pid and kill -USR1 pid. Reload the web page in your browser and you should see the change as shown below. This can be customized at compilation time, but it's important that ultimately the ServerRoot in httpd.conf match the actual installation root. The documentation available as of the date of this release is included in HTML format in the docs/manual/ directory. You can also tell Apache to restart. The recommended default is ThreadsPerChild 150, but this must be adjusted to reflect the greatest anticipated number of simultaneous connections to accept. If you allow the account to log in as a user and as a service, then you can log on with that account and test that the account has the privileges to execute the scripts, read the web pages, and that you can start Apache in a console window. Our new index.html page is being served by Apache. This article was originally published in October 2020. If you simply want the basic server software, you can open a terminal and issue the command: sudo apt-get install apache2 -y However, if you want a full-blown Linux Apache MySQL PHP (LAMP) stack, you'd issue the command: sudo apt-get install lamp-server^ Once you run either of those commands, you'll have Apache up and running. What we have to do is create a link from that configuration into the /etc/apache2/sites-enabled directory. It tells the server how many threads it should use. Apache comes with a utility called the Apache Service Monitor. Confirm that the created account is a member of the Users group. Today, we're going to leave the default Apache virtual host configuration pointing to www.example.com and set up our own at gci.example.com. Why? Image: Jack Wallen What is that page Apache is serving up? We can modify its content in /var/www/html or settings by editing its Virtual Host file found in /etc/apache2/sites-enabled/000-default.conf. Apache works seamlessly with MySQL, PHP, and a host of other packages, so you can serve up simple static or incredibly dynamic websites. Image: Jack Wallen How to create a site for Apache What we're going to do now is create a virtual host for Apache to serve up. On Windows NT 4.0 these privileges are granted via User Manager for Domains, but on Windows 2000 and XP you probably want to use Group Policy for propagating these settings. You can now place your web files in the htdocs directory and start serving web content. Let's walk through this, one step at a time. For further customization and advanced configuration, refer to the Apache documentation. In fact, you are only limited to the power of your hosting server and the bandwidth of your network. But if the server is running in a console window, you can only stop it by pressing Control-C in the same window. Warning: The server configuration file is reread when a new child process is started. The most up-to-date documentation can be found at . If you are having problems with the service, it is suggested you follow the instructions below to try starting httpd.exe from a console window, and work out the errors before struggling to start it as a service again. Said utility is a2ensite. Due to the issue of case insensitive and short 8.3 format names, Apache must validate all path names given. The U.S. Government Department of Commerce, Bureau of Industry and Security (BIS), has classified this software as Export Commodity Control Number (ECCN) 5D002.C.1, which includes information security software using or performing cryptographic functions with asymmetric algorithms. However, Apache is still not aware of the new site. As a project of the Apache Software Foundation, the developers aim to collaboratively develop and maintain a robust, commercial-grade, standards-based server with freely available source code. Assuming httpd was installed into C:\Program Files\Apache Software Foundation\Apache2.4\, you can do the following: c: cd "\Program Files\Apache Software Foundation\Apache2.4\bin" httpd.exe Then wait for Apache to stop, or press Control-C. The apr_crypto interface is used by the mod_session_crypto module available under modules/session for optional encryption of session information. So let's create a virtual host called test. httpd -vApache version installed verifyStep 7: Adjust Firewall SettingsEnsure that the Windows Firewall allows traffic on the port Apache is using (usually port 80). These are the same files used to configure the Unix version, but there are a few different directives for Apache on Windows. For more detailed information, refer to the piped logging documentation. The default configuration of the source distribution expects the server to be installed into \Apache24. The directives that accept filenames as arguments must use Windows filenames instead of Unix ones. For this reason, it is particularly important to use the directive when attempting to limit access to content in the filesystem, since this directive applies to any content in a directory, regardless of how it is accessed. You'll also want to make sure to enable Apache to start upon a server reboot (or boot). When running Apache httpd as a service, you must create a separate account in order to access network resources, as described above. Where do you place files? To connect to the server and access the default page, launch a browser and enter this URL: Apache should respond with a welcome page and you should see "It Works!". If this works, and you have followed the steps above, Apache should execute as a service with no problems. Running Apache as a service is usually the recommended way to use it, but it is sometimes easier to work from the command line, especially during initial configuration and testing. Use the default MaxConnectionsPerChild 0, unless instructed to change the behavior to overcome a memory leak in third party modules or in-process applications. If you don't have Apache installed as a service, the window will remain visible until you stop Apache by pressing Control-C in the console window where Apache is running in. This will be housed in /etc/apache/sites-available. However, these mappings are associated only with interactive sessions and are not directly available to Apache httpd when it is started as a service. It is recommended that users create a separate account for running Apache service(s). This mechanism acts as a backup for those situations where Apache is not yet prepared to use the error.log file. Any errors during Apache startup are logged into the Windows event log when running on Windows NT. The process management directives are also different: MaxConnectionsPerChild: Like the Unix directive, this controls how many connections a single child process will serve before exiting. 2.Navigate to the Apache bin directory. If you wish to assure that only lowercase is used in URLs, you can use something like: RewriteEngine On RewriteMap lowercase int:tolower RewriteCond "%{REQUEST_URI}" "[A-Z]" RewriteRule "(.*)" "${lowercase:$1}" [R,L] When running, Apache needs write access only to the logs directory and any configured cache directory tree. This is /apache by default, you can verify it by using httpd.exe -V and looking for a value labelled as HTTPD_ROOT. When starting Apache as a service you may encounter an error message from the Windows Service Control Manager. You can review the Windows Application Event Log by using the Event Viewer, e.g. Start - Settings - Control Panel - Administrative Tools - Event Viewer. Please see the file called LICENSE. Grant the account change (RWXD) rights to the Apache logs directory. This will open a console window and start Apache inside it. However, unlike on Unix, a replacement process is not instantly available. This time it's all about the Apache web server, a piece of software that's been around for decades, happily serving up small and large websites without fail. In Ubuntu-based distributions, the configurations are in /etc/apache2/apache2.conf and /etc/apache2/sites-available/. On non-Ubuntu servers, you have to use the ln (for link) command to do this. If you look in /var/www/html, you'll find the index.html file. However, if you do have Apache installed as a service, the shortcut starts the service. It not only helps to ground me as a tech writer, but it helps a lot of people who are just learning the ropes of whatever piece of technology I'm talking about. If Apache2.4 is installed at C:\Program Files, then the root directory, Program Files and Apache2.4 must all be visible to Apache. Individual committers may provide binary packages as a convenience, but it is not a release deliverable. You should see the "It works!" default Apache page. The form and manner of this Apache Software Foundation distribution makes it eligible for export under the License Exception ENC Technology Software Unrestricted (TSU) exception (see the BIS Export Administration Regulations, Section 740.13) for both object code and source code. Since it is often difficult to manage files with names like .htaccess in Windows, you may find it useful to change the name of this per-directory configuration file using the AccessFilename directive. Download the binary version suitable for your system (usually found under the "Apache HTTPD" section). Use only UNC paths for network resources in httpd.conf so that the resources can be accessed consistently regardless of how Apache httpd is started. Please see the file called INSTALL. Back at the terminal window, rename that index.html file with the command: sudo mv /var/www/html/index.html /var/www/html/index.html.bak Now, let's create a new welcome file. You can take this simple how-to and use it as a basis for spinning up all the Apache-served websites you need. See the directive index for all the available directives. ServerRoot "C:/Apache24"2.Listen: Set the port number you want Apache to listen on (default is 80). Grant the newly-created user a privilege of Log on as a service and Act as part of the operating system. Steps to configure an Apache web serverStep 1: Download Apache1. This guide will provide a step-by-step process to install and configure the Apache web server on a Windows machine. The main differences in Apache for Windows are: Because Apache for Windows is multithreaded, it does not use a separate process for each request, as Apache can on Unix. There are still more differences to be had, but you get the idea. By default, Apache comes with a basic site (the one that we saw in the previous step) enabled. Change to the folder to which you installed Apache, type the command httpd.exe, and read the error message. Apache is a powerful and flexible web server widely used for hosting websites. In Red Hat-based distributions, much of your Apache configuration will happen in /etc/httpd/conf/httpd.conf. Issue the command: sudo nano /var/www/html/index.html In that file, paste the following two lines: How are you doing? Save and close that file. This is the maximum number of connections the server can handle at once, so be sure to set this number high enough for your site if you get a lot of hits. You should be greeted by the Apache Welcome Page as shown below. The value of this key is the ServerRoot directory which contains the conf subdirectory. A registry entry which was created if you did a binary installation. Open the Control Panel and go to System and Security > Windows Firewall > Advanced settings.In the left pane, click on Inbound Rules.In the right pane, click on New Rule.Select Port and click Next.Select TCP and specify the port number (80).Allow the connection and apply the rule to the appropriate profiles (Domain, Private, Public).Name the rule (e.g., "Apache HTTP") and finish the wizard.ConclusionYou have successfully installed and configured the Apache web server on your Windows machine. Save and close the file. If Apache is running as a service, you can tell it to stop by opening another console window and entering: Running as a service should be preferred over running in a console window because this lets Apache end any current operations and clean up gracefully. Originally designed as a replacement for the NCSA HTTP Server, it has grown to be the most popular web server on the Internet. So let's start by creating a folder for our new website in /var/www/ by running sudo mkdir /var/www/gci/ We have it named gci here but any name will work, as long as we point to it in the virtual hosts configuration file later. Apache win64 download.Step 2: Install ApacheExtract the downloaded zip file to your preferred location (e.g., C:\Apache24). httpd.exe -k install -n "MyServiceName" If you need to have specifically named configuration files for different services, you must use this: httpd.exe -k install -n "MyServiceName" -f "c:\files\my.conf" If you use the first command without any special parameters except -k install, the service will be called Apache2.4 and the configuration will be assumed to be conf\httpd.conf. Apache can also load ISAPI (Internet Server Application Programming Interface) extensions such as those used by Microsoft IIS and other Windows servers. Open the extracted folder and navigate to the conf directory. To be able to manage an Apache service with the monitor, you have to first install the service (either automatically via the installation or manually). The command line option used, -k, was chosen as a reminder of the kill command used on Unix. This warning can be ignored if the server was otherwise able to find its configuration file. If you copy the Apache directory or configuration files to a new location it is vital that you update the ServerRoot directive in the httpd.conf file to reflect the new location. Another difference is where and how Apache is configured. For example, if you try to start Apache by using the Services applet in the Windows Control Panel, you may get the following message: Could not start the Apache2.4 service on \\COMPUTER Error 1067; The process terminated unexpectedly. If your host is not connected to the net, or if you have serious problems with your DNS (Domain Name Service) configuration, you may have to use this URL: If you happen to be running Apache on an alternate port, you need to explicitly put that in the URL: Once your basic installation is working, you should configure it properly by editing the files in the conf subdirectory. Apache HTTP Server Version 2.4 Available Languages: en | fr | ko This document explains how to install, configure and run Apache 2.4 under Microsoft Windows. If we run the command: sudo a2ensite test.conf Our test virtual host will then be enabled. To start an installed Apache service you'll use this: httpd.exe -k start -n "MyServiceName" To stop an Apache service via the command line switches, use this: httpd.exe -k stop -n "MyServiceName" or httpd.exe -k shutdown -n "MyServiceName" You can also restart a running service and force it to reread its configuration file by using: httpd.exe -k restart -n "MyServiceName" By default, all Apache services are registered to run as the system user (the LocalSystem account). Always obtain and install the current service pack to avoid operating system bugs. The primary Windows platform for running Apache 2.4 is Windows 2000 or later. When running CGI scripts, the method Apache uses to find the interpreter for the script is configurable using the ScriptInterpreterSource directive. The first thing we're going to do is create a directory to house test with the command: sudo mkdir -p /var/www/html/test Next, we'll give the new directory the proper ownership with the command: sudo chown -R $USER:$USER /var/www/html/test Finally, we'll grant the proper permissions with the command: sudo chmod -R 755 /var/www/html/test Copy our new index.html file into the test directory with the command: sudo cp /var/www/html/index.html /var/www/html/test/ Now we have to create the virtual host configuration so Apache knows where test is. Now let's create a VirtualHost file so it'll show up when we type in gci.example.com. cd C:\Apache24\bin3.Install Apache as a service: httpd.exe -k installStep 5: Start Apache1.Start Apache service: httpd.exe -k startAlternatively, you can start and manage the Apache service via the Services management console: Open the Run dialog (Win + R), type services.msc, and press Enter.Find "Apache2.4" in the list, right-click, and select "Start".Step 6: Verify Apache InstallationOpen a web browser and navigate to . While filenames are generally case-insensitive on Windows, URLs are still treated internally as case-sensitive before they are mapped to the filesystem. Every so often, taking a step back and going through the basics is good. If you have to access network resources via Apache, this is required. This forces it to reread the configuration file. SEE: Apache Maven — Build Automation Tool Review (TechRepublic) How to install Apache on Ubuntu Server There are several ways you can install Apache on Ubuntu. You will get this generic error if there is any problem with starting the Apache service. Instead there are usually only two Apache processes running: a parent process, and a child which handles the requests. 2. It has, however, wide privileges locally. You can have numerous virtual hosts served up on a single Apache server. Locate the httpd.conf file(C:\Apache24\conf) and open it with a text editor (e.g., Notepad). You've just installed the Apache web server, edited the index.html file, and then created your very own virtual host. The country in which you currently reside may have restrictions on the import, possession, use, and/or re-export to another country, of encryption software. More information is available. At this point, we've created the directory to house the files, given it the proper ownership and permissions, and created a configuration for the virtual host. Current working directory. Grant the account read and execute (RX) rights to the httpd.exe binary executable. But first, a bit more information. How do you install and configure the server? It was updated by Antony Peyton in January 2025. Again, if you change the configuration of the Windows NT service for Apache, first attempt to start it from the command line to make sure that the service starts with no errors. However, because Apache may interpret backslashes as an "escape character" sequence, you should consistently use forward slashes in path names, not backslashes. Windows Tuning If more than a few dozen piped loggers are used on an operating system instance, scaling up the "desktop heap" is often necessary. In addition, some versions of apr-util provide an abstract interface for symmetrical cryptographic functions that make use of a general-purpose encryption library, such as OpenSSL, NSS, or the operating system's platform-specific facilities. (Arcane and error prone procedures may work around the restriction on mapped drive letters, but this is not recommended.) UNCList dochost DocumentRoot "//dochost/www/html/" UNCList 192.168.1.50 DocumentRoot "//192.168.1.50/docs/" UNCList imagehost1 imagehost2 Alias "/images/" "//imagehost/www/images/" Alias "/images2/" "//imagehost2/www/images/" #... Change DocumentRoot:Decide on the new directory where you want to serve your web files (e.g., D:/MyWebFiles).Update the DocumentRoot directive.DocumentRoot "D:/MyWebFiles"Update the directive to match the new DocumentRoot. Options Indexes FollowSymLinks AllowOverride None Require all grantedStep 4: Install Apache as a Windows Service1.Open Command Prompt as an administrator. With it you can see and manage the state of all installed Apache services on any machine on your network. Let's go into our newly created directory and create one by typing: cd /var/www/gci/ nano index.html Paste the following code in the index.html file: Ubuntu rocks! I'm running this website on an Ubuntu Server server! Pretty cool, right? You can verify the compiled file name from a value labelled as SERVER_CONFIG_FILE when invoking Apache with the -V switch, like this: Apache will then try to determine its ServerRoot by trying the following, in this order: A ServerRoot directive via the -C command line switch. However, on Ubuntu there's a handy utility that will create that site for you. Error code 2186 is a good indication that you need to review the "Log On As" configuration for the service, since Apache cannot access a required network resource. After starting Apache (either in a console window or as a service) it will be listening on port 80 (unless you changed the Listen directive in the configuration files or installed Apache only for the current user). For example, the , Alias, and ProxyPass directives all use case-sensitive arguments. Because Apache cannot share the same port with another TCP/IP application, you may need to stop, uninstall or reconfigure certain other services before running Apache. Only those configurations found in sites-enabled are active on the Apache server. If Apache is compiled normally, it will install a number of optional modules in the \Apache2.4\modules directory. If you don't specify a configuration file with -f or -n, Apache will use the file name compiled into the server, such as conf\httpd.conf. The Apache HTTP Server Project itself does not provide binary releases of software, only source code. The -d switch on the command line. You can also run Apache via the shortcut Start Apache in Console placed to Start Menu --> Programs --> Apache HTTP Server 2.4.xx --> Control Apache Server during the installation. The server root compiled into the server. Then change to the logs folder, and review the error.log file for configuration mistakes. Just use: The specific Apache service to be uninstalled can be specified by using: httpd.exe -k uninstall -n "MyServiceName" Normal starting, restarting and shutting down of an Apache service is usually done via the Apache Service Monitor, by using commands like NET START Apache2.4 and NET STOP Apache2.4 or via normal Windows service management. See for more information. The Apache HTTP Server is a powerful and flexible HTTP/1.1 compliant web server. For example, on Red Hat-based distributions, Apache is installed via the httpd package, whereas on Ubuntu-based distributions, the apache2 package will do the trick. This interface is known as the apr_crypto interface, with implementation beneath the /crypto directory. You can also manually set these via the Local Security Policy MMC snap-in. If you want to compile Apache yourself (possibly to help with development or tracking down bugs), see Compiling Apache for Microsoft Windows. Never grant any network privileges to the LocalSystem account! If you need Apache to be able to access network resources, create a separate account for Apache as noted below. Binary distributions may customize either the default installation root or the overall layout of the initial configuration. To run Apache from the command line as a console application, use the following command: Apache will execute, and will remain running until it is stopped by pressing Control-C. Apache HTTP Server versions later than 2.2 will not run on any operating system earlier than Windows 2000. It is usually a good practice to grant the user the Apache service runs as read and execute (RX) access to the whole Apache2.4 directory, except the logs subdirectory, where the user has to have at least change (RWXD) rights. We can modify how Apache handles incoming requests and have multiple sites running on the same server by editing its Virtual Hosts file. If you have questions after reviewing the documentation (and any event and error logs), you should consult the peer-supported users' mailing list. Then enter the following: cd ..\logs more < error.log When working with Apache it is important to know how it will find the configuration file. To activate these or other modules, the LoadModule directive must be used. This means that each directory which Apache evaluates, from the drive root up to the directory leaf, must have read, list and traverse directory permissions. Also, pay close attention to the privileges of the user Apache is configured to run as.

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