Auth

ApacheCon

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- Allow and Deny
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- PerlAuthzHandler

Authentication, Authorization, and Access Control

- ApacheCon 2002
- Las Vegas
- Rich Bowen

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About me

- Rich Bowen
- CTO, Cooper McGregor, Inc
- Member, Apache Software Foundation
- Contributor, Apache Server Documentation Project

http://httpd.apache.org/docs-project/

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Definitions

- Authentication
- Authorization
- Access Control
- Security

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Authentication

- Make sure someone is who they say they are
- Usually involves a username and password
- Can involve other "secret"
- Photo ID

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Authorization

- Once we know who you are ... (usually)
- Are you allowed to be here?
- Often a group of users who fall into a particular category
- Plane ticket

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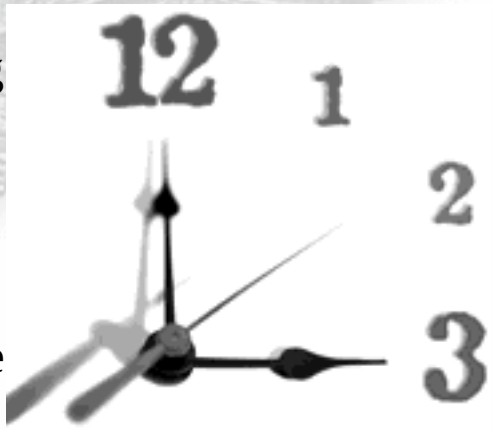
Access Control

- Other methods of keeping you out
- Usually unrelated to the other two terms
- You can't get on the plane until boarding starts.



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Security

- Don't confuse auth with security
- Auth can be faked or circumvented.
- People lie.
- Internal attacks are much more deadly than external ones
- An insecure system cannot be helped by a password dialog

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Standard authentication types

- HTTP spec mentions Basic and Digest auth
- Basic universally supported
- Digest less supported, so less used, so less supported (repeat as necessary)

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Basic

- Server sends 401 Unauthorized header to indicate that authentication is required.
- Credentials (username and password) passed with request
- If credentials are valid (for some definition of valid) then the request is passed on to the next phase of the request handling (usually authorization).

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Modules

- mod_auth
- mod_auth_db(m)
- mod_auth_anon

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Password file

- htpasswd

```
htpasswd -c password_file username
```

- Prompted for password
- Omit -c to add another user to the same file

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Configuration

- Tell Apache to protect something
- Tell it where your password file is
- Tell it what methods to use

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Configuration, cont'd

```
AuthType Basic
AuthName "Go Away"
AuthUserFile /usr/local/apache/passwords/password_file
Require valid-user
```

- "Go Away" appears in the password dialog
- AuthName is also called the "Realm"
- User is asked for username and password.

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Configuration, cont'd

- Can require a particular user ...

```
require user bob
```

- or users.

```
require user billy joe bob
```

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Forward to Groups

Groups

- Create group file

```
admin: tom dick harry
others: larry moe curly
```

- Modify configuration:

```
AuthType Basic
AuthName "Go Away"
AuthUserFile /usr/local/apache/passwords/password_file
AuthGroupFile /usr/local/apache/passwords/group_file
Require group admin
```

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Caveats

- Slow - unindexed text files must be read line by line
- Insecure - username and password passed in the clear every time, as is the content.
- Has been known to fail for large user lists (where "large" will depend on many variables.)
- Keep your password file outside of the document root. Preferably owned by and readable only by 'nobody'

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Digest

- Username/Password never sent to the server
- MD5 hash of name, password, realm
- MD5 is a one-way hashing algorithm
- Password never stored anywhere in a readable format, and never passed across the network at all.

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Configuration

```
AuthType Digest
AuthName "Go Away"
AuthDigestFile /usr/local/apache/passwords/digest
AuthDigestGroupFile /usr/local/apache/passwords/groups
Require group admin
```

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Password file

- htdigest utility to create

```
htdigest [ -c ] passwdfile realm username
```

- And the file looks like:

```
rbowen:foo:b000697b277cfaec3c4476596c52197d
```

- Mathematically impossible to retrieve password from this
- Groups look just like those used by mod_auth

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Caveats

- Not supported by all browsers
- Content is still passed in the clear
- It is still a text file
- The hash itself could be used as a key

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Additional auth modules

- mod_auth_mysql
- mod_auth_*

http://modules.apache.org/

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mod_auth_db

- Creating a password file

```
dbmmanage passwords.dat adduser montressor
dbmmanage add groups.dat rbowen one,two,three
```

- dbmmanage --help for full details
- This is still Basic authentication, with all the concerns pertaining thereto. It's just using a different file for its information.

```
AuthName "Members Only"
AuthType Basic
AuthDBUserFile /usr/local/apache/passwd/passwords.dat
AuthDBGroupFile /usr/local/apache/passwd/groups.dat
require group three
```

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mod_auth_mysql

- Username, password, group info, in mysql database tables.

```
create table mysql_auth (
   username char(25),
   passwd char(25),
   groups char(25),
   primary key (username)
   );
```

- Then ...

```
Auth_MYSQL_DB yourdb
Auth_MYSQL_Password_Table mysql_auth
Auth_MySQL_Username_Field username
Auth_MYSQL_Password_Field passwrd
Auth_MYSQL_Empty_Passwords Off
AuthName "Members-Only Area"
AuthType Basic
```

```
require valid-user
```

http://www.cgi101.com/class/password/mod_auth_mysql.html

Access Control

- Allow, or deny, from particular addresses

```
<Location /server-status>
 Order deny,allow
 Deny from all
 Allow from apacheadmin.com
</Location>
```

- These are applied as a series of filters. Everyone is excluded, then apacheadmin.com is let in. The other way around, it would be ineffectual.
- Alternately,

```
Order allow,deny
Allow from all
Deny from something.com
```

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Allow and Deny

- Allow and Deny take a variety of arguments

```
Allow from 192.168.1
Allow from .org
Allow from 192.168.1.0/16
Allow from fully.qualified.hostname.com
```

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Satisfy

- Specify more than one rule, and obey one of them

```
Require group customers
Allow from internal.subnet.com
Satisfy any
```

- Or obey all of them

```
Satisfy all
```

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Allow/Deny from other criteria

- mod_setenvif and Deny from env=

```
SetEnvIf User-Agent EmailSiphon Spammers
Order Allow,Deny
Allow from all
Deny from env=Spammers
```

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Writing an AC module with mod_perl

- PerlAccessHandler for access control
- PerlAuthenHandler for authentication
- PerlAuthzHandler for authorization

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PerlAccessHandler

- Provide access control based on arbitrary criteria

```
package Example::AccessHandler;
use Apache::Constants qw(:common FORBIDDEN);
```

```
sub handler {
   my ($class, $r) = @_;
   if (goodconditions($r)) {
       return OK;
   } else {
       return FORBIDDEN;
   }
}
```

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PerlAccessHandler configuration

```
<Location /admin>
   PerlAccessHandler Example::AccessHandler

   PerlSetVar AdditionalArgument1 value1
   PerlSetVar AdditionalArgument2 value2
</Location>
```

- Variables set by `PerlSetVar` are available via the `dir_config` method

```
   $value = $r->dir_config{AdditionalArgument1}
```

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PerhAuthenHandler

- Provide authentication via your own custom mechanism
- Eliminate need for pop-up auth dialog
- Store auth information in a cookie
- Retrieve password information from a database

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PerlAuthenHandler example

- Returns `AUTH_REQUIRED` or `OK`

  http://perl.apache.org/docs/1.0/guide/security.html

- Note that username, password, can also be supplied via other means, like an HTML form, or from a cookie.
- Or, if from a standard auth dialog:

```
my($status, $sent_pw) = $r->get_basic_auth_pw;
my $user = $r->connection->user;
```

- Your auth handler is called each time there is an access
- If getting auth from elsewhere, you should set `$r->`connection->user> to the username value

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PerlAuthzHandler

- Similarly, returns `OK` or `AUTH_REQUIRED`
- For authorization, not authentication
- Splitting it into these two separate steps improves retention of sanity

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