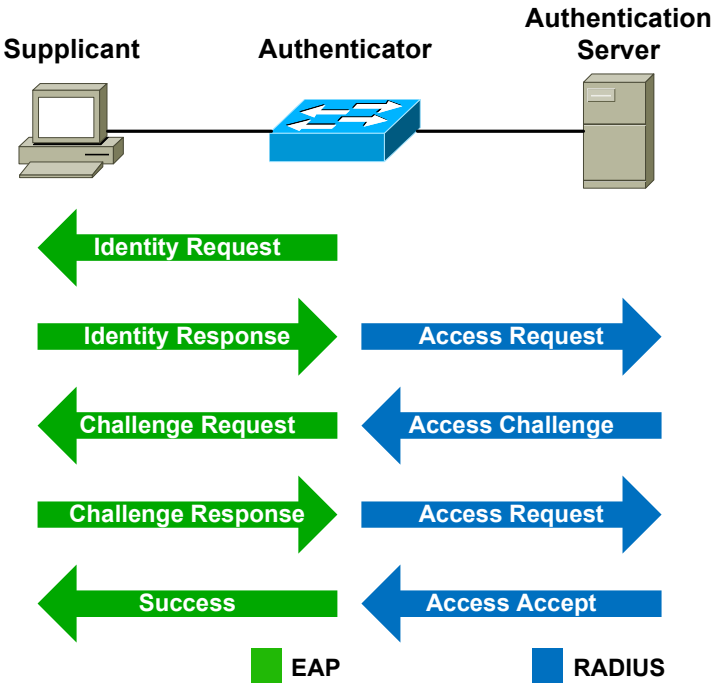
IEEE 802.1X

802.1X Header

EAP Header

EAP Flow Chart



Configuration

Global Configuration

```
! Define a RADIUS server
radius-server host 10.0.0.100
radius-server key MyRadiusKey
! Configure 802.1X to authenticate via AAA
aaa new-model
aaa authentication dot1x default group radius
! Enable 802.1X authentication globally
dot1x system-auth-control
```

Interface Configuration

```
! Static access mode
switchport mode access
! Enable 802.1X authentication per port
dot1x port-control auto
! Configure host mode (single or multi)
dot1x host-mode single-host
! Configure maximum authentication attempts
dot1x max-reauth-req
! Enable periodic reauthentication
dot1x reauthentication
! Configure a guest VLAN
dot1x guest-vlan 123
! Configure a restricted VLAN
dot1x auth-fail vlan 456
dot1x auth-fail max-attempts 3
```

Terminology

Extensible Authentication Protocol (EAP)
A flexible authentication framework defined in RFC 3748

EAP Over LANs (EAPOL)
EAP encapsulated by 802.1X for transport across LANs

Supplicant
The device (client) attached to an access link that requests authentication by the authenticator

Authenticator
The device that controls the status of a link; typically a wired switch or wireless access point

Authentication Server
A backend server which authenticates the credentials provided by supplicants (for example, a RADIUS server)

Guest VLAN
Fallback VLAN for clients not 802.1X-capable

Restricted VLAN
Fallback VLAN for clients which fail authentication

802.1X Packet Types

0	EAP Packet
1	EAPOL-Start
2	EAPOL-Logoff
3	EAPOL-Key
4	EAPOL-Encap-ASF-Alert

EAP Codes

1	Request
2	Response
3	Success
4	Failure

Interface Defaults

Max Auth Requests	2
Reauthentication	Off
Quiet Period	60s
Reauth Period	1hr
Server Timeout	30s
Supplicant Timeout	30s
Tx Period	30s

EAP Req/Resp Types

1	Identity
2	Notification
3	Nak
4	MD5 Challenge
5	One Time Password
6	Generic Token Card
254	Expanded Types
255	Experimental

Port-Control Options

`force-authorized`
Port will always remain in authorized state (default)

`force-unauthorized`
Always unauthorized; authentication attempts are ignored

`auto`
Supplicants must authenticate to gain access

Troubleshooting

```
show dot1x [statistics] [interface <interface>]
dot1x test eapol-capable [interface <interface>]
dot1x re-authenticate interface <interface>
```