Authentication Extensions for the Dynamic Host Configuration Protocol

draft-pruss-dhcp-auth-dsl-00.txt

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Problem space
Incremental PPP to IP migration in DSL

Gradual migration from ATM to Ethernet, and from PPPoE and PPPoA to “IP Sessions”.

In order to simplify migration, protocol changes are necessary only where the PPP endpoints reside (NAS and HGW)
“DHCP Proxy” to AAA*

Host configuration provided by centralized AAA systems

RADIUS subscriber attributes are mapped to DHCP Options

Driven by the need to protect massive investments in custom AAA systems and back-end infrastructure

* This function is available from a number of NAS vendors today

Relying on option 82 marking may not be sufficient in some cases:

- Migration existing Username/Password systems
- End user controlled retail ISP selection (@domain)
- Subscriber nomadicity
- Line information at the Access Node may not always be reliable
Authentication Extensions for DHCP
(Option 1 - No new DHCP Messages)

• Same architecture as “DHCP Proxy to AAA” but with credentials from the HGW rather than only the Access Node
• Uses existing DHCP message set
• Defined only for CHAP authentication (for greatest compatibility with PPP-based AAA)
Authentication Extensions for DHCP
(Option 2* - EAP in new DHCPAuth Message)

Client, waits for a DHCP AUTH message carrying EAP payload

Precise EAP exchange dependent on EAP method, DHCPAuth message is simply a wrapper

DHCP Discover (EAP Capability Option)
DHCP Auth (EAP Request / ID)
DHCP Auth (EAP Response / ID)

DHCPAUTH Auth (EAP Request)
DHCPAUTH Auth (EAP Response)

Normal DHCP operation from here on

DHCP Offer
DHCP Request
DHCP Ack

Radius Access Request (EAP Response / ID)
Radius Access Accept (EAP Request)
Radius Access Request (EAP Response)
Radius Access Accept (EAP Success)

* Details are still very much a work in progress, but this is the main idea

Possibly the EAP Success is better sent in an DHCP Offer to improve reliability

"EAP passthrough" shown Here. Could be terminated at NAS for "PPP CHAP" interface to AAA
Questions