draft-lear-ietf-dhc-mud-option

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Making our PowerPoint simpler and more distinctive.

Big Problem

- We know how to manage large numbers of the same device (e.g., ca. 120 – 300 million iPhones)
- We don’t know how to manage larger numbers of **types** of devices

The Network Needs Two Pieces of Information

- What the device is
- **How the network should protect it**

We have some constraints

- Devices have very few resources to devote to security.
- The larger the footprint on the endpoint, the larger the threat surface (more code = more bugs)
- Strong security will not be possible in some instances.

What is in the option?

- A client-specified URI
- Fully specified in draft-lear-ietf-netmod-mud

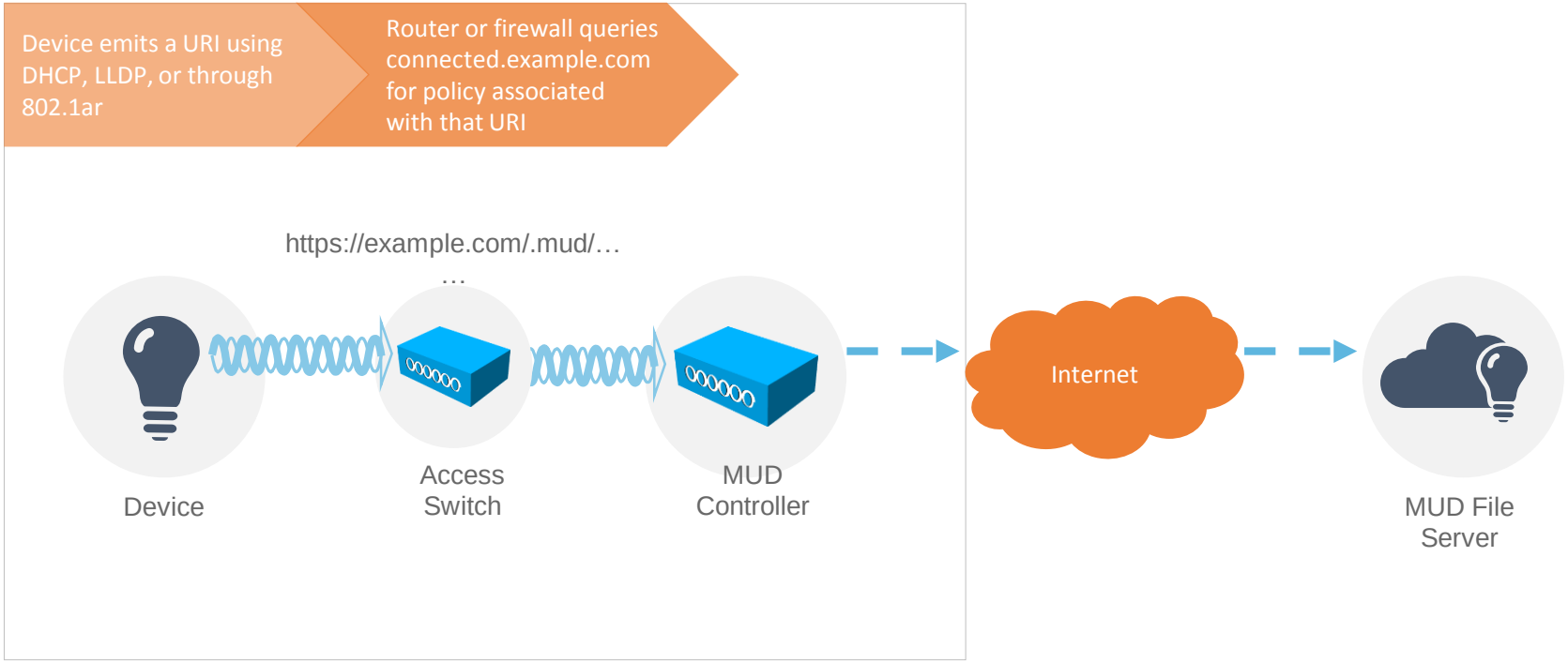
Specifically:

https://authority/.well-known/mud/mudvers/…

...model/dev-rev?extras

- This draft normatively depends on the netmod work.
- More information about MUD can be found at
  - draft-lear-mud-framework-00.txt

Expressing Manufacturer Usage Descriptions



Makes use of YANG-based XML

```
<?xml version = '1.0' encoding = 'UTF-8'? >
<edit-config
 xmlns="urn:ietf:params:xml:ns:netconf:base:1.0"
 xmlns:inet="urn:ietf:params:xml:ns:yang:ietf-inet-types"
 xmlns:mud="urn:ietf:params:xml:ns:yang:cisco-manpolicy"
 xmlns:acl="urn:ietf:params:xml:ns:yang:ietf-acl">
 <mud:supportInformation>
 <mud:lastUpdate>2015-05-12T20:00:50Z</mud:lastUpdate>
 <mud:cacheValidity>1440</mud:cacheValidity>
 </mud:supportInformation>
 <config>
 <top>
 <acl:access-list>
 <acl:access-list-entries>
                <acl:access-list-entry>
                 <acl:rule-name>access-thermostat-controller</acl:rule-name>
                 <acl:matches>
                 <inet:hostname>controller.example.com</inet:hostname>
                 </acl:matches>
                 <acl:actions>
                 <acl:permit/>
                 </acl:actions>
 </acl:access-list-entry>
                <acl:access-list-entry>

                 <acl:rule-name>let-me-talk-to-other-thermostats</acl:rule-name>
                 <acl:matches>
                 <mud:sameManufacturer/>
                 </acl:matches>
                 <acl:actions>
                 <acl:permit/>
                 </acl:actions>
                </acl:access-list-entry>
                <acl:access-list-entry>
                 <acl:rule-name>deny-other</acl:rule-name>
                 <acl:actions>
                 <acl:deny/>
                 </acl:actions>
                </acl:access-list-entry>
 </acl:access-list-entries>
 </acl:access-list>
 </top>
 </config>
</edit-config>
```

Only the text in red would have to change with the proposed standardization

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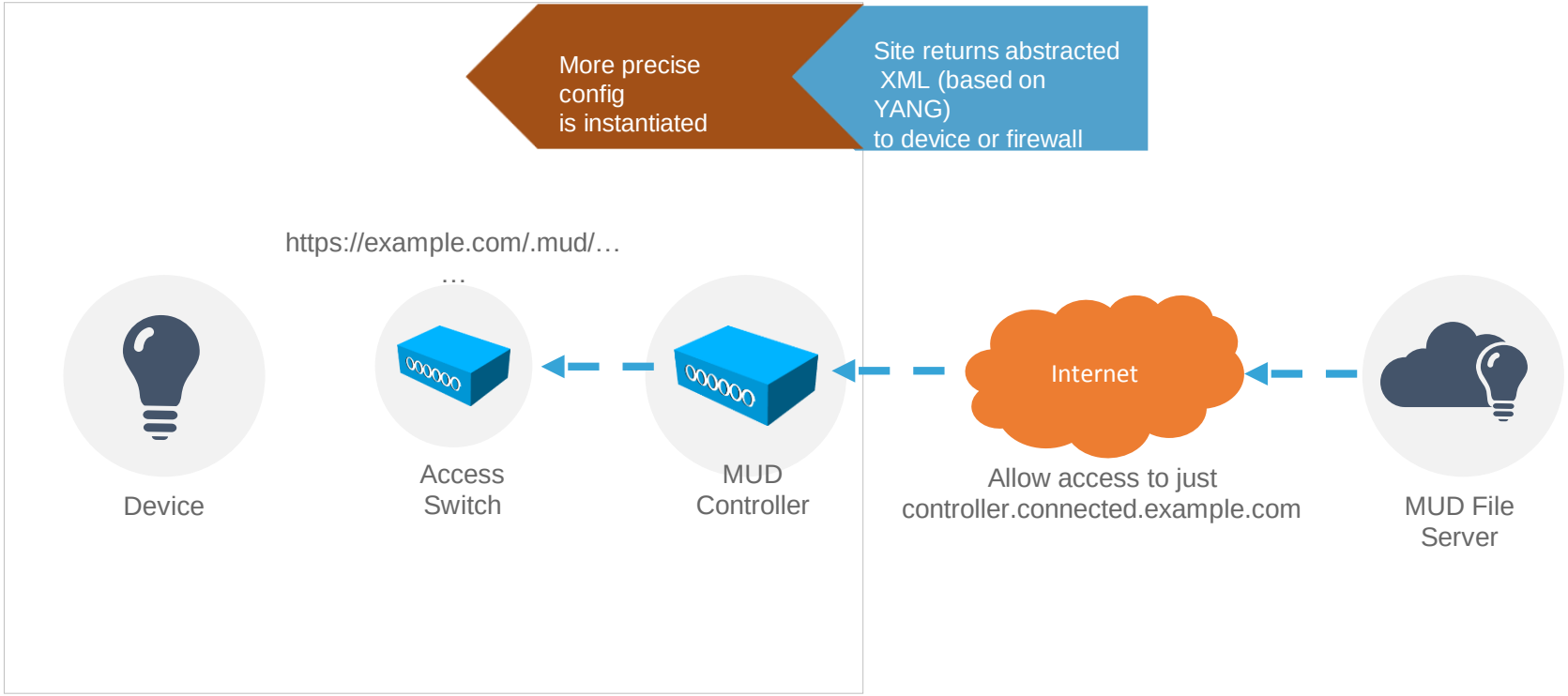

Why a DHCP option?

- This is the **2nd choice** to deliver the MUD URI
- IEEE 802.1AR has stronger security properties
- DHCP is still useful - assertion is from the device for **its protection.**
- Very easy to implement and deploy for any system already implementing DHCP

Who does what?

- Client sends URI
- Gateway passes URI
- Server processes URI or passes it to a controller
- Server acknowledges in its response
- Controller/server retrieves descriptions and applies what configuration it will
- Controller cleans up on release, carrier drop, or session termination

What is needed…

- Would like more eyes on the draft and the concept
- Can this be adopted as a WG draft?


CISCO