CoAP Utilization for Building Control

draft-vanderstok-core-bc-04

Naming and discovery of groups

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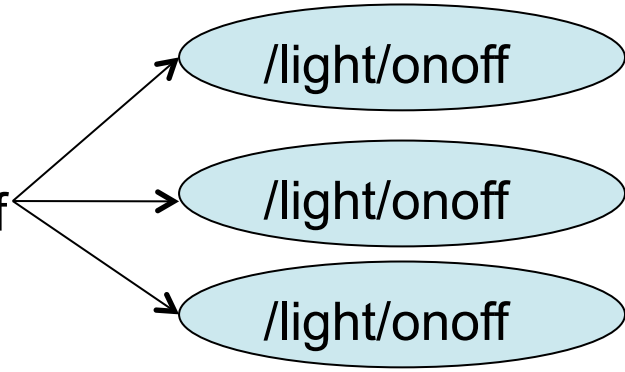
Group naming constraint (reminder)

<u>Authority:</u>

Device (host [:socket]) resolves to a unicast IP address, port
Group (set of devices) resolves to a scoped multicast group IP address
or set of serial IP unicasts (ref: group-comm I-D)

Group operation is sent to all members of group in identical message.
All servers in group listen to same port
The resource must be identified with identical path by all group members

e.g.: coap://all-lights.office.bldg.town.cy/light/onoff



Onoff → resource of “light” service (entry-point)
described by standard XXX; if = XXX in link-format

core-bc describes DNS- Service Discovery(1)

DNS-SD:

Service instance name is of form {Instance}.{ServiceType}.{Location}

Location: global subdomain; in bc equivalent to building location
e.g. office.bldg.town.cy

ServiceType: [_subtype._sub.]_type._proto
_type._proto registered in DNS-SD register by XXX organisation
[_subtype._sub.] defined in: _type._proto by XXX organisation
e.g. _light._sub._HomeAutomation._udp

Instance: uniquely identifies instance of given service within domain;
In bc not necessarily human interpretable

core-bc describes DNS- Service Discovery (2)

Discovery examples:

Return all instances of _HomeAutomation._udp
in domain (location) office.bldg.town.cy
Answer: all URIs of type HomeAutomation in given office

Return all instances of _light._sub._HomeAutomation._udp
in domain (location) bldg.town.cy
Answer: all URIs of type HomeAutomation lights in given building

Answer includes:

SRV record	with host name + port
AAAA record	with IP address,
TXT records	with if=ZIGBEE, path=/light (when appropriate)

Draft-lynn-core-discovery-mapping-01
Draft-shelby-core-resource-directory-00
Draft-ietf-core-link-format-06

Installation example

Barcode readable

UID: 545aafgh678uu8
Location: office5/hilton8.org
IP: fdfd::1234
if: zigbee

Service instances: d4-light1
d4-light2
d4-light3

ServiceType: _light._sub._homeautomation._udp

DNS-SD

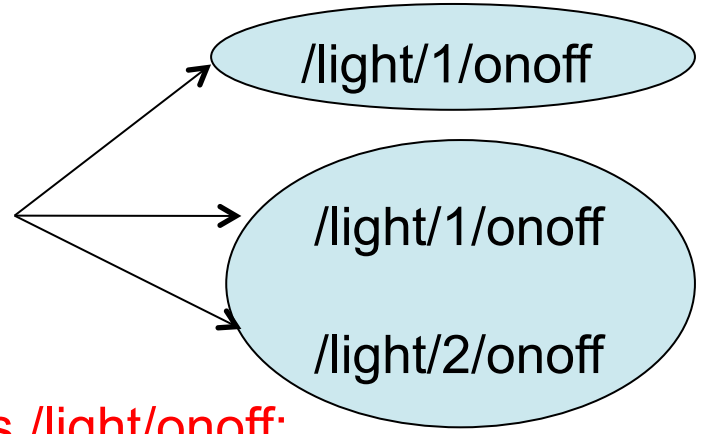
device4.office5.hilton8.org	AAAA	fdfd::1234
_light._sub._homeautomation._udp	PTR	d4-light1
_light._sub._homeautomation._udp	PTR	d4-light2
d4-light1	SRV	device4.office5.hilton8.org; port1
	TXT	if=zigbee path=/light/1
d4-light2	SRV	device4.office5.hilton8.org; port1
	TXT	if=zigbee path=/light/2

Installation example, grouping (1)

Suppose, two instances of same subtype one server: /light/1 and /light/2:
And one instance of same subtype on other server: /light/1

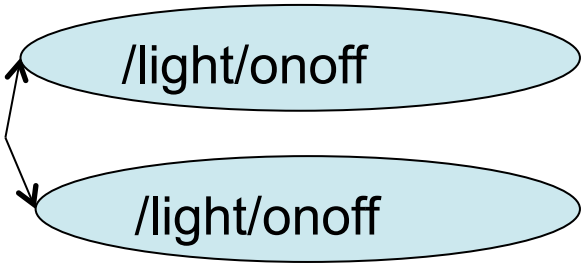
Suppose group “all-lights” groups these three instances:

coap://all-lights.office.bldg.town.cy/light/x/onoff



Inconsistent -> service envelops all instances /light/onoff:

coap://all-lights.office.bldg.town.cy/light/onoff

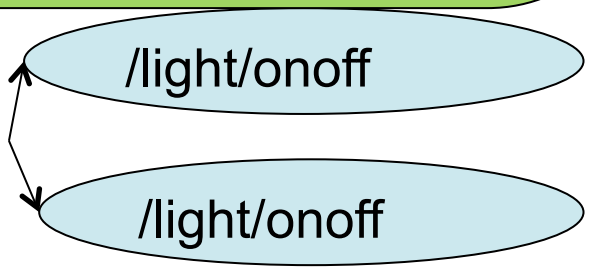


Installation example, grouping (2)

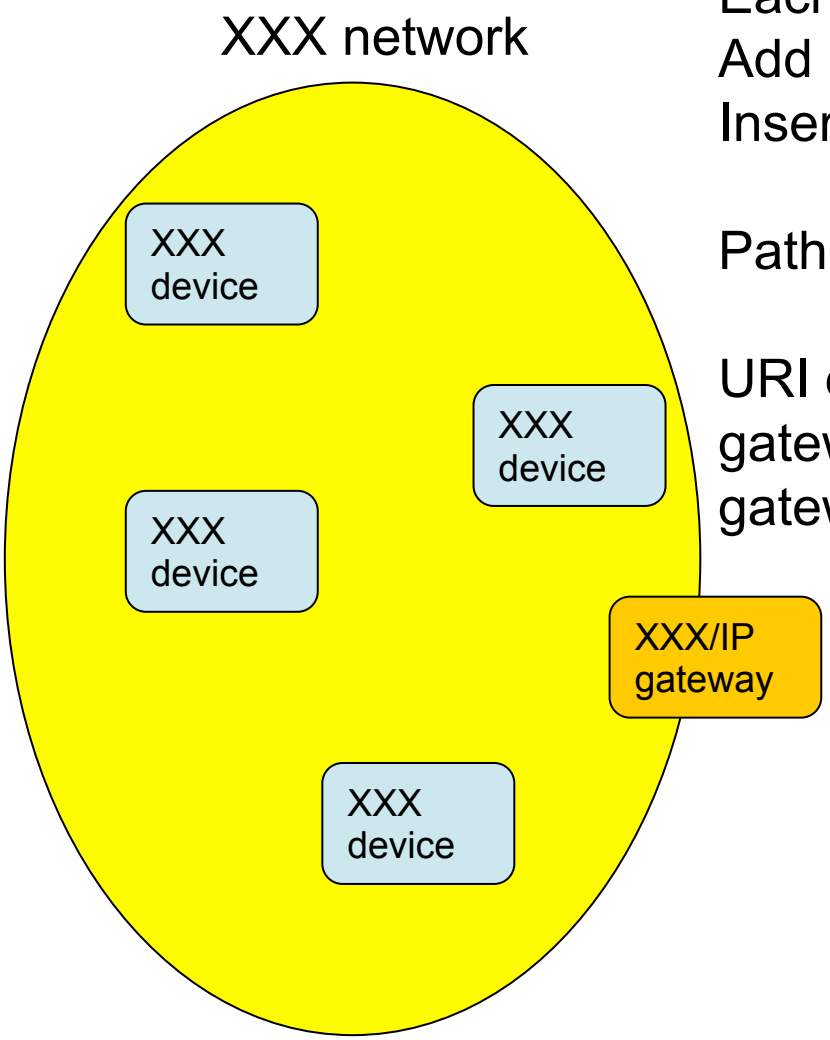
DNS-SD

device4.office5.hilton8.org	AAAA:	fdfd::1234
device5.office5.hilton8.org	AAAA:	fdfd::1235
all-lights.office5.hilton8.org	AAAA:	ff1e::12
_light._sub._homeautomation._udp	PTR	d4-light1
_light._sub._homeautomation._udp	PTR	d5-light1
_all_light._sub._homeautomation._udp	PTR	all-light
d4-light1	SRV:	device4.office5.hilton8.org; port1
	TXT:	if=zigbee path=/light/1
d5-light1	SRV:	device5.office5.hilton8.org; port1
	TXT:	if=zigbee path=/light/1
all-light	SRV:	all-lights.office5.hilton8.org; port1
	TXT:	if=zigbee path=/light

coap://all-lights.office5.hilton8.org/light/onoff



Discover gateway



Consider gateway as multifunction device;
Each XXX device accessed via path in gateway
Add path names which group XXX devices
Insert RR with path names in DNS-SD

Path names should follow XXX name schema

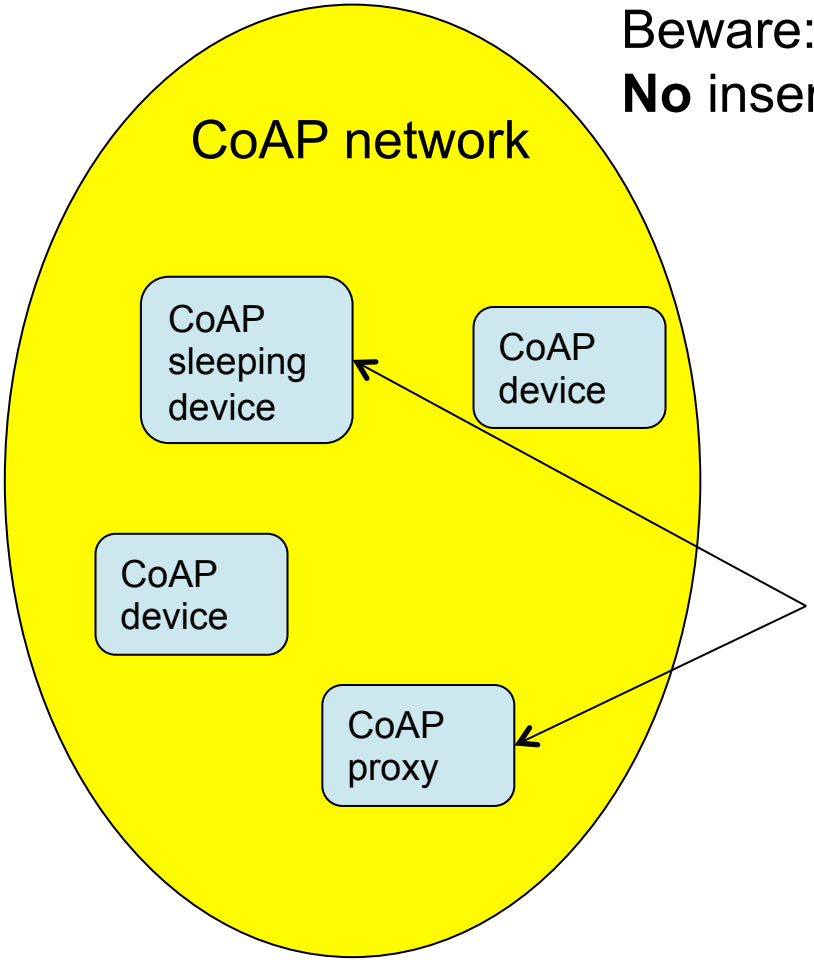
URI examples of XXX light device are:
gateway.office.bldg.town.cy/light/1/onoff
gateway.office.bldg.town.cy/light/onoff

Discover backward proxy

Services of sleeping device copied to proxy
Insert RR with proxy services into DNS-SD

Beware:
No insertion of RR with sleeping node services

Request:
Extension of link-format to signal sleeping device



Identical path names and services