

What should a Thing
API look like?

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e.g. Philips Hue

- Multiple Lights
- Controlled through Hub

N.B.

- We're ignoring:
 - pairing
 - authentication
 - security

N.B. also

- The Hue API is pretty close to this now!
- But there's lots of bad APIs out there

API Entry

```
GET /api  
{  
  "things": "/api/things"  
}
```

Things

```
GET /api/lights
```

```
{  
  "1": "/api/things/1",  
  "2": "/api/things/2",  
  "3": "/api/things/3"  
}
```

Thing 1

```
GET /api/lights/1
```

```
{  
  "state": "/api/things/1/state",  
  "meta": "/api/things/1/meta"  
}
```


Thing | State

```
GET /api/lights/1/state
{
  "on": true,
  "color": "#FF0000",
  (other stuff)
}
```

Thing | State

```
PATCH /api/lights/1/state
{
  "color": "#FF9999"
}
```

Thing I Meta

```
GET /api/things/1/meta
```

```
{  
  "uuid": "0000-...-000",  
  "name": "My Living Room"  
}
```

Thing 1 Meta

```
PUT /api/things/1/meta
```

```
{
```

```
"name": "My Basement Den"
```

```
}
```

Improvements

@context

explain terms

```
GET /api/things/1/state
```

```
{  
  "@context": <some url>,  
  "on": true,  
  "color": "#FF0000",  
  (other stuff)  
}
```

@type

what is this?

```
GET /api/things/1/state
```

```
{  
  "@type": [ "Thing", "Light" ],  
  "on": true,  
  "color": "#FF0000",  
  (other stuff)  
}
```

@id where am I

```
GET /api/things/1/state
{
  "@id": "/api/things/1/state",
  "on": true,
  "color": "#FF0000",
  (other stuff)
}
```


IOTDB

- Semantic vocabulary
- defines what (e.g.)
 - “on” means
 - “color” means

Use real IDs

- Instead of 1, 2, 3...
- Use unique IDs for each device

istate & ostate

Two States!

- input state “istate” - what my values are
- output state “ostate” - what I want them to be
- not always - frequently not - the same

Thing 1 (revisited)

```
GET /api/lights/1
```

```
{  
  "istate": "/api/things/1/istate",  
  "ostate": "/api/things/1/ostate",  
  "meta": "/api/things/1/meta"  
}
```

istate

- The “input” (toward me) state
- The *actual* state of the Thing

ostate

- The “output” state
- What we want the state to become

why two states?

- developers are used to things working or failing
- when you tell Things to do things, this becomes more indeterminate

Get in touch!
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