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Device URN

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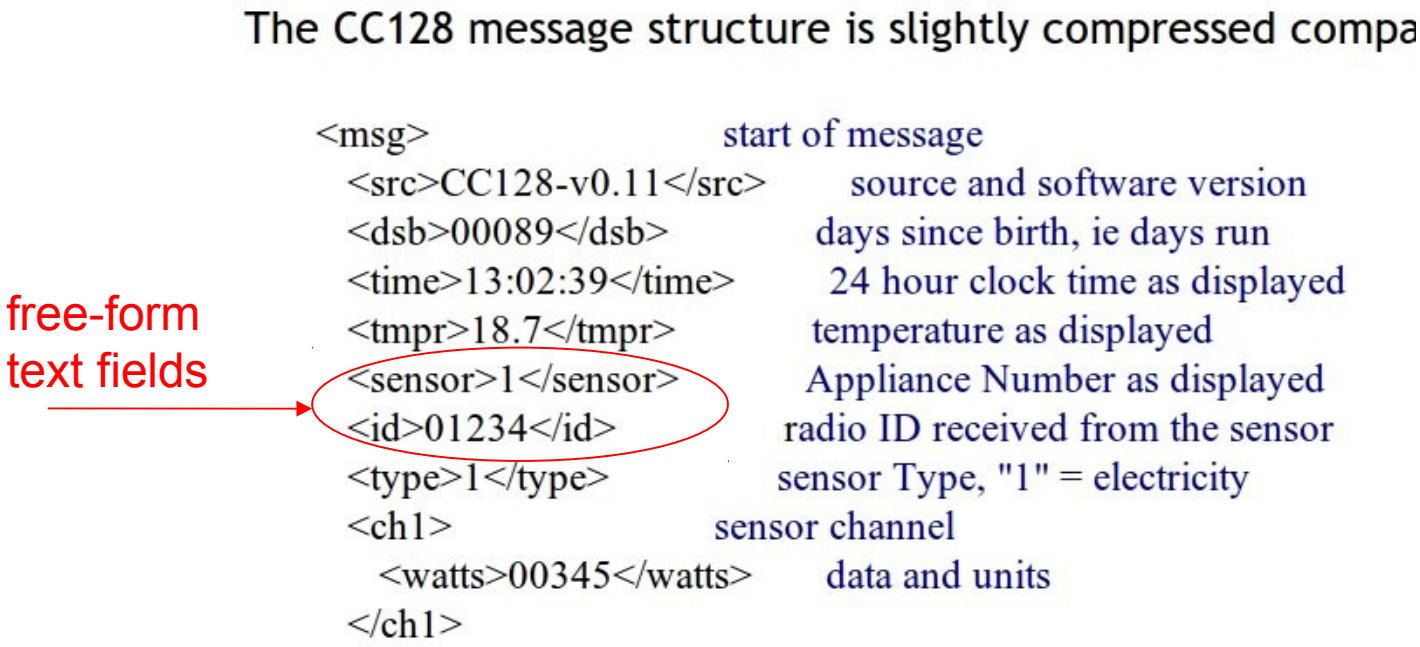
What's the Problem?

1. Google for ”XML sensor data format”
2. Take the first search result
3. Go to the first example on the page

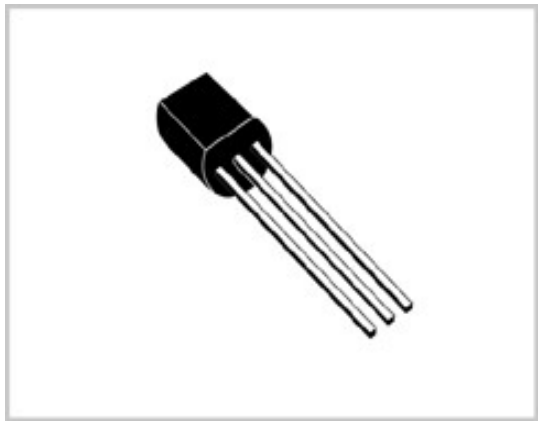


Text-Based vs. Uniform Identifiers

- Cannot make any use of the text identifiers beyond exact match
- Text identifiers do not have clearly defined scope or uniqueness properties
- Uniform, formally defined identifiers can be passed around more easily:
  - They are self-describing
  - Merging data from different sources easier
  - No coordination needed across types
- Conclusion 1: use URNs or URIs as identifiers

Identifier Types

- Semantics-based ”sensor for the oven”
- Name-based ”my_sensor_3”
- Location-based ”coordinates X,Y”
- Address-based ”http://[2001:db8::1]”
- Device ID-based (”mac=...” or ”serial=...”)



How do you configure this device to send a name or location?

Conclusion 2: Device IDs are attractive for many deployment cases – e.g., identifying specific devices in sensor data streams, storage servers and equipment inventory applications. Names are obviously needed too, but can exist at higher layers

The Specification for ”dev” URNs

urn:dev:mac:0024befffe804ff1 (my laptop's MAC address)

- Device identifiers based on EUI-48/64 MAC addresses
  - Similar to UUIDs but requires no real-time clocks, stable storage, and has easier process on the manufacturing side
- Device identifiers based on 64-bit 1-Wire addresses
- Device identifiers based on cryptographic identifiers – related to the security discussion from yesterday
- Extension rules for new types

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SenML

draft-jennings-senml

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```
{"e":[
      {"v":"23.5", "t": "0"},
      {"v":"23.4", "t": "10"},
      {"v":"23.4", "t": "20"},
      {"v":"23.3", "t": "30"},
      {"v":"23.2", "t": "40"},
      {"v":"23.0", "t": "50"},
      {"v":"22.0", "t": "60"},
      {"v":"19.3", "t": "70"},
      {"v":"17.21", "t": "80"},
      {"v":"17.03", "t": "90"},
      {"v":"16.9", "t": "100"}
    ],
 "bt":"1276020076",
 "bn":"urn:dev:ow:10e2073a01080063"
}
```

Why?

- Smart objects need common data format(s)
- JSON is an easy, relatively compact format
- Properly designed base format helps use a generic data container for typical smart object applications – no need to design a scheme just to represent temperature measurements
- Right design helps keep size down even on textual format
- JSON, XML, EXI mappings

```
root@weather:/home/jar/OneWire/History# ls -l 26.*
-rw-r--r-- 1 root root 50436604 2011-11-17 21:44 26.2B4DF5000000.history.dat
-rw-r--r-- 1 root root 75752642 2011-11-17 21:44 26.2D5FE7000000.history.dat
-rw-r--r-- 1 root root 50438850 2011-11-17 21:44 26.4437F5000000.history.dat
-rw-r--r-- 1 root root 95495758 2011-11-17 21:44 26.80A3CD000000.history.dat
root@weather:/home/jar/OneWire/History#
```