Service Discovery Proposal

- This presentation covers:
  - Function and Service definitions
  - Model of 1394 PWG Node
  - Service Discovery issues

What is a Function?
What is a Service?
How do they relate?

Function

- Definition:
  - function: a label applied to a class of devices which provide similar related useful capabilities.
  - Websters:
    - the broad general term for the natural, required , or expected activity of a person or thing.

Services

- Definition:
  - service: an entity which provides some capability by accepting requests and generating appropriate responses.
  - Websters:
    - a system or method of providing people with the use of something

Relationship

- Functions relate to a human perception of the device capability.
- Services relate to mechanisms used to access the device capability.

Example

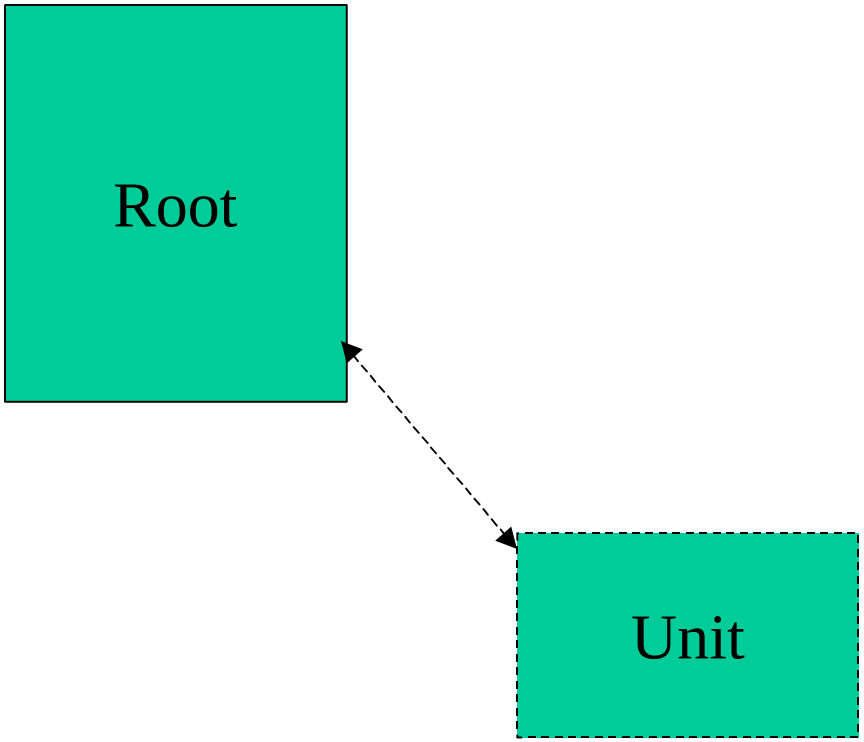
- A 1394 device may support one or more functions.
- A function may be accessed by one or more services.
- Each service may have specific attributes.

Model Issues

1394 Node Model

- Module is the box or a sub-box.
  - Modules may contain one or more nodes.
- Node is an entity within the physical box.
  - Nodes may support one or more functions
- Unit directory is a software interface
- CSR interface is low-level H/W
- ConfigROM is node description

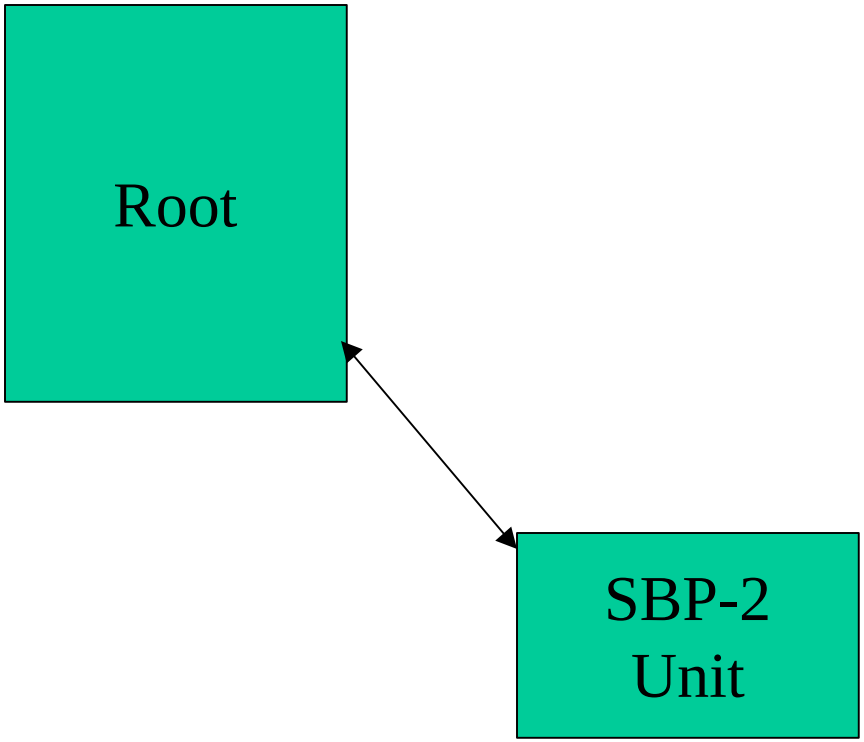
1394 Node Model



SBP-2 Node Model

- Module is the box or a sub-box.
- Node is an entity within the physical box.
  - Nodes may support one or more functions
- Unit is a software interface
  - Defined by Spec_ID
- CSR interface requirements defined
- ConfigROM is node & transport description

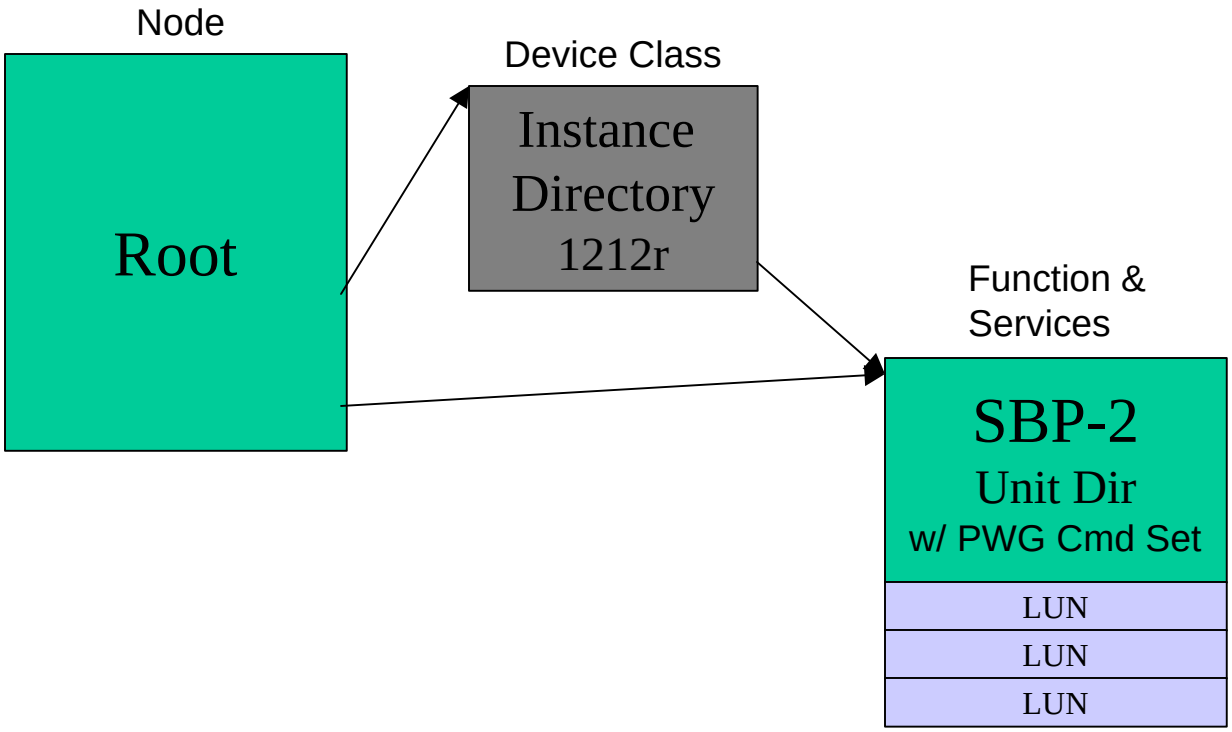
SBP-2 Node Model



1394 PWG Node Model

- Inherits SBP-2 Model and extends following concepts:
  - A Unit directory defines a software interface for one or more instances of a function.
  - Logical units (LUNs) provide unique socket endpoints which provide access to services.
  - Defines
    - Command Set, ConfigROM, & Multi-Queue Model

1394 PWG Node Model



Service Discovery for 1394 PWG Profile

Accessing Services

- What services are provided?
- How do I access a service?
  - Mapping of services to LUNs?
  - Number of instances per service?
  - Number of queues required per instance?
  - Static from ConfigROM or dynamic?

Proposal

- Provide high level service information in Unit Directory.
- Enforce order within Unit Directory by defining a 16 byte service descriptor block for each LUN.

Solution: Service List Directory

- Exists on Service Provider (target) nodes.
  - Provides information on Services provided to access the Function.
  - Each Service Descriptor provides
    - LUN information
    - Service Identifier values
    - Service Name strings
    - Service Attributes supported

Service List Directory

- Extends the idea of Unit Directory to fit PWG Model
- Uses existing keys and structure
- Makes extra information easily available for interested clients.

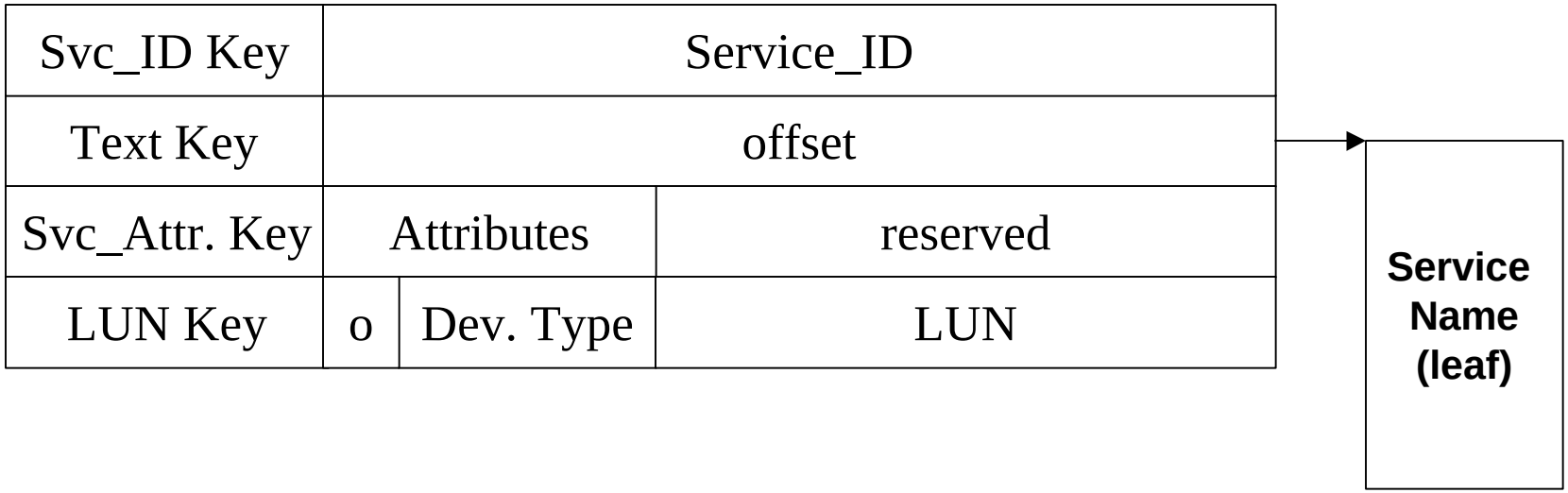
Service List Directory Details

- Two Command Set specific keys defined:
  - Service_ID Key: Identifies a service entry
  - Service_Attribute_Key: Identifies attributes for the preceding service entry

Service List Directory Details

- Defined values
  - Service ID - 24 bit service identifier
    - Meaning is defined within scope of Command_Set_Spec_ID and Command_Set.
  - Service TD: Textual descriptor for name
  - Service Attributes: Max. # of queues / service

Service Descriptor Entry



Summary

- Located in Unit Directory or Unit-Dependent Directory?
  - Decided to put ‘in-line’ in Unit Directory. Moved textual descriptor to leaf to create a fixed size entry in Unit Directory.

Summary

- 1:1 correspondence of LUN to Service Descriptor
- Logins
  - Can only get one LUN, need two, what to do?
  - A. Don’t do that if it’s critical
  - B. Define back-off behavior for client

Summary

- Encoding and ordering
  - Service entries precede the LUN entry
  - Sequence is:
    - Service ID
    - Service Name
    - Service Attributes
    - Service LUN

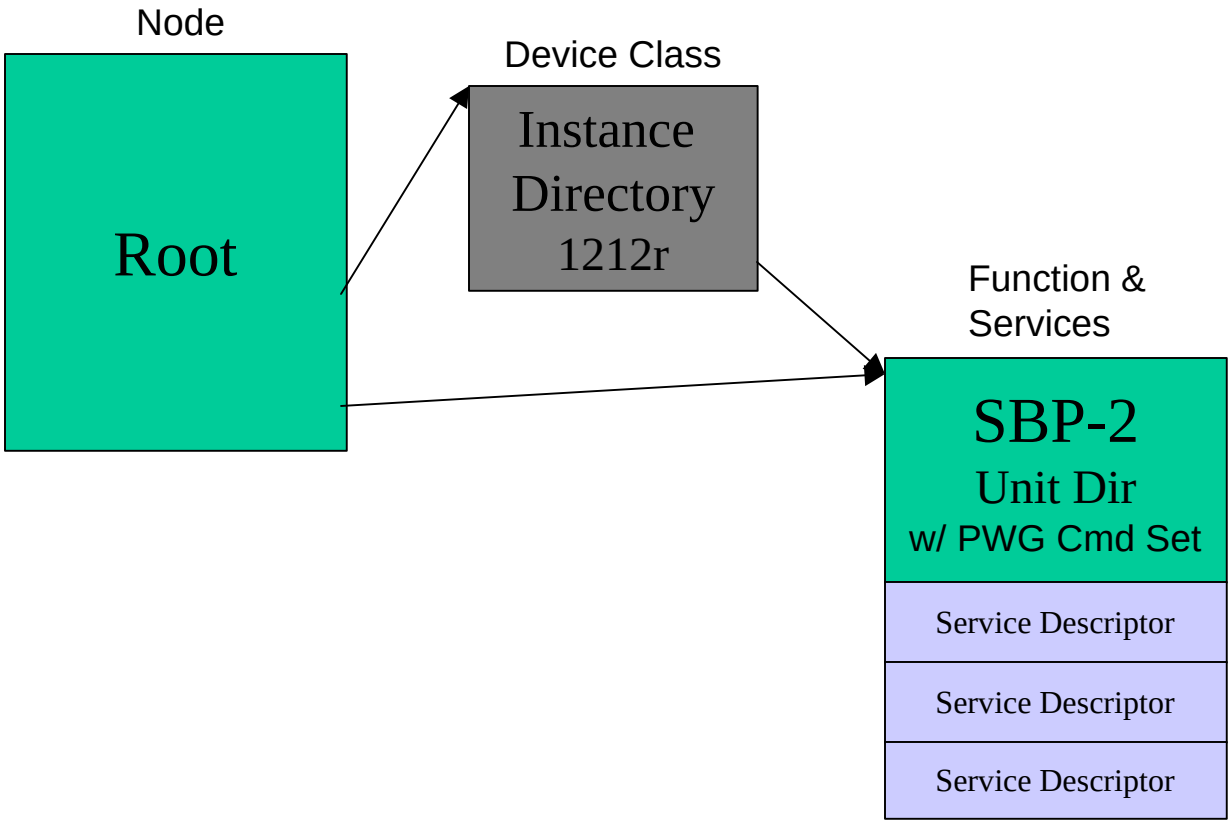
Summary

- Service ID Assignment
  - 24 bit value
  - Need to define this space for use with the Service_ID key.
    - Meaning is defined within scope of Command_Set_Spec_ID and Command_Set.
  - Part of our PWG OUI process

1394 PWG Node Model - Pt. 2

- Keeps current 1394 PWG Node Model and extends following concept:
  - Defines Service Discovery mechanism.
    - Locates service information for a LUN in the Unit Directory by defining a 16 byte service descriptor block which includes the LUN entry.
    - Defines two new keys within scope of PWG OUI

1394 PWG Node Model - Pt. 2



Issues

- Does this proposal fit our needs?
- What, if anything, is necessary that's missing?
  - Do service attributes need additional space?
  - Are they required for initial Service Discovery?
  - Consider directory for extensibility.
- Vote to adopt as part of 1394 PWG profile?