



Dynamic Device Tree BoF ELC 2016

Dynamic DT

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Dynamic Device Tree New Attractions

- + Phandle hash table
- + Indirect targets for overlays
- + Target root
- + Changeset helpers
- + Symbol propagation from loaded overlays
- + Overlay manager for probeable busses

Phandle hash table

- + Modern SoC have hundreds of phandles
- + Phandle lookup uses bogo-search
- + Patch make phandles
- + Uses rhashtable
- + Minimal overhead

Indirect targets for overlays

- + Currently there's a single target
- + Impossible to use when you want to apply the same exact overlay at different points of the base tree
- + Indirect target support; target-indirect node maps a property to a path of label.
- + The target selected comes from the 'id' parameter of the

```
int of_overlay_create_indirect(struct  
device_node *tree, const char *id)
```

Target root

- + When you have probeable busses and need to apply an overlay on the newly created node
- + Target is relative to the root passed as an argument to

```
int of_overlay_create_target_root(struct
device_node *tree, struct device_node
*target_root)
```

Changeset Helpers

- + Changeset API is too low-level.
- + Constructing at runtime nodes/properties is a chore.
- + Changeset Helpers dynamically allocate nodes/properties.
- + Much simplified API.

```
of_changeset_add_property_string(ocs, np,  
"compatible", "foo,bar");
```

Symbol propagation from overlays

- + Currenty an overlay can not refer to a label that a previously loaded overlay contains
- + Patch populates symbols node with the labels that a loaded overlay contains
- + Overlay A contains foo: foo@o
- + Overlay B can refer to &foo as if it was present in the base tree
- + Stacked overlays are now easier.

Overlay manager for probeable busses

- + Overlays on PCI nodes or USB node
- + Manager tracks and creates device nodes for probeable devices that appear at runtime.
- + Provides method to which overlay applies when the devices appear/disappear
- + Uses changeset helpers and the target root capability
- + i.e. when a PCI device with Vendor ID, Device ID is created apply the selected overlay.



Thank you for listening
