

Composing Nodes

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Agenda

- OTP Release Management
- Distributed Applications
- Composing a Node
- Examples

Bottom -> Up

- Code is organized into Modules
- Processes use the code in one or more Modules
- OTP Application is a collection of Modules and Processes

OTP Application

- OTP Application provides a Service through some public API; Erlang Microservice?
- Top level Supervisor
- Processes
- Modules
- Dependent OTP Applications

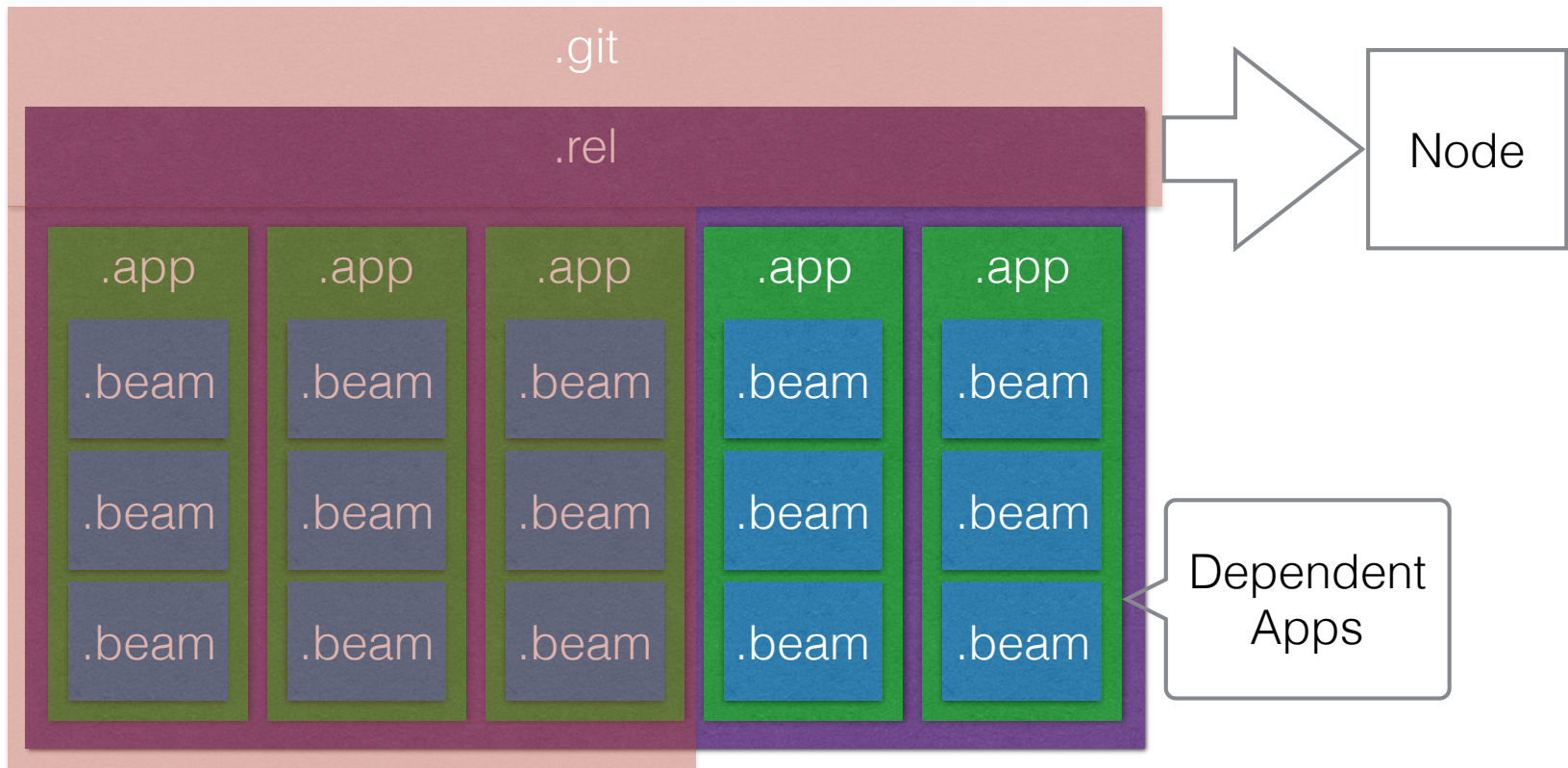
OTP Release

- Release is an Erlang Node
- Self-contained
- List of OTP Applications to run on the Node
 - Bundled into the Release
 - Started in the right order

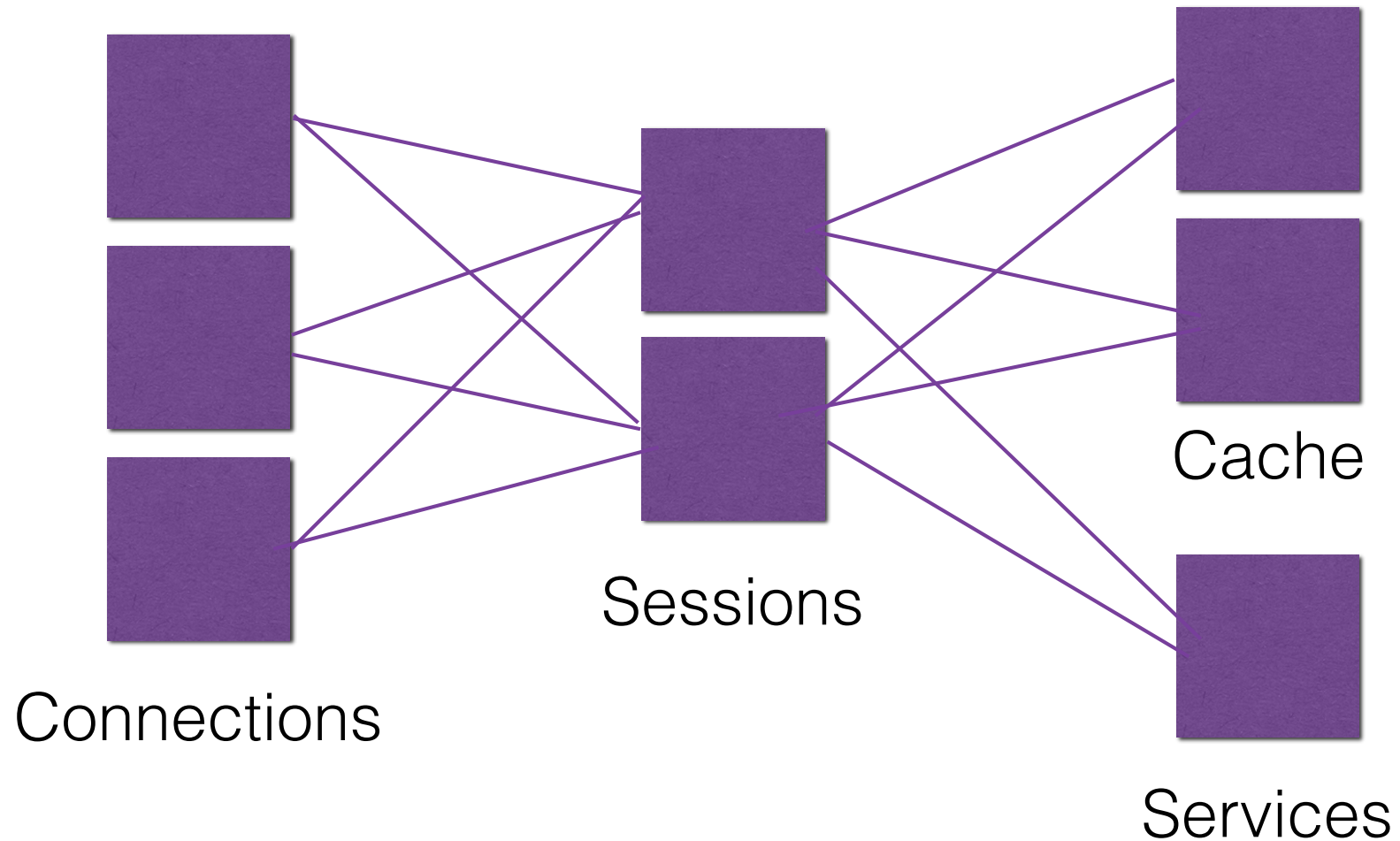
Repository

- Repo for the Service
- OTP Application(s) and OTP Release

Hierarchy



Distributed Application



Great, but?

- Hard to test/debug during development
- Sharing code?
- Rebalancing?

What if...

- Create an all-in-one node for development/testing
- Share Erlang apps among services
- Recompose nodes to rebalance workload

Designing for Composition

- Make OTP Applications single purpose
- Well defined boundaries
- Clear APIs
- Understand dependencies

Repositories

- Separate the OTP Application from the OTP Release needed to use it
- Repo for each OTP Application
- Repo for each Node Configuration

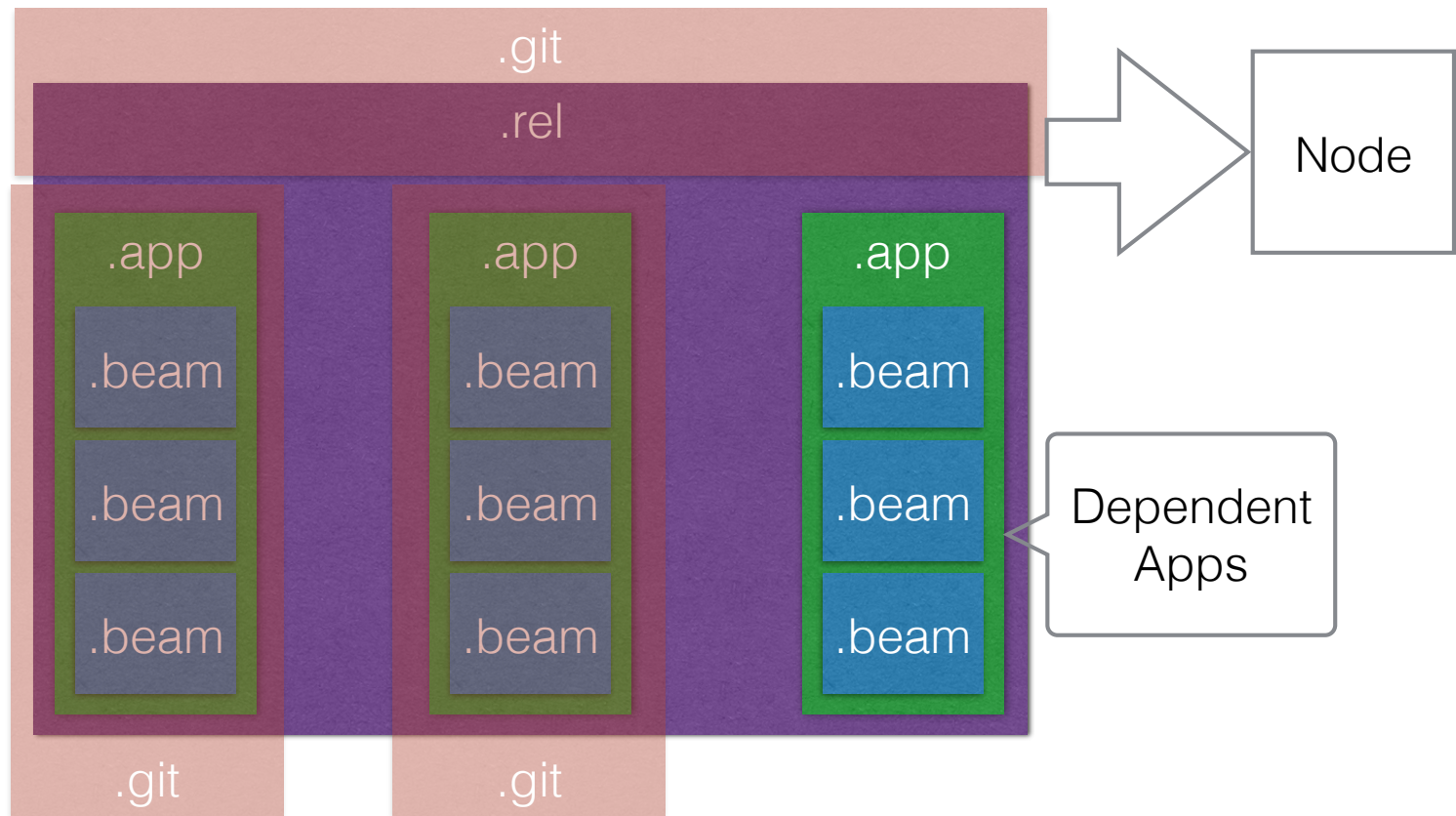
Application Repo

- Application Repo has no Release - rely on the Node Repo for building the Release
- List Application dependencies as normal

Composing Node

- Empty application for the OTP Release
- List OTP Applications to run on Node as dependencies
- Any sys.config configuration is for this Node for shared resources
- A Master Application

Composing



But what about mnesia?

- Some OTP Applications provide a shared resource
 - mnesia - database
 - cowboy - webserver

Thin Manager

- A Thin Manager initializes the resource
- Client OTP Applications use the Thin Manager's API to create/configure the resource
- The Thin Manager's config in the OTP Release is the Node-wide configuration

Mnesia Example

- https://github.com/ivanos/erl_mnesia

Adding sshd

- https://github.com/ivanos/erl_sshd

Other Examples

- https://github.com/ivanos/erl_cowboy
- https://github.com/ivanos/dobby_allinone_node
- https://github.com/ivanos/dobby_rest_node

But...

- Splitting OTP Release and OTP Application into separate repos complicates workflow
- Use symbolic links for deps

Questions?