



OSGiTM Alliance

Bulk Configuration Updates

Draft

8 Pages

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Abstract

When several configurations have related updates, processing all the updates at once can considerably reduce churn. This behavior can be implemented by a Coordination. The configuration management agent that updates the configuration starts a Coordination, and the consumer of the updates such as DS registers as a participant in the Coordination and tracks the configuration events received during the Coordination. After completion the consumer can process all the updates in a suitable order. Labeling the Coordination with a well known name enables consumers to detect that the Coordination is actually involved in configuration. ManagedService and ManagedServiceFactory can be registered with a similar (or identical) well known name so config admin itself can implement this behavior on their behalf.

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0.3 Feedback

This document can be downloaded from the OSGi Alliance design repository at <https://github.com/osgi/design> The public can provide feedback about this document by opening a bug at <https://www.osgi.org/bugzilla/>.

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0.5 Terminology and Document Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY" and "OPTIONAL" in this document are to be interpreted as described in 10.1.

Source code is shown in this typeface.

0.6 Revision History

The last named individual in this history is currently responsible for this document.

Revision	Date	Comments
Initial	06 06 2016	David Jencks, IBM, djencks@us.ibm.com

1 Introduction

Configurations can be interdependent in several ways. For instance, DS components can now consume multiple pids. Also, configurations can reference each other in various ways either because the configure linked components or as a (poor) way to represent tree-like configuration information. In these cases, it can considerably reduce churn if all related updates can be persisted in config admin before any configuration events are processed.

2 Application Domain

This section should be copied from the appropriate RFP(s). It is repeated here so it can be extended while the RFC authors learn more subtle details.

3 Problem Description

There are several situations in which a configuration management agent may wish to indicate that a set of configuration updates are “one thing” and in which a configuration consumer such as SCR may wish to collect all relevant configuration changes before taking action.

4 Requirements

- C0010 – A configuration management agent must be able to indicate that a set of configuration updates should be treated as a unit of work. This must not need to wait for any asynchronous event delivery for the configuration updates in the unit of work.
- C0020 – A configuration consumer must be able to detect whether a configuration update is part of a larger unit of work and detect when the unit of work is complete so that all updates done as part of the unit can be processed at once.
- C0030 – `ManagedService` and `ManagedServiceFactory` instances should be able to be notified of configuration changes part of a unit of work at the end of the unit of work

5 Technical Solution

This seems a bit complicated since there are many threads involved. Clearly more than one coordination is needed.

1. A configuration management agent may start a thread local Coordination and mark it as “for configurations” using a well known variable name. It can complete the coordination when it’s done with supplying configuration changes. No additional delays should be introduced for this coordination.
2. SynchronousConfigurationListeners can participate directly in this coordination if present.
3. Config admin tracks the configuration updates occurring within such a Coordination and creates one or more coordinations attached to the threads it emits configuration events on. These coordinations should also be marked with the well-known variable name.
4. Once all the events for configuration updates done in the original coordination have been sent (and the methods returned) config admin can complete all of it’s Coordinations related to the original one.
5. Configuration listeners can participate in any coordination with the well-known variable name and should return promptly. They can do the actual work when the coordination completes.
6. In order to prevent unneeded delays from configuration listeners that aren’t coordination aware, ConfigurationListeners that are coordination aware should register with a well-known service property. Config admin does not need to supply a thread-local coordination for non-aware listeners.
7. ManagedService[Factory] services that wish to be notified on completion of the (config admin, not original) coordination must register using a well-known service property.

I don’t understand coordinations well enough to know if it would be safe for config admin to attach the same coordination to all threads it uses for configuration events or if it needs a coordination per thread. As long as config admin waits until all configuration event calls return, I don’t see a problem. Possibly if some configuration listener terminates the coordination it could cause chaos on other threads that had started nested coordinations (even though this would be extremely bad practice, as the idea is to wait to do work until the coordination completes).

6 Data Transfer Objects

No DTOs seem appropriate.

7 Javadoc

Please include Javadoc of any new APIs here, once the design has matured. Instructions on how to export Javadoc for inclusion in the RFC can be found here: <https://www.osgi.org/members/RFC/Javadoc>

8 Considered Alternatives

For posterity, record the design alternatives that were considered but rejected along with the reason for rejection. This is especially important for external/earlier solutions that were deemed not applicable.

9 Security Considerations

Description of all known vulnerabilities this may either introduce or address as well as scenarios of how the weaknesses could be circumvented.

10 Document Support

10.1 References

- [1]. Bradner, S., Key words for use in RFCs to Indicate Requirement Levels, RFC2119, March 1997.
- [2]. Software Requirements & Specifications. Michael Jackson. ISBN 0-201-87712-0

*Add references simply by adding new items. You can then cross-refer to them by choosing <Insert><Cross Reference><Numbered Item> and then selecting the paragraph. **STATIC REFERENCES (I.E. BODGED) ARE NOT ACCEPTABLE, SOMEONE WILL HAVE TO UPDATE THEM LATER, SO DO IT PROPERLY NOW.***

10.2 Author's Address

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