

## Robotics Service Bus - Enhancement #2532

Enhancement # 2195 (Resolved): Implement Spread connection pooling

### Spread connection pooling for listeners [C++]

04/15/2016 11:37 AM - J. Moringen

<b>Status:</b>	Resolved	<b>Start date:</b>	04/15/2016
<b>Priority:</b>	Normal	<b>Due date:</b>	
<b>Assignee:</b>	J. Moringen	<b>% Done:</b>	100%
<b>Category:</b>	C++	<b>Estimated time:</b>	0.00 hour
<b>Target version:</b>	rsb-0.18		
<b>Description</b>			

#### Associated revisions

##### Revision c6041b80 - 01/12/2018 12:03 AM - J. Moringen

Partial connector pooling

fixes #2532

##### Revision e95dbcbf - 01/12/2018 12:54 PM - J. Moringen

Partial connector pooling

fixes #2532

##### Revision a385a537 - 01/12/2018 02:08 PM - J. Moringen

Partial connector pooling

fixes #2532

##### Revision e8dbe8c6 - 01/23/2018 08:47 PM - J. Moringen

Removed RefCountingSpreadConnection in src/rsb/transport/spread/RefCountingSpreadConnection.{h,cpp}

This commit removes the RefCountingSpreadConnection class in preparation for full, mandatory Spread connection sharing.

refs #2532

- src/rsb/transport/spread/Factory.{h,cpp} (header): updated copyright  
(Factory::createConnection): unconditionally create and return a SpreadConnection instance  
(Factory::createInPushConnector): adapted to createConnection change  
(Factory::createInPullConnector): likewise  
(Factory::createOutConnector): likewise
- src/rsb/transport/spread/RefCountingSpreadConnection.{h,cpp}: removed; will be replaced by full Spread connection sharing
- src/CMakeLists.txt (SOURCES): removed file

rsb/transport/spread/RefCountingSpreadConnection.cpp  
(HEADERS): removed file  
rsb/transport/spread/RefCountingSpreadConnection.h

## Revision 5a4eb284 - 01/23/2018 08:59 PM - J. Moringen

Spread connection sharing in src/rsb/transport/spread/\*.{h,cpp}

fixes #2532

A new class Bus manages one Spread connection and its group memberships. One or more connectors are attached to the Bus and notifications are routed between the Spread connection and the attached connectors:

- Notifications originating from OutConnectors are sent via the Spread connection and dispatched to In{Push,Pull}Connectors with matching scopes
- Notifications received via the Spread connection are dispatched to In{Push,Pull}Connectors with matching scopes

Management and creation of Bus instances is handled by the Factory class: a Bus instance is created for each Spread daemon to which at least one connector is connected.

Bus instances are kept alive by shared\_ptrs owned by connectors. The Factory only maintains weak\_ptrs to Bus instances. Consequently, Bus instances are destroyed when all connectors drop their references.

- src/rsb/transport/spread/SpreadConnection.cpp (SpreadConnection::send): send messages with SELF\_DISCARD since we dispatch to In{Push,Pull}Connectors within the process
- src/rsb/transport/spread/Notifications.h: new file; contains classes for representing incoming and outgoing notifications
- src/rsb/transport/spread/ReceiverTask.cpp (includes): adapted to new notification representation  
(ReceiverTask::Handler::handleIncomingNotification): use new notification representation  
(ReceiverTask::execute): likewise
- src/rsb/transport/spread/DeserializingHandler.{h,cpp} (includes): adapted to new notification representation  
(DeserializingHandler::handleMessage): call maybeJoinFragments; construct IncomingNotification  
(DeserializingHandler::maybeJoinFragments): new method; join FragmentedNotification instances into a single Notification instance
- src/rsb/transport/spread/Bus.{h,cpp}: new files; contain Bus class
- src/rsb/transport/spread/ConnectorBase.{h,cpp} (includes): adapted for SpreadConnection -> Bus change  
(ConnectorBase::bus): changed connection -> bus  
(ConnectorBase::ConnectorBase): accept Bus instance of SpreadConnection

- (ConnectorBase::printContents): adapted accordingly
- (ConnectorBase::getTransportURL): likewise
- src/rsb/transport/spread/InConnector.{h,cpp} (includes): adapted to SpreadConnection -> Bus change
  - (InConnector): added base class BusSink
  - (InConnector::memberships): removed member variable; now handled by Bus
  - (InConnector::InConnector): accept Bus instead of SpreadConnection
  - (InConnector::activate): register with bus instead of activating connection
  - (InConnector::deactivate): unregister from bus instead of deactivating connection
  - (InConnector::notificationToEvent): accept reference to notification instead of pointer
  - (InConnector::handleError): new method; handle Error notification from Bus
- src/rsb/transport/spread/InPullConnector.{h,cpp} (includes): adapted to SpreadConnection -> Bus change; added rsc/threading/SynchronizedQueue.h
  - (InPullConnector::InPullConnector): accept Bus instead of SpreadConnection
  - (InPullConnector::activate): removed method; now handled by base class
  - (InPullConnector::deactivate): likewise
  - (InPullConnector::handleNotification): new method; accept notifications from bus
- src/rsb/transport/spread/InPushConnector.{h,cpp} (includes): adapted to SpreadConnection -> Bus change; removed ReceiverTask.h
  - (InPushConnector::Handler): removed; no longer needed
  - (InPushConnector::exec): removed; no longer needed
  - (InPushConnector::rec): likewise
  - (InPushConnector::handler): likewise
  - (InPushConnector::InPushConnector): accept Bus instead of SpreadConnection; no need to initialize handler, task or executor
  - (InPushConnector::activate): removed method; now handled by base class
  - (InPushConnector::deactivate): likewise
  - (InPushConnector::handleNotification): renamed Handle{Incoming -> }Notification; adapted to changed notification representation
- src/rsb/transport/spread/OutConnector.{h,cpp} (includes): adapted to SpreadConnection -> Bus change;
  - (OutConnector::OutConnector): accept Bus instead of SpreadConnection
  - (OutConnector::activate): do not activate connection
  - (OutConnector::deactivate): do not deactivate connection
  - (OutConnector::handle): serialize and fragment event according to changed notification representation; then submit to bus for distribution
- src/rsb/transport/spread/Factory.{h,cpp} (Factory::buses): new member variable; map of Spread daemon names to Bus instances
  - (Factory::busesLock): new member variable; lock for Bus map
  - (Factory::obtainBus): renamed createConnection -> obtainBus; check map of weak pointers to bus instances for an entry that matches the

- requested daemon and is still alive; use that entry or create a new Bus instance
- (Factory::createInPushConnector): use obtainBus
- (Factory::createInPullConnector): likewise
- (Factory::createOutConnector): likewise
- test/rsb/transport/spread/SpreadConnectorTest.cpp (header): updated copyright
- (createSpreadInPullConnector): create Bus instance, pass to connector
- (createSpreadInPushConnector): likewise
- (createSpreadOutConnector): likewise
- src/CMakeLists.txt (SOURCES): added file src/rsb/transport/spread/Bus.cpp
- (HEADERS): added file src/rsb/transport/spread/Bus.h

#### **Revision 61decafa - 01/23/2018 09:03 PM - J. Moringen**

Mention full Spread connection sharing in C++ in news.rst

refs #2532

- news.rst (RSB 0.18): mention full Spread connection sharing in C++ implementation

#### **Revision 0d85fc6b - 01/23/2018 09:32 PM - J. Moringen**

Mention full Spread connection sharing in C++ in news.rst

refs #2532

- news.rst (RSB 0.18): mention full Spread connection sharing in C++ implementation

## **History**

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### **#1 - 06/08/2016 09:01 PM - J. Moringen**

- Target version changed from rsb-0.14 to rsb-0.15

### **#2 - 11/07/2016 10:38 AM - J. Moringen**

- Target version changed from rsb-0.15 to rsb-0.16

### **#3 - 04/10/2017 09:01 PM - J. Moringen**

- Target version changed from rsb-0.16 to rsb-0.17

### **#4 - 09/28/2017 08:54 PM - J. Moringen**

- Target version changed from rsb-0.17 to rsb-0.18

### **#5 - 01/05/2018 05:36 PM - J. Moringen**

- Status changed from New to In Progress
- Assignee set to J. Moringen

**#6 - 01/12/2018 12:50 PM - J. Moringen**

- *Status changed from In Progress to Resolved*

- *% Done changed from 0 to 100*

Applied in changeset commit:rsb-spread-cpp|c6041b800ec93112d6feb63d7830cf99bb20f711.