

# Grouper Messaging System

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The recommended approach for messaging in Grouper v2.6+ is:

1. Use a provisioner instead of messaging so that full and incremental syncs can occur and all the [provisioning framework](#) features can be used
2. If you still want to use messaging, consider using a messaging provisioner (such as Amazon AWS SNS/SQS, ActiveMQ, RabbitMQ) instead of the messaging change log. There is more granular control of which objects are eligible for the messaging, and information is kept/displayed about when messages are sent
3. If you still want to use messaging change log consumer, it is still supported

Grouper messaging system is a Java implementation of the Interface `GrouperMessagingSystem`. It allows messages to be sent and received from a messaging system.

The built in implementation is

- [Grouper database \(default\)](#):

Newer options, (found in Grouper 2.5+) leveraging external messaging systems are:

- [Amazon AWS SNS/SQS](#)
- [ActiveMQ](#)
- [RabbitMQ](#)

The messages:

- must support 100kB in size
- must support ordered messaging (unless ordered messaging consumers are not used)
- there are bulk methods, but the implementation can do them one at a time (if there is an error, block until all are successful)
- [Grouper messaging built in](#)
- [Grouper messaging send receive change log adapter example](#)
- [Grouper messaging send receive example](#)
- [Grouper Messaging System development guide](#)
- [Grouper Messaging System - full sync messages](#)
- [Grouper messaging to web service API](#)
- [Grouper Messaging with ActiveMQ](#)
- [Grouper Messaging with AWS SQS](#)
- [Grouper Messaging with RabbitMQ](#)

Configure an ESB change log consumer in `grouper-loader.properties`

```
#####
## Messaging integration with ESB, send change log entries to a messaging system
#####

# note, change "messagingEsb" in key to be the name of the consumer. e.g. changeLog.consumer.myAzureConsumer.
class
# note, routingKey property is valid only for rabbitmq. For other messaging systems, it is ignored.
#changeLog.consumer.messagingEsb.class = edu.internet2.middleware.grouper.changeLog.esb.consumer.EsbConsumer

# quartz cron
# {valueType: "string", regex: "^changeLog\\.\\.consumer\\.\\.([^.]+)\\.\\.quartzCron$"}
#changeLog.consumer.messagingEsb.quartzCron = 0 * * * * ?

# el filter
# {valueType: "string", regex: "^changeLog\\.\\.consumer\\.\\.([^.]+)\\.\\.elfilter$"}
#changeLog.consumer.messagingEsb.elfilter = event.eventType eq 'GROUP_DELETE' || event.eventType eq 'GROUP_ADD'
|| event.eventType eq 'MEMBERSHIP_DELETE' || event.eventType eq 'MEMBERSHIP_ADD'

# publishing class
# {valueType: "class", mustExtendClass: "edu.internet2.middleware.grouper.changeLog.esb.consumer.
EsbMessagingPublisher", regex: "^changeLog\\.\\.consumer\\.\\.([^.]+)\\.\\.publisher\\.\\.class$"}
#changeLog.consumer.messagingEsb.publisher.class = edu.internet2.middleware.grouper.changeLog.esb.consumer.
EsbMessagingPublisher

# messaging system name
# {valueType: "string", regex: "^changeLog\\.\\.consumer\\.\\.([^.]+)\\.\\.messagingSystemName$"}
#changeLog.consumer.messagingEsb.publisher.messagingSystemName = grouperBuiltinMessaging

# routing key
# {valueType: "string", regex: "^changeLog\\.\\.consumer\\.\\.([^.]+)\\.\\.routingKey$"}
#changeLog.consumer.messagingEsb.publisher.routingKey =

# EL replacement definition. groupName is the variable for the name of the group. grouperUtil is the class
GrouperUtilElSafe can be used for utility methods.
# {valueType: "string", regex: "^changeLog\\.\\.consumer\\.\\.([^.]+)\\.\\.regexRoutingKeyReplacementDefinition$"}
#changeLog.consumer.messagingEsb.regexRoutingKeyReplacementDefinition = ${groupName.replaceFirst('hawaii.edu',
'group.modify').replace(':enrolled', '').replace(':waitlisted', '').replace(':withdrawn', '')}

# replace routing key with periods
# {valueType: "string", regex: "^changeLog\\.\\.consumer\\.\\.([^.]+)\\.\\.replaceRoutingKeyColonsWithPeriods$"}
#changeLog.consumer.messagingEsb.replaceRoutingKeyColonsWithPeriods = true

# queue or topic
# {valueType: "string", regex: "^changeLog\\.\\.consumer\\.\\.([^.]+)\\.\\.publisher\\.\\.messageQueueType$"}
#changeLog.consumer.messagingEsb.publisher.messageQueueType = queue

# queue or topic name
# {valueType: "string", regex: "^changeLog\\.\\.consumer\\.\\.([^.]+)\\.\\.publisher\\.\\.queueOrTopicName$"}
#changeLog.consumer.messagingEsb.publisher.queueOrTopicName = abc

# exchange type for rabbitmq. valid options are DIRECT, TOPIC, HEADERS, FANOUT
# {valueType: "string", regex: "^changeLog\\.\\.consumer\\.\\.([^.]+)\\.\\.publisher\\.\\.exchangeType$"}
#changeLog.consumer.messagingEsb.publisher.exchangeType =
```

The GrouperMessagingSystem interface is located in the GrouperClient:

```

/**
 *
 * @author mchzyer
 * $Id$
 */
package edu.internet2.middleware.grouperClient.messaging;

/**
 * Represents the methods that a messaging system
 * needs to support
 */
public interface GrouperMessagingSystem {

    /**
     * send a message to a queue name. Note, the recipient could be a
     * queue or a topic (generally always one or the other) based on the
     * implementation of the messaging system. Messages must be delivered
     * in the order that collection iterator designates. If there is a problem
     * delivering the messages, the implementation should log, wait (back off)
     * and retry until it is successful.
     * @param grouperMessageSendParam has the queue or topic, and the message(s) and perhaps args
     * @return result
     */
    public GrouperMessageSendResult send(GrouperMessageSendParam grouperMessageSendParam);

    /**
     * this will generally block until there are messages to process. These messages
     * are ordered in the order that they were sent.
     * @param grouperMessageReceiveParam grouper messaging receive param
     * @return a message or multiple messages. It will block until there are messages
     * available for this recipient to process
     */
    public GrouperMessageReceiveResult receive(GrouperMessageReceiveParam grouperMessageReceiveParam);

    /**
     * tell the messaging system that these messages are processed
     * generally the message system will use the message id. Note, the objects
     * sent to this method must be the same that were received in the
     * receiveMessages method. If there is a problem
     * delivering the messages, the implementation should wait (back off)
     * and retry until it is successful. Alternatively the message should be
     * returned to queue, returned to end of queue, or sent to another queue
     * @param grouperMessageAcknowledgeParam
     * @return result
     */
    public GrouperMessageAcknowledgeResult acknowledge(GrouperMessageAcknowledgeParam
grouperMessageAcknowledgeParam);

}

```

This is the interface for GrouperMessage (located in the GrouperClient), which has a default implementation that can be used. Note the message contents will be encrypted, have metadata, etc.

```

/**
 * @author mchyzer
 * $Id$
 */
package edu.internet2.middleware.grouperClient.messaging;

/**
 * grouper message sent to/from grouper messaging systems
 */
public interface GrouperMessage {

    /**
     * member id of a subjct that sent the message
     * @return the from member id
     */
    public String getFromMemberId();

    /**
     * @param fromMemberId1 the from to set
     */
    public void setFromMemberId(String fromMemberId1);

    /**
     * @return the id
     */
    public String getId();

    /**
     * @param id1 the id to set
     */
    public void setId(String id1);

    /**
     * @return the message
     */
    public String getMessageBody();

    /**
     * @param message1 the message to set
     */
    public void setMessageBody(String message1);
}

```

#### See Also:

[GSH to manage built in messaging](#)

[GSH to send / receive messages](#)

[Grouper Built In Messaging](#)

[Message Format Detail](#)

[Message Format Config Example](#)

[Grouper Messaging System Development Guide](#)

[Grouper Messaging to Web Service API](#)

[Change Log Consumers](#)

