The ClusterManager object

Introduction

- Cluster manager là thành phần mở rộng của Tomcat’s session manager interface, “org.apache.catalina.Manager”. Cluster manage cần được thực thi “org.apache.catalina.ha.ClusterManager” và tự chịu trách nhiệm về cách session được nhân rộng.

- Có 2 manager khác nhau, “org.apache.catalina.ha.session.DeltaManager” sao chép delta của session data tới tất cả member trong cluster. Thực thi này đã được chứng minh hoạt động tốt, nhưng có hạn chế là các thành viên phải trong cụm đồng nhất, tất cả node cần được deploy same app và cùng phiên bản. “org.apache.catalina.ha.session.BackupManager” cũng nhân bản delta nhưng chỉ trên node backup. Ví trị backup được biết trên toàn bộ cluster. Nó cũng hỗ trợ deployment không đồng nhất, do đó manager biết được vị trí ứng dụng web được triển khai.

The <Manager>

- <Manager> element được định nghĩa bên trong <cluster> element, được định nghĩa theo mẫu tại web.xml. Tuy nhiên ta vẫn có thể override lại thực thi manager trên mỗi web app bằng cách đặt <manager> bên trong <context> element tại “context.xml” file hoặc “server.xml”.

Attributes

Common Attributes

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| **Attribute** | **Description** |
| **className** |  |
| name | **The name of this cluster manager, the name is used to identify a session manager on a node. The name might get modified by the Cluster element to make it unique in the container.** |
| notifyListenersOnReplication | Set to true if you wish to have session listeners notified when session attributes are being replicated or removed across Tomcat nodes in the cluster. |
| processExpiresFrequency | Frequency of the session expiration, and related manager operations. Manager operations will be done once for the specified amount of backgroundProcess calls (i.e., the lower the amount, the more often the checks will occur). The minimum value is 1, and the default value is 6. |
| secureRandomClass | Name of the Java class that extends java.security.SecureRandom to use to generate session IDs. If not specified, the default value isjava.security.SecureRandom. |
| secureRandomProvider | Name of the provider to use to create the java.security.SecureRandominstances that generate session IDs. If an invalid algorithm and/or provider is specified, the Manager will use the platform default provider and the default algorithm. If not specified, the platform default provider will be used. |
| secureRandomAlgorithm | Name of the algorithm to use to create the java.security.SecureRandominstances that generate session IDs. If an invalid algorithm and/or provider is specified, the Manager will use the platform default provider and the default algorithm. If not specified, the default algorithm of SHA1PRNG will be used. If the default algorithm is not supported, the platform default will be used. To specify that the platform default should be used, do not set the secureRandomProvider attribute and set this attribute to the empty string. |
| recordAllActions | Flag whether send all actions for session across Tomcat cluster nodes. If set to false, if already done something to the same attribute, make sure don't send multiple actions across Tomcat cluster nodes. In that case, sends only the actions that have been added at last. Default is false. |

org.apache.catalina.ha.session.DeltaManager Attributes

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| **Attribute** | **Description** |
| expireSessionsOnShutdown | When a web application is being shutdown, Tomcat issues an expire call to each session to notify all the listeners. If you wish for all sessions to expire on all nodes when a shutdown occurs on one node, set this value to true. Default value is false. |
| maxActiveSessions | The maximum number of active sessions that will be created by this Manager, or -1 (the default) for no limit. For this manager, all sessions are counted as active sessions irrespective if whether or not the current node is the primary node for the session. |
| notifySessionListenersOnReplication | Set to true if you wish to have session listeners notified when sessions are created and expired across Tomcat nodes in the cluster. |
| notifyContainerListenersOnReplication | Set to true if you wish to have container listeners notified across Tomcat nodes in the cluster. |
| stateTransferTimeout | The time in seconds to wait for a session state transfer to complete from another node when a node is starting up. Default value is 60seconds. |
| sendAllSessions | Flag whether send sessions as split blocks. If set to true, send all sessions as one big block. If set to false, send sessions as split blocks. Default value is true. |
| sendAllSessionsSize | The number of sessions in a session block message. This value is effective only when sendAllSessions is false. Default is 1000. |
| sendAllSessionsWaitTime | Wait time between sending of session block messages. This value is effective only when sendAllSessions is false. Default is 2000milliseconds. |
| sessionAttributeNameFilter | A regular expression used to filter which session attributes will be replicated. An attribute will only be replicated if its name matches this pattern. If the pattern is zero length or null, all attributes are eligible for replication. The pattern is anchored so the session attribute name must fully match the pattern. As an example, the value (userName|sessionHistory) will only replicate the two session attributes named userName and sessionHistory. If not specified, the default value of null will be used. |
| sessionAttributeValueClassNameFilter | A regular expression used to filter which session attributes will be replicated. An attribute will only be replicated if the implementation class name of the value matches this pattern. If the pattern is zero length or null, all attributes are eligible for replication. The pattern is anchored so the fully qualified class name must fully match the pattern. If not specified, the default value of null will be used unless a SecurityManager is enabled in which case the default will bejava\\.lang\\.(?:Boolean|Integer|Long|Number|String). |
| stateTimestampDrop | When this node sends a GET\_ALL\_SESSIONS message to other node, all session messages that are received as a response are queued. If this attribute is set to true, the received session messages (except any GET\_ALL\_SESSIONS sent by other nodes) are filtered by their timestamp. A message is dropped if it is not a GET\_ALL\_SESSIONSmessage and its timestamp is earlier than the timestamp of our GET\_ALL\_SESSIONS message. If set to false, all queued session messages are handled. Default is true. |
| warnOnSessionAttributeFilterFailure | If **sessionAttributeNameFilter** or**sessionAttributeValueClassNameFilter** blocks an attribute, should this be logged at WARN level? If WARN level logging is disabled then it will be logged at DEBUG. The default value of this attribute is false unless a SecurityManager is enabled in which case the default will be true. |

org.apache.catalina.ha.session.BackupManager Attributes

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| **Attribute** | **Description** |
| mapSendOptions | The backup manager uses a replicated map, this map is sending and receiving messages. You can setup the flag for how this map is sending messages, the default value is 6(synchronous). Note that if you use asynchronous messaging it is possible for update messages for a session to be processed by the receiving node in a different order to the order in which they were sent. |
| maxActiveSessions | The maximum number of active sessions that will be created by this Manager, or -1 (the default) for no limit. For this manager, only sessions where the current node is the primary node for the session are considered active sessions. |
| rpcTimeout | Timeout for RPC message used for broadcast and transfer state from another map. Default value is 15000 milliseconds. |
| sessionAttributeNameFilter | A regular expression used to filter which session attributes will be replicated. An attribute will only be replicated if its name matches this pattern. If the pattern is zero length or null, all attributes are eligible for replication. The pattern is anchored so the session attribute name must fully match the pattern. As an example, the value (userName|sessionHistory) will only replicate the two session attributes named userName and sessionHistory. If not specified, the default value of null will be used. |
| sessionAttributeValueClassNameFilter | A regular expression used to filter which session attributes will be replicated. An attribute will only be replicated if the implementation class name of the value matches this pattern. If the pattern is zero length or null, all attributes are eligible for replication. The pattern is anchored so the fully qualified class name must fully match the pattern. If not specified, the default value of null will be used unless a SecurityManager is enabled in which case the default will bejava\\.lang\\.(?:Boolean|Integer|Long|Number|String). |
| terminateOnStartFailure | Set to true if you wish to terminate replication map when replication map fails to start. If replication map is terminated, associated context will fail to start. If you set this attribute to false, replication map does not end. It will try to join the map membership in the heartbeat. Default value is false . |
| warnOnSessionAttributeFilterFailure | If **sessionAttributeNameFilter** or**sessionAttributeValueClassNameFilter** blocks an attribute, should this be logged at WARN level? If WARN level logging is disabled then it will be logged at DEBUG. The default value of this attribute is false unless a SecurityManager is enabled in which case the default will be true. |
| accessTimeout | The timeout for a ping message. If a remote map does not respond within this timeout period, its regarded as disappeared. Default value is 5000 milliseconds. |

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