TIBCO BusinessEvents: ActiveSpace Integration

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| Product Suite | **TIBCO BusinessEvents** |
| Product | **BusinessEvents Core** |
| Product Version | **4.1** |
| Initial Author | **Suresh Subramani** |

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# Change Log

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|  |  |  |  |
| --- | --- | --- | --- |
| Date | Version | Name | Description |
| 3/18/10 | 1.0 | Suresh Subramani | Initial doc |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## Related Documents

|  |  |  |
| --- | --- | --- |
| Document Title | Revision Number | Author |
| TIBCO BusinessEvents User Guide | 3.0.1 HF9 | Jackie Pascoe |
| TIBCO ActiveSpace User Guide | 1.0.1 |  |

# Introduction

## Purpose

The objective of this document is to provide

1. Detailed analysis of Coherence usage in BE
2. Migration to AS – code and data migration process if any.
3. Design details for AS and BE integration
4. Provide a detail time lines for an execution path

## Scope

The document describes in detail gap analysis and functional usage of coherence in BE. The document also provides detail usage semantics and how it should design in order to use AS and replace Coherence. The document does not attempt to describe in any way of optimizing /fixing layers that it might touch during the gap-analysis process (e.g. Rete optimization, Cache+WM optimization)

## Audience

The document is intended for Developers, Architects, QA, Product Marketing, and Managers.

## References

## 

# Acronyms and Vocabulary

The table below describes some of the Acronyms used in this documentation

1. BE – TIBCO BusinessEvents.
2. AS – TIBCO ActiveSpaces
3. Cluster
4. Node
5. Cache Agent
6. Inference Agent
7. BE Artifacts (Concepts, StateMachine, Scorecards, Metrics, Queries, Rules, Channels Events, Timers, Channel)
8. Studio Project – A TIBCO Project build using TIBCO BusinessEvents Studio.

# Background

## Execution Life Cycle

## Clusters and Nodes

## Behavior and Interactions

# Gap Analysis

## Type Mapping

## ID Generation

## Group Membership

## Cluster Actions

Remote Functions

Delete

Schedules

Flush

## Locks

## Filters

## Gets/Load/Recover

## Catalog Function API mapping

## Backing Store

### Write Behind

### Cache Aside

### Exception and Recovery

### Transactions

## Cache

### Fixed Size Caches

### Cache Policies - Distribution and Replication

### Object Tables

## Monitoring and Management – JMX

## Subscription Management

### Event Listeners

### Mediators

## Marshalling and Encoding

### Serialization

### Deserialization

# Appendix A – List of Files using Coherence Package

All sources extracted from subversion for BE under LEO branch. Some metrics are listed below

# Files : 178

#Lines : 19994

|  |
| --- |
| be-oracle\src\com\tibco\be\jdbcstore\BECoherenceJdbcStore.java |
| be-oracle\src\com\tibco\be\oracle\BECoherenceOracleStore.java |
| be-oracle\src\com\tibco\be\oracle\impl\ControllableAgent.java |
| be-oracle\src\com\tibco\be\oracle\impl\ManageConnection.java |
| be-oracle\src\com\tibco\be\oracle\OracleEntityAdapter.java |
| common\src\com\tibco\cep\runtime\management\impl\adapter\child\RegisterListenerTask.java |
| common\src\com\tibco\cep\runtime\management\impl\adapter\child\RemoteCoherenceMetricTableImpl.java |
| common\src\com\tibco\cep\runtime\management\impl\adapter\util\CoherenceFQNameFilterFactory.java |
| common\src\com\tibco\cep\runtime\management\impl\cluster\CoherenceCacheTable.java |
| common\src\com\tibco\cep\runtime\management\impl\cluster\CoherenceManagementTable.java |
| common\src\com\tibco\cep\runtime\management\impl\cluster\CoherenceMetricTable.java |
| common\src\com\tibco\cep\runtime\model\element\impl\StateMachineConceptImpl.java |
| common\src\com\tibco\cep\runtime\model\serializers\ConceptBytesHandler.java |
| common\src\com\tibco\cep\runtime\model\serializers\DataInputConceptDeserializer.java |
| common\src\com\tibco\cep\runtime\model\serializers\DataInputConceptDeserializer\_NoNullProps.java |
| common\src\com\tibco\cep\runtime\model\serializers\DataInputStateMachineDeserializer.java |
| common\src\com\tibco\cep\runtime\model\serializers\DataOutputConceptSerializer.java |
| common\src\com\tibco\cep\runtime\model\serializers\DataOutputConceptSerializer\_NoNullProps.java |
| common\src\com\tibco\cep\runtime\model\serializers\DataOutputStateMachineSerializer.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\BulkEntityDeleter.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\AgentManager.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\AcquireEvent.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\AgentEventsFilter.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\AgentTimeQueue.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\AvailableEventFilter.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\CacheFlush.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\ClassFilter.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\ClassUnloadService.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\EventLivenessChecker.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\ExpireEntities.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\ForwardingRtcTxnSubscriber.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\GetAgentProperty.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\InvokeRuleFunction.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\LoadExternalClasses.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\MarkDeleted.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\NewInferenceAgent.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\ObjectTableFilter.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\PurgeObjectTableExtractor.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\ReleaseEvent.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\ResumeAgents.java |
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| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\RtcTransactionFilter.java |
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| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\RtcTransactionProperties.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\RtcTransactionSubscriber.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\RtcTransactionSubscriber\_V2.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\SetWriteMode.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\SMTimeoutTask.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\SuspendAgents.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\TestExpiry.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\TimeBasedEntity.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\TimeoutExtractor.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\TimeoutKeyExtractor.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\TransactionFilter.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\TransferEvent.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\VersionedGet.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\VersionedGetV2.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\agents\VersionedGetV3.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\AgentTableCache.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\BEEntityCache.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\BEEntityCacheV2.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\BEManagedCache.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\CacheAgent.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\CacheAgentConfiguration.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\CacheCluster.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\CacheSerializer.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\CacheServiceAgent.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\ClusterBackingStoreManager.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\ClusterCacheFactory.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\ClusterCommandChannel.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\ClusterEntityListener.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\ClusterEntityMediator.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\ClusterEntityProvider.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\ClusterEventQueueListener.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\DataObject.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\EntityTupleImpl.java |
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| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\ExtidExtractor.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\HotDeployer.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\IdSequence.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\MasterCache.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\MetadataCache.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\ObjectTableCache.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\RVEntityMediator.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\SchedulerCache.java |
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| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\services\txn\UnloadServiceTxn.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\TestPof.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\TopicRegistry.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\AgentCommandInvocable.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\BELocalCache.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\BEReadWriteBackingMap.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\BESafeHashMap.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\BetweenLimitIndexAwareFilter.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\CacheEntityIterator.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\CacheEntityPagedIterator.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\CacheSequenceManager.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\EqualsIndexAwareFilter.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\RuleFunctionComparator.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\util\StateMachineTimeoutTuple.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\WorkEntry.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\WorkManagerEntry.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\WorkManagerTimeExtractor.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\cluster\WorkTuple.java |
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| common\src\com\tibco\cep\runtime\service\om\coherence\InternalNamedCache.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\KeyTuple.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\metadata\ConceptUpdateProcessor.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\metadata\EntityDescription.java |
| common\src\com\tibco\cep\runtime\service\om\coherence\NamedCacheProvider.java |
| common\src\com\tibco\cep\runtime\service\om\impl\ConceptBasedIdGenerator.java |
| common\src\com\tibco\cep\runtime\service\om\impl\invm\AbstractTangosolLocalCache.java |
| common\src\com\tibco\cep\runtime\service\om\PropertyKey.java |
| common\src\com\tibco\cep\runtime\service\om\tangosol\AbstractFTNodeManager.java |
| common\src\com\tibco\cep\runtime\service\om\tangosol\FTNodeManagerImpl.java |
| common\src\com\tibco\cep\runtime\service\om\tangosol\FTNodeMap.java |
| common\src\com\tibco\cep\runtime\service\om\tangosol\MasterCache.java |
| common\src\com\tibco\cep\runtime\session\impl\locks\AbstractCoherenceLockKeeper.java |
| common\src\com\tibco\cep\runtime\session\impl\locks\BloomFilterCoherenceLockKeeper.java |
| common\src\com\tibco\cep\runtime\session\impl\locks\CoherenceLockKeeper.java |
| common\src\com\tibco\cep\runtime\session\impl\locks\StickyLockKeeper.java |
| common\test\com\tibco\cep\\_retired\_\ClusterLockManager.java |
| common\test\com\tibco\cep\\_retired\_\CoherenceLockManagerImpl.java |
| common\test\com\tibco\cep\lockmanager\AbstractClusterLockManagerTest.java |
| common\test\com\tibco\cep\lockmanager\ClusterLockManagerTest.java |
| common\test\com\tibco\cep\lockmanager\ConcurrentLockManagerLogRecordTest.java |
| common\test\com\tibco\cep\lockmanager\ConcurrentLockManagerTest.java |
| common\test\com\tibco\cep\runtime\metrics\impl\RawAsyncWorkerStopWatchTest.java |
| common\test\com\tibco\cep\runtime\metrics\impl\RawLockManagerStopWatchTest.java |
| common\test\com\tibco\cep\runtime\metrics\impl\RawReteStopWatchTest.java |
| examples\be\_enterprise\bql\src\com\tibco\cep\query\bql\runtime\BQLAgent.java |
| functions\src\com\tibco\be\functions\cluster\ClusterFunctions.java |
| functions\src\com\tibco\be\functions\coherence\CoherenceFunctions.java |
| functions\src\com\tibco\be\functions\coherence\extractor\CoherenceExtractorFunctions.java |
| functions\src\com\tibco\be\functions\coherence\filters\CoherenceFilterFunctions.java |
| functions\src\com\tibco\be\functions\coherence\filters\DeserializationDecoratorFilter.java |
| functions\src\com\tibco\be\functions\coherence\NamedCacheAPI.java |
| functions\src\com\tibco\be\functions\coherence\query\CoherenceQueryFunctions.java |
| query\src\com\tibco\cep\query\stream\impl\cache\PrimaryLocalCache.java |
| query\src\com\tibco\cep\query\stream\impl\cache\SimpleLocalCache.java |
| query\src\com\tibco\cep\query\stream\impl\rete\integ\AbstractSharedObjectSource.java |
| query\src\com\tibco\cep\query\stream\impl\rete\integ\CacheListener.java |
| query\src\com\tibco\cep\query\stream\impl\rete\integ\CoherenceFilterHelper.java |
| query\src\com\tibco\cep\query\stream\impl\rete\integ\container\SharedObjectSourceImpl.java |
| query\src\com\tibco\cep\query\stream\impl\rete\integ\container\SharedObjectSourceRepositoryImpl.java |
| query\src\com\tibco\cep\query\stream\impl\rete\integ\EntityLoaderImpl.java |
| query\src\com\tibco\cep\query\stream\impl\rete\integ\metrics\CoherenceMetricDataListener.java |
| query\src\com\tibco\cep\query\stream\impl\rete\integ\standalone\DefaultDelegateRepository.java |
| query\src\com\tibco\cep\query\stream\impl\rete\integ\standalone\QueryTypeInfo.java |
| query\src\com\tibco\cep\query\stream\impl\rete\service\QueryAgent.java |
| query\test\com\tibco\cep\query\benchmark\query\sender\MTSender.java |
| query\test\com\tibco\cep\query\benchmark\query\sender\MTSendLauncher.java |
| query\test\com\tibco\cep\query\exec\impl\ReteIntegTest2WithGeneratedCode.java |
| query\test\com\tibco\cep\query\exec\impl\ReteIntegTestWithGeneratedCode.java |
| query\test\com\tibco\cep\query\stream\framework\AbstractCacheTest.java |
| query\test\com\tibco\cep\query\stream\framework\AgentServiceImpl.java |
| query\test\com\tibco\cep\query\stream\rete\perf\ReteCQAddEvtSlidWinAggrPerfTest.java |
| query\test\com\tibco\cep\query\stream\rete\perf\ReteSSAddEvtPassThruBridgePerfTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteBothAddDelEvtAggrTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteCQAddDelEvtAggrTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteCQAddDelEvtSlidingWAggrTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteCQAddModConTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteCQClassHierarchyTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteCQJoinConTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteCQNullSimulatorTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteSSAddEvtAggrTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteSSAddEvtPassThruBridgeTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteSSEvtTruncBridgeTest.java |
| query\test\com\tibco\cep\query\stream\rete\ReteSSPreFilterTest.java |
| query\test\com\tibco\cep\runtime\service\om\coherence\cluster\TSafeHashMap.java |
| tools\migration\src\com\tibco\be\migration\expimp\providers\cache\AbstractStore.java |
| tools\migration\src\com\tibco\be\migration\expimp\providers\cache\CacheStore.java |
| tools\migration\src\com\tibco\be\migration\expimp\providers\cache\ConceptStore.java |
| tools\migration\src\com\tibco\be\migration\expimp\providers\cache\EntityStore.java |
| tools\migration\src\com\tibco\be\migration\expimp\providers\cache\EventStore.java |
| tools\migration\src\com\tibco\be\migration\expimp\providers\csv\CSVLoader.java |

# Apendix – B Detailed Analysis of the complexity

Please the XL file for more info:<BE-Coh-Usage.xlsx>