



# Tomcat Cluster (*Unicast*)

환경

apache 1대

tomcat 2대

apache - tomcat1, tomcat2 loadbalancer 연동\

Azure Cloud 환경

# 구절 삭제

```
<Engine name="Catalina" defaultHost="localhost">
```

# 아래 포트는 8080이 아닌 Cluster Port입니다. 4000 ~ 5000

# tomcat 1번 서버

```
<Engine name="Catalina" defaultHost="localhost" jvmRoute="tomcat1">
```

```
<Cluster
```

```
    channelSendOptions="8"
```

```
    channelStartOptions="3"
```

```
    className="org.apache.catalina.ha.tcp.SimpleTcpCluster">
```

```
    <Manager
```

```
        className="org.apache.catalina.ha.session.DeltaManager"
```

```
        expireSessionsOnShutdown="false"
```

```
        notifyListenersOnReplication="true"
```

```
    />
```

```
    <Channel className="org.apache.catalina.tribes.group.GroupChannel">
```

```
        <Sender className="org.apache.catalina.tribes.transport.ReplicationTransmitter">
```

```
            <Transport className="org.apache.catalina.tribes.transport.nio.PooledParallelSender" />
```

```
        </Sender>
```

```
        <Receiver
```

```
            address="192.168.1.4"
```

```
            autoBind="0"
```

```
            className="org.apache.catalina.tribes.transport.nio.NioReceiver"
```

```
            maxThreads="6"
```

```
            port="5100"
```

```
            selectorTimeout="5000"
```

```
    /> <!-- server1 information -->
```

```
    <!-- <Interceptor className="com.dm.tomcat.interceptor.DisableMulticastInterceptor" /> -->
```

```
    <Interceptor className="org.apache.catalina.tribes.group.interceptors.TcpPingInterceptor" staticOnly="true"/>
```

```
    <Interceptor className="org.apache.catalina.tribes.group.interceptors.TcpFailureDetector" />
```

```
    <Interceptor className="org.apache.catalina.tribes.group.interceptors.StaticMembershipInterceptor">
```

```
        <Member
```

```
            className="org.apache.catalina.tribes.membership.StaticMember"
```

```
            port="4100"
```

```
            host="192.168.0.4"
```

```
            uniqueId="{0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,2}"
```

```
        />
```

```
    </Interceptor>
```

```
    <Interceptor className="org.apache.catalina.tribes.group.interceptors.MessageDispatchInterceptor" />
```

```
    </Channel>
```

```
    <Valve
```

```
        className="org.apache.catalina.ha.tcp.ReplicationValve"
```

```
        filter=".*\.(gif|.*\.(js|.*\.(jpg|.*\.(png|.*\.(htm|.*\.(html|.*\.(css|.*\.(txt|;"
```

```
    />
```

```
    <ClusterListener className="org.apache.catalina.ha.session.ClusterSessionListener" />
```

```
</Cluster>
```

```
# tomcat 1번 서버

<Engine name="Catalina" defaultHost="localhost" jvmRoute="tomcat1">

<Cluster
    channelSendOptions="8"
    channelStartOptions="3"
    className="org.apache.catalina.ha.tcp.SimpleTcpCluster">
    <Manager
        className="org.apache.catalina.ha.session.DeltaManager"
        expireSessionsOnShutdown="false"
        notifyListenersOnReplication="true"
    />
    <Channel className="org.apache.catalina.tribes.group.GroupChannel">
        <Sender className="org.apache.catalina.tribes.transport.ReplicationTransmitter">
            <Transport className="org.apache.catalina.tribes.transport.nio.PooledParallelSender" />
        </Sender>
        <Receiver
            address="1번 tomcat IP"
            autoBind="0"
            className="org.apache.catalina.tribes.transport.nio.NioReceiver"
            maxThreads="6"
            port="1번 tomcat port"
            selectorTimeout="5000"
        />
        <!-- server1 information -->
        <!-- <Interceptor className="com.dm.tomcat.interceptor.DisableMulticastInterceptor" /> -->
        <Interceptor className="org.apache.catalina.tribes.group.interceptors.TcpPingInterceptor" staticOnly="true"/>
        <Interceptor className="org.apache.catalina.tribes.group.interceptors.TcpFailureDetector" />
        <Interceptor className="org.apache.catalina.tribes.group.interceptors.StaticMembershipInterceptor">
            <Member
                className="org.apache.catalina.tribes.membership.StaticMember"
                port="2번 tomcat port"
                host="2번 tomcat IP"
                uniqueId="{0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,2}"
            />
        </Interceptor>
        <Interceptor className="org.apache.catalina.tribes.group.interceptors.MessageDispatchInterceptor" />
    </Channel>
    <Valve
        className="org.apache.catalina.ha.tcp.ReplicationValve"
        filter=".*\.gif;.*\js;.*\jpg;.*\png;.*\html;.*\html;.*\css;.*\txt;"
    />
    <ClusterListener className="org.apache.catalina.ha.session.ClusterSessionListener" />
</Cluster>
```

```
# tomcat 2번 서버

<Engine name="Catalina" defaultHost="localhost" jvmRoute="tomcat2">

<Cluster
    channelSendOptions="8"
    channelStartOptions="3"
    className="org.apache.catalina.ha.tcp.SimpleTcpCluster">
    <Manager
        className="org.apache.catalina.ha.session.DeltaManager"
        expireSessionsOnShutdown="false"
        notifyListenersOnReplication="true"
    />
    <Channel className="org.apache.catalina.tribes.group.GroupChannel">
        <Sender className="org.apache.catalina.tribes.transport.ReplicationTransmitter">
            <Transport className="org.apache.catalina.tribes.transport.nio.PooledParallelSender" />
        </Sender>
        <Receiver
            address="192.168.0.4"
            autoBind="0"
            className="org.apache.catalina.tribes.transport.nio.NioReceiver"
            maxThreads="6"
            port="4100"
            selectorTimeout="5000"
        />
        <!-- server1 information -->
        <!-- <Interceptor className="com.dm.tomcat.interceptor.DisableMulticastInterceptor" /> -->
        <Interceptor className="org.apache.catalina.tribes.group.interceptors.TcpPingInterceptor" staticOnly="true"/>
    </Channel>
    <Valve
        className="org.apache.catalina.ha.tcp.ReplicationValve"
        filter=".*\.gif;.*\js;.*\jpg;.*\png;.*\html;.*\html;.*\css;.*\txt;"
    />
    <ClusterListener className="org.apache.catalina.ha.session.ClusterSessionListener" />
</Cluster>
```

```

        <Interceptor className="org.apache.catalina.tribes.group.interceptors.TcpFailureDetector" />
        <Interceptor className="org.apache.catalina.tribes.group.interceptors.StaticMembershipInterceptor">
            <Member
                className="org.apache.catalina.tribes.membership.StaticMember"
                port="5100"
                host="192.168.1.4"
                uniqueId="{0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,3}"
            />
        </Interceptor>
    </Channel>
    <Valve
        className="org.apache.catalina.ha.tcp.ReplicationValve"
        filter=".*\.gif;.*\js;.*\jpg;.*\png;.*\htm;.*\html;.*\css;.*\txt;"
    />
    <ClusterListener className="org.apache.catalina.ha.session.ClusterSessionListener" />
</Cluster>

```

# tomcat 2번 서버

```

<Engine name="Catalina" defaultHost="localhost" jvmRoute="tomcat2">

    <Cluster
        channelSendOptions="8"
        channelStartOptions="3"
        className="org.apache.catalina.ha.tcp.SimpleTcpCluster">
            <Manager
                className="org.apache.catalina.ha.session.DeltaManager"
                expireSessionsOnShutdown="false"
                notifyListenersOnReplication="true"
            />
            <Channel className="org.apache.catalina.tribes.group.GroupChannel">
                <Sender className="org.apache.catalina.tribes.transport.ReplicationTransmitter">
                    <Transport className="org.apache.catalina.tribes.transport.nio.PooledParallelSender" />
                </Sender>
                <Receiver
                    address="2번 tomcat IP"
                    autoBind="0"
                    className="org.apache.catalina.tribes.transport.nio.NioReceiver"
                    maxThreads="6"
                    port="2번 tomcat port"
                    selectorTimeout="5000"
                />
                <!-- server1 information -->
                <!-- <Interceptor className="com.dm.tomcat.interceptor.DisableMulticastInterceptor" /> -->
                <Interceptor className="org.apache.catalina.tribes.group.interceptors.TcpPingInterceptor" staticOnly="true"/>
                <Interceptor className="org.apache.catalina.tribes.group.interceptors.TcpFailureDetector" />
                <Interceptor className="org.apache.catalina.tribes.group.interceptors.StaticMembershipInterceptor">
                    <Member
                        className="org.apache.catalina.tribes.membership.StaticMember"
                        port="1번 tomcat port"
                        host="1번 tomcat IP"
                        uniqueId="{0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,3}"
                    />
                </Interceptor>
                <Interceptor className="org.apache.catalina.tribes.group.interceptors.MessageDispatchInterceptor" />
            </Channel>
            <Valve
                className="org.apache.catalina.ha.tcp.ReplicationValve"
                filter=".*\.gif;.*\js;.*\jpg;.*\png;.*\htm;.*\html;.*\css;.*\txt;"
            />
            <ClusterListener className="org.apache.catalina.ha.session.ClusterSessionListener" />
        </Cluster>

```

```

19-Dec-2022 05:49:14.955 INFO [main] org.apache.catalina.ha.tcp.SimpleTcpCluster.startInternal Cluster is about to start
19-Dec-2022 05:49:14.966 INFO [main] org.apache.catalina.tribes.transport.ReceiverBase.bind Receiver Socket bound to [/192.168.0.4:4100]
19-Dec-2022 05:49:14.991 INFO [Catalina-utility-1] org.apache.catalina.ha.tcp.SimpleTcpCluster.memberAdded Replication member added: [org.apache.catalina.tribes.membership.StaticMember[tcp://192.168.1.4:5100,192.168.1.4:5100, alive=0, securePort=-1, UDP Port=-1, id={0 0 0 0 0 0 0 0 0 0 0 0 1 2 }, payload={}, command={}, domain={}]]
19-Dec-2022 05:49:15.021 INFO [main] org.apache.catalina.startup.HostConfig.deployWAR Deploying web application archive [/was/apache-tomcat-9.0.70/webapps/session.war]
19-Dec-2022 05:49:15.264 INFO [main] org.apache.catalina.ha.session.DeltaManager.startInternal Register manager [localhost/session] to cluster element [Engine] with name [Catalina]
19-Dec-2022 05:49:15.264 INFO [main] org.apache.catalina.ha.session.DeltaManager.startInternal Starting clustering manager at [localhost/session]
19-Dec-2022 05:49:15.274 INFO [main] org.apache.catalina.tribes.io.BufferPool.getBufferPool Created a buffer pool with max size:[104857600] bytes of type: [org.apache.catalina.tribes.io.BufferPool$1$Impl]
19-Dec-2022 05:49:15.279 INFO [main] org.apache.catalina.ha.session.DeltaManager.getAllClusterSessions Manager [localhost/session], requesting session state from [org.apache.catalina.tribes.membership.StaticMember[tcp://192.168.1.4:5100,192.168.1.4:5100, alive=0, securePort=-1, UDP Port=-1, id={0 0 0 0 0 0 0 0 0 0 0 0 1 2 }, payload={}, command={}, domain={}]]. This operation will timeout if no session state has been received within [60] seconds.
19-Dec-2022 05:49:15.385 INFO [main] org.apache.catalina.ha.session.DeltaManager.waitForSendAllSessions Manager [localhost/session]; session state sent at [12/19/22 5:49 AM] received in [115] ms.
19-Dec-2022 05:49:15.400 INFO [main] org.apache.catalina.startup.HostConfig.deployWAR Deployment of web application archive [/was/apache-tomcat-9.0.70/webapps/session.war] has finished in [379] ms
19-Dec-2022 05:49:15.401 INFO [main] org.apache.catalina.startup.HostConfig.deployWAR Deploying web application archive [/was/apache-tomcat-9.0.70/webapps/clusterTest.war]
19-Dec-2022 05:49:15.422 INFO [main] org.apache.catalina.ha.session.DeltaManager.startInternal Register manager [localhost/clusterTest] to cluster element [Engine] with name [Catalina]
19-Dec-2022 05:49:15.422 INFO [main] org.apache.catalina.ha.session.DeltaManager.startInternal Starting clustering manager at [localhost/clusterTest]
19-Dec-2022 05:49:15.423 INFO [main] org.apache.catalina.ha.session.DeltaManager.getAllClusterSessions Manager [localhost/clusterTest], requesting session state from [org.apache.catalina.tribes.membership.StaticMember[tcp://192.168.1.4:5100,192.168.1.4:5100, alive=0, securePort=-1, UDP Port=-1, id={0 0 0 0 0 0 0 0 0 0 0 0 1 2 }, payload={}, command={}, domain={}]]. This operation will timeout if no session state has been received within [60] seconds.
19-Dec-2022 05:49:15.527 INFO [main] org.apache.catalina.ha.session.DeltaManager.waitForSendAllSessions Manager [localhost/clusterTest]; session state sent at [12/19/22 5:49 AM] received in [105] ms.
19-Dec-2022 05:49:15.529 INFO [main] org.apache.catalina.startup.HostConfig.deployWAR Deployment of web application archive [/was/apache-tomcat-9.0.70/webapps/clusterTest.war] has finished in [129] ms
19-Dec-2022 05:49:15.530 INFO [main] org.apache.catalina.startup.HostConfig.deployWAR Deploying web application archive [/was/apache-tomcat-9.0.70/webapps/httpSessionLogin.war]
19-Dec-2022 05:49:15.556 INFO [main] org.apache.catalina.ha.session.DeltaManager.startInternal Register manager [localhost/httpSessionLogin] to cluster element [Engine] with name [Catalina]
19-Dec-2022 05:49:15.557 INFO [main] org.apache.catalina.ha.session.DeltaManager.startInternal Starting clustering manager at [localhost/httpSessionLogin]
19-Dec-2022 05:49:15.557 INFO [main] org.apache.catalina.ha.session.DeltaManager.getAllClusterSessions Manager [localhost/httpSessionLogin], requesting session state from [org.apache.catalina.tribes.membership.StaticMember[tcp://192.168.1.4:5100,192.168.1.4:5100, alive=0, securePort=-1, UDP Port=-1, id={0 0 0 0 0 0 0 0 0 0 0 0 1 2 }, payload={}, command={}, domain={}]]. This operation will timeout if no session state has been received within [60] seconds.
19-Dec-2022 05:49:15.658 INFO [main] org.apache.catalina.ha.session.DeltaManager.waitForSendAllSessions Manager [localhost/httpSessionLogin]; session state sent at [12/19/22 5:49 AM] received in [101] ms.
19-Dec-2022 05:49:15.660 INFO [main] org.apache.catalina.startup.HostConfig.deployWAR Deployment of web application archive [/was/apache-tomcat-9.0.70/webapps/httpSessionLogin.war] has finished in [130] ms
19-Dec-2022 05:49:15.660 INFO [main] org.apache.catalina.startup.HostConfig.deployWAR Deploying web application archive [/was/apache-tomcat-9.0.70/webapps/clusterTest.war]
19-Dec-2022 05:49:15.683 INFO [main] org.apache.catalina.ha.session.DeltaManager.startInternal Register manager [localhost/clusterTest] to cluster element [Engine] with name [Catalina]
19-Dec-2022 05:49:15.683 INFO [main] org.apache.catalina.ha.session.DeltaManager.startInternal Starting clustering manager at [localhost/clusterTest]
19-Dec-2022 05:49:15.684 INFO [main] org.apache.catalina.ha.session.DeltaManager.getAllClusterSessions Manager [localhost/clusterTest], requesting session state from [org.apache.catalina.tribes.membership.StaticMember[tcp://192.168.1.4:5100,192.168.1.4:5100, alive=0, securePort=-1, UDP Port=-1, id={0 0 0 0 0 0 0 0 0 0 0 0 1 2 }, payload={}, command={}, domain={}]]. This operation will timeout if no session state has been received within [60] seconds.
19-Dec-2022 05:49:15.785 INFO [main] org.apache.catalina.ha.session.DeltaManager.waitForSendAllSessions Manager [localhost/clusterTest]; session state sent at [12/19/22 5:49 AM] received in [100] ms.

```

```

22-Dec-2022 05:22:57.457 INFO [Catalina-utility-2] org.apache.catalina.ha.tcp.SimpleTcpCluster.memberAdded Replication member added: [org.apache.catalina.tribes.membership.StaticMember[tcp://192.168.0.4:4100,192.168.0.4:4100, alive=0, securePort=-1, UDP Port=-1, id={0 0 0 0 0 0 0 0 0 0 0 0 1 2 }, payload={}, command={}, domain={}]]

```

```

22-Dec-2022 05:25:22.777 INFO [main] org.apache.catalina.ha.session.DeltaManager.getAllClusterSessions Manager [localhost/clusterTest], requesting session state from [org.apache.catalina.tribes.membership.StaticMember[tcp://192.168.1.4:5100,192.168.1.4:5100, alive=0, securePort=-1, UDP Port=-1, id={0 0 0 0 0 0 0 0 0 0 0 0 1 3 }, payload={}, command={}, domain={}]]. This operation will timeout if no session state has been received within [60] seconds.

```

정상 Log

```

<Proxy "balancer://mycluster">
    BalancerMember "http://192.168.1.4:8080"
    BalancerMember "http://192.168.0.4:8080"
</Proxy>

```

```

<VirtualHost *:80>
    ProxyPass "/" "balancer://mycluster/"
    ProxyPassReverse "/" "balancer://mycluster/"
</VirtualHost>

```

# 모듈 해제

```

LoadModule proxy_module modules/mod_proxy.so
LoadModule proxy_http_module modules/mod_proxy_http.so
LoadModule proxy_balancer_module modules/mod_proxy_balancer.so
LoadModule slotmem_shm_module modules/mod_slotmem_shm.so
LoadModule lbmethod_byrequests_module modules/mod_lbmethod_byrequests.so

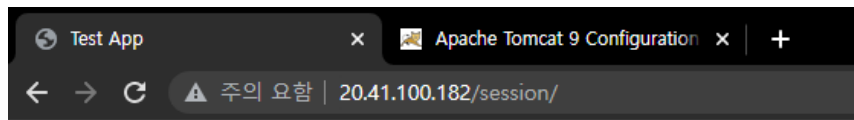
```

# 주석 해제

```

Include conf/extra/httpd-vhosts.conf

```



## TEST : Session Tracking Test

Session tracking with JSP is easy

You have hit this page 14 times.

Your Session ID is 38F5D3F8FF87859D73B4EF2F56060B94.tomcat1

tomcat 1번과 2번이 번갈아 가며 down시에도 같은 세션 ID가 유지되며 page times가 올라간다.