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# Contents

**Aggregation Service for the Web Broadcast Supervisor** ................................................. 4  
  About the Service ............................................................................................................. 4  
  Workflow ......................................................................................................................... 4  
  Services Structure .......................................................................................................... 5  
  Configuration ................................................................................................................ 5  
  Editing the Configuration xml....................................................................................... 6  
  Aggregation Service Configuration XML Parameters: ................................................ 6  
  Harris.Automation.ADC.Services.AggregationServiceHost.exe.config  ...................... 7  
  Configuration Interface Endpoints .............................................................................. 7  
  Installation ..................................................................................................................... 11  
  Start the Service .......................................................................................................... 12  
  To Install the License File ............................................................................................ 12  
  Example Scenario .......................................................................................................... 13  

**Playlist and Aggregation Service** ............................................................................ 14  
  Scheme ........................................................................................................................... 14  
  Installation ..................................................................................................................... 15  
  Configuration ................................................................................................................ 18  
    Change the ADC Services ports configuration .......................................................... 18  
    ManagerService.xml file ......................................................................................... 23  
    Material Service in the Aggregation Service ............................................................ 26  
    Aggregation Service .config file ................................................................................ 26  
    Configure Aggregation service ............................................................................... 29  
    Config section for local node (LAST_NODE) ............................................................ 32  
  Start the Services through Windows Service console ................................................ 38  
  Testing Material validation ......................................................................................... 40  
  Other Web applications ............................................................................................... 41
Aggregation Service for the Web Broadcast Supervisor

About the Service

This special Aggregation Service allows using the Broadcast Supervisor over Internet (through a VPN/firewall) to simultaneously connect to several Device Servers through a different set of ADC Services (AggregationListService, AggregationDeviceService, AggregationTimecodeService, AggregationErrorReportingService) from different TV stations in the customer network.

Workflow

The following diagram illustrates the workflow for this solution.

- A station group has several TV stations located in different geographical places and time zones (Station 1, 2, 3, ..., N).
- The head office (Hub) has the Web Broadcast Supervisor installed, and the users connect to it via the web browsers.
- The stations are connected to the head office via a VPN.
- The Hub has the Aggregation Service, which routes the requests from the Broadcast Supervisor to the proper station Services and collects callbacks from them.
Services Structure

The services structure can be represented as following scheme:

- Each client class can broadcast specific calls for each configured service and present the merged result (e.g. GetAvailableDeviceServers() method).
- All API methods associated with subscription mechanism have additional routing logic that allows restoring the subscription state after reestablishing a lost connection with some station. This eliminates the need to re-subscribe for services notification.

Configuration

This Aggregation Service is hosted on hub and is configured to several sets of Services through VPN. Required business services are: AggregationListService, AggregationDeviceService, AggregationTimecodeService, AggregationErrorReportingService.

Note: The synchronous timecode is gotten from only one connected station. The Aggregation Service is configured to choose the desired station to show the timecode.

The station name entry in the Aggregation Service is limited to 32 characters
Editing the Configuration xml

Currently, the Aggregation Service can be configured only by editing its configuration xml. If this xml is edited manually, it is necessary to restart the Service. For start / restart procedure see Start the Service (on page 12).

Aggregation Service Configuration XML Parameters:

- The Node section contains the necessary information about one specific station:
  - NodeName: station name. This parameter will be used for routing the calls to necessary station. Also this parameter will be presented as part of requested device server in following format "STATIONNAME<separator>SERVERNAME". Here the <separator> is customizable value.
  - Services: List of services configuration. Each service has Type and target Endpoint.
  - DeviceServerNameMapped and NodeNameMapped set up a table that allows lookup from a device server name to a node name. NodeToDeviceServerMapping is the container for an arbitrary number of Mapping elements. Each Mapping element is a pair of DeviceServerNameMapped and NodeNameMapped such that when Aggregation service receives a command for a device server that matches DeviceServerNameMapped the instruction will be sent to the Services instance defined in the Nodes section that matches the NodeNameMapped value.
  - The NodeNameMapped can be repeated if necessary
  - DeviceServerNameMapped: This must be unique.

Example:

For services of node my_services connected to device server my_ds, the addition to the file looks like:

```
<N odeToDeviceServerMappings>
  <Mapping>
    <DeviceServerNameMapped>my_ds</DeviceServerNameMapped>
    <NodeNameMapped>my_services</NodeNameMapped>
  </Mapping>
</NodeToDeviceServerMappings>
```

If there are two device servers, my_ds1 and my_ds2 run by a single services instance, the addition becomes:

```
<N odeToDeviceServerMappings>
  <Mapping>
    <DeviceServerNameMapped>my_ds1</DeviceServerNameMapped>
    <NodeNameMapped>my_services</NodeNameMapped>
  </Mapping>
  <Mapping>
    <DeviceServerNameMapped>my_ds2</DeviceServerNameMapped>
    <NodeNameMapped>my_services</NodeNameMapped>
  </Mapping>
</NodeToDeviceServerMappings>
```
For 1 device server each on 2 sets of services:

```xml
<NodeToDeviceServerMappings>
  <Mapping>
    <DeviceServerNameMapped>my_ds1</DeviceServerNameMapped>
    <NodeNameMapped>my_services1</NodeNameMapped>
  </Mapping>
  <Mapping>
    <DeviceServerNameMapped>my_ds2</DeviceServerNameMapped>
    <NodeNameMapped>my_services2</NodeNameMapped>
  </Mapping>
</NodeToDeviceServerMappings>
```

**Harris.Automation.ADC.Services.AggregationServiceHost.exe.config**

The Harris.Automation.ADC.Services.AggregationServiceHost.exe.config file contains some specific parameter (section appSettings):
- **ConfigFilePath**: Path to XML configuration file
- **NodeServerSeparator**: The `<separator>` symbol or string that will contains in device server name
- **ServicePingInterval**: The interval of checking the inner proxy's availability (the proxies that contains in client classes).
- **ServiceSendTimeout, ServiceReceiveTimeout, ServiceReceiveTimeout, ServiceCloseTimeout, ServiceOpenTimeout**: WCF parameters for configuring inner services proxies.

**Configuration Interface Endpoints**

1. **Config section for remote node:**
   Open Aggregation Service's XML file in "config" folder (C:\Program Files (x86)\Imagine Communications\ADC Aggregation Service\config):
   The default configuration section looks like this:
   ```xml
   <Node>
     <NodeName>NODENAME</NodeName>
     <Services>
       <Service>
         <Type>ListService</Type>
       </Service>
       <Service>
         <Type>DeviceService</Type>
       </Service>
     </Services>
   </Node>
   ```
Instead of "host" name you can enter the DNS name of the remote node or their IP address.

IMPORTANT: Node section should be configured for each set of ADC Services

Example:
NODE1 (DNS name: NODE_1 IP: 10.0.0.1)

```
<Node>
  <NodeName>NODE1</NodeName>
  <Services>
    <Service>
      <Type>TimecodeService</Type>
    </Service>
    <Service>
      <Type>ErrorReportingService</Type>
    </Service>
    <Service>
      <Type>DeviceService</Type>
    </Service>
    <Service>
      <Type>ListService</Type>
    </Service>
  </Services>
</Node>
```

OR
<Node>
   <NodeName>NODE1</NodeName>
   <Services>
      <Service>
         <Type>ListService</Type>
      </Service>
      <Service>
         <Type>DeviceService</Type>
      </Service>
      <Service>
         <Type>ErrorReportingService</Type>
      </Service>
      <Service>
         <Type>TimecodeService</Type>
         <Endpoint>net.tcp://10.0.0.1:10080/Harris.Automation.ADC.Services.TimecodeService</Endpoint>
      </Service>
   </Services>
</Node>

2. Open Broadcast Supervisor ‘s Web.config (C:\Program Files (x86)\Imagine Communications\BroadcastSupervisor).
The default configuration section looks like this:

   <client>
      <endpoint
         address="net.tcp://localhost:10050/Harris.Automation.ADC.Services.ListService"
         binding="netTcpBinding" bindingConfiguration="NetTcpBinding_IListService"
         contract="ListServiceReference_IListService" name="NetTcpBinding_IListService"
         behaviorConfiguration="Harris.Automation.ADC.Services.ListServiceClientBehavior" />

      <endpoint
         address="net.tcp://localhost:10040/Harris.Automation.ADC.Services.ErrorReportingService"
         binding="netTcpBinding" bindingConfiguration="NetTcpBinding_IErrorReportingService"
         contract="ErrorReportingServiceReference_IErrorReportingService" name="NetTcpBinding_IErrorReportingService"
         behaviorConfiguration="Harris.Automation.ADC.Services.ErrorReportingServiceClientBehavior" />
   </client>
Aggregation Service
Installation and Operations
Aggregation Service for the Web Broadcast Supervisor

<endpoint
address="net.tcp://localhost:10080/Harris.Automation.ADC.Services.TimecodeService"
binding="netTcpBinding" bindingConfiguration="NetTcpBinding_ITimecodeService"
contract="TimecodeServiceReference.ITimecodeService"
name="NetTcpBinding_ITimecodeService"
behaviorConfiguration="Harris.Automation.ADC.Services.TimecodeServiceClientBehavior" />

<endpoint
address="net.tcp://localhost:10030/Harris.Automation.ADC.Services.DeviceService"
binding="netTcpBinding" bindingConfiguration="NetTcpBinding_IDeviceService"
contract="DeviceServiceReference.IDeviceService"
name="NetTcpBinding_IDeviceService"
behaviorConfiguration="Harris.Automation.ADC.Services.DeviceServiceClientBehavior" />

<endpoint
binding="netTcpBinding" bindingConfiguration="NetTcpBinding_ISecurityService"
contract="SecurityService.ISecurityService"
name="NetTcpBinding_ISecurityService"

</client>

Required configuration:

<client>

<endpoint address="net.tcp://host:11050/Harris.Automation.ADC.Services.ListService"
binding="netTcpBinding" bindingConfiguration="NetTcpBinding_IListService"
contract="ListServiceReference.IListService"
name="NetTcpBinding_IListService"
behaviorConfiguration="Harris.Automation.ADC.Services.ListServiceClientBehavior" />

<endpoint
address="net.tcp://host:11040/Harris.Automation.ADC.Services.ErrorReportingService"
binding="netTcpBinding" bindingConfiguration="NetTcpBinding_IErrorReportingService"
contract="ErrorReportingServiceReference.IErrorReportingService"
name="NetTcpBinding_IErrorReportingService"
behaviorConfiguration="Harris.Automation.ADC.Services.ErrorReportingServiceClientBehavior" />

<endpoint
address="net.tcp://host:11080/Harris.Automation.ADC.Services.TimecodeService"
binding="netTcpBinding" bindingConfiguration="NetTcpBinding_ITimecodeService"
contract="TimecodeServiceReference.ITimecodeService"
name="NetTcpBinding_ITimecodeService"
behaviorConfiguration="Harris.Automation.ADC.Services.TimecodeServiceClientBehavior" />

<endpoint
address="net.tcp://host:11030/Harris.Automation.ADC.Services.DeviceService"
binding="netTcpBinding" bindingConfiguration="NetTcpBinding_IDeviceService"
Instead of "host" name you can enter the DNS name of Aggregation service's location or their IP address.

**IMPORTANT**: Aggregation Service and Broadcast Supervisor must be restarted after changing the configuration.

---

### Installation

Install the ADC Aggregation Service on a target machine

1. Install the Aggregation Service by clicking on the ADCAggregatorSetup_5.3.x.xx.exe. This launches the installation wizard.
2. On the Install Wizard Welcome screen click **Next**
3. On the Destination folder screen specify the install location. (Recommended: Accept default location). When finished click **Next**.
4. In the Ready to Install Screen click **Install**.
5. On the Completed screen click **Finish**

**Security Service**: 

<endpoint
binding="netTcpBinding" bindingConfiguration="NetTcpBinding_ISecurityService"
contract="SecurityService.ISecurityService" name="NetTcpBinding_ISecurityService"

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A Security service is added to the Aggregation Service installer. After the Security Service is installed a license file can be uploaded into the same PC with Aggregation service. Broadcast Supervisor then connects to this instance of Security service.

### Start the Service

This service is set to start automatically, but it may take a few minutes. If required, it can be started manually.

1. Start Task Manager
2. Select the Services tab
3. Sort for descending Alphabetic order
4. Right click on ADCAggegationService and from the context menu select Start.

### To Install the License File

1. Run the License Manager application using the shortcut from the Start menu.

   (Option) Navigate to the Aggregation service install location C:\Program Files (x86)\Imagine Communications\"Service Name", and then run Harris.Automation.ADC.Services.LicenseManager.exe

   The following dialog is displayed:
2. Click ‘…’ and from the Open dialog specify the path to the generated license file (e.g. ADCLicense.lic), and then press "Upload license file" button.

3. When completed the dialog will display the message: "License file is loaded to the Security Service." After this the previously installed Web BroadcastSupervisor is available for use.

---

**Example Scenario**

The following diagram illustrates a basic Aggregation Services scenario. Customer sites may employ a different configuration. The ‘virtual subnet’ in the diagram is connected through a VPN to simulate two different physical locations.
Playlist and Aggregation Service

Scheme

Proposed scheme

[Diagram showing the proposed scheme with nodes and services connected by arrows and ports indicated with numbers.]

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Installation

1. Install ADC services on all targets PC (use the same installer ADCServicesSetup_5.5.X.XA.exe or ADCServicesSetup_5.4.X.X.exe) and also you should install the Aggregation service on one "HUB" node (on scheme this is "LAST_NODE" PC, use the appropriate installer ADCAggregationSetup_5.5.X.XA.exe or ADCAggregationSetup_5.4.X.X.exe)

   ![File List Image]

Note: It is not important how the Data service will be configured on remote nodes. Data service should be configured only on "LAST_NODE" near the Material and Aggregation services. But if you want to configure the AsRun logging, you should take the necessary actions.

2. Start the Manager Service.
3. Wait until all services are started.

4. Configure the services through Manager Client:
   a. Set the target Device Servers names
   b. Change the default services names (this is not important, but will be more understandable and easier to debug)

<table>
<thead>
<tr>
<th>Local node</th>
</tr>
</thead>
<tbody>
<tr>
<td>ServiceName</td>
</tr>
<tr>
<td>List - LocalNode_LS</td>
</tr>
<tr>
<td>Device - LocalNode_DS</td>
</tr>
<tr>
<td>AsRun - LocalNode_AS</td>
</tr>
<tr>
<td>Error Rep - LocalNode_ES</td>
</tr>
<tr>
<td>Timecode - LocalNode_TS</td>
</tr>
</tbody>
</table>

All services connected to “VOROBYEV_DS” Device server (for example)

<table>
<thead>
<tr>
<th>Remote node</th>
</tr>
</thead>
<tbody>
<tr>
<td>ServiceName</td>
</tr>
<tr>
<td>List - RemNode_LS</td>
</tr>
<tr>
<td>Device - RemNode_DS</td>
</tr>
<tr>
<td>AsRun - RemNode_AS</td>
</tr>
<tr>
<td>Error Rep - RemNode_ES</td>
</tr>
<tr>
<td>Timecode - RemNode_TS</td>
</tr>
</tbody>
</table>

All services connected to “CRUISECONTROL” Device server (for example)

**Note:** The configured AsRun Services will not be accessible through Aggregation service. The Playlist will connect to AsRun service on "LAST_NODE" but this service will not be able to connect to DSs on remote nodes, so in this architecture Playlist unable to communicate with AsRun service correctly.

5. **Stop all services** on "LAST_NODE" PC (where the Aggregation service will be configured)
a. Services can be started through **Windows Services** console

<table>
<thead>
<tr>
<th>ADC Manager Service</th>
<th>Name</th>
<th>Description</th>
<th>Status</th>
<th>Startup Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ADC AsRun Service</td>
<td>Saves and ...</td>
<td>Started</td>
<td>Automatic</td>
</tr>
<tr>
<td></td>
<td>ADC Commercial Va...</td>
<td>This service...</td>
<td>Started</td>
<td>Manual</td>
</tr>
<tr>
<td></td>
<td>ADC Data Service</td>
<td>Provides a...</td>
<td>Started</td>
<td>Automatic</td>
</tr>
<tr>
<td></td>
<td>ADC Device Service</td>
<td>Provides a...</td>
<td>Started</td>
<td>Automatic</td>
</tr>
<tr>
<td></td>
<td>ADC Error Reporting</td>
<td>Provides e...</td>
<td>Started</td>
<td>Automatic</td>
</tr>
<tr>
<td></td>
<td>ADC Integration S...</td>
<td>The Integr...</td>
<td>Automatic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADC List Service</td>
<td>Provides pl...</td>
<td>Started</td>
<td>Automatic</td>
</tr>
<tr>
<td></td>
<td>ADC Material Serv...</td>
<td>Provides ...</td>
<td>Started</td>
<td>Automatic</td>
</tr>
<tr>
<td></td>
<td>ADC Security Serv...</td>
<td>Manages t...</td>
<td>Started</td>
<td>Automatic</td>
</tr>
<tr>
<td></td>
<td>ADC Timecode Serv...</td>
<td>Provides s...</td>
<td>Started</td>
<td>Automatic</td>
</tr>
<tr>
<td></td>
<td>ADCManagerService</td>
<td>Provides ...</td>
<td>Started</td>
<td>Automatic</td>
</tr>
</tbody>
</table>

Description:
Provides various configuration options to control the other ADC Services.

Stop the service
Restart the service

b. Or through Manager client

```
[Image of Manager client interface]
```

This approach still require stopping Manager Service through **Windows Services** console.

<table>
<thead>
<tr>
<th>ADC Manager Service</th>
<th>Name</th>
<th>Description</th>
<th>Status</th>
<th>Startup Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ADC AsRun Service</td>
<td>Saves and ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADC Commercial Va...</td>
<td>This service...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADC Data Service</td>
<td>Provides a...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADC Device Service</td>
<td>Provides a...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADC Error Reporting</td>
<td>Provides e...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADC Integration S...</td>
<td>The Integr...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADC List Service</td>
<td>Provides pl...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADC Material Serv...</td>
<td>Provides ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADC Security Serv...</td>
<td>Manages t...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADC Timecode Serv...</td>
<td>Provides s...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADCManagerService</td>
<td>Provides ...</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Application Engine...</td>
<td>Provides ...</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description:
Provides various configuration options to control the other ADC Services.

Start the service
Configuration

Change the ADC Services ports configuration

1. Open the following files in services root folder ("C:\Program Files (x86)\Imagine Communications\ADC Services") and make these changes:
      - Before:
        </service>
      - After:
        </service>

      - After:
        </service>
        </services>
binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
</service>
</services>

- Before:
  <services>
  <service
  behaviorConfiguration="Harris.Automation.ADC.Services.ErrorReportingServiceBehavior">
    <endpoint
    <endpoint
    address="net.tcp://localhost:10040/Harris.Automation.ADC.Services.ErrorReportingService"
    binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
  </service>
  <service
  behaviorConfiguration="Harris.Automation.ADC.Services.ErrorReportingServiceBehavior">
    <endpoint
    <endpoint
    binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
  </service>
  </services>

• Before:
  
  <services>
    <endpoint address="net.tcp://localhost:11050/Harris.Automation.ADC.Services.ListService"
      binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
      contract="ListService.IListService" name="NetTcpBinding_IListService"
      behaviorConfiguration="Harris.Automation.ADC.Services.ListServiceClientBehavior" />
  </service>
  </services>
<service name="Harris.Automation.ADC.Services.ListService.ListService"
    behaviorConfiguration="Harris.Automation.ADC.Services.ListService.ListServiceBehavior">
    <endpoint
        address="net.tcp://localhost:10052/Harris.Automation.ADC.Services.ListService/mex"
        binding="mexTcpBinding" contract="IMetadataExchange" />
    <endpoint
        address="net.tcp://localhost:10050/Harris.Automation.ADC.Services.ListService"
        binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
        contract="Harris.Automation.ADC.Services.ListService.IListService" />
</service>

<service
    name="Harris.Automation.ADC.Services.ListService.ListServiceConfigurationInterface"
    behaviorConfiguration="Harris.Automation.ADC.Services.ListService.ListServiceBehavior">
    <endpoint
        binding="mexTcpBinding" contract="IMetadataExchange" />
    <endpoint
        binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
</service>

- After:
  <services>
    <service name="Harris.Automation.ADC.Services.ListService.ListService"
        behaviorConfiguration="Harris.Automation.ADC.Services.ListService.ListServiceBehavior">
        <endpoint
            address="net.tcp://localhost:11052/Harris.Automation.ADC.Services.ListService/mex"
            binding="mexTcpBinding" contract="IMetadataExchange" />
        <endpoint
            address="net.tcp://localhost:11050/Harris.Automation.ADC.Services.ListService"
            binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
            contract="Harris.Automation.ADC.Services.ListService.IListService" />
    </service>
    <service
        name="Harris.Automation.ADC.Services.ListService.ListServiceConfigurationInterface"
        behaviorConfiguration="Harris.Automation.ADC.Services.ListService.ListServiceBehavior">
        <endpoint
            binding="mexTcpBinding" contract="IMetadataExchange" />
        <endpoint
            binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
    </service>
  </services>
c. Harris.Automation.ADC.Services.TimecodeServiceHost.exe.config

- Before:

```xml
<services>
  <service name="Harris.Automation.ADC.Services.TimecodeService.TimecodeService"
    behaviorConfiguration="Harris.Automation.ADC.Services.TimecodeService.TimecodeServiceBehavior">
    <endpoint address="net.tcp://localhost:10082/Harris.Automation.ADC.Services.TimecodeService/mex"
      binding="mexTcpBinding" contract="IMetadataExchange" />
    <endpoint address="net.tcp://localhost:10080/Harris.Automation.ADC.Services.TimecodeService"
  </service>
  <service behaviorConfiguration="Harris.Automation.ADC.Services.TimecodeService.TimecodeServiceBehavior"
    name="Harris.Automation.ADC.Services.TimecodeService.TimecodeServiceConfigurationInterface">
      binding="mexTcpBinding" contract="IMetadataExchange" />
  </service>
</services>
```

- After:

```xml
<services>
  <service name="Harris.Automation.ADC.Services.TimecodeService.TimecodeService"
    behaviorConfiguration="Harris.Automation.ADC.Services.TimecodeService.TimecodeServiceBehavior">
    <endpoint address="net.tcp://localhost:11082/Harris.Automation.ADC.Services.TimecodeService/mex"
      binding="mexTcpBinding" contract="IMetadataExchange" />
    <endpoint address="net.tcp://localhost:11080/Harris.Automation.ADC.Services.TimecodeService"
  </service>
  <service behaviorConfiguration="Harris.Automation.ADC.Services.TimecodeService.TimecodeServiceBehavior"
    name="Harris.Automation.ADC.Services.TimecodeService.TimecodeServiceConfigurationInterface">
      binding="mexTcpBinding" contract="IMetadataExchange" />
  </service>
</services>
```
<service
Behavior"
name="Harris.Automation.ADC.Services.TimecodeService.TimecodeServiceConfigurationInt
erface">
    <endpoint
gurationInterface/mex" binding="mexTcpBinding" contract="IMetadataExchange" />
    <endpoint
gurationInterface" binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
/>
</service>
</services>

ManagerService.xml file

1. 5.2) Open the ManagerService.xml file in services "config" folder ("C:\Program Files (x86)\Imagine
Communications\ADC Services\config") and make these changes:
   a. for List Service configuration interface
      • Before:
        <Service>
        <UniqueId>60b8d3d0-0ff6-4722-889a-d4e5f795733d</UniqueId>
        <Type>ListService</Type>
        <Host>
        <Type>SelfHosting</Type>
        <HostName>LOCALHOST</HostName>
        <ApplicationName>ADC List Service</ApplicationName>
ion</Endpoint>
        </Host>
        <ServicesDependencies/>
        </Service>
      • After:
        <Service>
        <UniqueId>60b8d3d0-0ff6-4722-889a-d4e5f795733d</UniqueId>
        <Type>ListService</Type>
        <Host>
        <Type>SelfHosting</Type>
        <HostName>LOCALHOST</HostName>
        <ApplicationName>ADC List Service</ApplicationName>
ion</Endpoint>
        </Host>
        <ServicesDependencies/>
        </Service>
a. for Device Service configuration interface
   - Before:
     <Service>
     <UniqueId>fddf08b7-811a-4d4a-aa10-1af4444065f2</UniqueId>
     <Type>DeviceService</Type>
     <Host>
     <Type>SelfHosting</Type>
     <HostName>LOCALHOST</HostName>
     <ApplicationName>ADC Device Service</ApplicationName>
     </Host>
     <ServicesDependencies/>
     </Service>
   - After:
     <Service>
     <UniqueId>fddf08b7-811a-4d4a-aa10-1af4444065f2</UniqueId>
     <Type>DeviceService</Type>
     <Host>
     <Type>SelfHosting</Type>
     <HostName>LOCALHOST</HostName>
     <ApplicationName>ADC Device Service</ApplicationName>
     </Host>
     <ServicesDependencies/>
     </Service>

b. for Error Reporting Service configuration interface
   - Before:
     <Service>
     <UniqueId>671f0d70-ab09-4d8a-b83e-1cf14f2f3fa</UniqueId>
     <Type>ErrorReportingService</Type>
     <Host>
     <Type>SelfHosting</Type>
     <HostName>LOCALHOST</HostName>
     <ApplicationName>ADC Error Reporting Service</ApplicationName>
     </Host>
     <ServicesDependencies/>
     </Service>
• After:
  <Service>
  <UniqueId>671f90-acf0-4d8a-b83e-1cf14f2f53fa</UniqueId>
  <Type>ErrorReportingService</Type>
  <Host>
  <Type>SelfHosting</Type>
  <HostName>LOCALHOST</HostName>
  <ApplicationName>ADC Error Reporting Service</ApplicationName>
  </Host>
  <ServicesDependencies/>
  </Service>

  c. for Timecode Service configuration interface
  • Before:
  <Service>
  <UniqueId>d075f43a-e6c1-453f-8a6e-de0a1a8195f2</UniqueId>
  <Type>TimecodeService</Type>
  <Host>
  <Type>SelfHosting</Type>
  <HostName>LOCALHOST</HostName>
  <ApplicationName>ADC Timecode Service</ApplicationName>
  </Host>
  <ServicesDependencies/>
  </Service>

  • After:
  <Service>
  <UniqueId>d075f43a-e6c1-453f-8a6e-de0a1a8195f2</UniqueId>
  <Type>TimecodeService</Type>
  <Host>
  <Type>SelfHosting</Type>
  <HostName>LOCALHOST</HostName>
  <ApplicationName>ADC Timecode Service</ApplicationName>
  </Host>
  <ServicesDependencies/>
  </Service>
Note: Without these changes the Manager Service will unable to monitor the services state and perform their reconfigure. On the step 5.1 we have changed the services configuration endpoints, so we have to do the same for Manager Service configuration.

Material Service in the Aggregation Service

By default, Material Service is not included with the services aggregated by Aggregation Service. To have Material Service included with the aggregation, and allow Playlist to look up metadata in the database, the Data Service Address default port must be changed from 10021 to 10022.

1. Navigate to C:\Program Files (x86)\Imagine Communications\ADC Services\config.
4. Save the file. Now Playlist will look up metadata in the database through Material service.

Aggregation Service .config file

1. Open the .config file in Aggregation Service root folder ("C:\Program Files (x86)\Imagine Communications\ADC Aggregation Service") and make these changes:
      - Before:

```xml
   <services>
     <service
       name="Harris.Automation.ADC.Services.AggregationService.AggregationServiceConfiguratio
       nInterface"
       behaviorConfiguration="Harris.Automation.ADC.Services.AggregationService.AggregationSe
       rviceBehavior">
       <endpoint
         nfiguration/mex" bindings="mexTcpBinding" contract="IMetadataExchange" />
       <endpoint
         nfiguration" binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
       />
   </service>
</services>
```

- After:

```xml
   <services>
     <service
       name="Harris.Automation.ADC.Services.AggregationService.AggregationServiceConfiguratio
       nInterface"
       behaviorConfiguration="Harris.Automation.ADC.Services.AggregationService.AggregationSe
       rviceBehavior">
       <endpoint
         nfiguration/mex" bindings="mexTcpBinding" contract="IMetadataExchange" />
       <endpoint
         nfiguration" binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
       />
   </service>
</services>
```
<service
name="Harris.Automation.ADC.Services.AggregationService.AggregationListService"
behaviorConfiguration="Harris.Automation.ADC.Services.AggregationService.AggregationServiceBehavior">
  <endpoint
address="net.tcp://localhost:11052/Harris.Automation.ADC.Services.ListService/mex"
binding="mexTcpBinding" contract="IMetadataExchange" />
  <endpoint
address="net.tcp://localhost:11050/Harris.Automation.ADC.Services.ListService"
</service>

<service
name="Harris.Automation.ADC.Services.AggregationService.AggregationDeviceService"
behaviorConfiguration="Harris.Automation.ADC.Services.AggregationService.AggregationServiceBehavior">
  <endpoint
address="net.tcp://localhost:11032/Harris.Automation.ADC.Services.DeviceService/mex"
binding="mexTcpBinding" contract="IMetadataExchange" />
  <endpoint
address="net.tcp://localhost:11030/Harris.Automation.ADC.Services.DeviceService"
</service>

<service
name="Harris.Automation.ADC.Services.AggregationService.AggregationErrorReportingService"
behaviorConfiguration="Harris.Automation.ADC.Services.AggregationService.AggregationServiceBehavior">
  <endpoint
address="net.tcp://localhost:11042/Harris.Automation.ADC.Services.ErrorReportingService/mex"
binding="mexTcpBinding" contract="IMetadataExchange" />
  <endpoint
address="net.tcp://localhost:11040/Harris.Automation.ADC.Services.ErrorReportingService"
</service>

<service
name="Harris.Automation.ADC.Services.AggregationService.AggregationTimecodeService"
behaviorConfiguration="Harris.Automation.ADC.Services.AggregationService.AggregationServiceBehavior">
  <endpoint
address="net.tcp://localhost:11082/Harris.Automation.ADC.Services.TimecodeService/mex"
binding="mexTcpBinding" contract="IMetadataExchange" />
  <endpoint
address="net.tcp://localhost:11080/Harris.Automation.ADC.Services.TimecodeService"
binding="netTcpBinding" bindingConfiguration="TcpNoSecurity"
contract="Harris.Automation.ADC.Services.TimecodeService.ITimecodeService" />
</service>
</services>
• After:
  <services>
    <service
name="Harris.Automation.ADC.Services.AggregationService.AggregationServiceConfiguratio
nInterface"
behaviorConfiguration="Harris.Automation.ADC.Services.AggregationService.AggregationSe
rviceBehavior">
    <endpoint
figuration/mex" bindings="mexTcpBinding" contract="IMetadataExchange" />
    <endpoint
tionInterface" />
  </service>
  <service
name="Harris.Automation.ADC.Services.AggregationService.AggregationListService"
behaviorConfiguration="Harris.Automation.ADC.Services.AggregationService.AggregationSe
rviceBehavior">
    <endpoint
address="net.tcp://localhost:10052/Harris.Automation.ADC.Services.ListService/mex"
binding="mexTcpBinding" contract="IMetadataExchange" />
    <endpoint
address="net.tcp://localhost:10050/Harris.Automation.ADC.Services.ListService"
binding="netTcpBinding" bindingConfiguration="TcpNoSecurity" contract="Harris.Automa
tion.ADC.Services.ListService_IListService" />
  </service>
  <service
name="Harris.Automation.ADC.Services.AggregationService.AggregationDeviceService"
behaviorConfiguration="Harris.Automation.ADC.Services.AggregationService.AggregationSe
rviceBehavior">
    <endpoint
address="net.tcp://localhost:10032/Harris.Automation.ADC.Service
DeviceService/mex"
binding="mexTcpBinding" contract="IMetadataExchange" />
    <endpoint
address="net.tcp://localhost:10030/Harris.Automation.ADC.Services.DeviceService"
  </service>
  <service
name="Harris.Automation.ADC.Services.AggregationService.AggregationErrorReportingServi
Configure Aggregation service.

1. Open AggregationService.xml file in folder "C:\Program Files (x86)\Imagine Communications\ADC Aggregation Service\config".
2. 6.1) Config section for remote node:
   The default configuration section looks like this:
   
   ```xml
   <Node xmlns="http://Harris/Automation/ADC/Services/AggregationService">
     <NodeName xmlns="http://Harris/Automation/ADC/Services/AggregationService">S1</NodeName>
     <Services xmlns="http://Harris/Automation/ADC/Services/AggregationService">
       <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
         <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>
       </Service>
     </Services>
   </Node>
   ```
3. Instead of "host" name you can enter the DNS name of the remote node or their IP address. Based on "Proposed scheme" the configuration will be the follow:

- NODE1 (DNS name: NODE_ONE IP: 10.0.0.1)
  <Node xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <NodeName xmlns="http://Harris/Automation/ADC/Services/AggregationService">NODE1</NodeName>
    <Services xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
        <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>
      </Service>
      <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
        <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
      </Service>
      <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
        <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
      </Service>
      <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
        <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
      </Service>
    </Services>
  </Node>
  </Service>
  <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
  </Service>
  </Service>
  <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
  </Service>
  <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
  </Service>
</Node>
<Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>


<Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
</Service>


<Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>
</Service>

<Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
</Service>

<Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
</Service>

OR

<Node xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <NodeName xmlns="http://Harris/Automation/ADC/Services/AggregationService">NODE1</NodeName>
  <Services xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>
    </Service>
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
    </Service>
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
    </Service>
  </Services>
</Node>
<Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
    <Endpoint>net.tcp://10.0.0.1:10080/Harris.Automation.ADC.Services.TimecodeService</Endpoint>
</Service>
</Services>
</Node>

Config section for local node (LAST_NODE)

1. Config section for local node (or "LAST_NODE" where Aggregation service and ADC Services are installed):

   In according with changes from "Step 1 under Change the ADC Services ports configuration" the ADC Services on this node have other ports. So the default configuration section has to be changed as follow:

   - LAST_NODE (everything one PC) (DNS name: LAST_NODE_PC IP: 172.16.0.1)
     
     <Node xmlns="http://Harris/Automation/ADC/Services/AggregationService">
       <NodeName xmlns="http://Harris/Automation/ADC/Services/AggregationService">LAST_NODE</NodeName>
       <Services xmlns="http://Harris/Automation/ADC/Services/AggregationService">
         <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
           <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>
         </Service>
         <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
           <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
         </Service>
         <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
           <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
         </Service>
       </Services>
     </Node>

   
   <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
     <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
   </Service>
   
   <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
     <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
   </Service>
<Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
</Service>

OR

<Node xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <NodeName xmlns="http://Harris/Automation/ADC/Services/AggregationService">LAST_NODE</NodeName>
  <Services xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>
    </Service>
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
    </Service>
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
    </Service>
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
    </Service>
  </Services>
</Node>

</Service>
</Services>
</Node>

OR

<Node xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <NodeName xmlns="http://Harris/Automation/ADC/Services/AggregationService">LAST_NODE</NodeName>
  <Services xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>
    </Service>
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
    </Service>
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
    </Service>
    <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
    </Service>
  </Services>
</Node>
2. In accordance with "Proposed scheme" the whole AggregationService.xml configuration file will looks like this:

```xml
<?xml version="1.0" encoding="utf-8"?>
<AggregationServiceConfiguration
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xmlns:xsd="http://www.w3.org/2001/XMLSchema"
 xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <Nodes xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <Node xmlns="http://Harris/Automation/ADC/Services/AggregationService">NODE1</NodeName>
    <Services xmlns="http://Harris/Automation/ADC/Services/AggregationService">
      <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
        <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>
      </Service>
      <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
        <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
      </Service>
      <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
        <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
      </Service>
      <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
        <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
      </Service>
    </Services>
  </Node>
</AggregationServiceConfiguration>
```
<Node xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <NodeName xmlns="http://Harris/Automation/ADC/Services/AggregationService">NODEN</NodeName>
    <Services xmlns="http://Harris/Automation/ADC/Services/AggregationService">
        <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
            <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>
        </Service>
        <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
            <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
        </Service>
        <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
            <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
        </Service>
        <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
            <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
        </Service>
    </Services>
</Node>

<Node xmlns="http://Harris/Automation/ADC/Services/AggregationService">
    <NodeName xmlns="http://Harris/Automation/ADC/Services/AggregationService">LAST_NODE</NodeName>
    <Services xmlns="http://Harris/Automation/ADC/Services/AggregationService">
        <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
            <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>
        </Service>
        <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
            <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
        </Service>
        <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
            <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
        </Service>
        <Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
            <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
        </Service>
    </Services>
</Node>
<Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ListService</Type>


</Service>

<Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">DeviceService</Type>
</Service>

<Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">ErrorReportingService</Type>
</Service>

<Service xmlns="http://Harris/Automation/ADC/Services/AggregationService">
  <Type xmlns="http://Harris/Automation/ADC/Services/AggregationService">TimecodeService</Type>
</Service>

</Services>

</Node>

</Nodes>

</AggregationServiceConfiguration>
Start the Services through Windows Service console

1. **Start Manager Service** through **Windows Service console**. Wait until all services will be started.

   ![Services (Local)](image)

   - **ADC Material Service**
     - **Stop** the service
     - **Restart** the service

     **Description:**
     Implements the search of events in a database, verifies and updates Playlist according to database, manages Cache Update.

   - **ADC Aggregation Service**
     - **Description:** Provides the service

2. Ensure all services have connected to **Device Server**.

   ![Connections VOROBYEV_DS](image)

   - **File**
   - **View**
   - **Help**

   **Connections VOROBYEV_DS**

   - AARTYOMOV (List Server 1750)
   - ATURKINA-ConfigT (Configuration Manager)
   - CRUISECONTROL (List Server 2241)
   - LocalNode_AS (Air Client)
   - LocalNode_DS (Air Client)
   - LocalNode_ES (Air Client)
   - LocalNode_LS (Air Client)
   - LocalNode_TS (Air Client)
   - LSSVC (Air Client)
   - LSSvUAV (Air Client)
   - PanteleevCL (Configuration Manager)
   - POPOV (List Server 1126)
3. Make sure that **Manager Client** works correctly after reconfiguration of **Manager Service**.

4. Start **Aggregation Service** through **Windows Service console**. Make sure that process has been started.

5. Install and start up the **Playlist**. Connect to services.
Testing Material validation

Make sure that Material validation features works correctly:

1. Insert event

2. Material service has to verify the target event
Other Web applications

1. Install any other Web application.

**Note:** The Commercial Validation Service requires the configured AsRun service. In this architecture the AsRun service unable to provide full functionality. Also it is impossible to configure the Commercial Validation Service through Manager Client because the Aggregation service will change the Device server’s names. You can configure the Commercial Validation Service manually by changing the CommercialValidationService.xml. But anyway it will be impossible to retrieve the AsRun record through AsRun service.