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PI Integrator for Business Analytics ODBC Connection Error - Cannot connect to server 'AFServer'

Applies to: PI Integrator for Business Analytics- 1.0.0.184, 1.1.0.432, 1.2.0.104, 1.2.0.106, 1.2.0.107, 1.2.0.108, 1.2.0.109, 1.2.0.110, 1.2.0.111, 1.2.0.112, 1.2.0.113, 1.2.0.114, 1.2.0.115, 1.2.0.116, 1.2.0.117, 1.2.0.118, 1.2.0.119, 1.2.0.120, 1.2.0.121, 1.2.0.122, 1.2.0.123, 1.2.0.124, 1.2.0.125, 1.2.0.126, 1.2.0.127, 1.2.0.128, 1.2.0.129, 1.2.0.130, 1.2.0.131, 1.2.0.132, 1.2.0.133, 1.2.0.134, 1.2.0.135, 1.2.0.136, 1.2.0.137, 1.2.0.138, 1.2.0.139, 1.2.0.140, 1.2.0.141, 1.2.0.142, 1.2.0.143, 1.2.0.144, 1.2.0.145, 1.2.0.146, 1.2.0.147, 1.2.0.148, 1.2.0.149, 1.2.0.150, 1.2.0.151, 1.2.0.152, 1.2.0.153, 1.2.0.154, 1.2.0.155, 1.2.0.156, 1.2.0.157, 1.2.0.158, 1.2.0.159, 1.2.0.160, 1.2.0.161, 1.2.0.162, 1.2.0.163, 1.2.0.164, 1.2.0.165, 1.2.0.166, 1.2.0.167, 1.2.0.168, 1.2.0.169, 1.2.0.170, 1.2.0.171, 1.2.0.172, 1.2.0.173, 1.2.0.174, 1.2.0.175, 1.2.0.176, 1.2.0.177, 1.2.0.178, 1.2.0.179, 1.2.0.180, 1.2.0.181, 1.2.0.182, 1.2.0.183, 1.2.0.184, 1.2.0.185, 1.2.0.186, 1.2.0.187, 1.2.0.188, 1.2.0.189, 1.2.0.190, 1.2.0.191, 1.2.0.192, 1.2.0.193, 1.2.0.194, 1.2.0.195, 1.2.0.196, 1.2.0.197, 1.2.0.198, 1.2.0.199, 1.2.0.200, 1.2.0.201, 1.2.0.202, 1.2.0.203, 1.2.0.204, 1.2.0.205, 1.2.0.206, 1.2.0.207, 1.2.0.208, 1.2.0.209, 1.2.0.210, 1.2.0.211, 1.2.0.212, 1.2.0.213, 1.2.0.214, 1.2.0.215, 1.2.0.216, 1.2.0.217, 1.2.0.218, 1.2.0.219, 1.2.0.220, 1.2.0.221, 1.2.0.222, 1.2.0.223, 1.2.0.224, 1.2.0.225, 1.2.0.226, 1.2.0.227, 1.2.0.228, 1.2.0.229, 1.2.0.230, 1.2.0.231, 1.2.0.232, 1.2.0.233, 1.2.0.234, 1.2.0.235, 1.2.0.236, 1.2.0.237, 1.2.0.238, 1.2.0.239, 1.2.0.240, 1.2.0.241, 1.2.0.242, 1.2.0.243, 1.2.0.244, 1.2.0.245, 1.2.0.246, 1.2.0.247, 1.2.0.248, 1.2.0.249, 1.2.0.250, 1.2.0.251, 1.2.0.252, 1.2.0.253, 1.2.0.254, 1.2.0.255, 1.2.0.256, 1.2.0.257, 1.2.0.258, 1.2.0.259, 1.2.0.260, 1.2.0.261, 1.2.0.262, 1.2.0.263, 1.2.0.264, 1.2.0.265, 1.2.0.266, 1.2.0.267, 1.2.0.268, 1.2.0.269, 1.2.0.270, 1.2.0.271, 1.2.0.272, 1.2.0.273, 1.2.0.274, 1.2.0.275, 1.2.0.276, 1.2.0.277, 1.2.0.278, 1.2.0.279, 1.2.0.280, 1.2.0.281, 1.2.0.282, 1.2.0.283, 1.2.0.284, 1.2.0.285, 1.2.0.286, 1.2.0.287, 1.2.0.288, 1.2.0.289, 1.2.0.290, 1.2.0.291, 1.2.0.292, 1.2.0.293, 1.2.0.294, 1.2.0.295, 1.2.0.296, 1.2.0.297, 1.2.0.298, 1.2.0.299, 1.2.0.300, 1.2.0.301, 1.2.0.302, 1.2.0.303, 1.2.0.304, 1.2.0.305, 1.2.0.306, 1.2.0.307, 1.2.0.308, 1.2.0.309, 1.2.0.310, 1.2.0.311, 1.2.0.312, 1.2.0.313, 1.2.0.314, 1.2.0.315, 1.2.0.316, 1.2.0.317, 1.2.0.318, 1.2.0.319, 1.2.0.320, 1.2.0.321, 1.2.0.322, 1.2.0.323, 1.2.0.324, 1.2.0.325, 1.2.0.326, 1.2.0.327, 1.2.0.328, 1.2.0.329, 1.2.0.330, 1.2.0.331, 1.2.0.332, 1.2.0.333, 1.2.0.334, 1.2.0.335, 1.2.0.336, 1.2.0.337, 1.2.0.338, 1.2.0.339, 1.2.0.340, 1.2.0.341, 1.2.0.342, 1.2.0.343, 1.2.0.344, 1.2.0.345, 1.2.0.346, 1.2.0.347, 1.2.0.348, 1.2.0.349, 1.2.0.350, 1.2.0.351, 1.2.0.352, 1.2.0.353, 1.2.0.354, 1.2.0.355, 1.2.0.356, 1.2.0.357, 1.2.0.358, 1.2.0.359, 1.2.0.360, 1.2.0.361, 1.2.0.362, 1.2.0.363, 1.2.0.364, 1.2.0.365, 1.2.0.366, 1.2.0.367, 1.2.0.368, 1.2.0.369, 1.2.0.370, 1.2.0.371, 1.2.0.372, 1.2.0.373, 1.2.0.374, 1.2.0.375, 1.2.0.376, 1.2.0.377, 1.2.0.378, 1.2.0.379, 1.2.0.380, 1.2.0.381, 1.2.0.382, 1.2.0.383, 1.2.0.384, 1.2.0.385, 1.2.0.386, 1.2.0.387, 1.2.0.388, 1.2.0.389, 1.2.0.390, 1.2.0.391, 1.2.0.392, 1.2.0.393, 1.2.0.394, 1.2.0.395, 1.2.0.396, 1.2.0.397, 1.2.0.398, 1.2.0.399, 1.2.0.400, 1.2.0.401, 1.2.0.402, 1.2.0.403, 1.2.0.404, 1.2.0.405, 1.2.0.406, 1.2.0.407, 1.2.0.408, 1.2.0.409, 1.2.0.410, 1.2.0.411, 1.2.0.412, 1.2.0.413, 1.2.0.414, 1.2.0.415, 1.2.0.416, 1.2.0.417, 1.2.0.418, 1.2.0.419, 1.2.0.420, 1.2.0.421, 1.2.0.422, 1.2.0.423, 1.2.0.424, 1.2.0.425, 1.2.0.426, 1.2.0.427, 1.2.0.428, 1.2.0.429, 1.2.0.430, 1.2.0.431, 1.2.0.432, 1.2.0.433, 1.2.0.434, 1.2.0.435, 1.2.0.436, 1.2.0.437, 1.2.0.438, 1.2.0.439, 1.2.0.440, 1.2.0.441, 1.2.0.442, 1.2.0.443, 1.2.0.444, 1.2.0.445, 1.2.0.446, 1.2.0.447, 1.2.0.448, 1.2.0.449, 1.2.0.450, 1.2.0.451, 1.2.0.452, 1.2.0.453, 1.2.0.454, 1.2.0.455, 1.2.0.456, 1.2.0.457, 1.2.0.458, 1.2.0.459, 1.2.0.460, 1.2.0.461, 1.2.0.462, 1.2.0.463, 1.2.0.464, 1.2.0.465, 1.2.0.466, 1.2.0.467, 1.2.0.468, 1.2.0.469, 1.2.0.470, 1.2.0.471, 1.2.0.472, 1.2.0.473, 1

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SOLUTION VERIFIED - Updated on April 03, 2019 -

English

Issue

Content originally from KB01350

You encounter the following error message when connecting in a Business Intelligence (BI) client when connecting to the PI Integrator for Business Analytics PI View Data Source Name (DSN):

[Query Engine RDSA] Cannot connect to server '(AF Server Name)'. Please examine connectivity to the remote PI AF Server as well as ensure that the user has the appropriate permissions.

Environment

- Trying to connect a BI Client (such as PI SQL Commander or Microsoft Power BI) to PI View data published by the PI Integrator for Business Analytics

Solution

Verify that the Integrator can connect to the AF Server

If you know which AF server hosts your Integrator, open PI System Explorer *on the Integrator machine* and verify that you can successfully connect to the AF server that hosts the Integrator.

Note: You can confirm which AF Server is hosting the Integrator by doing the following:

1. On the *Integrator machine*, open %PIHOME%\Integrators\BA\CAST.UI.WindowsService.exe.config.
2. Locate the **InstancePath** key near the top of the file.
3. The value of the **InstancePath** key contains the configuration AF Server used to host PI Integrator for Business Analytics.

Verify that Service Principal Names have been set for PI SQL DAS (Integrator Framework)

If the AF Server is running and your Integrator, AF server that hosts it, and client machine are on different machines, you may be encountering a Kerberos delegation issue. Assuming that PI SQL DAS (Integrator Framework) is running as the default *Network Service* account (strongly recommended), then PI SQL DAS (Integrator Framework) uses the Integrator machine SPN. By default, the installation of the Integrator should have created the SPNs for PI SQL DAS (Integrator Framework).

In a command prompt window, enter the following command to list the Integrator machine SPNs:

```
setspn -L (IntegratorServer)$
```

where (IntegratorServer) is the Integrator server's host name. For example, for a server named PIINTEG, the command would be the following:

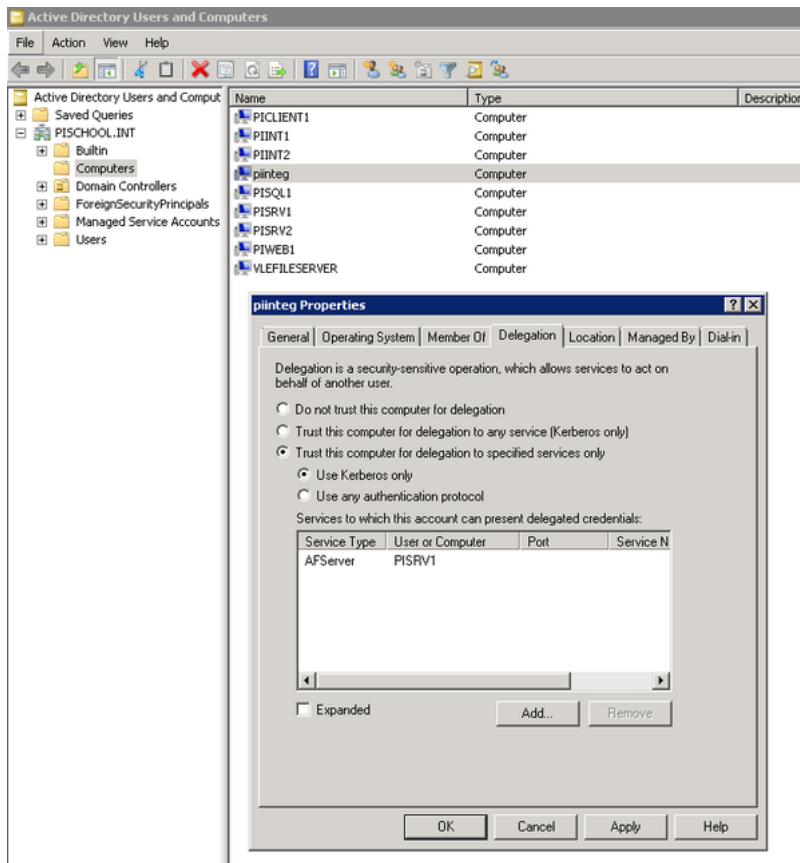
```
setspn -L PIINTEG$
```

If the SPNs have been set properly, you will see two listings:

```
HOST/(IntegratorServer)
HOST/(IntegratorServer).(domain).(com)
```

Configure Kerberos delegation for PI SQL DAS

1. On the domain controller, open **Active Directory Users and Groups**, select **Computers**, and find the computer where PI Integrator for Business Analytics is installed. In the screenshot below, PI Integrator for BA is installed on computer PIINTEG.
2. Double-click the Integrator computer name to open the **Properties** window and navigate to the **Delegation** tab. One of these options will be selected:
 - **Trust this computer for delegation to any service (Kerberos only)** indicates that unconstrained delegation is enabled.
 - **Trust this computer for delegation to specified services only with Use Kerberos only** selected indicates that constrained Kerberos delegation is enabled.
 - **Note:** OS/soft recommends constrained delegation because it is more secure.



- For constrained delegation, verify that the correct AF Server SPN is listed under "Services to which this account can present delegated credentials." The AF Server SPN must match the AF Server specified during the PI Integrator for Business Analytics installation.
- If the AF Server SPN is missing, try to add it. Click **Add...** at the bottom of the delegation list, and search for the AF Server SPN. If the correct AF Server SPN is not available, then it has not been created yet. If this SPN, you should investigate why it was not created. Refer to [Configuring Delegation for PI AF](https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB00599) (<https://customers.osisoft.com/s/knowledgearticle?knowledgeArticleUrl=KB00599>).
- Restart the PI SQL DAS (Integrator Framework) service after making any changes to Kerberos configuration.
- On both the Integrator machine and the client machine, open command prompt and issue the command to purge cached Kerberos tickets:

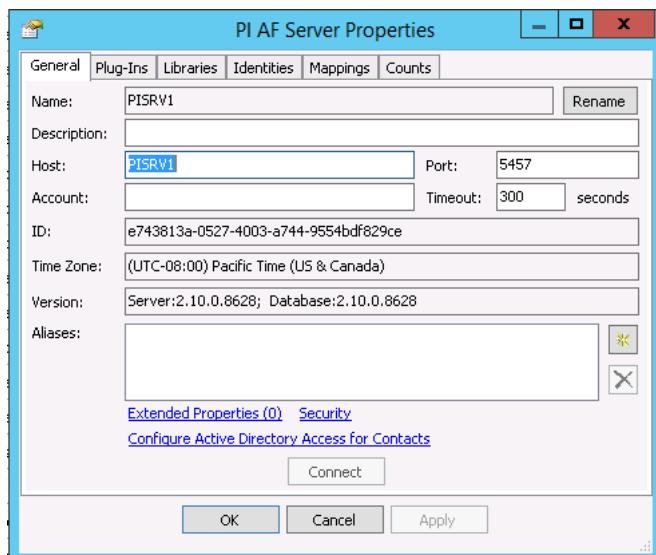
```
klist purge
```

Verify that the AF Server is configured to use SPN instead of UPN

PSE can configure its connection to the AF server using a specific account, and/or the AF Server can be configured to use User Principal Name (UPN). (<https://livelibrary.osisoft.com/LiveLibrary/content/en/server-v11/GUID-1EAF0B3C-2E74-4817-A787-52C5B8676CB1>), instead of Service Principal Name (SPN). Kerberos delegation will not work with this UPN configuration.

- Check PI System Explorer's Account field:

- Open PI System Explorer on the Integrator server, then go to Server Properties..., and ensure that the Account field is cleared:



- Verify in the AF server's config file that the `userPrincipalName` key is not enabled

- On the AF Server, navigate open the AF Server configuration file (%PIHOME64%\AF\AFServer.exe.config). Verify that the servicePrincipalName key is present and the userPrincipalName key is commented out.
- See the PI Server 2018 User Guide > [Configure PI AF server to use a UPN](https://livelibrary.osisoft.com/LiveLibrary/content/en/server-v11/GUID-1EAF0B3C-2E74-4817-A787-52C5B8676CB1) (https://livelibrary.osisoft.com/LiveLibrary/content/en/server-v11/GUID-1EAF0B3C-2E74-4817-A787-52C5B8676CB1), for more details.

Verify that configuration on the SQL Server node is correct

If you continue to see errors even with Kerberos enabled, there might be a permissions issue on the PI Integrator SQL Server database. A SQL login for PI SQL DAS should be created and configured during installation for the NT Service\PISqlDas virtual account, but it is possible for this step to fail. For these cases, we have provided a Powershell script that can be run directly on the SQL Server machine.

1. Copy grantaccess.ps1 and grantaccess.txt found in %PIHOME64%\SQLDAS\Tools on the *Integrator machine* to the *SQL Server*. Grantaccess.txt includes directions on how to run the Powershell script.
 - a. **Note:** You can confirm which SQL Server is hosting the Integrator by doing the following:
 - i. On the *Integrator machine*, open %PIHOME64%\Integrators\BA\CAST.UI.WindowsService.exe.config.
 - ii. Locate the **InstancePath** key near the top of the file.
 - iii. Note the value of the **InstancePath** key. It contains the configuration AF Server used to host PI Integrator for Business Analytics as well as the exact element path that stores this Integrator instance's configuration.
 - iv. In PI System Explorer from any computer, connect to the AF server that hosts your PI Integrator for Business Analytics and navigate to the InstancePath element.
 - v. Navigate to the **DataCache** child element > **Attributes** tab.
 - vi. The value of the **DataCache** element's **Host** attribute is the SQL Server instance that hosts your Integrator.
2. Note the computer name and domain where PI Integrator for Business Analytics is installed.

For the above example where PI Integrator for BA is installed on PIINTEG and SQL Server is installed on PISRV1, and the default Integrator SQL database name PIIntegratorDB is used, the Powershell command would be:

```
.\grantaccess.ps1 pischool PIINTEG PISRV1 PIIntegratorDB
```

If a domain service account (not recommended) is used for PI SQL DAS (Integrator Framework), give db_datareader permissions to the service account to the PIIntegratorDB SQL database.

Note: Rather than run grantaccess.ps1, alternatively we can also manually create the same login using SQL Server Management Studio. Simply follow the steps in the *No Data Tables visible for PI Integrator Connection* section of the [PI SQL Data Access Server Administration Guide](https://livelibrary.osisoft.com/LiveLibrary/content/en/das-integrator-v1/GUID-F305879F-1C18-4CD4-9181-3253FA756272) (https://livelibrary.osisoft.com/LiveLibrary/content/en/das-integrator-v1/GUID-F305879F-1C18-4CD4-9181-3253FA756272).

Workaround

The only workaround to not configuring Kerberos is to install all components on the same box. This means that PI SQL DAS (installed with PI Integrator for BA), AF Server, and the BI client with PI ODBC Driver must all be installed on the same computer.

Cause

The simplest scenario is that the AF Server used to host the PI Integrator for Business Analytics is not running or the Integrator machine does not have access to the AF server due to a firewall or other network issue.

There are two different configuration issues that can lead to this error:

- Kerberos delegation has not been configured for PI SQL DAS (Integrator Framework) and you are in a double-hop scenario (client, Integrator, and AF server are all on different machines)
- the PI SQL DAS part of the Integrator installation failed to perform some configuration on the SQL Server node

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