# Requirement and Recommendation for Transport Layer Security (TLS) Setting in Revit Add-ons

## Background

During a short period following August 3, 2019, when Autodesk Identity and Revit Cloud Worksharing Services moved to TLS 1.2 and stopped supporting TLS 1.0 and TLS 1.1, several Revit users reported that their Revit failed to communicate with Revit Cloud Worksharing Services, even though the [required updates for Revit](https://knowledge.autodesk.com/support/revit-products/downloads/caas/downloads/content/autodesk-transport-layer-security-updates-require-revit-security-fix.html) had been correctly applied. There were dumps in Revit journals like below

*IOException: Unable to read data from the transport connection: An existing connection was forcibly closed by the remote host*

*IOException Authentication failed because the remote party has closed the transport stream*

*SocketException: An existing connection was forcibly closed by the remote host from System*

The root cause turned out to be in a specific add-on, which exclusively specified TLS 1.0 in the code. This setting overrided the TLS configuration in Revit and caused Revit to lose the capability of using TLS 1.2.

Therefore, we suggest developers follow below requirement and recommendation when a specific TLS version is required in the add-ons.

## Requirement

**Do not** hard-code any TLS version **exclusively**, by directly assigning the version to the application-wide property [ServicePointManager.SecurityProtocol](https://docs.microsoft.com/en-us/dotnet/api/system.net.securityprotocoltype?view=netframework-4.7). This will override Revit’s native TLS configuration, which inherits from the targeted .NET Framework, and supports TLS 1.0, 1.1 and 1.2.

The native TLS configuration is critical for Revit to communicate with various Autodesk cloud services.

A problematic setting is like

*System.Net.ServicePointManager.SecurityProtocol = System.Net.SecurityProtocolType.Tls12;*

you may specify a TLS version in your add-on, if the add-on could be possibly running on the Revit that doesn’t have an appropriate [TLS security update](https://knowledge.autodesk.com/support/revit-products/downloads/caas/downloads/content/autodesk-transport-layer-security-updates-require-revit-security-fix.html). Please **make sure** the setting is **inclusive**, by using bitwise OR ([logical OR](https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/operators/bitwise-and-shift-operators#logical-or-operator-)) on the application-wide property [ServicePointManager.SecurityProtocol](https://docs.microsoft.com/en-us/dotnet/api/system.net.securityprotocoltype?view=netframework-4.7).

A correct setting is like

*System.Net.ServicePointManager.SecurityProtocol |= System.Net.SecurityProtocolType.Tls12;*

## Recommendation

We recommend you **don’t specify** the desired TLS version in the add-on, but always rely on Revit and .NET Framework’s TLS support, if

1. The add-on is targeted on Revit 2015 to 2019, and the desired TLS version is 1.0 or 1.1
2. Or, the add-on is targeted on Revit 2020 (or a future release), and the desired TLS version is 1.0, 1.1, or 1.2