What are they

Since Power BI is a cloud service, it requires specific software to be able to access on-premise data sources. The software that allows this secure access to the data in an on-premise data source is the Data Gateway.

How do they work

It is a windows service running on a specific windows machine. The data gateway connects securely to the Power BI cloud service to the on-premise gateway. Requests for data from the Power BI service are passed to the gateway, which processes the queries and passes them to the data source. In turn, the data source processes the queries and returns the data requested. Next, the data gateway spools the data back to the Power BI service.

Security model used

Are they secure

**Requirements**

Minimum

* .NET Framework 4.7.2 (Gateway release December 2020 and earlier)
* .NET Framework 4.8 (Gateway release February 2021 and later)
* A 64-bit version of Windows 10 or a 64-bit version of Windows Server 2012 R2 with current TLS 1.2 and cipher suites
* 4-GB disk space for performance monitoring logs (in default configuration)

Recommended

* An 8-core CPU
* 8 GB of memory
* A 64-bit version of Windows Server 2012 R2 or later
* Solid-state drive (SSD) storage for spooling

Firewall Gateway ports

Gateway does not require any inbound ports to be open, it defaults to the outbound port of TCP 443 (default), 5672, 9350 and 9354 to communicate with the Azure Service Bus. Note the gateway can be forced to use HTTPS communication exclusively, in that case avoiding the use of IP addresses via both the UI and the configuration files directly but this may impair performance.

Other considerations

Recovery key that is used should be stored securely, so that if wanting to restore the data gateway this will make it much easier.

Installation Environment

* Gateways aren't supported on Server Core installations.
* Gateways aren't supported on Windows containers.
* The gateway can't be installed on a domain controller.
* Don't install a gateway on a computer, like a laptop, that might be turned off, asleep, or disconnected from the internet. The gateway can't run under any of those circumstances.

User account

* The user installing the gateway must be the admin of the gateway.
* If you're planning to use Windows authentication, make sure you install the gateway on a computer that's a member of the same Active Directory environment as the data sources.

If a gateway uses a wireless network, its performance might suffer.

If you use a virtualization layer for your virtual machine, performance might suffer or perform inconsistently. Therefore, we recommend setting the gateway on a wired device for the best network performance.

You could install other applications on the gateway machine, but these applications might degrade gateway performance. If you install other applications on the gateway machine, monitor the gateway closely to check if there's any resource contention.

You can install up to two gateways on a single computer: one in personal mode and the other in standard mode. An on-premises data gateway (personal mode) can be used only with Power BI. You can't have more than one gateway running in the same mode on the same computer.

The on-premises data gateway (standard mode) must be installed on a domain-joined machine with a trust relationship with the target domain.

When considering the specification of the machine which will be running the gateway, the hardware specification can impact the throughput of data via the gateway. As a result

The gateway software is updated regularly; a maintenance schedule should be planned to keep the gateway updated.

Reference - <https://learn.microsoft.com/en-us/data-integration/gateway/service-gateway-install>

**Install the standard gateway**

Best practices for installation of data gateways

<https://docs.microsoft.com/en-us/data-integration/gateway/>

<https://docs.microsoft.com/en-us/data-integration/gateway/service-gateway-onprem-indepth>

<https://docs.microsoft.com/en-gb/power-bi/connect-data/service-gateway-onprem>

<https://docs.microsoft.com/en-us/power-bi/connect-data/service-gateway-deployment-guidance>

<https://docs.microsoft.com/en-us/data-integration/gateway/service-gateway-monthly-updates>