Microsoft

Multiplexing—Overview

This brief applies to all Microsoft Licensing programs.

Contents

Summary

This brief explains how Multiplexing may impact the licensing needs of Microsoft customers. "Multiplexing" is when individuals use hardware or software to pool connections, reroute or indirectly access information, and/or reduce the number of devices or users that directly access or use a product. Multiplexing can also include reducing the number of devices or users a product directly manages.

Customers can use Multiplexing technologies to streamline workloads or reduce hardware and other costs. Microsoft's policies and licensing rules are not intended to prohibit the use of Multiplexing with Microsoft products, but rather to ensure that customers remain compliant with licensing when permitting indirect access to our products. As a licensing construct, Multiplexing rules protect against customers looking for ways to purchase fewer licenses than would otherwise be required to access a software or service. The most common form of Multiplexing is often thought of as "connection pooling", where many users are accessing an application through a single contact point. As technology in the world has advanced, there are many other forms of Multiplexing that have emerged, such as automated processes to migrate data, accessing applications indirectly, and more.
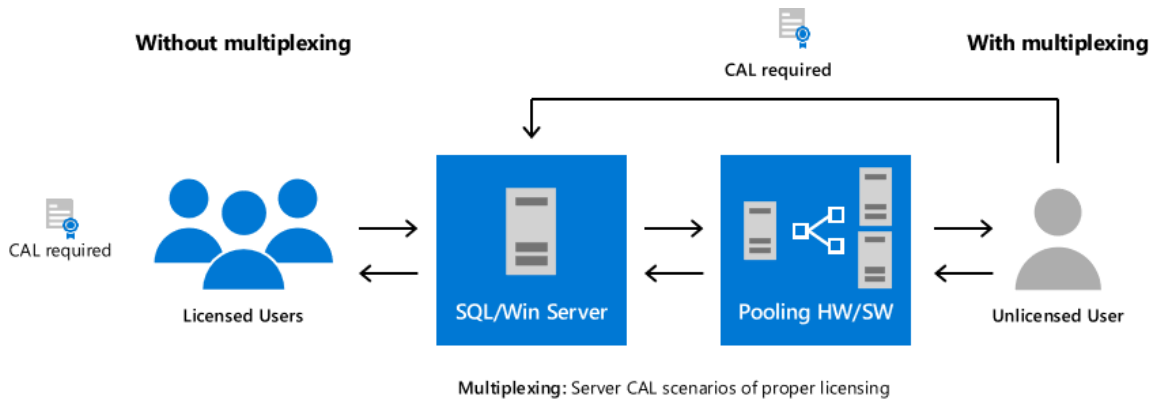
Multiplexing is an industry-wide challenge, and Microsoft is no exception. Microsoft offers one of the broadest portfolios of software and online services in the world that includes Dynamics 365, Power Platform and M365 Apps for Business. As all our products and services go through substantial growth and evolution, the Multiplexing topic becomes increasingly complex due to the exponential benefits when multiple products and services are used together.

In this brief we will cover the more commonly known Multiplexing scenarios with Microsoft SQL Server, Project Server, and Microsoft Azure DevOps Server. In addition to this, we will expand upon scenarios with Dynamics 365, Dataverse, and Power Platform. You can also find an abbreviated list of key definitions at the end of this document. The products described in this brief are not the only ones affected by potential Multiplexing scenarios and you will need to look at your situation directly to determine if additional licensing is required.

Details - Servers

Multiplexing does not reduce the number of Microsoft licenses required. Users and devices are always required to have the appropriate licenses, regardless of their direct or indirect connection to a product. For example, any user or device that accesses the server, files, data or content provided by the server that is made available through an automated process requires a Client Access License (CAL). Certain circumstances do not require CALs, and they are detailed later in this document. Generally, if files, data, or content are available because of a manual activity (a person uploading a file onto a server or emailing the file), a CAL is not required for users or devices accessing those manually transmitted files.

The following examples address specific products, but the same theory applies to other Microsoft services. Assume that the Windows Server operating system and Microsoft Exchange Server are the networking and messaging platforms, respectively.

Without multiplexing

CAL required

With multiplexing

CAL required

Licensed Users — SQL/Win Server — Pooling HW/SW — Unlicensed User

Multiplexing: Server CAL scenarios of proper licensing

Microsoft SQL Server

Figures 1, 2, and 3 illustrate representative Multiplexing scenarios and example licensing requirements for Microsoft SQL Server database software. (Note: Windows Server and Exchange Server CAL requirements apply for any access either direct or indirect to these servers.)
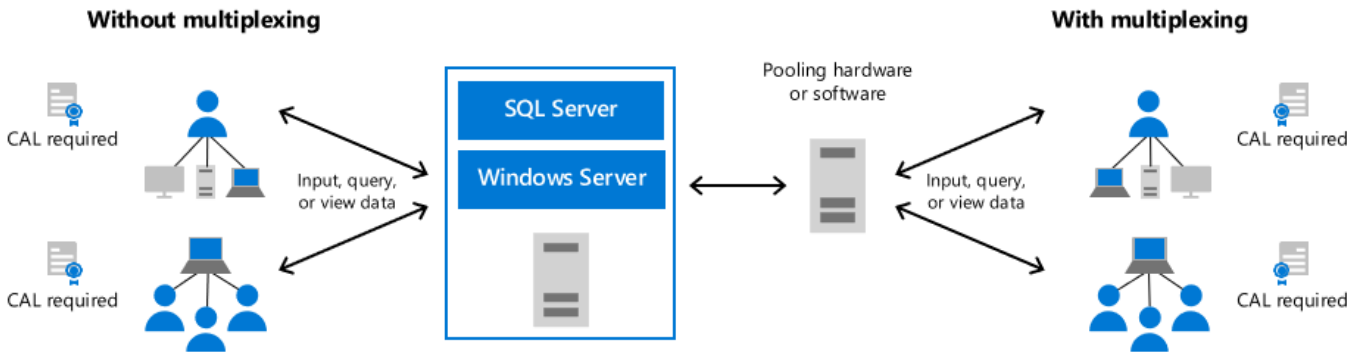

Without multiplexing

CAL required

Input, query, or view data

CAL required

SQL Server

Windows Server

Pooling hardware or software

With multiplexing

Input, query, or view data

CAL required

CAL required

Figure 1: Inputting, querying, or viewing data

SQL Server CALs are required for users who directly input into, query, or view data from a SQL Server database (left side of Figure 1). Similarly, SQL Server CALs are required for users or devices that input data into, query, or view data from a SQL Server database through a pooling device (right side of Figure 1). This includes users who view data through web-based applications or enter information into a database through an intermediary product. (**Note:** Customers can also license SQL Server on a per-core basis, thus negating any need for SQL Server CALs.)
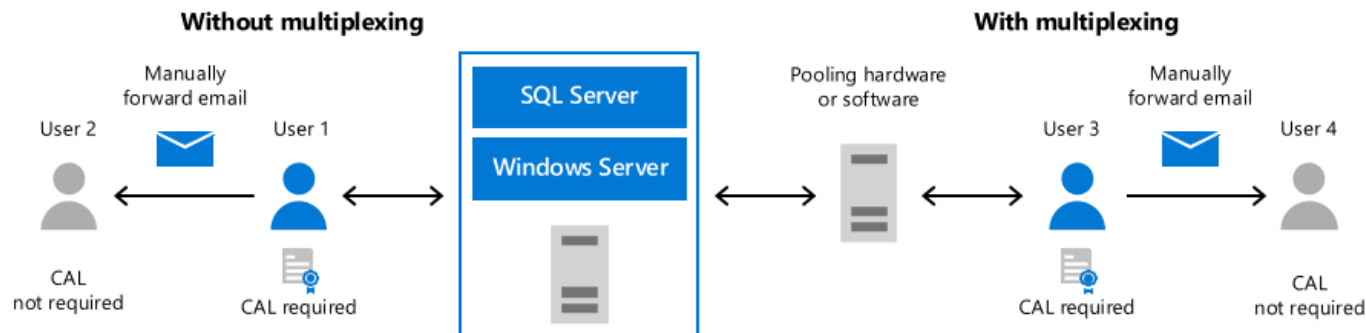
Figure 2: Messaging data

If a user (User 1 in Figure 2 above) retrieves data from SQL Server, that user requires a SQL Server CAL. If User 1 actively sends that data by email or other messaging technology to User 2; then User 2 does not require a SQL Server CAL. With Multiplexing, these rules do not change. User 3, who receives data through a pooling application, must similarly have a SQL Server CAL. If User 3 actively sends that data by email or other messaging technology to User 4, then User 4 does not require a SQL Server CAL.
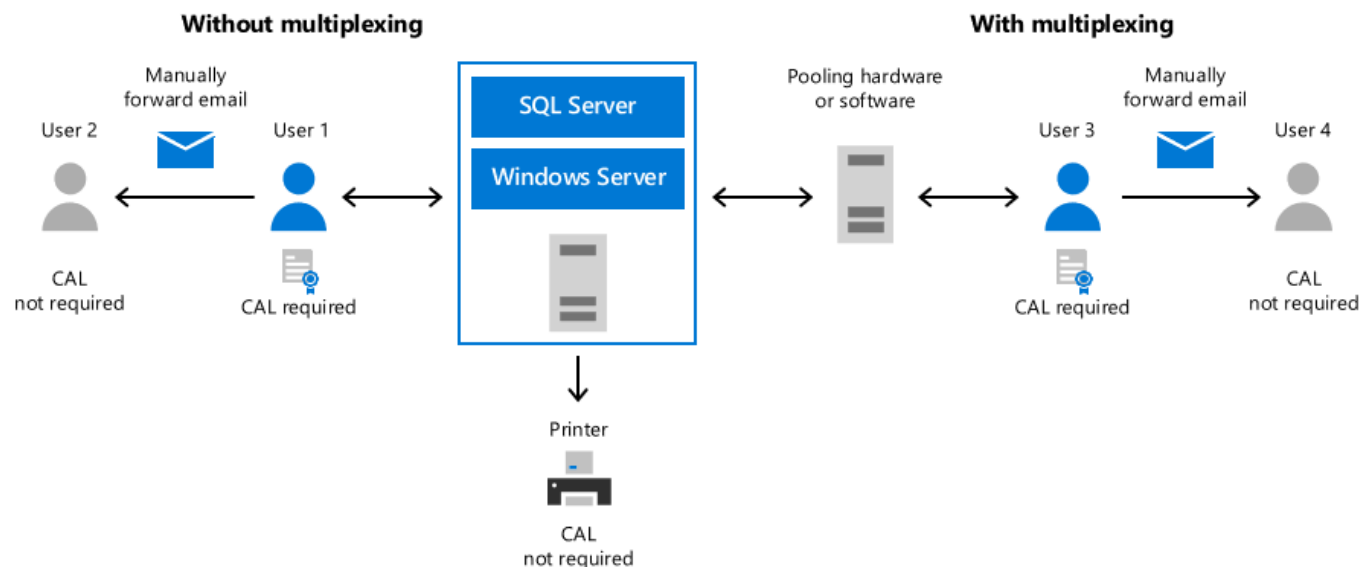
Figure 3: Hardcopy delivery of data

The paper distribution of data does not require SQL Server CALs for the recipients of the paper report. However, both User 1 and User 3 in the figure above receive data (directly or indirectly) from SQL Server and both require CALs. If each user prints the data and delivers it to another user (Users 2 and 4), these latter recipient users do not require a SQL Server CAL.

A printer connected directly to the server does not require a license to print data from the server, nor is a printer considered a Multiplexing device.

Project Server

Figure 4 illustrates some Multiplexing scenarios and licensing requirements for Project Server. (Note: Windows Server and SQL Server [if licensed Server/CAL] CAL requirements apply for any access either direct or indirect to these servers.)
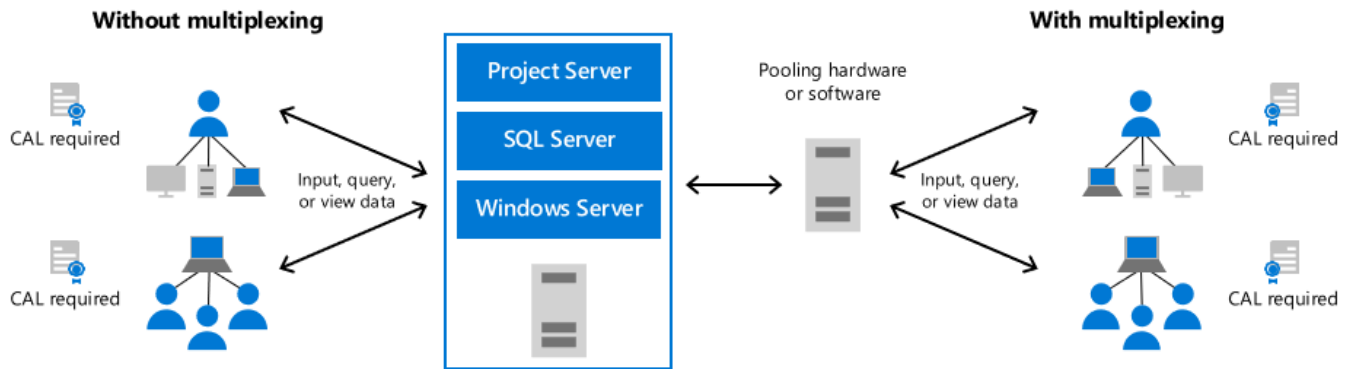

Figure 4: Basic Project Server configuration

Viewing or querying data from or entering data into Project Server through an intermediary Multiplexing application, which could include a web-based application, requires CALs for Project Server. Like SQL Server, the same CAL requirements apply for the messaging of data through email or paper distribution shown in the examples above.

Microsoft Azure DevOps Server

As with SQL Server and other products in the Microsoft server/CAL licensing model, applying Multiplexing rules to CAL requirements for Microsoft Azure DevOps Server depends on the degree of automation involved in content, file, or data accessibility and distribution. Any device/user that accesses or deploys files, content, and data that is made available in an automated way (for example, directly from a server or automatically posted to a server) requires a CAL. However, if the availability results from manual activity, such as a person loading files onto a server or emailing the files, a CAL is not required for users and/or devices accessing those manually posted or emailed files. The following examples illustrate the Azure DevOps Server CALs required. (The CAL requirements for other server products used with Azure DevOps Server still apply for any access either direct or indirect to the server.)

Example 1

An automated process is set up to load files from a server running Azure DevOps Server to a server farm, and then that server farm automatically loads those files onto desktops. Azure DevOps Server CALs requirement: Each server in the farm and each desktop/user require an Azure DevOps Server CAL because of a continuous automatic link back to Azure DevOps Server.

Example 2

A business decision maker (BDM) downloads a report generated by Azure DevOps Server that was posted automatically to a server. Azure DevOps Server CALs requirement: Each BDM requires an Azure DevOps Server CAL because he or she is receiving the direct benefit of the automation of Azure DevOps Server. Even though the BDM is reviewing a report posted to another server, he or she needs a CAL due to the directly realized benefit of the server's automatic posting.

For further information or questions, please consult the Product Terms.

Details – Dynamics 365, Power Platform, & Dataverse

As stated above, Multiplexing does not reduce the number of Microsoft licenses required.

Like server data, access to Dynamics 365 data through Dataverse typically requires the appropriate product license. There are, however, certain situations that do not require full licenses. Users that access or receive information from the server, files, data, or content provided by an automated process must always be appropriately licensed. There is no such thing as "unlicensed user access" and a Multiplexing setup *does not* reduce the number of licenses required to access a Dynamics 365 service, regardless of the pooling connection created. Any user or device that accesses the Dynamics 365 service—whether directly or indirectly—must be properly licensed.

Dynamics 365 licenses are required for users or devices that directly input, query, or view data from the Dynamics 365 service. Similarly, Dynamics 365 licenses are required for users or devices that input data into, query, or view data from the Dynamics 365 service through a pooling device.

Pooled connections use a non-interactive user account in Dynamics 365 that can access the system but only via the web service layer. Internal users and devices accessing Dynamics 365 data indirectly through a portal or via an API to a separate service such Microsoft Outlook must also be properly licensed, regardless of if they are set up as a Dynamics 365 user in the service, for example:

- Internal users and devices accessing Dynamics 365 restricted data indirectly through a Power Apps must still be properly licensed for Dynamics 365.

- Any user or device that accesses the service, files, data, or content provided by the service that is made available through an automated process requires a Dynamics 365 service license.

- The number of tiers of hardware or software between the Dynamics 365 service and the user or devices that ultimately use its data, services, or functionality does not affect the number of licenses required.

Note: Licensed users may manually rekey information (when coming from non-licensed users) into the Dynamics 365 service.

Multiplexing needs to be considered if you are moving data within Dynamics 365 through Power Automate or other automated means.

- If the data is within Dataverse, and as long as it is standard entity data, it can be accessed by any user with appropriate Dataverse licensing (either a Dynamics license or a Power Platform user license).

- If the data is in Dataverse and it is restricted entity data, then Multiplexing applies and the end users would need an appropriate Dynamics user license.

- If data is moved outside Dataverse via Power Automate, then users accessing the data would also need a Dynamics license.

The above applies because Power Automate is an automated process. E.g., End users accessing said data would need the appropriate licenses, whether the automated process moves restricted data outside Dataverse or if the data was never moved outside Dataverse.

How does Dynamics 365 leverage Dataverse & Power Apps?

Dynamics 365 customer engagement (CE) transactional apps (e.g. Dynamics 365 Marketing, Sales, Customer Service, Field Service) are natively built on the Power Platform, extensively leveraging Dataverse, Power Apps, and Power Automate. Therefore, each of these apps has the following features:

- Automatically deployed into a Power Platform environment

- The data from these apps are stored directly in Dataverse

- The app business logic exists in the Power Platform environment and is implemented directly into Dataverse

- The user interface is surfaced via Power Apps

Dynamics 365 ERP transactional apps (e.g. Dynamics 365 Finance, SCM, Talent) are not deployed natively in Dataverse and reside at least in part on other platforms (not Power Platform), which means the data, business logic, and user interface do not leverage Power Platform out of the box.
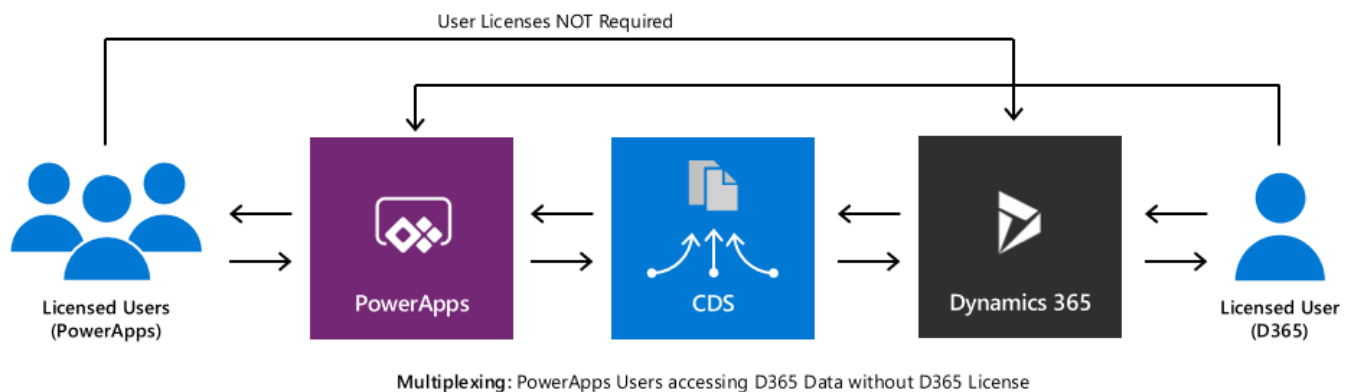
Common Scenarios

General Multiplexing

Scenario: User A is appropriately licensed and wants to distribute data to colleagues (unlicensed) and import the modified data back to the originating service.

Example 1

User A manually exports data from Dataverse and uploads to external storage location or sends data via email to colleagues. The colleagues consume/edit data. User A manually imports the data back to Dataverse.

Not Multiplexing: Since User A is manually performing all steps in the distribution of data, and they have the appropriate licenses, it does not matter of who they are sending data to.

Example 2

User A has Power Platform (or other automation) export data from Dataverse and uploads to external storage location or sends data via email to colleagues. The colleagues consume/edit data. Power Platform (or other automation) imports the modified data back to Dataverse.

Multiplexing: Since Power Platform (or other automation) is performing all the steps in data distribution, the end users should have the appropriate license to access the original data and import back the modified data.

Example 3

User A has Power Platform (or other automation) export data from Dataverse and uploads to external storage location or sends data via email to colleagues. Before the distribution of data, User A decides "Go/No-Go" and manually hits send/perform on Power Platform (or other automation) to complete task. The colleagues consume/edit data. Power Platform (or other automation) import data to Dataverse, before finalizing, User A decides "Go/No-Go" and manually hits send/perform on Power Platform (or other automation) to import the data back to Dataverse.

Multiplexing: Even though User A is performing a manual step in the process, they are not performing all steps and there is an automation step. Since there is an automation step, the end users accessing data need the appropriate licenses.

Dynamics Data & Dataverse
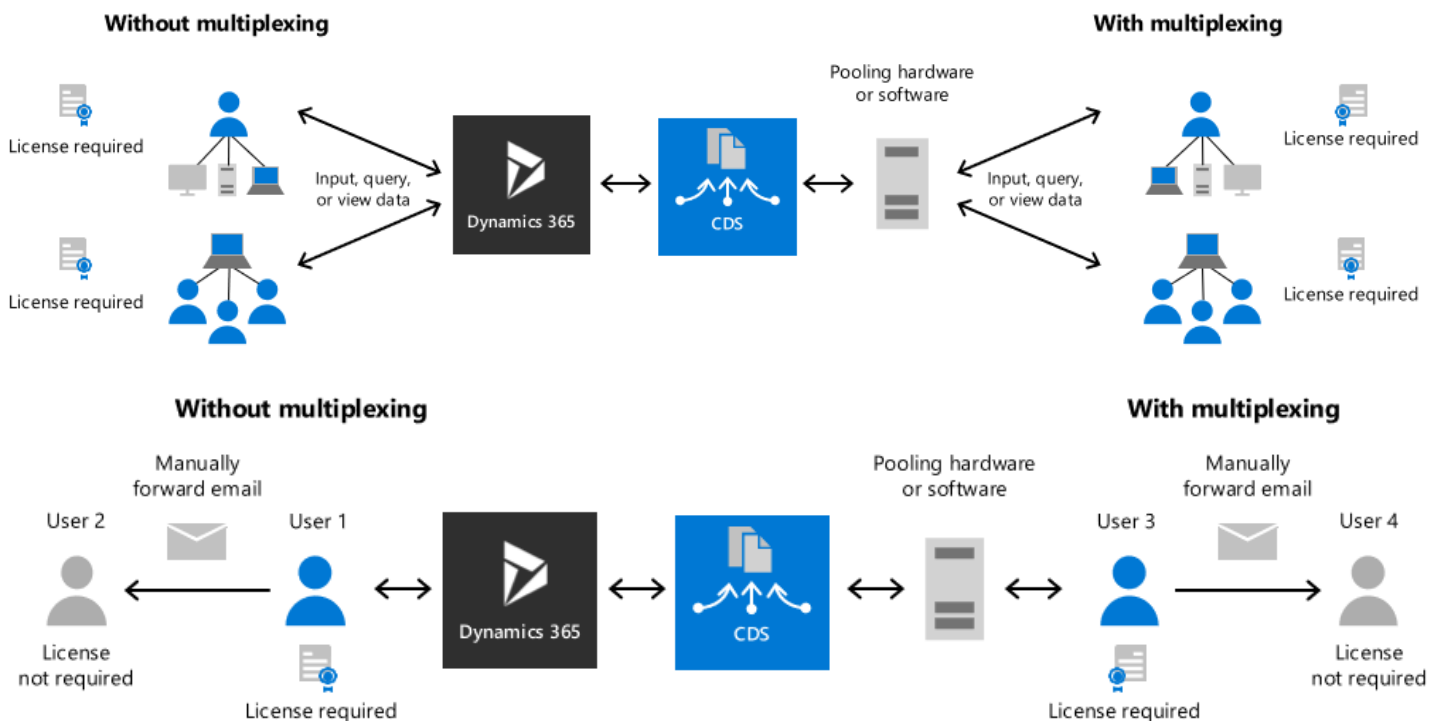
Example 1 - First party application and service access to data within Dataverse

There are many scenarios where Dynamics data in Dataverse is created with application business logic, or where updates to Dataverse data will cause business logic in applications to execute. Customers must enable both cross-

Dynamics application access to data and Power Platform access to data while still ensuring the proper licensing of application or user access is maintained.

Example 2 - Exporting of business application data outside of Dataverse

Customers can export data outside Dataverse. However, Multiplexing policies state that customers who are accessing Dataverse data, even when it is outside of Microsoft products, still require appropriate Microsoft licensing. If the data exported is through an automated means, CALs will be required for appropriate access.

Example 3 - Third party integrations into Microsoft applications and services

Third party services can integrate into Microsoft services, creating significant value for customers, however, this can potentially cause significant workloads onto Microsoft systems. Multiplexing policies state that all users of the integrating service must also be licensed for the Microsoft service that they are integrated with, even if those users never use the Microsoft service directly.

Example 4 - Using first party non-user-based services to avoid first party user licensing

Multiplexing only applies to access-based licensing, which is a significant benefit that metered, core-based and other non-user-aligned licensing models offer. When user-based licensing models and non-user-aligned models co-exist, their interactions can be complex and can introduce additional licensing challenges for customers.
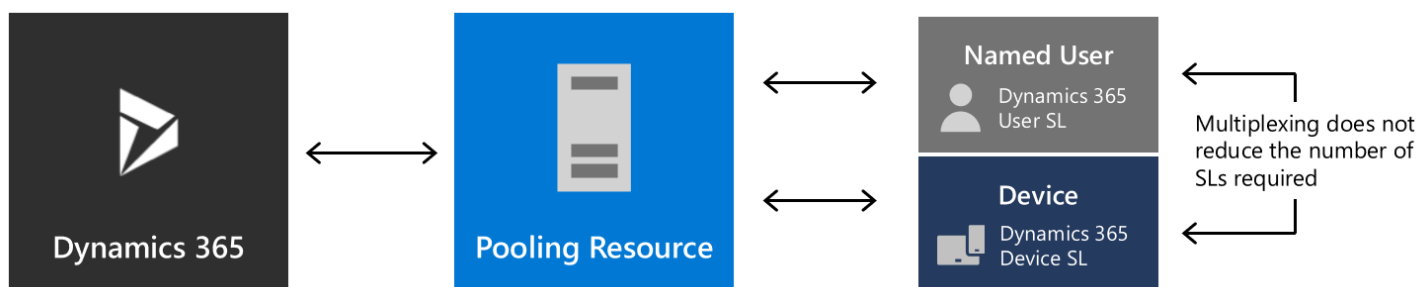
Microsoft Dynamics 365 & Power Platform

Example 1: Customer uses Power Platform to solve a pain point, then buys Dynamics 365 and wants to deploy it in the same environment.

Power Platform can create significant advantages in productivity for customers. Occasionally customers prefer to "lock down" their Dynamics 365 environment to scenarios directly related to it – and therefore deploy more standalone scenarios in a different environment.

When deploying in the same environment, Multiplexing rules will still apply even with the Power Platform solution deployed and it's critical that each user or device has the proper Dynamics 365 access licenses.

Example 2: Customer wants to extend their Dynamics 365 scenarios via Power Platform in the same environment.

This scenario is extremely common for customers who want to use PowerApps to extend Dynamics 365 for "light" Dynamics scenarios that may have traditionally been covered in a Team Member scenario. For example, Firstline workers may want to use Power Platform for lead generation or customer support. With the added complexity of this workforce historically being unlicensed, introducing new automated solutions often causes additional licensing and scenario questions.

Multiplexing rules will still apply, and it is critical that each user or solution has the proper Power Platform license and Dynamics 365 access license depending on the solution deployed.

Example 3: Customer wants to extend their Dynamics 365 scenarios via Power Platform in the same environment and they want to create a separate Power Platform environment for standalone scenarios.

This is also a very common scenario – Dynamics 365 customers who want to do Example 2 usually (often model-driven apps) also want to create non-related solutions (often canvas-driven apps) that they'd like to keep separate for a variety of reasons (e.g. clean data, security/access control, etc.).

As with Examples 1 and 2, the same Multiplexing rules will still apply depending on the Power Platform solution deployed and each user or device must have the proper Dynamics 365 access licenses.
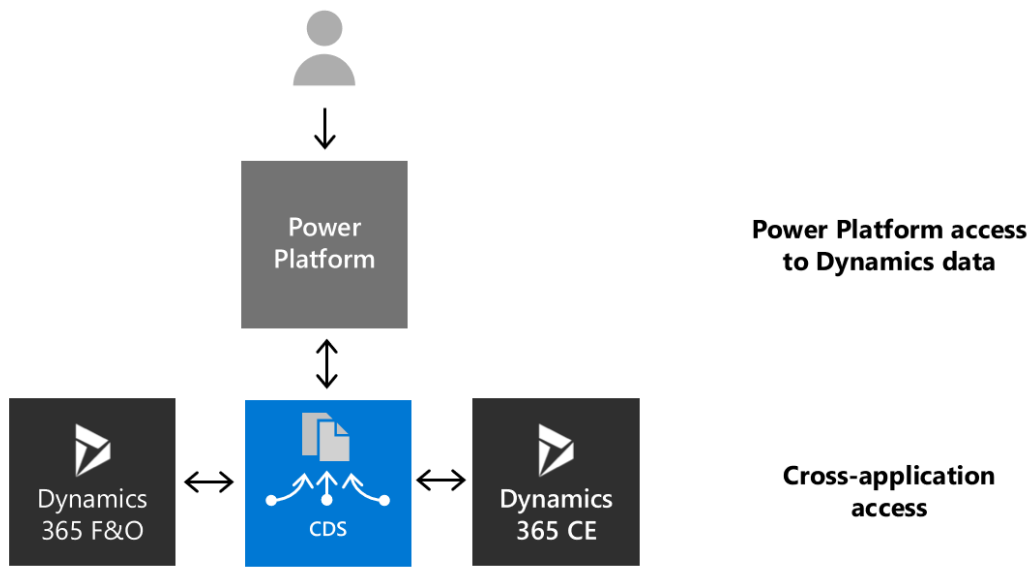
Frequently asked questions

Q1: Do these rules apply to only the products listed in this brief or to all products licensed under a Microsoft agreement?

A: Multiplexing is a Universal License Term and, therefore, applies to all Microsoft products. The products described in this brief are not the only ones affected by potential Multiplexing scenarios.

Q2: Has Microsoft changed its position on Multiplexing?

A: No. This brief is simply to help clarify the License Terms already in place.

Q3: What is the difference between a device licensed with a device CAL and a Multiplexing device?

A: A device assigned a device CAL can be used by any user to access instances of the server software on the licensed server. A Multiplexing device pools connection from other devices but does not avoid the need for those other devices to be licensed.

Q4: Does having a chain of Multiplexing devices change licensing requirements?

A: No. Multiplexing does not reduce the number of CALs required, regardless of how many Multiplexing devices are between the user/device and the server.

Q5: *Does the Multiplexing device require a CAL?*

> **A:** No. However, a CAL is required if the Multiplexing device is also directly accessed by a user (not an administrator).

Q6: *Are Multiplexing rules different for Windows Server CALs?*

> **A:** No. Like the SQL Server examples previously detailed, CALs are required for access to Windows Server whether direct or indirect. Access, whether to the Windows Server software or through Multiplexing hardware or software, requires a Windows Server CAL.

Q7: *I have Frontline workers who input data into on-prem servers. Those data are then copied into Dataverse and accessed by other users with D365 licenses. The other users who have D365 licenses use those data for sales pipelines, quotes, etc. Do the Frontline workers need D365 licenses? Even though they are not leveraging Dynamics and unaware those data are landing there?*

> **A:** Yes. Any user causing updates to a D365 application (indirectly or directly) needs to be properly licensed as if they are making those updates directly in the application. This is Multiplexing as the on-prem servers are acting as a pooling device to input data into D365 via Dataverse.

Q8: *I built a Power App to access Dataverse and access Project data to build reports for my team. I noticed that there is also restricted entity D365 data in Dataverse I have access to. Can I use my Power App to pull these additional data as well?*

> **A:** No. You may only access, view, read, write restricted entity data from or to an application that you are properly licensed for; i.e. if you have the appropriate D365 license, you may access D365 data. Project for project. Etc.

Q9: *I have multiple franchisees that take payment from customers and will go through several layers of mediation software. The transaction is then validated and imported into Dynamics as a Sales Order. This is not in real time, but once per week. Our corporate office is fully licensed with D365 and will be capturing and storing the data. Do we need additional licenses for the franchisees to avoid Multiplexing?*

> **A:** Yes. Since these franchisees do not require direct access to D365, one possible solution is to purchase Dynamics 365 Operations - Order Lines. The requirements for this solution are that it is an indirect transaction that utilizes an OData or DIXF integration and only updates data in the tables designated as qualifying for Operations - Order Lines. You can see more details in the D365 Licensing Guide.

Q10: *Where can I find more information about Multiplexing?*

> **A:** The Dynamics 365 & Power Platform Licensing Guides contain further details and information around Multiplexing. You can also view Microsoft's Multiplexing terms in the Product Terms & Online Service Terms.

Definitions

Multiplexing

Multiplexing can be defined as hardware or software that is used to pool connections, reroute or indirectly access information, or reduce the number of devices or users that directly access or use the Product. It can also be classified as a way to reduce the number of OSEs, devices, or users the Product directly manages.

A key thing to note, sometimes referred to as "pooling", Multiplexing *does not* reduce the number of licenses of any type that a Customer needs for their solutions.

Power Platform

The Power Platform is the collective group of Power Apps, Power BI, and Power Automate to customize, extend, and build all the apps you need for your business and unlock the potential of Office 365 and Dynamics 365. The Power Platform is made possible by Microsoft Dataverse.

Power Apps

Power Apps is the user interface system for the Power Platform. It connects natively to Dataverse data sources allowing for in-context interaction with Dataverse data without the use of an external connector. Power Apps applications and components are also packaged as Dataverse Solutions and can be transported between Power Platform environments and redeployed.

Dynamics 365

Microsoft Dynamics 365 (D365) is a cloud-based business applications platform that combines components of Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP), along with productivity applications and artificial intelligence tools.

Dataverse

Microsoft Dataverse is a business application platform that easily structures data and business logic to support interconnected applications and processes. As such, Dataverse enables organizations to securely store, manage, and act on data used by business applications.