SYSPRO Services

SYSPRO 8

Reference Guide

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SYSPRO

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Exploring

Where it fits in?

SYSPRO Services provide a communication interface between various applications (e.g. ***SYSPRO Espresso***, ***SYSPRO Reporting Services***, ***SYSPRO Workflow Services***, ***SYSPRO Harmony***, ***SYSPRO Point of Sale***, etc).

These services typically run in the background, so you don't interact with them directly. However, if a service is not running, then applications that rely on that service won't function properly.

Navigation

Viewing services from within Windows

- Load the **Administrative Tools** menu of the **Windows Control Panel** and select the **Services** application.

  This displays information about all services on your computer, including SYSPRO-specific services.

Default install locations

- During the installation of SYSPRO services, you can choose the destination folder.

  By default, 64-bit services are installed to: `C:\Program Files\SYSPRO\{Name-of-service}\`.

Terminology

Business object

Business objects are portions of SYSPRO business logic that can be called programmatically from outside of SYSPRO, passed instructions in XML, and return the results in XML (updating the database, if required).

They are COM-based components that allow third party developers to access the rich functionality of the SYSPRO core product. Each third party application typically uses a number of e.net Business Objects that are licensed at functional area level. Functional areas are merely a grouping of Business Objects.

COM

Component Object Model, or COM, is a Microsoft standard used for applications to communicate with one another.

Connected Services

SYSPRO's Connected Services consist of multiple capabilities that provide integration touch points between SYSPRO and external parties.

Existing Connected Services include:

- e.net Solutions
- SYSPRO Supply Chain Portal (available from ***SYSPRO 8 2019 R2***)
- Tax Connector - Avalara (available from ***SYSPRO 8 2021 R1***)
- Tax Connector - Vertex (available from ***SYSPRO 8 2021 R1***)
- Data Connector - OData (available from ***SYSPRO 8 2021 R2***)

DCOM

Distributed Component Object Model, or DCOM, is a set of components that assist in the communication between a client and server.

Endpoint

The endpoint is a device or node that is connected to the local area network or wide area network and accepts communications back and forth across the network.

REST

Representation State Transfer (REST) provides a structured and accessible way of accessing a service. It does not consume as much bandwidth as Simple Object Access Protocol (SOAP) and is more suitable for use over the Internet.

It uses a simple URL (instead of XML) to obtain information in a form that's easy to parse within the language you need for your application.

Rule

Rules consist of conditions and actions.

A condition is evaluated and (if true) the **SYSPRO Rules Engine** initiates the defined actions.

Rule action

Actions are executed when the conditions of a rule are met.

> **FOR EXAMPLE:**
>
> These actions range from displaying a Harmony message, to creating a log file in a specific location, or tracking the history of a specific database column.

Rule condition

Conditions act as triggers that initiate a specific action according to how they have been configured.

They let you fine-tune a rule with the records to be excluded and when certain actions must be performed (i.e. they act as a set of conditional expressions that must be met before any rule actions are performed).

Rule target

A rule target indicates the database table to which a rule applies, as well as the operation on that table (e.g. All, Insert, Update or Delete).

Targets can be set as company-specific or system-wide.

Rule variable

Variables are used to define or manipulate any values required in the conditions or actions of a rule. The different property packets of a variable include the following:

Variable	Description
New	Variables that begin with this property packet contain the new values of a record *after* an insert or update occurs. They are only available for **Insert** or **Update** type operations.
Old	Variables that begin with this property packet contain the previous value of a record *before* an update or delete occurs. They are only available for **Update** or **Delete** type operations.
Current	Variables that begin with this property packet contain the current value of a record.  This is useful if the record has changed since the **SYSPRO 8 Rules Data Service** flagged the transaction. Most of the time these values are the same as the `New` variables. We recommend using the `New` property packet, as `Current` variables have a slight overhead.

Variable	Description
Global	Variables that begin with this property packet are values related to the transaction, such as: ▪ SchemaName ▪ TableName ▪ Operation ▪ ChangedFields ▪ TransactionDate ▪ RuleId ▪ LevelId ▪ LevelValue ▪ MessageId ▪ BatchIndex ▪ SystemWideDb
Var	Variables that begin with this property packet are custom variables that have been defined in the **Variables** pane of the **Rules Administrator** program.

Run Time Product

SYSPRO has commercial arrangements with several Independent Software Vendors (ISVs). The products that ISVs develop require integration into SYSPRO, often using ***e.net Solutions*** to call e.net business objects.

Run Time Product licenses are issued for this purpose as they allow third-party products to connect seamlessly to e.net Solutions at a SYSPRO site (if they've selected to license the Run Time Product) without any further e.net licensing implications.

While the **Run Time Product** license doesn't require any additional configuration or assignment of licenses at the site, the SYSPRO site must have licensed the underlying required module.

> **FOR EXAMPLE:**
>
> If the Run Time Product accesses the Accounts Receivable Query Functional Area, then the SYSPRO site must have also licensed the ***Accounts Receivable*** module (which would inevitably be the case otherwise there wouldn't be any Accounts Receivable data).

Run Time Products were typically allowed open access to any e.net functional area (i.e. **Standard** Run Time license). However, due to functional enhancements from ***SYSPRO 8 2021 R1*** onwards, only **Managed** Run Time licenses now apply.

This means that a limited number of functional areas are accessible by the Run Time Products.

The Run Time Products definition file lists the e.net functional areas required and the license generated and applied at the SYSPRO site ensures that only these functional areas are licensed.

You can check the type of access for your Run Time Product, by viewing the **Run Time Products** pane of the **Company Maintenance** program (indicated in the **Access** column).

SOAP

Simple Object Access Protocol (SOAP) is a method of calling a service if you are using managed code. It has a strong support for data types. It requires writing or using a provided server program (to serve data) and a client program (to request data).

It is an XML-based messaging protocol that allows programs which are running on different operating systems to communicate using Hypertext Transfer Protocol (HTTP) or Simple Mail Transfer Protocol (SMTP). It defines a standard set of rules for structuring messages that can be used for simple one-way messaging.

Sychronous/asynchronous

The *synchronous* method calls the service and waits for a response before allowing execution to continue.

The *asynchronous* method can initially call a service method and then continue executing other tasks while the service processes the method. When the method completes, a call back event on the client is fired and the client application can then proceed with processing the output result.

TCP

Transmission Control Protocol, or TCP, is one of the core protocols used to enable communication between computers on a network.

WCF

Windows Communication Foundation (WCF) is a technology that forms part of the Microsoft .NET Framework. It provides a set of APIs (Application Programming Interface) for building connected, service-oriented applications. It was designed using SOA (Service-Oriented Architecture) principles to support distributed computing where services have remote consumers.

Web services

A web service is any piece of software that makes itself available over the internet and uses a standardized XML messaging system. XML is used to encode all communications to a web service (e.g. a client invokes a web service by sending an XML message, then waits for a corresponding XML response).

Using

Tasks

Check whether a service is running

1. Open the **Services** facility, viewing by large icons (*Control Panel* > *System and Security* *Administrative Tools* > *Services*).
2. Locate the service you want to review.
3. Review the entry in the **Status** column.

   A status of **Running** indicates the service is running.

Creating a user to run on local machine

We recommend that you run Document Flow Manager with its own operating system user. The reason for this is that the services do not function correctly if configured to run as the local system account. It is also easier to configure permissions against a defined user than compromise one that was originally created to serve a different purpose.

If the DFM Folder Poller service only needs to poll folders on the SYSPRO application server, then you only need to create a local user account. If it needs to poll folders on other machines (or the Email Folder Poller service is also being used) then you must create the user as a domain user.

1. Open the **Computer Management** facility, viewing by large icons (*Control Panel* > *System and Security* > *Administrative Tools* > *Computer Management*).
2. Navigate to the **Local Users and Groups** folder.
3. Right-click on the **User** folder and select **New User** from the menu..
4. Enter the required user details.

   We recommend that you uncheck the option: **User must change password at next logon** and enable the option: **Password never expires**. Otherwise, when you need to change the password the DFM services will stop functioning and the password against the services will need to be changed manually.
5. Exit the **Computer Management** facility.

Starting and stopping a service manually

Ensure that **SQL Server** is running before starting any of the services, as the service attempts to log in to SYSPRO to ensure that the company license information includes the ***e.net System Manager*** and ***Document Flow Manager***. This will not be possible if SQL Server is not running.

1. Open the **Services** facility, viewing by large icons (*Control Panel* > *System and Security* *Administrative Tools* > *Services*).
2. Locate the service you want to review.
3. Review the entry in the **Status** column.
    - If the status is **Running**, it indicates that service is running. You can select the **Stop Service** icon to stop the service.
    - If the status is not running, nothing is displayed in the **Status** column. You can select the **Start Service** icon to start the service.

Configuring a user to run as a service

1. Open the **Local Security Policy** facility, viewing by large icons (*Control Panel* > *System and Security* > *Administrative Tools* > *Computer Management*).
2. Expand the **Local Policies** folder.
3. Select the **User Rights Assignment** sub-folder.
4. Right-click on the **Log on as a service** policy.
5. Select **Properties** from the menu.
6. Locate the user you want to configure.
7. Configure the user to run as a service.
    - Select **Add User or Group**.
    - Select **Locations**.
    - Select your local machine name and then select **OK**.
    - Enter the name of the DFM user that you created on your local machine.
    - Select **Check Names** to confirm that the user name entered is valid.
8. Exit the **Local Security Policy** facility.

Referencing

Summary list of services

Service	SYSPRO application affected
SYSPRO 8 Active Directory Sync Service	▪ SYSPRO 8
SYSPRO 8 Analytics	▪ SYSPRO Analytics
SYSPRO Application Gateway	▪ SYSPRO Web UI (Avanti) ▪ SYSPRO Embedded Analytics
SYSPRO Avanti Web Service	▪ SYSPRO Web UI (Avanti)
SYSPRO 8 Avanti Initialization Service	▪ SYSPRO Web UI (Avanti)
SYSPRO 8 Cognitive Service	▪ AP Invoice Automation
SYSPRO 8 Communications Service	▪ Client connection to server
SYSPRO 8 Document Flow Manager Folder Poller	▪ Document Flow Manager
SYSPRO 8 Document Flow Manager Queue Poller	▪ Document Flow Manager
SYSPRO 8 e.net Communications Load Balancer	▪ SYSPRO 8 ▪ SYSPRO Web UI (Avanti) ▪ SYSPRO Server-side Reporting ▪ SYSPRO Web-based Product Configurator ▪ Executive Dashboard ▪ SYSPRO Workflow Services ▪ SYSPRO e.net Diagnostics ▪ SYSPRO Point of Sale ▪ SYSPRO Harmony ▪ SYSPRO Espresso ▪ SYSPRO Machine Learning ▪ Any external or third party e.net application accessing SYSPRO data
SYSPRO 8 Espresso Service	▪ SYSPRO Espresso

Service	SYSPRO application affected
SYSPRO 8 Espresso Notification Service	▪ SYSPRO Espresso
SYSPRO 8 Harmony API Service	▪ SYSPRO Harmony
SYSPRO 8 Harmony Service	▪ SYSPRO Harmony
SYSPRO 8 Machine Learning	▪ SYSPRO Web UI (Avanti) ▪ AI Machine Learning ▪ SYSPRO Rules Engine
SYSPRO OData Service	▪ Data Connector - OData
SYSPRO 8 Point of Sale e.net Communication Service	▪ SYSPRO Point of Sale
SYSPRO 8 Point of Sale Services	▪ SYSPRO Point of Sale
SYSPRO 8 Point of Sale Utility Service	▪ SYSPRO Point of Sale
SYSPRO 8 Reporting Host Service	▪ Server-side Printing
SYSPRO 8 Rules Data Service	▪ SYSPRO Harmony ▪ SYSPRO Rules Engine
SYSPRO 8 Rules Engine Service	▪ SYSPRO Harmony ▪ SYSPRO Rules Engine
SYSPRO 8 Service Upgrade Manager	▪ All services (except Document Flow Manager, SYSPRO Analytics and web services) ▪ SYSPRO 8 ▪ SYSPRO Web UI (Avanti) ▪ SYSPRO Espresso ▪ SYSPRO Harmony
SYSPRO 8 Web Service	▪ SYSPRO e.net Diagnostics ▪ Any external or third party e.net application accessing SYSPRO data
SYSPRO 8 Workflow Service	▪ SYSPRO Workflow Services

SYSPRO 8 Active Directory Sync Service

Exploring

Where it fits in?

The **SYSPRO 8 Active Directory Sync Service** is used to integrate **Microsoft Active Directory (AD)** to read all users contained within the `SYSPRO.ERP` security group.

The service updates the AdmSsoUsers table, which updates the operators listed in the **Active Directory User Management** program.

The service also provides an audit trail of all updates that occur. This information is stored in the AdmSsoUserSyncLog table of your system-wide database.

The service is used by **SSO using Active Directory** and comprises the following:

- Main service
- Receiver

Main service

The main service is responsible for the synchronization of components according to the configured synchronization schedule.

The following functions are performed by this component:

- Read configuration files
- Interrogate **Microsoft Active Directory (AD)**
- Generate XML for passing into the AdmSsoUsers table
- Call relevant SYSPRO business objects

Benefits include:

- The service is fault tolerant and allows a custom retry timer if a fault is detected.
- The service allows custom configuration, if required, which takes precedence and remains in force when updating the service.
- The service doesn't need to be restarted when creating custom configuration.
- The service has a delayed start which results in improved machine start times.

Receiver

The receiver is the listening component of the service which is responsible for listening for external synchronization requests.

It is activated by the **Sync Now** option in the **Active Directory User Management** program.

Benefits include:

- Synchronization between SYSPRO and **Microsoft Active Directory (AD)** can be performed at any time.
- The service has a delayed start (30 seconds after system start) which results in improved machine start times.

Navigation

- The default location for this service is:

  Program Files > SYSPRO > SYSPRO 8 Active Directory Sync Service

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

The **SYSPRO 8 Active Directory Sync Service** must be run as a named user that has `READ` permission to access **Microsoft Active Directory (AD)**.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.
- The **SYSPRO 8 Active Directory Sync Service** must be run as a named user that has `READ` permission to access **Microsoft Active Directory (AD)**.
- This service can be installed on any machine that has access to **Microsoft Active Directory (AD)** and the **SYSPRO 8 e.net Communications Load Balancer** service.
- The **SYSPRO 8 Active Directory Sync Service** can only be installed once per machine.
- Each security group in **Microsoft Active Directory (AD)** requires its own **SYSPRO 8 Active Directory Sync Service** to be installed.

Solving

Debugging and Diagnostics

Service Config.exe file

The `SYSPRO.AD.Sync.Service.exe.config` file is located in the same folder in which the service is installed.

Avoid editing this file as it could potentially break the service at the next update.

If you need to make changes to the file, we suggest the following alternative options:

- Uninstall the service
- Create a `custom.config` file

To create a `custom.config` file, make a copy of the `SYSPRO.AD.Sync.Service.exe.config` file and rename it to `custom.config`.

The `custom.config` file can then contain the entry you want to modify and the startup node. Any entries not contained in the `custom.config` file are retrieved from the original `SYSPRO.AD.Sync.Service.exe.config` file.

You should ideally stop the service while you do this, otherwise the configurations will be picked up at the next poll interval.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

However, this depends on the logging level defined in the `Service.config` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

FAQs

Operators types and settings

What is the difference between a service operator and a normal operator?

Service operators are signed in by a *SYSPRO service* and are used for any functionality that is required by the service to obtain information about SYSPRO.

Normal operators sign in to SYSPRO with a username and password. They access certain programs and functions to perform specific tasks.

> **FOR EXAMPLE:**
>
> the __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** to obtain information about the companies in an environment, but it isn't used by the business object to retrieve the data for a report, as that would be the specific normal operator that submits the request for the report.

What permissions are required for the service user?

The **SYSPRO 8 Active Directory Sync Service** must be run as a named user that has READ permission to access **Microsoft Active Directory (AD)**.

What are service operators and what are they used for?

Service operators are created by SYSPRO and are used by SYSPRO services to obtain information about SYSPRO.

The service operator code starts with a double underscore to differentiate them from other operators. A default company code must be assigned to each service operator within the **Operator Maintenance** program, as we use the company code to log in the service operator via e.net .

The following is a list of service operators and their function within SYSPRO:

- The __ADSYNC service operator is used by the **SYSPRO 8 Active Directory Sync Service** to push **Microsoft Active Directory (AD)** information into SYSPRO for Active Directory managed operators.
- The __DFM service operator is used by the **SYSPRO 8 Document Flow Manager Folder Poller** and **SYSPRO 8 Document Flow Manager Queue Poller** to monitor folders, send files to the queue and process files.
- The __ESP service operator is used by the following services:
  - **SYSPRO 8 Espresso Service**,
  - **SYSPRO 8 Espresso Notification Service**,
  - **SYSPRO Espresso Development Plugin** and the

- **SYSPRO Avanti Web Service** to obtain information for the password reset and forgot password functionality.
- The __POS service operator is used by the **SYSPRO 8 Point of Sale Services** to determine and validate the setup options and required credentials at start up, update the required databases and post to SYSPRO (if the Point of Sale operator doesn't have access to SYSPRO).
- The __RUL service operator is used by the **SYSPRO 8 Rules Engine Service** and the **SYSPRO 8 Rules Data Service**.
- The __SA service operator is used by the **SYSPRO 8 Analytics** service to make business object calls.
- The __SAI service operator is used by the **SYSPRO 8 Machine Learning** service.
- The __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** and the **SYSPRO 8 Cognitive Service** to manage client-side report printing.

- Only specific services use service operators to log in via e.net.
- SYSPRO creates service operators by copying the ADMIN operator. If the ADMIN operator record doesn't exist (i.e. it may have been deleted), then the current operator is used when saving system details from the **Setup Options** program.

Microsoft Active Directory (AD)

What attributes are updated in Microsoft Active Directory (AD)?

None. The synchronization between SYSPRO and **Microsoft Active Directory (AD)** is a one-way service.

SYSPRO operators defined as **AD Managed** are managed by **Microsoft Active Directory (AD)** and updated accordingly in SYSPRO automatically when the **SYSPRO 8 Active Directory Sync Service** runs.

The following operator attributes are managed by **Microsoft Active Directory (AD)** and cannot be maintained in SYSPRO for Active Directory operators:

- Operator name
- Operator email address
- Network user name
- Operator status (i.e. ACTIVE, DISABLED or REMOVED)

Can I rename the security group in Microsoft Active Directory (AD)?

You can rename the `SYSPRO.ERP` security group in **Microsoft Active Directory (AD)** by adding a suffix to the group name.

> **FOR EXAMPLE:**
>
> `SYSPRO.ERP.ACCOUNTS`

When you install the **SYSPRO 8 Active Directory Sync Service** (using the **SYSPRO Installer** app) ensure that you enter this suffix at the **Security Group Suffix** parameter field.

If required, you can update the suffix after installing the **SYSPRO 8 Active Directory Sync Service**:

1. Create a `custom.config` file:

   To create a `custom.config` file, make a copy of the `SYSPRO.AD.Sync.Service.exe.config` file and rename it to `custom.config`.

   The `custom.config` file can then contain the entry you want to modify and the startup node. Any entries not contained in the `custom.config` file are retrieved from the original `SYSPRO.AD.Sync.Service.exe.config` file.

   

   You should ideally stop the service while you do this, otherwise the configurations will be picked up at the next poll interval.

2. Update the `ADSecurityGroup` key's value with the new security group name.

Synchronization

What is the default synchronization schedule?

The `PollInterval` is set to default every `12 hours`, but can be changed if required.

The minimum setting is `0.30` minutes.

What variables are passed to the email templates when synchronization occurs?

If you have configured receiving emails in the **System Setup** program (**Review email required**, **Failure email required**, **Success email required**) the following variables are passed to the email templates when the Microsoft Active Directory (AD) synchronization takes place:

- `$SsoUserCount$`

  Count of users added for review.

- `$SsoOpChanged$`

  Count of operators with changes (e.g. email, name).

- `$SsoOpActivated$`

  Count of operators whose status has changed to active from disabled or removed.

- `$SsoOpDisabled$`

- Count of operators whose status has changed to disabled.
- `$SsoOpRemoved$`

  Count of operators whose status has changed to removed.
- `$FailedMsg$`

  If the synchronization fails, then this contains the message as written to the log file.

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
`LoadBalancerAddress`	This specifies the URL for the **SYSPRO 8 e.net Communications Load Balancer** service, as defined when the service is installed in the **SYSPRO Installer**.
`ReceiverEndpoint`	This specifies the service's endpoint (as defined when the service is installed in the **SYSPRO Installer**) so that SYSPRO can call the service.
`instancekey`	This specifies the base directory instance on the SYSPRO application server, as defined when the service is installed in the **SYSPRO Installer**.
`languageCode`	This specifies the SYSPRO language code.
`PollInterval`	This determines how often the service will pull information from **Microsoft Active Directory (AD)**. The default is `12 hours`. The minimum setting is `0.30 minutes`.
`FailedRetryInterval`	This determines how often the service will try to post again after a failure. The default is `1 hour`. The minimum setting is `0.30 minutes`.
`LogLevel`	This enables debug logging for the service in the Microsoft **DebugView** tool and outputs logging to the `logfile.txt`: ▪ `N` = None (Default) ▪ `I` = Information ▪ `E` = Errors Only

Key	Description
`EventLoggingRequired`	This enables additional logging for the service and outputs the log entries to the `EventLog`. If this key is disabled when the service starts, normal default entries are written. However, if this key is enabled, then entries are written to a dedicated section in the `EventLog`. The level of detail output depends on the logging level defined against the `LogLevel` key. The detailed logging includes the full FQDN (Fully Qualified Domain Name) for all processed uses and failed objects. Therefore, it is not recommended to set the `LogLevel` as `I`, as that would result in the entries being verbose including the FQDN. This entry is only applicable in the `custom.config` file. Therefore, attempting to enable this key in the standard `SYSPRO.AD.Sync.Service.exe.config` file has no effect.
`ADSecurityGroup`	This indicates the **Microsoft Active Directory (AD)** security group (set to `SYSPRO.ERP` as the default, but can be customized using custom configuration).

SYSPRO 8 Analytics

Exploring

Where it fits in?

SYSPRO 8 Analytics includes an Administration Service and a Business Layer Service.

The **SYSPRO Analytics 8.0 Business Layer Service** contains the business layer logic and provides remoting services to SYSPRO Analytics 8.0 clients.

The **SYSPRO Analytics 8.0 Administration Service** starts and stops the Business Layer Service, checks to see if the server is available, and provides an update mechanism. This service also checks if the client and server assemblies are the same, to identify if an update is required.

This service is used by:

- SYSPRO Analytics

Navigation

- The default location for this service is:

  Program Files (x86) > *SYSPRO* > *SYSPRO 8 Analytics*

Starting

Prerequisites

Requirements to perform business analysis on your SYSPRO data:

- SQL Server Analysis Services
- SQL Server Integration Services
- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

Requirements to perform business analysis on your SYSPRO data on a client workstation, using SYSPRO's viewer:

- Microsoft Core XML Services (MSXML) 6.0
- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- OLEDB data providers for SQL Server Analysis Services
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Configuring

1. Load SYSPRO and navigate to the **SYSPRO Analytics Setup** program.

   When loading ***SYSPRO Analytics*** for the first time you will be prompted to create the SYSPRO Analytics Master Database.

   You cannot perform any tasks until you have created this database, as it stores the Analytics setup information and contains all the information about Analytics that is not site-specific.

   This database can be accessed from either the client or the server, and its implementation ensures easier control and updating of the data.
2. Select the **SYSPRO Analytics Servers** option from the **Setup Tasks** folder.
3. Enter the server details:

Field	Description
Server Details	
How should the SYSPRO Analytics client connect	*Local connection* This is used for testing or demonstration purposes only. In a live environment, you must select Remote via Web service. *Remote via Web service* If you use a remote server, then you need to install the SYSPRO Analytics Server component onto the SQL server that you are going use as the SYSPRO Analytics server.
Remote Server Settings	
Server	This is the name of the server where the SQL Server and SYSPRO Analytics Server components are installed (if you are running instances of SQL server). We recommend that you select NET.TCP as your preferred method, as HTTP can cause errors when creating a site or job.
Server connection method	NET.TCP (Recommended)
Administration port	The port used by SYSPRO Analytics Administration Service (defaults to 30200).
Business Layer port	The port used by SYSPRO Analytics Business Service (defaults to 30201).
Administration Web service path	This path is generated automatically according to your selections.
Test Administration Layer connection	This tests the connection to the remote server. A successful connection is made if the server is accessible and if the SYSPRO Analytics Administration Layer service is running on this server.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `BusinessChannel.xml` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROAnalytics` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

Error messages

You have tried to create a channel to a service that does not support .Net Framing

Cause

You have selected a server connection method of NET.TCP, but the `BusinessChannel.xml` configuration file indicates a connection method of HTTP.

FAQs

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- SYSPRO creates service operators by copying the ADMIN operator. If the ADMIN operator record doesn't exist (i.e. it may have been deleted), then the current operator is used when saving system details from the **Setup Options** program.

What is the difference between a service operator and a normal operator?

Service operators are signed in by a *SYSPRO service* and are used for any functionality that is required by the service to obtain information about SYSPRO.

Normal operators sign in to SYSPRO with a username and password. They access certain programs and functions to perform specific tasks.

FOR EXAMPLE:

the __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** to obtain information about the companies in an environment, but it isn't used by the business object to retrieve the data for a report, as that would be the specific normal operator that submits the request for the report.

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Setting	Description
AdminPort	The port used by SYSPRO Analytics Administration Service (defaults to 30200).
BusinessPort	The port used by SYSPRO Analytics Business Service (defaults to 30201).
ConnectionMethod	The connection method for the SYSPRO Analytics WCF services (defaults to http).
ReceiveTimeout	
SendTimeout	
SqlCommandTimeout	The length of time, in seconds before a SQL command will time out. The default is 300.

SYSPRO Application Gateway

Exploring

Where it fits in?

The **SYSPRO Application Gateway** service works as a load balancer to locate the least utilized Web UI Container in ***SYSPRO Web UI (Avanti)***, as well as to route SYSPRO network traffic to the required services.

Where is it used?

Currently, the **SYSPRO Application Gateway** service is used by the following:

- SYSPRO Web UI (Avanti)

  The scalability and performance of the ***SYSPRO Web UI (Avanti)*** offering has been bolstered by the release of the **SYSPRO Application Gateway** service that, together with **Microsoft Windows** containers, allows a much larger number of users to run on a single application server.

  When users interact with the SYSPRO Web UI (using Windows containers) the network traffic is routed via the **SYSPRO Application Gateway**.

  This service then detects the least loaded Web UI Container and sends a message to the **SYSPRO 8 Avanti Initialization Service** residing within the selected container. This, in turn, instantiates a Web UI session, just the same as the non-containerized architecture.

- SYSPRO Embedded Analytics

  The **SYSPRO Application Gateway** ensures that any request within SYSPRO to display SYSPRO Embedded Analytics dashboards is communicated through this service.

  In addition, this service enables the ***SYSPRO Web UI (Avanti)*** to be run in HTTPS when accessing SYSPRO Embedded Analytics dashboards. The reason for this is that, as you can't mix HTTP and HTTPS content in a web client, any analytical data requested needs to be provided over an HTTPS connection for security purposes.

Benefits

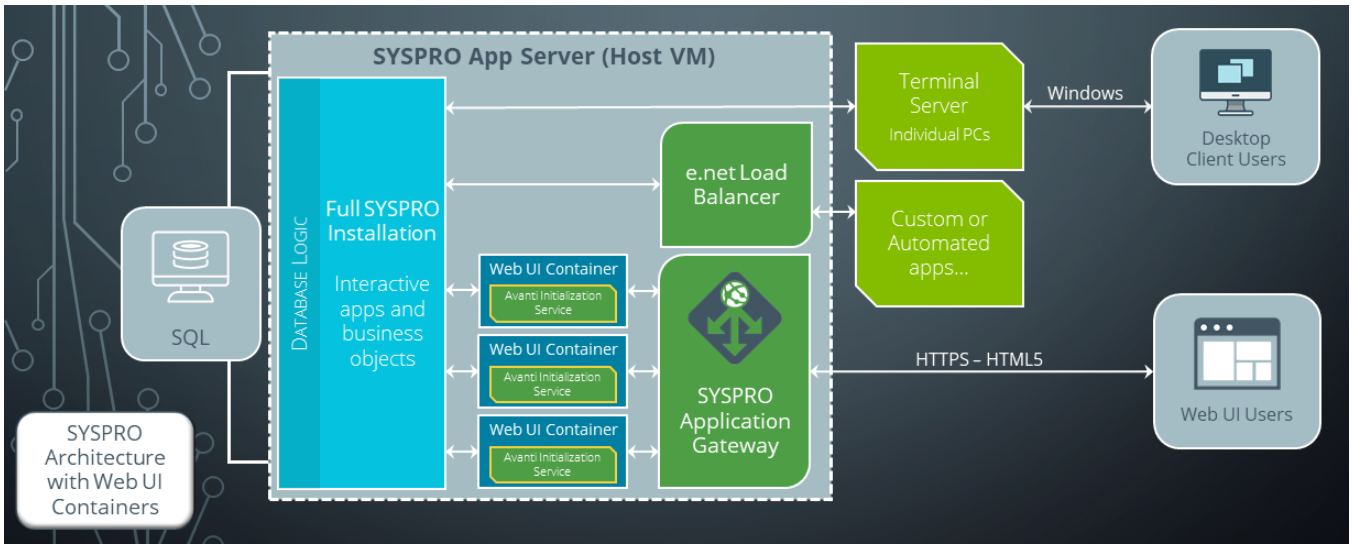
- **Load balancing**

  Incoming traffic is distributed evenly among the different servers to prevent any single server from becoming overloaded. In the event that a server fails completely, other servers can step up to handle the traffic.

Architecture: SYSPRO Web UI (Avanti)

Client-server architecture with Web UI containers

Some of the services have been deliberately excluded from this diagram for simplicity.



There are no changes to the way the SYSPRO Installation (including hotfixes) is applied to the SYSPRO Application server when using containers, with the exception of the **SYSPRO 8 Avanti Initialization Service** (which should instead be installed to the SYSPRO root folder):

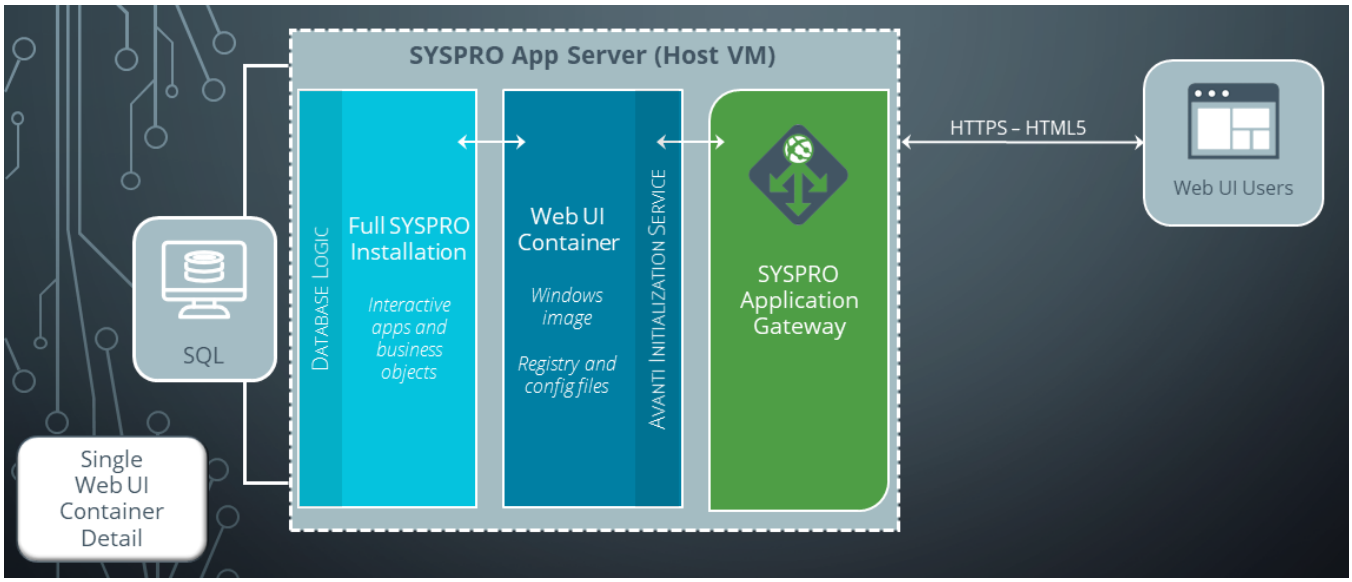
- Each container runs software by mapping (i.e. mounting) to folders on the host VM.
- When users interact with the SYSPRO Web UI, the network traffic is routed via the **SYSPRO Application Gateway** service.
- The **SYSPRO Application Gateway** contains a load balancer that locates the least loaded Web UI Container and brokers the browser access to that container. Note that each Web UI Container can support many Web UI components.
- The **SYSPRO 8 Avanti Initialization Service** (running inside each container) loads an instance of the Web UI component (as normal) which in turn communicates with the interactive app.

This has the advantage that each container has its own set of resources that are being consumed by the Web UI components.

The containers provide isolation from one group of Web UI components to another, allowing a much larger number of Web UI components to be run concurrently on the same underlying SYSPRO Application Server.

Therefore, instead of being limited to 30-35 users, you can have a much larger number of SYSPRO Web UI sessions running on a single app server, both reliably and with good performance.

Single Web UI Container Detail



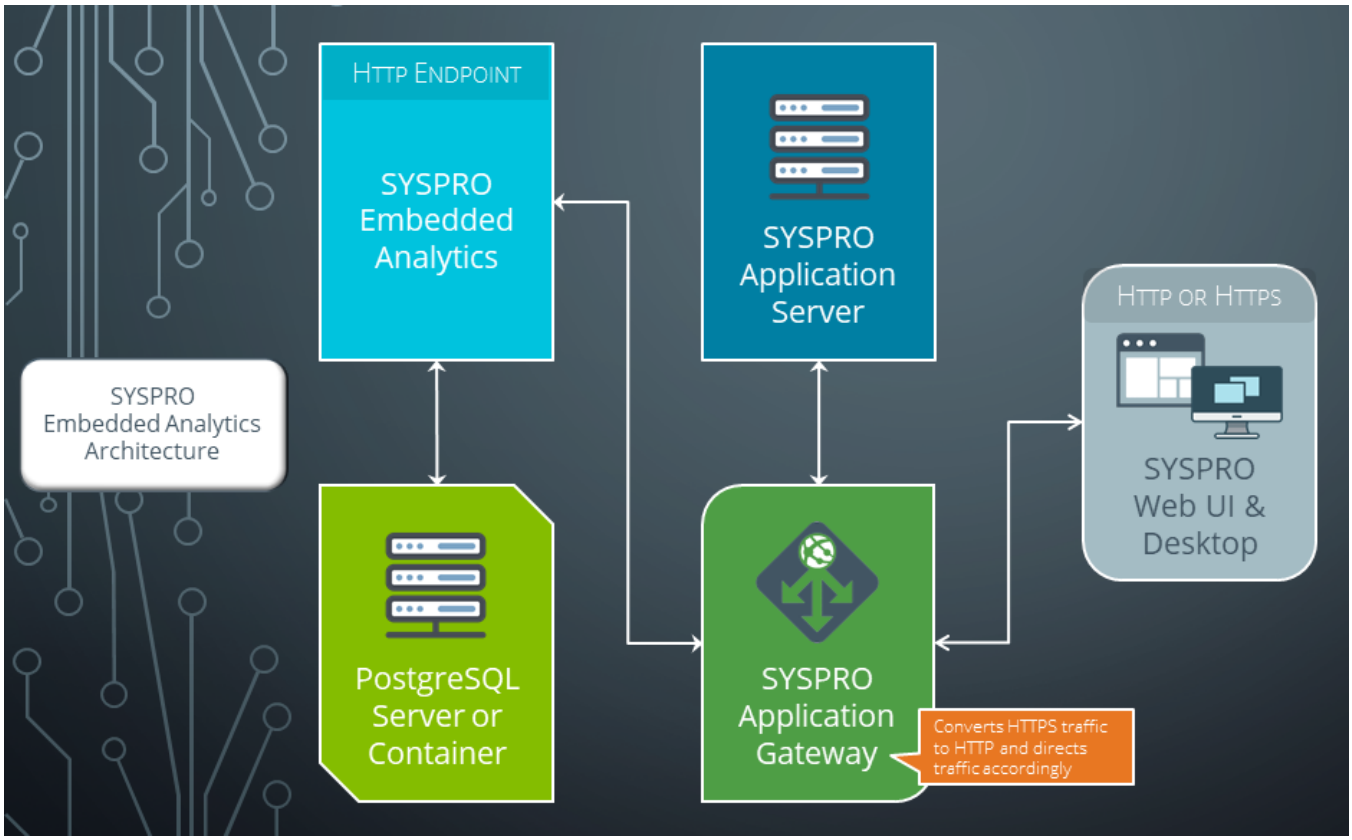
On a site with a large number of users, you may have as many as 20 or more of these containers.

This diagram shows a single container that will be used to host Web UI components:

- A Web UI container is created by using a special Windows container image and applying configuration changes to it from within.
- When a Web UI container is deployed at a site, the parameters (e.g. registry entries relating to the location of the SYSPRO installation) are dynamically injected into the container.
- In addition, the **SYSPRO 8 Avanti Initialization Service** is started within the container, ready for users to connect and run the SYSPRO Web UI.

> This only applies if the **SYSPRO 8 Avanti Initialization Service** is installed under the SYSPRO root folder.
>
> Best practice recommendation:
>
> `C:\SYSPRO\Services\SYSPRO Avanti Initialization Service`
>
> Where `C:\SYSPRO` indicates the SYSPRO root, under which the core SYSPRO programs and screen sets reside.

Architecture: SYSPRO Embedded Analytics



This diagram depicts the components and services used within SYSPRO Embedded Analytics:

- When a SYSPRO operator accesses the SYSPRO Embedded Analytics module, they are directed to the **SYSPRO Application Gateway** service. This includes activities such as:
  - Viewing dashboards
  - Designing dashboards
  - Configuring SYSPRO Embedded Analytics
  - Generating user access tokens to authenticate users
  - Querying existing dashboards when designing user interfaces
- The **SYSPRO Application Gateway** performs two functions:
  - It converts any HTTPS traffic to HTTP and then directs the user through to Embedded Analytics.

    Note that an SSL certificate is required if converting from HTTPS.
  - It abstracts away the actual endpoint for SYSPRO Embedded Analytics to ensure security (i.e. the endpoint is not visible outside of the organization).

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *Application Gateway*

Terminology

Windows Container

Each container is like a mini-virtual machine, without many of the overheads of a traditional VM.

A container image is a static, lightweight, standalone and executable package of software that includes everything needed to run an application:

- Executable code
- Runtime
- System tools
- System libraries
- Settings

This enables it to run an isolated process on information technology (IT) infrastructure.

Related Information

Overview topic

SYSPRO Services

Starting

Prerequisites

- Microsoft .NET Desktop Runtime 6

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.
- Ensure that the machine on which you install this service can reach (i.e. communicate with) any service for which the **SYSPRO Application Gateway** is required.

Solving

Debugging and Diagnostics

Service Settings

The **SYSPRO Application Gateway** service stores its settings withing the following files:

- `appsettings.json` - located in the applications' installation folder: *Program Files* > *SYSPRO* > *Application Gateway*.
- `appsettings.reverseProxy.json` - located in the `%ProgramData%\SYSPRO\Application.Gateway` folder.

> It is not recommended to edit any shipped configuration files as it could potentially break your SYSPRO Environment at the next update.
>
> You can however, edit or create custom configuration files to support certain changes.

The **SYSPRO Application Gateway** only supports one configuration section to manage the logging. Therefore, to change logging settings or enable custom logging, proceed as follows:

1. Create a file named `appsettings.custom.json` in the `%ProgramData%\SYSPRO\Application.Gateway` folder.
2. Copy the **Logging** section from the standard `appsettings.json` into the custom file you just created.
3. Change the logging level defined as required:
    - None
    - Critical
    - Error
    - Warning
    - Information
    - Debug
    - Trace

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROGW` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

FAQs

How does the SYSPRO Application Gateway work with the Web UI?

When users interact with the SYSPRO Web UI (using Windows containers) the network traffic is routed via the **SYSPRO Application Gateway**.

This service then detects the least loaded Web UI Container and sends a message to the **SYSPRO 8 Avanti Initialization Service** residing within the selected container. This, in turn, instantiates a Web UI session, just the same as the non-containerized architecture.

The SYSPRO installation (including hotfixes) resides on the underlying host computer (or host VM).

The advantages of this are that there is only a single SYSPRO installed instance, resulting in a simple hotfix process and a common `\Work` and `\Base` folder structure.

How does the SYSPRO Application Gateway work with Embedded Analytics?

The **SYSPRO Application Gateway** ensures that any request within SYSPRO to display SYSPRO Embedded Analytics dashboards is communicated through this service.

In addition, this service enables the ***SYSPRO Web UI (Avanti)*** to be run in HTTPS when accessing SYSPRO Embedded Analytics dashboards. The reason for this is that, as you can't mix HTTP and HTTPS content in a web client, any analytical data requested needs to be provided over an HTTPS connection for security purposes.

SYSPRO Avanti Web Service

Exploring

Where it fits in?

This is a web service that hosts the ***SYSPRO Web UI (Avanti)*** web site for remote accessing.

It handles the communication between the web browser and SYSPRO (for Avanti to generate user interfaces for screens) and also manages user logins.

This service is used by:

- SYSPRO Web UI (Avanti)

Navigation

- The default location for this service is:

  inetpub > *wwwroot* > *SYSPROAvanti*

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 Server
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.
- SYSPRO 8 Avanti Initialization Service connection
- Internet Information Services (IIS) 7.0 Core Web Engine Feature
- Internet Information Services (IIS) 7.0 World Wide Web Publishing Feature
- Internet Information Services (IIS) WebSocket Protocol Feature

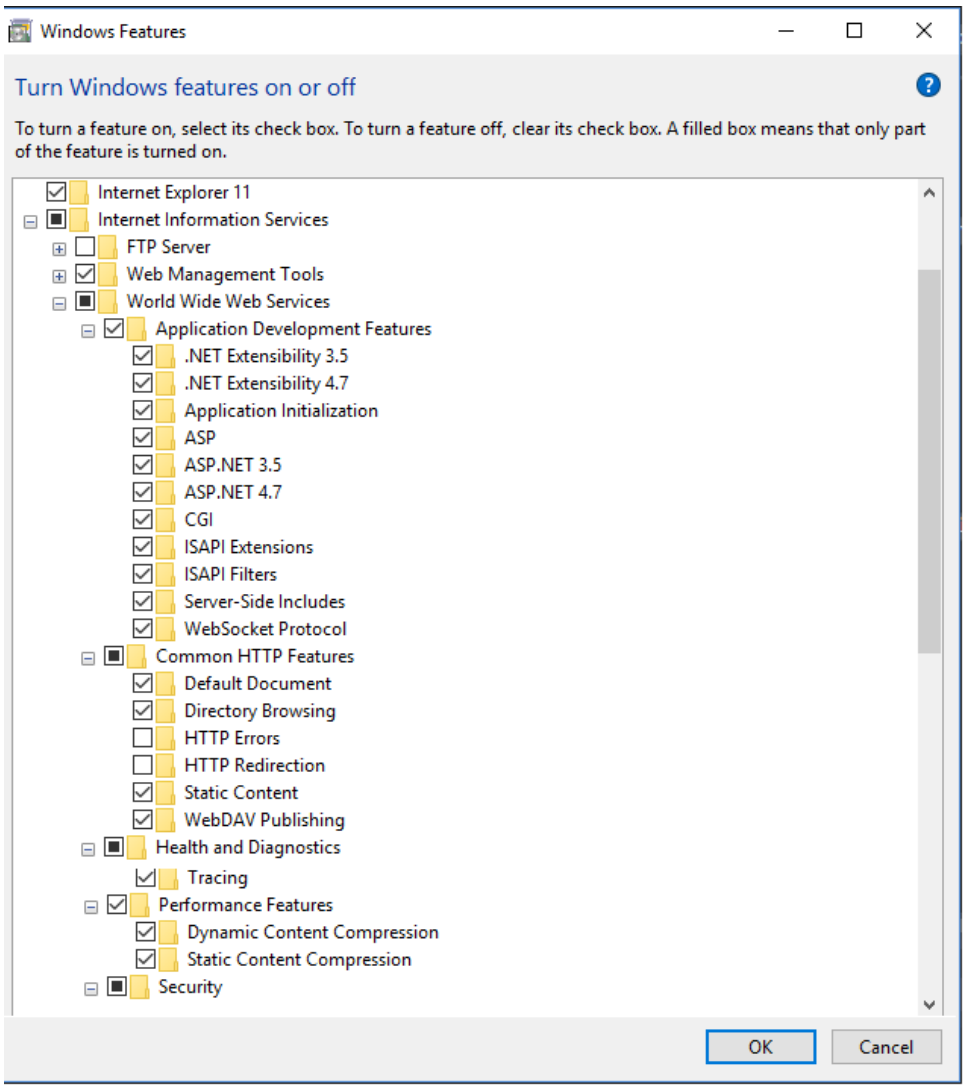
We recommend that you use **Windows Server 2019** (or higher) when running ***SYSPRO Web UI (Avanti)***.

The following technology is also required when using more than 30 instances of the ***SYSPRO Web UI (Avanti)*** - as defined against the **MAXIMUM NUMBER OF INSTANCES ALLOWED** setup option (*Setup Options* > *System Setup* > *System-Wide Personalization*):

- Windows Server 2022: Datacenter Edition
- SYSPRO Application Gateway (Container Solution)

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.
- This service should be installed on a web server that is accessible to any client with web browsers used for Avanti.
- IIS must be installed along with ASP.NET development features (as illustrated):



Configuring

Setup Options

The **Setup Options** program lets you configure how SYSPRO behaves across all modules. These settings can affect processing within this program.

E.Net Service Details System Setup

Setup Options > *System Setup* > *E.Net Service Details*

- The ports and the machine name for the **SYSPRO 8 e.net Communications Load Balancer** must be configured correctly for Avanti.

Connectivity System Setup

Setup Options > *System Setup* > *Connectivity*

- The Avanti url must match the entry at the **AVANTI WEBSITE ADDRESS** field (e.g. on a local machine it should be `http://192.168.5.16/sysproavanti/`, where `192.168.5.16` indicates the IP address of the machine where ***SYSPRO Web UI (Avanti)*** is installed).

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `web.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROAIS` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

Error messages

HTTP Error 500.19 - Internal Server Error

Synopsis

This (and similar errors) often states that *The requested page cannot be accessed because the related configuration data for the page is invalid*.

Cause

These errors occur when there is a problem reading the configuration file for the web server or web application.

Solution

Verify the configuration settings in **System Setup**, in particular at the **E.net services** tab.

FAQs

What are service operators and what are they used for?

Service operators are created by SYSPRO and are used by SYSPRO services to obtain information about SYSPRO.

The service operator code starts with a double underscore to differentiate them from other operators. A default company code must be assigned to each service operator within the **Operator Maintenance** program, as we use the company code to log in the service operator via e.net .

The following is a list of service operators and their function within SYSPRO:

- The __ADSYNC service operator is used by the **SYSPRO 8 Active Directory Sync Service** to push **Microsoft Active Directory (AD)** information into SYSPRO for Active Directory managed operators.
- The __DFM service operator is used by the **SYSPRO 8 Document Flow Manager Folder Poller** and **SYSPRO 8 Document Flow Manager Queue Poller** to monitor folders, send files to the queue and process files.
- The __ESP service operator is used by the following services:
  - **SYSPRO 8 Espresso Service**,
  - **SYSPRO 8 Espresso Notification Service**,
  - **SYSPRO Espresso Development Plugin** and the
  - **SYSPRO Avanti Web Service** to obtain information for the password reset and forgot password functionality.
- The __POS service operator is used by the **SYSPRO 8 Point of Sale Services** to determine and validate the setup options and required credentials at start up, update the required databases and post to SYSPRO (if the Point of Sale operator doesn't have access to SYSPRO).
- The __RUL service operator is used by the **SYSPRO 8 Rules Engine Service** and the **SYSPRO 8 Rules Data Service**.
- The __SA service operator is used by the **SYSPRO 8 Analytics** service to make business object calls.
- The __SAI service operator is used by the **SYSPRO 8 Machine Learning** service.
- The __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** and the **SYSPRO 8 Cognitive Service** to manage client-side report printing.

- Only specific services use service operators to log in via e.net.
- SYSPRO creates service operators by copying the ADMIN operator. If the ADMIN operator record doesn't exist (i.e. it may have been deleted), then the current operator is used when saving system details from the **Setup Options** program.

What is the difference between a service operator and a normal operator?

Service operators are signed in by a *SYSPRO service* and are used for any functionality that is required by the service to obtain information about SYSPRO.

Normal operators sign in to SYSPRO with a username and password. They access certain programs and functions to perform specific tasks.

> **FOR EXAMPLE:**
>
> the __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** to obtain information about the companies in an environment, but it isn't used by the business object to retrieve the data for a report, as that would be the specific normal operator that submits the request for the report.

SYSPRO 8 Avanti Initialization Service

Exploring

Where it fits in?

This Windows service is responsible for starting the `SYSPRO.exe` process on the SYSPRO Application server, together with a number of other SYSPRO-specific functions, such as accessing the file system on the application server and controlling authentication when logging into SYSPRO.

This service is used by:

- SYSPRO Web UI (Avanti)

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO Avanti Initialization Service*

Starting

Prerequisites

This service must be installed on the same application server as the ***SYSPRO 8*** Server.

- Microsoft .NET Framework 4.8
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

The following technology is also required when using more than 30 instances of the ***SYSPRO Web UI (Avanti)*** - as defined against the **MAXIMUM NUMBER OF INSTANCES ALLOWED** setup option (*Setup Options* > *System Setup* > *System-Wide Personalization*):

- Windows Server 2022: Datacenter Edition
- SYSPRO Application Gateway (Container Solution)

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPROInitializationHostService.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROAIS` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

SYSPRO 8 Communications Service

Exploring

Where it fits in?

This service allows for client/server communication (i.e. between the **SYSPRO Application server** and **SYSPRO clients**). This service replaced `CCITCP2` in ***SYSPRO 7 Update 1***.

This service is used by:

- Client connection to server

Navigation

- The default location for this service is:

  Program Files > SYSPRO > SYSPRO 8 Communications Service

Starting

Prerequisites

This service must be installed on the same application server as the ***SYSPRO 8*** Server.

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPROCOMMSService.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROCOMMS` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
baseaddress	This is the template base address used by the service. For `REST` and `SOAP` communication, the schema must be left as `http://` even if a different binding is used as the service will configure this automatically.
DetailedLog	When set to true the service will output a detailed log file to the temp folder of the machine on which the service is installed.
serviceserversoapbinding	The communication binding for the service to use for `SOAP` communication
serviceclientsoapbinding	
serviceserversoapport	This is the port that the service will use to host the `SOAP` endpoint. If set, `SOAP` communication must be performed using an address that includes the port number (e.g. `http://localhost:{PortNumber}/SYSPROWCFService/Soap`).
serviceclientsoapport	
servicesettingssoapport	This is the port used by the service to communicate settings with clients
serviceserveraddress	
expirytimeout	
ClientSettingsProvider.ServiceUri	
reliableSessionValue	Indicates if reliable session is turned on. When changing this, you must also update the `reliableSession` variable on the `ServerBinding` and `ClientBinding` nodes.

Key	Description
use64bitsyspro	

DFM Folder Poller service

Exploring

Where it fits in?

This service monitors specified folders and uses the contract details to determine if the files in the folders should be sent to the DFM queue.

This service is used by:

- Document Flow Manager

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *Document Flow Manager Folder Poller*

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.
- The ***Document Flow Manager*** folders that are configured against DFM contracts must be accessible to this service.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.
- The service can be installed multiple times, as determined by the workload.

Restrictions and Limits

- If you require files to be processed in a certain sequence then you need to add them to the queue in the correct order.

  The ***Document Flow Manager*** processes files as they appear and as the data is available.
- Processing speed may be affected by the number of contracts and folders in use.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPRODFMFolderPoller.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPRODocumentFlowManager` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

FAQs

What are service operators and what are they used for?

Service operators are created by SYSPRO and are used by SYSPRO services to obtain information about SYSPRO.

The service operator code starts with a double underscore to differentiate them from other operators. A default company code must be assigned to each service operator within the **Operator Maintenance** program, as we use the company code to log in the service operator via e.net .

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- **SYSPRO 8 Espresso Service**,
- **SYSPRO 8 Espresso Notification Service**,
- **SYSPRO Espresso Development Plugin** and the
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> **FOR EXAMPLE:**
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Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Any configuration changes made using the **DFM Service Maintenance** program only takes effect when next the service polls for a change in configuration information.

The following settings can be maintained using the **DFM Service Maintenance** program within SYSPRO:

- Configuration polling interval
- Polling interval
- Pause polling

Key	Description
WCFAddress	This indicates the URL for the **SYSPRO 8 e.net Communications Load Balancer** service.
InstanceKey	This indicates the `base dir` instance on the SYSPRO application server.
LanguageCode	This indicates the SYSPRO language code.
ConfigPollInterval	This indicates how often the service will poll for changes made to the configuration information. If the service can't reach the **SYSPRO 8 e.net Communications Load Balancer** or business object, it will retry once this interval has lapsed. This is measured in the unit of time specified at the `ConfigPollType` flag.

Key	Description
ConfigPollType	This lets you indicate the unit of time (i.e. `ss` - seconds, `mm` - minutes and `hh` - hours) the service will use to poll for changes in the configuration information.  You can't use the **DFM Service Maintenance** program to maintain this flag.
FolderPollInterval	This indicates how often the service will poll for new files in configured contract folders. This is measured in the unit of time specified at the `FolderPollType` flag.  This defaults to 30 seconds.
FolderPollType	This lets you specify the unit of time (i.e. `ss` - seconds, `mm` - minutes and `hh` - hours) the service will use to poll for new files in configured contract folders.  This can only be changed in the configuration file and defaults to seconds in the **DFM Service Maintenance** program.
zeroFileSizeDeleteTime	Specifies the length of time (in seconds) that a *zero* sized file will remain in a polling folder, before it is deleted.  This can only be set in the configuration file and not in the **DFM Service Maintenance** program.
DebugService	This enables service debug logging. This outputs the debug messages to the active trace log, which can be viewed using an application like **DbgView**. Although debug messages are not written to file anywhere, exception messages are shown in the debug stream, as well as in the event log.  We recommend you set this to `true` before starting the service.

Key	Description
PausePolling	This enables or pauses folder polling.  Before starting the service you can set this to `false` to start the service but pause folder polling.

DFM Queue Poller service

Exploring

Where it fits in?

This service monitors and processes files in the DFM queue.

This service is used by:

- Document Flow Manager

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *Document Flow Manager Queue Poller*

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.
- Microsoft SQL Server
- The ***Document Flow Manager*** folders that are configured against DFM contracts must be accessible to this service.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.
- The service can be installed multiple times, as determined by the workload.

Restrictions and Limits

- If you require files to be processed in a certain sequence then you need to add them to the queue in the correct order.

  The ***Document Flow Manager*** processes files as they appear and as the data is available.
- Processing speed may be affected by the number of contracts and folders in use.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPRODFMQueuePoller.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPRODocumentFlowManager` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

FAQs

What are service operators and what are they used for?

Service operators are created by SYSPRO and are used by SYSPRO services to obtain information about SYSPRO.

The service operator code starts with a double underscore to differentiate them from other operators. A default company code must be assigned to each service operator within the **Operator Maintenance** program, as we use the company code to log in the service operator via e.net .

The following is a list of service operators and their function within SYSPRO:

- The `__ADSYNC` service operator is used by the **SYSPRO 8 Active Directory Sync Service** to push **Microsoft Active Directory (AD)** information into SYSPRO for Active Directory managed operators.
- The `__DFM` service operator is used by the **SYSPRO 8 Document Flow Manager Folder Poller** and **SYSPRO 8 Document Flow Manager Queue Poller** to monitor folders, send files to the queue and process files.
- The `__ESP` service operator is used by the following services:

- **SYSPRO 8 Espresso Service**,
- **SYSPRO 8 Espresso Notification Service**,
- **SYSPRO Espresso Development Plugin** and the
- **SYSPRO Avanti Web Service** to obtain information for the password reset and forgot password functionality.

- The __POS service operator is used by the **SYSPRO 8 Point of Sale Services** to determine and validate the setup options and required credentials at start up, update the required databases and post to SYSPRO (if the Point of Sale operator doesn't have access to SYSPRO).
- The __RUL service operator is used by the **SYSPRO 8 Rules Engine Service** and the **SYSPRO 8 Rules Data Service**.
- The __SA service operator is used by the **SYSPRO 8 Analytics** service to make business object calls.
- The __SAI service operator is used by the **SYSPRO 8 Machine Learning** service.
- The __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** and the **SYSPRO 8 Cognitive Service** to manage client-side report printing.

- Only specific services use service operators to log in via e.net.
- SYSPRO creates service operators by copying the ADMIN operator. If the ADMIN operator record doesn't exist (i.e. it may have been deleted), then the current operator is used when saving system details from the **Setup Options** program.

What is the difference between a service operator and a normal operator?

Service operators are signed in by a *SYSPRO service* and are used for any functionality that is required by the service to obtain information about SYSPRO.

Normal operators sign in to SYSPRO with a username and password. They access certain programs and functions to perform specific tasks.

> **FOR EXAMPLE:**
>
> the __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** to obtain information about the companies in an environment, but it isn't used by the business object to retrieve the data for a report, as that would be the specific normal operator that submits the request for the report.

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Any configuration changes made using the **DFM Service Maintenance** program only takes effect when next the service polls for a change in configuration information.

The following settings can be maintained using the **DFM Service Maintenance** program within SYSPRO:

- Configuration polling interval
- Polling interval
- Pause polling

Key	Description
WCFAddress	Specifies the URL for the **SYSPRO 8 e.net Communications Load Balancer** service.
InstanceKey	Specifies the base dir instance on the SYSPRO application server.
LanguageCode	Specifies the SYSPRO language code.
ConfigPollInterval	This specifies how often the service will poll for changes made to the configuration information. If the service can't reach the **SYSPRO 8 e.net Communications Load Balancer** or business object, it will try again once this interval has lapsed. This is measured in the unit of time specified at the **ConfigPollType** flag.

Key	Description
ConfigPollType	This lets you indicate the unit of time (i.e. `ss` - seconds, `mm` - minutes and `hh` - hours) the service will use to poll for changes in the configuration information. You can't use the **DFM Service Maintenance** program to maintain this flag.
PollInterval	This indicates how often the service will poll for new files in configured contract folders. This is measured in the unit of time specified at the `PollType` flag. This defaults to 30 seconds.
PollType	This lets you specify the unit of time (i.e. `ss` - seconds, `mm` - minutes and `hh` - hours) the service will use to poll for new files in configured contract folders.
DebugService	This enables service debug logging. We recommend you set this to `true` before starting the service.
PausePolling	This enables or pauses folder polling. Before starting the service you can set this to `false` to start the service but pause folder polling.

SYSPRO 8 e.net Communications Load Balancer

Exploring

Where it fits in?

Based on Windows Communication Foundation, this service exposes the `SYSPRO64.DLL` library to internal and external applications that need to interact with SYSPRO (e.g. SYSPRO Espresso, Predictive Search, third party developer applications, etc). Data is retrieved from the SYSPRO database using the open e.net architecture, without compromising data integrity.

This service replaces the **SYSPRO e.net WCF Service** (originally developed to replace **SYSPRO Web Services** and **DCOM**) and provides for load balancing functionality as well as being fault-tolerant (e.g. if a channel fails, a new thread is initiated automatically to prevent the whole service from failing).

This service is used by ***SYSPRO 8*** and any external or third party e.net application accessing SYSPRO data.

Although you can continue running the older **SYSPRO e.net WCF Service** alongside the new **SYSPRO 8 Communications Service**, you will have to configure a different communication port.

This service is used by:

- SYSPRO 8
- SYSPRO Avanti
- SYSPRO Server-side Reporting
- SYSPRO Web-based Product Configurator
- Executive Dashboard
- SYSPRO Workflow Services
- SYSPRO e.net Diagnostics
- SYSPRO Point of Sale
- SYSPRO Harmony
- SYSPRO Espresso
- SYSPRO Machine Learning
- Any external or third party e.net application accessing SYSPRO data

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO 8 e.net Communications Load Balancer*

Starting

Prerequisites

This service must be installed on the same application server as the ***SYSPRO 8*** Server.

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 Server

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPRO.8.enet.Communications.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROECS` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
baseaddress	This is the template base address at which all endpoints are hosted.
portNetTcp	This is the port at which the net.tcp binding is hosted.
portBasicHttp	This is the port at which the basic binding is hosted.
portWsHttp	This is the port at which the WS binding is hosted.
portRestHttp	This is the port at which the REST binding is hosted.
portNetPipe	This is the name of the named pipe endpoint.
InstanceContextMode	This value indicates when new service objects are created. It specifies the number of service instances available for handling calls that are contained in incoming messages.
ConcurrencyMode	This indicates whether a service supports one thread, multiple threads, or re-entrant calls. It specifies whether a service class supports single-threaded or multi-threaded modes of operation.
AddressFilterMode	This is used by the dispatcher to route incoming messages to the correct endpoint. It specifies the type of match semantics used by the dispatcher to route incoming messages to the correct endpoint.
backhaulPingTimeout	

Key	Description
workerPingTimeout	This is an integer specifying milliseconds. This controls locked worker detection. The value specifies how long to wait for a response from the SYSPRO runtime. If a ping response exceeds this time, the worker is considered locked and marked for termination.
workerPingInterval	This is an integer that lets the supervisor test the worker every x calls and determine if the worker is healthy on every pool re-balance. ▪ Zero value = detection only on pool re-balance. ▪ Greater than Zero value = detection on every x calls. ▪ Lower values -> Greater reliability. ▪ Higher values -> Higher performance.
minWorkers	This is an integer that specifies the minimum number of worker processes. Zero workers will cause all calls to execute internally, with no redundancy.
schedulerInterval	This is an integer specifying seconds that specifies how often the scheduler checks the recycling thresholds. Recycling is a cooperative process, and workers will only be recycled when they fault or have no jobs in progress. Setting this too low will reduce performance.
schedulingAlgorithm	This determines how the scheduler chooses a worker. ▪ RoundRobin - a worker is chosen in round-robin fashion. This is better for high workloads with mostly short-lived transactions. ▪ BalancedWorkload - a worker is chosen according to the jobs in progress, where the worker with the fewest jobs is considered most favorable. This is better for low workloads with mostly long-lived transactions.
recyclingTimes	This is a comma separated list (hh:mm) and defines fixed times at which workers are recycled.

Key	Description
recyclingInterval	This is a single value (hh:mm) and defines a fixed interval at which workers are recycled.
recyclingRequests	This is an integer that recycles a worker after it has served a certain number of requests.
recyclingPagedMemory, recyclingVirtualMemory, recyclingWorkingSet	This recycles a worker if the memory usage goes over this threshold (n{B|KB|MB|GB}) Although all these settings are available, only the working set value is close to what Windows exposes in the Task Manager. The other values may be useful in certain cases, but are harder to monitor.
recyclingWatchFolders	This is a pipe-delimited list of folders that recycles workers when a folder is modified.

SYSPRO 8 Espresso Service

Exploring

Where it fits in?

This web service is used to power the ***SYSPRO Espresso*** mobile application and ***SYSPRO Espresso*** from the browser. It generates the user interface for ***SYSPRO Espresso*** and controls the flow of data and business logic from ***SYSPRO Espresso*** to the core SYSPRO product.

Also installed with ***SYSPRO Espresso*** is the **SYSPRO 8 Espresso File Service** which controls the self-healing of components from SYSPRO into the **SYSPRO 8 Espresso Service** (required when applications in Espresso are updated and the **SYSPRO 8 Espresso Service** is installed on a separate server).

This service is used by:

- SYSPRO Espresso

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO 8 Espresso File Service*

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.
- SYSPRO 8 Espresso Notification Service
- Internet Information Services (IIS)
- SSL Certificate

  A valid SSL certificate is required to run the Espresso application and connect to an IP address on an Android device.

Restrictions and Limits

- **Multi-Factor Authentication** and **SSO using Active Directory** are not currently supported with ***SYSPRO Espresso***.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `Web.config` file is located in the folder to which you installed the service and defaults to: `C:\inetpub\wwwroot\SYSPRO8Espresso`.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROEFS` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

FAQs

What are service operators and what are they used for?

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- **SYSPRO Espresso Development Plugin** and the
- **SYSPRO Avanti Web Service** to obtain information for the password reset and forgot password functionality.

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- The __SA service operator is used by the **SYSPRO 8 Analytics** service to make business object calls.
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- The __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** and the **SYSPRO 8 Cognitive Service** to manage client-side report printing.

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Normal operators sign in to SYSPRO with a username and password. They access certain programs and functions to perform specific tasks.

> **FOR EXAMPLE:**
>
> the __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** to obtain information about the companies in an environment, but it isn't used by the business object to retrieve the data for a report, as that would be the specific normal operator that submits the request for the report.

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
Debug mode	`<add key="debugmode" value="true"/>` This flag puts the Espresso service into debug mode. Components that are currently in debug mode can be used inside Espresso applications. Logging is also performed both inside the web browser console as well as on the server itself. The log file for the Espresso web service is written to the temporary folder from which Espresso runs (typically `c:\windows\temp`).
Menu tile refresh rate	`<add key="menutilerefreshrate" value="10000" />` The menu tile refresh rate determines how often live tiles are refreshed in Espresso menus. The value is set in milliseconds and should be set after considering the types of live tiles in use, along with the data they require.
Attempt relogon	`<add key="attemptrelogon" value="true" />` When this key is set to `true`, Espresso tries to log operators back into the SYSPRO e.net layer if they are unexpectedly logged off by the system. This provides a more seamless experience inside Espresso. This should be set to `false` if users shouldn't be logged back onto e.net if logged off.
Session expiry duration	`<add key="sessionexpiryduration" value="0.02:00:00" />` This field defines how long an Espresso session can be idle before the session expires and you need to login again.

Key	Description
Enable translation	`<add key="enabletranslation" value="false" />` When set to `true` it enables translation throughout the Espresso product. This has a significant performance effect on Espresso when applications are loaded for the first time, because the translation for the application must also be loaded. This should only be set to `true` on sites that use translation.

Administrator contact details	`<add key="adminname" value="Jo Soap" />`
	`<add key="adminnumber" value="0114611000" />`
	`<add key="adminemail" value="jo.soap@suds.com" />`
	These define the system administrator's contact details that will be displayed in the **Account Details** tab of the **Espresso** menu.

Base dir	`<add key="basedir" value="0"/>` This defines the SYSPRO base directory number to use on the SYSPRO Application Server for this install of the Espresso service.
Espresso server external name	`<add key="espressoserverexternalname" value="http://localhost" />` This must be set to the external IP or DSN name of the Espresso server. If images are not displayed in Espresso, then this address may be incorrect.
Local storage roll over percentage	`<add key="OpenSessionsCacheFileName " value="" />` This sets the name of the Espresso Open Session Cache file. This defaults to the temporary folder from which the Espresso Web App is run (typically `c:\windows\temp\EspressoOpenSessionsCache.dat`). This is useful when multiple versions of the Espresso Web Application are installed on the server.

Key	Description
Open sessions cache filename	`<add key="compressofflinedata" value="false" />` This specifies whether data cached on the device should be compressed. This allows for more data to be stored on devices, but may have an affect on the performance of the device. It also makes debugging of issues more difficult and should be turned off for debugging purposes.
Server calls timeout	`<add key="servercallstimeout" value="120000" />` This sets the timeout value in milliseconds for calls to the Espresso server. The connectivity environment in which ***SYSPRO Espresso*** is used, as well as the speed of the server, should be considered when this is set.
Application Redirect	`<add key="applicationredirect" value="Suppliers" />` This redirects ***SYSPRO Espresso*** to a specific application every time a user logs in, instead of displaying the normal logon screen.
Application Redirect Session Data	`<add key="applicationredirectsessiondata" value="" />` This sets the Espresso session data when a user logs on (for every user). This can be used with **Application Redirect** to open a specific supplier or stock code when the relevant application is opened automatically.

- Additional application settings within the file:

Key	Description
Workflow Service	`<add key="workflowservice" value="net.tcp://localhost:90/SWS" />` This indicates the SOAP address of the **SYSPRO 8 Workflow Service** to use when calling workflows. This only has an effect if the workflow is called explicitly from an Espresso Application.

Key	Description
Enable Global Barcoding	`<add key="enableglobalbarcoding" value="true" />` This enables/disables global barcoding. If `true` then all browsable and tracking fields will use the associated barcoding setup. If `false` then only fields marked by developers as barcoded will use associated barcoding. If disabled, then all barcoding is disabled in Espresso.
Disable Scrolling Override	`<add key="disablescrollingoverride" value="false" />` This lets you disable the scrolling override in Espresso. It defines whether the scrolling and tab workaround should be used to fix scrolling issues in Espresso. This is set to `false` by default, but can be turned off by setting it to `true` for customers who don't experience scrolling issues. This depends on the types of applications that are used.
Post Media Type	`<add key="postmediatype" value="PNG" />` This sets the multimedia type to save images from Espresso to another device, like the signature pad or a native device camera. It defaults to `PNG` if left blank. If you have problems using the image then try setting this to `JPG`.

- There are also client settings which relate to connectivity between ***SYSPRO Espresso*** and SYSPRO ERP via SYSPRO WCF. These are described below:

Key	Description
SYSPRO WCF net.tcp endpoint address	The first endpoint is for the `SYSPROWCFServiceReference.ISYSPROWCFServiceSoap` contract. This contract is the WCF net.tcp address on which ***SYSPRO Espresso*** communicates. It defaults to `net.tcp://localhost:31001/SYSPROWCFService`.
SYSPRO Espresso notification service endpoint address	The second endpoint is the pointer to the `EspressoNotificationService.IEspressoNotification` contract. This contract is the net.tcp address that ***SYSPRO Espresso*** uses for notifications that will be sent out via SYSPRO ERP via the **SYSPRO 8 Espresso Notification Service**. It defaults to `net.tcp://localhost:30180/SYSPROEspressoNotificationService`.

Key	Description
SYSPRO Espresso file server endpoint address	The third endpoint is the pointer to the `EspressoFileService.IEspressoFileService` contract. This contract is the pointer to the **SYSPRO 8 Espresso File Service** that is used for copying files from the SYSPRO folders to the SYSPRO Espresso folder in `c:\inetpub\wwwroot`. It defaults to `net.tcp://localhost:30181/EspressoFileService`.

SYSPRO 8 Espresso Notification Service

Exploring

Where it fits in?

This service is used to power the Espresso Mobile Application and ***SYSPRO Espresso*** from the browser. It generates the user interface for ***SYSPRO Espresso*** along with controlling the flow of data and business logic from ***SYSPRO Espresso*** to the core SYSPRO application.

This service is used by:

- SYSPRO Espresso

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO 8 Espresso Notification Service*

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

Restrictions and Limits

- **Multi-Factor Authentication** and **SSO using Active Directory** are not currently supported with ***SYSPRO Espresso***.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Settings required on a corporate network for push notifications:

Android devices

If your organization has a firewall that restricts internet traffic then you'll need to configure it to allow connectivity with Google Cloud Messaging (GCM).

The ports to open are:

- 5228
- 5229
- 5230

GCM typically only uses 5228, but sometimes uses 5229 and 5230. GCM doesn't provide specific IPs; it frequently changes IPs. We recommend against using ACLs.

Meanwhile, the answer for that is 'all IP blocks listed in Google's ASN of 15169'. You can use an online tool to get the ASN info.

Apple devices

Field	Description
Device is connected to Wi-Fi and does not have a cellular data account or a cellular data signal, push notifications are not received.	Devices using Access Point Names need a direct connection to Apple's server. If a device is unable to connect using cellular data, it will attempt to use Wi-Fi if available. If there is a proxy server on the Wi-Fi network, the device will be unable to use APNs, because they require a direct and persistent connection from device to server. When connecting to APNs, iOS devices use the cellular data connection, if available. Only if the cellular connection is not available or viable will the device switch to Wi-Fi for APNs connections. For APNs traffic to get past your firewall, you'll need to open these ports: ▪ TCP port 5223 (used by devices to communicate to the APNs servers) ▪ TCP port 2195 (used to send notifications to the APNs) ▪ TCP port 2196 (used by the APNs feedback service) ▪ TCP Port 443 (used as a fallback on Wi-fi only, when devices are unable to communicate to APNs on port 5223) The APNs servers use load balancing. Your devices will not always connect to the same public IP address for notifications. The entire 17.0.0.0/8 address block is assigned to Apple, so it's best to allow this range in your firewall settings.

Configuring

1. Load the **Setup Options** program from within SYSPRO.
2. From the **Connectivity System Setup** form of the **System Setup** category (*SYSPRO Ribbon bar* > *Setup* > *Setup Options* > *System Setup*) specify the address of the Espresso Server at the **NOTIFICATION ADDRESS** field.

   This is used to send push notifications to a user's devices (e.g. `http://localhost/SYSPROEspresso`) as well as the Espresso Application Builder.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPROEspresso.Notifications.Service.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROENS` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
ServiceSoapAddress	30180
WebSocketsServerAddress	Default provided: `http://localhost:8082/SYSPRO8Espresso` Accept the default provided or change manually to match your preference.

SYSPRO 8 Harmony API Service

Exploring

Where it fits in?

This service provides an interface for ***SYSPRO Harmony*** integration.

This service is used by:

- SYSPRO Harmony

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.
- Internet Information Services (IIS) 7.0 Core Web Engine Feature
- Internet Information Services (IIS) 7.0 World Wide Web Publishing Feature
- Microsoft .NET Core 1.0.1 Runtime (x64)

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `web.config` file is located in the `inetpub\wwwroot\SYSPROHarmonyAPI` folder.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPRO_Harmony_API.txt` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

SYSPRO 8 Harmony Service

Exploring

Where it fits in?

This service lets you query and post transactions to the ***SYSPRO Harmony*** database.

This service is used by:

- SYSPRO Harmony

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO 8 Harmony Service*

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- Microsoft SQL Server 2012 or higher
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPROHarmonyDatabaseServiceHost.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROSHS` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
ServiceRestAddress	30141

SYSPRO 8 Machine Learning

Exploring

Where it fits in?

This service lets you train an Artificial Intelligence project to produce a model and then to use the model to perform predictions.

This service is used by:

- SYSPRO Web UI (Avanti)
- AI Machine Learning
- SYSPRO Rules Engine

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO 8 Machine Learning*

Starting

Prerequisites

This service can be installed on any server as long as the **SYSPRO 8 e.net Communications Load Balancer** endpoint is configured correctly in the service's configuration file.

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.
- If you have two installations of the **SYSPRO 8 Machine Learning** service installed on different servers, then you can configure SYSPRO to use a **TRAINING END POINT** and a **PREDICTION END POINT**.

  Separate endpoints for training and predicting ensures better responsiveness, especially as the training endpoint may seem unresponsive when training projects.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `web.config` file is located in the `inetpub\wwwroot\SYSPROHarmonyAPI` folder.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROAI` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

FAQs

What are service operators and what are they used for?

Service operators are created by SYSPRO and are used by SYSPRO services to obtain information about SYSPRO.

The service operator code starts with a double underscore to differentiate them from other operators. A default company code must be assigned to each service operator within the **Operator Maintenance** program, as we use the company code to log in the service operator via e.net .

The following is a list of service operators and their function within SYSPRO:

- The `__ADSYNC` service operator is used by the **SYSPRO 8 Active Directory Sync Service** to push **Microsoft Active Directory (AD)** information into SYSPRO for Active Directory managed operators.
- The `__DFM` service operator is used by the **SYSPRO 8 Document Flow Manager Folder Poller** and **SYSPRO 8 Document Flow Manager Queue Poller** to monitor folders, send files to the queue and process files.
- The `__ESP` service operator is used by the following services:

- **SYSPRO 8 Espresso Service**,
- **SYSPRO 8 Espresso Notification Service**,
- **SYSPRO Espresso Development Plugin** and the
- **SYSPRO Avanti Web Service** to obtain information for the password reset and forgot password functionality.

- The __POS service operator is used by the **SYSPRO 8 Point of Sale Services** to determine and validate the setup options and required credentials at start up, update the required databases and post to SYSPRO (if the Point of Sale operator doesn't have access to SYSPRO).
- The __RUL service operator is used by the **SYSPRO 8 Rules Engine Service** and the **SYSPRO 8 Rules Data Service**.
- The __SA service operator is used by the **SYSPRO 8 Analytics** service to make business object calls.
- The __SAI service operator is used by the **SYSPRO 8 Machine Learning** service.
- The __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** and the **SYSPRO 8 Cognitive Service** to manage client-side report printing.

- Only specific services use service operators to log in via e.net.
- SYSPRO creates service operators by copying the ADMIN operator. If the ADMIN operator record doesn't exist (i.e. it may have been deleted), then the current operator is used when saving system details from the **Setup Options** program.

What is the difference between a service operator and a normal operator?

Service operators are signed in by a *SYSPRO service* and are used for any functionality that is required by the service to obtain information about SYSPRO.

Normal operators sign in to SYSPRO with a username and password. They access certain programs and functions to perform specific tasks.

> **FOR EXAMPLE:**
>
> the __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** to obtain information about the companies in an environment, but it isn't used by the business object to retrieve the data for a report, as that would be the specific normal operator that submits the request for the report.

SYSPRO OData Service

Exploring

Where it fits in?

The **SYSPRO OData** feature lets you connect securely to SYSPRO data without direct SQL access and retrieve data for use by third-party applications. It is a future-proof technology that provides a RESTful API to the SYSPRO database and allows OData-compliant applications to query SYSPRO data in a standard and controlled manner.

Although it is available for both on-premise and cloud solutions, **SYSPRO OData** is the only mechanism available when applications need access to SYSPRO data in the **SYSPRO Cloud ERP** environment (the **SYSPRO Cloud ERP** platform doesn't allow direct database access by any application or personnel).

The ***Data Connector - OData*** module is currently in BETA status and the connection to **Microsoft SQL Server** is managed manually. The full feature and its functionality is scheduled for release in ***SYSPRO 8 2021 R2***.

The **SYSPRO OData Service** is a standalone OData service based on OData 4.0 standards that enables third party applications and solutions to connect to the SYSPRO data tables (i.e. company and system databases):

- Customers can use it to connect to applications and solutions (such as analysis tools or subscriber feeds)
- Independent Software Companies (ISV's) can use it to connect their applications to SYSPRO for read-only data access.

The service queries the system upon start-up to retrieve all the SYSPRO operators that have been configured for OData access. Therefore, when the SQL query is issued, it uses the credentials stored against the operator (in the **Operator Maintenance** program) for authentication and not the credentials that were provided to the third party user.

The advantage of this is that the third party user doesn't know the SQL login used for the query, no-one will know what the password is and the SYSPRO administrator can still have over-site on what the third party user is accessing.

This service is used by:

- Data Connector - OData

Navigation

- The default location for this service is:

  inetpub > *wwwroot* > *SYSPRO8OData*

Terminology

Business Activity Query (BAQ)

SYSPRO Business Activity Queries are SQL views that are created in the relevant company databases and (because they are defined in SYSPRO) are recognized as data sources. They provide a view into the business data commonly used during the typical business management process. The queries are built and secured in the core ERP system and then surfaced to users via their enterprise reporting and connectivity solutions.

OData

OData (i.e Open Data Protocol) is an ISO/IEC approved, OASIS standard that defines a set of best practices for building and consuming RESTful APIs. It's a REST-based protocol for querying and updating data. It is built on standardized technologies such as HTTP, Atom/XML, and JSON and is different from other REST-based web services in that it provides a uniform way to describe both the data and the data model.

OData helps you focus on your business logic while building RESTful APIs without having to worry about the various approaches to define request and response headers, status codes, HTTP methods, URL conventions, media types, payload formats, query options, etc.

It also provides guidance for tracking changes, defining functions/actions for reusable procedures and sending asynchronous/batch requests.

The OData metadata (a machine-readable description of the data model of the APIs) enables the creation of powerful generic client proxies and tools.

OData is considered to be a flexible technology for enabling interoperability between disparate data sources, applications, services and clients.

Visit `https://www.odata.org` for more information.

Starting

Prerequisites

Licensing

To use this feature, the following module(s) must be installed according to the terms of your software license agreement:

- e.net System Manager
- Data Connector - OData

Technology

The following technology prerequisites are applicable to using the **SYSPRO OData Service**:

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- Internet Information Services (IIS) - including:
  - .NET Core hosting bundle (version 3.1.12 or higher)

    Minimum .NET Core frameworks required by the SYSPRO OData API:
    - Microsoft.AspNetCore.App (version 3.1.8 or higher)
    - Microsoft.NETCore.App (version 3.1.0 or higher)
    - NETStandardLibrary (version 2.1.0 or higher)
  - SSL Certificate for live production sites

    The **SYSPRO OData** deployment must be secured by an IIS certificate.

    An SSL certificate can be purchased online and deployed on the host server. It is essentially the remit of the solution platform provider to assist in deploying a valid SSL certificate into the IIS instance and to configure the solution for access on **Port 443**.
- A connection to Microsoft SQL Server
- A connection to the SYSPRO 8 e.net Communications Load Balancer via net.tcp

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

> We strongly recommend exposing this service over HTTPS to ensure security.

Configuring

The following setup options must be configured to use this service:

Setup Options

Setup Options > *System Setup* > *Connectivity*

ODATA

- OData endpoint

> This configuration is required to connect to the **SYSPRO OData Service** (i.e. the OData layer).

Authentication

The authentication used by the **SYSPRO OData Service** is *Basic Authentication* with the appropriate SQL user credentials. Therefore, a separate SQL login must be created for this service, as using the standard `sa` user is not recommended.

> You can use the **Generate Credentials** function within the **OData** section of the **Operator Maintenance** program to automatically create these SQL users and link them to an operator defined as an OData user.

The **SYSPRO OData Service** completely bypasses SYSPRO's security framework because it doesn't use a standard SYSPRO operator to login to **SYSPRO OData**, therefore security controls (such as branch access, etc.) doesn't apply.

Solving

Diagnostics

Configuration files

The following files are located in the folder where you installed the service:

- `appsettings.json`
- `web.config`

Service Startup

If the **SYSPRO OData Service** is unable to start, a file named `ODataFailedToStart.txt` is created in the default install location (i.e. *inetpub* > *wwwroot* > *SYSPRO8OData*) and includes details of the error (s) for the startup failure.

Error messages

OData Validation Error

Cause

An OData Validation error message is returned if an error occurs during the process of a URL request, such as incorrect parameter information contained within the endpoint.

> **FOR EXAMPLE:**
>
> ```
> OData Validation Error: Could not find a property named 'Name' on type
> 'SYSPRODBModel.INVMaster'.
> ```

Solution

Ensure that you capture the correct base URL and subsequent entities (e.g. company ID, table name, query parameters, etc.).

FAQs

SYSPRO OData URLs

What makes up the SYSPRO OData URL?

The URL used to query data within SYSPRO comprises the base URL for the OData website, followed by separate entities that change depending on the information you are querying (e.g. company ID, table name, query parameters, etc.).

> **FOR EXAMPLE:**
>
> ```
> https://localhost/SYSPRO8Odata/SYSPROOData/edu1/ArCustomer
> ```

where:

- `https://localhost/SYSPRO8Odata/SYSPROOData` indicates the static base URL.
- `/edu1/ArCustomer` indicates the dynamic entities added to the endpoint.
  - `edu1` indicates the company being queried.
  - ArCustomer indicates the table within that company.

How does the URL convention differ between on-premise sites and SYSPRO Cloud ERP sites?

The only difference between on-premise and SYSPRO Cloud ERP sites connecting to **SYSPRO OData** is the base URL for the OData Website.

FOR EXAMPLE:

- On premise:

  `https://`**`localhost/SYSPRO8Odata`**`/SYSPROOData/edu1/ArCustomer`
- SYSPRO Cloud ERP:

  `https://`**`pmotst01.sysprocloud.com`**`/SYSPRO8OData/SYSPROOdata/edu1`

What URL convention do I use to query data in a company database?

The format of the call to query company data is:

https:// **ServiceBaseURL** /SYSPROOData/ **SYSPRO Company** / **SYSPRO Table ? Query parameters**

FOR EXAMPLE:

```
https://localhost/SYSPRO8Odata/SYSPROOData/edu1/ArCustomer?select=Customer,Name
```

What URL convention do I use to query data in the system database?

The format of the call to query system data is:

https:// **ServiceBaseURL** /SYSPROOData/ **system** / **SYSPRO Table ? Query parameters**

FOR EXAMPLE:

```
https://localhost/SYSPRO8Odata/SYSPROOData/system/AdmOperator?$Select=Operator,
Name, GroupCode&$Top=2
```

Functionality

Who would benefit from using SYSPRO OData?

The **SYSPRO OData** solution provides a standard way of connecting and integrating with other applications and is therefore applicable to anyone who wants to retrieve data from the SYSPRO databases using one of the following methods:

- Excel, PowerBI, Tableau and other external analytical solutions.
- PHP where a REST-friendly address is required, as well as the ability to query data and insert select statements in a browser (e.g. HTTP requests).
- Developers working in Visual Studio who need to query SYSPRO data.

How can an ISV access SYSPRO OData without the customer having a site license?

ISV's can access **SYSPRO OData** (without the customer having to license it for their SYSPRO site) by passing their runtime product code when calling the **SYSPRO OData Service**.

To pass a runtime product code with a call to the **SYSPRO OData Service**, the words `#RunTimeProductCode#` and the actual product code must be included as part of the username of the basic authentication information for all API requests.

The structure of the username field should be as follows:

`[username]#RunTimeProductCode#[runtime product code]`

> **FOR EXAMPLE:**
>
> - Runtime product code: `OData123`
> - Username: `Blogs`
>
> Based on this example, the username field for the basic authentication must be specified as:
> `Blogs#RunTimeProductCode#OData123`

If no runtime product code is provided and the site isn't licensed for the ***Data Connector - OData*** module, then the **SYSPRO OData** functionality will not be available for use.

How do I refresh the data structure after making configuration changes in SYSPRO?

You would use the **GetVersion** call.

> **FOR EXAMPLE:**
> `https://localhost/SYSPRO8OData/GetVersion`

The **GetVersion** call not only returns the version of the **SYSPRO OData Service**; it also:

- Refreshes the company data structure to ensure that any database configuration changes made within SYSPRO are refreshed and used by the service.
- Verifies that the **SYSPRO OData Services** are communicating correctly.

When the **GetVersion** call is unsuccessful, a log file is generated in the `Inetpub>wwwroot>SYSPROOData>Log` folder named `ODataFailedToStart.txt`.

Does SYSPRO OData support paging?

SYSPRO OData supports paging as the `$top` and `$skip` clauses are built-in as standard.

All calls are `GET` type calls, as **SYSPRO OData** only supports reading data.

Does SYSPRO OData have rate limits?

Currently, **SYSPRO OData** doesn't have rate limitations (e.g. rows per minute or per second limiting). However, to assist with faster calls and returns, developers and ISV's need to be mindful of how much data they are consuming, taking care to use query parameters to limit the amount of data being returned.

How can I view all table entities available within SYSPRO?

Developers may find it useful to have a complete list of all entities that are available within the SYSPRO databases, as this can assist in the way they construct their client code to interact with the SYSPRO entities.

1. Open you browser.
2. Enter your URL and the `$metadata` clause.

> **FOR EXAMPLE:**
>
> `https://localhost/SYSPRO8OData/SYSPROOData/edu1/$metadata`

This returns an XML format listing of each table as an entity (i.e. table name in the database), properties (i.e. column names) and navigation properties.

To override the set limits of data returned, specify the normal OData URL conventions using OData structure and query language.

What if I need to call more than 5000 rows?

There are various ways to overcome the 5000 row limit:

- You can limit the calls to weeks, periods, months or years and then combine multiple calls into one dataset within your BI tool.
- You can use an ETL tool to refresh the data into a Data Lake or Repository and then run the BI tool on the dataset created from a feed within the **SYSPRO OData** solution.
- The **SYSPRO Business Activity Queries** feature (available from ***SYSPRO 8 2021 R2***) lets you create Views on the Database for OData consumption, thereby providing aggregation and summary custom datasets. These can then be used within Insight Tiles, reports, etc.

Why can't I see custom form tables in the data table listing?

Custom form tables don't appear in the listing of tables as you would expect to see them in **Microsoft SQL Server** (i.e. SQL tables ending with a plus). Instead, they are now suffixed with `_company`.

> **For example:**
>
> Microsoft SQL Server: `ApSupplier+`
>
> OData: `ApSupplier_edu1`

Deployment

Who deploys and manages the SYSPRO OData Service?

The **SYSPRO OData** solution can be deployed on-premise or within the SYSPRO Cloud offering:

- On-Premise (or MCS Cloud):

  The SYSPRO Region/Partner Tech Consultant or Customer
- Cloud:

  The SYSPRO Cloud support teams. Specifically, by change request to managed services or via the cloud portal.

What skills are required for deploying the SYSPRO OData Service?

For on-premise deployments, the deployment team should have the following skills:

- Windows Service Deployment (to install and configure the solution)
- SQL Instance Management (to configure users and manage permissions)
- OData awareness (to output data)
- SYSPRO OData best practice awareness (to optimize performance)
- IIS SSL Certification Application (for security)

How do I apply an SSL certificate to my IIS website?

Requirements:

- Your server certificate
- Your intermediate certificates
- Your private key

Installation instructions:

1. Launch the **Internet Information Services (IIS) Manager**.
2. Select your server name from the **Connections** menu (i.e. the host to which you want to install the certificate).
3. Navigate to the **Security** section by selecting the **Server Certificates** icon under **Security**.
4. Select the **Complete Certificate Request** function from the **Actions** menu.
5. From the **Complete Certificate Request** wizard, browse for your Server Certificate file (previously saved on your server's desktop) and select **OK**.

Binding your certificate to your website:

The following describes how to assign or bind the SSL certificate to the appropriate website:

1. From the **Connections** menu in **Internet Information Services (IIS) Manager**, expand your server's name, followed by the **Sites** folder, and then select the site that you want to secure.
2. Select the **Bindings** function of the **Actions** menu.
3. From the **Site Bindings** window, select the **Add** function.

   If you already have the appropriate site binding created, select the **Edit** function to change the SSL Certificate accordingly.
4. Enter the following within the **Add Site Binding** window:
   - Type: `https`
   - IP Address: `All unassigned`.

     If you have multiple IP addresses, select the correct one that applies.
   - Port: `443`
   - SSL Certificate: Select the *friendly name* of the SSL certificate you've installed.

     You can also select the **View** function to confirm the validity of the certificate.
5. Select **OK** to finish binding the SSL certificate to your live website.

As SSL certificates have an expiry date, ensure that you renew your certificates timeously to prevent any unexpected down time.

Why do I need to apply an SSL certificate?

The **SYSPRO OData** deployment must be secured by an IIS certificate.

An SSL certificate can be purchased online and deployed on the host server. It is essentially the remit of the solution platform provider to assist in deploying a valid SSL certificate into the IIS instance and to configure the solution for access on **Port 443**.

The core function of an SSL certificate is to protect server-client communication. It protects your information online by encrypting any data sent to you, and then decrypting it once you've received it (i.e. the data is locked and can only be unlocked by the intended recipient as no-one else can have the key to open it).

SSL certificates also provide website authentication - identity verification being one of the most important aspects of web security.

Alternative options for accessing SYSPRO data

Can I still make use of the e.net business object layer?

The e.net business object layer is still the preferred mechanism of applications accessing any business logic, including data queries, as well as add, update, delete and transactional access.

The ***Data Connector - OData*** module is designed for cases where the e.net business object layer is unable to provide the data access required for the business solution.

Why shouldn't I use applications that make use of direct database access to the SYSPRO data?

The **SYSPRO OData** feature is a significant improvement over applications that use direct database access to the SYSPRO data.

This is because that type of direct database access doesn't provide traceability or visibility about what access is being performed, regardless of whether the access has the correct permissions and how frequently access is being made.

This lack of visibility and traceability leads to a high-risk site.

Upgrading from on-premise to cloud

What if a customer upgrades from on-premise to SYSPRO Cloud ERP?

As direct SQL access is restricted in the **SYSPRO Cloud ERP** environment, sites that upgrade from SYSPRO on-premise to a SYSPRO Cloud deployment are required to re-skill in OData and update any linked solutions using OData (rather than ODBC access to the SQL database).

Referencing

Configuration file

appsettings.json

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
ODataMaxRecords	`5000` This indicates the default maximum records to be returned by the service.
WCFServiceAddress	`net.tcp://localhost:31001/SYSPROWCFService` This indicates the SYSPRO 8 e.net Communications Load Balancer endpoint address as configured during the service installation via the **SYSPRO Installer Application**.
ServiceManagerAddress	`net.tcp://localhost:30140/SYSPROServiceManager` This is reserved for future use.

SYSPRO 8 Point of Sale e.net Communication Service

Exploring

Where it fits in?

This service allows the ***SYSPRO Point of Sale*** applications to interact with the core SYSPRO product.

Based on **Windows Communication Foundation**, this service exposes the `SYSPRO64.DLL` library to internal and external applications that need to interact with SYSPRO (e.g. ***SYSPRO Espresso***, Predictive Search, third party developer applications, etc.).

Data is retrieved from the SYSPRO database using the open e.net architecture, without compromising data integrity.

This service replaces the legacy **SYSPRO e.net WCF Service** (originally developed to replace SYSPRO Web Services and DCOM) and provides for load balancing functionality, as well as being fault tolerant (e.g. if a channel fails, a new thread is initiated automatically to prevent the whole service from failing).

This service is used by:

- SYSPRO Point of Sale

Navigation

- The default location for this service is:

  Program Files > SYSPRO > SYSPRO 8 Point of Sale Services

Starting

Installation considerations

- This service is installed using the SYSPRO 8 Point of Sale autorun (available from: https://syspro8install.azureedge.net/iso/SYSPRO8POSAutorun.iso).

  You will be required to configure settings for the service during the installation.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPRO.8.Point.of.sale.enet.Communications.config.exe` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
Language	This indicates the default language to use with SYSPRO communication. You can manually override this during logon.
LogDetail	This indicates the default logging detail used by SYSPRO. You can manually override this during logon.
Instance	This indicates the default instance of SYSPRO with which the service will communicate. SYSPRO instances are reflected in your Windows Registry to identify the `\Base` folder of your SYSPRO install, where the required `.dll` and `.exe` files are located.
baseaddress	This indicates the template base address used by the service. For `REST` and `SOAP` communication, the schema must be left as `http://` (even if a different binding is used) as the service configures this automatically.
DetailedLog	When set to `true` the service outputs a detailed log file to the `temp` folder of the machine on which the service is installed.
servicesoapbinding	This indicates the communication binding for the service to use for `SOAP` communication.
servicerestport	This is the port that the service will use to host the `REST` endpoint. You must add the `REST` port to the firewall manually.
servicesoapport	This is the port that the service will use to host the `SOAP` endpoint. If set, `SOAP` communication must be performed using an address that includes the port number (e.g. `http://localhost:{PortNumber}/SYSPROWCFService/Soap`).

Key	Description
servicerestportchildrange	The internal range of REST ports used by the hive processes of the service. The range should include the same number of items as the hive process count.
hiveprocesscount	The number of hive processes to start to process SYSPRO WCF Service requests.
ReceiveTimeout	The maximum length of time a call to the service can take.
SendTimeout	The maximum length of time a call to the service can take.

SYSPRO 8 Point of Sale Services

Exploring

Where it fits in?

In ***SYSPRO Point of Sale***, this service pack lets you synchronize master data, copy transactional data from offline branches to the Head Office server, post transactional data that was copied from offline branches and print directly to your printers. This comprises of the following services:

- SYSPRO 8 Point of Sale Synchronize Service *(Mandatory)*

  This Microsoft Windows service is installed in both online and offline environments and is used to synchronize ***SYSPRO Point of Sale*** application files (i.e. it self-heals web site components). It uses web services hosted on the Head Office server to synchronize changes to ***SYSPRO Point of Sale***, as well as SYSPRO files at the various branches.

  Its primary purpose is to check for any SYSPRO Point of Sale updates that may have been ported and automatically update the software accordingly.

  The secondary purpose of this function in the offline environment is to check for any business object or work file changes that need to be applied to the Branch server. If it detects any updates, it copies down the relevant files needed by the SYSPRO Offline foundation.

  This service should only be configured to run once a day after hours (or as required) when SYSPRO settings have changed or updates have been made, so that the required **Internet Information Services (IIS)** can restart without affecting trading.

  Upon startup, the service makes 3 attempts to perform an initial sync, after which it resumes as per the scheduled setup. Restarting the service can be used to force a sync on a branch after specific setup values were changed at Head Office.

- SYSPRO 8 Point of Sale Copy Service *(Optional)*

  This is an essential service to successfully use the ***SYSPRO Point of Sale*** Offline architecture.

  This Microsoft Windows service is installed on the Head Office server and its purpose is to copy transactional data from all offline branches to the main Head Office server. The service therefore continually checks each branch server for transactions that need to be copied up to the Head Office server. If it finds a transaction, it copies it from the branch server (where the Offline Foundation version of SYSPRO ERP is installed) to the Head Office server (where the complete version of SYSPRO ERP is installed) and marks it as "copied" on the branch server.

- SYSPRO 8 Point of Sale Posting Service *(Optional)*

- This Microsoft Windows service is installed on the Head Office server and checks for offline transactions that have been copied from the branch server to the main server, but that have not yet been posted to SYSPRO ERP.

  Its purpose is to post the copied offline transactional data to SYSPRO ERP.

  You can configure this service to post at defined intervals.

- SYSPRO 8 Point of Sale Print Service *(Optional)*

  This is an essential service to successfully print from within ***SYSPRO Point of Sale***.

  This Microsoft Windows service is installed on all servers and is used for device-based printing. It enables communication between ***SYSPRO Point of Sale*** and the printers configured on the server, thereby controlling all the printing sent directly to those printers.

This service is used by:

- SYSPRO Point of Sale

Navigation

- The default location for this service is:

  Program Files (x86) > SYSPRO > SYSPRO 8 Point of Sale Services

Starting

Installation considerations

- You install this service using the ***SYSPRO Point of Sale*** autorun, available to download from the **SYSPRO Installer Application**.

  During the installation you will be required to configure settings for the service.

- We recommend that you restart the service to release any e.net business objects which may be held by the service.

  Reinstalling a service is typically only required if an updated and/or improved version of the service is released.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The files are located in the folder to which you installed the service and defaults to: `C:\Program Files (x86)\SYSPRO\SYSPRO Point of Sale Services`.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

FAQs

Installation, configuration and updates

What statuses are written to the application log?

Besides errors, the **SYSPRO 8 Point of Sale Synchronize Service** writes the following statuses to the application log:

- SYSPRO Files Sync Started
- SYSPRO Files Synced
- POS Files Sync started
- POS Files Synced

Where do I configure settings for the SYSPRO Point of Sale services?

The settings are configurable within each specific service's configuration file, which is located in the install directory of each specific service.

Where must the SYSPRO 8 Point of Sale Synchronize Service be installed?

This service must be installed on all servers.

Which account must be specified when installing the SYSPRO 8 Point of Sale Print Service on a server?

A local administrator account that has access to all printers.

How are database updates handled?

The underlying ***SYSPRO Point of Sale*** architecture provides real time updates and seamless database creation and updates, making it truly adaptable.

If any updates are required, ***SYSPRO Point of Sale*** automatically updates both the components and databases based on the version currently deployed or updated.

The **SYSPRO 8 Point of Sale Synchronize Service** controls all updates of the software on the Head Office server and all branch servers. As soon as an update file is found, it ensures that components are copied to all required servers and automatically updates the database, Point of Sale components and SYSPRO components required on the offline server.

This means that updates can be done automatically as part of the SYSPRO update architecture.

How are multiple companies updated?

The **SYSPRO 8 Point of Sale Posting Service** posts per company. Therefore, only a single service is installed and the service itself controls posting to multiple companies. It posts on a different thread per company, meaning that it still operates as a separate service but is only installed once.

Services and service operators

What is the SYSPRO 8 Point of Sale Synchronize Service?

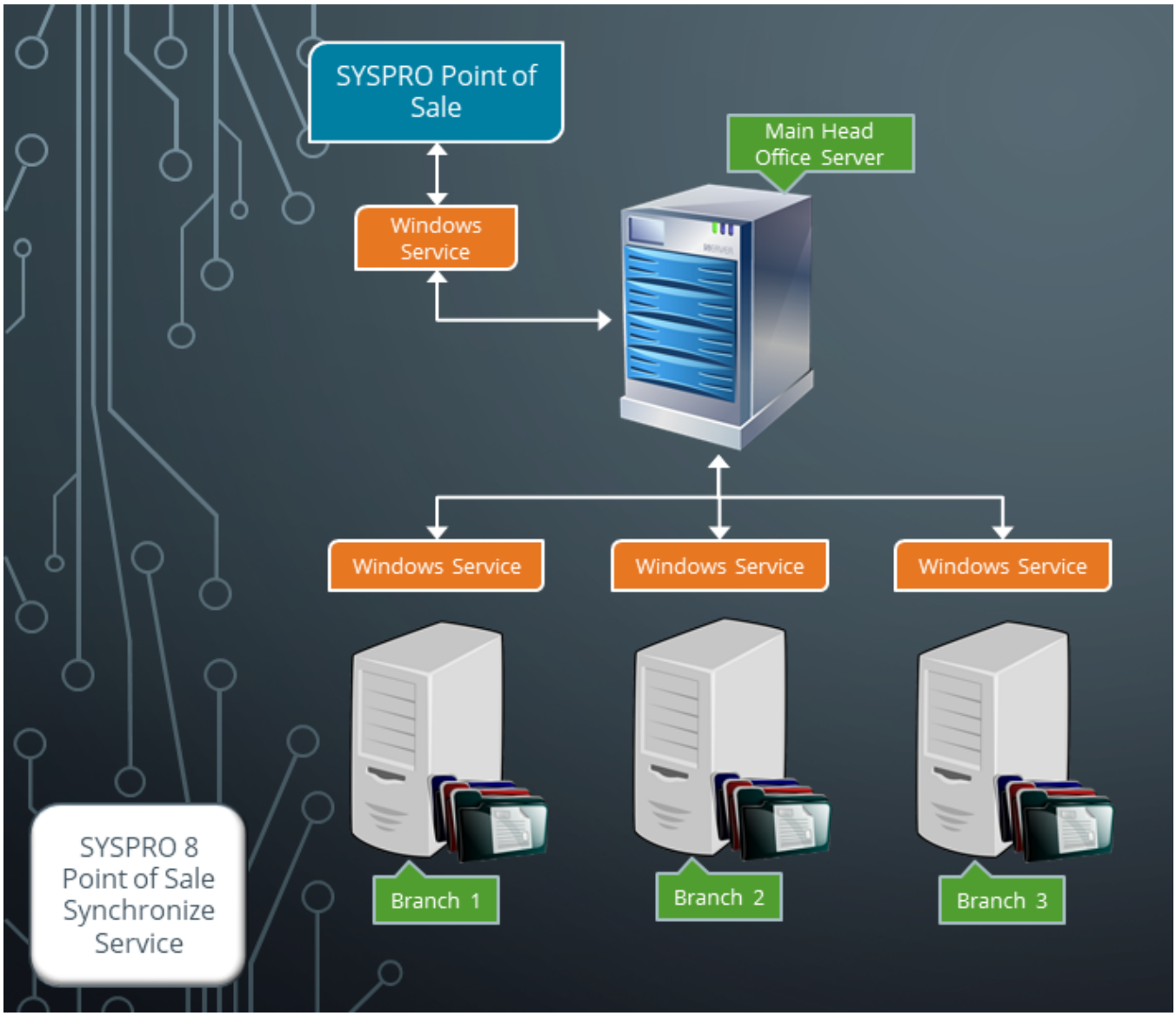
This Microsoft Windows service is installed in both online and offline environments and is used to synchronize ***SYSPRO Point of Sale*** application files (i.e. it self-heals web site components). It uses web services hosted on the Head Office server to synchronize changes to ***SYSPRO Point of Sale***, as well as SYSPRO files at the various branches.

Its primary purpose is to check for any SYSPRO Point of Sale updates that may have been ported and automatically update the software accordingly.

The secondary purpose of this function in the offline environment is to check for any business object or work file changes that need to be applied to the Branch server. If it detects any updates, it copies down the relevant files needed by the SYSPRO Offline foundation.

This service should only be configured to run once a day after hours (or as required) when SYSPRO settings have changed or updates have been made, so that the required **Internet Information Services (IIS)** can restart without affecting trading.

Upon startup, the service makes 3 attempts to perform an initial sync, after which it resumes as per the scheduled setup. Restarting the service can be used to force a sync on a branch after specific setup values were changed at Head Office.



How does the SYSPRO 8 Point of Sale Copy Service work?

This is an essential service to successfully use the ***SYSPRO Point of Sale*** Offline architecture.

This Microsoft Windows service is installed on the Head Office server and its purpose is to copy transactional data from all offline branches to the main Head Office server. The service therefore continually checks each branch server for transactions that need to be copied up to the Head Office

server. If it finds a transaction, it copies it from the branch server (where the Offline Foundation version of SYSPRO ERP is installed) to the Head Office server (where the complete version of SYSPRO ERP is installed) and marks it as "copied" on the branch server.

In the `SYSPROPOS` database, a table called `_BranchesSqlConnections` contains the connection strings which the SYSPRO 8 Point of Sale Copy Service references to copy the waiting offline branch data. Each offline branch requires a corresponding connection string in this table to be processed.

Each time the service runs, it determines which branch to copy next by comparing the `ProcessDate` field in the table, and the last branch processed is the first one to process next. The `RecordsToCopy` field is used to determine how many transactions will be copied at once.

When the copying process starts, the records being copied are flagged as `Busy Copying`. When this process completes, it updates with the status `COPIED`.

Two types of data are copied via the SYSPRO 8 Point of Sale Copy Service:

- Transaction data
- End of Day cash up data

What are service operators and what are they used for?

Service operators are created by SYSPRO and are used by SYSPRO services to obtain information about SYSPRO.

The service operator code starts with a double underscore to differentiate them from other operators. A default company code must be assigned to each service operator within the **Operator Maintenance** program, as we use the company code to log in the service operator via e.net .

The following is a list of service operators and their function within SYSPRO:

- The `__ADSYNC` service operator is used by the **SYSPRO 8 Active Directory Sync Service** to push **Microsoft Active Directory (AD)** information into SYSPRO for Active Directory managed operators.
- The `__DFM` service operator is used by the **SYSPRO 8 Document Flow Manager Folder Poller** and **SYSPRO 8 Document Flow Manager Queue Poller** to monitor folders, send files to the queue and process files.
- The `__ESP` service operator is used by the following services:
  - **SYSPRO 8 Espresso Service**,
  - **SYSPRO 8 Espresso Notification Service**,
  - **SYSPRO Espresso Development Plugin** and the
  - **SYSPRO Avanti Web Service** to obtain information for the password reset and forgot password functionality.

- The __POS service operator is used by the **SYSPRO 8 Point of Sale Services** to determine and validate the setup options and required credentials at start up, update the required databases and post to SYSPRO (if the Point of Sale operator doesn't have access to SYSPRO).
- The __RUL service operator is used by the **SYSPRO 8 Rules Engine Service** and the **SYSPRO 8 Rules Data Service**.
- The __SA service operator is used by the **SYSPRO 8 Analytics** service to make business object calls.
- The __SAI service operator is used by the **SYSPRO 8 Machine Learning** service.
- The __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** and the **SYSPRO 8 Cognitive Service** to manage client-side report printing.

- Only specific services use service operators to log in via e.net.
- SYSPRO creates service operators by copying the ADMIN operator. If the ADMIN operator record doesn't exist (i.e. it may have been deleted), then the current operator is used when saving system details from the **Setup Options** program.

What is the difference between a service operator and a normal operator?

Service operators are signed in by a *SYSPRO service* and are used for any functionality that is required by the service to obtain information about SYSPRO.

Normal operators sign in to SYSPRO with a username and password. They access certain programs and functions to perform specific tasks.

> **FOR EXAMPLE:**
>
> the __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** to obtain information about the companies in an environment, but it isn't used by the business object to retrieve the data for a report, as that would be the specific normal operator that submits the request for the report.

Troubleshooting

How do I troubleshoot the SYSPRO 8 Point of Sale Print Service?

This depends on what version of the SYSPRO 8 Point of Sale Print Service is installed on the server:

- If an older version of the service is installed, then you can look in the Temp directory of your C drive for the service text file.
- If a newer version of the service is installed, then you can look in the service's install directory for the LOG - OPERATIONAL.txt and LOG - ERROR.txt text files.

How do I troubleshoot the SYSPRO 8 Point of Sale Posting Service?

You can use one of the following sources:

- The log tracing detail text file of the **SYSPRO 8 Point of Sale Posting Service**

  If this type of logging is enabled in the Posting service configuration file.

- The Windows application logs (*Event Viewer* > *Windows Logs* > *Application*)

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

SYSPROServerSyncService.exe.config

Application settings	Description
UpdateTime	21:00
UpdateInterval	86400000
EnableDebuggingToLog	True/False
DebugLog	`C:\Program Files (x86)\SYSPRO\SYSPRO 8 Point of Sale Services\DebugLog.txt`
InstanceId	This indicates the default instance of SYSPRO with which the service will communicate. SYSPRO instances are reflected in your Windows Registry to identify the `\Base` folder of your SYSPRO install where the necessary `.dll` and `.exe` files are located.
BaseLoadBalancerAddress	This indicates the TCP-based network protocol (`net.tcp://`) that points to your **SYSPRO 8 e.net Communications Load Balancer** installation.
CompanyCode	This indicates the SYSPRO Company Directory.
InstallDir	The indicates the directory in which you installed the software.
IsOnline	True/False.
PosUrl	`/SYSPRO8POS_/`

SysproPosCopyService.exe.config

Application settings	Description
BaseLoadBalancerAddress	This indicates the TCP-based network protocol (`net.tcp://`) that points to your **SYSPRO 8 e.net Communications Load Balancer** installation.
InstanceId	This indicates the default instance of SYSPRO with which the service will communicate. SYSPRO instances are reflected in your Windows Registry to identify the `\Base` folder of your SYSPRO install where the necessary `.dll` and `.exe` files are located.

SYSPROPosPostService.exe.config

Application settings	Description
LogTracingDetailToApplicationLog	True/False.
LogTracingDetailToTextFile	True/False. `C:\Program Files(x86)\SYSPRO\SYSPRO 8 Point of Sale Services\TracingLog.txt`
TransactionPostingInterval	10000
EndOfDayPostingInterval	600000
InvoiceAndPaymentBatchPostingInterval	120000
BaseLoadBalancerAddress	This indicates the TCP-based network protocol (net.tcp://) that points to your **SYSPRO 8 e.net Communications Load Balancer** installation.
InstanceId	This indicates the default instance of SYSPRO with which the service will communicate. SYSPRO instances are reflected in your Windows Registry to identify the `\Base` folder of your SYSPRO install where the necessary `.dll` and `.exe` files are located.

SYSPROPosPrintService.exe.config

Application settings	Description
iTunesIP	This indicates the IP address of the service provider that your **iTunes** integration communicates with.
iTunesPort	This indicates the port number of the service provider for your **iTunes** integration.
iTunesServiceInterval	This indicates how often **iTunes** must check for new transactions that require posting to your service provider.
iTunesTimeOut	This indicates how long the service must wait before it considers communications with the service provider to be timed out.
iTunesEchoMessageInterval	This indicates how often the service must make an echo request to the **iTunes** service provider to keep the communications channel open.
EnableiTunes	This indicates that **iTunes** integration must be enabled.

Application settings	Description
PrintCount	This defines the number of copies that must be sent to the printer.  This can be used for printing duplicates instead of using NCR paper or Pre-printed stationary that already contains duplicates.
httpsCertificateToUse	If the service is installed to run on HTTPS, this indicates the certificate that must be used for hosting its own communication end points.

SYSPRO 8 Point of Sale Utility Service

Exploring

Where it fits in?

This service is installed on client machines and is used for device-based printing, as well as integration to external devices (e.g. signature pads and card payment integration pads).

Its purpose is to provide the client machine's details (i.e., IP address and computer name) to ***SYSPRO Point of Sale*** during transaction processing.

This service is used by:

- SYSPRO Point of Sale

Navigation

- The default location for this service is:

  Program Files (x86) > SYSPRO > SYSPRO 8 Point of Sale Utility Service

Starting

Installation considerations

- This service is only installed on client machines (at each SYSPRO Point of Sale branch) that run ***SYSPRO Point of Sale*** on the **Microsoft Silverlight** platform.
- You install this service using the ***SYSPRO Point of Sale*** autorun, available to download from the **SYSPRO Installer Application**.

  During the installation you will be required to configure settings for the service.

- If you previously installed SYSPRO Point of Sale without specifying the SYSPRO 8 Point of Sale Utility Service port number, then (once you have installed this service) you must manually configure the `<SysproPosClientSideServiceUrl>` entry within the **SystemConfig.xml** file of SYSPRO Point of Sale.

  FOR EXAMPLE:

  If you are using port number `30210`:

  ```
  <SysproPosClientSideServiceUrl>http://localhost:30210</SysproPosClientSideServiceUrl>
  ```

  The SYSPRO 8 Point of Sale Utility Service runs on the client machine and **Microsoft Silverlight** sends requests to the client machine's Utility service from the client machine. Therefore, the `<SysproPosClientSideServiceUrl>` needs to point to a “localhost” address to ensure that its local to each client machine running the SYSPRO 8 Point of Sale Utility Service.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPROPOSUtilityService.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

FAQs

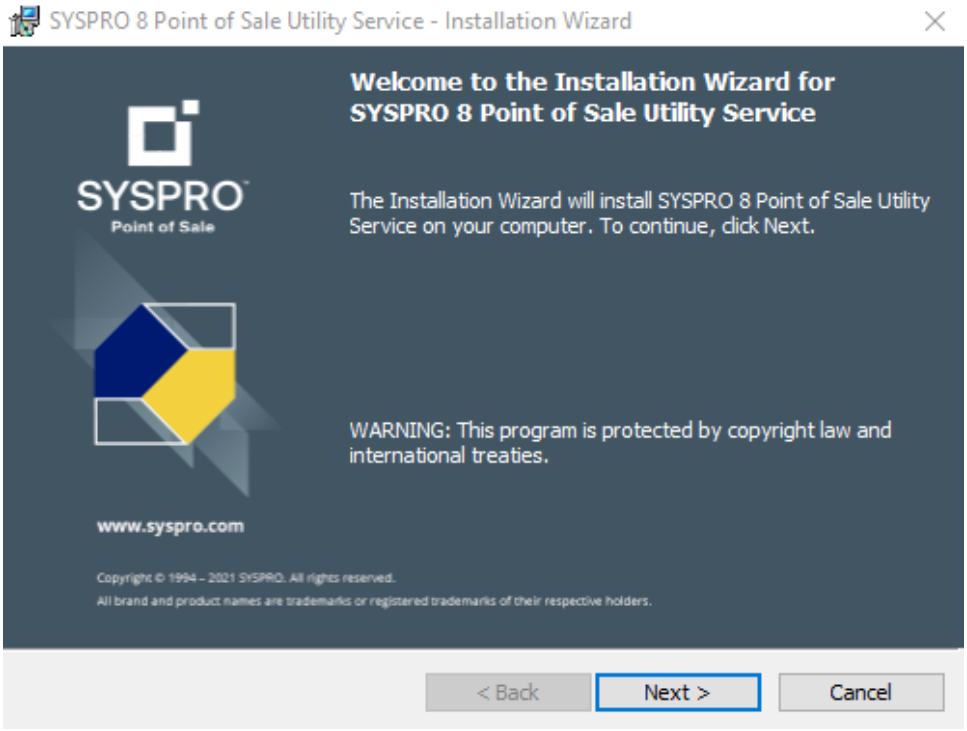
How do I install the SYSPRO 8 Point of Sale Utility Service?

This service is installed on client machines and is used for device-based printing, as well as integration to external devices (e.g. signature pads and card payment integration pads).

Its purpose is to provide the client machine's details (i.e., IP address and computer name) to ***SYSPRO Point of Sale*** during transaction processing.

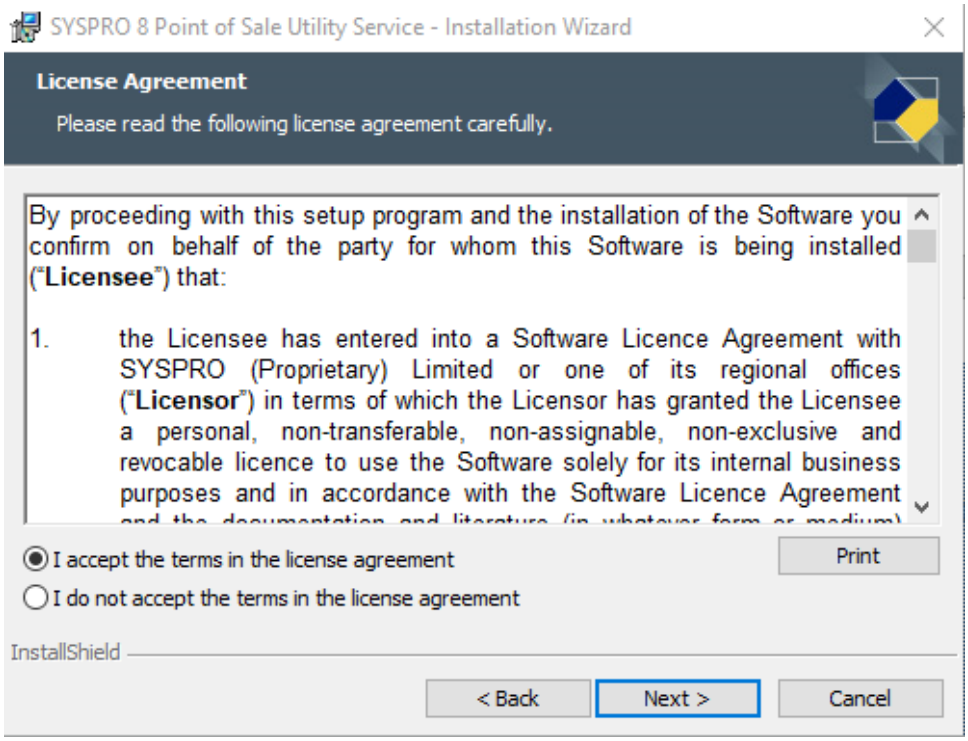
Proceed as follows to install this service using the SYSPRO Point of Sale autorun.exe wizard:

1. Installation Wizard



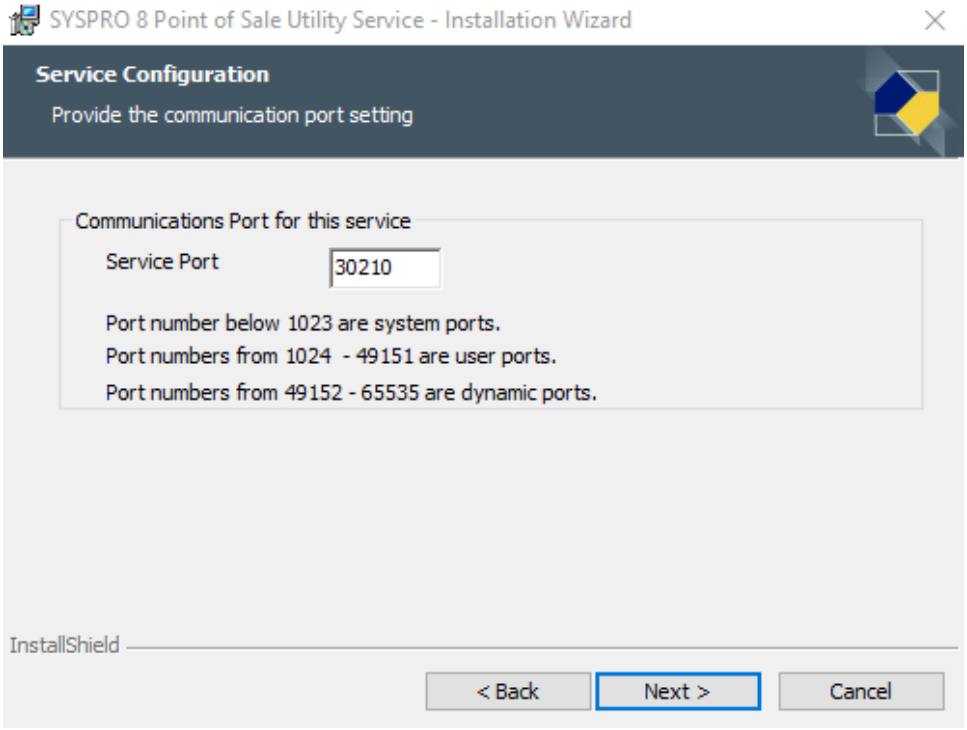
From the **Welcome to the Installation Wizard for SYSPRO 8 Point of Sale Utility Service** window, select **Next** to continue.

2. License Agreement



From the **License Agreement** window, accept the terms of the agreement.

3. Service Configuration

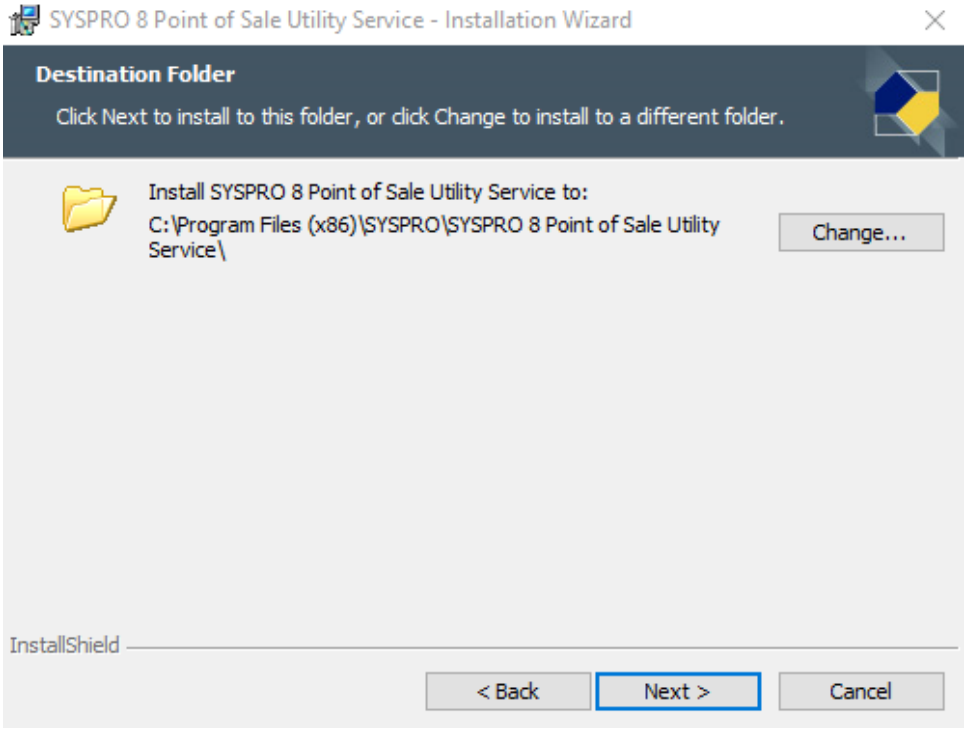


From the **Services Configuration** window, indicate the communication port to be used for the SYSPRO 8 Point of Sale Utility Service.

> This port number must match the port defined during the install of the SYSPRO 8 Point of Sale Services.

Select **Next** to continue.

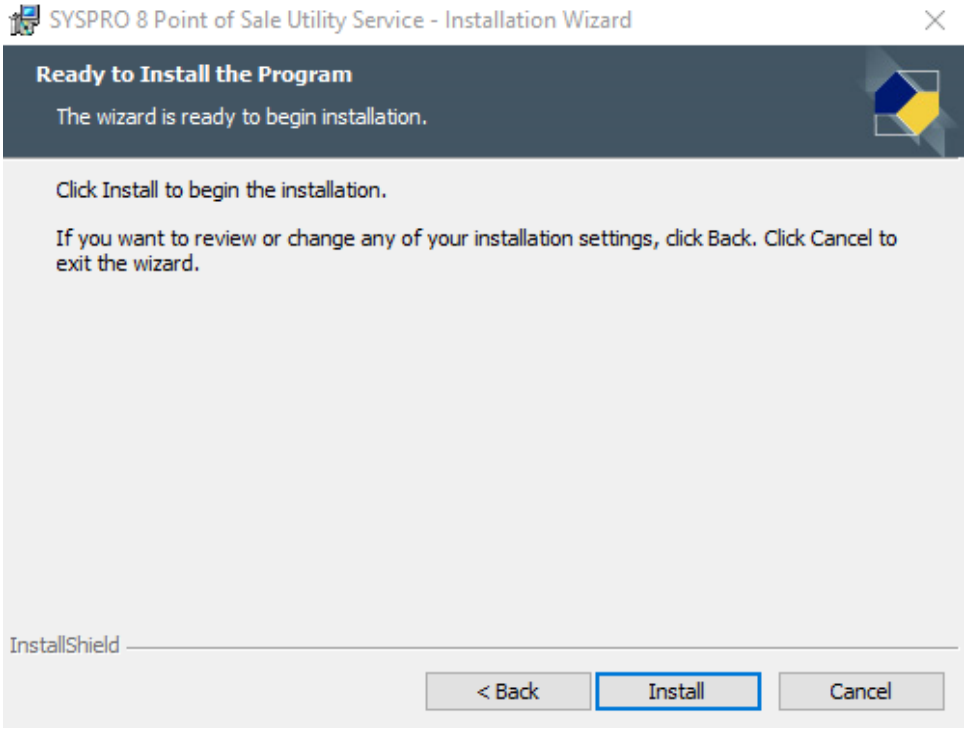
4. Destination Folder



From the **Destination Folder** window, indicate the install location for the service or accept the default provided.

Select **Next** to continue.

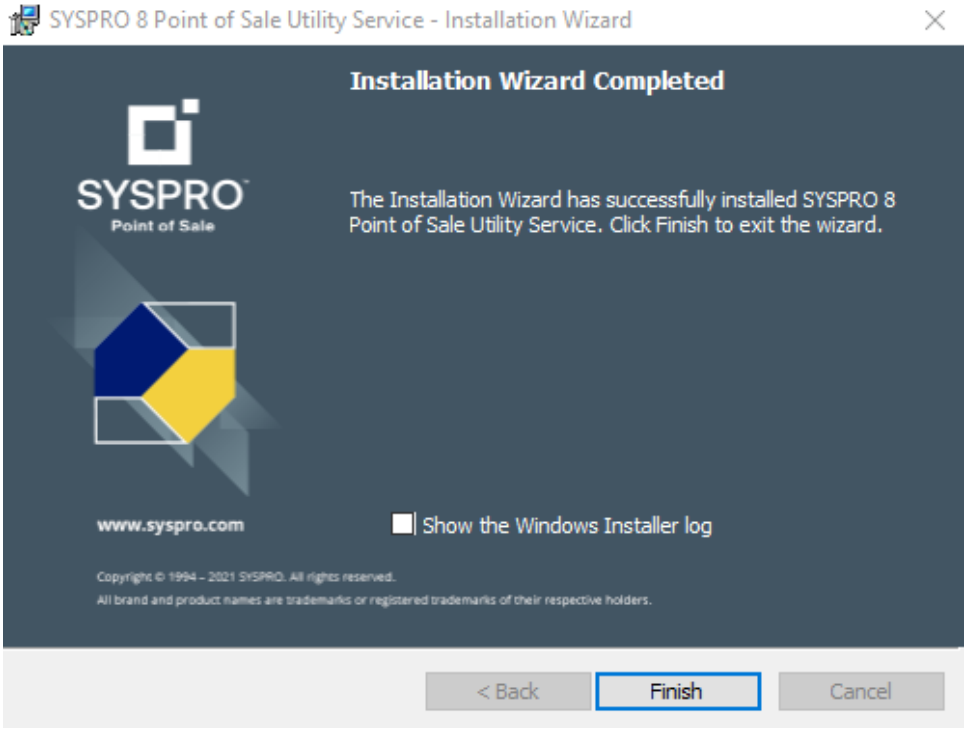
5. Begin Install



From the **Ready to Install the Program** window, select the **Install** function to begin the installation.

Use the **Back** function if you want to review or change any of your installation settings.

6. Install Complete



Once the installation completes, the **Installation Wizard Completed** window is displayed.

Select **Finish** to exit the wizard.

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Application settings	Description
WebApiUrl	http://localhost:10281/

SYSPRO 8 Reporting Host Service

Exploring

Where it fits in?

This service is used to communicate requests between ***SYSPRO Reporting Services*** and Crystal Reports.

This service is used by:

- SYSPRO Server-side Reporting

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO 8 Reporting Host Service*

Starting

Prerequisites

The **SYSPRO 8 Reporting Host Service** must be installed on the same application server as the ***SYSPRO 8*** Server.

SYSPRO Additional Reporting Software 2020 SP4

*(Available from **SYSPRO 8 2023** onwards. This is only applicable within **SYSPRO 8 2023** if **Hotfix KB8100663** has been applied.)*

- Server-Side Software:
  - Microsoft .NET Framework 4.8
  - SAP Crystal Reports Server 2020 SP4
  - SYSPRO 8 Runtime
  - SYSPRO 8 Reporting Host Service
- Client-Side Software:

  Requirements to print SYSPRO reports using the SRS technology, via client-side:
  - Microsoft .NET Framework 4.8
  - SAP Crystal Reports Server 2020 SP35

    SAP Crystal Reports Runtime Engine
  - SYSPRO 8 Runtime
  - SYSPRO 8 Reporting Components
- Designer Software:

  Requirements to change the standard SYSPRO SRS reports or design your own reports/documents, via client-side:
  - Microsoft .NET Framework 4.8
  - SAP Crystal Reports Runtime Engine
  - SYSPRO 8 Runtime
  - SYSPRO 8 Reporting Components
  - SAP Crystal Reports Server 2020 SP4
  - BusinessObjects .NET SDK 64bit 4.3 SP4
  - SYSPRO 8 Reporting Designer Addin

SYSPRO Additional Reporting Software 2020

*(Available from **SYSPRO 8 2021 R2** to **SYSPRO 8 2023**)*

- Server Side Software:
  - Microsoft .NET Framework 4.6
  - Microsoft .NET Framework 4.8
  - SAP Crystal Reports Server 2020
  - SYSPRO 8 Runtime
  - SYSPRO 8 Reporting Host Service
- Client-Side Software:

  Requirements to print SYSPRO reports using the SRS technology, via client-side:
  - Microsoft .NET Framework 4.6
  - Microsoft .NET Framework 4.8
  - SAP Crystal Reports Runtime Engine
  - SYSPRO 8 Runtime
  - SYSPRO 8 Reporting Components
- Designer Software:

  Requirements to change the standard SYSPRO SRS reports or design your own reports / documents, via client-side:
  - Microsoft .NET Framework 4.6
  - Microsoft .NET Framework 4.8
  - SAP Crystal Reports Runtime Engine
  - SYSPRO 8 Runtime
  - SYSPRO 8 Reporting Components
  - SAP Crystal Reports 2020 SP2
  - BusinessObjects .NET SDK 64bit 4.3 SP2
  - SYSPRO 8 Reporting Designer Addin

SYSPRO Additional Reporting Software 2016

*(Applicable for use from **SYSPRO 8 2020 R2** to **SYSPRO 8 2021 R2**)*

Due to SAP Crystal Reports 2016 having reached the end of its life cycle, the **Additional Reporting Software 2016** is no longer available for new installations from January 2024.

- Server Side Software:
  - Microsoft .NET Framework 4.6
  - Microsoft .NET Framework 4.8
  - SAP Crystal Reports Server 2016 SP8
  - SYSPRO 8 Runtime
  - SYSPRO 8 Reporting Host Service
  - SAP BusinessObjects BI platform .NET SDK Redistributable 64bit 4.2 SP8
- Client-Side Software:

  Requirements to print SYSPRO reports using the SRS technology, via client-side:
  - Microsoft .NET Framework 4.6
  - Microsoft .NET Framework 4.8
  - Business Objects Runtime 2016 x86
  - SYSPRO 8 Runtime
  - SYSPRO 8 Reporting Components
- Designer Software:

  Requirements to change the standard SYSPRO SRS reports or design your own reports / documents, via client-side:
  - Microsoft .NET Framework 4.6
  - Microsoft .NET Framework 4.8
  - Business Objects Runtime 2016 x86
  - SYSPRO 8 Runtime
  - SYSPRO 8 Reporting Components
  - SAP BusinessObjects BI platform .NET SDK Redistributable 64bit 4.2 SP8
  - SAP Crystal Reports 2016 SP8
  - SYSPRO 8 Reporting Designer Addin

SYSPRO Additional Reporting Software 2013

*(Applicable for use up to and including **SYSPRO 8 2020 R1**)*

Due to SAP Crystal Reports 2013 having reached the end of its life cycle, the **Additional Reporting Software 2013** is no longer available for new installations from January 2024.

- Client-Side Software:

  Requirements to print SYSPRO reports using the SRS technology, via client-side:

  - Microsoft .NET Framework 4.6
  - Microsoft .NET Framework 4.8
  - SAP Crystal Reports Runtime engine
  - SYSPRO 8 Reporting Components
  - SYSPRO 8 Runtime

- Designer Software:

  Requirements to change the standard SYSPRO SRS reports or design your own reports / documents, via client-side:

  - Microsoft .NET Framework 4.6
  - Microsoft .NET Framework 4.8
  - SAP Crystal Reports Runtime engine
  - SYSPRO 8 Runtime
  - SYSPRO 8 Reporting Components
  - SAP Crystal Reports 2013 SP6
  - SAP Crystal Reports 2013 SP8 update
  - BI platform .NET SDK Redistributable
  - SYSPRO 8 Reporting Designer Addin

The SYSPRO 8 Reporting Components enable you to print reports through SYSPRO when the **REPORTING CONFIGURATION** setup option is defined as **Client-side reporting using SQL** or **Client-side reporting using XML** (*Setup Options* > *System Setup* > *Reporting*).

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPROReportingServiceHostService.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

The **SYSPRO Reporting Host Manager** outputs an event log to the `SYSPROSSM` file.

The **SYSPRO RAS Host Manager** outputs an event log to the `SYSPRORASManagement` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
ip	
host	
impwrk	
impact	
port	
servicebaseaddress	localhost/SRS/
servicesoapbinding	nettcp
servicerestport	20129
servicesoapport	20130
instancekey	0 This key should only be used if you are in a 4-tier environment, and will be your SYSPRO client instance on the reporting host server.
SYSPROInstanceOnReportingServer	This key should only be used if you are in a 4-tier environment and will be your SYSPRO client instance on the reporting host server.
servicerefresh	0.00:01:00 This is the frequency of service update in hours.

Key	Description
usewcf	localhost:31001/SYSPROWCFService
DocumentPrintServiceAddress	localhost:20151
ReportPrintServiceAddress	localhost:20152
enabledocumentprint	true
maxdocumentemail	10
MAXNumberOfRASServers	6
ThreadSafe	This lets you switch of multi-threading so that reports run synchronously (making it safer and allowing Crystal RAS Server to handle the load).
detaillogging	This is a comma-separated list of non case-sensitive values to define what logging must be done. A value of **D** indicates logging for documents, while **A** indicates logging for document archiving (e.g. value='A,D' or value='A'). The log files are output to `%programdata%\SYSPRO\ReportingServiceHostService\Logging`. There will be a separate folder for each day and a separate log file for documents and for archiving.
EnableSRSDebug	(true/false). When this flag is switched on, the service won't delete the `GUID` folder in `%temp%`. The SQL tables are not dropped, so support can troubleshoot using the Crystal report.

SYSPRO 8 Rules Data Service

Exploring

Where it fits in?

This service monitors your SYSPRO transaction log in real time (e.g. inserts, updates or deletes) and extracts specific information required for current and active rules.

The data extracted is then persisted in the SYSPRO database, which enables the **SYSPRO 8 Rules Engine Service** to process the data without intervention so that it can execute the actions required by each configured rule.

The information extracted includes before and after values (e.g. if a stock code's description is changed from 'Bike' to 'Mountain Bike', both values are stored).

This is useful with regard to *delete-type* transactions as you have access to the whole record deleted, not just the key.

This service is used by:

- SYSPRO Rules Engine
- SYSPRO Harmony

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO 8 Rules Data Service*

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPRO.DataService.exe.config` file is located in the in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROSDS` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

FAQs

How do I address log contention?

Log contention refers to a scenario where one process or thread attempts to acquire a lock held by another process or thread, but has to wait until the lock is released. This can reduce the throughput by hindering the concurrency of a program.

In certain workloads, just reading the transaction log can itself cause log contention.

If this situation arises, an administrator can use the `BatchSize`, `SleepInterval`, and `NapInterval` settings to throttle the service and reduce the load on SQL Server.

Why was the rules data service developed?

In the era of big data, companies need to be able to track changes to their data. These changes could be stored for analysis, or they could trigger a business process.

> **FOR EXAMPLE:**
>
> A sales order for an important customer could trigger an email to an expeditor, so that the order can be given a higher level of customer service and delivered on time.

The standard way of accomplishing this type of database monitoring in **Microsoft SQL Server**, is to use database events, which can monitor database operations and store them to other database tables.

However, database events usually involve severe performance degradation (verified by our own in-house testing). The effect is amplified for highly transactional systems, like SYSPRO ERP.

The **SYSPRO 8 Rules Data Service** provides an alternative approach to monitoring the database - it monitors the SQL transaction log. This is the *ledger* SQL Server uses internally to ensure the consistency of the database and to recover from errors in case of corruption.

Reading the transaction log results in better overall performance when compared to using database events.

What are service operators and what are they used for?

Service operators are created by SYSPRO and are used by SYSPRO services to obtain information about SYSPRO.

The service operator code starts with a double underscore to differentiate them from other operators. A default company code must be assigned to each service operator within the **Operator Maintenance** program, as we use the company code to log in the service operator via e.net .

The following is a list of service operators and their function within SYSPRO:

- The __ADSYNC service operator is used by the **SYSPRO 8 Active Directory Sync Service** to push **Microsoft Active Directory (AD)** information into SYSPRO for Active Directory managed operators.
- The __DFM service operator is used by the **SYSPRO 8 Document Flow Manager Folder Poller** and **SYSPRO 8 Document Flow Manager Queue Poller** to monitor folders, send files to the queue and process files.
- The __ESP service operator is used by the following services:
  - **SYSPRO 8 Espresso Service**,
  - **SYSPRO 8 Espresso Notification Service**,
  - **SYSPRO Espresso Development Plugin** and the
  - **SYSPRO Avanti Web Service** to obtain information for the password reset and forgot password functionality.
- The __POS service operator is used by the **SYSPRO 8 Point of Sale Services** to determine and validate the setup options and required credentials at start up, update the required databases and post to SYSPRO (if the Point of Sale operator doesn't have access to SYSPRO).
- The __RUL service operator is used by the **SYSPRO 8 Rules Engine Service** and the **SYSPRO 8 Rules Data Service**.
- The __SA service operator is used by the **SYSPRO 8 Analytics** service to make business object calls.
- The __SAI service operator is used by the **SYSPRO 8 Machine Learning** service.
- The __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** and the **SYSPRO 8 Cognitive Service** to manage client-side report printing.

- Only specific services use service operators to log in via e.net.
- SYSPRO creates service operators by copying the ADMIN operator. If the ADMIN operator record doesn't exist (i.e. it may have been deleted), then the current operator is used when saving system details from the **Setup Options** program.

What is the difference between a service operator and a normal operator?

Service operators are signed in by a *SYSPRO service* and are used for any functionality that is required by the service to obtain information about SYSPRO.

Normal operators sign in to SYSPRO with a username and password. They access certain programs and functions to perform specific tasks.

FOR EXAMPLE:

the __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** to obtain information about the companies in an environment, but it isn't used by the business object to retrieve the data for a report, as that would be the specific normal operator that submits the request for the report.

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
CommandTimeout (milliseconds)	This indicates the timeout that is used for commands against the database. This corresponds to an ADO.net command timeout. The default is `300ms`.
BatchSize	This controls contention on the transaction log by throttling how many transactional records are read and written in each batch. The default is `750 records`.
SleepInterval (milliseconds) & NapInterval (milliseconds)	These settings assist in controlling the service throttling. The service checks the transaction log for changes every `SleepInterval`. If changes are detected, the service then reads the `BatchSize` records, and then waits `NapInterval`. This step is repeated until there are no more records available. Once all records are read, the service waits for `SleepInterval` again before checking for more changes. The defaults are: ■ SleepInterval = `5000ms` ■ NapInterval = `500ms`

Key	Description
SubscriberRefreshInterval (milliseconds)	 This service has the following subscribers: ▪ **SYSPRO Rules Engine**.  Subscribers can subscribe to specific events. **FOR EXAMPLE:** Only notify inserts and deletes on the InvMaster table. Subscribers can also change this at any time. **FOR EXAMPLE:** You no longer require changes from the InvMaster table, but rather changes on the InvMovements table. A subscriber notifies the **SYSPRO 8 Rules Data Service** of the events it is interested in by posting a message to a message queue, such as a new rule created by the **SYSPRO Rules Engine**. The service then checks for this message every `SubscriberRefreshInterval`. Therefore, changing the configuration in the SYSPRO Rules Engine, may not see events come through until this message is read. The default is `30 000ms`.
VersionCheckTime (hh:mm)	This indicates when to check the **SYSPRO 8 Service Upgrade Manager** to perform an automatic service update.  This should be scheduled during a low transaction time (e.g. shift change). The default is `05:00`.
BaseDir (text)	This indicates the SYSPRO instance to use when connecting to the **SYSPRO 8 e.net Communications Load Balancer** service. The default is `0`.

SYSPRO 8 Rules Engine Service

Exploring

Where it fits in?

This service processes the data extracted by the **SYSPRO 8 Rules Data Service** after monitoring the SYSPRO transaction log.

The service is responsible for:

- Processing each log entry relayed by the **SYSPRO 8 Rules Data Service** service.
- Gathering the required data and calculating the additional values required.
- Evaluating sets of conditional statements.
- Executing all actions required per rule.

This service communicates to the following platforms:

- SYSPRO Espresso
- SYSPRO Web UI (Avanti)

This service is used by:

- SYSPRO Rules Engine
- SYSPRO Harmony

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO 8 Rules Engine Service*

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

Configuring

The following setup options must be configured to use this service:

Setup Options

Setup Options > *System Setup* > *Rules Engine/Harmony*

Rules Engine/Harmony System Setup

Ensure that you define which companies you want the **SYSPRO 8 Rules Engine Service** to monitor:

- Rules engine options
  - Rules Engine active company list

Database

Ensure that your SQL credentials are defined as the service uses these settings for its database connections.

- Company database connection
  - SQL Server name
- SQL Server administrative information
  - Administrator login
  - Administrator login password

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPRORulesEngineService.exe.config` file is located in the in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPRORUL` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

FAQs

What is the default interval timing?

The **SYSPRO 8 Rules Engine Service** has the following internal interval loops:

- `MessageQueueLoop`

  This loop retrieves records highlighted by the **SYSPRO 8 Rules Data Service** and processes the appropriate rules for each of these transactions.

  This process evaluates all variables and conditions and prepares a list of actions to process for each rule.

  The default delay (`MessageQueueLoopDelay`) for this loop is `10 seconds`.

- `ActionQueueLoop`

  This loop sequentially processes all the actions queued by the `MessageQueueLoop`.

  The default delay (`ActionQueueLoopDelay`) for this loop is `11 seconds`.

- `RefreshLoop`

  This loop refreshes all data for the service.

  This includes updating the list of active rules, checking for a service update, and retrieving the latest database schemas for all active companies.

  The default delay (`RefreshLoopDelay`) for this loop is `61 seconds`.

What is the purpose of the persistence file?

The actions processed between the `MessageQueueLoop` and `ActionQueueLoop` are persisted to the `\Temp` folder for the Service User.

> **FOR EXAMPLE:**
>
> `C:\Windows\Temp\SYSPRO_8_RulesEngineService_Persistence`

This persistence file is used to process any forwarded actions in case the service shuts down before processing all required actions.

Do I need to restart the service when updating the config file?

Settings are refreshed with each Refresh Loop, excluding loop delay settings.

Therefore, for changes to loop delays (or to have new settings apply immediately) we recommend refreshing the service.

What are service operators and what are they used for?

Service operators are created by SYSPRO and are used by SYSPRO services to obtain information about SYSPRO.

The service operator code starts with a double underscore to differentiate them from other operators. A default company code must be assigned to each service operator within the **Operator Maintenance** program, as we use the company code to log in the service operator via e.net .

The following is a list of service operators and their function within SYSPRO:

- The `__ADSYNC` service operator is used by the **SYSPRO 8 Active Directory Sync Service** to push **Microsoft Active Directory (AD)** information into SYSPRO for Active Directory managed operators.
- The `__DFM` service operator is used by the **SYSPRO 8 Document Flow Manager Folder Poller** and **SYSPRO 8 Document Flow Manager Queue Poller** to monitor folders, send files to the queue and process files.
- The `__ESP` service operator is used by the following services:
  - **SYSPRO 8 Espresso Service**,
  - **SYSPRO 8 Espresso Notification Service**,
  - **SYSPRO Espresso Development Plugin** and the
  - **SYSPRO Avanti Web Service** to obtain information for the password reset and forgot password functionality.
- The `__POS` service operator is used by the **SYSPRO 8 Point of Sale Services** to determine and validate the setup options and required credentials at start up, update the required databases and post to SYSPRO (if the Point of Sale operator doesn't have access to SYSPRO).
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- The `__SA` service operator is used by the **SYSPRO 8 Analytics** service to make business object calls.
- The `__SAI` service operator is used by the **SYSPRO 8 Machine Learning** service.
- The `__SRS` service operator is used by the **SYSPRO 8 Reporting Host Service** and the **SYSPRO 8 Cognitive Service** to manage client-side report printing.

- Only specific services use service operators to log in via e.net.
- SYSPRO creates service operators by copying the `ADMIN` operator. If the `ADMIN` operator record doesn't exist (i.e. it may have been deleted), then the current operator is used when saving system details from the **Setup Options** program.

What is the difference between a service operator and a normal operator?

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> **FOR EXAMPLE:**
>
> the __SRS service operator is used by the **SYSPRO 8 Reporting Host Service** to obtain information about the companies in an environment, but it isn't used by the business object to retrieve the data for a report, as that would be the specific normal operator that submits the request for the report.

Using

Hints and Tips

- Ensure that you restart the service if your **COMPANY DATABASE CONNECTION** options change (**SQL System Setup** form within the **System Setup** category of the **Setup Options** program).

  This refreshes the subscriber entry in the `RulMessageQueue` and clearing the old SQL connection settings.

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
BaseDir	This indicates the SYSPRO instance to use when connecting to the **SYSPRO 8 e.net Communications Load Balancer** service. The default is `8`.
MessageQueueLoopDelay (milliseconds)	This indicates how often the service must read the Message Queue table. The default is `10000`.
MessageQueueBatch	This indicates how many records the service must retrieve from the Message Queue table. The default is `1000`.
ActionQueueLoopDelay (milliseconds)	This indicates how often the service must process the action queue The default is `11000`.
ActionQueueBatch	This indicates how many actions the service must action from the Action Queue. The default is `1000`.
RefreshLoopDelay (milliseconds)	This indicates how often to refresh data for the service, including: ▪ Updating rules ▪ Checking for service updates ▪ Checking for latest database schemas The default is `61000`.
Debug specific options	

Key	Description
CreateDetailsLog	This creates an output log in the temp drive = `C:\Windows\Temp\SYSPRORulesEngine_Detail_{date}.Log` The default is `False`.
FullErrorLogging	This outputs a full error message including stack trace. The default is `False`.
MessageQueuePurge	This deletes processed transactions from Message Queue. The default is `True`.
Debug	This creates extra debug logging lines. **FOR EXAMPLE:** Rule ID with Harmony Beat. The default is `False`.
ConstantRefresh	This refreshes rules before every `MessageQueueLoop`.  This is useful to apply new rules immediately. The default is `False`.

SYSPRO 8 Service Upgrade Manager

Exploring

Where it fits in?

This service is used to self-heal/update other SYSPRO services on the same machine.

This service is used by:

- All services (except Document Flow Manager, SYSPRO Analytics and web services)
- SYSPRO Desktop
- SYSPRO Web UI (Avanti)
- SYSPRO Espresso
- SYSPRO Harmony

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO 8 Service Upgrade Manager*

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPROServiceManagerService.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROSSM` file.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

SYSPRO 8 Web Service

Exploring

Where it fits in?

This lets you access SYSPRO data through ***e.net Solutions*** using a web service on the internet.

Although still supported, this service was replaced by the **SYSPRO e.net WCF Service**, which was subsequently replaced by the **SYSPRO 8 e.net Communications Load Balancer**.

This service is used by:

- SYSPRO e.net Diagnostics
- Any external or third party e.net application accessing SYSPRO data.

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- Internet Information Server (IIS) 7.0
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.

SYSPRO Web Services is a wrapper around the SYSPRO 8 e.net Communications Load Balancer service, which is a prerequisite when installing ***SYSPRO 8***.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.
- Web-based Applications are not installed on the SYSPRO Application Server.

SYSPRO 8 Workflow Service

Exploring

Where it fits in?

This service allows any client or server application to communicate with workflows executing on the server.

The workflows and their endpoints are exposed as SOAP and REST endpoints. This simplifies developing and integrating applications to ***SYSPRO Workflow Services***.

This service is used by:

- SYSPRO Workflow Services

Navigation

- The default location for this service is:

  Program Files > *SYSPRO* > *SYSPRO 8 Workflow Service*

Starting

Prerequisites

- Microsoft .NET Framework 4.6
- Microsoft .NET Framework 4.8
- SYSPRO 8 Service Upgrade Manager
- SYSPRO 8 e.net Communications Load Balancer

  A valid endpoint must be configured in the **Setup Options** program of ***SYSPRO 8***.
- The **SYSPRO 8 Workflow Service** must be set to **Automatic (Delayed Start)** as it requires the **SYSPRO 8 e.net Communications Load Balancer** to be started first.

Installation considerations

- This service is installed using the **SYSPRO Installer Application**.

Solving

Debugging and Diagnostics

Service Config.exe file

You can debug this service by editing the associated `config` file in elevated mode (i.e. with administrator privileges).

The `SYSPROWorkflowHostService.exe.config` file is located in the folder to which you installed the service.

Windows Event Viewer function

You can view monitoring and troubleshooting messages about this service using the **Event Viewer** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Event Viewer* > *Applications and Service Logs*)

This service outputs an event log to the `SYSPROSWS` file.

If you add a `<DetailedLog>` setting with a value of true, then this switches on logging for the workflow service. This records all calls to the workflow service as well as the workflow services' interaction with SYSPRO itself. This can be extremely useful when debugging whether calls reached workflow, whether workflows are starting up correctly and any other unexpected errors.

A `SYSPROWorkflowHost.dll.log` and a `SYSPROWorkflowHostWrapper.dll` log file is created in the SYSPRO Workflow Services install directory. The `SYSPROWorkflowHost` log will include all workflow service calls made and the `SYSPROWorkflowHostWrapper` log will include details about workflows starting up, becoming faulted, retiring, deploying and restarted.

Windows Services function

You can start, stop, restart and configure this service using the **Services** function in Windows:

(*Control Panel* > *System and Security Administrative Tools* > *Services*)

Referencing

Configuration file

You should only update this file for temporary debugging purposes (i.e. not as a method to update values for the service).

Any temporary changes made to the configuration files are reset to their original installation values when this application is next updated. Because these temporary changes are not carried forward, forgetting that you made them could hamper troubleshooting efforts if unexpected issues arise.

Key	Description
servicebaseaddress	This defines the address at which the **SYSPRO 8 Workflow Service** will be hosted. This excludes any ports that are used and is simply the name of the address.
serviceexternalbaseaddress	This is the external base address and is used for external calls into the workflow such as links from emails.
servicesoapbinding	The communication binding for the service to use for `SOAP` communication
servicerestport	This is the port that the service will use to host the `REST` endpoint. You must add the `REST` port to the firewall manually.
servicesoapport	This is the port that the service will use to host the `SOAP` endpoint. If set, `SOAP` communication must be performed using an address that includes the port number (e.g. `http://localhost:{PortNumber}/SYSPROWCFService/Soap`).
instancekey	This indicates the default instance of SYSPRO with which the service will communicate. SYSPRO instances are reflected in your Windows Registry to identify the `\Base` folder of your SYSPRO install where the necessary `.dll` and `.exe` files are located.
disabledcompanies	This defines the companies (separated by a semi-colon) that should be ignored on startup by the **SYSPRO 8 Workflow Service** (e.g. companies that don't have workflows deployed or don't use workflows).

Key	Description
persistencedelay	This defines how long a workflow can be idle before it is persisted to the database. An idle workflow includes workflows waiting in delay activities, receive activities and even long running activities such as those calling business objects or sending emails. Lowering this value will increase the load on SQL.
notificationtemplate	This defines the file path relative to the service install of the html template of email notifications sent by the workflow service. By changing this file or file path, the notification emails can be changed to use company-specific branding and formatting of messages.
sysprooutputtransform	These define the filepath relative to the service install of XSL transform files used to transform raw XML returned by the workflow service `REST API` into user friendly html. These transforms can be changed to use company-specific branding and customized formatting of outputs from the `REST API` for lists of workflows, workflow instances, tracking data and all other workflow outputs such as `Message sent to workflow successfully`.
sysprolistoutputtransform	This defines the xsl transform to use when generating output from the service when opened from a browser or email link.
sysprotrackingtransform	This defines the xsl transform to use when generating output from the service when opened from a browser or email link.
sysproinstancestransform	This defines the xsl transform to use when generating output from the service when opened from a browser or email link.
safemode	This puts the **SYSPRO 8 Workflow Service** into safe mode (i.e. prevents workflows that could possibly cause the workflow service to crash on startup from starting or deploying). The administrator can then manually start each of these workflows in order to diagnose which workflow is at fault. Use with extreme caution at a live site.
faultedretrydelay	This allows workflows to automatically restart versions of workflows that have faulted due to unstable network conditions. Faulted retry delay sets the time taken between a workflow faulting and trying to restart it.

Key	Description
faultedretryattempts	This sets the number of times the workflow service should try to restart the faulted workflow version. Sometimes workflow versions may be unable to restart initially depending on whether network conditions are still a problem. It is therefore important to tune this settings based on the type of environment, the regularity with which workflow is called and the overall stability of the system.
sqlcommandtimeout	This sets the time that every workflow SQL command (specifically to the workflow database) can take before timing out. This can be useful in environments with unstable SQL connections where it may exceed the default one minute in certain instances.
usewcf	This is the **SYSPRO e.net WCF Service** address that the **SYSPRO 8 Workflow Service** will use to connect to SYSPRO.

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