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Legal Statements and Policies

This section provides legal statements and general policies for AgilePoint software and documentation.

Disclaimer of Warranty

AgilePoint, Inc. makes no representations or warranties, either express or implied, by or with respect to anything in this document, and shall not be liable for any implied warranties of merchantability or fitness for a particular purpose or for any indirect, special or consequential damages.

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Government Rights Legend

Use, duplication or disclosure by the U.S. Government is subject to restrictions set forth in the applicable license agreement and as provided in DFARS 227.7202-1(a) and 227.7202-3(a) (1995), DFARS 252.227-7013(c)(1)(ii) (Oct 1988), FAR 12.212(a) (1995), FAR 52.227-19, or FAR 52.227-14, as applicable.

Virus-Free Software Policy

AgilePoint recognizes that viruses are a significant security consideration for our customers. AgilePoint takes the following measures to make sure our software is free of viruses upon delivery:

- AgilePoint is built on top of Microsoft .NET framework. The pre-compiled executable is a .NET Common Language Runtime (CLR) application, not a native machine binary. As far as is known at this time, there are no viruses that infect .NET CLR executables.
- The virtual environment for the product packaging process is fully isolated and protected, and anti-virus software is installed and running during packaging.
- The compiled and packaged software files are scanned by a variety of anti-virus software services before they are made available for customer download. An official disclosure document regarding the findings from our virus scanning activities is available upon request.
Roles and Responsibilities

Here are the various roles and responsibilities of the people involved in installing and managing the AgilePoint environment.

**AgilePoint System Administrator**

The AgilePoint system administrator is the primary custodian of AgilePoint Server installation and maintenance tasks. This user is required during installation, upgrades, managing server on a daily basis, assigning others permission to use the system, monitoring alerts, etc.

This role is typically fulfilled by someone from the customer's IT team who manages other servers in your environment. Once the installation is complete, a system administrator is required part time. AgilePoint Server typically does not need a full time administrator.

**Tenant Administrators**

A tenant administrator is required only for multi-tenant installations. Each tenant can have a separate tenant administrator who is the primary custodian of tenant-specific maintenance tasks. This user is involved during tenant setup, managing the tenant on daily basis, assigning others permission to use the tenant, monitoring alerts for the tenant, and so on.

This role is typically fulfilled by someone from IT team who manages other servers in your environment. Once the installation is complete, the tenant administrator is required part-time. Tenant administration tasks typically do not require a full-time administrator.

**Database Administrator**

This user is the primary custodian of AgilePoint database installation and maintenance tasks. For large enterprise-level setup and heavily used systems, it is critical to have the database server node highly capable and tuned for optimal performance. This user would be involved during installation, upgrades, managing a database on a daily basis, monitoring database alerts, and so on.

This role is typically fulfilled by someone from the customer's IT team who manages other database servers in your environment. Once the installation is complete, the DBA is required part-time. Maintenance tasks do not require a full-time administrator.

**Network Administrator**

AgilePoint NX apps typically connect to many other external applications, such as SMTP, Database, SharePoint, Active Directory, and so on. It is critical that the networking team set up some monitoring and alerts to avoid downtime because of connectivity issue or network latency. AgilePoint installation involves opening a few ports (explained later in this document) and setting up things like SSL, fully qualified domain name (FQDN) and a network administrator would be required to make these configurations.

This user is required during installation, monitoring network connectivity alerts, and similar tasks. This role is typically fulfilled by someone from IT team who manages the rest of your network. Once the installation is complete, network administrator is required part-time as monitoring tasks do not need full-time involvement.

**Application Owners**

Application owners manage daily usage, maintenance, and monitoring of the AgilePoint NX apps he or she owns. Different apps can have different application owners. Application owners are the point of contact for users related to application usage, daily monitoring, managing human tasks, and so on. Application owners are also
responsible for assigning application level permissions to other users who intend to use the applications and corresponding data entities, reports, or other extended functionality.

**Application Designer**

Application designers develop and enhance the AgilePoint NX apps over their lifecycle. Like application owners, different apps can have different application designers. They would work alongside application owners, business analysts, and stakeholders to design and develop the business applications as per requirements. These users are also responsible for working with a configuration management team to move apps and the corresponding data entity, access tokens, shared variables from one environment to another.

An AgilePoint NX app can have more than 1 application owner and it can have more than 1 application designer. The application owner can also be an application designer, but this is not required.

**Application Reviewers**

Application reviewer is an ad hoc (virtual) team who review an AgilePoint NX app before it goes to production. The members of this team may be different depending on the functionality and type of the AgilePoint NX app, but they are typically stakeholders in the app. Application reviewers may include designers or end users of the app, but they can also include representatives of an organization's security team, DBAs, network administrators, configuration managers, and so on.

**Runtime App Users**

Runtime app users are the human consumers of the AgilePoint NX app. Different apps can have different users. The access to specific apps and specific functionality within an app can be configured with the application permission framework. This is explained further in this document, and in the AgilePoint NX Security Guide.
Infrastructure Setup

Selecting the right deployment option and right infrastructure setup is perhaps the first and one of the most important phases for successful rollout of the application development platform setup and digitization of the business applications.

Deployment Options

AgilePoint NX supports the following different deployment options:

- AgilePoint Hosted Environment.
  - On-Demand Public Cloud.
    For more information, refer to AgilePoint NX OnDemand.
  - On-Demand Dedicated Cloud (AWS or Azure).
    For more information, refer to AgilePoint NX PrivateCloud.
- Customer Hosted Environment.
  - On-Premises Deployment.
    For more information, refer to AgilePoint NX OnPremises.
  - Private Cloud Deployment.
    For more information, refer to AgilePoint NX PrivateCloud.
Installation Setup

Below are some key points that need to be considered while setting up the infrastructure for installation. This section is for customer-hosted environments.

Small Scale Organization and Normal Usage

This section provides information about preparing the infrastructure for AgilePoint NX installation in small organizations.

- It is recommended to have at least 1 production and 1 non-production AgilePoint Server machine. These can be physical or virtual machines.
- Single-server AgilePoint NX deployment is mainly used for entry-level, department-specific, and small business deployments.
  
  For more information, refer to Single Server Deployment Architecture.
- For a production environment, you can have a single server node or multiple server node (in NLB), depending on the level of usage and whether you require a high availability requirement.
- If the AgilePoint NX application load is small, the database can be shared with other applications. However, it is recommended to have the database for AgilePoint NX on a dedicated server node if possible. AgilePoint Server is database-intensive. Therefore, a faster server results in enhanced AgilePoint Server performance.

Medium Scale Organization and Normal Usage

This section provides information about preparing the infrastructure for AgilePoint NX installation in medium-sized organizations.

- It is recommended to have at least 1 production environment and 1-2 non-production environments for development and QA.
- For the production environment, the customer can opt for a single AgilePoint Server node or multiple AgilePoint Server nodes (in NLB) depending on usage and high availability requirement but we recommend at least 2 servers in NLB which is considered an entry-level high availability deployment architecture.
- The production and QA environment should each have a dedicated database server node. AgilePoint Server is database-intensive. Therefore, faster server results in enhanced AgilePoint Server performance.

Large Scale Organization and Normal Usage

This section provides information about preparing the infrastructure for AgilePoint NX installation in large organizations.

- It is recommended to have 1 production and 2 non-production (QA and Development) environments.
- The production environment should be in an NLB setup with 2 or more AgilePoint Server nodes. The number depends on the usage and future data growth forecasting. A network load balancing (NLB) deployment uses a 3-tier architecture. The NLB configuration provides data tier redundancy, front tier performance, and high availability. This model considers the entry-level enterprise deployment architecture. Also, the architecture is
easy to scale and handles heavy loads from end user interaction, such as web forms, SharePoint libraries, and reports.

For more information, refer to NLB Deployment Architecture.

- This architecture can be scaled out by adding nodes to existing NLB clusters.
- The architecture can be scaled up by upgrading existing nodes (for example, increasing CPU and memory).
- The database for AgilePoint NX should be on a dedicated server node. For better performance, use a database cluster with 2 nodes in the high availability group. AgilePoint server is database-intensive. Therefore, a faster machine results in enhanced AgilePoint Server performance.
- For enterprise-level setup and mission-critical business applications, it is recommended to have the same setup for the QA environment as that of Production. This is helpful in case of an issue, the same scenario can be reproduced and tested in a non-production environment.
- The Development environment can be set up in NLB or without NLB environment, but it is recommended to have a separate database server node from Production and QA.
- AgilePoint NX has multiple add-on components that can run on an AgilePoint Server machine or outside of an AgilePoint Sever machine as an independent Windows Service and interact with the AgilePoint core service directly or via API. For an enterprise level setup or heavy usage setup, it is recommended to host these services on the separate Windows server machine so that the AgilePoint Server machine performance is not impacted by these add-on services. Some of these common add-on services are:
  - Active Directory User Group Synchronizer (ADSync Module).
  - Windows Azure Active Directory User Group Synchronizer (WAADSync Module).
  - SharePoint User Group Synchronizer (SPSync Module).
  - Database User Group Synchronizer (DBSync Module).
  - Data Services (legacy module available in v6. In v7 this is superseded by Data Entity module).

This is especially recommended for global enterprise-wide deployments as something like user group synchronizer can be resource intensive operation especially for organizations who have thousands of users. Global organizations would hardly have any non-peak hours. Such background jobs can affect server performance for time zones that coincide with the sync schedule. Therefore, it is better to offload these background jobs to a separate server to avoid competing with core AgilePoint Server for CPU processing.

**Regional and Department Specific Deployment Options for Global Enterprises**

Global enterprises are spread across multiple countries and often time has requirement of keeping their AgilePoint Server and database instances separate from other teams due to data privacy and local laws. Regional deployment is used for organizations that keep their AgilePoint instances isolated from one regional team to the next - for example, where an AgilePoint instance in one country is isolated from the AgilePoint instance in another country.

AgilePoint NX supports various deployment models for isolation of data between various regions. Please note that all the diagrams in this section show NLB environments. However, the same deployment architecture applies to a single server also.
Option 1: Different AgilePoint Cluster for Each Region

- The customer can opt for a single AgilePoint Server node or multiple AgilePoint Server nodes (in NLB) depending on usage and high availability requirement, but we recommend at least 2 servers in NLB which is considered an entry level high-availability deployment architecture.

- The external front end server (regional farms) is not necessary if your application uses eForms and AgilePoint NX Portal as the user interface. However, if you use SharePoint, Salesforce, etc., these can be in place of regional servers shown in the above-mentioned diagram.

- For production and QA environment, there should be a dedicated database server node. AgilePoint Server is database-intensive. Therefore, a faster server increases AgilePoint Server performance.

- This architecture can be scaled out by adding nodes to existing NLB clusters.

- This architecture can be scaled up by upgrading existing nodes (for example, increasing CPU and memory).

- Users from other regional teams do not have access to your region’s processes since each AgilePoint Server instance gets its own database instance. This gives you strict control over the governance of your processes.

- Upgrades can be planned independently without having to rely on other teams.

- Your AgilePoint Server machine can be scaled independently of other regional team servers.

- Better performance can be achieved since the physical server is located at the same location so network latency does not become a constraint.
• Because each team has its own AgilePoint Server, business time calculation and holiday schedule can be effectively controlled for each region. As such, you will not have a task due on holiday.
• Virtual machine cost increases because each team must have its own virtual machine.
• Each server must be upgraded separately, instead of centralized upgrades.

Option 2: Centrally Hosted Regional Deployment, Shared AgilePoint Server Instance

- The customer can opt for a single AgilePoint Server node or multiple AgilePoint Server nodes (in NLB) depending on usage and high availability requirement, but we recommend at least 2 servers in NLB which is considered an entry level high-availability deployment architecture.
- The external front end server (regional servers) is not necessary if your application uses eForms and AgilePoint NX Portal as the user interface. However, if you use SharePoint, Salesforce, etc., these can be in place of regional servers shown in the above mentioned diagram.
- For production and QA environment, there should be a dedicated database server node. AgilePoint Server is database-intensive. Therefore, a faster server increases AgilePoint Server performance.
- This architecture can be scaled out by adding nodes to existing NLB clusters.
- This architecture can be scaled up by upgrading existing nodes (for example, increasing CPU and memory).
- The centralized server can use the same AgilePoint license for all teams.
- Hardware cost can be controlled because all teams can share the same physical server or virtual machine.
• If you prefer to have centralized upgrades for all teams, this is a good option since you can run upgrade once on the server and all teams get upgraded.
• Upgrades cannot be planned independently so all teams need to plan for upgrades together.
• Offshore teams can notice some level of performance degradation if the network connection to the remote server is not good from their location.
• The database instance is shared between different regional teams, therefore, power users or admins from another teams who have higher privileges can access information from processes belonging to other teams. We recommend using application permission framework to restrict permissions of user to their region's apps only.
• Teams would be sharing the same work calendar which would mean that business time calculations cannot be used for other teams outside of installed location since that would result in task becoming Overdue during their non-working hours. Also, region-wise holiday schedule cannot be used either due to a shared global calendar.
• Offshore teams can notice some level of performance decrease if the network connection to the remote server is not good.

Option 3: Centrally Hosted Regional Deployment, More than One Instance of AgilePoint Server

In this mode, you would install multiple instances of AgilePoint Server on the same machine and also multiple instances of AgilePoint NX Portal on the same machine. Though you are sharing the hardware, each department within the enterprise can get its own AgilePoint instance which connects to its own database. On machine level, AgilePoint Server instances are separated out and each portal instance has its own URL. This has an advantage that the same user can belong to multiple instances. However, hardware usage wise, this can consume relatively more CPU as each instance will have its base CPU usage. For example, if you plan to use 5 instances on the same server, you will have to scale server capacity up and put them in NLB accordingly. User access in this kind of setup can be more easily controlled through security group in AD.

This would look something like this:
• You can opt for a single AgilePoint Server node or multiple AgilePoint Server nodes (in NLB) depending on usage and high availability requirement, but we recommend at least 2 servers in NLB which is considered an entry level enterprise deployment architecture.

• The external front end server (regional servers) is not necessary if your application uses eForms and AgilePoint NX Portal as the user interface. However, if you use SharePoint, Salesforce, etc., these can be in place of regional servers shown in the above-mentioned diagram.

• For Production and QA environment, there should be a dedicated database server node. AgilePoint Server is database-intensive. Therefore, a faster server increases AgilePoint Server performance.

• This architecture can be scaled out by adding nodes to existing NLB clusters.

• This architecture can be scaled up by upgrading existing nodes (for example, increasing CPU and memory).

• Users from other regional teams do not have access to your region's processes since each AgilePoint Server instance gets its own database instance. This gives you strict control over your processes.

• Because each team has its own AgilePoint Server, business time calculation and holiday schedule can be effectively controlled for each region. As such, you will not have a task due on holiday.

• Physical hardware cost can be controlled since all teams can share the same physical hardware, but at the same time maintain their own database instance.

• In case you prefer to have centralized upgrades for all teams then this is a good option since you can run upgrade once on the server and all instances get upgraded.

• Upgrades cannot be planned independently so all teams need to plan for upgrades together.

• Offshore teams can notice some level of performance decrease if the network connection to a remote server is not good.
System Configuration

The standard system configuration that gets set up by default from the installer is for small and mid-level organization and usage setup. AgilePoint NX supports various configurable attributes that can be used to set up the platform, according to predicted usage and server’s infrastructure capacity. For an enterprise level of setup, it is recommended to change some common configuration based on your infrastructure setup, platform usage and your requirements.

AgilePoint Server Configuration

This describes configuration settings that are important for AgilePoint Server initial setup and performance.

Thread Pool Size

The default value for system thread (eventCap and workingCap) is 10 which is fine for small and mid-sized setup. For enterprise level of setup, it is recommended to increase this value to 50, 75, 100 depending on the server's hardware configuration. More concurrently running threads require more server resources (for example, RAM and CPU). Increase the thread pool size based on the requirement and server's capacity.

For more information, refer to Thread Pool Sizing Guidelines.

• Database Connection Pool Size: It is recommended to have the database connection pool size set to double of AgilePoint Server thread pool size. For example, if the AgilePoint Server thread pool size is set to 50, then set the database connection pool size to 100.

• AgilePoint Server enforces a maximum loop check to avoid runaway processes. By default, this is set to 50. Excessive looping can have an adverse effect on the AgilePoint Server performance and though you can increase the max loop value to a somewhat higher number (for example, 100), please avoid very high values.

• There are many other configurations attributes that you can add or modify the values based on the requirement and fine-tuning required which might be specific to your requirements.

For more information, refer to AgilePoint Server Configuration in netflow.cfg.

AgilePoint Windows Service Configuration

There are some special configurations related to NLB, database, license activation format, etc. which you can add or modify as per requirement for your environment. For the cluster and NLB environment, it is recommended to add the below property keys at a minimum as this gives more even distribution of processes across multiple nodes in NLB. Value can be changed as per your requirement and reference guidelines.

For more information, refer to Configuring Ascentn.AgilePoint.WCFService.exe.config.

<add key="bindTo" value="*.*.*.*" />
<add key="AdvancedLoadBalanceInterval" value="1" />
<add key="AdvancedLoadBalanceCondition" value="0.5" />
AgileConnector (Extension Modules) Configuration

AgilePoint NX supports various integrations through its extension modules, called AgileConnectors. Most AgileConnectors require some configuration. One of the important configuration values in some AgileConnectors is a thread pool size, which you need to configure based on your predicted usage of that connector and server's hardware capacity. Below are guidelines for some of the Connector/Extension Module:

SPS Integration – SharePoint/Office 365 Integration

The default thread pool size of this connector is 5. Depending on your usage you should increase this value. For a large enterprise level organization where SharePoint related activities are more in application's processes, they need to increase it to 15, 25, 40 or any other values in this range. However, please make sure this value is a fraction of the AgilePoint Server thread. For example, if AgilePoint Server threads are 100 then you can go up to 40 on SharePoint threads provided your usage of SharePoint activities is higher and SharePoint servers can bear that load.

SAP Connector

The default thread pool size of this connector is 5. Depending on your usage you should increase this value. For a large enterprise level organization where SAP related activities are more in application's processes, they need to increase it to 15, 25 or any other values in this range. However, please make sure this value is a fraction of the AgilePoint Server thread. For example, if AgilePoint Server threads are 100 then you can go up to 40 on SAP threads provided your usage of SAP activities is higher.

CRM – Salesforce, Dynamic CRM, NetSuite, Zoho etc. Integration

The default thread pool value is 1. Depending on usage you should increase this value to 5, 10 or 15 or any other values in this range if usage is high.

Enterprise Social

Salesforce Chatter, Yammer, Slack, Facebook, LinkedIn, Twitter, etc. Integration – The default thread pool value is 1. Depending on usage you should increase this value to 5, 10 or 15 or any other values in this range if usage is high.

Storage Management

The default thread pool value is 1, if your application's processes involve more document transfer and storage management related activities for example, Box, Dropbox, OneDrive, Google Drive and so on, then consider to increase this value to 3, 5 or 10 or any other values in this range. Please note that SharePoint file transfer does not use this queue and instead uses the SharePoint connector for file transfer.

For more information, refer to AgilePoint Server Extensions screen.

Database Server Setup and Configuration Recommendations

For large enterprise level setup and heavily used system, it is very important to have a database server node that is as high capacity as possible, and tuned for optimal performance. Below are some configuration settings to keep the database server maintained and fine-tuned.
Set Min and Max Memory Configurations

It is recommended to set Min and Max Memory to avoid under usage or over usage of the system's resources and impact the other applications or Windows server itself. The default setting for Min Memory is 0, and the default setting for Max Memory is 2,147,483,647 megabytes (MB). It is recommended to have Min memory as 2 GB and Max memory as 80% of total server's memory.

Configure Max DOP (Degree of Parallelism) Settings

When SQL Server runs on a computer with more than 1 processor or CPU, it detects the best degree of parallelism that the number of processors employed to run a single statement, for each query that has a parallel execution plan. You can use the max degree of parallelism option to limit the number of processors to use for parallel plan execution and to prevent queries from impacting SQL Server performance by using all available CPUs. The default value is 0, which mean the query processor can open a number of threads equal to the number of CPUs available on the system. To prevent using all of the CPUs we should set the value for Max DOP accordingly, generally 50% of total CPUs available on the system.

Have Rebuild Index Job in Place

It is recommend to schedule weekly, preferably on weekend. When the indexes are created, they will undergo automatic maintenance of the SQL Server Database Engine whenever insert, update or delete operations are executed on the underlying data. These modifications will continuously scatter the information in the index throughout the database – fragmenting the index over time. This means that there is a high percentage of free space on the index pages and that SQL Server has to read a higher number of pages when scanning each index. Also, ordering of pages that belong to the same index gets scrambled and this adds more work to the SQL Server when reading data. To solve the defragmentation and scattering of data it is recommend to run a scheduled job to rebuild or reorganize indexes. When the Index Fragmentation is more than 30%, the job should be run or scheduled to run weekly once.

Have Reorganize Index Job in Place

It is recommend to schedule daily off-peak hours except on the day Rebuild Index job scheduled. When the Index Fragmentation is less than 30%, the job should be run or scheduled to run once daily.

Update Statistics

It is recommend to schedule daily off-peak hours once the Organize/Re-index Job completes. Updating statistics ensures that queries compile with up-to-date statistics. However, updating statistics, causes queries to recompile. We recommend not updating statistics too frequently because there is a performance trade-off between improving query plans and the time it takes to recompile queries. The specific trade-offs depend on your application. UPDATE STATISTICS can use TempDB to sort the sample of rows for building statistics.

Monitor the Index Fragmentation and Disk Fragmentation

Database Administration team and Infrastructure Administration teams need to monitor Index Fragmentation and Disk Fragmentation and defragment accordingly if there is any.

Set TempDB Files Configurations

TempDB database files hold the temporary tables and stored procedures, plus other items that aren't saved when a SQL Server system is shut down and then restarted.
Create a Volume/Drive/Array for TempDB
This should be a separate volume from your user database and log files – not just for performance reasons, but also for logistical management reasons. If TempDB lives on the same volume as your user data and log files, and the drive runs out of space, you can have a tough time restarting SQL Server. Create 8 or logical processor count (whichever is lower) equally sized data files.

Configure the Separate Drives for Data File, Log File, Temp DB File and Backup Files in Individual Drives on all the Environments
When setting up your disk subsystems, there are five basic groups of files to keep in mind. These are data files (MDF and NDF files), log files (LDF files), tempdb database, the SQL Server binaries (files that are the actual SQL Server software) and Backup (BAK) files. Each file system should be kept in separate disk system on its own. By separating your files into these groups, you will see a definite improvement in performance.

Have Alert Notification Setup for Blockings, so that the DBA or Concerned Team Gets Notified Whenever It Happens
By setting up the alerts, DBA team or concerned team gets notified when there is any blocking in the server, so that the concern team can login to the server and see if these are the temporary blocking or the actual blocking, and kill the blocking session if necessary.

Table and Index Partitioning
Use the same number of partitions as processor cores to maximize performance with parallel operations. SQL Server Management Console or command to partition following tables and indexes: WF_EVENTS, WF_PROC_TRACKINGS, WF_ACTIVITY_INSTS, WF_CUSTOM_ATTRS, WF_LARGE_TEXTS, WF_LARGE_DATA, WF_AUTO_WORKITEMS.

Setting Up a Secured Connection
We highly recommend protecting your AgilePoint Server and Portal endpoints with TLS 1.2 compliant SSL certificate. Here are high level steps on how to configure an SSL certificate for the AgilePoint Windows Service.
For more information, refer to Configure AgilePoint Server to use SSL.
AgilePoint NX Portal is a standard web site in IIS. The steps to apply an SSL certificate for the Portal are similar to any other website. Please refer to the IIS documentation for detailed steps.
Please contact AgilePoint Professional Services in case you need help applying SSL certificate on your AgilePoint Server and Portal.
For more information, refer to AgilePoint Customer Support.

Selecting an Authentication Type
AgilePoint NX supports different authentication types, including Active Directory (AD), Windows Azure Active Directory (WAAD), Salesforce, Google account, and others.
For more information, refer to Authentication.
Please select your primary authentication type at the time installation. You can also have more than 1 authentication type if required. Please contact AgilePoint Professional Services to know the process of adding secondary authentication types.
If the authentication type you are looking for is not listed, please contact AgilePoint Professional Services. We can deliver a custom authentication module as part of Professional Services.

For more information, refer to AgilePoint Customer Support.
Administration - Server

This section gives information about AgilePoint Server administration.

Server Monitoring

AgilePoint NX provides an option to monitor the health of AgilePoint Server through the Manage Center, in the performance and System Overview sections.

The System Monitor screen shows you complete health of your system, including performance overview. For example, you can see the thread usage, database connections usage, average event processing time, user count, license information, application overview, and email notification overview.

For more information, refer to System Overview.

Performance monitor screen displays real time stats for event thread usage (system activity threads), working thread (human activity threads) usage and database connections.

For more information, refer to Performance Screen.

To monitor the AgilePoint Server, it is recommended to have external monitoring tools set up at the machine level to send alerts when the AgilePoint service is not running. It is recommended that the administrator should configure the monitoring and alert for an overall health check of the server machine including the ones mentioned below:

- CPU utilization > 80%
- Memory utilization > 80%
- The AgilePoint service goes down
- The AgilePoint NX Portal web site is not accessible
- Low disk space
- Database memory > 80%
- Database CPU > 80%
- Slow disk I/O

External System Monitoring

AgilePoint NX provides the option to connect to 70+ line of business (LOB) systems as part of your application design. It is important to set up alerts for performance, usage, and uptime of those third-party systems for better health of the AgilePoint NX system for degraded performance on the third-party systems can hold valuable threads on AgilePoint Server for longer durations, which affects overall system performance of AgilePoint Server.

AgilePoint recommends setting alerts for the following types of events for SharePoint. These may change, depending upon the types of third-party system to which your AgilePoint NX environment connects:

- CPU utilization on SharePoint > 80%
- Memory utilization on SharePoint > 80%
- The SharePoint service goes down
• Low disk space on SharePoint
• SharePoint database connections > 80%
• SharePoint database CPU > 80%
• Slow SharePoint API response time
• Slow disk I/O

Active Directory or External Authentication Provider Monitoring

AgilePoint NX supports a concept of Bring Your Own Identity (BYOI) where you can use an identity provider of your own choice. However, this means there is a dependency on the access speed of your authentication provider API. If this is not optimal, it proves to be a bottleneck. This can be more evident in the case of OAuth 2.0-based authentication systems, which can have a back and forth token flow involving multiple HTTP requests. We recommend setting up a monitoring mechanism to alert administration when the connectivity from AgilePoint Server machine to the authentication provider is down or slow.

Network Monitoring

Below are some monitoring and alerts that the infrastructure team are recommended to set up to avoid the downtime because of connectivity issue:

1. Setup up a monitoring mechanism to alert when the Internet connectivity is down from the AgilePoint Server machine if you use external authentication providers—for example, if authentication is online through WAAD. In the past, AgilePoint has noticed that the authentication provider website was not working. Therefore, including this point will avoid the outage for end users.

2. Set up a monitoring mechanism to alert when the connectivity from AgilePoint Server machine to the database server is down. We have noticed this issue a few times for some customers. Including this alert will minimize the risk of outage for end users.

3. Set up a monitoring mechanism to alert when the connectivity from AgilePoint Server machine to any third-party system it connects to, for example, SharePoint, SAP, Salesforce, etc., is down. We have noticed this issue a few times for some customers. Therefore, including this item in alert will minimize the risk of outage for end users.

4. There are a few network ports used in AgilePoint NX setup which are chosen by admin at the time of installing the AgilePoint Server. The infrastructure team needs to know the list of such ports and make sure configuration does not change for those ports. Here is the list of ports used by AgilePoint Server and Portal. For more information, refer to Reserve Port Numbers for AgilePoint Components.

The values listed are just default values. At the time of installation, your administrator can choose whichever port he wants for each endpoint and can be changed later as well.

5. AgilePoint NX supports different bindings (BasicHttpBinding, NetTcpBinding, and WSHttpBinding) to connect to the AgilePoint WCF services from the server machine, i.e. in a server to server call for e.g. when SharePoint calls AgilePoint NX to invoke a workflow. NetTcpBinding is considered to be faster than the other 2 bindings. Therefore, it is recommended to enable and configure NetTcpBinding binding when server to server communication takes place. In case of any client-to-server communication, which is the majority of the calls—for example ones coming in from forms or the NX portal—WebHTTPBinding (REST) should be used.
6. Maximize dynamic client port range of outgoing connection.
   PowerShell command:
   • `netsh int <ipv4|ipv6> set dynamic <tcp|udp> start=number num=range.`

   If 2 or more AgilePoint Server machines are setup in NLB, the 2 servers communicate with each other over port 13481 by default through a private network to provide intelligent process load balancing. Please make sure that a private network is accessible on a selected port number between both servers else you might notice some duplicate event processing. This port number can be configured on a port of your choice by navigating to:
   • `C:\Program Files\AgilePoint\AgilePointServerInstance\bin\Ascentn.AgilePoint.WCFService.exe.config`

   Find this configuration key:
   • `<add key="port" value="13481"/>

   If you modify this value, please make sure both servers have the same value and you recycle AgilePoint Windows service after the change.

**Restart AgilePoint Windows Service**

It is recommended to recycle AgilePoint Windows Service every weekend to keep the system in good health and clear up any cache buildup. The AgilePoint Windows Service is just like any other Windows Service. It can be scheduled to be restarted using PowerShell.

`Restart-Service [AgilePoint Server Manager service name]`

In an NLB environment, AgilePoint recommends restarting the servers on different days to maintain system availability. If you restart them on the same day at the same time, it is possible to experience system downtime.

**Log Handling**

AgilePoint NX writes logs for each module. AgilePoint Server, AgilePoint Cluster, SharePoint Connector, and Active Directory sync all provide an option to write separate log files. Log messages are categorized as below:

- **Error** - Exception and the critical operation failure message would be logged under error log files.
- **Warning** – Logs those messages which are not critical, but it would good to get resolved.
- **Info** – Logs message which would help to trace the regular flow of the operation including server start and stop.
- **Debug** – Stores log line which has been written for troubleshooting any issue or temporary log lines which can be removed once feature becomes stable.

AgilePoint NX Portal writes the log message under the following path:

- `\AgilePointPortal\App_Data\Logs`

In addition to this, AgilePoint SharePoint Integration writes log files on the SharePoint server by default under the following location:

- `C:\SPIntegrationLog`

Location of the log files can be customized. Please contact AgilePoint Support to know how to customize the log file location.
Disaster Recovery

As a best practice, it is advised to back up the database on a daily basis on different servers placed in different geographical regions. If something goes wrong with the database, it can be restored. Database admin usually writes a daily job to perform the backup action. Some companies back up their databases more often depending on their internal RTO and RPO policies. Please check with your IT admin and stakeholders on how frequently the backup should be done.

In addition to the database, AgilePoint recommends backing up these configuration files:

AgilePoint Windows Service Config File:
- C:\Program Files\AgilePoint\AgilePointServerInstance\bin\ Ascentn.AgilePoint.WCFService.exe.config

AgilePoint Server Config File:
- C:\Program Files\AgilePoint\AgilePointServerInstance\netflow.cfg

AgilePoint Portal Config File:
- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointPortal\ Web.config

Work Center Setting File:
- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointPortal\Modules\AgilePoint.Portal.WorkCenter\Content\tl.settings.xml

Form Designer Setting File:
- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointPortal\Modules\AgilePoint.Portal.AppBuilder\Content\ FD.Settings.xml

Process Designer Setting File:
- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointPortal\Modules\AgilePoint.Portal.AppBuilder\Content\ PD.Settings.xml

Manage Center Setting File:
- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointPortal\Modules\AgilePoint.Portal.Manage\Content\ em.settings.xml

Page Builder Setting File:
- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointPortal\Modules\AgilePoint.Portal.Builder\Scripts\designer\ config.json

Data entity Setting File:
- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointPortal\Modules\AgilePoint.Portal.DataEntity\Scripts\designer\ config.json

Portal Database Connection Setting File:
- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointPortal\Config\ settings.txt

AgileReports Config File:
- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointReports\AgileReports\_Definitions\ _Settings.lgx

Data Services Config File:
- C:\Program Files\AgilePoint\AgilePoint Data Services\ DataServicesWindowsService.exe.config
Please refer to the following document for an overview of the disaster recovery process. We highly recommend trying it out as part of the disaster recovery simulation ahead of time. All you need to do is to restore all the required settings and config files on the standby server and then point the DR server to newly restored database, keeping same FQDN and server names so that none of the connection strings have to change. In case of any queries, please contact AgilePoint Professional Services.

For more information, refer to Disaster Recovery.

**Archiving**

Although AgilePoint NX is designed to handle large quantities of workflow data efficiently, the amount of data stored in the workflow database may affect the runtime performance of certain operations. As the AgilePoint workflow database grows in size over time, it may improve the system's performance by archiving some of the older data by moving it into a separate database.

AgilePoint NX can do this automatically simply by configuring the Archive Database settings in the AgilePoint Server Configuration utility.

![AgilePoint Configuration](image)

It is good practice to consider archiving completed process data for better performance of database indexing and interactivity. It is recommended to have archiving rules across all process definitions or per process definition. In general, archive process data based on the following parameters:

- Your organization's reporting requirements for a particular process.
- Your database hardware.
- Average transaction response time.
You can obtain the archived data from the AgilePoint archive database by using SQL. Contact AgilePoint Support if you would like to obtain a copy of the AgilePoint Database Schema.

AgilePoint NX provides the functionality to turn on or off process archiving to the archive database through the AgilePoint Server Configuration Utility. To avoid having your process data archived to the archive database, simply turn off the archiving. To turn off the archive database process, set the "Archive completed process in" field = 0. Risks of not archiving include pile-up of records leading to a decreased performance of the database indexing and interactivity.

**Setting up Calendar**

The work calendar specifies the days and times your business operates. Some AgilePoint NX features use the work calendar to schedule operations. In the Portal, the work calendar is referred to as business time. For example, if you can set the due date for a task to use business time, AgilePoint NX calculates the due date so that it only considers the time available on the work calendar.

For more information, refer to [Work Calendar screen](#).

**Setting up Language and Time**

AgilePoint Server picks the current system time zone and time. The locale also would be picked from the current Environment locale. If a user wishes to set a different server locale, they can set an attribute locale="en-US" or "ja-JP" under netflow.cfg.
System Performance

The section gives information about system performance for AgilePoint Server.

Capacity Planning

Predicting your system usage ahead of time is not easy for most organizations and they usually adopt a strategy of fine-tuning their environment needs once the system is in place. AgilePoint NX provides a formula to calculate your system usage based on various parameters like business hours, threads, average event processing time in your environment.

For more information, refer to Maximum Process Steps per Day for AgilePoint.

We recommend using a smaller number for your business hours. As you should calculate server capacity to handle the load for peak hours. For example, if your business runs 24X7, you might still want to use 8 hours in the formula to accommodate for peak hours load.

There are, however, other factors like CPU speed, number of CPUs, CPU sizing, RAM, bandwidth, etc. which affect hardware calculations so we recommend going through the entire hardware estimation guide to know more about those factors.

For more information, refer to Initial Hardware Estimation Guidelines.

It is recommended that you predict the workload at the time of the infrastructure set up for the next 1 year at least and implement the infrastructure accordingly.

AgilePoint Professional Services offers performance fine-tuning and capacity planning services to enterprises. It is typically recommended to do an environment, health check after first 3 months of going into production to analyze the usage and scale accordingly and from there on, system health checks every 6 months to revisit and analyze the workload and the infrastructure, and enhance the infrastructure if necessary, as per the organizational workload.

The performance of the server depends on multiple factors like number of new instances getting created on a daily basis, number of concurrently running process instances, number of users accessing the AgilePoint Server APIs, number of AgileConnectors running, etc. It is recommended that the capacity of the server is decided based on the above factors like on an average number of process instance expected to run every day over the next 2 years. The growth of the number of system activities, number of manual activities should be taken into consideration and accordingly, we need to increase the threads and if required we need to scale up the environment by adding multiple nodes to NLB.

Recommended Browser

AgilePoint NX supports all primary browsers including Google Chrome, Firefox, Safari, Internet Explorer and Edge. Please refer to the following document to get more information on minimum browser version support and any known limitations for any browser.

For more information, refer to Client Machine Requirements.
Client-Side Form Rendering Performance
Troubleshooting Steps

AgilePoint NX uses client-side rendering of its forms and components, so the overall performance of these components depends upon the performance of the web browser on the client machine. We typically recommend Google Chrome if that is available within your organization as it has a modern, multi-threaded architecture which is found to be the fastest among all browsers.

Browser speed depends on other factors like graphic card, RAM, number of programs running, CPU type, etc. If your users face slower form loading time, AgilePoint recommends running the following URL in the browser on the client machine to check its browser score. AgilePoint recommends a browser score of 400+ for decent rendering time of client-side components like forms, Work Center, Manage Center, etc.

For more information, refer to Speed Battle Result.

Any laptop having a score of less than 400 might notice slower rendering speeds for larger forms or UI components and it is recommended be inspected by network team.

Moreover, network speed has a big part of play in the rendering of forms, Work Center, etc., since it brings back data from external systems and if any of the underlying systems, i.e. database, authentication provider, SharePoint, etc. is slow, it will affect rendering time. If the browser score is more than 400 but you are still noticing slow rendering of client-side forms, please check the network connectivity. We have noticed few incidences where network components like load balancer slowed down the API performance for an external system which in turn slowed down the entire form loading time in browser. This is covered under the network administration section earlier in the document.
Software Update

This section gives information about the processes for updating the AgilePoint NX software.

Procedure for Service Pack, Software Update, Hotfix Deployment

The following policies and procedures should be followed when deploying updates to AgilePoint NX.

- Whenever any Service Pack or Software Update is provided, AgilePoint recommended following the deployment instruction as per information provided in the documentation or in the support ticket, in case of a custom fix. In some cases, the issue happened because of not following the deployment instructions completely.

- No upgrade or fix application should be done on the production server directly. It should be deployed first on Development or QA and after testing of a few days, it should be deployed on production.

- After each deployment or any configuration change on your Production environment, AgilePoint recommends doing sanity testing to avoid any outage. When deployment is completed over the weekend or holidays, have a monitoring window scheduled on your next business day when the end user starts using the platform.

- The Release Notes documents for Software Updates and Hotfixes provide backup and restores instructions. Backup and Restore procedures are provided in the Upgrade Guide for major releases and Service Packs. Follow those instructions to revert the environment to the previous release in case of any issues while you work with AgilePoint support to resolve the issue in the new upgrade package.

Backup and Recovery

As the best practice it is advised to back up the database on a daily basis on a different server placed in different geographical regions so that if something goes wrong, it can be restored. IT admin usually writes a daily job to perform the backup action. Few companies back it up more often depending on their internal RTO and RPO policies. Please check with your IT admin and stakeholders on how frequently the backup should be done.

In addition to the database, there are few other config files to be backed up.

AgilePoint Windows Service Config File:

- C:\Program Files\AgilePoint\AgilePointServerInstance\bin\ Ascentn.AgilePoint.WCFService.exe.config

AgilePoint Server Config File:

- C:\Program Files\AgilePoint\AgilePointServerInstance\netflow.cfg

AgilePoint Portal Config File:

- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointPortal\Web.config

Work Center Setting File:

- C:\Program Files\AgilePoint\AgilePointWebApplication\AgilePointPortal\Modules \AgilePointPortal.WorkCenter\Content\ tl.settings.xml

Form Designer Setting File:
As part of a software upgrade, the AgilePoint NX upgrade bootstrap automatically creates a backup all the required files before applying the upgrade so that if we need to restore, we can always restore to a previous version of the software provided that database backup is taken. However, it is easier to back up a whole virtual machine, especially during a bigger upgrade like a service pack or software update and uses that as a restore point. Product release notes have the backup and restore instructions.

For more information, refer to AgilePoint NX v7.0 Software Update Installation.
Access Control and Permission Management

This section gives information about AgilePoint NX user permissions.

User Management and Operations Policy

AgilePoint NX follows a role-based access control system. We never collect and store any user level passwords on AgilePoint NX. Authentication is done against the system of your choice and authentication module is externalized from the core engine. AgilePoint NX only performs an authorization of the user to determine the user's access rights within AgilePoint NX system once the user has been authenticated against the external user directory. You can manage users and groups in the LDAP or the directory where you currently maintain users and groups and AgilePoint NX system just does one-way sync with the LDAP and store minimal information about the user which is required for the functioning of the workflow and forms. In order to know about the user sync module corresponding to your authentication provider, please contact AgilePoint support.

AgilePoint NX system maintains its own user management system. In order to access AgilePoint NX, the user must be a registered user within the system.

- The username is a mandatory field while registering the user.
- The username can be in Domain\username format or [username@abc.com] (UPN) format based on the type of user authentication.
- Users can be synchronized from Active Directory, Windows Azure AD, Salesforce, SharePoint, Database, etc.
- New users can be created via Manage Center as well.
- The maximum length of a username is 64 characters.
- The username must not contain characters that are not supported by Active Directory.
- As part of the user profile, other important details collected are Full Name, User Name, Email Address, Department, Title, Manager, Language, Phone Number, Yammer, Chatter, and Skype for Business ID.

Group management and Operation policy

AgilePoint NX system allows creating a group within a system so that while assigning tasks or sending emails recipients can be directly pointed to a group.

- Group name must be unique, and it must contain a group lead.
- Group lead cannot be removed from the group, but can be changed.
- A group can consist of any number of users in it represented as group members.
- A group can be added to a role.
- Group can be synchronized with external LDAP where you manage your existing group.
Roles and Authorization Policy

AgilePoint NX system has a granular role-based access control system which provides an access control mechanism with more than 50+ access rights controlling every action you can perform within AgilePoint NX. AgilePoint NX depends on external systems for authentication, but has its own authorization mechanism.

- While creating a role, it is required to have a unique name and roles must have access rights associated with it.
- Roles can consist of users or groups. Usually, as a best practice, it is suggested to create a group with all the required users and add it as the member of the role. So that all users of the group would get the same level of access rights according to the role.
- AgilePoint NX by default creates administrator role which would have all access rights assigned to it. If any user needs administrative access, it is easy to just add that user or group as a member of the administrator role. In addition to the administrator role, another role called users would get created as well, and every registered user would be added under this role by default until they are provided elevated rights. Similarly, there are predefined roles for Application Designer and Application Runtime Manager.

Setting up Access Tokens and Shared Variables

AgilePoint NX provides a centralized way of creating and managing access token and shared variables which can be used across all the applications.

Manage Center allows to create a global level access token to help AgilePoint NX to integrate with external systems. It provides an option to export and import the access token between different environments. Access tokens are maintained outside the application so that when an application migrates from one environment to another environment, it may not undergo any changes. If any change required, it is only the access token that may be edited since the app token name remains the same.

Access tokens can be created at the application level as well. However, usually, tokens hold the security information like the service account credentials and not accessible to Application Designer and defined by admin at a global level. However, for secured apps like HR only applications, it is better to create application level access tokens. Similarly, shared variables also play an important role that makes the application configurable resulting in easy migration from one environment to another. The system provides an option to export and import shared environment variables and modifying the values without affecting the application configuration. Once imported to the different environment if required, we just need to update the value and the places where the variable is referenced, would pick the new value at runtime.

Please refer to the security guide for more details on access token.
This section gives information about how to manage applications in AgilePoint NX.

**Application Deployment and Migration Policy**

AgilePoint NX supports 1-click migration and deployment of applications from one environment to another. It is strongly recommended that the administrator team lays down a process and policy for the deployment of applications in the production environment. AgilePoint NX recommends the following governance policy for application deployment:

1. All application development should be done on a non-production environment (Development or QA).
2. Only tested and verified application should be deployed to production.
3. The standard process is that a developer (application owner) hand over the exported application file and other related configuration information to the configuration management team for deployment on production and only configuration management team has access to app builder in production.
4. While deploying the application or production, it is recommended that the administrator or governance team creates the access token, data entity, shared variable, etc. if they are required in the application. This is only required during the first-time application is set up in a new environment as these values are not overridden during subsequent version migrations. However, if you add a new access token in a new version of the app, you should tell the configuration management team to add those new access token, data entity fields, shared variables to the production environment as part of migration review process.
5. While configuring the access token, it is strongly recommended to use the service account with the password that never expires or the administrator should be notified when the password for such user account gets expired so that access token can be refreshed without affecting the business.
6. It is recommended to use a global level shared variable and global access token if you feel this information is required and shared by many applications on the platform. The global level access token provides you feature to lock them down to specific roles at design time for enhanced security.

For more information, refer to Access Tokens Permission Settings screen.

For secured apps for example, HR only applications, it is better to create application level access tokens which are scoped to app level only for security reasons.

7. While deploying the application on production, the administrator should do a verification of applications and its impact on server infrastructure, network especially in case of event services or background job which triggers the process instances. Sometimes the developer sets the frequency to trigger the process every second for testing, and accidentally carries that setting into production, which may not be a business requirement, and might result in excessive load on the system.

**Naming Convention**

Each organization follows different policies for the naming conventions of application and its corresponding data entities, shared variables, access tokens, etc. AgilePoint recommends providing meaningful names to the applications, processes, activities, data entities, and shared variables for business users to identify the items.

In case of a global organization using same AgilePoint instance to host multiple countries or departments on the same instance of AgilePoint Server, they might want to come up with their own naming convention to avoid
confusion later. For example, any application or data entity can be prefixed with US_, EMEA_, ASIA_, etc. for identifying the entities easily. However, this is entirely based on organizations naming convention policy and preferences. AgilePoint NX provides access control for applications, data entities, and custom web pages so that each department or country can only view their own applications, data entities, and web pages based on assigned permissions. AgilePoint NX provides permission control at the following level:

- Global level role-based access control
- Application level permissions
- Data entity level permissions
- Custom web page level permissions
- Report level permissions
- Module level permissions

Using the above permission system, even in a shared instance, you can control the visibility of apps and data for different departments within the organization.

For more details on permission control systems, please refer to the Security guide.

**Custom Module Policies**

AgilePoint NX Developer enables customers’ IT developers to extend the AgilePoint NX platform by creating their own custom system activities, human task activities, AgileConnectors, and ASP.Net web applications. Moreover, if there is any custom SOAP or REST service required for the application development, that should be developed by either the customer’s IT developers or by availing services from AgilePoint Professional Services team.

Custom modules should be deployed and maintained by the customer's IT development team.
Support Structure and Organization

This section gives information about AgilePoint Customer Support.

Support Overview

It is Customer Support's goal at AgilePoint to provide expedient as well as excellent customer care. We offer a wide array of support resources to assist with issues and make it our priority to resolve any issue in an efficient and professional manner.

Our global presence allows us to provide support worldwide and access to highly trained and knowledgeable professionals for any need. This document defines the structure and methodology for providing support to AgilePoint customers. Additionally, provided is a standard service level agreement which defines response times and definitions and resolution procedures.

AgilePoint Support Structure

AgilePoint support is a global entity with offices and support personnel located worldwide to assist customers in all time zones. Below are the locations of AgilePoint's offices.

Main Office

• United States (Mountain View, CA)

Regional Offices

• India
• Taiwan
• Japan
• Malaysia
• China
• Hong Kong
• Belgium
• Spain

Support is structured and connected globally on a single ticketing platform accessed through our Support Portal. Customers can either log into the Support Portal and create their own tickets, or they may choose to call directly or send an e-mail to the support e-mail address. Support calls and e-mails are entered into the ticketing system by our Customer Support Analysts. Once a ticket has been entered, all offices worldwide will have access to it and can communicate with the customer regarding the issue.

In most cases, offices will handle cases that are in their geographic area due to time zone and language considerations. However, when the need arises, any region can be available to assist with customer issues regardless of where the customer is located.

AgilePoint provides 24/7 support for the customers who have opted for 24/7 support. The US Support team leads the support team from other regional teams, global support team would meet every week to discuss the outstanding tickets, knowledge sharing, discuss about new customers, etc. The support team would act immediately upon the ticket and if required a web session would be set up with the customer for quick resolution of the issue. Support ticket would be counted for all product related queries, invalid issue reporting, etc. if it is a
product issue and product enhancement those tickets would not be counted. Also, as per policy, you are allowed to enter 1 query per support ticket.

**Incident Management Process and Procedure**

These are the points that give a general overview of the incident management process for AgilePoint Customer Support.

1. **Incident Classification**

When an incident is raised with support desk, it can be classified in subcategories as follows:

- **Query** - Support team analyses the ticket and if it is a general product query they provide the response to the query.
- **Product Issue** - Support team analyses the ticket and if it is a product issue, it is sent to QA team for reproducing the issue and if the issue is reproducible engineering team provides the resolution to the issue.
- **Enhancement** - Support team analyses the ticket and if it is a product enhancement, it is sent to the engineering team for feasibility analysis to be added in upcoming releases.
- **Custom development and implementation** - Support team analyzes the ticket and if it is a custom implementation for the customer, customers are redirected to the Professional Services team for the custom implementation.

2. **Priority Classification and Initial Support**

When an incident is raised with support desk, it can be classified in subcategories of priority as follows:

- High
- Medium/Normal
- Low

3. **Investigation and Analysis**

Once a ticket has been entered by or for the customer, a Customer Support analyst will review the ticket and begin analysis of the issue. He or she may then ask the customer additional questions to get a clearer picture of the issue, or they may schedule a virtual meeting with the customer using Zoom, the web conferencing software of choice for AgilePoint. Additional data may be gathered this way and the customer can show the Customer Support analyst additional details through screen sharing.

4. **Resolution and record**

When analysis of the issue is complete, the analyst will then either provide a solution to the problem or will request assistance from subject matter experts to assist. The additional assistance can be from engineers, developers, Professional Services, or product group from within AgilePoint depending on the nature of the issue and the need of the analyst, and can be from any of the support offices. All the communication to the customer for the incident happens from helpdesk portal and the response, meeting summary, and resolution are recorded in the portal for tracking and closure.

5. **Outcomes**

Outcome possible to a ticket.

- Problem resolved and the ticket is closed.
• An alternative method is offered as a workaround to the problem.
• A patch is created and applied to the customer's installation.
• The issue requires product enhancement and is sent to the product team to evaluate and determine if enhancement will be included in the next fixes release.
• The issue is escalated to Professional Services for an engagement if authorized by the customer.

6. Incident Closure
After the resolution or response to the incident has been accepted by the customer, the incident will be marked as closed.

Support Channels
AgilePoint offers multiple channels for delivering quality support to our customers based on the preferential need the customer has. From self-assistance to live customer support, AgilePoint offers a wide array of support offerings.

Support Channels Offered:

Support Portal
The AgilePoint Support Portal is the most used method for requesting support:
• **Ticketing**
  • Customers place their own tickets.
  • Analysts communicate with the customer via this system.
  • Tickets can be tracked and viewed by all of AgilePoint support.
• **How-To Videos**
  • Many videos available to learn how to do various activities in AgilePoint NX.
  • New videos are continuously being created and added to the video library.
  • The content is helpful for those who like to learn by watching.
• **Knowledge Base**
  • Searchable content for common issues and "how-to" scenarios
  • FAQ
  • Quick Start Guides
• **Community Forum**
  • Find answers to questions submitted by peer users.
• **Documentation**
  • Searchable content.
  • Documentation for all aspects of AgilePoint NX.
  • Organized by topic.
Phone
Support calls can be made by phone where a live agent will answer and assist. The agent will enter all pertinent information into the ticketing system where it will be tracked. The agent will also collect additional information from the customer while on the phone and will attempt to resolve the issue if possible.

We do not use call centers at AgilePoint. When a customer calls the support number, an AgilePoint Customer Support employee will answer the call.

E-mail
Support requests can also be sent through e-mail to our support e-mail address. These requests will also be entered into the ticketing system for tracking and enhanced communication.

Support SLA

Maintenance and Service Level Objectives
This Exhibit sets forth the support interface and support response objectives between Licensee and AgilePoint regarding the resolution of problems with AgilePoint products used by Licensee. This document further specifies the specific support ‘rules of cooperation.’

General Support Description
AgilePoint will provide email access and telephone support for creating and updating Cases. A support engineer is assigned to each case to coordinate general Case operations and resolution and to interface into their respective development organizations.

Definitions
Product Defect means a material nonconformance between AgilePoint products and AgilePoint corresponding user documentation (e.g. program error, defect, documentation error).

Problem Report means a Licensee reported a problem that is suspected to be a Product Defect and requires involvement by AgilePoint for Resolution and the subsequent efforts, under this Attachment B, to address those problems.

Case is the communication vehicle between Licensee and AgilePoint for a Problem Report.

Business Day means AgilePoint technical support hours (8 am to 6 pm Pacific time) Monday through Friday, excluding holidays observed by AgilePoint and Licensee.

Engineering Response is direct contact (i.e., phone or email) with a technical support or development engineer.

Escalation is an act that expedites the Resolution of the Problem Report by requesting the assistance of AgilePoint to add resources or raise management awareness to a specific problem.

Patch means an interim release for AgilePoint products on the applicable platform which contains critical bug fixes on top of the current version and which, at the discretion of AgilePoint’s Product Management organization, will be contained in a release of the affected AgilePoint product.

Priority of a Problem Report is based on the functional impact of an occurrence of the problem.
Support Structure and Organization

**High:** Major AgilePoint features or functions are not performing as documented, affecting the business process or significantly impacting development schedules. May cause data delay or potential loss under restricted conditions, but business operations can proceed.

**Medium:** Minor AgilePoint features or functions are not operating as documented, but with no immediate business exposure or development schedule impact.

**Low:** No business impact, often cosmetic in nature, a question, or request for product enhancement.

**Reproducible Test Case** means a small code sample or detailed steps with licensee-specific AgilePoint environment information that demonstrate the specific syntax or scenario that causes the problem. The code sample or steps demonstrate the inconsistencies with the AgilePoint product user documentation.

**Case Status** communicates to the Licensee the steps that AgilePoint completed, the results of those steps, and the next steps to be taken to resolve the problem.

**Work Around** means a way to avoid the problem that is reasonably acceptable to Licensee and AgilePoint. The Work Around may utilize features or behaviors of AgilePoint products, or processes outside the delivered AgilePoint product set. The Work Around can take the form of a temporary or permanent solution to a problem. A temporary Work Around will be replaced with a permanent solution at a later date unless otherwise agreed to by Licensee.

**Resolution** to a Problem Report will be in the form of a Work Around, a Patch, or an updated or new product version. Problems will be considered resolved when the test used to demonstrate the problem demonstrates the corrected behavior.

**Service Level Objectives**

The following Service Level Objectives outline the time frame expectations for response times to acknowledge requests for problem Resolution, the status of problems that are under diagnosis and repair, and the effort to achieve problem Resolution given a problem's Priority. Commitments to Resolutions are for problems within delivered AgilePoint product, and not problems within customizations to AgilePoint product.

⚠️ **Note:** The following table is just a general representation of our support SLA policy. However, this might differ in your case based on the level of support purchased along with the product. Please refer to your purchase agreement for SLA specific to your organization.

**Table 1 - Problem Report Response Requirements**

<table>
<thead>
<tr>
<th>Priority</th>
<th>Initial Response</th>
<th>Status Frequency</th>
<th>Resolution</th>
<th>Permanent Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Within 4 business hours of logging the problem</td>
<td>Daily or as agreed</td>
<td>Continuous effort during business hours until patch or work around is delivered.</td>
<td>Permanent Work Around or fix incorporated in upcoming minor or major release at the discretion of AgilePoint Quality and Release Management.</td>
</tr>
<tr>
<td>Medium</td>
<td>By the next Business Day</td>
<td>Weekly or as agreed</td>
<td>Quarterly</td>
<td>Permanent Work Around or fix in a future release at the discretion of AgilePoint Quality</td>
</tr>
<tr>
<td>Priority</td>
<td>Initial Response</td>
<td>Status Frequency</td>
<td>Resolution</td>
<td>Permanent Solution</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------</td>
<td>------------------------------</td>
<td>-----------------------------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Low</td>
<td>Within 5 Business Days</td>
<td>Monthly or Quarterly or as agreed</td>
<td>On a selected basis</td>
<td>Permanent Work Around or may be fixed in a future release at the discretion of Quality and Release Management.</td>
</tr>
</tbody>
</table>

**Notes to Problem Report Response Requirements Table:**

1. Priorities are defined under DEFINITIONS.
2. Status Frequency may differ on a case-by-case basis only if all involved parties mutually agree upon a different frequency.
3. To an extent, a Licensee presents a Reproducible Test Case that will facilitate the Resolution and Permanent Solution.

**Escalation**

Escalation of individual cases will be done only when all reasonable internal efforts to resolve the problem have been exhausted and when reasonable efforts have been made to follow the normal case process without satisfactory results.

The escalation process will be used when the conditions below arise:

1. The Licensee’s management feels the case has not received the proper attention needed to resolve the problem; or
2. There are several concurrently open and high priority cases.

The Licensee’s management will contact the AgilePoint Customer Support engineer assigned to the case and request that the case is escalated and referred to the escalation manager. The AgilePoint escalation manager will contact the Licensee’s manager to discuss the situation and work out a mutually agreeable plan for resolution.

**Product Version and Definition Support**

A major release is indicated by the number to the left of all decimal places (i.e. 1.x, 2.x etc.). A version is indicated by any and all numbers to the right of a major release number (i.e., each of 1.2, 1.2.1, 1.2.1.1 and 1.3 are versions of the major release 1.x). AgilePoint provides technical support for the current version of the current major release, for the last version of the previous major release, and for all versions in between. AgilePoint provides product fixes on the current version of the current major release and the last version of the previous major release, and not on versions in between. As an example, if AgilePoint NX is on major release 2.x, and the current version of that major release is 2.0.3, if a Licensee requests support for version 2.0.1, AgilePoint will provide technical support, but any product fixes for that Licensee would be provided in version 2.0.3.x.
Change Request and Review Process

For any change request, including AgilePoint NX major release upgrade, software update, and hotfix, it is highly recommended to go through impact and risk analysis and review process. If there is any unclear or uncertain item, please contact AgilePoint support or professional service before applying changes. The diagram below is a typical change request review process.
AgilePoint provides excellent Documentation, Video Portal, and Training Videos online.

AgilePoint also offers professional classroom-based and remote session training to help partners and customers to acquire knowledge, skill sets and techniques to make the most use of its award-winning AgilePoint NX BPM-enabled low-code development platform.

AgilePoint provides the following 3 levels of training. The training contents and topics can also be customized and tailored based on customer requirements, number of different components used by them, and the audience type. To make more use of platform it is strongly recommended that customer opts for the below or customized professional training.

**AgilePoint NX Training Curriculum**

<table>
<thead>
<tr>
<th>Training Topics</th>
<th>NX Aware</th>
<th>NX Professional</th>
<th>NX Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamentals of BPM and Apps</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Introduction to NX Platform</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Application design and eForms</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Common workflow patterns</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Solution building fundamentals</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Advanced eForms</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3rd Party Integrations</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Advanced Workflow Patterns, Manage Center</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Report Center and Design Challenge</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Introduction to Advanced Application Development on NX</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>eForms - JavaScript extensions and UX extensions</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Training Topics</td>
<td>NX Aware</td>
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<tr>
<td>Cloud and On-premise solutions</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>