

The image features a large, circular graphic on the left side of the page. Inside the circle is a close-up of a flower, possibly a rose, with its petals rendered in a dark, textured, almost metallic blue-grey color. Overlaid on the flower is a complex, futuristic user interface (UI) consisting of concentric circles, dashed lines, and glowing yellow and blue elements that resemble data visualizations or a control panel. The background of the entire page is a solid, deep blue. In the top right corner, there is a decorative pattern of small, yellow dots arranged in a grid.

KRYON™

System Architecture & Requirements

Kryon Process Discovery

V. 21.6

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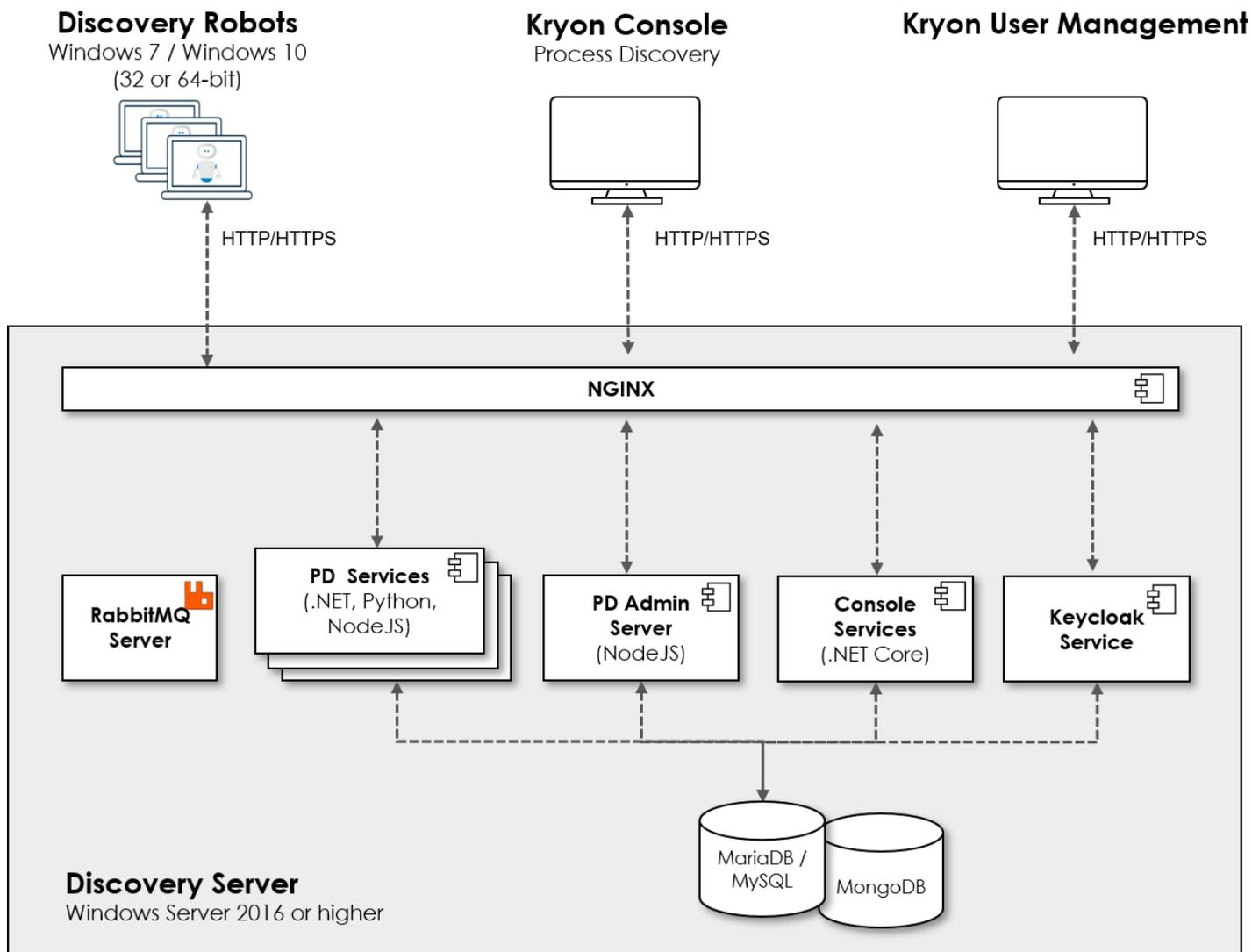
Introduction

Kryon Process Discovery is a powerful, proprietary, AI-based platform designed to identify your organization's business processes, correlate variants, and make recommendations for enhanced efficiency via automation.

The platform uses silent Discovery Robots installed on the company's computers to capture all actions that affect business outcomes. It then analyzes this data to make process improvement and automation recommendations.

The purpose of this document is to provide a high-level overview of the Kryon Process Discovery platform's system architecture and components. Unless stated otherwise, information in this document is relevant to common Kryon Process Discovery use cases.

System Architecture Diagram



System Architecture Components

Discovery Robots

Lightweight clients installed on employee desktops that silently monitor business-related activities without impacting end-user productivity. They provide full visibility into all business activities at the application level by collecting behavioral data about every user, process, and application across the entire business unit or organization – even when the user's computer is off-network and offline. The data collected by **Discovery Robots** (a screen shot/metadata for each user action) is sent to the **Discovery Server** for analysis. The raw data collected by the **Discovery Robot** is comprised of:

1. A screenshot for each user action; *and*
2. Detailed metadata corresponding to each screenshot, including –
 - Application name
 - User name
 - Event type (e.g., mouse wheel, left mouse click)
 - Mouse position (e.g., x:933, y:637)
 - Time stamp

The System Admin defines the desktop and web applications that are monitored by the **Discovery Robots**.

Discovery Server

The **Discovery Server** utilizes the data collected by the robots perform complex algorithmic processes, including:

- **Image Analysis** – extraction of relevant information from every screen shot
- **Image Clustering** – identification of repeated actions
- **Discovery** – Identifying highly repeated processes and calculating statistical information on duration, actions, applications, etc.
- Output of process and variant data to the **Process Library**

The **Discovery Server** includes **Application Databases**. These are the databases (either MariaDB or MySQL) in which all the data collected by the **Discovery Robots** is stored. The data collected by the **Discovery Robots** is immediately encrypted and transferred to the application databases and remains on the client machine for a short time.

Process Discovery User Management Tool

Kryon Process Discovery User Management Tool grants user access to the Process Library (**Keycloak Service**).

Process Discovery Console

A browser-based application providing an overview of discovered processes selected and saved by the Business-Analyst (you), with the ability to drill down into all the underlying details.

Using the Process Discovery Console you can:

1. Set and configure the collected data:
 - Manage Teams and user access
 - Define applications for discovery
 - Manage the recorded data
 - Manage the **Discovery Robots** and their licenses
2. Discover the best candidate processes for automation
3. Select and add the desired processes to the **Process Library** for further analysis and for mapping
4. Generate processes files for automation (used in **Kryon Studio**) and supporting documents.

The Process Discovery Console can be accessed using the Chrome or Edge web browsers from any machine with access to the **Discovery Server**.

About Automation and Integration

Integration with RPA studio

RPA Studio is an Integrated Development Environment (IDE) that enables easy creation and editing of simple and advanced automation wizards.

The integration between the **Process Library** and **Studio** allows managers to send processes directly to automation as pre-developed wizards, including wizards steps, action variations, decision points, and application data manipulations. Automation developers can then use Studio's intuitive interface and robust toolbox of available commands to make any necessary revisions.

Security

All Kryon products for deployment in Production contexts follow application security best practices including OWASP, WASC, and NIST standards, along with annual penetration tests by an external, independent security specialist.

Kryon has designed the system to ensure minimal risk to sensitive or private data:

- Kryon Process Discovery is installed on-premises, without communication to servers outside the customer organization's network, SaaS services or any other third-party servers, internal or external.
- All data is saved in the **Discovery Server's** internal repository and is not transmitted or exported outside the server, automatically or manually.
- Raw data is not saved over time, and no sensitive information is persisted over time.
- All sensitive and private textual data is removed ("masked") from the process maps. This masking procedure is irreversible, and the sensitive data cannot be retrieved.
- The user name in all data recorded/transmitted by the **Discovery Robots** can be hashed. The customer can enable/disable this option on a per-robot basis according to its needs.
- The **Discovery Server** does not expose open APIs for retrieving data, other than to authorized discovery services.
- Kryon does not have any direct or indirect access to the customer environment, servers or data. The customer's IT administrators maintain sole control over allowing or prohibiting such access to Kryon employees.
- The customer's IT administrators maintain control over which business applications to monitor through the use of lists that define applications to monitor:
 - Only applications on the Applications to Include list will be recorded and processed; applications on the Applications to Exclude list will not be recorded and processed.
 - Any applications not approved for discovery, for security or other reasons, can be excluded from the Applications to Include list or added to the Applications to Exclude list.

Network Configuration

Firewall & Port Configuration

Kryon Process Discovery's port configuration and network protocols can be customized to support all common firewall requirements. The default port configuration is as follows:

- Discovery Robots outbound to Discovery Server: **80** (or **443** when using HTTP/TLS) – configurable
- Discovery Robots inbound from Discovery Server: **dynamic**
- Database communications: **3306**, **1433** and **27017** – configurable
- User Management platform: **5058** – configurable
- Process Library – **50100-50130** – configurable
- Document Manager – **50007**

HTTPS Configuration (optional)

HTTPS is supported and is set to OFF by default (HTTP is the default).

In order to set the communication to HTTPS, please refer to the topic "Process Discovery Over HTTPS" in the Process Discovery Installation Guide.

System Requirements

System Requirements for Discovery Server

Hardware & software requirements

Item	Requirement
Processor (minimum)	Intel i7 or Xeon / 16 core* Processors with AVX support
RAM (minimum)	32GB
Free disk space (SSD)	Minimum 150GB Recommended 500GB (Local hard disk <i>only</i>)
OS	Windows Server 2016 or higher
Database	Server installation installs MongoDB 4.4.3 and MariaDB 10.4.7. Alternatively, you can connect to a preexisting dedicated Windows version database server (MariaDB 10.3.7 or higher / MySQL 8.0.11 or higher / MongoDB 4.4.3 or higher)
Supported browser for accessing Process Library	Chrome v69 or higher, Edge v69
Network bandwidth	500 MB/day per active Discovery Robot client ~15 KB/s per active Discovery Robot client ~1.2 MB average packet size (10 user actions per packet)

*When a single server with 16 cores is not possible, installation on 2 servers with 8 cores each is an option. Contact Kryon Support for details if this is option is required.

TIP
How many cores?



To verify the number of processor cores are installed on a machine:

1. Open the **Windows Task Manager > Performance tab**
2. The **Logical processors** field provides the information you're looking for

Yes, it might seem counter intuitive, but for purposes of **Process Discovery**, it's the **Logical processors** field you're interested in – not the **Cores** field!

System Requirements for Discovery Robots

Item	Requirement
Processor	i3 / 2 cores minimum i5 / 4 cores recommended
Supported workstations	<ol style="list-style-type: none"> 1. Windows desktops 2. Remotely managed workstations, like: <ul style="list-style-type: none"> • Remote client machines of a terminal server running Microsoft Terminal 2016 and up • Cloud desktops running Amazon WorkSpaces client application
OS	Windows 10 (64- or 32-bit); or Windows 7 (64- or 32-bit)
Supported browsers for Discovery Robot recording	<ul style="list-style-type: none"> • Chrome v69 or higher • Edge v17 or higher • Internet Explorer v11 or higher • Mozilla Firefox 63
Supported languages for multi-language keyboard recording	<i>Albanian, Latvian, Armenian, Lithuanian, Bulgarian, Macedonian, Catalan, Norwegian, Croatian, English, Polish, Czech, Portuguese, Danish, Romanian, Dutch, Russian, Estonian, Slovak, Finnish, Slovene, French, , Spanish, German, Swedish, Greek (Modern), Turkish, Hungarian, Ukrainian, Icelandic, Russian, Italian, Hebrew</i>
Network bandwidth	500 MB/day per active Discovery Robot client ~15 KB/s per active Discovery Robot client ~120 KB average packet size (1 user action per packet)

Installed Components & Software

Discovery server

The following software is automatically installed on the **Discovery Server** by the Kryon Process Discovery server installation package, if not previously installed:

- Microsoft .NET Framework 4.7.2
- Microsoft .NET Core 3.1.10 – Windows Server Hosting
- Microsoft Visual C++ 2015-2019 Redistributable (x64)
- RabbitMQ Server (used only for internal server communication)
- Erlang OTP (the programming language on which RabbitMQ is built)
- NodeJS (JavaScript runtime used by Kryon Process Discovery Admin)
- Seq (centralized logging component)
- Tesseract in case masking is installed

The following software can be optionally installed by the Kryon Process Discovery server installation package:

- HeidiSQL (database viewer)
- Notepad++

Discovery robot

The following software is automatically installed on the client machine during the **Discovery Robot** installation, if not previously installed:

- Microsoft .NET Framework 4.7.2
- Microsoft Visual C++ 2015-2019 Redistributable (x64/x86 as appropriate)

Third party components

Third party software provided as part of or with the Licensed Product is solely governed by its respective license terms as set forth in:

<https://public.kryon.io/#PD-Versions/21.3/Documents/>