MAXIMIZING EFFICIENCIES:
THE POWER OF INTEGRATED PROCUREMENT IN eCOMMERCE

Cat® Integrated Procurement (IP) White Paper

Version 7 – July 2023

Cat IP White Paper

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Why Integrated Procurement?

In today's fast-paced and highly competitive landscape, customers are constantly seeking innovative ways to enhance operational efficiency, optimize costs, and gain a competitive edge.

One area that has emerged as a critical driver of success amongst customers is automating procurement and invoicing processes and integrating with supplier systems. This not only streamlines their operations but also reduces transaction costs.

Since 2001, Caterpillar has been an industry leader in the integrated procurement of parts by facilitating hundreds of connections between customer business systems and Cat® dealers.

Customers who procure parts and receive electronic invoices through these connections can experience:

transaction costs savings of 50%

or more depending on their current processes.

Benefits

This white paper explores Cat® Integrated Procurement, better known as Cat IP, that offers Cat dealer customers:

Efficiency | Orders are placed from the customer's system to the Cat dealer's system, reducing manual effort and eliminating duplicate order entry.

Electronic invoices can then be sent by the Cat dealer to the customer's business system and automatically reconciled with the original purchase orders.

Order Accuracy | Customers can select parts from several sources:

1. Caterpillar's online parts manuals,
2. Caterpillar's online parts manuals,
3. Frequent order lists, or
4. Their own system's list of Cat® parts and prices.

Instant Information | Customers receive parts prices and availability instantaneously, such as for emergency orders, even after hours.

Automated Stock Replenishment | Customers with stocks of Cat parts may be able to automatically generate stock replenishment orders to the Cat dealer without manual intervention.

Cost Savings | These benefits can result in significant transaction cost savings for customers.

Requirements

Customers who wish to pursue Cat IP should have a relatively high volume of part orders with their Cat dealers. Customers with smaller volumes may want to consider Caterpillar's other eCommerce suite of offerings, such as Cat® Central or Parts.cat.com. They will also need a customer-based ERP (Enterprise Resource Planning) system or a procurement system or marketplace with the ability to send and receive XML documents over the Internet via HTTPS.

Connecting Through Cat IP

Cat IP provides connection services, messaging, cross-referencing, and routing of several document types to more than 100 Cat dealers worldwide.

Two Options for Connecting

Customers have two basic options for connecting to the Caterpillar system:

01 Directly from their business system, such as SAP, Oracle, etc.

02 Through a third-party supplier hub or marketplace partner, such as Ariba, Coupa, etc.

Customers deciding whether to use a direct connection or a supplier hub / marketplace partner should consider several factors. The choice can affect costs and should reflect the customer's ability to handle internet-based transactions, protocols, and connections. Also, customers should consider their e-business strategy, such as their need to integrate with multiple suppliers.

XML Formats and Security

Whichever connection is chosen, Cat IP provides the flexibility to accept and send a variety of XML formats depending on customer requirements. The most common, and preferred, XML formats sent through Cat IP are xCBL (XML Common Business Library) and cXML (commerce XML).

For security reasons, Cat IP requires encryption using HTTPS and:

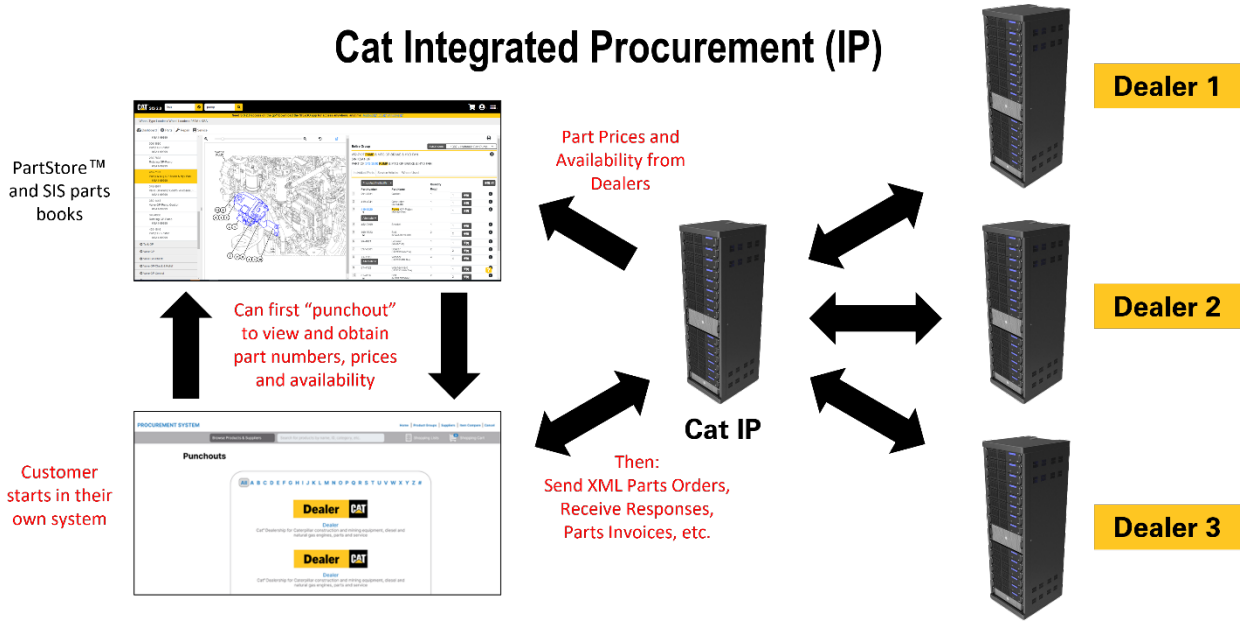
- High Ciphers – customers should prioritize these to be first in their available ciphers:
  - TLS1.2-ECDHE-RSA-AES256-GCM-SHA384
  - TLS1.2-ECDHE-RSA-AES128-GCM-SHA256
- Digital Certificates are updated regularly, so Cat IP strongly recommends customers trust certificates at the root, and not server level.
- No Framing for Punchout, customers must allow for a new screen.

Transaction Types and Documents

Customers can choose from a growing number of transaction types and documents that are routed through Cat IP. These are not exclusive, so a customer can use one or all of them.

Caterpillar Hosted Catalog – Punchout or OCI RoundTrip

Customers who need to look up Cat® part numbers or other information before submitting an integrated procurement order can browse their dealer's PartStore and the part manuals in SIS (Service Information System). Users can find part numbers in part manuals, exploded diagrams, frequent order lists, Planned Maintenance Checklists, etc.



TO USE THIS FEATURE

The customer's business or procurement application must support one of two protocols:

- cXML PunchOut
- Open Catalog Interface (OCI) Roundtrip

The method selected usually depends on which business or procurement system the customer uses. Customers should contact their system vendor for recommendations.

BENEFITS OF BOTH METHODS

Both methods give the user full functionality of PartStore and SIS to:

- Search for and select parts from detailed parts manuals (updated nightly)
- View real time price and availability from the dealer for each part selected
- Return the parts shopping cart to customer system for requisitioning

Because the shopping cart is electronically returned to the customer's system, it can be put into a work order or into a requisition, which, when approved, can then be submitted as an electronic purchase order to Cat IP and the dealer.

To avoid security vulnerabilities, Cat IP now allows only HTTP POST method for OCI RoundTrip versus the HTTP GET method, which provides clear text visibility in the browser history and web server logs.

Parts Purchase Orders

Customers can submit parts purchase orders to Cat IP and Cat dealers from several sources:

- Punchout Parts Orders – from a Punchout or OCI RoundTrip session
- Direct Parts Orders – typed in or obtained from an internal parts catalog

Punchout Parts Orders must contain the Punchout or OCI session ID sent back to the customer system along with the parts shopping cart. When Cat IP later gets this parts order, it can obtain info selected in the punchout session, such as:

- Customer account
- Dealer store location
- Equipment serial number
- Shipping method
- Etc.

Direct Parts Orders must contain all the info needed to process the order, but Cat IP can map values sent by the customer in their orders to obtain some of the info above. For example, the customer could send their site ID or address ID within their orders that Cat IP can then use to obtain the customer account and/or dealer store location. Business rules established by the customer can be applied to each order, such as how to deal with backordered or replaced parts.

Cat IP can return both an immediate acknowledgement that the parts order was received as well as a detailed order response when the Cat dealer processes the order. The detailed order response can be posted back to the customer's system, sent via email, or both. It can contain:

- Status of the order (accepted or not or with amendments)
- Replaced parts information
- Backorder information
- Price changes
- Core charges
- Taxes
- Total order amount
- Etc.

Cat IP may send the detailed order response using the same connection as the order (synchronously) or via HTTPS Post from Cat IP to the customer's or their marketplace's web server (asynchronously). Asynchronous order responses are often preferred in case any system is unavailable for order processing.

Price & Availability Inquiry

Some customer systems do not have Punchout capability but can send an XML query, often called an RFQ (Request for Quote), with a list of Cat part numbers and other info. Cat IP will then query the dealer system and post back a response to the customer system with the parts prices, availability, part number replacements, alternate parts, etc.

This process is like the direct parts order process discussed previously and is posted to Cat IP using the same method (HTTPS); however, no record will be created in the dealer system. Additional differences include:

- A purchase order number is not required.
- Shipping information is not required, but if a valid shipping method is sent, then the inquiry response may contain shipping charges.
- Order quantity is not required and can be defaulted to a quantity of one.
- A line item without a part number will not cause the entire inquiry to fail, unless the customer requests that.

Cat IP will retrieve current price and availability information from the Cat dealer for each valid line item in the document and return that information to the customer, along with

- Replaced Part – for an item that is replaced by another part number.
- Alternate Part – a suggested part that could be used instead of the original part.
- Backorders – includes amount of item on hand plus dealer stores and/or Caterpillar facilities where a back order would be placed.

The preferred XML format for a P&A inquiry is xCBL version 3.5. While an inquiry may be sent in xCBL 3.0, the response will be returned in an xCBL 3.5 response. If the customer does not support that, however, Cat IP can send an xCBL 3.0 response document, but it will be missing some of the availability info.

Since inquiries could take some time to process, the response document should be posted back to the customer system asynchronously if possible. If not, a synchronous response can be returned through the same HTTPS connection that is used to send an inquiry document, but there is a risk that the connection could time out before the response can be sent.

Electronic Parts Invoice

Customers can receive electronic invoices from Cat dealers with all the information typically contained in their emailed or paper invoices, including:

- Detailed line-item information
- Core charges and information used for core management within the customer's ERP system
- Shipping charges
- Taxes
- Other charges (miscellaneous)
- Remit-To address information
- Terms and discounts
- Final payment due amount

Electronic invoicing also includes the following features:

- Customers may choose to receive separate invoices for each shipment of parts or one invoice for an entire order, based on an agreement with the dealer.
- If a customer chooses to receive electronic invoices, all parts invoices will be electronically sent whether the order was placed via Cat IP, Parts.cat.com, email, phone, or at the Cat® dealer parts counter.

Here are some of the advantages to electronic invoicing:

- Invoices are typically sent electronically to accounts payable, reducing transaction costs and minimizing errors.
- Invoices can be automatically reconciled against the original purchase order or detailed order response.
- Invoices contain information that customers can utilize with their core management processes.

Invoice XML documents are posted via HTTPS to the customer's port and URL of choice. Cat IP will expect an acknowledgement message referring to the posted e-invoice and will not consider the sending of the e-invoice successful until it is received.

Mass Parts Price Update

Many Cat® parts customers maintain an internal catalog with thousands of Cat parts numbers and dealer prices within their own ERP system (for example: SAP's Material Master). Keeping that internal catalog up to date, as part numbers and prices change, can be difficult. Cat IP offers customers a way to keep their parts catalogs up to date.

The customer system must be configured to send their entire catalog of Cat parts, up to 8,000 part numbers at a time, and accept and utilize the response. This process is like the Price & Availability feature described previously but instead of sending a limited number of line items, such as for a requisition, this process could be sending thousands of line items. Cat IP will then query the dealer system for the customer's account and obtain part number replacements, updated parts prices, core charges, etc.

Due to the size of these queries:

- This should be run outside of business hours.
- Should be run every few months or no more than once a month.
- Cat IP will break the request into smaller bits to query dealer system, then reassemble for mass return to customer.
- Mass response must be posted asynchronously to the customer system.

It should be noted that SAP and other major business systems do not provide this functionality by default. It will likely require some IT work by the customer, their vendor, or consultant.

Advance Shipping Notice (ASN)

Advance ship (or shipping) notice (ASN) is a notification of pending deliveries, like a packing list. It is now often sent in an electronic format and is becoming a more common B2B document.

Suppliers usually send ASNs to customers prior to shipping and include information about the shipment and its contents. The ASNs purpose is to prepare the customer to accept delivery, so it should include enough info to notify the customer when shipping occurs and provide physical characteristics about the shipment.

ASNs must originate from Cat® dealer systems, but since this is a new feature for Cat IP it still has limited availability amongst dealers. The integrated customer should ask if their dealer can provide ASNs electronically. If so, a project with the customer, dealer, and Cat IP teams can implement this feature.

Connection and Mapping Services

Once a customer has made the decision to move forward with a Cat IP connection project, the customer, Cat dealer, supplier hub or marketplace (if applicable), and the Cat IP team will work together to resolve all business process and technological gaps to integrate the customer's system with their Cat dealer's system. The Cat IP team will:

- Help map future parts procurement processes
- Aid in defining and resolving business and technological gaps
- Provide specific connection information
- Track and manage the resolution of issues
- Offer system mapping services (see below) as necessary
- Provide testing guidelines and a testing environment
- Facilitate moving into a production environment

Gaps may be identified while mapping the values that a customer's system can provide to the values that the Cat dealer requires. Cat IP has the capacity and flexibility to offer individual mapping solutions for each customer. The Cat IP team determines when to apply a custom mapping solution during the data gap analysis while engaged in the connection effort. The Cat IP solution can include cross-referencing, preference lists, and default data as needed.

Please note that there is no charge to a customer from Caterpillar for any of these services.

Customers often ask what ERP systems or marketplaces can connect to Cat IP. There is no limitation if the system or marketplace has basic procurement functionality and the ability to send and receive XML documents over the Internet via HTTPS. Cat IP's capabilities have been made flexible to accommodate differences in connections and business systems. Some of the systems or marketplaces that have connections with Cat IP include Oracle®, SAP®, Ariba®, Coupa®, PeopleSoft®, and JD Edwards®.

Additional information can be provided to interested parties including:

- Detailed technical information for mapping and cross-referencing
- XML formats used and example XML documents

In addition, teleconferences and on-site presentations can be arranged to explain the many aspects of Cat IP and understand a customer's current and future procurement processes. For more information, please contact a local Cat dealer, account manager, or visit cat.com/ip.

Acronym Glossary

- **B2B (Business to Business):** Another term for IP (Integrated Procurement) but also refers to any exchange between two businesses rather than between consumers and businesses.
- **cXML (commerce XML):** Used to standardize the exchange of catalog content, such as Ariba's PunchOut, and as a streamlined version of XML for business documents and procurement applications (http://www.cxml.org).
- **Cat IP (Cat Integrated Procurement):** Caterpillar's integrated procurement solution provided to its dealers.
- **ERP (Enterprise Resource Planning):** Generic name for a business management system used for planning, procurement, sales, marketing, accounting, etc.
- **HTTPS (HyperText Transfer Protocol Secure):** Version of HTTP that encrypts data using the Transport Layer Security (TLS) v1 protocol.
- **IP (Integrated Procurement):** Business-to-business (B2B) integration of a customer's e-procurement or ERP system with a supplier's business system for the purchase of supplies and services (IP can also mean Internet Protocol).
- **OCI RT (Open Catalog Interface RoundTrip):** Standard to provide integration of catalog data, used for SAP's EBP (Enterprise Buyer Professional procurement application).
- **SIS (Service Information System):** Caterpillar's electronic service tool containing parts and service information for all Caterpillar products since 1977.
- **TLS (Transport Layer Security), and its predecessor, Secure Sockets Layer (SSL):** Are cryptographic protocols designed to provide communications security over a computer network.
- **URL (Uniform Resource Locator):** The Web address for a site, image, document, etc., found on the Internet or some other network.
- **xCBL (XML Common Business Library):** The pre-eminent XML component library for business-to-business e-commerce (http://www.xcbl.org).
- **XML (Extensible Markup Language):** A language for the web that is more flexible than HTML and uses data tags to define the type of data contained within the tags (http://www.xml.org).