ERP Integration Guide

Version 8.1.

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Chapter 1

Overview

Topics:

- Overview
- About the ERP Integration Database
- About the ERP Scheduler Service
- About the ERP Import Service
- About ERP Export Service
- About the ERP Transformation Service

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Overview

As a system administrator, you can configure integration between Plant Applications and Enterprise Resource Planning (ERP) systems to automatically import the following records from the ERP systems to the Plant Applications database:

- Work orders
- Process orders
- Materials
- Material Lot
- Outside Processing (OSP)

This integration is implemented by means of an integration database and integration services.

- The integration database: Stores information necessary for the integration, such as messages that contain work orders, process orders, and materials that are sent by ERP systems.
- The integration services: Include the ERP Scheduler service, ERP Transformation service, and ERP Import service, which convert the work orders, process orders, and materials into a JSON file (as needed), import them into Plant Applications, and maintain status information in the integration database.

About the ERP Integration Database

The ERP integration database supports the transfer of data from ERP systems.

Tip: Refer to the database schema for additional information.

The implementation can be a standalone database or a table in the Plant Applications SOADB database, depending on the Plant Applications system setup during initial installation.

About the ERP Scheduler Service

The ERP Scheduler service is a server daemon that executes the import process. The service polls the integration database on a regular interval for the following types of records:

- New records: For each new (that is, unprocessed) work order, process order, or material, the ERP Scheduler service calls the HTTP POST method of the ERP Import service to import the record.
- Records that are already in the process of being imported: For each work order, process order, or material whose import process has started, but not completed, the ERP Scheduler service calls the HTTP GET method of the ERP Import service (by sending the ID of the record as a URI parameter) to receive the status update.

After the ERP Scheduler service receives a response from the ERP Import service regarding the status of the import, the ERP Scheduler service updates the error code, error message, and time stamp of the respective message in the integration database.

About the ERP Import Service

The ERP Import service retrieves information about work orders, process orders, and materials from the integration database, and creates these records in the Plant Applications database.

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The ERP Import service is a RESTful microservice that exposes an API consisting of the following methods: POST and GET.

To import files, the following steps are performed:

1. When the ERP Scheduler service sends a request for a new or in-process record, the ERP Import service performs one of the following steps:
   - For a new record, it retrieves the corresponding file from the integration database using the POST method to communicate with the other Plant Applications microservices. This method is asynchronous; as a result, the HTTP response codes and response messages are stored in a table for subsequent retrieval.

     Note: If the record is available in an XML or B2MML format, the ERP Import service sends the data to the ERP Transformation service, where it is converted to a JSON format.
   - For an in-process record, it retrieves the ID of the record from the integration database using the GET method.
2. The ERP Import service updates the status of the import. The ERP Scheduler service then updates the ERP Integration database with this information.

About ERP Export Service

ERP Export service sends the events from the Plant Applications Web Client to the ERP system (or middleware / interfacing system).

ERP Export service triggers a message from the Plant Applications Web Client to the ERP system when the following events occur:

- Operation Complete
- Clock on an operation in a serial/lot
- Clock off an operation in a serial/lot
- Material Lot Scrap
- Route Release

When one of the events occur, the ERP Export service performs the following operations:

- Inserts a message in a B2MML format to an integration table.
- Publishes an event to the Kafka topic associated with the event and notifies the ERP system .

About the ERP Transformation Service

The ERP Transformation service converts an XML or a B2MML file to a JSON file. The supported version on the B2MML file is V0401.

To convert an XML or a B2MML file to a JSON file, the following steps are performed:

1. The XML or B2MML file is converted to a standard B2MML file (compatible with MESA standards) based on the mapping details in the XSL file. The supported version of the XSL file is V1.0.
2. The standard B2MML file is converted to a JSON file, which contains the work order, process order, or material details.
3. The JSON file is sent in the request body using the HTTP POST method of the ERP Import service.

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Chapter 2

Information Flow

Topics:

- About Information Flow
- Information Flow for New Records
- Information Flow for In-Process Records

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About Information Flow

Information flows to and from the ERP Integration database in the form of JSON, B2MML, and XML files. JSON files contain the following types of messages:

- Work orders: Specified in a Work Order Import Document (WOID).
- Process orders: Specified in a Process Order Import Document (POID).
- Materials: Specified in a Material Master Import Document (MMID).
- Material Lot: Specified in a Material Lot Import Document for Material Lots (MLID).
- Outside Processing (OSP): Specified in a Material Lot Import Document for OSP (MLID).

  Note:

  This note is applicable for OSP.

  - If a material lot has serialized material, the received quantity is recorded, and the non-clocking operation is completed.
  - If a material lot has non-serialized material, and if partial quantity is received, only the received quantity is recorded. The operation is not completed until the remaining quantity is received.

After you connect the ERP system to the ERP Integration database, the ERP systems adds the messages to the ERP Integration database. The ERP Integration services then imports the messages into the Plant Applications database and updates the status of the messages in the ERP Integration database.

Information Flow for New Records

The following diagram provides the steps that you must perform as a system integrator and the steps performed by the integration services to import a new record.

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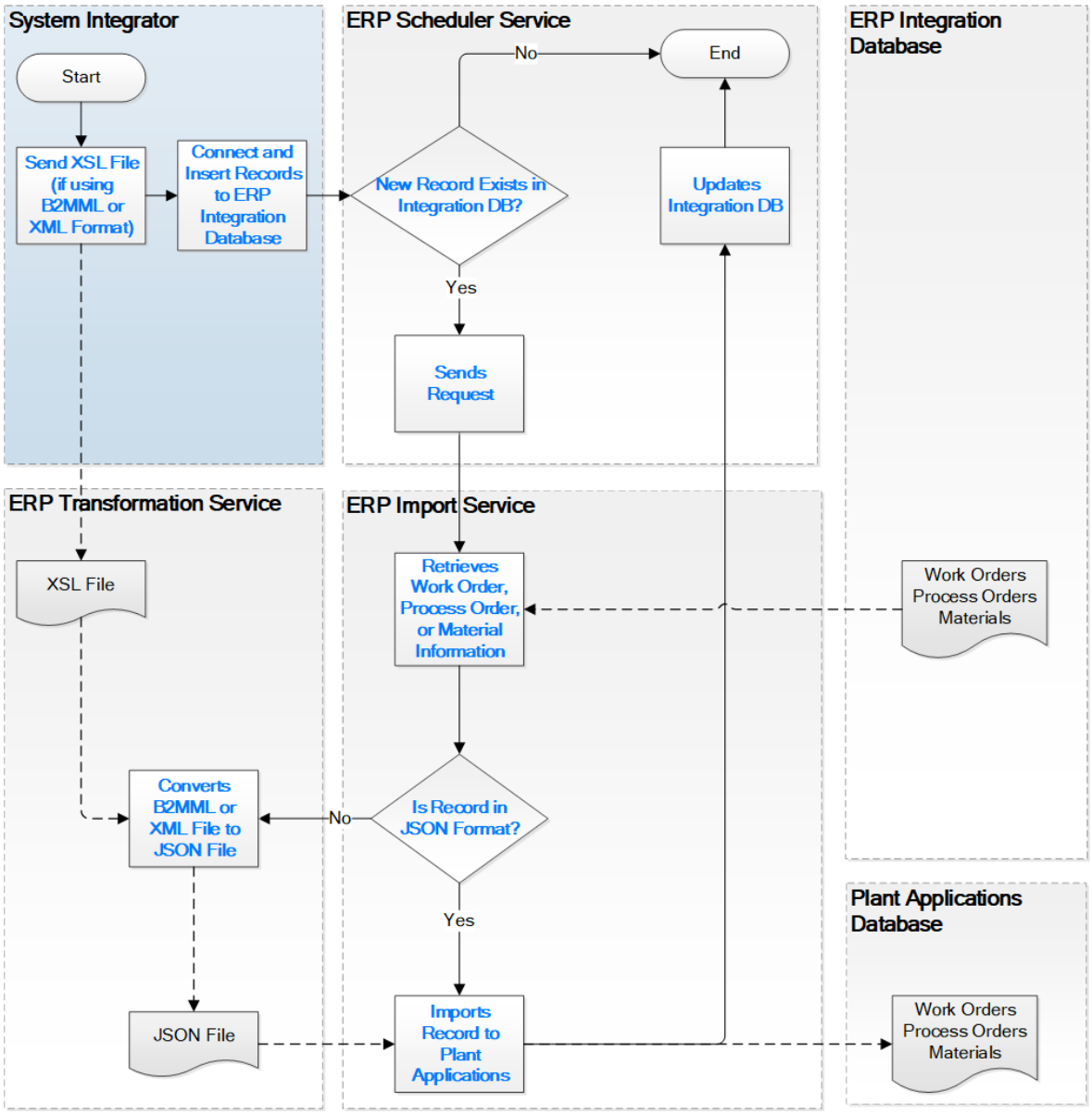

Information Flow for In-Process Records

The following diagram provides the steps performed by the integration services for an in-process record.

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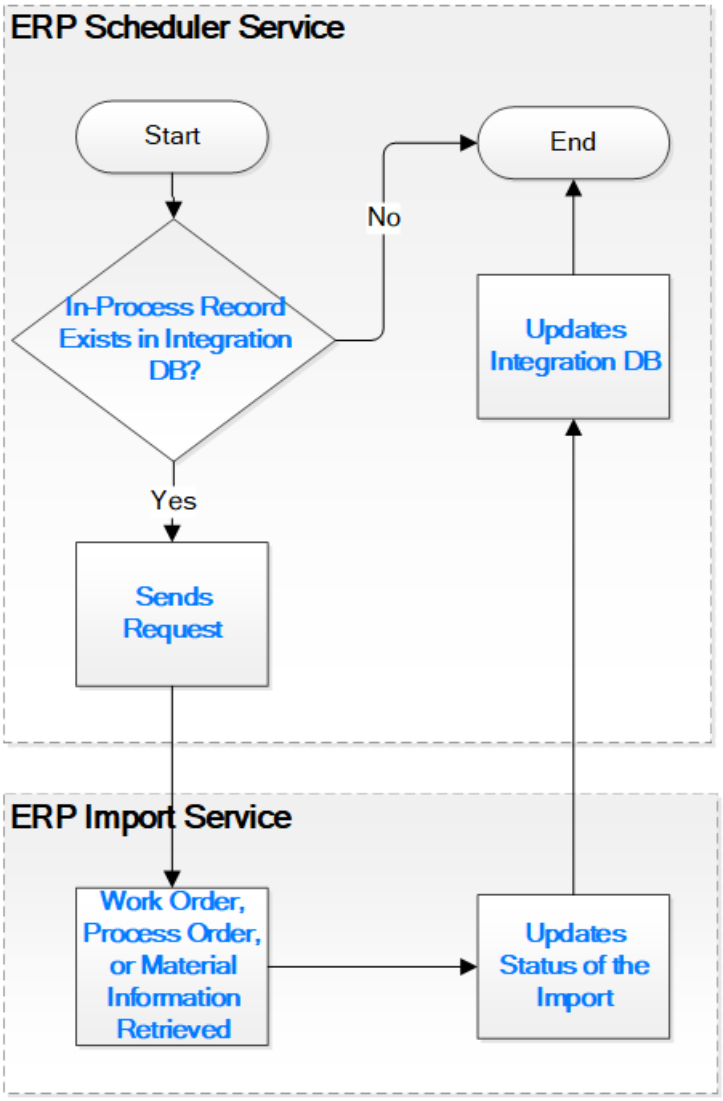

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Chapter 3

Configure ERP Integration

Topics:

- Configure ERP Integration
- Provide Mapping Details
- ERP Integration Database Settings
- Configuration Parameters in the ERP Scheduler Service
- Configuration Parameters in the ERP Import Service
- Configuration Parameters in the ERP Export Service
- Modifications and Additions to Properties in Plant Applications Web Client 8.1

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Configure ERP Integration

The following table provides the sequence of steps that you must perform to configure ERP integration. You must provide your UAA credentials to perform these steps.

Step Number	Description	Notes
1	Provide mapping details of a work order, process order, or material.	This step is required if the work order, process order, or material details are stored in a B2MML or XML file. It is used by the ERP Transformation service to convert the file to a JSON file.
2	Connect to the ERP Integration database by configuring the database settings, and insert records.	This step is required. After the integration, work orders, process orders, and materials are automatically imported to the ERP Integration database.
3	Configure the ERP Scheduler service parameters.	This step is optional. It is used to change the default value of the time interval at which the ERP Scheduler service polls the ERP Integration database.
4	Configure the ERP Import service parameters.	This step is optional. It is used to change the default values of parameters used in the service (such as names of property categories and groups).

Provide Mapping Details

About This Task

If you want to send work order, process order, or material details in a B2MML or an XML file, you must map the fields using an XSL document. When you install Plant Applications, a default XSL file is provided. The supported XSL version is 1.0.

Procedure

1. Create an XSL file.

   Tip: Create the XSL file based on the standard B2MML or XML file that you want to create. You can also refer to the sample files in the Reference section.
2. Access the [erp].[MappingSpecification] table of the Microsoft SQL database, and perform the following steps as applicable:
   - If you want to provide the mapping details for a work order, replace the following xml code with the xml code from the XSL file that you have created.

```
IF EXISTS (Select 1 from [erp].[MappingSpecification] where
Resource_Type = 'WorkOrder')
BEGIN
       UPDATE [erp].[MappingSpecification]
       SET Specification = '<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/
1999/XSL/Transform" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fn="http://www.w3.org/2005/xpath-functions">
    <xsl:output method="xml" version="1.0" encoding="UTF-8"
indent="yes"/>
```

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```
   <xsl:template match="@* | node()">
    <xsl:copy>
      <xsl:apply-templates select="@* | node()"/>
    </xsl:copy>
  </xsl:template>
</xsl:stylesheet>'
       where  Resource_Type = 'WorkOrder'
END
ELSE
BEGIN
       INSERT  INTO [erp].[MappingSpecification] (Specification,
Resource_Type)
       VALUES
       ('<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/
1999/XSL/Transform" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fn="http://www.w3.org/2005/xpath-functions">
    <xsl:output method="xml" version="1.0" encoding="UTF-8"
indent="yes"/>
   <xsl:template match="@* | node()">
    <xsl:copy>
      <xsl:apply-templates select="@* | node()"/>
    </xsl:copy>
  </xsl:template>
</xsl:stylesheet>', 'WorkOrder')
END
```

- If you want to provide the mapping details for a process order, replace the following xml code with the xml code from the XSL file that you have created.

```
IF EXISTS (Select 1 from [erp].[MappingSpecification] where
Resource_Type = 'ProcessOrder')
BEGIN
       UPDATE [erp].[MappingSpecification]
       SET Specification = '<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/
1999/XSL/Transform" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fn="http://www.w3.org/2005/xpath-functions">
    <xsl:output method="xml" version="1.0" encoding="UTF-8"
indent="yes"/>
   <xsl:template match="@* | node()">
    <xsl:copy>
      <xsl:apply-templates select="@* | node()"/>
    </xsl:copy>
  </xsl:template>
</xsl:stylesheet>'
       where  Resource_Type = 'ProcessOrder'
END
ELSE
BEGIN
       INSERT  INTO [erp].[MappingSpecification] (Specification,
Resource_Type)
       VALUES
       ('<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/
1999/XSL/Transform" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fn="http://www.w3.org/2005/xpath-functions">
    <xsl:output method="xml" version="1.0" encoding="UTF-8"
indent="yes"/>
   <xsl:template match="@* | node()">
    <xsl:copy>
```


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```
      <xsl:apply-templates select="@* | node()"/>
    </xsl:copy>
  </xsl:template>
</xsl:stylesheet>', 'ProcessOrder')
END
```

- If you want to provide the mapping details for a material, replace the following xml code with the xml code from the XSL file that you have created.

```
IF EXISTS (Select 1 from [erp].[MappingSpecification] where
Resource_Type = 'Material')
BEGIN
       UPDATE [erp].[MappingSpecification]
       SET Specification = '<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/
1999/XSL/Transform" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fn="http://www.w3.org/2005/xpath-functions">
    <xsl:output method="xml" version="1.0" encoding="UTF-8"
indent="yes"/>
   <xsl:template match="@* | node()">
    <xsl:copy>
      <xsl:apply-templates select="@* | node()"/>
    </xsl:copy>
  </xsl:template>
</xsl:stylesheet>'
       where  Resource_Type = 'Material'
END
ELSE
BEGIN
       INSERT  INTO [erp].[MappingSpecification] (Specification,
Resource_Type)
       VALUES
       ('<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/
1999/XSL/Transform" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fn="http://www.w3.org/2005/xpath-functions">
    <xsl:output method="xml" version="1.0" encoding="UTF-8"
indent="yes"/>
   <xsl:template match="@* | node()">
    <xsl:copy>
      <xsl:apply-templates select="@* | node()"/>
    </xsl:copy>
  </xsl:template>
</xsl:stylesheet>', 'Material')
END
```

3. Run the script.

Results

When you send a B2MML or XML file, it is converted to a JSON file by the ERP Transformation service using the mapping you have specified, and then imported to Plant Applications.

ERP Integration Database Settings

You must connect the ERP system with the ERP Integration database for work order, process order, and material records to be imported automatically into the ERP Integration database. These records are stored in the erp_integration_inbound_messages table.

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Refer to your ERP integration system implementation guide for details on connecting to the integration database. Provide the following details when you integrate the ERP system with the ERP Integration database:

- Database: Microsoft SQL Server 2016
- Default name: SOADB
- Schema name: erp
- Default schema: erp

Configuration Parameters in the ERP Scheduler Service

You can configure the following parameters in the ERP Scheduler service.

Note: The parameters listed below are with respect to a non-docker based installation of Plant Applications Web Client. In the case of docker-based installation, the dots in the parameters are replaced with underscores. For example: `erp_scheduler_service_importJobPoll_milliseconds`.

Parameter	Description
`erp.scheduler.service.importJobPoll.milliseconds`	The interval (in milliseconds) at which the ERP Schedule service polls the ERP Integration database for new inbound messages. The default value is 30000.
`erp.scheduler.service.importJobStatusPoll.milliseconds`	The interval (in milliseconds) at which the ERP Schedule service polls the ERP Integration database for in-process messages. The default value is 30000.
`erp.scheduler.service.retrylimit`	The maximum numbers of times the ERP Scheduler Service retries to process a record. The default value is 6.

Configuration Parameters in the ERP Import Service

You can configure the following parameters in the ERP Import service.

Note: Before you configure the parameters related to custom property groups and categories, you must create them in the Property Definition app. The maximum number of properties that you can create per property group is 2000. For more information, refer to Property Definition in Plant Applications Web Client help.

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Parameter	Description
Workorder_post_delete_delay	The duration after which importing a work order of the same name replaces the existing work order. The default value is 15 seconds. **Note:** This parameter is only applicable for importing work orders.
Workorder.property.group.id	The GUID of property group with the name WorkOrder Import from Property Definition application. This group Id belongs to WorkOrder Import. The default value is CB21B6A6-B370-46D5-8400-5BA64C46CB9F.
Material.property.group.id	The GUID of property group with the name Material Import from Property Definition application. This group Id belongs to Material Import. The default value is 79433EC1-6683-4BED-B353-BD667210E0A2.
maximumCacheSize	The maximum number of entries that the cache can contain. The default value is 100.
cacheExpireAfterWrite	Specifies that each entry be removed from the cache after a fixed duration after one of the following events occur: • The entry has been created. • The latest value of the entry has been updated. The default value is 5 minutes.

Note:

- The parameters Workorder_property_Group_name and Material_property_Group_name in Plant Applications Web Client version 8.0 are changed to Workorder.property.group.id and Material.property.group.id.
- The parameters Workorder_property_category_name and Material_property_category_name are not used in Plant Applications Web Client version 8.1.

Configuring parameters in the Property Definition application

In the Plant Applications Web Client, access the **Property Definition** page, select **ERP APP**, and then select **MaterialLot Import**.

Parameter	Description
inventory.line.id	The GUID of property definition with the name Inventory Line from Property Definition. The default value is AF651BC5-4161-4B03-8124-DE2AE4887CCE.
receiver.line.id	The GUID of property definition with the name Receiver Line from Property Definition. The default value is 02651301-05BD-4DE0-999C-0B6F93630308.

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Parameter	Description
receiver.status.id	The GUID of property definition with the name Receiver Status from Property Definition. The default value is FFDEE988-8E13-43C4-8BC3-A379BC6ACA53.
receiver.unit.id	The GUID of property definition with the name Receiver Unit from Property Definition. The default value is 0716041E-DFC6-4939-A81C-B2EB8F25B29E.

Note: Using known GUIDs you can rename the property groups and their definitions to suit your processes without changing their implementation. For example, if you want to modify the name of the group from Material Lot Import to Import Lot Properties, you can do so in the Property Definition app without hardcoding any values in Plant Applications Web Client.

Add default groups and definitions

If you delete the default groups and/or definitions from the database, get the GUIDs of created groups and/or definitions from the database and modify the GUIDs with the new values in application.properties file (for non-docker environment) and/or environment variables (for docker environment) of the ERP Import service.

Configuration Parameters in the ERP Export Service

This topic describes the various configuration parameters that a System Administrator must configure in ERP Export service and the Property Definition application in Plant Applications Web Client.

The System Administrator must configure these values during installation. To change the configuration, the System Administrator must restart the application.

- Configure the following parameters in the ERP Export service:

Parameter	Description
eventuatelocal.kafka.db.schema	Name of the schema. The default value is ERP.
eventuatelocal.kafka.bootstrap.groupname	Name of the consumer group, which is the consumer who listens to the work order events. The default value is erp-export-service.
eventuatelocal.zookeeper.connection.string	The connection string for zookeeper.
workorder.kafka.topic	Work order Kafka topic name. The default value is mes.workorder.workorders.
eventuate.local.kafka.consumer.properties.fetch.max.bytes	The maximum number of bytes that Kafka fetches at a time. The default value is 3145728.
eventuate.local.kafka.consumer.properties.max.poll.records	The maximum number of records that Kafka polls for. The default value is 100.

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Parameter	Description
erpexport.outbound.standard.topic	Name of the topic to which the ERP system publishes messages related to Operation Complete, Material Scrap, and Route Release events. The default value is mes.erp.outbound.messages.
erpexport.outbound.laborVouchering.topic	Name of the topic to which the ERP system publishes messages related to clock-on and clock-off events. The default value is mes.erp.outbound.messages.laborVouchering.
event.retryCount	Maximum number of retries to publish an event. The default value is 3.
event.retryMilliSeconds	Retry to publish an event after specified milliseconds. The default value is 1000.

- While configuring the ERP Export service, the System Administrator chooses the format of the message using the property erp.outbound.messages.messageType, and selecting one of the following values:
  - Application/XML – message is displayed in XML/B2MML format
  - Application/JSON – message is displayed in JSON format

Modifications and Additions to Properties in Plant Applications Web Client 8.1

The following table lists the properties that are removed from Plant Applications Web Client version 8.0 and, modified and added properties for Plant Applications Web Client version 8.1.

PA 8.0	PA 8.1	Comment
ROUTE_WORKORDER_CATEGORY	ERP APP	ROUTE_WORKORDER_CATEGORY is removed in PA 8.1. ERP APP is added in PA 8.1 to consolidate ERP related groups under one category.
ROUTE_WORKORDER_GROUP	WorkOrder Import	ROUTE_WORKORDER_GROUP is renamed to WorkOrder Import and any properties configured in the older group are moved to the new group during installation. The ERP application picks up the properties from the new group while creating a work order.
ROUTE_MATERIAL_CATEGORY	ERP APP	The category of properties is removed from PA 8.1.

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PA 8.0	PA 8.1	Comment
ROUTE_MATERIAL_GROUP	Material Import	ROUTE_MATERIAL_GROUP is renamed to Material Import and any properties configured in the older group are moved to the new group during installation. The ERP application picks up the properties from the new group while creating material.
-	MaterialLot Import	Added in PA 8.1. The ERP application picks up the properties from this group while creating a material lot.

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Chapter 4

ERP Import Service

Topics:

- ERP Import Service
- About the ERP Import Service
- Creating a Username for ERP System and Granting Permissions
- Configuring Parameters for the ERP Import Service
- ERP Import Service Kafka Topics

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ERP Import Service

About the ERP Import Service

The ERP Import service retrieves information about work orders, process orders, and materials from the integration database, and creates these records in the Plant Applications database.

The ERP Import service is a RESTful microservice that exposes an API consisting of the following methods: POST and GET.

To import files, the following steps are performed:

1. When the ERP Scheduler service sends a request for a new or in-process record, the ERP Import service performs one of the following steps:
   - For a new record, it retrieves the corresponding file from the integration database using the POST method to communicate with the other Plant Applications microservices. This method is asynchronous; as a result, the HTTP response codes and response messages are stored in a table for subsequent retrieval.

     Note: If the record is available in an XML or B2MML format, the ERP Import service sends the data to the ERP Transformation service, where it is converted to a JSON format.
   - For an in-process record, it retrieves the ID of the record from the integration database using the GET method.
2. The ERP Import service updates the status of the import. The ERP Scheduler service then updates the ERP Integration database with this information.

Creating a Username for ERP System and Granting Permissions

To execute tasks such as importing the details related to Work Orders, Material Lots, and Outside Processing from the ERP system to MES, the System Administrator must perform the following steps:

1. Create a user name on OpsHub UAA.

   Note: If you are performing a fresh installation of Plant Applications Web Client, a default username is provided to you.
2. Grant permissions for the user name to perform the following tasks:
   - Create a Work Order
   - Edit a Work Order
   - Execute a Work Order
   - Cancel a Work Order
   - Create Raw Material Lots
3. Modify the properties of the user name:
   - For Plant Applications Web Client with Docker installation, in the Environment Variables section, update the values of the following properties in a YAML file:
     - uaa_service_serviceuser_name
     - uaa_service_serviceuser_password
     - uaa_service_client_id
     - uaa_service_client_secret

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- For Plant Applications Web Client without Docker installation, browse to the folder `<Tomcat Installation folder>\webapps\erp-import-service-<version>\WEB-INF\classes\application.properties`, and update the values of the following properties:
  - uaa.service.client.id
  - uaa.service.client.secret
  - uaa.service.serviceuser.name
  - uaa.service.serviceuser.password

Configuring Parameters for the ERP Import Service

This topic describes the various configuration parameters that a System Administrator must configure in ERP Import service and the Property Definition application in Plant Applications Web Client.

The System Administrator must configure these values during installation. To change the configuration, the System Administrator must restart the application.

Parameter	Description
material.property.group.id	The GUID of property group with the name Material Import from Property Definition application. This group Id belongs to Material Import. The default value is 79433EC1-6683-4BED-B353-BD667210E0A2.
workorder.property.group.id	The GUID of property group with the name WorkOrder Import from Property Definition application. This group Id belongs to WorkOrder Import. The default value is CB21B6A6-B370-46D5-8400-5BA64C46CB9F.
materiallot.property.group.id	The GUID of property group with the name MaterialLot Import from Property Definition application. This group Id belongs to MaterialLot Import. The default value is 170d56ca-1f50-47db-8e2b-793a792ad6c9.
inventory.line.id	The GUID of property group with the name Inventory Line from Property Definition application. The default value is AF651BC5-4161-4B03-8124-DE2AE4887CCE.
receiver.line.id	The GUID of property definition with the name Receiver Line from Property Definition application. The default value is 02651301-05BD-4DE0-999C-0B6F93630308.
receiver.status.id	The GUID of property definition with the name Receiver Status from Property Definition application. The default value is FFDEE988-8E13-43C4-8BC3-A379BC6ACA53.
receiver.unit.id	The GUID of property definition with the name Receiver Unit from Property Definition application. The default value is 0716041E-DFC6-4939-A81C-B2EB8F25B29E.

ERP Import Service Kafka Topics

The ERP Import service publishes the messages in JSON and/or B2MML format to the following Kafka topics:

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Events	Kafka Topic
Records Operation Completed Event	mes.erp.outbound.messages.OperationCompletedEvent
Records route released Events	mes.route.releasedRoutes.RouteReleasedEvent
Records Scrapped and MaterialLotStatus Changed Event	mes.erp.outbound.messages.MaterialLotStatusChangedEvent
Records ClockOn Event	mes.erp.outbound.messages.ClockOnEvent
Records ClockOff Event	mes.erp.outbound.messages.ClockOffEvent

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Chapter 5

ERP Export Service

Topics:

- About ERP Export Service
- Configuration Parameters in the ERP Export Service
- ERP Export Service Kafka Topics
- ERP Export Service Tables
- Outbound JSON Messages Structure
- Outbound XML Messages Structure

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About ERP Export Service

ERP Export service sends the events from the Plant Applications Web Client to the ERP system (or middleware / interfacing system).

ERP Export service triggers a message from the Plant Applications Web Client to the ERP system when the following events occur:

- Operation Complete
- Clock on an operation in a serial/lot
- Clock off an operation in a serial/lot
- Material Lot Scrap
- Route Release

When one of the events occur, the ERP Export service performs the following operations:

- Inserts a message in a B2MML format to an integration table.
- Publishes an event to the Kafka topic associated with the event and notifies the ERP system .

Configuration Parameters in the ERP Export Service

This topic describes the various configuration parameters that a System Administrator must configure in ERP Export service and the Property Definition application in Plant Applications Web Client.

The System Administrator must configure these values during installation. To change the configuration, the System Administrator must restart the application.

- Configure the following parameters in the ERP Export service:

Parameter	Description
eventuatelocal.kafka.db.schema	Name of the schema. The default value is ERP.
eventuatelocal.kafka.bootstrap.groupname	Name of the consumer group, which is the consumer who listens to the work order events. The default value is erp-export-service.
eventuatelocal.zookeeper.connection.string	The connection string for zookeeper.
workorder.kafka.topic	Work order Kafka topic name. The default value is mes.workorder.workorders.
eventuate.local.kafka.consumer.properties.fetch.max.bytes	The maximum number of bytes that Kafka fetches at a time. The default value is 3145728.
eventuate.local.kafka.consumer.properties.max.poll.records	The maximum number of records that Kafka polls for. The default value is 100.
erpexport.outbound.standard.topic	Name of the topic to which the ERP system publishes messages related to Operation Complete, Material Scrap, and Route Release events. The default value is mes.erp.outbound.messages.

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Parameter	Description
erpexport.outbound.laborVouchering.topic	Name of the topic to which the ERP system publishes messages related to clock-on and clock-off events. The default value is mes.erp.outbound.messages.laborVouchering.
event.retryCount	Maximum number of retries to publish an event. The default value is 3.
event.retryMilliSeconds	Retry to publish an event after specified milliseconds. The default value is 1000.

- While configuring the ERP Export service, the System Administrator chooses the format of the message using the property erp.outbound.messages.messageType, and selecting one of the following values:
  - Application/XML – message is displayed in XML/B2MML format
  - Application/JSON – message is displayed in JSON format

ERP Export Service Kafka Topics

The ERP Export service publishes the messages in JSON and/or B2MML format to the following Kafka topics:

Events	Kafka topic
Clock-on and Clock-Off	mes.erp.outbound.messages.laborVouchering
Operation Complete, Material Scrap, and Release Route	mes.erp.outbound.messages
Messagess about unprocessed events are published here. **Note:** Check this topics in case of failures.	event.topic.failedeventname: mes.failedevents

Note:

Messages for Clock-On and Clock-Off events are generated separately because:

- a lot of messages are generated for these two events and that can adversely impact the system performance
- users who are not interested in messages related to these events can ignore them

ERP Export Service Tables

The ERP Export service publishes the messages in JSON and/or B2MML format to the following tables:

Events	Table
Clock-on and Clock-Off	erp.erp_integration_outbound_laborVouchering_messages
Operation Complete, Material Scrap, and Release Route	erp.erp_outbound_integration_standard_messages

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Events	Table
Material Lot Status Changed	erp.erp_outbound_integration_standard_messages

The description of the table is as follows:

Column	Description
Id	Id of the message
Event_Type	Type of the event
Message	Body of the message
Inserted_By	Person or system that sent the message
Inserted_Date	Date on which the message was initiated
Message_Type	Specifies if the message is in B2MML (application/xml) or JSON (application/JSON) format

Outbound JSON Messages Structure

Clock-on Event

```
{"workOrderName":"",
"operation":"",
"laborType":"",
"operatorName":"",
"clockedOnTime":"",
"clockedOnBy":"",
"lotIdentifier":[],
"unitName":"",
"productionLine":"",
"kafkaConsumerId":"",
"publishedDate":"
"}
```

Clock-off Event

```
{"workOrderName":"",
"operation":"",
"operatorName":"",
 "lotIdentifier":[],
 "clockedOnTime":"",
 "clockedOffTime":"",
 "clockedOffBy":"",
 "unitName":"",
 "productionLine":"",
 "kafkaConsumerId":"",
 "publishedDate":""
 }
```

Operation Completed Event

```
{
"workOrderName":"",
"lotIdentifier":"",
"operationInfo":{"name":"",
```


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```
"startTime":"",
"endTime":"",
"unitName":"",
"productionLine":"",
"status":"",
"completedBy":"",
"producedMaterial":"",
"unitOfMeasure":"",
"completedQuantity":,
"billOfMaterials":[],
"properties":[]
},"kafkaConsumerId":"",
"publishedDate":""
}
```


Route Event


```
{"id":"0000016ed6560f38-0242ac12001a0000",
"name":"Test Route1","revision":2,
"producedMaterialName":"Prod12",
"plannedLineName":"Line1",
"publishedDate":"2019-12-05T13:52:45Z",
"operationsGroup":{"operations":[{"sequenceNumber":1,
"name":"NewOperation",
"description":"",
"plannedUnitNames":["ConsumedUnit"],
"behaviors":["requiresClockOn"],
"propertyValues":[],
"billOfMaterials":[],
"documents":[]}],
"route":{"behaviors":[],
"propertyValues":[],
"billOfMaterials":[{"materialName":"Prod,
"unitOfMeasureName":"EA",
"quantity":3.0,
"displayOrder":3,
"behaviors":[],
"propertyValues":[]},
{
"materialName":"Prod3",
"unitOfMeasureName":"EA",
"quantity":3.0,
"displayOrder":2,
"behaviors":[],
"propertyValues":[]
},
{
"materialName":"prod1",
"unitOfMeasureName":"LB",
"quantity":2.0,
"displayOrder":4,
"behaviors":[],
"propertyValues":[]}],
"documents":[]}}
```


Scrap Event


```
{"kafkaConsumerId":"",
"publishedDate":"",
```


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```
"materialLot":[{"lotIdentifier":"",
"productName":"",
"status":"",
"productionUnit":"",
"quantity":,
"productionLine":"",
"unitOfMeasure":"",
"properties":[{"propertyName":"",
"propertyValue":""},
{"propertyName":"",
"propertyValue":""},
{"propertyName":"","propertyValue":""},
{"propertyName":"","propertyValue":" "},
{"propertyName":"","propertyValue":""},
{"propertyName":"","propertyValue": ""}]}]}
```

Material Lot Status Changed Event

```
{
  "kafkaConsumerId": "00000172565c7e31-0242ac1200400000",
  "publishedDate": "2020-05-27T11:25:36Z",
  "materialLot": [
    {
      "lotIdentifier": "LOT-001",
      "productName": "P002",
      "status": "Complete",
      "productionUnit": "Receiver (Test)",
      "productionLine": "Received Material Lots (Test)",
      "unitOfMeasure": "UN",
      "properties": [
        {
          "propertyName": "statusUpdatedBy",
          "propertyValue": "bm_operator_1"
        },
        {
          "propertyName": "statusUpdatedTime",
          "propertyValue": "2020-05-21T06:57:50Z"
        },
        {
          "propertyName": "SCRAP",
          "propertyValue": "5"
        },
        {
          "propertyName": "RTV",
          "propertyValue": "5"
        },
        {
          "propertyName": "REWORK",
          "propertyValue": "2"
        },
        {
          "propertyName": "DIT",
          "propertyValue": "3"
        },
        {
          "propertyName": "ACCEPT",
          "propertyValue": "25"
        },
        {
          "propertyName": "TestStringProp",
```


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```
          "propertyValue": "WOProperty"
        }
      ]
    }
  ]
}
```

Outbound XML Messages Structure

Clock On Event

```
<ProductionPerformance
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-AllExtensions"
    xmlns:inp2="http://www.wbf.org/xml/B2MML-V0401"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:erp="http://sample.data"
    xmlns="http://www.wbf.org/xml/B2MML-V0401">
    <ID>0000016fd83ef2ff-02420a000bab0000</ID>
    <Description>ERP Export Service</Description>
    <PublishedDate>2020-01-22T13:57:03Z</PublishedDate>
    <ProductionResponse>
        <ID>REWORK-TEST-WO2</ID>
        <SegmentResponse>
            <ID>op10</ID>
            <PersonnelActual>
                <PersonID>bm_operator_2</PersonID>
                <Location>
                    <EquipmentID>KRoute_WO_testing</EquipmentID>
                    <EquipmentElementLevel>ProductionLine</
EquipmentElementLevel>
                    <Location>
                        <EquipmentID>KRoute_Unit1</EquipmentID>
                        <EquipmentElementLevel>Unit</
EquipmentElementLevel>
                    </Location>
                </Location>
                <PersonnelActualProperty>
                    <ID>laborType</ID>
                    <Value>
                        <ValueString>Rework</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </PersonnelActualProperty>
                <PersonnelActualProperty>
                    <ID>clockedOnTime</ID>
                    <Value>
                        <ValueString>2020-01-24T15:50:01Z</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </PersonnelActualProperty>
                <PersonnelActualProperty>
                    <ID>operatorName</ID>
                    <Value>
                        <ValueString>bm_operator_2</ValueString>
                        <DataType>string</DataType>
```

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```
                        <UnitOfMeasure/>
                    </Value>
                </PersonnelActualProperty>
            </PersonnelActual>
            <MaterialProducedActual>
                <MaterialLotID>SN-1</MaterialLotID>
            </MaterialProducedActual>
        </SegmentResponse>
    </ProductionResponse>
</ProductionPerformance>
```

Clock Off Event

```
<ProductionPerformance
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-AllExtensions"
    xmlns:inp2="http://www.wbf.org/xml/B2MML-V0401"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:erp="http://sample.data"
    xmlns="http://www.wbf.org/xml/B2MML-V0401">
    <ID>0000016fd83ea61e-02420a000bab0000</ID>
    <Description>ERP Export Service</Description>
    <PublishedDate>2020-01-22T13:57:03Z</PublishedDate>
    <ProductionResponse>
        <ID>REWORK-TEST-WO2</ID>
        <SegmentResponse>
            <ID>op10</ID>
            <PersonnelActual>
                <PersonID>bm_operator_2</PersonID>
                <Location>
                    <EquipmentID>KRoute_WO_testing</EquipmentID>
                    <EquipmentElementLevel>ProductionLine</
EquipmentElementLevel>
                    <Location>
                        <EquipmentID>KRoute_Unit1</EquipmentID>
                        <EquipmentElementLevel>Unit</
EquipmentElementLevel>
                    </Location>
                </Location>
                <PersonnelActualProperty>
                    <ID>clockedOnTime</ID>
                    <Value>
                        <ValueString>2020-01-24T15:46:58Z</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </PersonnelActualProperty>
                <PersonnelActualProperty>
                    <ID>clockedOffTime</ID>
                    <Value>
                        <ValueString>2020-01-24T15:49:42Z</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </PersonnelActualProperty>
                <PersonnelActualProperty>
                    <ID>operatorName</ID>
                    <Value>
                        <ValueString>bm_operator_2</ValueString>
                        <DataType>string</DataType>
```


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```
                        <UnitOfMeasure/>
                    </Value>
                </PersonnelActualProperty>
            </PersonnelActual>
            <MaterialProducedActual>
                <MaterialLotID>SN-1</MaterialLotID>
            </MaterialProducedActual>
        </SegmentResponse>
    </ProductionResponse>
</ProductionPerformance>
```

Operation Completed Event

```
<ProductionPerformance
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-AllExtensions"
    xmlns:inp2="http://www.wbf.org/xml/B2MML-V0401"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:erp="http://sample.data"
    xmlns="http://www.wbf.org/xml/B2MML-V0401">
    <ID>0000016fd8293f1b-02420a000bab0000</ID>
    <Description>ERP Export Service</Description>
    <PublishedDate>2020-01-22T13:57:03Z</PublishedDate>
    <ProductionResponse>
        <ID>TEST-TEST-WO2</ID>
        <SegmentResponse>
            <ID>op20</ID>
            <ActualStartTime>2020-01-24T15:16:57Z</ActualStartTime>
            <ActualEndTime>2020-01-24T15:26:19Z</ActualEndTime>
            <ProductionData>
                <ID>status</ID>
                <Value>
                    <ValueString>Complete</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Value>
            </ProductionData>
            <ProductionData>
                <ID>completedBy</ID>
                <Value>
                    <ValueString>bm_operator_2</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Value>
            </ProductionData>
            <MaterialProducedActual>
                <MaterialDefinitionID>Test34</MaterialDefinitionID>
                <MaterialLotID>SN-1</MaterialLotID>
                <Location>
                    <EquipmentID>KRoute_WO_testing</EquipmentID>
                    <EquipmentElementLevel>ProductionLine</
EquipmentElementLevel>
                    <Location>
                        <EquipmentID>KRoute_Unit2</EquipmentID>
                        <EquipmentElementLevel>Unit</
EquipmentElementLevel>
                    </Location>
                </Location>
                <Quantity>
                    <QuantityString>1.0</QuantityString>
```

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```
                    <DataType>double</DataType>
                    <UnitOfMeasure>inch</UnitOfMeasure>
                </Quantity>
            </MaterialProducedActual>
        </SegmentResponse>
    </ProductionResponse>
</ProductionPerformance>
```

Route Event

```
<ProductInformation
    xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-AllExtensions"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns:inp2="http://www.wbf.org/xml/B2MML-V0401"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:erp="http://sample.data"
    xmlns="http://www.wbf.org/xml/B2MML-V0401">
    <ID>0000016fd259e9bb-0242ac1400160000</ID>
    <Description>ERP Export Service</Description>
    <Location>
        <EquipmentID/>
        <EquipmentElementLevel>Site</EquipmentElementLevel>
    </Location>
    <PublishedDate>2020-01-22T13:57:05Z</PublishedDate>
    <ProductDefinition>
        <ID>Copy of Setup-labor-route</ID>
        <Version>2</Version>
        <Description/>
        <Location>
            <EquipmentID/>
            <EquipmentElementLevel>Site</EquipmentElementLevel>
            <Location>
                <EquipmentID>KRoute_WO_testing</EquipmentID>
                <EquipmentElementLevel>ProductionLine</
EquipmentElementLevel>
            </Location>
        </Location>
        <ProductSegment>
            <ID>ROUTE</ID>
            <Description/>
            <MaterialSpecification>
                <MaterialClassID/>
                <MaterialDefinitionID>Test7</MaterialDefinitionID>
                <Quantity>
                    <QuantityString>1.0</QuantityString>
                    <DataType>string</DataType>
                    <UnitOfMeasure>inch</UnitOfMeasure>
                </Quantity>
                <MaterialSpecificationProperty>
                    <ID>requiresConsumptionTracking</ID>
                    <Description>behaviors</Description>
                    <Value>
                        <ValueString>false</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialSpecificationProperty>
                <MaterialSpecificationProperty>
                    <ID>displayOrder</ID>
                    <Value>
```


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```
                        <ValueString>1</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialSpecificationProperty>
            </MaterialSpecification>
            <MaterialSpecification>
                <MaterialClassID/>
                <MaterialDefinitionID>Test8</MaterialDefinitionID>
                <Quantity>
                    <QuantityString>1.0</QuantityString>
                    <DataType>string</DataType>
                    <UnitOfMeasure>inch</UnitOfMeasure>
                </Quantity>
                <MaterialSpecificationProperty>
                    <ID>requiresConsumptionTracking</ID>
                    <Description>behaviors</Description>
                    <Value>
                        <ValueString>false</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialSpecificationProperty>
                <MaterialSpecificationProperty>
                    <ID>displayOrder</ID>
                    <Value>
                        <ValueString>2</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialSpecificationProperty>
            </MaterialSpecification>
            <MaterialSpecification>
                <MaterialClassID/>
                <MaterialDefinitionID>Test34</MaterialDefinitionID>
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
            </MaterialSpecification>
        </ProductSegment>
        <ProductSegment>
            <ID>op10</ID>
            <Description/>
            <Parameter>
                <ID>requiresClockOn</ID>
                <Value>
                    <ValueString>true</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Value>
                <Description>behaviors</Description>
            </Parameter>
            <EquipmentSpecification>
                <EquipmentClassID/>
                <EquipmentID>KRoute_Unit1</EquipmentID>
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
```

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```
            </Quantity>
            <EquipmentSpecificationProperty>
                <ID/>
                <Value>
                    <ValueString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Value>
            </EquipmentSpecificationProperty>
        </EquipmentSpecification>
        <EquipmentSpecification>
            <EquipmentClassID/>
            <EquipmentID>KRoute_Unit2</EquipmentID>
            <Quantity>
                <QuantityString/>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Quantity>
            <EquipmentSpecificationProperty>
                <ID/>
                <Value>
                    <ValueString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Value>
            </EquipmentSpecificationProperty>
        </EquipmentSpecification>
        <EquipmentSpecification>
            <EquipmentClassID/>
            <EquipmentID>KRoute_Unit4</EquipmentID>
            <Quantity>
                <QuantityString/>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Quantity>
            <EquipmentSpecificationProperty>
                <ID/>
                <Value>
                    <ValueString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Value>
            </EquipmentSpecificationProperty>
        </EquipmentSpecification>
        <EquipmentSpecification>
            <EquipmentClassID/>
            <EquipmentID>KRoute_Unti3</EquipmentID>
            <Quantity>
                <QuantityString/>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Quantity>
            <EquipmentSpecificationProperty>
                <ID/>
                <Value>
                    <ValueString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Value>
            </EquipmentSpecificationProperty>
        </EquipmentSpecification>
```


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```
        </ProductSegment>
        <ProductSegment>
            <ID>op20</ID>
            <Description/>
            <Parameter>
                <ID>requiresClockOn</ID>
                <Value>
                    <ValueString>true</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Value>
                <Description>behaviors</Description>
            </Parameter>
            <EquipmentSpecification>
                <EquipmentClassID/>
                <EquipmentID>KRoute_Unit2</EquipmentID>
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
                <EquipmentSpecificationProperty>
                    <ID/>
                    <Value>
                        <ValueString/>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </EquipmentSpecificationProperty>
            </EquipmentSpecification>
            <EquipmentSpecification>
                <EquipmentClassID/>
                <EquipmentID>KRoute_Unit1</EquipmentID>
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
                <EquipmentSpecificationProperty>
                    <ID/>
                    <Value>
                        <ValueString/>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </EquipmentSpecificationProperty>
            </EquipmentSpecification>
            <EquipmentSpecification>
                <EquipmentClassID/>
                <EquipmentID>KRoute_Unit4</EquipmentID>
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
                <EquipmentSpecificationProperty>
                    <ID/>
                    <Value>
                        <ValueString/>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
```

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```
                    </Value>
                </EquipmentSpecificationProperty>
            </EquipmentSpecification>
            <EquipmentSpecification>
                <EquipmentClassID/>
                <EquipmentID>KRoute_Unti3</EquipmentID>
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
                <EquipmentSpecificationProperty>
                    <ID/>
                    <Value>
                        <ValueString/>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </EquipmentSpecificationProperty>
            </EquipmentSpecification>
        </ProductSegment>
    </ProductDefinition>
</ProductInformation>
```

Scrap Event

```
<MaterialInformation
    xmlns:inp2="http://www.wbf.org/xml/B2MML-V0401"
    xmlns:erp="http://sample.data">
    <ID>0000016fc806bd3d-02420a000b4d0000</ID>
    <Description/>
    <Location>
        <EquipmentID/>
        <EquipmentElementLevel>Site</EquipmentElementLevel>
    </Location>
    <PublishedDate>2020-01-21T12:14:43Z</PublishedDate>
    <MaterialLot>
        <ID>LOTSCRAP2-2</ID>
        <Description/>
        <MaterialDefinitionID>Prod1</MaterialDefinitionID>
        <Status>Scrapped</Status>
        <MaterialLotProperty>
            <ID>scrappedBy</ID>
            <Description/>
            <Value>
                <ValueString>bm_operator_2</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>scrappedTime</ID>
            <Description/>
            <Value>
                <ValueString>2020-01-21T12:14:42Z</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
```


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```
            <ID>reasonLevel1</ID>
            <Description/>
            <Value>
                <ValueString/>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>reasonLevel2</ID>
            <Description/>
            <Value>
                <ValueString/>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>reasonLevel3</ID>
            <Description/>
            <Value>
                <ValueString/>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>reasonLevel4</ID>
            <Description/>
            <Value>
                <ValueString/>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Value>
        </MaterialLotProperty>
        <Location>
            <EquipmentID/>
            <EquipmentElementLevel>Site</EquipmentElementLevel>
            <Location>
                <EquipmentID>Line9</EquipmentID>
                <EquipmentElementLevel>ProductionLine</
EquipmentElementLevel>
                <Location>
                    <EquipmentID>unit9</EquipmentID>
                    <EquipmentElementLevel>Unit</EquipmentElementLevel>
                </Location>
            </Location>
        </Location>
        <Quantity>
            <QuantityString>1</QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure>inch</UnitOfMeasure>
        </Quantity>
    </MaterialLot>
</MaterialInformation>
```

Material Lot Status Changed Event

```
<MaterialInformation
    xmlns:inp2="http://www.wbf.org/xml/B2MML-V0401"
```

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```
    xmlns:erp="http://sample.data">
    <ID>000001723c1a2bc7-0242ac1200400000</ID>
    <Description/>
    <Location>
        <EquipmentID/>
        <EquipmentElementLevel>Site</EquipmentElementLevel>
    </Location>
    <PublishedDate>2020-05-22T11:12:49Z</PublishedDate>
    <MaterialLot>
        <ID>TEST-NAU_0091</ID>
        <Description/>
        <MaterialDefinitionID>P001</MaterialDefinitionID>
        <Status>PENDING MRB/NCR</Status>
        <MaterialLotProperty>
            <ID>statusUpdatedBy</ID>
            <Description/>
            <Value>
                <ValueString>bm_operator_1</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>statusUpdatedTime</ID>
            <Description/>
            <Value>
                <ValueString>2020-05-21T06:57:50Z</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>MRB/NCR</ID>
            <Description/>
            <Value>
                <ValueString>5</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>ACCEPT</ID>
            <Description/>
            <Value>
                <ValueString>5</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Value>
        </MaterialLotProperty>
        <Location>
            <EquipmentID/>
            <EquipmentElementLevel>Site</EquipmentElementLevel>
            <Location>
                <EquipmentID>Received Material Lots (Test)</
EquipmentID>
                <EquipmentElementLevel>ProductionLine</
EquipmentElementLevel>
                <Location>
                    <EquipmentID>Receiver (Test)</EquipmentID>
                    <EquipmentElementLevel>Unit</EquipmentElementLevel>
                </Location>
```


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```
            </Location>
        </Location>
        <Quantity>
            <QuantityString/>
            <DataType>string</DataType>
            <UnitOfMeasure>UN</UnitOfMeasure>
        </Quantity>
    </MaterialLot>
</MaterialInformation>
```

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Chapter 6

Reference

Topics:

- ERP Integration Database Schema
- Sample Files for a Work Order
- Sample Files for a Process Order
- Sample Files for Material
- Sample Files for Material Lot
- Sample Files for Outside Processing (OSP)
- Response Codes

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ERP Integration Database Schema

ERP Integration Database Schema

The ERP Integration database stores messages that specify work orders, process orders, and materials. Messages are stored in the erp_integration_inbound_messages table until they are imported into the Plant Applications database. The following table describes the columns in the erp_integration_inbound_messages table.

Column	Description
Id	A system-generated identity value.
Message_Type	The identifier for the type of the record. This column contains one of the following values: • workOrder • processOrder • material • materialLot
Media_Type	The MIME type of the message. This column contains one of the following values: • application/json • application/xml
Key_Data	The information added by the ERP Scheduler service when the record is processed (for example, work order number). The data can be used by system administrators for internal purposes, such as to query how many times the order number has been sent for import.
Inserted_Date	The date and time (in UTC format) when the ERP system added the record to the table.
Process_Start_Date	The date and time (in UTC format) when the ERP Scheduler service started processing the message.
Process_Complete_Date	The date and time (in UTC format) when the ERP Scheduler service completed processing the message.
Response_Code	The HTTP response code from the import process.
Response_Message	The message that contains information about whether the import has been successful.

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Column	Description
Message	The record that contains the details of the work order, process order, or material in a JSON, B2MML, or XML format. If the message is in the JSON format, this column contains one of the following files: • work order import document (WOID) • process order import document (POID) • material master import document (MMID)
Inserted_By	The user who created the record.

Sample Files for a Work Order

Message that Contains a Work Order

Inbound messages are added to the integration database using Microsoft SQL Server 2016 version or higher.

Message that Contains a Work Order

```
INSERT INTO erp.erp_integration_inbound_messages
(Message_Type, Media_Type, Message, Inserted_By)
                VALUES ('workOrder', 'application/json',
'{WOID}', '<user name>')
```

where {WOID} is a JSON document that specifies the work order.

Work Order Import Document

A JSON work order import document (WOID) contains all the details of a work order, including route and revision or segment definition. The WOID constitutes the body of the HTTP POST request of the ERP Import Service, which posts the work order to Plant Applications.

WOID with Route Definition

Note: "schemaVersion": 3 is supported in Plant Applications version 8.0.

```
{
 "schemaVersion": 3,
 "workOrderName": "Test WO with route Demo 001",
 "producedMaterialName": "Ni01",
 "plannedLineName": "NiyuthTestLine01",
 "plannedQuantity": 1,
 "priority": 0,
 "plannedStartDate": "2018-09-18T13:28:39.039Z",
 "plannedEndDate": "2018-12-19T13:00:00.000Z",
 "lotIdentifiers": [
 "SERNUM1",
 "SERNUM2",
 "SERNUM3"
 ],
 "routeDefinitionName": "TestRoute",
```


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```
  "routeDefinitionRevision": 1
}
```

WOID without Route Definition

Note: "schemaVersion": 3 is supported in Plant Applications version 8.0.

```
{
  "schemaVersion": 3,
  "workOrderName": "32847248",
  "producedMaterialName": "GEEC3MA0025EMZI",
  "plannedLineName": "OU_D86085_US",
  "priority": 0,
  "plannedStartDate": "2017-04-22T00:00:00.000Z",
  "plannedEndDate": "2014-04-22T00:00:00.000Z",
  "operationsGroup": {
    "route": {
      "billOfMaterials": [],
      "documents": [],
      "propertyValues": [
        {
          "propertyName": "ProductCategory",
          "propertyValue": "CAPACITORSA"
        },
        {
          "propertyName": "RouteTemplate",
          "propertyValue": "CapacitorRoute"
        }
      ],
      "behaviors": []
    },
    "operations": [
      {
        "name": "10",
        "description": "Wind Pack",
        "sequenceNumber": 10,
        "plannedUnitNames": [
          "FIX_LT_ADJ"
        ],
        "billOfMaterials": [
          {
            "materialName": "308A2463BD067",
            "quantity": 1,
            "unitOfMeasureName": "EA",
            "requiresConsumptionTracking": true,
            "displayOrder": 1,
            "propertyValues": [
              {
                "propertyName": "GEDS_Drawing_Reference",
                "propertyValue": "1"
              },
              {
                "propertyName": "GEDS_Position",
                "propertyValue": "POS A"
              },
              {
                "propertyName": "GEDS_IsPickable",
                "propertyValue": "true"
              },
```

```
            {
              "propertyName": "GEDS_BOM_Location",
              "propertyValue": "A123"
            },
            {
              "propertyName": "GEDS_JumperSetting",
              "propertyValue": "PL01"
            }
          ],
          "behaviors": []
        },
        {
          "materialName": "308A309800048",
          "quantity": 1,
          "unitOfMeasureName": "EA",
          "requiresConsumptionTracking": false,
          "displayOrder": 2,
          "propertyValues": [
            {
              "propertyName": "GEDS_Drawing_Reference",
              "propertyValue": "3"
            }
          ],
          "behaviors": []
        }
      ],
      "documents": [
        {
          "displayName": "Document 1",
          "link": "http:/grid.ge.com/485765/abc.pdf"
        },
        {
          "displayName": "Document 2",
          "link": "http:/grid.ge.com/485765/abc2.pdf"
        }
      ],
      "propertyValues": [
        {
          "propertyName": "LaborTime",
          "propertyValue": "210"
        }
      ],
      "behaviors": []
    },
    {
      "name": "20",
      "description": "Ultrasonic Weld",
      "sequenceNumber": 20,
      "plannedUnitNames": [],
      "billOfMaterials": [
        {
          "materialName": "ACCR",
          "quantity": 33.78,
          "unitOfMeasureName": "LB",
          "requiresConsumptionTracking": false,
          "displayOrder": 1,
          "propertyValues": [],
          "behaviors": []
        }
      ],
      "documents": [
```


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```
            {
              "displayName": "Document 1",
              "link": "http:/grid.ge.com/485765/abc.pdf"
            },
            {
              "displayName": "Document 2",
              "link": "http:/grid.ge.com/485765/abc2.pdf"
            }
          ],
          "propertyValues": [
            {
              "propertyName": "LaborTime",
              "propertyValue": "100"
            }
          ],
          "behaviors": []
        }
      ]
    },
    "plannedQuantity": 3,
    "lotIdentifiers": [
      "SERNUM1",
      "SERNUM2",
      "SERNUM3"
    ]
}
```

B2MML File that Contains a Work Order

Instead of a JSON work order import document (WOID), you can send all the details of a work order, process order, or material in a B2MML file.

If you want to send a B2MML document, you must also provide an XSL file with the mapping details. The ERP Transformation service uses this XSL file to convert the B2MML document to a JSON file.

Note: When an XML file is processed, some of the special characters are omitted. To prevent this issue, use the escape strings as specified in the following table.

Special Character	Escape String
&	&
<	<
>	>
“	"
‘	'

B2MML File that Contains a Work Order

Note: This XML file supports schema version 4.

```
<?xml version="1.0" encoding="utf-8"?>
<ProductionSchedule
    xmlns:inp2="http://www.wbf.org/xml/B2MML-V0401"
    xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-
AllExtensions"
    xmlns="http://www.wbf.org/xml/B2MML-V0401">
```

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```
    <inp2:PublishedDate>2017-04-15T09:30:00</
inp2:PublishedDate>
    <Extended:SchemaVersion>4</Extended:SchemaVersion>
    <inp2:ProductionRequest>
        <inp2:ID>Test_WO_perf_pl39543534353</inp2:ID>
        <inp2:Description>32847248</inp2:Description>
        <!-- 1st ProductProductionRuleID is for
RouteDefinitionName and 2nd ProductProductionRuleId is
for Revision. Commented to avoid conflict between route
and operations  -->
        <!-- <inp2:ProductProductionRuleID>50488731</
inp2:ProductProductionRuleID><inp2:ProductProductionRuleI
D>1</inp2:ProductProductionRuleID> -->
        <inp2:Location>
            <inp2:EquipmentID>Test Line1</
inp2:EquipmentID>
            <inp2:EquipmentElementLevel>Site</
inp2:EquipmentElementLevel>
        </inp2:Location>
        <inp2:SegmentRequirement>
            <inp2:ID>000</inp2:ID>
            <inp2:EarliestStartTime>2017-04-22T00:00:00</
inp2:EarliestStartTime>
            <inp2:LatestEndTime>2017-04-23T00:00:00</
inp2:LatestEndTime>
            <inp2:MaterialProducedRequirement>

<inp2:MaterialDefinitionID>TestWithNonSerializedProp
                </inp2:MaterialDefinitionID>
                <inp2:MaterialLotID>SERNUM1</
inp2:MaterialLotID>
                <inp2:Quantity>
                    <inp2:QuantityString>1</
inp2:QuantityString>
                    <inp2:DataType>float</inp2:DataType>
                    <inp2:UnitOfMeasure />
                </inp2:Quantity>

<inp2:MaterialProducedRequirementProperty>
                    <inp2:ID>WOStatus</inp2:ID>
                    <inp2:Value>
                        <inp2:ValueString>Released</
inp2:ValueString>
                        <inp2:DataType>string</
inp2:DataType>
                        <inp2:UnitOfMeasure />
                    </inp2:Value>
                </
inp2:MaterialProducedRequirementProperty>

<inp2:MaterialProducedRequirementProperty>
                    <inp2:ID>MaterialAvailabilityDate</
inp2:ID>
                    <inp2:Value>

<inp2:ValueString>2017-04-22T00:00:00</inp2:ValueString>
                        <inp2:DataType>DateTime</
inp2:DataType>
                        <inp2:UnitOfMeasure />
                    </inp2:Value>
                </
```


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```
inp2:MaterialProducedRequirementProperty>

<inp2:MaterialProducedRequirementProperty>
                    <inp2:ID>ParentOrder</inp2:ID>
                    <inp2:Value>
                        <inp2:ValueString>SO2367523</
inp2:ValueString>
                        <inp2:DataType>string</
inp2:DataType>
                        <inp2:UnitOfMeasure />
                    </inp2:Value>
                </
inp2:MaterialProducedRequirementProperty>
            </inp2:MaterialProducedRequirement>
            <inp2:MaterialProducedRequirement>

<inp2:MaterialDefinitionID>TestWithNonSerializedProp
                </inp2:MaterialDefinitionID>
                <inp2:MaterialLotID>SERNUM2</
inp2:MaterialLotID>
                <inp2:Quantity>
                    <inp2:QuantityString>1</
inp2:QuantityString>
                    <inp2:DataType>float</inp2:DataType>
                    <inp2:UnitOfMeasure />
                </inp2:Quantity>
            </inp2:MaterialProducedRequirement>
            <inp2:MaterialProducedRequirement>

<inp2:MaterialDefinitionID>TestWithNonSerializedProp
                </inp2:MaterialDefinitionID>
                <inp2:MaterialLotID>SERNUM3</
inp2:MaterialLotID>
                <inp2:Quantity>
                    <inp2:QuantityString>1</
inp2:QuantityString>
                    <inp2:DataType>float</inp2:DataType>
                    <inp2:UnitOfMeasure />
                </inp2:Quantity>
            </inp2:MaterialProducedRequirement>
        </inp2:SegmentRequirement>
        <inp2:SegmentRequirement>
            <inp2:ID>10</inp2:ID>
            <inp2:Description>Wind Pack</
inp2:Description>
            <inp2:Location>
                <inp2:EquipmentID>WIND</inp2:EquipmentID>
                <inp2:EquipmentElementLevel>WorkCenter</
inp2:EquipmentElementLevel>
            </inp2:Location>
            <inp2:EarliestStartTime>2017-04-15T12:00:00</
inp2:EarliestStartTime>
            <inp2:LatestEndTime>2017-04-15T12:15:00</
inp2:LatestEndTime>
            <inp2:EquipmentRequirement>
                <inp2:Location>
                    <inp2:EquipmentID>Unit9</
inp2:EquipmentID>

<inp2:EquipmentElementLevel>WorkCell</
inp2:EquipmentElementLevel>
```

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```
                </inp2:Location>
                <inp2:Quantity>
                    <inp2:QuantityString>1</
inp2:QuantityString>
                </inp2:Quantity>
            </inp2:EquipmentRequirement>
            <inp2:ProductionParameter>
                <inp2:Parameter>
                    <inp2:ID>Priority</inp2:ID>
                    <inp2:Value>
                        <ValueString>10</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure />
                    </inp2:Value>
                </inp2:Parameter>
            </inp2:ProductionParameter>
            <inp2:ProductionParameter>
                <inp2:Parameter>
                    <inp2:ID>behaviors</inp2:ID>
                    <inp2:Value>
                        <ValueString>requiresClockOn</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                    </inp2:Value>
                </inp2:Parameter>
            </inp2:ProductionParameter>
            <inp2:ProductionParameter>
                <inp2:Parameter>
                    <inp2:ID>behaviors</inp2:ID>
                    <inp2:Value>
                        <ValueString>requiresClockOn1</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                    </inp2:Value>
                </inp2:Parameter>
            </inp2:ProductionParameter>
            <inp2:ProductionParameter>
                <inp2:Parameter>
                    <inp2:ID>prop</inp2:ID>
                    <inp2:Value>
                        <ValueString>210</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure />
                    </inp2:Value>
                </inp2:Parameter>
            </inp2:ProductionParameter>
            <inp2:MaterialConsumedRequirement>

<inp2:MaterialDefinitionID>TestSerializedProp3</
inp2:MaterialDefinitionID>
                <inp2:Quantity>
                    <inp2:QuantityString>1</
inp2:QuantityString>
                    <inp2:DataType>float</inp2:DataType>
                    <inp2:UnitOfMeasure>EA</
inp2:UnitOfMeasure>
                </inp2:Quantity>

<inp2:MaterialConsumedRequirementProperty>
```


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```
                    <inp2:ID>prop</inp2:ID>
                    <inp2:Value>
                        <inp2:ValueString>1</
inp2:ValueString>
                        <inp2:DataType>integer</
inp2:DataType>
                        <inp2:UnitOfMeasure></
inp2:UnitOfMeasure>
                    </inp2:Value>
                </
inp2:MaterialConsumedRequirementProperty>
            </inp2:MaterialConsumedRequirement>
            <inp2:MaterialConsumedRequirement>

<inp2:MaterialDefinitionID>TestSerializedProp4</
inp2:MaterialDefinitionID>
                <inp2:Quantity>
                    <inp2:QuantityString>1</
inp2:QuantityString>
                    <inp2:DataType>float</inp2:DataType>
                    <inp2:UnitOfMeasure>EA</
inp2:UnitOfMeasure>
                </inp2:Quantity>

<inp2:MaterialConsumedRequirementProperty>
                    <inp2:ID>prop</inp2:ID>
                    <inp2:Value>
                        <inp2:ValueString>3</
inp2:ValueString>
                        <inp2:DataType>integer</
inp2:DataType>
                        <inp2:UnitOfMeasure></
inp2:UnitOfMeasure>
                    </inp2:Value>
                </
inp2:MaterialConsumedRequirementProperty>

<inp2:MaterialConsumedRequirementProperty>
                    <inp2:ID>behaviors</inp2:ID>
                    <inp2:Value>

<inp2:ValueString>requiresConsumptionTracking</
inp2:ValueString>
                        <inp2:DataType>string</
inp2:DataType>
                        <inp2:UnitOfMeasure></
inp2:UnitOfMeasure>
                    </inp2:Value>
                </
inp2:MaterialConsumedRequirementProperty>
            </inp2:MaterialConsumedRequirement>
        </inp2:SegmentRequirement>
        <inp2:SegmentRequirement>
            <inp2:ID>20</inp2:ID>
            <inp2:Description>Ultrasonic Weld</
inp2:Description>
            <inp2:Location>
                <inp2:EquipmentID>Unit9</
inp2:EquipmentID>
                <inp2:EquipmentElementLevel>WorkCenter</
inp2:EquipmentElementLevel>
```

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```
            </inp2:Location>
            <inp2:EarliestStartTime>2017-04-15T12:00:00</
inp2:EarliestStartTime>
            <inp2:LatestEndTime>2017-04-15T12:15:00</
inp2:LatestEndTime>
            <inp2:EquipmentRequirement>
                <inp2:Location>
                    <inp2:EquipmentID>Unit9</
inp2:EquipmentID>

<inp2:EquipmentElementLevel>WorkCell</
inp2:EquipmentElementLevel>
                </inp2:Location>
                <inp2:Quantity>
                    <inp2:QuantityString>1</
inp2:QuantityString>
                </inp2:Quantity>
            </inp2:EquipmentRequirement>
            <inp2:ProductionParameter>
                <inp2:Parameter>
                    <inp2:ID>Priority</inp2:ID>
                    <inp2:Value>
                        <ValueString>20</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure />
                    </inp2:Value>
                </inp2:Parameter>
            </inp2:ProductionParameter>
            <inp2:ProductionParameter>
                <inp2:Parameter>
                    <inp2:ID>prop</inp2:ID>
                    <inp2:Value>
                        <ValueString>100</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure />
                    </inp2:Value>
                </inp2:Parameter>
            </inp2:ProductionParameter>
            <inp2:MaterialConsumedRequirement>

<inp2:MaterialDefinitionID>TestSerializedProp5</
inp2:MaterialDefinitionID>
                <inp2:Quantity>
                    <inp2:QuantityString>33.78</
inp2:QuantityString>
                    <inp2:DataType>float</inp2:DataType>
                    <inp2:UnitOfMeasure>LB</
inp2:UnitOfMeasure>
                </inp2:Quantity>

<inp2:MaterialConsumedRequirementProperty>
                    <inp2:ID>GEDS_BOM_Sequence</inp2:ID>
                    <inp2:Value>
                        <inp2:ValueString>1</
inp2:ValueString>
                        <inp2:DataType>integer</
inp2:DataType>
                        <inp2:UnitOfMeasure></
inp2:UnitOfMeasure>
                    </inp2:Value>
                </
```


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```
inp2:MaterialConsumedRequirementProperty>
            </inp2:MaterialConsumedRequirement>
        </inp2:SegmentRequirement>
    </inp2:ProductionRequest>
</ProductionSchedule>
```

XSL File to Map a Work Order

This topic provides a sample XSL file that is used to map a work order.

XSL File to Map a Work Order

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:inp2="http://www.wbf.org/xml/B2MML-V0401"
    xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-
AllExtensions"
    xmlns:erp="http://sample.data">
    <xsl:output omit-xml-declaration="yes" method="xml"
        indent="yes" />
    <xsl:strip-space elements="*" />
    <!-- For external lookup table -->
    <!-- <xsl:variable name='unitOfMeasure'
select='document("lookup.xml")/uoms/unit'
        /> -->
    <xsl:variable name='unitOfMeasure'
        select='document("")/xsl:stylesheet/erp:uoms/
unit' />
    <xsl:template match="/inp2:ProductionSchedule">
        <ProductionSchedule>
            <ID>
                <xsl:value-of select="inp2:ID"></
xsl:value-of>
            </ID>
            <Description></Description>
            <Location>
                <EquipmentID></EquipmentID>
                <EquipmentElementLevel></
EquipmentElementLevel>
            </Location>
            <PublishedDate>
                <xsl:value-of
select="inp2:PublishedDate"></xsl:value-of>
            </PublishedDate>
            <ProductionRequest>
                <xsl:variable name='ProductionRequest'
                    select='inp2:ProductionRequest' />
                <xsl:variable name='ProductionRequestID'
                    select='$ProductionRequest/
inp2:ID' />
                <xsl:variable
name='ProductionRequestDescription'
                    select='$ProductionRequest/
inp2:Description' />
                <xsl:variable
name='ProductionRequestLocation'
                    select='$ProductionRequest/
```

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```
inp2:Location' />
                <xsl:variable name='SegmentRequirement'
                    select='$ProductionRequest/
inp2:SegmentRequirement' />
                <ID>
                    <xsl:value-of
select="$ProductionRequestID" />
                </ID>
                <Description>
                    <xsl:value-of
select="$ProductionRequestDescription" />
                </Description>
                <xsl:for-each select="$ProductionRequest/
inp2:ProductProductionRuleID">
                    <ProductProductionRuleID>
                        <xsl:value-of select="." />
                    </ProductProductionRuleID>
                </xsl:for-each>
                <Location>
                    <EquipmentID>
                        <xsl:value-of

select="$ProductionRequestLocation/inp2:EquipmentID" />
                    </EquipmentID>
                    <EquipmentElementLevel>
                        <xsl:value-of

select="$ProductionRequestLocation/
inp2:EquipmentElementLevel" />
                    </EquipmentElementLevel>
                </Location>
                <xsl:for-each
                    select="$SegmentRequirement[inp2:ID
= '000']">
                    <StartTime>
                        <xsl:value-of
select="inp2:EarliestStartTime" />
                    </StartTime>
                    <EndTime>
                        <xsl:value-of
select="inp2:LatestEndTime" />
                    </EndTime>
                </xsl:for-each>
                <Priority>
                    <xsl:choose>
                        <xsl:when
test="not($ProductionRequest/inp2:Priority)">
                            <xsl:text>0</xsl:text>
                        </xsl:when>
                        <xsl:otherwise>
                            <xsl:value-of
select="$ProductionRequest/inp2:Priority"/>
                        </xsl:otherwise>
                    </xsl:choose>
                </Priority>
                <xsl:for-each
select="$SegmentRequirement">
                    <SegmentRequirement>
                        <ID>
                            <xsl:choose>
                                <xsl:when test="inp2:ID
```


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```
= 000">
                                    <xsl:text>ROUTE</
xsl:text>
                                </xsl:when>
                                <xsl:otherwise>
                                    <xsl:value-of
select="inp2:ID" />
                                </xsl:otherwise>
                            </xsl:choose>
                        </ID>
                        <ProductSegmentID></
ProductSegmentID>
                        <ProcessSegmentID></
ProcessSegmentID>
                        <Description>
                            <xsl:value-of
select="inp2:Description" />
                        </Description>
                        <Location>
                            <EquipmentID>
                                <xsl:value-of

select="inp2:Location/inp2:EquipmentID" />
                            </EquipmentID>
                            <EquipmentElementLevel>
                                <xsl:value-of

select="inp2:Location/inp2:EquipmentElementLevel" />
                            </EquipmentElementLevel>
                        </Location>
                        <EarliestStartTime>
                            <xsl:value-of
select="inp2:EarliestStartTime" />
                        </EarliestStartTime>
                        <LatestEndTime>
                            <xsl:value-of
select="inp2:LatestEndTime" />
                        </LatestEndTime>
                        <xsl:for-each
select="inp2:ProductionParameter">
                            <ProductionParameter>
                                <xsl:variable
name='Parameter'

select='inp2:Parameter' />
                                <xsl:variable
name='ParameterValue'
                                    select='$Parameter/
inp2:Value' />
                                <Parameter>
                                    <ID>
                                        <xsl:apply-
templates

select="$Parameter/inp2:ID"></xsl:apply-templates>
                                        <!-- <xsl:value-
of select="$Parameter/inp2:ID" /> -->
                                    </ID>
                                    <Value>
                                        <ValueString>
                                            <xsl:value-of
```

```
select="$ParameterValue/inp2:ValueString" />
                                        </ValueString>
                                        <DataType>
                                            <xsl:choose>

<xsl:when test="not($ParameterValue/inp2:DataType)">

<xsl:text>string</xsl:text>
                                                    </
xsl:when>

<xsl:otherwise>

<xsl:value-of select="$ParameterValue/inp2:DataType" />
                                                    </
xsl:otherwise>
                                            </xsl:choose>
                                        </DataType>
                                        <UnitOfMeasure>
                                            <xsl:value-of

select="$ParameterValue/inp2:UnitOfMeasure" />
                                        </UnitOfMeasure>
                                    </Value>
                                    <Description>
                                        <xsl:value-of

select="$Parameter/inp2:Description" />
                                    </Description>
                                </Parameter>
                            </ProductionParameter>
                        </xsl:for-each>
                        <xsl:for-each
select="inp2:EquipmentRequirement">
                            <EquipmentRequirement>
                                <Location>
                                    <EquipmentID>
                                        <xsl:value-of

select="inp2:Location/inp2:EquipmentID" />
                                    </EquipmentID>

<EquipmentElementLevel>
                                        <xsl:value-of

select="inp2:Location/inp2:EquipmentElementLevel" />
                                    </
EquipmentElementLevel>
                                </Location>
                            </EquipmentRequirement>
                        </xsl:for-each>
                        <xsl:for-each

select="inp2:MaterialProducedRequirement">
                            <MaterialProducedRequirement>
                                <xsl:variable
name='Quantity' select='inp2:Quantity' />
                                <xsl:variable
name='MaterialProducedRequirementProperty'
select='inp2:MaterialProducedRequirementProperty' />
```


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```
                                    <MaterialClassID></
MaterialClassID>
                                    <MaterialDefinitionID>
                                        <xsl:value-of
select="inp2:MaterialDefinitionID" />
                                    </MaterialDefinitionID>
                                    <MaterialLotID>
                                        <xsl:value-of
select="inp2:MaterialLotID" />
                                    </MaterialLotID>
                                    <MaterialSubLotID></
MaterialSubLotID>
                                    <Description></
Description>
                                    <Quantity>
                                        <QuantityString>
                                            <xsl:value-of
select="$Quantity/inp2:QuantityString" />
                                        </QuantityString>
                                        <DataType>
                                            <xsl:choose>
                                                <xsl:when
test="not($Quantity/inp2:DataType)">
<xsl:text>string</xsl:text>
                                                </xsl:when>
<xsl:otherwise>
<xsl:value-of select="$Quantity/inp2:DataType" />
                                                </
xsl:otherwise>
                                            </xsl:choose>
                                        </DataType>
                                        <UnitOfMeasure>
                                            <xsl:value-of
select="$Quantity/inp2:UnitOfMeasure" />
                                        </UnitOfMeasure>
                                    </Quantity>
<MaterialProducedRequirementProperty>
                                        <ID>
                                            <xsl:value-of
select="$MaterialProducedRequirementProperty/inp2:ID" />
                                        </ID>
                                        <Description></
Description>
                                        <xsl:for-each
select="inp2:Value">
                                            <Value>
                                                <ValueString>
<xsl:value-of
select="$MaterialProducedRequirementProperty/
inp2:ValueString" />
                                                </
ValueString>
                                                <DataType>
```

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```
<xsl:value-of
select="$MaterialProducedRequirementProperty/
inp2:DataType" />
                                                </DataType>

<UnitOfMeasure>

<xsl:value-of
select="$MaterialProducedRequirementProperty/
inp2:UnitOfMeasure" />
                                                </
UnitOfMeasure>
                                                    </Value>
                                                </xsl:for-each>
                                                <!-- <Quantity></
Quantity> -->
                                            </
MaterialProducedRequirementProperty>
                                        </
MaterialProducedRequirement>
                                    </xsl:for-each>
                                    <xsl:for-each

select="inp2:MaterialConsumedRequirement">
                                        <MaterialConsumedRequirement>
                                            <MaterialClassID></
MaterialClassID>
                                            <MaterialDefinitionID>
                                                <xsl:value-of
select="inp2:MaterialDefinitionID" />
                                            </MaterialDefinitionID>
                                            <xsl:for-each
select="inp2:MaterialLotID">
                                                <MaterialLotID>
                                                    <xsl:value-of
select="." />
                                                </MaterialLotID>
                                            </xsl:for-each>
                                            <MaterialSubLotID></
MaterialSubLotID>
                                            <Description></
Description>
                                            <Quantity>
                                                <QuantityString>
                                                    <xsl:value-of

select="inp2:Quantity/inp2:QuantityString" />
                                                </QuantityString>
                                                <DataType>
                                                    <xsl:choose>
                                                        <xsl:when
test="not(inp2:Quantity/inp2:DataType)">

<xsl:text>string</xsl:text>
                                                </xsl:when>

<xsl:otherwise>

<xsl:value-of
```


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```
select="inp2:Quantity/inp2:DataType" />
                                                    </
xsl:otherwise>
                                                </xsl:choose>
                                            </DataType>
                                            <UnitOfMeasure>
                                                <xsl:value-of

select="inp2:Quantity/inp2:UnitOfMeasure" />
                                            </UnitOfMeasure>
                                        </Quantity>
                                        <xsl:for-each

select="inp2:MaterialConsumedRequirementProperty">
                                            <xsl:variable
name='value' select='inp2:Value' />
                                            <xsl:variable
name='uomname'
                                                select='$value/
inp2:UnitOfMeasure' />
                                            <xsl:variable
name='mapped-uom'

select='$unitOfMeasure[@name=$uomname]/@abbr' />

<MaterialConsumedRequirementProperty>
                                                <ID>
                                                    <!--
<xsl:value-of select="inp2:ID" /> -->
                                                    <xsl:apply-
templates select="inp2:ID"></xsl:apply-templates>
                                                </ID>
                                                <Description></
Description>
                                                <Value>
                                                    <ValueString>

<xsl:value-of select="$value/inp2:ValueString" />
                                                    </
ValueString>
                                                    <DataType>

<xsl:choose>

<xsl:when test="not($value/inp2:DataType)">

<xsl:text>string</xsl:text>
                                                                </
xsl:when>

<xsl:otherwise>

<xsl:value-of select="$value/inp2:DataType" />
                                                                </
xsl:otherwise>
                                                            </
xsl:choose>
                                                    </DataType>

<UnitOfMeasure>
```

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```
<xsl:value-of select="$mapped-uom" />
                                                        <xsl:if
test="not($mapped-uom)">

<xsl:value-of select="$uomname" />
                                                        </xsl:if>
                                                    </
UnitOfMeasure>
                                                </Value>
                                            </
MaterialConsumedRequirementProperty>
                                        </xsl:for-each>
                                    </
MaterialConsumedRequirement>
                                </xsl:for-each>
                            </SegmentRequirement>
                        </xsl:for-each>
                    </ProductionRequest>
                    <Extended:SchemaVersion>
                        <xsl:value-of
select="Extended:SchemaVersion"></xsl:value-of>
                    </Extended:SchemaVersion>
                </ProductionSchedule>
            </xsl:template>
            <erp:uoms>
                <unit abbr="EA" name="EACH" />
                <unit abbr="CM" name="CENTIMETERS" />
                <unit abbr="KG" name="KILOGRAMS" />
            </erp:uoms>
            <xsl:template match="inp2:ID/text()
[.='GEDS_IsRequired']">
                IS_REQUIRES_CONSUMPTION
            </xsl:template>
            <xsl:template
                match="inp2:ID/text()[.='GEDS_BOM_Sequence']">
                BOM_SEQUENCE
            </xsl:template>
            <xsl:template
                match="inp2:Parameter/inp2:ID/text()
[.='WorkInstruction']">
                DOCUMENTS
            </xsl:template>
        </xsl:stylesheet>
```

Standard B2MML File for a Work Order

This topic provides an example of a standard B2MML file that contains the details of a work order.

Standard B2MML File for a Work Order

```
<?xml version="1.0"?>

<ProductionSchedule
    xmlns:erp="http://sample.data"
    xmlns:inp2="http://www.wbf.org/xml/B2MML-V0401">
    <Description/>

    <Location>
```


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```
        <EquipmentID/>
        <EquipmentElementLevel/>
    </Location>
    <PublishedDate>2017-04-15T09:30:00</PublishedDate>

    <ProductionRequest>
        <ID>32847248</ID>
        <Description>32847248</Description>

    <Location>
        <EquipmentID>OU_D86085_US</EquipmentID>
        <EquipmentElementLevel>Site</
EquipmentElementLevel>
    </Location>
        <StartTime>2017-04-22T00:00:00</StartTime>
        <EndTime>2014-04-22T00:00:00</EndTime>
        <Priority>0</Priority>

    <SegmentRequirement>
            <ID>ROUTE</ID>
            <ProductSegmentID/>
            <ProcessSegmentID/>
            <Description/>

            <Location>
                <EquipmentID/>
                <EquipmentElementLevel/>
            </Location>
            <EarliestStartTime>2017-04-22T00:00:00</
EarliestStartTime>
            <LatestEndTime>2014-04-22T00:00:00</
LatestEndTime>

            <ProductionParameter>
                <Parameter>
                    <ID>ProductCategory</ID>
                    <Value>
                        <ValueString>CAPACITORSA</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>

            <ProductionParameter>
                <Parameter>
                    <ID>RouteTemplate</ID>
                    <Value>
                        <ValueString>CapacitorRoute</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>

            <MaterialProducedRequirement>
                <MaterialClassID/>
```

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```
                <MaterialDefinitionID>GEEC3MA0025EMZI </
MaterialDefinitionID>
                <MaterialLotID>SERNUM1</MaterialLotID>
                <MaterialLotID>SERNUM2</MaterialLotID>
                <MaterialLotID>SERNUM3</MaterialLotID>
                <MaterialSubLotID/>
                <Description/>

                <Quantity>
                    <QuantityString>3</QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure/>
                </Quantity>

                <MaterialProducedRequirementProperty>
                    <ID>WOStatus</ID>
                    <Description/>
                    <Value>
                        <ValueString>Released</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialProducedRequirementProperty>

                <MaterialProducedRequirementProperty>
                    <ID>MaterialAvailabilityDate</ID>
                    <Description/>
                    <Value>

<ValueString>2017-04-22T00:00:00</ValueString>
                        <DataType>DateTime</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialProducedRequirementProperty>

                <MaterialProducedRequirementProperty>
                    <ID>ParentOrder</ID>
                    <Description/>
                    <Value>
                        <ValueString>SO2367523</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialProducedRequirementProperty>
            </MaterialProducedRequirement>
        </SegmentRequirement>

        <SegmentRequirement>
            <ID>10</ID>
            <ProductSegmentID/>
            <ProcessSegmentID/>
            <Description>Wind Pack</Description>

            <Location>
                <EquipmentID>WIND</EquipmentID>
                <EquipmentElementLevel>WorkCenter</
EquipmentElementLevel>
            </Location>
            <EarliestStartTime>2017-04-15T12:00:00</
```


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```
EarliestStartTime>
            <LatestEndTime>2017-04-15T12:15:00</
LatestEndTime>
            <ProductionParameter>

                <Parameter>
                    <ID>Priority</ID>
                    <Value>
                        <ValueString>10</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>

            <ProductionParameter>
                <Parameter>
                    <ID>LaborTime</ID>
                    <Value>
                        <ValueString>210</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>

            <ProductionParameter>
                <Parameter>
                    <ID>DOCUMENTS</ID>
                    <Value>
                        <ValueString>http:/grid.ge.com/
485765/abc.pdf</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description>Document 1</Description>
                </Parameter>
            </ProductionParameter>

            <ProductionParameter>
                <Parameter>
                    <ID>DOCUMENTS</ID>
                    <Value>
                        <ValueString>http:/grid.ge.com/
485765/abc2.pdf</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description>Document 2</Description>
                </Parameter>
            </ProductionParameter>

            <EquipmentRequirement>
                <Location>
                    <EquipmentID>FIX_LT_ADJ</EquipmentID>
                    <EquipmentElementLevel>WorkCell</
EquipmentElementLevel>
                </Location>
            </EquipmentRequirement>
```

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```
            <MaterialProducedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID/>
                <MaterialSubLotID/>
                <Description/>


-
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
            </MaterialProducedRequirement>


-
            <MaterialConsumedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID>308A2463BD067</
MaterialDefinitionID>
                <MaterialSubLotID/>
                <Description/>

                <Quantity>
                    <QuantityString>1</QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>EA</UnitOfMeasure>
                </Quantity>

                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_Drawing_Reference</ID>
                    <Description/>

                    <Value>
                        <ValueString>1</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>

                <MaterialConsumedRequirementProperty>
                    <ID>BOM_SEQUENCE</ID>
                    <Description/>
                    <Value>
                        <ValueString>1</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>

                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_Position</ID>
                    <Description/>

                    <Value>
                        <ValueString>POS A</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
```


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```
                </MaterialConsumedRequirementProperty>

                <MaterialConsumedRequirementProperty>
                    <ID>IS_REQUIRES_CONSUMPTION</ID>
                    <Description/>
                    <Value>
                        <ValueString>true</ValueString>
                        <DataType>boolean</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>

                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_IsPickable</ID>
                    <Description/>
                    <Value>
                        <ValueString>true</ValueString>
                        <DataType>boolean</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>

                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_BOM_Location</ID>
                    <Description/>
                    <Value>
                        <ValueString>A123</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>

                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_JumperSetting</ID>
                    <Description/>
                    <Value>
                        <ValueString>PL01</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>
            </MaterialConsumedRequirement>

            <MaterialConsumedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID>308A309800048</
MaterialDefinitionID>
                <MaterialSubLotID/>
                <Description/>

                <Quantity>
                    <QuantityString>1</QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>EA</UnitOfMeasure>
                </Quantity>

                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_Drawing_Reference</ID>
                    <Description/>
                    <Value>
                        <ValueString>3</ValueString>
```

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```
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>

                <MaterialConsumedRequirementProperty>
                    <ID>BOM_SEQUENCE</ID>
                    <Description/>
                    <Value>
                        <ValueString>2</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>

                <MaterialConsumedRequirementProperty>
                    <ID>IS_REQUIRES_CONSUMPTION</ID>
                    <Description/>
                    <Value>
                        <ValueString>false</ValueString>
                        <DataType>boolean</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>
            </MaterialConsumedRequirement>
        </SegmentRequirement>

        <SegmentRequirement>
            <ID>20</ID>
            <ProductSegmentID/>
            <ProcessSegmentID/>
            <Description>Ultrasonic Weld</Description>

            <Location>
                <EquipmentID>WIND_WELD</EquipmentID>
                <EquipmentElementLevel>WorkCenter</
EquipmentElementLevel>
            </Location>
            <EarliestStartTime>2017-04-15T12:00:00</
EarliestStartTime>
            <LatestEndTime>2017-04-15T12:15:00</
LatestEndTime>

            <ProductionParameter>
                <Parameter>
                    <ID>Priority</ID>
                    <Value>
                        <ValueString>20</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>

            <ProductionParameter>
                <Parameter>
                    <ID>LaborTime</ID>
                    <Value>
                        <ValueString>100</ValueString>
                        <DataType>integer</DataType>
```


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```
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>

            <ProductionParameter>
                <Parameter>
                    <ID>DOCUMENTS</ID>
                    <Value>
                        <ValueString>http:/grid.ge.com/
485765/abc.pdf</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description>Document 1</Description>
                </Parameter>
            </ProductionParameter>

            <ProductionParameter>
                <Parameter>
                    <ID>DOCUMENTS</ID>
                    <Value>
                        <ValueString>http:/grid.ge.com/
485765/abc2.pdf</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description>Document 2</Description>
                </Parameter>
            </ProductionParameter>

            <MaterialProducedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID/>
                <MaterialSubLotID/>
                <Description/>

                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
            </MaterialProducedRequirement>

            <MaterialConsumedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID>ACCR</
MaterialDefinitionID>
                <MaterialSubLotID/>
                <Description/>

                <Quantity>
                    <QuantityString>33.78</
QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>LB</UnitOfMeasure>
                </Quantity>

                <MaterialConsumedRequirementProperty>
                    <ID>BOM_SEQUENCE</ID>
```

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```
                    <Description/>

                    <Value>
                        <ValueString>1</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>

                <MaterialConsumedRequirementProperty>
                    <ID>IS_REQUIRES_CONSUMPTION</ID>
                    <Description/>

                    <Value>
                        <ValueString>false</ValueString>
                        <DataType>boolean</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>
            </MaterialConsumedRequirement>
        </SegmentRequirement>
    </ProductionRequest>
</ProductionSchedule>
```

Sample Files for a Process Order

Message that Contains a Process Order

Inbound messages are added to the integration database using Microsoft SQL Server 2016 or higher.

Message that Contains a Process Order

```
INSERT INTO erp_integration_inbound_messages
(Message_Type, Media_Type, Message, Inserted_By)
VALUES ('processOrder', 'application/json', '{POID}',
'<user name>')
```

where {POID} is a JSON document that specifies the process order.

Process Order Import Document

A JSON process order import document (POID) contains all the details of a process order, including route and revision or segment definition. The POID constitutes the body of the HTTP POST request of the ERP Import service, which posts the process order to Plant Applications.

POID

```
{
  "schemaVersion": 1,
  "plannedQuantity": 10,
  "plannedLineName": "Line1",
  "producedMaterialName": "weebles1",
  "processOrderName": "PO_AUTO_Json_1172",
```


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```
  "bomFormulation": "Bomformulation1",
  "plannedStartDate": "2017-04-08T09:22:17.825Z",
  "plannedEndDate": "2019-04-08T09:22:17.825Z"
}
```

B2MML File that Contains a Process Order

Instead of a JSON process order import document (POID), you can send all the details of a work order, process order, or material in a B2MML file.

If you want to send a B2MML document, you must also provide an XSL file with the mapping details. The ERP Transformation service uses this XSL file to convert the B2MML document to a JSON file.

Note: When an XML file is processed, some of the special characters are omitted. To prevent this issue, use the escape strings as specified in the following table.

Special Character	Escape String
&	&
<	<
>	>
“	"
‘	'

B2MML File that Contains a Process Order

```
<?xml version="1.0" encoding="UTF-8"?>
<ProductionSchedule>
    <ID>0000000112841171</ID>
    <Location>
        <EquipmentID>0288</EquipmentID>
        <EquipmentElementLevel>Site</
EquipmentElementLevel>
        <Location>
            <EquipmentID>193</EquipmentID>
            <EquipmentElementLevel>Area</
EquipmentElementLevel>
        </Location>
    </Location>
    <ProductionRequest>
        <ID>000900826215</ID>
        <ProductProductionRuleID>0501</
ProductProductionRuleID>
        <StartTime>2005-02-25T21:50:58</StartTime>
        <EndTime>2005-02-26T00:00:00</EndTime>
        <SegmentRequirement>
            <ID>1</ID>
            <EarliestStartTime>2005-02-25T21:50:58</
EarliestStartTime>
            <LatestEndTime>2005-02-26T00:00:00</
LatestEndTime>
            <EquipmentRequirement>
                <EquipmentID>GGMB05</EquipmentID>
            </EquipmentRequirement>
            <MaterialProducedRequirement>
```

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```
<MaterialDefinitionID>000000000095052698</
MaterialDefinitionID>
                <MaterialLotID>0000429633</MaterialLotID>
                <Description>COM PST MILDMINT 3 STRIPE -
WHT BLUE SPEC</Description>
                <Location>
                    <EquipmentID>0288</EquipmentID>
                    <EquipmentElementLevel>Site</
EquipmentElementLevel>
                    <Location>
                        <EquipmentID>LDFM</EquipmentID>

<EquipmentElementLevel>StorageZone</
EquipmentElementLevel>
                    </Location>
                </Location>
                <Quantity>
                    <QuantityString>3000</QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>KG</UnitOfMeasure>
                </Quantity>
                <Quantity>
                    <QuantityString>3000</QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>KG</UnitOfMeasure>
                </Quantity>
                <MaterialProducedRequirementProperty/>
                <MaterialProducedRequirementProperty>
                    <ID>InspectionLotID</ID>
                    <Description/>
                    <Value>
                        <ValueString>000000000000</
ValueString>
                        <DataType>string</DataType>
                    </Value>
                    <Quantity/>
                </MaterialProducedRequirementProperty>
            </MaterialProducedRequirement>
            <MaterialConsumedRequirement>

<MaterialDefinitionID>000000000011100613</
MaterialDefinitionID>
                <Description>CARBOMER 956</Description>
                <Location>
                    <EquipmentID>0288</EquipmentID>
                    <EquipmentElementLevel>Site</
EquipmentElementLevel>
                    <Location>
                        <EquipmentID>0088</EquipmentID>

<EquipmentElementLevel>StorageZone</
EquipmentElementLevel>
                    </Location>
                </Location>
                <Quantity>
                    <QuantityString>1.500</
QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>KG</UnitOfMeasure>
                </Quantity>
```


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```
                <MaterialConsumedRequirementProperty>
                    <ID>MaterialReservationID</ID>
                    <Description/>
                    <Value>
                        <ValueString>0033739080</
ValueString>
                        <DataType>string</DataType>
                    </Value>
                    <Quantity/>
                </MaterialConsumedRequirementProperty>
                <MaterialConsumedRequirementProperty>
                    <ID>MaterialReservationSequence</ID>
                    <Description/>
                    <Value>
                        <ValueString>0016</ValueString>
                        <DataType>string</DataType>
                    </Value>
                    <Quantity/>
                </MaterialConsumedRequirementProperty>
                <MaterialConsumedRequirementProperty>
                    <ID>ScrapPercent</ID>
                    <Description/>
                    <Value>
                        <ValueString>0.00</ValueString>
                        <DataType>float</DataType>
                        <UnitOfMeasure>percent</
UnitOfMeasure>
                    </Value>
                    <Quantity/>
                </MaterialConsumedRequirementProperty>
                <MaterialConsumedRequirementProperty/>
                <MaterialConsumedRequirementProperty/>
                <MaterialConsumedRequirementProperty/>
            </MaterialConsumedRequirement>
            <MaterialConsumedRequirement>

<MaterialDefinitionID>000000000011614647</
MaterialDefinitionID>
                <Description>TRICLOSAN 50% SOLUTION</
Description>
                <Location>
                    <EquipmentID>0288</EquipmentID>
                    <EquipmentElementLevel>Site</
EquipmentElementLevel>
                    <Location>
                        <EquipmentID>0088</EquipmentID>

<EquipmentElementLevel>StorageZone</
EquipmentElementLevel>
                    </Location>
                </Location>
                <Quantity>
                    <QuantityString>16.800</
QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>KG</UnitOfMeasure>
                </Quantity>
                <MaterialConsumedRequirementProperty>
                    <ID>MaterialReservationID</ID>
                    <Description/>
                    <Value>
```

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```
                        <ValueString>0033739080</
ValueString>
                        <DataType>string</DataType>
                    </Value>
                    <Quantity/>
                </MaterialConsumedRequirementProperty>
                <MaterialConsumedRequirementProperty>
                    <ID>MaterialReservationSequence</ID>
                    <Description/>
                    <Value>
                        <ValueString>0015</ValueString>
                        <DataType>string</DataType>
                    </Value>
                    <Quantity/>
                </MaterialConsumedRequirementProperty>
                <MaterialConsumedRequirementProperty>
                    <ID>ScrapPercent</ID>
                    <Description/>
                    <Value>
                        <ValueString>0.00</ValueString>
                        <DataType>float</DataType>
                        <UnitOfMeasure>percent</
UnitOfMeasure>
                    </Value>
                    <Quantity/>
                </MaterialConsumedRequirementProperty>
                <MaterialConsumedRequirementProperty/>
                <MaterialConsumedRequirementProperty/>
                <MaterialConsumedRequirementProperty/>
            </MaterialConsumedRequirement>
            <MaterialConsumedRequirement>

<MaterialDefinitionID>000000000011614523</
MaterialDefinitionID>
                <Description>BFG 51 HYDRATED SILICA & CI
74160</Description>
                <Location>
                    <EquipmentID>0288</EquipmentID>
                    <EquipmentElementLevel>Site</
EquipmentElementLevel>
                    <Location>
                        <EquipmentID>0088</EquipmentID>

<EquipmentElementLevel>StorageZone</
EquipmentElementLevel>
                    </Location>
                </Location>
                <Quantity>
                    <QuantityString>6.750</
QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>KG</UnitOfMeasure>
                </Quantity>
                <MaterialConsumedRequirementProperty>
                    <ID>MaterialReservationID</ID>
                    <Description/>
                    <Value>
                        <ValueString>0033739080</
ValueString>
                        <DataType>string</DataType>
                    </Value>
```


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```
                    <Quantity/>
                </MaterialConsumedRequirementProperty>
                <MaterialConsumedRequirementProperty>
                    <ID>MaterialReservationSequence</ID>
                    <Description/>
                    <Value>
                        <ValueString>0014</ValueString>
                        <DataType>string</DataType>
                    </Value>
                    <Quantity/>
                </MaterialConsumedRequirementProperty>
                <MaterialConsumedRequirementProperty>
                    <ID>ScrapPercent</ID>
                    <Description/>
                    <Value>
                        <ValueString>0.00</ValueString>
                        <DataType>float</DataType>
                        <UnitOfMeasure>percent</
UnitOfMeasure>
                    </Value>
                    <Quantity/>
                </MaterialConsumedRequirementProperty>
                <MaterialConsumedRequirementProperty/>
                <MaterialConsumedRequirementProperty/>
                <MaterialConsumedRequirementProperty/>
            </MaterialConsumedRequirement>
        </SegmentRequirement>
    </ProductionRequest>
</ProductionSchedule>
```

XSL File to Map a Process Order

This topic provides a sample XSL file that is used to map a process order.

XSL File to Map a Process Order

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
version="1.0">
    <xsl:output method="xml" indent="yes" omit-xml-
declaration="yes"/>
    <xsl:strip-space elements="*"/>
    <xsl:template match="ProductionSchedule">
        <ProductionSchedule>
            <ProductionRequest>
                <xsl:variable select="ProductionRequest"
name="ProductionRequest"/>
                <xsl:variable select="Location"
name="ProductionRequestLocation"/>
                <xsl:variable select="$ProductionRequest/
SegmentRequirement" name="SegmentRequirement"/>
                <ID>
                    <xsl:value-of
select="$ProductionRequest/ID"/>
                </ID>
                <ProductProductionRuleID>
                    <xsl:value-of
```

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```
select="$ProductionRequest/ProductProductionRuleID"/>
                </ProductProductionRuleID>
                <Location>
                    <EquipmentID>
                        <xsl:value-of
select="$SegmentRequirement[ID = 1]/EquipmentRequirement/
EquipmentID"/>
                    </EquipmentID>
                    <EquipmentElementLevel>
                        <xsl:value-of
select="$ProductionRequestLocation/
EquipmentElementLevel"/>
                    </EquipmentElementLevel>
                </Location>
                <Priority>0</Priority>
                <SegmentRequirement>
                    <ID>
                        <xsl:value-of select="ID"/>
                    </ID>
                    <xsl:if test="$SegmentRequirement/
EarliestStartTime">
                        <EarliestStartTime>
                            <xsl:value-of
select="$SegmentRequirement/EarliestStartTime"/>
                        </EarliestStartTime>
                    </xsl:if>
                    <xsl:if test="$SegmentRequirement/
LatestEndTime">
                        <LatestEndTime>
                            <xsl:value-of
select="$SegmentRequirement/LatestEndTime"/>
                        </LatestEndTime>
                    </xsl:if>
                    <EquipmentRequirement>
                        <EquipmentID>
                            <xsl:value-of
select="$SegmentRequirement/EquipmentRequirement/
EquipmentID"/>
                        </EquipmentID>
                    </EquipmentRequirement>
                    <MaterialProducedRequirement>
                        <xsl:variable
select="$SegmentRequirement/MaterialProducedRequirement"
name="MaterialProducedRequirement"/>
                        <xsl:variable
select="$SegmentRequirement/MaterialProducedRequirement/
Quantity" name="Quantity"/>
                        <xsl:variable
select="$MaterialProducedRequirement/
MaterialProducedRequirementProperty"
name="MaterialProducedRequirementProperty"/>
                        <MaterialDefinitionID>
                            <xsl:value-of
select="$MaterialProducedRequirement/
MaterialDefinitionID"/>
                        </MaterialDefinitionID>
                        <Quantity>
                            <QuantityString>
                                <xsl:value-of
select="$Quantity/QuantityString"/>
                            </QuantityString>
```


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```
                                <DataType>
                                    <xsl:value-of
select="$Quantity/DataType"/>
                                </DataType>
                                <UnitOfMeasure>
                                    <xsl:value-of
select="$Quantity/UnitOfMeasure"/>
                                </UnitOfMeasure>
                            </Quantity>
                        </MaterialProducedRequirement>
                        <xsl:for-each
select="$SegmentRequirement/MaterialConsumedRequirement">
                            <MaterialConsumedRequirement>
                                <xsl:variable
select="$SegmentRequirement/MaterialConsumedRequirement"
name="MaterialConsumedRequirement"/>
                                <xsl:variable
select="$MaterialConsumedRequirement/Quantity"
name="Quantity"/>
                                <xsl:variable
select="$MaterialConsumedRequirement/
MaterialConsumedRequirementProperty"
name="MaterialConsumedRequirementProperty"/>
                                <MaterialDefinitionID>
                                    <xsl:value-of
select="$MaterialConsumedRequirement/
MaterialDefinitionID"/>
                                </MaterialDefinitionID>
                                <Quantity>
                                    <QuantityString>
                                        <xsl:value-of
select="$Quantity/QuantityString"/>
                                    </QuantityString>
                                    <DataType>
                                        <xsl:value-of
select="$Quantity/DataType"/>
                                    </DataType>
                                    <UnitOfMeasure>
                                        <xsl:value-of
select="$Quantity/UnitOfMeasure"/>
                                    </UnitOfMeasure>
                                </Quantity>
                            </MaterialConsumedRequirement>
                        </xsl:for-each>
                    </SegmentRequirement>
                </ProductionRequest>
            </ProductionSchedule>
        </xsl:template>
</xsl:stylesheet>
```

Standard B2MML File for a Process Order

This topic provides an example of a standard B2MML file that contains the details of a process order.

Standard B2MML File for a Process Order

```
<?xml version="1.0"?>
```

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```
-
<ProductionSchedule
    xmlns:erp="http://sample.data"
    xmlns:inp2="http://www.wbf.org/xml/B2MML-V0401">
    <Description/>


-
    <Location>
        <EquipmentID/>
        <EquipmentElementLevel/>
    </Location>
    <PublishedDate>2017-04-15T09:30:00</PublishedDate>


-
    <ProductionRequest>
        <ID>32847248</ID>
        <Description>32847248</Description>


-
        <Location>
            <EquipmentID>OU_D86085_US</EquipmentID>
            <EquipmentElementLevel>Site</
EquipmentElementLevel>
        </Location>
        <StartTime>2017-04-22T00:00:00</StartTime>
        <EndTime>2014-04-22T00:00:00</EndTime>
        <Priority>0</Priority>


-
        <SegmentRequirement>
            <ID>ROUTE</ID>
            <ProductSegmentID/>
            <ProcessSegmentID/>
            <Description/>


-
            <Location>
                <EquipmentID/>
                <EquipmentElementLevel/>
            </Location>
            <EarliestStartTime>2017-04-22T00:00:00</
EarliestStartTime>
            <LatestEndTime>2014-04-22T00:00:00</
LatestEndTime>


-
            <ProductionParameter>


-
                <Parameter>
                    <ID>ProductCategory</ID>


-
```


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```
                    <Value>
                        <ValueString>CAPACITORSA</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>


-
            <ProductionParameter>


-
                <Parameter>
                    <ID>RouteTemplate</ID>


-
                    <Value>
                        <ValueString>CapacitorRoute</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>


-
            <MaterialProducedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID>GEEC3MA0025EMZI </
MaterialDefinitionID>
                <MaterialLotID>SERNUM1</MaterialLotID>
                <MaterialLotID>SERNUM2</MaterialLotID>
                <MaterialLotID>SERNUM3</MaterialLotID>
                <MaterialSubLotID/>
                <Description/>


-
                <Quantity>
                    <QuantityString>3</QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure/>
                </Quantity>


-
                <MaterialProducedRequirementProperty>
                    <ID>WOStatus</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>Released</
```

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```
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialProducedRequirementProperty>


-
                <MaterialProducedRequirementProperty>
                    <ID>MaterialAvailabilityDate</ID>
                    <Description/>


-
                    <Value>

<ValueString>2017-04-22T00:00:00</ValueString>
                        <DataType>DateTime</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialProducedRequirementProperty>


-
                <MaterialProducedRequirementProperty>
                    <ID>ParentOrder</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>SO2367523</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialProducedRequirementProperty>
            </MaterialProducedRequirement>
        </SegmentRequirement>


-
        <SegmentRequirement>
            <ID>10</ID>
            <ProductSegmentID/>
            <ProcessSegmentID/>
            <Description>Wind Pack</Description>


-
            <Location>
                <EquipmentID>WIND</EquipmentID>
                <EquipmentElementLevel>WorkCenter</
EquipmentElementLevel>
            </Location>
            <EarliestStartTime>2017-04-15T12:00:00</
EarliestStartTime>
            <LatestEndTime>2017-04-15T12:15:00</
LatestEndTime>
```


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```
-
            <ProductionParameter>


-
                <Parameter>
                    <ID>Priority</ID>


-
                    <Value>
                        <ValueString>10</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>


-
            <ProductionParameter>


-
                <Parameter>
                    <ID>LaborTime</ID>


-
                    <Value>
                        <ValueString>210</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>


-
            <ProductionParameter>


-
                <Parameter>
                    <ID>DOCUMENTS</ID>


-
                    <Value>
                        <ValueString>http:/grid.ge.com/
485765/abc.pdf</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description>Document 1</Description>
                </Parameter>
            </ProductionParameter>
```

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```
-
            <ProductionParameter>


-
                <Parameter>
                    <ID>DOCUMENTS</ID>


-
                    <Value>
                        <ValueString>http:/grid.ge.com/
485765/abc2.pdf</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description>Document 2</Description>
                </Parameter>
            </ProductionParameter>


-
            <EquipmentRequirement>


-
                <Location>
                    <EquipmentID>FIX_LT_ADJ</EquipmentID>
                    <EquipmentElementLevel>WorkCell</
EquipmentElementLevel>
                </Location>
            </EquipmentRequirement>


-
            <MaterialProducedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID/>
                <MaterialSubLotID/>
                <Description/>


-
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
            </MaterialProducedRequirement>


-
            <MaterialConsumedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID>308A2463BD067</
MaterialDefinitionID>
                <MaterialSubLotID/>
                <Description/>


-
```


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```
                <Quantity>
                    <QuantityString>1</QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>EA</UnitOfMeasure>
                </Quantity>


-
                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_Drawing_Reference</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>1</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>


-
                <MaterialConsumedRequirementProperty>
                    <ID>BOM_SEQUENCE</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>1</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>


-
                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_Position</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>POS A</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>


-
                <MaterialConsumedRequirementProperty>
                    <ID>IS_REQUIRES_CONSUMPTION</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>true</ValueString>
```

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```
                        <DataType>boolean</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>


-
                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_IsPickable</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>true</ValueString>
                        <DataType>boolean</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>


-
                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_BOM_Location</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>A123</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>


-
                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_JumperSetting</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>PL01</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>
            </MaterialConsumedRequirement>


-
            <MaterialConsumedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID>308A309800048</
MaterialDefinitionID>
                <MaterialSubLotID/>
                <Description/>
```


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```
-
                <Quantity>
                    <QuantityString>1</QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>EA</UnitOfMeasure>
                </Quantity>


-
                <MaterialConsumedRequirementProperty>
                    <ID>GEDS_Drawing_Reference</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>3</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>


-
                <MaterialConsumedRequirementProperty>
                    <ID>BOM_SEQUENCE</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>2</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>


-
                <MaterialConsumedRequirementProperty>
                    <ID>IS_REQUIRES_CONSUMPTION</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>false</ValueString>
                        <DataType>boolean</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>
            </MaterialConsumedRequirement>
        </SegmentRequirement>


-
        <SegmentRequirement>
            <ID>20</ID>
            <ProductSegmentID/>
            <ProcessSegmentID/>
            <Description>Ultrasonic Weld</Description>
```

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```
-
            <Location>
                <EquipmentID>WIND_WELD</EquipmentID>
                <EquipmentElementLevel>WorkCenter</
EquipmentElementLevel>
            </Location>
            <EarliestStartTime>2017-04-15T12:00:00</
EarliestStartTime>
            <LatestEndTime>2017-04-15T12:15:00</
LatestEndTime>


-
            <ProductionParameter>


-
                <Parameter>
                    <ID>Priority</ID>


-
                    <Value>
                        <ValueString>20</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>


-
            <ProductionParameter>


-
                <Parameter>
                    <ID>LaborTime</ID>


-
                    <Value>
                        <ValueString>100</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </ProductionParameter>


-
            <ProductionParameter>


-
                <Parameter>
                    <ID>DOCUMENTS</ID>
```


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```
-
                    <Value>
                        <ValueString>http:/grid.ge.com/
485765/abc.pdf</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description>Document 1</Description>
                </Parameter>
            </ProductionParameter>


-
            <ProductionParameter>


-
                <Parameter>
                    <ID>DOCUMENTS</ID>


-
                    <Value>
                        <ValueString>http:/grid.ge.com/
485765/abc2.pdf</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description>Document 2</Description>
                </Parameter>
            </ProductionParameter>


-
            <MaterialProducedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID/>
                <MaterialSubLotID/>
                <Description/>


-
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
            </MaterialProducedRequirement>


-
            <MaterialConsumedRequirement>
                <MaterialClassID/>
                <MaterialDefinitionID>ACCR</
MaterialDefinitionID>
                <MaterialSubLotID/>
                <Description/>
```

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```
-
                <Quantity>
                    <QuantityString>33.78</
QuantityString>
                    <DataType>float</DataType>
                    <UnitOfMeasure>LB</UnitOfMeasure>
                </Quantity>


-
                <MaterialConsumedRequirementProperty>
                    <ID>BOM_SEQUENCE</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>1</ValueString>
                        <DataType>integer</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>


-
                <MaterialConsumedRequirementProperty>
                    <ID>IS_REQUIRES_CONSUMPTION</ID>
                    <Description/>


-
                    <Value>
                        <ValueString>false</ValueString>
                        <DataType>boolean</DataType>
                        <UnitOfMeasure/>
                    </Value>
                </MaterialConsumedRequirementProperty>
            </MaterialConsumedRequirement>
        </SegmentRequirement>
    </ProductionRequest>
</ProductionSchedule>
```

Sample Files for Material

Message that Contains a Material

Inbound messages are added to the integration database using Microsoft SQL Server 2016 or higher.

Message that Contains a Material

```
INSERT INTO erp_integration_inbound_messages
(Message_Type, Media_Type, Message, Inserted_By)
VALUES ('material', 'application/json', '{MMID}', '<user
name>')
```


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where {MMID} is a JSON document that specifies the material.

Material Master Import Document

A JSON material master import document (MMID) contains all the details of a material. The MMID constitutes the body of the HTTP POST request of the ERP Import service, which posts the material to Plant Applications.

MMID

```
{
  "schemaVersion": 2,
  "productionLines": [
    "Line1"
  ],
  "storageZone": "StorageZone",
  "storageUnit": "StorageUnit",
  "material": {
    "productCode": "105D6043P008",
    "productDescription": "INDEX TUBE",
    "productFamily": "Capacitor",
    "propertyValues": [
      {
        "propertyName": "UNITOFMEASURE",
        "propertyValue": "EA"
      },
      {
        "propertyName": "REVISION_DATE",
        "propertyValue": "2/20/2016 11:52:44 AM"
      },
      {
        "propertyName": "ITEM_CREATION_DATE",
        "propertyValue": "2/19/2016 4:08:05 PM"
      },
      {
        "propertyName": "STORAGELOCATION",
        "propertyValue": "STK"
      },
      {
        "propertyName": "ITEM_DRAWING",
        "propertyValue": "[\"http://www/google.com/
document1\", \"http://www/google.com/document2\"]"
      }
    ],
    "isSerialized": true
  }
}
```

B2MML File that Contains a Material

Instead of a JSON material master import document (MMID), you can send all the details of a work order, process order, or material in a B2MML file.

If you want to send a B2MML document, you must also provide an XSL file with the mapping details. The ERP Transformation service uses this XSL file to convert the B2MML document to a JSON file.

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Note: When an XML file is processed, some of the special characters are omitted. To prevent this issue, use the escape strings as specified in the following table.

Special Character	Escape String
&	&
<	<
>	>
“	"
‘	'

B2MML File that Contains a Material

```
<?xml version="1.0"?>
<ProductInformation xmlns="http://www.wbf.org/xml/B2MML-
V0401" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-
AllExtensions"><ID>Internal from MiddleWare</
ID><Description>ITEM_MASTER</
Description><Location><EquipmentID>C86</
EquipmentID><EquipmentElementLevel>Site</
EquipmentElementLevel></
Location><PublishedDate>2016-04-06T12:43:56-04:00</
PublishedDate><ProductDefinition><ID>105D6043P008</
ID><Version>100</Version><Description>INDEX TUBE</
Description><ProductSegment><ID>000</
ID><Description>HEADER</
Description><Parameter><ID>UNIT_OF_MEASURE</
ID><Value><ValueString>EA</ValueString><DataType>string</
DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>PRODUCT_CATEGORY</
ID><Value><ValueString>Capacitor</
ValueString><DataType>string</DataType><UnitOfMeasure/></
Value></Parameter><Parameter><ID>SERIALIZED</
ID><Value><ValueString>TRUE</
ValueString><DataType>boolean</
DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>REVISION_DATE</
ID><Value><ValueString>2/20/2016 11:52:44 AM</
ValueString><DataType>DateTime</
DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>ITEM_CREATION_DATE</
ID><Value><ValueString>2/19/2016 4:08:05 PM</
ValueString><DataType>DateTime</
DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>ITEM_DRAWING</
ID><Value><ValueString>http://www/google.com/document1</
ValueString><DataType>string</DataType><UnitOfMeasure/></
Value><Description>Document 1</Description></
Parameter><Parameter><ID>ITEM_DRAWING</
ID><Value><ValueString>http://www/google.com/document2</
ValueString><DataType>string</DataType><UnitOfMeasure/></
Value><Description>Document 2</Description></
Parameter><Parameter><ID>STORAGELOCATION</
ID><Value><ValueString>STK</
ValueString><DataType>string</DataType><UnitOfMeasure/></
```


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```
Value></Parameter><EquipmentSpecification><EquipmentId/
><EquipmentSpecificationProperty><ID>ProductionLine</
ID><Value><ValueString>Line1</ValueString></Value></
EquipmentSpecificationProperty><EquipmentSpecificationPro
perty><ID>StorageZone</
ID><Value><ValueString>StorageZone</ValueString></
Value></
EquipmentSpecificationProperty><EquipmentSpecificationPro
perty><ID>StorageUnit</
ID><Value><ValueString>StorageUnit</ValueString></
Value></EquipmentSpecificationProperty></
EquipmentSpecification></ProductSegment></
ProductDefinition></ProductInformation>
```

Sample XSL File to Map a Material

Sample of the XSL file to map a material

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet
    xmlns:h="http://www.wbf.org/xml/B2MML-V0401"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
version="1.0">
    <xsl:output indent="yes" method="xml" omit-xml-
declaration="yes"/>
    <xsl:strip-space elements="*"/>
    <xsl:template match="/">
        <xsl:apply-templates
select="h:ProductInformation"/>
    </xsl:template>
    <xsl:template match="h:ProductInformation">
        <ProductInformation>
            <ID>
                <xsl:value-of select="h:ID"/>
            </ID>
            <Description>
                <xsl:value-of select="h:Description"/>
            </Description>
            <Location>
                <EquipmentID>
                    <xsl:value-of select="h:Location/
h:EquipmentID"/>
                </EquipmentID>
                <EquipmentElementLevel>
                    <xsl:value-of select="h:Location/
h:EquipmentElementLevel"/>
                </EquipmentElementLevel>
            </Location>
            <PublishedDate>
                <xsl:value-of select="h:PublishedDate"/>
            </PublishedDate>
            <ProductDefinition>
                <xsl:apply-templates
select="h:ProductDefinition"/>
            </ProductDefinition>
        </ProductInformation>
    </xsl:template>
```

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```
    <xsl:template match="h:ProductDefinition">
        <ID>
            <xsl:value-of select="h:ID"/>
        </ID>
        <Version>
            <xsl:value-of select="h:Version"/>
        </Version>
        <Description>
            <xsl:value-of select="h:Description"/>
        </Description>
        <Location>
            <EquipmentID/>
            <EquipmentElementLevel/>
        </Location>
        <ProductProductionRule/>
        <BillOfMaterialsID/>
        <BillOfResourcesID/>
        <ManufacturingBill>
            <ID/>
            <Description/>
            <MaterialClassID/>
            <Quantity>
                <QuantityString/>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Quantity>
            <BillOfMaterialID/>
        </ManufacturingBill>
        <ProductSegment>
            <xsl:apply-templates
select="h:ProductSegment"/>
        </ProductSegment>
    </xsl:template>
    <xsl:template match="h:ProductSegment">
        <ID>
            <xsl:value-of select="h:ID"/>
        </ID>
        <Description>
            <xsl:value-of select="h:Description"/>
        </Description>
        <ProcessSegmentID/>
        <xsl:for-each select="h:Parameter">
            <Parameter>
                <ID>
                    <!--<xsl:value-of select="h:ID" /> --
>
                    <xsl:apply-templates select="h:ID"/>
                </ID>
                <Value>
                    <ValueString>
                        <xsl:value-of select="h:Value/
h:ValueString"/>
                    </ValueString>
                    <DataType>
                        <xsl:choose>
                            <xsl:when test="not(h:Value/
h:DataType)">
                                <xsl:text>string</
xsl:text>
                            </xsl:when>
                            <xsl:otherwise>
```


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```
                                    <xsl:value-of
select="h:Value/h:DataType"/>
                                </xsl:otherwise>
                            </xsl:choose>
                        </DataType>
                        <UnitOfMeasure/>
                    </Value>
                    <Description/>
                </Parameter>
            </xsl:for-each>
            <PersonnelSpecification>
                <PersonnelClassID/>
                <PersonID/>
                <Description/>
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
                <PersonnelSpecificationProperty>
                    <ID/>
                    <Description/>
                    <Value>
                        <ValueString/>
                        <DataType>string</DataType>
                        <UnitOfMeasure></UnitOfMeasure>
                    </Value>
                    <Quantity>
                        <QuantityString/>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Quantity>
                </PersonnelSpecificationProperty>
            </PersonnelSpecification>
            <xsl:for-each select="h:EquipmentSpecification">
                <EquipmentSpecification>
                    <EquipmentClassID/>
                    <EquipmentID>
                        <xsl:value-of
select="h:EquipmentId"/>
                    </EquipmentID>
                    <Description></Description>
                    <Quantity>
                        <QuantityString/>
                        <DataType>string</DataType>
                        <UnitOfMeasure/>
                    </Quantity>
                    <xsl:for-each
select="h:EquipmentSpecificationProperty">
                        <EquipmentSpecificationProperty>
                            <ID>
                                <xsl:value-of select="h:ID"/>
                            </ID>
                            <Description/>
                            <Value>
                                <ValueString>
                                    <xsl:value-of
select="h:Value/h:ValueString"/>
                                </ValueString>
                                <DataType>string</DataType>
                                <UnitOfMeasure/>
```

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```
                        </Value>
                        <Quantity>
                            <QuantityString/>
                            <DataType>string</DataType>
                            <UnitOfMeasure/>
                            <Key/>
                        </Quantity>
                    </EquipmentSpecificationProperty>
                </xsl:for-each>
            </EquipmentSpecification>
        </xsl:for-each>
        <MaterialSpecification>
            <MaterialClassID/>
            <MaterialDefinitionID/>
            <Description/>
            <Quantity>
                <QuantityString/>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Quantity>
            <MaterialSpecificationProperty>
                <ID/>
                <Description/>
                <Value>
                    <ValueString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Value>
                <Quantity>
                    <QuantityString/>
                    <DataType>string</DataType>
                    <UnitOfMeasure/>
                </Quantity>
            </MaterialSpecificationProperty>
        </MaterialSpecification>
    </xsl:template>
    <xsl:template match="h:ID/text()
[.='PRODUCT_CATEGORY']"> PRODUCT_FAMILY </xsl:template>
</xsl:stylesheet>
```

XML File to Map a Material

The following XML code integrates with the sample XSL file.

```
<ProductInformation
    xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-AllExtensions"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns="http://www.wbf.org/xml/B2MML-V0401">
    <ID>Internal from MiddleWare</ID>
    <Description>ITEM_MASTER</Description>
    <Location>
        <EquipmentID>C86</EquipmentID>
        <EquipmentElementLevel>Site</EquipmentElementLevel>
    </Location>
    <PublishedDate>2016-04-06T12:43:56-04:00</PublishedDate>
    <ProductDefinition>
        <ID>105D6043P008</ID>
```


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```
        <Version>100</Version>
        <Description>INDEX TUBE</Description>
        <ProductSegment>
            <ID>000</ID>
            <Description>HEADER</Description>
            <Parameter>
                <ID>UNIT_OF_MEASURE</ID>
                <Value>
                    <ValueString>EA</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
            </Parameter>
            <Parameter>
                <ID>PRODUCT_CATEGORY</ID>
                <Value>
                    <ValueString>Capacitor</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
            </Parameter>
            <Parameter>
                <ID>ISSERIALIZED</ID>
                <Value>
                    <ValueString>TRUE</ValueString>
                    <DataType>boolean</DataType>
                    <UnitOfMeasure />
                </Value>
            </Parameter>
            <Parameter>
                <ID>REVISION_DATE</ID>
                <Value>
                    <ValueString>2/20/2016 11:52:44 AM</ValueString>
                    <DataType>DateTime</DataType>
                    <UnitOfMeasure />
                </Value>
            </Parameter>
            <Parameter>
                <ID>ITEM_CREATION_DATE</ID>
                <Value>
                    <ValueString>2/19/2016 4:08:05 PM</ValueString>
                    <DataType>DateTime</DataType>
                    <UnitOfMeasure />
                </Value>
            </Parameter>
            <Parameter>
                <ID>ITEM_DRAWING</ID>
                <Value>
                    <ValueString>http://www/google.com/document1</
ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure></UnitOfMeasure>
                </Value>
                <Description>Document 1</Description>
            </Parameter>
            <Parameter>
                <ID>ITEM_DRAWING</ID>
                <Value>
                    <ValueString>http://www/google.com/document2</
ValueString>
                    <DataType>string</DataType>
```

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```
                    <UnitOfMeasure></UnitOfMeasure>
                </Value>
                <Description>Document 2</Description>
            </Parameter>
            <Parameter>
                <ID>STORAGELOCATION</ID>
                <Value>
                    <ValueString>STK</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
            </Parameter>
            <EquipmentSpecification>
                <EquipmentId></EquipmentId>
                <EquipmentSpecificationProperty>
                    <ID>ProductionLine</ID>
                    <Value>
                        <ValueString>Line1</ValueString>
                    </Value>
                </EquipmentSpecificationProperty>
                <EquipmentSpecificationProperty>
                    <ID>StorageZone</ID>
                    <Value>
                        <ValueString>StorageZone</ValueString>
                    </Value>
                </EquipmentSpecificationProperty>
                <EquipmentSpecificationProperty>
                    <ID>StorageUnit</ID>
                    <Value>
                        <ValueString>StorageUnit</ValueString>
                    </Value>
                </EquipmentSpecificationProperty>
            </EquipmentSpecification>

        </ProductSegment>
    </ProductDefinition>
</ProductInformation>
```

Standard B2MML File for a Material

This topic provides an example of a standard B2MML file that works with the default mapping specification file (sample XSL file).

Standard B2MML File for a Material

```
<ProductInformation
    xmlns:h="http://www.wbf.org/xml/B2MML-V0401">
    <ID>Internal from MiddleWare</ID>
    <Description>ITEM_MASTER</Description>
    <Location>
        <EquipmentID>C86</EquipmentID>
        <EquipmentElementLevel>Site</
EquipmentElementLevel>
    </Location>
    <PublishedDate>2016-04-06T12:43:56-04:00</
PublishedDate>
    <ProductDefinition>
        <ID>105D6043P008</ID>
        <Version>100</Version>
```


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```
        <Description>INDEX TUBE</Description>
        <Location>
            <EquipmentID />
            <EquipmentElementLevel />
        </Location>
        <ProductProductionRule />
        <BillOfMaterialsID />
        <BillOfResourcesID />
        <ManufacturingBill>
            <ID />
            <Description />
            <MaterialClassID />
            <Quantity>
                <QuantityString />
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Quantity>
            <BillOfMaterialID />
        </ManufacturingBill>
        <ProductSegment>
            <ID>000</ID>
            <Description>HEADER</Description>
            <ProcessSegmentID />
            <Parameter>
                <ID>UNIT_OF_MEASURE</ID>
                <Value>
                    <ValueString>EA</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
                <Description />
            </Parameter>
            <Parameter>
                <ID>PRODUCT_FAMILY</ID>
                <Value>
                    <ValueString>Capacitor</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
                <Description />
            </Parameter>
            <Parameter>
                <ID>ISSERIALIZED</ID>
                <Value>
                    <ValueString>TRUE</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
                <Description />
            </Parameter>
            <Parameter>
                <ID>REVISION_DATE</ID>
                <Value>
                    <ValueString>2/20/2016 11:52:44 AM</
ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
                <Description />
            </Parameter>
            <Parameter>
```

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```
                <ID>ITEM_CREATION_DATE</ID>
                <Value>
                    <ValueString>2/19/2016 4:08:05 PM</
ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
                <Description />
            </Parameter>
            <Parameter>
                <ID>ITEM_DRAWING</ID>
                <Value>
                    <ValueString>http://www/google.com/
document1</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
                <Description />
            </Parameter>
            <Parameter>
                <ID>ITEM_DRAWING</ID>
                <Value>
                    <ValueString>http://www/google.com/
document2</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
                <Description />
            </Parameter>
            <Parameter>
                <ID>STORAGELOCATION</ID>
                <Value>
                    <ValueString>STK</ValueString>
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Value>
                <Description />
            </Parameter>
            <PersonnelSpecification>
                <PersonnelClassID />
                <PersonID />
                <Description />
                <Quantity>
                    <QuantityString />
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Quantity>
                <PersonnelSpecificationProperty>
                    <ID />
                    <Description />
                    <Value>
                        <ValueString />
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                    </Value>
                    <Quantity>
                        <QuantityString />
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                    </Quantity>
                </PersonnelSpecificationProperty>
```


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```
            </PersonnelSpecification>
            <EquipmentSpecification>
                <EquipmentClassID />
                <EquipmentID />
                <Description />
                <Quantity>
                    <QuantityString />
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Quantity>
                <EquipmentSpecificationProperty>
                    <ID>ProductionLine</ID>
                    <Description />
                    <Value>
                        <ValueString>Line1</ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                    </Value>
                    <Quantity>
                        <QuantityString />
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                        <Key />
                    </Quantity>
                </EquipmentSpecificationProperty>
                <EquipmentSpecificationProperty>
                    <ID>StorageZone</ID>
                    <Description />
                    <Value>
                        <ValueString>StorageZone</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                    </Value>
                    <Quantity>
                        <QuantityString />
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                        <Key />
                    </Quantity>
                </EquipmentSpecificationProperty>
                <EquipmentSpecificationProperty>
                    <ID>StorageUnit</ID>
                    <Description />
                    <Value>
                        <ValueString>StorageUnit</
ValueString>
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                    </Value>
                    <Quantity>
                        <QuantityString />
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                        <Key />
                    </Quantity>
                </EquipmentSpecificationProperty>
            </EquipmentSpecification>
            <MaterialSpecification>
                <MaterialClassID />
                <MaterialDefinitionID />
```

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```
                <Description />
                <Quantity>
                    <QuantityString />
                    <DataType>string</DataType>
                    <UnitOfMeasure />
                </Quantity>
                <MaterialSpecificationProperty>
                    <ID />
                    <Description />
                    <Value>
                        <ValueString />
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                    </Value>
                    <Quantity>
                        <QuantityString />
                        <DataType>string</DataType>
                        <UnitOfMeasure />
                    </Quantity>
                </MaterialSpecificationProperty>
            </MaterialSpecification>
        </ProductSegment>
    </ProductDefinition>
</ProductInformation>
```

Note:

- Add the IsSerialized parameter to support non-serialized products.
- Add the UnitOfMeasure parameter to associate material with UOM. This parameter is mandatory in Plant Applications version 8.1.

Sample Files for Material Lot

Message that Contains a Material Lot

Inbound messages are added to the integration database using Microsoft SQL Server 2016 or higher.

Message that Contains a Material Lot

```
INSERT INTO erp_integration_inbound_messages
(Message_Type, Media_Type, Message, Inserted_By)
VALUES ('materialLot' , 'application/json', '{MLID}',
'<user name>')
```

where {MLID} is a JSON document that specifies the material lot.

Material Lot Import Document

A JSON material lot import document (MLID) contains all the details of a material lot, including receiver data. The MLID constitutes the body of the HTTP POST request of the ERP Import service, which posts the material to Plant Applications.

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The example MLID is of schema version 2.


```
{
  "schemaVersion": 2,
  "materialLot": [
    {
      "lotIdentifier": "Lot-1",
      "productName": "RI-RM02-lb",
      "quantity": 10,
      "unitOfMeasure": "",
      "status": "Scrap",
      "description": "",
      "propertyValues": [
        {
          "propertyName": "RECEIVER",
          "propertyValue": "RE001"
        },
        {
          "propertyName": "VENDOR",
          "propertyValue": "VD01"
        },
        {
          "propertyName": "TIMESTAMPCREATION",
          "propertyValue": "2020-09-18T13:28:39.395Z"
        },
        {
          "propertyName": "TIMESTAMPCHANGE",
          "propertyValue": "2020-09-18T13:28:39.395Z"
        },
        {
          "propertyName": "AUTHORCHANGE",
          "propertyValue": "JonDoe"
        },
        {
          "propertyName": "SOMEPROPERTY1",
          "propertyValue": "Y"
        },
        {
          "propertyName": "SOMEPROPERTY2",
          "propertyValue": "2.5"
        },
        {
          "propertyName": "WORKORDER",
          "propertyValue": "WO001"
        },
        {
          "propertyName": "OPERATION",
          "propertyValue": "OP40"
        }
      ]
    }
  ]
}
```


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The example MLID is of schema version 3.

```
{
  "schemaVersion": 3,
  "materialLot": [
    {
      "lotIdentifier": "Receiver-001",
      "productName": "",
      "description": "Receiver",
      "quantity": 2,
      "unitOfMeasure": "",
      "propertyValues": [
        {
          "propertyName": "test",
          "propertyValue": "1"
        }
      ]
    },
    {
      "lotIdentifier": "Lot Identifier nonSerialize",
      "productName": "Prod1",
      "description": "",
      "quantity": 100,
      "unitOfMeasure": "inch",
      "propertyValues": [
        {
          "propertyName": "test",
          "propertyValue": "1"
        }
      ]
    }
  ]
}
```

B2MML File that Contains a Material Lot

Instead of a JSON material lot import document (MLID), you can send all the details of a work order, process order, material, or material lot in a B2MML file.

If you want to send a B2MML document, you must also provide an XSL file with the mapping details. The ERP Transformation service uses this XSL file to convert the B2MML document to a JSON file.

Note: When an XML file is processed, some of the special characters are omitted. To prevent this issue, use the escape strings as specified in the following table.

Special Character	Escape String
&	&
<	<
>	>
“	"
‘	'

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B2MML File that Contains a Material Lot

```
<?xml version="1.0"?>
<ProductInformation xmlns="http://www.wbf.org/xml/B2MML-
V0401" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-
AllExtensions"><ID>Internal from MiddleWare</
ID><Description>ITEM_MASTER</
Description><Location><EquipmentID>C86</
EquipmentID><EquipmentElementLevel>Site</
EquipmentElementLevel></
Location><PublishedDate>2016-04-06T12:43:56-04:00</
PublishedDate><ProductDefinition><ID>105D6043P008</
ID><Version>100</Version><Description>INDEX TUBE</
Description><ProductSegment><ID>000</
ID><Description>HEADER</
Description><Parameter><ID>UNIT_OF_MEASURE</
ID><Value><ValueString>EA</ValueString><DataType>string</
DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>PRODUCT_CATEGORY</
ID><Value><ValueString>Capacitor</
ValueString><DataType>string</DataType><UnitOfMeasure/></
Value></Parameter><Parameter><ID>SERIALIZED</
ID><Value><ValueString>TRUE</
ValueString><DataType>boolean</
DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>REVISION_DATE</
ID><Value><ValueString>2/20/2016 11:52:44 AM</
ValueString><DataType>DateTime</
DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>ITEM_CREATION_DATE</
ID><Value><ValueString>2/19/2016 4:08:05 PM</
ValueString><DataType>DateTime</
DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>ITEM_DRAWING</
ID><Value><ValueString>http://www/google.com/document1</
ValueString><DataType>string</DataType><UnitOfMeasure/></
Value><Description>Document 1</Description></
Parameter><Parameter><ID>ITEM_DRAWING</
ID><Value><ValueString>http://www/google.com/document2</
ValueString><DataType>string</DataType><UnitOfMeasure/></
Value><Description>Document 2</Description></
Parameter><Parameter><ID>STORAGELOCATION</
ID><Value><ValueString>STK</
ValueString><DataType>string</DataType><UnitOfMeasure/></
Value></Parameter><EquipmentSpecification><EquipmentId/
><EquipmentSpecificationProperty><ID>ProductionLine</
ID><Value><ValueString>Line1</ValueString></Value></
EquipmentSpecificationProperty><EquipmentSpecificationPro
perty><ID>StorageZone</
ID><Value><ValueString>StorageZone</ValueString></
Value></
EquipmentSpecificationProperty><EquipmentSpecificationPro
perty><ID>StorageUnit</
ID><Value><ValueString>StorageUnit</ValueString></
Value></EquipmentSpecificationProperty></
```

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```
EquipmentSpecification></ProductSegment></
ProductDefinition></ProductInformation>
```

XSL File to Map a Material Lot

This topic provides a sample XSL file that is used to map a material lot.

XSL File to Map a Material Lot

```
<?xml version="1.0" encoding="utf-8"?>
<xsl:stylesheet version="1.0"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:fn="http://www.w3.org/2005/xpath-functions">
    <xsl:output method="xml" indent="yes" />
    <xsl:template match="@* | node()">
        <xsl:copy>
            <xsl:apply-templates select="@* | node()" />
        </xsl:copy>
    </xsl:template>
</xsl:stylesheet>
```

Standard B2MML File for a Material Lot

This topic provides an example of a standard B2MML file that contains the details of a material lot.

Standard B2MML File for a Material Lot

```
<?xml version="1.0" encoding="utf-8"?>
<MaterialInformation
    xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-
AllExtensions"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns="http://www.wbf.org/xml/B2MML-V0401">

    <ID>S123</ID>
    <Description>InterfaceName</Description>
    <Location>
        <EquipmentID>Prague</EquipmentID>
        <EquipmentElementLevel>Site</
EquipmentElementLevel>
    </Location>
    <PublishedDate>2019-06-20T16:09:31-04:00</
PublishedDate>
    <MaterialLot>
        <ID></ID>
        <Description>RECEIVER</Description>
        <MaterialDefinitionID>RI-RM02-lb</
MaterialDefinitionID>
        <Status>Scrap</Status>
        <MaterialLotProperty>
            <ID>RECEIVER</ID>
            <Value>
                <ValueString>RE001</ValueString>
                <DataType>string</DataType>
```


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```
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>VENDOR</ID>
            <Value>
                <ValueString>VD01</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>TIMESTAMPCREATION</ID>
            <Value>
                <ValueString>2020-09-18T13:28:39.395Z</
ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>TIMESTAMPCHANGE</ID>
            <Value>
                <ValueString>2020-09-18T13:28:39.395Z</
ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>AUTHORCHANGE</ID>
            <Value>
                <ValueString>JonDoe</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>WORKORDER</ID>
            <Value>
                <ValueString>WO001</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>OPERATION</ID>
            <Value>
                <ValueString>OP40</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>SOMEPROPERTY1</ID>
            <Value>
                <ValueString>Y</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
```

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```
        <MaterialLotProperty>
            <ID>SOMEPROPERTY2</ID>
            <Value>
                <ValueString>2.5</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <Location>
            <EquipmentID>Prague</EquipmentID>
            <EquipmentElementLevel>Site</
EquipmentElementLevel>
            <Location>
                <EquipmentID>PLID1</EquipmentID>
                <EquipmentElementLevel>ProductionLine</
EquipmentElementLevel>
                <Location>
                    <EquipmentID>PUId1</EquipmentID>
                    <EquipmentElementLevel>Unit</
EquipmentElementLevel>
                </Location>
            </Location>
        </Location>
        <Quantity>
            <QuantityString>10</QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure />
        </Quantity>
        <Quantity>
            <QuantityString></QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure />
        </Quantity>
        <Quantity>
            <QuantityString></QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure></UnitOfMeasure>
        </Quantity>
        <Quantity>
            <QuantityString></QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure />
        </Quantity>
    </MaterialLot>
    <Extended:SchemaVersion>2</Extended:SchemaVersion>
</MaterialInformation>
```

Sample Files for Outside Processing (OSP)

Message that Contains Outside Processing

Inbound messages that contains Outside Processing (OSP) are added to the integration database using Microsoft SQL Server 2016 or higher.

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Message that Contains OSP

```
INSERT INTO erp_integration_inbound_messages (Message_Type,
Media_Type, Message, Inserted_By)
VALUES (’OSP’, 'application/json', '{MLID}', '<user name>')
```

where {MLID} is a JSON document that specifies the OSP.

Outside Processing Master Import Document

A JSON material lot import document (MLID) contains all the details of the Outside Processing (OSP), including route and revision or segment definition. The MLID constitutes the body of the HTTP POST request of the ERP Import service, which posts the OSP to Plant Applications.

The example MLID is of schema version 2.

```
{
  "schemaVersion": 2,
  "materialLot": [
    {
      "lotIdentifier": "",
      "productName": "Prod11",
      "quantity": 4,
      "unitOfMeasure": "",
      "status": "",
      "description": "",
      "propertyValues": [
        {
          "propertyName": "WorkOrder",
          "propertyValue": "WO-OSP-Non-Ser1"
        },
        {
          "propertyName": "WorkOrder",
          "propertyValue": "WO-OSP-Non-Ser1"
        },
        {
          "propertyName": "Operation",
          "propertyValue": "10"
        }
      ],
      "materialSubLots": [
        {
          "lotIdentifier": "JO-3",
          "quantity": 2
        },
        {
          "lotIdentifier": "JO-4",
          "quantity": 2
        }
      ]
    },
    {
      "lotIdentifier": "RECEIVEROSP",
      "productName": "",
      "quantity": 5,
      "unitOfMeasure": "",
      "status": "",
      "description": "Receiver",
```

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```
      "propertyValues": [
        {
          "propertyName": "TestStringProp",
          "propertyValue": "WOProperty"
        },
        {
          "propertyName": "TestIntProp",
          "propertyValue": "[\"1\", \"2\"]"
        }
      ]
    }
  ]
}
```

The example MLID is of schema version 3.

```
{
  "schemaVersion": 3,
  "materialLot": [
    {
      "lotIdentifier": "",
      "materialSubLots": [
        {
          "lotIdentifier": "lots1",
          "quantity": 1
        },
        {
          "lotIdentifier": "lots2",
          "quantity": 1
        }
      ],
      "productName": "8.2 Reg Nonser Prod",
      "quantity": 2,
      "unitOfMeasure": "",
      "description": "",
      "propertyValues": [
        {
          "propertyName": "WorkOrder",
          "propertyValue": "SHARMILA OSP Wo"
        },
        {
          "propertyName": "Operation",
          "propertyValue": "op2"
        }
      ]
    },
    {
      "lotIdentifier": "Receiver-osp-002",
      "productName": "",
      "quantity": 1,
      "unitOfMeasure": "",
      "status": "",
      "description": "receiver",
      "propertyValues": [
        {
          "propertyName": "STORAGELOCATION",
          "propertyValue": "true"
        }
```


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```
        ]
      }
    ]
}}
```

B2MML File that Contains an Outside Processing

Instead of a JSON material lot import document for OSP (MLID), you can send all the details of a work order, process order, material, material lot, or OSP in a B2MML file.

If you want to send a B2MML document, you must also provide an XSL file with the mapping details. The ERP Transformation service uses this XSL file to convert the B2MML document to a JSON file.

Note: When an XML file is processed, some of the special characters are omitted. To prevent this issue, use the escape strings as specified in the following table.

Special Character	Escape String
&	&
<	<
>	>
“	"
‘	'

B2MML File that Contains an OSP

```
<?xml version="1.0"?>
<ProductInformation xmlns="http://www.wbf.org/xml/B2MML-V0401"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://
www.w3.org/2001/XMLSchema-instance" xmlns:Extended="http://
www.wbf.org/xml/B2MML-V0401-AllExtensions"><ID>Internal from
MiddleWare</ID><Description>ITEM_MASTER</
Description><Location><EquipmentID>C86</
EquipmentID><EquipmentElementLevel>Site</EquipmentElementLevel></
Location><PublishedDate>2016-04-06T12:43:56-04:00</
PublishedDate><ProductDefinition><ID>105D6043P008</ID><Version>100</
Version><Description>INDEX TUBE</Description><ProductSegment><ID>000</
ID><Description>HEADER</Description><Parameter><ID>UNIT_OF_MEASURE</
ID><Value><ValueString>EA</ValueString><DataType>string</
DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>PRODUCT_CATEGORY</
ID><Value><ValueString>Capacitor</ValueString><DataType>string</
DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>SERIALIZED</ID><Value><ValueString>TRUE</
ValueString><DataType>boolean</DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>REVISION_DATE</
ID><Value><ValueString>2/20/2016 11:52:44 AM</
ValueString><DataType>DateTime</DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>ITEM_CREATION_DATE</
ID><Value><ValueString>2/19/2016 4:08:05 PM</
ValueString><DataType>DateTime</DataType><UnitOfMeasure/></Value></
Parameter><Parameter><ID>ITEM_DRAWING</
ID><Value><ValueString>http://www/google.com/document1</
ValueString><DataType>string</DataType><UnitOfMeasure/></
Value><Description>Document 1</Description></
```

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```
Parameter><Parameter><ID>ITEM_DRAWING</
ID><Value><ValueString>http://www/google.com/document2</
ValueString><DataType>string</DataType><UnitOfMeasure/></
Value><Description>Document 2</Description></
Parameter><Parameter><ID>STORAGELOCATION</ID><Value><ValueString>STK</
ValueString><DataType>string</DataType><UnitOfMeasure/></Value></
Parameter><EquipmentSpecification><EquipmentId/
><EquipmentSpecificationProperty><ID>ProductionLine</
ID><Value><ValueString>Line1</ValueString></Value></
EquipmentSpecificationProperty><EquipmentSpecificationProperty><ID>Stor
ageZone</ID><Value><ValueString>StorageZone</ValueString></Value></
EquipmentSpecificationProperty><EquipmentSpecificationProperty><ID>Stor
ageUnit</ID><Value><ValueString>StorageUnit</ValueString></Value></
EquipmentSpecificationProperty></EquipmentSpecification></
ProductSegment></ProductDefinition></ProductInformation>
```

XSL File to Map an Outside Processing

This topic provides a sample XSL file that is used to map an OSP.

```
<?xml version="1.0" encoding="utf-8"?>
<xsl:stylesheet version="1.0"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:fn="http://www.w3.org/2005/xpath-functions">
    <xsl:output method="xml" indent="yes" />
    <xsl:template match="@* | node()">
        <xsl:copy>
            <xsl:apply-templates select="@* | node()" />
        </xsl:copy>
    </xsl:template>
</xsl:stylesheet>
```

Standard B2MML File for Outside Processing

This topic provides an example of a standard B2MML file that contains the details of an OSP.

Example Standard B2MML File for an OSP

```
<?xml version="1.0" encoding="utf-8"?>
<MaterialInformation
    xmlns:Extended="http://www.wbf.org/xml/B2MML-V0401-
AllExtensions"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns="http://www.wbf.org/xml/B2MML-V0401">
    <ID>1</ID>
    <Description>InterfaceName</Description>
    <Location>
        <EquipmentID>Prague</EquipmentID>
        <EquipmentElementLevel>Site</
EquipmentElementLevel>
    </Location>
    <PublishedDate>2019-06-20T16:09:31-04:00</
PublishedDate>
    <MaterialLot>
        <ID></ID>
        <Description></Description>
```


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```
        <MaterialDefinitionID>Prod11</
MaterialDefinitionID>
        <Status></Status>
        <MaterialLotProperty>
            <ID>WorkOrder</ID>
            <Value>
                <ValueString>WO-OSP-Non-Ser1</
ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>WorkOrder</ID>
            <Value>
                <ValueString>WO-OSP-Non-Ser1</
ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>Operation</ID>
            <Value>
                <ValueString>10</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialSubLot>
            <ID>JO-3</ID>
            <Quantity>
                <QuantityString>2</QuantityString>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Quantity>
        </MaterialSubLot>
        <MaterialSubLot>
            <ID>JO-4</ID>
            <Quantity>
                <QuantityString>2</QuantityString>
                <DataType>string</DataType>
                <UnitOfMeasure/>
            </Quantity>
        </MaterialSubLot>
        <Quantity>
            <QuantityString>4</QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure></UnitOfMeasure>
        </Quantity>
        <Quantity>
            <QuantityString></QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure></UnitOfMeasure>
        </Quantity>
        <Quantity>
            <QuantityString></QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure/>
        </Quantity>
    </MaterialLot>
```

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```
    <MaterialLot>
        <ID>RECEIVEROSP</ID>
        <Description>Receiver</Description>
        <MaterialDefinitionID></MaterialDefinitionID>
        <Status></Status>
        <MaterialLotProperty>
            <ID>TestStringProp</ID>
            <Value>
                <ValueString>WOProperty</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>TestIntProp</ID>
            <Value>
                <ValueString>1</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <MaterialLotProperty>
            <ID>TestIntProp</ID>
            <Value>
                <ValueString>2</ValueString>
                <DataType>string</DataType>
                <UnitOfMeasure />
            </Value>
        </MaterialLotProperty>
        <Quantity>
            <QuantityString>5</QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure></UnitOfMeasure>
        </Quantity>
        <Quantity>
            <QuantityString></QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure></UnitOfMeasure>
        </Quantity>
        <Quantity>
            <QuantityString></QuantityString>
            <DataType>string</DataType>
            <UnitOfMeasure/>
        </Quantity>
    </MaterialLot>
    <Extended:SchemaVersion>2</Extended:SchemaVersion>
</MaterialInformation>
```

Response Codes

Response Codes

The ERP Integration database contains HTTP response codes and response messages returned by the ERP Import service. The responses provide the status of the import process. This topic provides the response codes, messages, and their description for each type of response.

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Table 1: Success Messages

Response Code	Response Message	Description
200	OK	The record (that is, the work order, process order, or material) was successfully imported.
202	Accepted	The record has been accepted for import processing. The final status is pending.

Table 2: Error Messages from the Client

Response Code	Response Message	Description
400	Bad Request	The inbound message could not be validated or could not be converted into a format suitable for importing.
401	Unauthorized	The import failed because the request lacked valid authentication credentials.
404	Not Found	The import service was unable to retrieve the status of the record.
422	Unprocessable Entity	The import service is attempting to create a record for materials that are not in the Plant Applications system.

Table 3: Error Messages from the Server

Response Code	Response Message	Description
500	Internal Server Error	A server error occurred while importing a record or while retrieving the status of a record.
503	Service Unavailable	The connection was refused or the server was unable to import a record or retrieve the status of a record due to a temporary server overload or other transitory condition.

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Chapter 7

Release Notes

Topics:

- Version 8.1
- Version 8.0

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Version 8.1

This topic provides a list of product changes for ERP Integration for this release.

Table 4: Enhancements and New Features

The following enhancements and new features have been added.

Description	Tracking ID
In addition to Work Orders, Process Orders, and Materials, you can now import Material Lot and Outside Processing (OSP) to Plant Applications Web Client.	F48473
An ERP-Export service is introduced. The ERP Export service sends the events from the Plant Applications Web Client to the ERP system (or middleware / interfacing system). The ERP Export service sends notifications from the Plant Applications Web Client to the ERP system when the following events occur: • Operation Complete • Clock on a serial/lot • Clock off a serial/lot • Material Scrap • Route Release	F46586 F37771 F45626
ERP Integration now supports serialized and non-serialized import of Work Orders and Materials.	F45347
Notifications are now sent to ERP when the following events occur in Plant Applications Web Client: • A route is released • An operation is clocked on or clocked off • An operation is complete	F45988
When raw materials are sent to an ERP system, the Plant Applications Web Client can access and process messages that are generated when a raw material is received and represent the associated material lots.	F46587

Version 8.0

This topic provides a list of product changes for ERP integration for this release.

Table 5: Enhancements and New Features

The following enhancements and new features have been added.

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Description	Tracking ID
In addition to work orders, you can now import process orders and materials to Plant Applications.	F43913
In addition to a JSON format, you can now send work order, process order, or material information in an XML or B2MML format. To facilitate this enhancement, a new service, ERP Transformation, has been introduced, which converts the XML or B2MML file to a JSON file before it is imported to Plant Applications.	• F37772 • F37770

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