

**APTTUS**

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**Apttus SOAP API March 2017  
Reference Guide**

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# Overview

Apttus provides Application Programming Interfaces (API) for you to extend the features offered by Apttus. These extensions add more functionality to the features available through configuration on Salesforce.

The Apttus CPQ and CM API reference Guide describes the APIs provided to work with configure, price, quote objects, and the APIs used to publish documents and manipulate document content.

# Overview

- [API Supported Packages](#)  
This guide covers CPQ, CM, Merge Service, and Configuration and Pricing APIs.
- [Document Setup](#)  
The Apttus CPQ and CM API reference Guide is divided into two sections: *API Reference* and *Scenarios*.
- [API Standards and Development Platforms](#)  
Apttus APIs are based on Salesforce APIs and use the same standards and platforms.
- [Field Types](#)  
Apttus APIs use a subset of the supported data and field types on Salesforce.

## API Supported Packages

This guide covers CPQ, CM, Merge Service, and Configuration and Pricing APIs.

Package Name	Version
Apttus Billing Management	4.5.0092   4.92
Apttus Order Management	1.0
Apttus CPQ API( <b>New</b> )	9.6.4
Apttus Configuration & Pricing	10.1214
Apttus Quote Proposal Configuration Integration	9.7.0206 (9.206)
Apttus Contract Management	8.5.0361 (8.361)

Package Name	Version
Apttus Proposal Management	8.2.0142 (8.142)

## Document Setup

The Apttus CPQ and CM API reference Guide is divided into two sections: *API Reference* and *Scenarios*.

<b>API Reference</b>	The <i>API reference</i> section details the APIs that you can use to manipulate Apttus objects through API calls and passing parameters. The API reference section also includes some code samples.
<b>Scenarios</b>	The <i>Scenarios</i> section details examples of the APIs you require to complete a specific task such as, adding products and constraint rules to the cart. The scenarios are classified by theme. You can refer to the generic examples of scenarios to identify the calls you can use to achieve your objective.

## API Standards and Development Platforms

Apttus APIs are based on Salesforce APIs and use the same standards and platforms.

### Standards

Name	Reference
Simple Object Access Protocol (SOAP) 1.1	<a href="http://www.w3.org/TR/2000/NOTE-SOAP-20000508">http://www.w3.org/TR/2000/NOTE-SOAP-20000508</a>



Name	Reference
Web Service Description Language (WDSL) 1.1	<a href="http://www.w3.org/TR/2001/NOTE-wsdl-20010315">http://www.w3.org/TR/2001/NOTE-wsdl-20010315</a>
WS-I Basic Profile 1.1	<a href="http://www.ws-i.org/Profiles/BasicProfile-1.1-2004-08-24.html">http://www.ws-i.org/Profiles/BasicProfile-1.1-2004-08-24.html</a>

## Development Platforms

Apttus SOAP API works with standard SOAP development environments. For a list of compatible development platforms, see [Salesforce Developer Force API](#) details.

### Note

A later version of this content will contain sample code.

## Field Types

Apttus APIs use a subset of the supported data and field types on Salesforce.

The following table lists the APIs that Apttus provides. For a comprehensive list of all field types supported by Salesforce, see [Salesforce Data Types](#).

Type	Description
Boolean	The <b>Boolean</b> field has a true (or 1) or false (or 0) value.
Data object	The <b>Data Object</b> field is an ID type and is represented by CPQ.nnDO in this document.

Type	Description
Date	The <b>Date</b> field contains date values only and do not contain relevant time values. Time in a date field is always set to midnight in the UTC time zone. If you want a timestamp you must use a <b>dateTime</b> field.
Decimal	The <b>Decimal</b> field provides an exact numeric value and you can arbitrarily size the precision and scale of the value.
ID	<p>The <b>ID</b> field is an alphanumeric field that acts like the primary key for a specific record associated with an object. The ID value includes a three-character code that identifies which object the record is associated with. The ID for a specific record does not change.</p> <p>For some objects, this field may also be a reference type value, which contains the ID value for a related record. They are identified by field names ending in 'Id', such as <code>priceListId</code>. The ID field acts like foreign keys and their values can be changed using an <code>update()</code> call.</p>
Integer	The <b>Integer</b> field contains whole numbers only. There are no digits after the decimal.
List	The <b>List</b> field includes a fixed set of values from which you must select a single value. Picklists are available as drop-down lists. If a picklist is unrestricted, the API does not limit entries to only currently active values.
String	The <b>String</b> field contains text and may have differing length restrictions based on the data you store in the specific field. For instance, <code>City</code> may be limited to 50 characters, while <code>AddressLine1</code> is limited to 255 characters.

# API Reference

- [CPQ Web Service](#)

The CPQ web service APIs account for the standard actions to configure, price, and quote.

- [Order Web Service](#)

You can use the Order Web Service APIs to create an order, create a shopping cart to order, create order line items from the shopping cart, and create the asset line items for the order.

- [Agreement Web Service](#)

The Agreement Web Service APIs are used for activating, selecting and publishing agreements. Once an agreement has been activated and associated with a template it can be published to [Salesforce.com](#) – either to Chatter files or Documents - or published to an external repository.

- [Merge Web Service](#)

The Merge Web Service APIs are used for generating and manipulating documents. Both agreements and supporting documents can be generated, while text can be added to document headers and footers. Word documents can be converted into PDF documents and security rules can be applied to PDF documents.

## CPQ Web Service

The CPQ web service APIs account for the standard actions to configure, price, and quote.

You can use the CPQ web service APIs to complete the following tasks:

- [Creating a Favorite Configuration](#)

This API creates a cart for the quote or proposal referenced by QuoteID. The quote or proposal must be associated with a price list.

- [Retrieving Categories for a Price List](#)

This API is used to get the unique list of categories for all the products within the specified price list.

- [Retrieving Products and List Prices for a Price List](#)  
This API is used to get the list of all the products within the specified price list.
- [Retrieving Products and List Prices for a Price List and Category](#)  
This API is used to get the list of products and related list prices for a specified category in the price list.
- [Retrieving Products and List Prices For a Price List and Search Text](#)  
This API is used to get the list of products that match search text criteria you used for the products in the price list.
- [Retrieving Products and List Prices For a Price List Category and Search Text](#)  
This API is used to get the list of products that match search text criteria you used and belong to specified category id in the price list.
- [Retrieving Option Groups, Options, and List Prices for a Price List Product](#)  
This retrieves option groups, options, and list prices for a price list product.
- [Modifying Assets \(Deprecated\)](#)  
This method enables you to complete standard asset based ordering actions of renew, terminate, amend, upgrade and increment.
- [Retrieving Asset Line Items](#)  
Gets the list of asset line item objects matching the parameters used as the search criteria.
- [Comparing Products](#)  
This is used to retrieve products, based on product IDs, and compare them side by side. This is typically done from the Product Catalog, to decide between products before adding them to the cart.
- [Adding a Bundle to a Cart](#)  
This adds a bundle along with selected products, options, and updated quantity to the cart.
- [Adding Options to a Bundle](#)  
This adds one or more Options Products to a Bundle product.
- [Adding Products to a Cart](#)  
This API adds one or more products (with default options) to the cart along with quantity, term, start date, and end date.

- [Adding Price Ramps to a Cart \(CPQ Web Service\)](#)  
After you add a line item to a cart, this API enables you to add primary and secondary ramp line items for the line item. Once the ramp line items are created, you can also update the ramp line item details or delete ramp line item details using standard SOQL queries.
- [Associating Constraint Rules to a Cart](#)  
This associates constraints rules to a cart.
- [Applying Constraint Rules to a Cart](#)  
This processes and applies all the constraint rules.
- [Removing a Bundle from a Cart](#)  
This removes a product bundle and related line items, options from the cart.
- [Removing Multiple Bundles from a Cart](#)  
This removes one or more products (with default options) or bundles from the cart along with quantity, term, start date, and end date.
- [Applying Constraint Rules to Deleted Products](#)  
This runs the rules that are related to the deleted products.
- [Retrieving Constraint Rules Results](#)  
This retrieves the constraints rules applied to a cart.
- [Computing the Net Price for a Bundle](#)  
This API is used to calculate the price for the individual and summary line items of the cart. It runs the pricing rules, calculate bundle, line item, option level net prices and update the cart line with calculated prices. After the pricing is calculated for the cart line items, the resulting information is stored in the *Line Item* and *Summary Group* objects.
- [Finalizing a Cart's Contents](#)  
This finalizes the cart, synchronizing the cart line items with the quote/proposal.
- [Synchronizing a Cart](#)  
This is used to sync the shopping cart with the product configuration on the quote record.
- [Abandoning a Cart](#)  
This deletes the selected cart in **Draft** status.
- [Updating Quote Terms](#)  
This method enables you to update the expected start date and expected end date of the quote, along with its selling term. This method does the following:

- [Price Breakup for a Cart or Specific Line Item](#)  
This method can be used to retrieve the price breakup for a cart or specific line item.
- [Updating Price For A Cart](#)  
This method enables you to update the price for items in a given cart. Only line items in pending status are updated.
- [Computing Shipping for Cart Line Items](#)  
This API enables you to calculate the shipping amount for an entire order and does not display the breakup for each line item.
- [Computing Taxes for Cart Line Items](#)  
This API enables you to calculate tax breakups for cart line item.
- [CPQAdmin Web Service](#)  
The APIs in this Webservice allow you to create products, categories, hierarchies, and attribute groups. Once you have created the items, you can also choose to retrieve them using the APIs provided in the Webservice.

## Retrieving Categories for a Price List

This API is used to get the unique list of categories for all the products within the specified price list.

### getCategoriesForPriceList

Parameters		
Name	Type	Description
priceListId	ID	The id of the price list

Response Data Object - CPQ.CategorySearchResultDO		
Field	Type	Description
HasCategories	Boolean	Indicates if there are categories for the price list.

Response Data Object - CPQ.CategorySearchResultDO		
Field	Type	Description
Categories	List<CPQ.CategoryDO>	The list of category data objects.

Data Object - CPQ.CategoryDO		
Field	Type	Description
CategoryId	ID	The Id of the category.
Name	String	The category name.
ParentCategoryId	ID	The Id of the parent category.
HasChildCategories	Boolean	Indicates if the category has child categories.
ChildCategories	List<CPQ.CategoryDO>	The list of child category data objects associated with the category.
ProductCount	Integer	The number of products within a category.

### Code Sample

The code sample below enables you to search for categories based on the pricelist ID. All the categories and subcategories associated with the price list are displayed. You can search for categories associated with a price list till the nth level. You can provide a search field on the cart page that enables the user to search for products by categories. For example, your cart page has multiple categories, such as Laptop, camera, Desktop, Accessories and so on. The user should be able to search for products by category by entering category name such as laptop. Use this API to invoke the categories and its associated sub-categories of products and then display it to the user.



```

public void executeSearch()
{
//Query for fetching pricelist id by querying price list
name
    List<Apttus_Config2__PriceList__c> priceListItemList = [select
id
    from Apttus_Config2__PriceList__c
    where name = :priceListName limit 1];

//If an id is returned in the list execute the
getCategoriesforpricelist API.
    if(priceListItemList.size() > 0)
    {

        priceListId = priceListItemList[0].ID;

        Apttus_CPQApi.CPQ.CategorySearchResultDO result =
Apttus_CPQApi.CPQWebService.getCategoriesForPriceList(priceListId);

        lstwrap = New List<CategoryWrapperClass>();
        For( Apttus_CPQApi.CPQ.CategoryDO catresult : result.
Categories)
        {
            CategoryWrapperClass wrap = New
CategoryWrapperClass();
            wrap.CategoryId = catresult.CategoryId;
            wrap.categoryName = catresult.name;
            lstwrap.add(wrap);
            //If a category has sub categories fetch the sub-category name and
id
            if(catresult.HasChildCategories)
            {
                For( Apttus_CPQApi.CPQ.CategoryDO subcatresult :
catresult.ChildCategories)
                {
                    CategoryWrapperClass subwrap = New
CategoryWrapperClass();
                    subwrap.CategoryId = subcatresult.CategoryId;
                    subwrap.categoryName = subcatresult.name;
                    lstwrap.add(subwrap);

                    // If the sub category has child categories fetch the sub
category name and
ID.
                    if(subcatresult.HasChildCategories)

```



```

    {
        For( Apttus_CPQApi.CPQ.CategoryDO subsubcatresult :
subcatresult.ChildCategories)
            {
                CategoryWrapperClass subsubwrap = New
CategoryWrapperClass();
                subsubwrap.CategoryId = subsubcatresult.CategoryId;
                subsubwrap.categoryName = subsubcatresult.name;
                lstwrap.add(subsubwrap);
            }
        }
    }
}

//If no Price List exists with the searched string name execute the
else condition
else
{
    lstwrap = New List<CategoryWrapperClass>();
    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
info, 'Category Name not found. Please enter valid Category Name.));
}
}
}
}

```

## Retrieving Products and List Prices for a Price List

This API is used to get the list of all the products within the specified price list.

This API automatically takes into consideration product visibility rules and will enforce them if applicable. For more information on Product Visibility, see the *CPQ Admin Guide*.

### getProductsForPriceList

Parameters		
Name	Type	Description

Parameters		
Name	Type	Description
priceListId	ID	The id of the price list.

Response Data Object - CPQ.ProductSearchResultDO		
Field	Type	Description
Products	List<CPQ.ProductDO>	The list of product data objects.
HasProducts	Boolean	This returns true if the list of product data objects is not empty.

Data Object - CPQ.ProductDO		
Field	Type	Description
ProductId	ID	The Id of the product.
ProductCode	String	The product code.
Name	String	The product name.
Description	String	The product description.
ImageUrl	String	The location of the image, if there is one, associated with the product.
ContentUrl	String	The product content location.

<b>Data Object - CPQ.ProductDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
HasPrices	Boolean	Indicates if there are list prices for the product.
HasProperties	Boolean	Indicates if there are properties set for the product.
Property	List<CPQ. PropertyDO>	The list of property data objects.
Prices	List<CPQ. PriceDO>	The list of price data objects.

<b>Data Object - CPQ.PropertyDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
Name	String	The name of the property.
Value	Decimal	The value of a property.

<b>Data Object - CPQ.PriceDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ChargeType	String	The charge type.
Value	Decimal	The list price.
Apttus_Config2__PriceListItem__c PriceItem	Apttus Object	The price list items for a price list.

## Code Sample

Using the sample you can show the user the list of products for a particular price list. For example if you have a price list created for a particular company, the user can search the price list by name and view all the products associated with that price list. For example, when a user searches for badger price list and clicks search, invoke the `getProductsForPriceList` API in which you pass the `pricelistID` as a parameter. Fetch and then display all the product components to the user such as Machinery, standard price, quantity and name and description of the product.

```

public void getProductsForPriceList()
{
    //If the priceList name by which the user searches the price list
    exists fetch the ID.
    if(priceListId == null || priceListId== '0')
    {
        List<Apttus_Config2__PriceList__c> priceListItemList =
[select id
        from Apttus_Config2__PriceList__c
        where Name = :priceListName limit 1];

    //If the priceListItem exists, the list size >0 assign the ID at the
    0th position of the list to priceListId
    if(priceListItemList.size() > 0)
    {
        priceListId = priceListItemList[0].ID;
    }
    else
    {
        lstProductwrapAll = New List<ProductWrapperClass>();
        lstProductwrap = New List<ProductWrapperClass>();
        return;
    }
}

//Fetch id
Apttus_CPQApi.CPQ.ProductSearchResultDO productResult =
    Apttus_CPQApi.CPQWebService.getProductsForPriceList
(priceListId);

productCount = 'Product Count: ' + productResult.Products.size();

```

```
lstProductwrapAll = New List<ProductWrapperClass>();
lstProductwrap = New List<ProductWrapperClass>();

//For the fetched pricelistID fetch and display the following
For(Apttus_CPQApi.CPQ.ProductDO catresult : productResult.Products)
{
    ProductWrapperClass wrap = New ProductWrapperClass ();
    wrap.ProductId = catresult.ProductId;
    wrap.ProductCode= catresult.ProductCode;
    wrap.ProductName=catresult.Name;
    wrap.Description=catresult.Description;
    wrap.ImageUrl=catresult.ImageUrl;
    wrap.ContentUrl=catresult.ContentUrl;
    wrap.HasPrices=catresult.HasPrices;
    wrap.Prices=catresult.Prices;
    wrap.Quantity=1;
    lstProductwrapAll.add(wrap);
}
}
```

## Retrieving Products and List Prices for a Price List and Category

This API is used to get the list of products and related list prices for a specified category in the price list.

This API automatically takes into consideration product visibility rules and will enforce them if applicable. For more information on Product Visibility, see the *CPQ Admin Guide*.

### getProductsForPriceListCategory

Parameters		
Name	Type	Description
priceListId	ID	The id of the price list.

Parameters		
Name	Type	Description
categoryID	ID	The id of the category.

Response Data Object - CPQ.ProductSearchResultDO		
Field	Type	Description
Products	List<CPQ.ProductDO>	The list of product data objects.
HasProducts	Boolean	This returns true if the list of product data objects is not empty.

Data Object - CPQ.ProductDO		
Field	Type	Description
ProductId	ID	The Id of the product.
ProductCode	String	The product code.
Name	String	The product name.
Description	String	The product description.
ImageUrl	String	The location of the image, if there is one, associated with the product.
ContentUrl	String	The product content location.

<b>Data Object - CPQ.ProductDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
HasPrices	Boolean	Indicates if there are list prices for the product.
HasProperties	Boolean	Indicates if there are properties set for the product.
Property	List<CPQ. PropertyDO>	The list of property data objects.
Prices	List<CPQ. PriceDO>	The list of price data objects.

<b>Data Object - CPQ.PropertyDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
Name	String	The name of the property.
Value	Decimal	The value of a property.

<b>Data Object - CPQ.PriceDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ChargeType	String	The charge type.
Value	Decimal	The list price.
Apttus_Config2__PriceListItem__c PriceItem	Apttus Object	The price list items for a price list.

## Code Sample

The sample below enables you to search for categories using price list name. Once the user selects the category and proceeds to search, pass the pricelistID and categoryID as parameters to the API. The user can select and view the products associated with that category and its components. For example, user enters the price list name and selects the category-Hardware. All the products associated with the Hardware category, such as Laptop are displayed. You can display all the fields associated to that product.

```

public void getProductList()
{
    categoryId = '';

    for(CategoryWrapperClass wrap: lstwrap )
    {
        if(wrap.selected == true)
        {
            categoryId = categoryId + wrap.CategoryId + ',';
        }
    }
    //If no category is selected prompt the user with an appropriate
    error message.
    if(categoryId.Trim()==='')
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Please select at least one Category.));
        lstProductwrap = New List<ProductWrapperClass>();
        lstProductwrapAll = New List<ProductWrapperClass>();
    }
    //Pass the pricelistID and categoryID as parameters to the API
    else
    {
        Apttus_CPQApi.CPQ.ProductSearchResultDO productResult =
        Apttus_CPQApi.CPQWebService.getProductsForPriceListCategory
(priceListId,categoryId.Substring(0,categoryId.length()-1));

        productCount = 'Product Count: ' + productResult.Products.
size();

        lstProductwrap = New List<ProductWrapperClass>();
        lstProductwrapAll = New List<ProductWrapperClass>();
    }
}

```



```

        For(Apttus_CPQApi.CPQ.ProductDO catresult : productResult.
Products)
        //Fetch and display the following product fields to the user
    {
        ProductWrapperClass wrap = New ProductWrapperClass ();
        wrap.ProductId = catresult.ProductId;
        wrap.ProductCode= catresult.ProductCode;
        wrap.ProductName=catresult.Name;
        wrap.Description=catresult.Description;
        wrap.ImageUrl=catresult.ImageUrl;
        wrap.ContentUrl=catresult.ContentUrl;
        wrap.HasPrices=catresult.HasPrices;
        wrap.Prices=catresult.Prices;
        wrap.Quantity=1;
        lstProductwrapAll.add(wrap);
    }
}
}

```

## Retrieving Products and List Prices For a Price List and Search Text

This API is used to get the list of products that match search text criteria you used for the products in the price list.

This API automatically takes into consideration product visibility rules and will enforce them if applicable. For more information on Product Visibility, see the *CPQ Admin Guide*.

### getProductsForSearchText

Parameters		
Name	Type	Description
priceListId	ID	The id of the price list.
searchText	String	The search terms that will be used to retrieve the products for the price list.

<b>Response Data Object - CPQ.ProductSearchResultDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
Products	List<CPQ.ProductDO>	The list of product data objects.
HasProducts	Boolean	This returns true if the list of product data objects is not empty.

<b>Data Object - CPQ.ProductDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ProductId	ID	The Id of the product.
ProductCode	String	The product code.
Name	String	The product name.
Description	String	The product description.
ImageUrl	String	The location of the image, if there is one, associated with the product.
ContentUrl	String	The product content location.
HasPrices	Boolean	Indicates if there are list prices for the product.
HasProperties	Boolean	Indicates if there are properties set for the product.
Property		The list of property data objects.

Data Object - CPQ.ProductDO		
Field	Type	Description
	List<CPQ.PropertyDO>	
Prices	List<CPQ.PriceDO>	The list of price data objects.

Data Object - CPQ.PropertyDO		
Field	Type	Description
Name	String	The name of the property.
Value	Decimal	The value of a property.

Data Object - CPQ.PriceDO		
Field	Type	Description
ChargeType	String	The charge type.
Value	Decimal	The list price.
Apttus_Config2__PriceListItem__c PriceItem	Apttus Object	The price list items for a price list.

### Code Sample

Using the sample below you can search for products using the price list id and product name search string. For example, you can provide to search fields for the user one for price list and the other for Search Text. Once the user enters the price list name, fetch the price list ID using the SOQL query. The user then types in the Product Name and clicks Search. Invoke the API where you pass the priceListID and the corresponding search string as parameters. The response object returns the product object fields. For example, if the user enters the name of the Hardware price list and the name of the product, such as Laptop and clicks Search, invoke the API and pass the priceListId and the product name as parameters of the API and fetch and display the product information.

```

public void getProductsForSearchText()
{
    if(priceListId == null || priceListId== '0')
    {
        List<Apttus_Config2__PriceList__c> priceListItemList =
[select id
        from Apttus_Config2__PriceList__c
        where Name = :priceListName limit 1];
//If Pricelist List above comprises a valid price list ID execute
the loop below.
        if(priceListItemList.size() > 0)
        {
            priceListId = priceListItemList[0].ID;
        }
        else
        {
            lstProductwrap = New List<ProductWrapperClass>();
            lstProductwrapAll = New List<ProductWrapperClass>();
            return;
        }
    }
//Pass the pricelist ID and the Product Name entered in the search
text as parameters to the API
    Apttus_CPQApi.CPQ.ProductSearchResultDO productResult =
Apttus_CPQApi.CPQWebService.getProductsForSearchText(priceListId,
productName);

    productCount = 'Product Count: ' + productResult.Products.size();

    lstProductwrap = New List<ProductWrapperClass>();

```

```

        lstProductwrapAll = New List<ProductWrapperClass>();
        For(Apttus_CPQApi.CPQ.ProductDO catresult : productResult.
Products)
        {
            ProductWrapperClass wrap = New ProductWrapperClass ();
            wrap.ProductId = catresult.ProductId;
            wrap.ProductCode= catresult.ProductCode;
            wrap.ProductName=catresult.Name;
            wrap.Description=catresult.Description;
            wrap.ImageUrl=catresult.ImageUrl;
            wrap.ContentUrl=catresult.ContentUrl;
            wrap.HasPrices=catresult.HasPrices;
            wrap.Prices=catresult.Prices;
            wrap.Quantity=1;
            lstProductwrapAll.add(wrap);
        }
    }

```

## Retrieving Products and List Prices For a Price List Category and Search Text

This API is used to get the list of products that match search text criteria you used and belong to specified category id in the price list.

This API automatically takes into consideration product visibility rules and will enforce them if applicable. For more information on Product Visibility, see the *CPQ Admin Guide*.

### getProductsForCategorySearchText

Parameters		
Name	Type	Description
priceListId	ID	The id of the price list.
categoryId	ID	The id of the category.

<b>Parameters</b>		
<b>Name</b>	<b>Type</b>	<b>Description</b>
searchText	String	The search terms that will be used to retrieve the products for the price list.

<b>Response Data Object - CPQ.ProductSearchResultDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
Products	List<CPQ.ProductDO>	The list of product data objects.
HasProducts	Boolean	This returns true if the list of product data objects is not empty.

<b>Data Object - CPQ.ProductDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ProductId	ID	The Id of the product.
ProductCode	String	The product code.
Name	String	The product name.
Description	String	The product description.
ImageUrl	String	The location of the image, if there is one, associated with the product.
ContentUrl	String	The product content location.

<b>Data Object - CPQ.ProductDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
HasPrices	Boolean	Indicates if there are list prices for the product.
HasProperties	Boolean	Indicates if there are properties set for the product.
Property	List<CPQ. PropertyDO>	The list of property data objects.
Prices	List<CPQ. PriceDO>	The list of price data objects.

<b>Data Object - CPQ.PropertyDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
Name	String	The name of the property.
Value	Decimal	The value of a property.

<b>Data Object - CPQ.PriceDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ChargeType	String	The charge type.
Value	Decimal	The list price.
Apttus_Config2__PriceListItem__c PriceItem	Apttus Object	The price list items for a price list.

## Code Sample

The user can enter the name of price list to view all the categories belonging to that price list. The sample below defines the behavior when the user selects a category and searches a product from the categories displayed. Fetch and pass the priceListID, categoryID, and productID as parameters to the API and display the fields of CPQ.ProductDo object. For example, the user enters a valid price list name, all the subsequent categories for the pricelist are displayed. The user selects the category Hardware and searches for a product Laptop. All the products matching the search string laptop are displayed along with the fields such as price, name , id and so on. You can execute the count loop to specify the number of products to be displayed per page and to provide next and previous pages.

```

public void getProductsForCategorySearchText()
{
    //Search for single category multiple category using comma separator
    and fetch category id
    categoryId = '';

    for(CategoryWrapperClass wrap: lstwrap )
    {
        if(wrap.selected == true)
        {
            categoryId = categoryId + wrap.CategoryId + ',';
        }
    }
    //If no category selected is selected by the user, show the
    following message
    if(categoryId.Trim()=='')
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Please select at least one Category.));
        lstProductwrap = New List<ProductWrapperClass>();
        lstProductwrapAll = New List<ProductWrapperClass>();
    }
    //If searched price list is valid, categories for that pricelist are
    displayed and if the user selects a category and enters search text
    by 'productName' parameter, pass the PricelistID, categoryID, and
    productID as parameters.
    else
    {
        Apttus_CPQApi.CPQ.ProductSearchResultDO productResult =

```



```
Apttus_CPQApi.CPQWebService.getProductsForCategorySearchText
(priceListId,categoryId.Substring(0,categoryId.length()-1),
productName);

        productCount = 'Product Count: ' + productResult.Products.
size();

        lstProductwrap = New List<ProductWrapperClass>();
        lstProductwrapAll = New List<ProductWrapperClass>();
        For(Apttus_CPQApi.CPQ.ProductDO catresult : productResult.
Products)
        {
// Fetch and display the following components for the products
        ProductWrapperClass wrap = New ProductWrapperClass ();
        wrap.ProductId = catresult.ProductId;
        wrap.ProductCode= catresult.ProductCode;
        wrap.ProductName=catresult.Name;
        wrap.Description=catresult.Description;
        wrap.ImageUrl=catresult.ImageUrl;
        wrap.ContentUrl=catresult.ContentUrl;
        wrap.HasPrices=catresult.HasPrices;
        wrap.Quantity=1;
        wrap.Prices=catresult.Prices;
        lstProductwrapAll.add(wrap);
        }
    }
}
```

## Retrieving Option Groups, Options, and List Prices for a Price List Product

This retrieves option groups, options, and list prices for a price list product.

### **getOptionGroupsForPriceListProduct**

Parameters		
Name	Type	Description
pricelistId	ID	The Id of the price list.
productId	ID	The Id of the product bundle.

Response Data Object - CPQ.ProductOptionGroupSearchResultDO		
Name	Type	Description
HasOptionGroups	Boolean	Indicates if the bundle has option groups.
OptionGroups	List<CPQ.ProductOptionGroupDO>	The list of product option group data objects.

Data Object - CPQ.ProductOptionGroupDO		
Field	Type	Description
ProductOptionGroupId	ID	Id of the product option group.
Name	String	The option group name.
Label	String	The option group label.
ParentOptiongroupId	ID	Id of the parent option group.
MinOptions	Integer	Minimum number of options that must be selected from the group.

<b>Data Object - CPQ.ProductOptionGroupDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
MaxOptions	Integer	Maximum number of options that can be selected from the group.
HasChildOptionGroups	Boolean	Indicates whether there are child option groups.
ChildOptionGroups	List<CPQ.ProductOptionGroupDO>	List of child option group data objects.
HasOptionComponents	Boolean	Indicates if the option group has product components.
OptionComponents	List<CPQ.ProductOptionComponentDO>	List of product component data objects.

<b>Data Object - CPQ.ProductOptionComponentDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ComponentId	ID	Id of the component.
ComponentProductId	ID	Id of the component product.
ProductCode	String	The product code.
Name	String	The product name.
Description	String	The product description.

<b>Data Object - CPQ.ProductOptionComponentDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ImageUrl	String	The location of the image, if there is one, associated with the product.
IsDefault	Boolean	Indicates if the option is included by default for the bundle.
IsRequired	Boolean	Indicates if the option is mandatory for the bundle.
HasPrices	Boolean	Indicates if there are list prices for the product.
Prices	List<CPQ.PriceDO>	List of price data objects.

<b>Data Object - CPQ.PriceDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ChargeType	String	The charge type.
Value	Decimal	The list price.
Apttus_Config2__PriceListItem__c PriceItem	Apttus Object	The price list items for a price list.

### Code Sample

Using the sample below you enable the user to search and select products by a price list. You can then pass the IDs of the price list and product as arguments to the API. If in the result object HasOptionGroups returns true, fetch and display the option group components. If the option group components HasComponents=true display the option components such as quantity. For example if the user searches a product and clicks Search, invoke the API to fetch the option groups for that bundle.

```

public void getOptionGroupsForPriceListProduct()
{
    string productID='';
    //Fetch product ID of selected products
    for(ProductWrapperClass selProdWrap: lstProductwrap)
    {
        if(selProdWrap.selected)
        {
            productID=selProdWrap.ProductId;
            break;
        }
    }

    //If no product is selected, show an appropriate error message
    if(productID=='')
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Please select at least one Product.));

        lstOptionGroup = new List<Apttus_CPQApi.CPQ.
ProductOptionGroupDO>();
        lstProductOptionWrapper = new
List<ProductOptionWrapperClass>();
    }
    //If product is selected, pass pricelistID and productID as
parameters to the API
    else
    {
        Apttus_CPQApi.CPQ.ProductOptionGroupSearchResultDO result =
Apttus_CPQApi.CPQWebService.getOptionGroupsForPriceListProduct
(priceListId, productID);

        lstOptionGroup = new List<Apttus_CPQApi.CPQ.
ProductOptionGroupDO>();
    }
}

```

```

        lstProductOptionWrapper = new
List<ProductOptionWrapperClass>();
//If the product has option groups, i.e the flag HasOptionGroups
returns true run the loop below fetching the components.
        if(result.HasOptionGroups)
        {
//For an option group fetch and display the following components
                For(Apttus_CPQApi.CPQ.ProductOptionGroupDO optionResult
: result.OptionGroups)
                {
                        ProductOptionWrapperClass objProductOptionWrapperClass=new
w ProductOptionWrapperClass();
                        objProductOptionWrapperClass.
ProductOptionGroupId=optionResult.ProductOptionGroupId;
                        objProductOptionWrapperClass.Name=optionResult.Name;
                        objProductOptionWrapperClass.Label=optionResult.Label;
                        objProductOptionWrapperClass.
ParentOptiongroupId=optionResult.ParentOptiongroupId;
                        objProductOptionWrapperClass.MinOptions=optionResult.
MinOptions;
                        objProductOptionWrapperClass.MaxOptions=optionResult.
MaxOptions;
                        objProductOptionWrapperClass.
HasChildOptionGroups=optionResult.HasChildOptionGroups;
                        objProductOptionWrapperClass.
ChildOptionGroups=optionResult.ChildOptionGroups;

                                List<ProductQuantityOptionWrapperClass>
listOptionComponent= new List<ProductQuantityOptionWrapperClass>();

//For an option group with components such as min, max and quantity
fetch and display the editable components to the user
for(Apttus_CPQApi.CPQ.ProductOptionComponentDO optionComponent :
optionResult.OptionComponents)
        {
                ProductQuantityOptionWrapperClass
objProductQuantityOptionWrapperClass = new
ProductQuantityOptionWrapperClass ();
                objProductQuantityOptionWrapperClass.OptionComponent =
optionComponent;
                objProductQuantityOptionWrapperClass.Quantity = 1;

//Fetch and display the list price of the option
components

```

```

        List<Apttus_CPQApi.CPQ.PriceDO> priceList = new
List<Apttus_CPQApi.CPQ.PriceDO>();
        for(Apttus_CPQApi.CPQ.PriceDO price : optionComponent.
Prices)
        {
            priceList.Add(price);
        }
        objProductQuantityOptionWrapperClass.prices = priceList ;
        listOptionComponent.Add
(objProductQuantityOptionWrapperClass);
        }
        objProductOptionWrapperClass.OptionComponents =
listOptionComponent;

        lstOptionGroup.Add(optionResult);

        lstProductOptionWrapper.Add
(objProductOptionWrapperClass);

    }

    ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Option Count: ' + lstProductOptionWrapper.size()));
    }
}
}

```

## Modifying Assets (Deprecated)

This method enables you to complete standard asset based ordering actions of renew, terminate, amend, upgrade and increment.

This method creates the cart line item and associates it to the corresponding asset id. Actions can be performed on a single line item or a selected set of asset line items. Actions can also be performed on standalone product or bundle product.

When doing a renewal, you can use any of the standard adjustment types, including *% Uplift* which is used to pass an uplift percentage that is applied to the *base price* of the renewed line item, resulting in an updated *net renewal* price.

### Note

*CartId*, *AssetLineItemId\_c*, and *AssetActions* are required parameters, the use of other parameters depends on your business case.

## modifyAsset

Parameters		
Name	Type	Description
CPQ.ModifyAssetRequestDO	request	This is the request call made by the method.

Request Data Object - CPQ.ModifyAssetRequestDO		
Field	Type	Description
CartId	ID	The Id of cart.
AssetActions	List<AssetActionDO>	The list of asset actions, which is either <i>Renew</i> , <i>Amend</i> , <i>Increment</i> , <i>Cancel</i> , <i>Upgrade</i> .

Response Data Object - CPQ.ModifyAssetResponseDO		
Field	Type	Description
LineNumber	List<Decimal>	The asset line number.
AssetActions	List<AssetActionDO>	The list of asset actions, which is either <i>Renew</i> , <i>Amend</i> , <i>Increment</i> , <i>Cancel</i> , <i>Upgrade</i> .



<b>Data Object - AssetActionDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
AssetAction	String	This is the specific asset action for the asset line item, referenced by AssetLineItemId.
AssetLineItemId	ID	This is the ID for the asset line item that you are going to renew, amend, increment, or cancel. This is mandatory.
Quantity	Decimal	The amount of assets.
SellingTerm	Decimal	The selling term for the asset.
StartDate	Date	This is the start date for the asset action.
EndDate	Date	This is the end date for the asset action. If you are terminating an asset you only need an end date.
AdjustmentType	String	This is the type of adjustment that will be used. You can select from types such as % Discount, Discount Amount, and Price Override. Your specific implementation may have more or less types.
AdjustmentAmount	Decimal	Enter the value (number) for the adjustment. How the value is interpreted is based on the Adjustment Type. For example, 10 with an Adjustment Type of

Data Object - AssetActionDO		
Field	Type	Description
		<i>% Uplift</i> means the price will be cut in half, whereas that same value of 10 with an Adjustment Type of <i>Price Override</i> means the price will become 10.
Comments	String	Text string containing comments.
Message	String	Text string containing comments.
Pending	Boolean	This indicates whether an asset action is pending.
CustomData	Apttus_Config2__LineItem__c	This can be used to include custom fields you have added to the asset object.
Selling Term	Decimal	This is the selling term of the asset line item that you want to renew, amend, or increment.

### Code Sample

You can amend a list of standalone or bundle products. You can change the dates, quantity, or some options for a product using the Amend API. You can also cancel or change options in an Option Group using Amend.

The Sample below enables you to change amend the start and end date for selected assets of an account. The response returns the lineitem number of the asset to be updated. The assetAction status, the status of the asset is modified and updated.

When the customer clicks Amend, you can invoke the modifyAssets API and choose to amend the date, quantity.

```

public void Amend()
{
    //Create an assetAction variable with value as amend
    string assetAction = 'Amend';

    List<Apttus_CPQApi.CPQ.AssetActionDO> assetActDOList = new
List<Apttus_CPQApi.CPQ.AssetActionDO>();

    //If Asset is selected in the cart page, execute the loop
    for(AssetWrapperClass objAssetWrapper : lstAssetWrapper)
    {
        if(objAssetWrapper.selected)
        {
            Apttus_CPQApi.CPQ.AssetActionDO assetActDO = new
Apttus_CPQApi.CPQ.AssetActionDO();
            assetActDO.AssetAction = assetAction;
            assetActDO.AssetLineItemId = objAssetWrapper.AssetId ;
            //Change the end date to five months from start date
            assetActDO.EndDate = Date.today().addMonths(5);
            //assetAction pending is true
            assetActDO.Pending = true;
            assetActDO.Quantity = objAssetWrapper.Quantity;
            //Amend the start date to include today's date
            assetActDO.StartDate = Date.today().addMonths(0);

            List<String> customFields = new List<String>();
            customFields.add('Apttus_Config2__Comments__c');
            customFields.add('Apttus_Config2__PricingStatus__c');

            assetActDO.CustomFields = customFields;

            Apttus_Config2__LineItem__c liSO = new
Apttus_Config2__LineItem__c();
            liSO.Apttus_Config2__Comments__c = 'Comments Added my
Modify Asset API Code';
            liSO.Apttus_Config2__PricingStatus__c = 'Complete';
            assetActDO.CustomData = liSO;

            assetActDOList.add(assetActDO);
        }
    }

    //Execute the API for a specific cart using CartID

```

```

    Apttus_CPQApi.CPQ.ModifyAssetRequestDO modifyRequest = new
Apttus_CPQApi.CPQ.ModifyAssetRequestDO();
    modifyRequest.CartId = cartID;
    modifyRequest.AssetActions = assetActDOList;

    Apttus_CPQApi.CPQ.ModifyAssetResponseDO modifyReponse =
Apttus_CPQApi.CPQWebservice.modifyAsset(modifyRequest);

    List<Decimal> lineNumberList = modifyReponse.LineNumbers;

    List<Apttus_CPQApi.CPQ.AssetActionDO> assetList = modifyReponse.
AssetActions;

//Signifies the status of the assetAction
    Boolean bIsPending = false;

    Integer iCounter = 0;

    while (iCounter < 1000)
    {
        bIsPending = false;
        for(Apttus_CPQApi.CPQ.AssetActionDO objAsset: assetList)
        {
            if(objAsset.Pending == true)
            {
                bIsPending = true;
                break;
            }
        }
        //If the asset action is pending execute the loop below to change
the status
        if(bIsPending == true)
        {
            modifyReponse = Apttus_CPQApi.CPQWebservice.modifyAsset
(modifyRequest);
            lineNumberList = modifyReponse.LineNumbers;
            assetList = modifyReponse.AssetActions;
        }
        else
        {
            break;
        }
        iCounter++;
    }

```

```

        bindAssets();
    }
    //This function enables you to bind updated assets to an account
    dynamically.
    public void bindAssets()
    {
        List<Apttus_Config2__AssetLineItem__c> aliSOList = [select id,
Apttus_Config2__Description__c,
        Apttus_Config2__Quantity__c, Apttus_Config2__StartDate__c,
Apttus_Config2__EndDate__c from Apttus_Config2__AssetLineItem__c
        where Apttus_Config2__AccountID__c = :accountID];

        lstAssetWrapper = new List<AssetWrapperClass>();

        for(Apttus_Config2__AssetLineItem__c aliSO : aliSOList)
        {
            AssetWrapperClass objAssetWrapperClass = new
AssetWrapperClass ();
            objAssetWrapperClass.AssetId = aliSO.ID;
            objAssetWrapperClass.ProductId = aliSO.
Apttus_Config2__Description__c;
            objAssetWrapperClass.Quantity = aliSO.
Apttus_Config2__Quantity__c;
            objAssetWrapperClass.StartDate = aliSO.
Apttus_Config2__StartDate__c;
            objAssetWrapperClass.EndDate = aliSO.
Apttus_Config2__EndDate__c;

            lstAssetWrapper.Add(objAssetWrapperClass);
        }
    }

```

You can renew a list of standalone or bundled products. You can choose to renew recurring items, overall bundle, and recurring options. You can also cancel or change quantity, price, or an entire option.

The sample below enables you to renew the assets. When the user selects an asset and clicks renew, invoke this API and use the sample below to extend the end date of the assets by 12 months.

```

public void ReNew()
{
    //Declare assetAction variable with value as Renew
    string assetAction = 'Renew';

    List<Apttus_CPQApi.CPQ.AssetActionDO> assetActDOList = new
List<Apttus_CPQApi.CPQ.AssetActionDO>();

    //For a selected asset you can execute the loop
    for(AssetWrapperClass objAssetWrapper : lstAssetWrapper)
    {
        if(objAssetWrapper.selected)
        {
            Apttus_CPQApi.CPQ.AssetActionDO assetActDO = new
Apttus_CPQApi.CPQ.AssetActionDO();
            assetActDO.AssetAction = assetAction;
            assetActDO.AssetLineItemId = objAssetWrapper.AssetId ;
            //assetActDO.EndDate = Date.today().addMonths(12);
            //Enables you to set end date as 12 months from the existing end date
            assetActDO.EndDate = objAssetWrapper.EndDate.addMonths(12
);

            assetActDO.Pending = true;
            assetActDO.Quantity = objAssetWrapper.Quantity;
            //assetActDO.StartDate = Date.today().addMonths(0);
            //Increment start date by One day from the existing start
            date
            assetActDO.StartDate = objAssetWrapper.EndDate.addDays(1)
;

            List<String> customFields = new List<String>();
            customFields.add('Apttus_Config2__Comments__c');
            customFields.add('Apttus_Config2__PricingStatus__c');

            assetActDO.CustomFields = customFields;
            //Fetch asset line item number
            Apttus_Config2__LineItem__c liSO = new
Apttus_Config2__LineItem__c();
            liSO.Apttus_Config2__Comments__c = 'Comments Added my
Modify Asset API Code';
            liSO.Apttus_Config2__PricingStatus__c = 'Complete';
            assetActDO.CustomData = liSO;

            assetActDOList.add(assetActDO);
        }
    }
}

```

```

    }
    //Invoke the modify assets API and specify the cart for which the
    API is invoked.
    Apttus_CPQApi.CPQ.ModifyAssetRequestDO modifyRequest = new
    Apttus_CPQApi.CPQ.ModifyAssetRequestDO();
    modifyRequest.CartId = cartID;
    modifyRequest.AssetActions = assetActDOList;

    Apttus_CPQApi.CPQ.ModifyAssetResponseDO modifyReponse =
    Apttus_CPQApi.CPQWebservice.modifyAsset(modifyRequest);

    List<Decimal> lineNumberList = modifyReponse.LineNumbers;

    List<Apttus_CPQApi.CPQ.AssetActionDO> assetList = modifyReponse.
    AssetActions;

    Boolean bIsPending = false;

    Integer iCounter = 0;

    while (iCounter < 1000)
    {
        bIsPending = false;
        for(Apttus_CPQApi.CPQ.AssetActionDO objAsset: assetList)
        {
            if(objAsset.Pending == true)
            {
                bIsPending = true;
                break;
            }
        }
        //If asset Action is pending execute the following loop
        if(bIsPending == true)
        {
            modifyReponse = Apttus_CPQApi.CPQWebservice.modifyAsset
            (modifyRequest);
            lineNumberList = modifyReponse.LineNumbers;
            assetList = modifyReponse.AssetActions;
        }
        else
        {
            break;
        }
        iCounter++;
    }

```

```

    }

    bindAssets();
}

//This function enables you to bind updated asset.
public void bindAssets()
{
    List<Apttus_Config2__AssetLineItem__c> aliSOList = [select id,
Apttus_Config2__Description__c,
    Apttus_Config2__Quantity__c, Apttus_Config2__StartDate__c,
Apttus_Config2__EndDate__c from Apttus_Config2__AssetLineItem__c
    where Apttus_Config2__AccountID__c = :accountID];

    lstAssetWrapper = new List<AssetWrapperClass>();

    for(Apttus_Config2__AssetLineItem__c aliSO : aliSOList)
    {
        AssetWrapperClass objAssetWrapperClass = new
AssetWrapperClass ();
        objAssetWrapperClass.AssetId = aliSO.ID;
        objAssetWrapperClass.ProductId = aliSO.
Apttus_Config2__Description__c;
        objAssetWrapperClass.Quantity = aliSO.
Apttus_Config2__Quantity__c;
        objAssetWrapperClass.StartDate = aliSO.
Apttus_Config2__StartDate__c;
        objAssetWrapperClass.EndDate = aliSO.
Apttus_Config2__EndDate__c;

        lstAssetWrapper.Add(objAssetWrapperClass);
    }
}

```

You can increment the quantity or the dates of the asset items using the increment asset action. For example, the user selects an asset item and clicks Increment. You can use the sample below to update the quantity and the end date by five months and bind the updated assets to the account.

```

public void Increment()
{

```



```

//Declare the assetAction variable with value as Increment
string assetAction = 'Increment';

List<Apttus_CPQApi.CPQ.AssetActionDO> assetActDOList = new
List<Apttus_CPQApi.CPQ.AssetActionDO>();

for(AssetWrapperClass objAssetWrapper : lstAssetWrapper)
{
    if(objAssetWrapper.selected)
    {
//For a selected asset increment the quantity by 5 and increment the
end date by 5.
        Apttus_CPQApi.CPQ.AssetActionDO assetActDO = new
Apttus_CPQApi.CPQ.AssetActionDO();
        assetActDO.AssetAction = assetAction;
        assetActDO.AssetLineItemId = objAssetWrapper.AssetId ;
        assetActDO.EndDate = Date.today().addMonths(5);
        assetActDO.Pending = true;
        assetActDO.Quantity = objAssetWrapper.Quantity + 5;
        assetActDO.StartDate = Date.today().addMonths(0);

        List<String> customFields = new List<String>();
        customFields.add('Apttus_Config2__Comments__c');
        customFields.add('Apttus_Config2__PricingStatus__c');

        assetActDO.CustomFields = customFields;
//Line number of the asset items
        Apttus_Config2__LineItem__c liSO = new
Apttus_Config2__LineItem__c();
        liSO.Apttus_Config2__Comments__c = 'Comments Added my
Modify Asset API Code';
        liSO.Apttus_Config2__PricingStatus__c = 'Complete';
        assetActDO.CustomData = liSO;

        assetActDOList.add(assetActDO);
    }
}
//Invoke the modifyAsset API to increment the quantity and end date
Apttus_CPQApi.CPQ.ModifyAssetRequestDO modifyRequest = new
Apttus_CPQApi.CPQ.ModifyAssetRequestDO();
modifyRequest.CartId = cartID;
modifyRequest.AssetActions = assetActDOList;

```

```

    Apttus_CPQApi.CPQ.ModifyAssetResponseDO modifyReponse =
Apttus_CPQApi.CPQWebservice.modifyAsset(modifyRequest);

    List<Decimal> lineNumberList = modifyReponse.LineNumbers;

    List<Apttus_CPQApi.CPQ.AssetActionDO> assetList = modifyReponse.
AssetActions;

    Boolean bIsPending = false;

    Integer iCounter = 0;

    while (iCounter < 1000)
    {
        bIsPending = false;
        for(Apttus_CPQApi.CPQ.AssetActionDO objAsset: assetList)
        {
            if(objAsset.Pending == true)
            {
                bIsPending = true;
                break;
            }
        }
        //If asset action is pending, execute this loop
        if(bIsPending == true)
        {
            modifyReponse = Apttus_CPQApi.CPQWebservice.modifyAsset
(modifyRequest);
            lineNumberList = modifyReponse.LineNumbers;
            assetList = modifyReponse.AssetActions;
        }
        else
        {
            break;
        }
        iCounter++;
    }

    bindAssets();
}

//Bind updated asset items
public void bindAssets()
{

```

```

        List<Apttus_Config2__AssetLineItem__c> aliSOList = [select id,
Apttus_Config2__Description__c,
        Apttus_Config2__Quantity__c, Apttus_Config2__StartDate__c,
Apttus_Config2__EndDate__c from Apttus_Config2__AssetLineItem__c
        where Apttus_Config2__AccountID__c = :accountID];

        lstAssetWrapper = new List<AssetWrapperClass>();

        for(Apttus_Config2__AssetLineItem__c aliSO : aliSOList)
        {
            AssetWrapperClass objAssetWrapperClass = new
AssetWrapperClass ();
            objAssetWrapperClass.AssetId = aliSO.ID;
            objAssetWrapperClass.ProductId = aliSO.
Apttus_Config2__Description__c;
            objAssetWrapperClass.Quantity = aliSO.
Apttus_Config2__Quantity__c;
            objAssetWrapperClass.StartDate = aliSO.
Apttus_Config2__StartDate__c;
            objAssetWrapperClass.EndDate = aliSO.
Apttus_Config2__EndDate__c;

            lstAssetWrapper.Add(objAssetWrapperClass);
        }
    }

```

The terminate asset action enables you to terminate or cancel the selected asset items. The sample below enables you to terminate the asset and change its status by setting the end date as current date.

```

public void Terminate()
{
    //Declaring variable assetAction and assigning it a value Cancel
    string assetAction = 'Cancel';

    List<Apttus_CPQApi.CPQ.AssetActionDO> assetActDOList = new
List<Apttus_CPQApi.CPQ.AssetActionDO>();

    //To terminate a selected Asset, set the end date as today
    for(AssetWrapperClass objAssetWrapper : lstAssetWrapper)
    {
        if(objAssetWrapper.selected)

```

```

    {
        Apttus_CPQApi.CPQ.AssetActionDO assetActDO = new
Apttus_CPQApi.CPQ.AssetActionDO();
        assetActDO.AssetAction = assetAction;
        assetActDO.AssetLineItemId = objAssetWrapper.AssetId ;
        assetActDO.EndDate = Date.today().addMonths(0);
        assetActDO.Pending = true;
        assetActDO.Quantity = objAssetWrapper.Quantity;
        //assetActDO.StartDate = Date.today().addMonths(0);

        List<String> customFields = new List<String>();
        customFields.add('Apttus_Config2__Comments__c');
        customFields.add('Apttus_Config2__PricingStatus__c');

        assetActDO.CustomFields = customFields;

        Apttus_Config2__LineItem__c liSO = new
Apttus_Config2__LineItem__c();
        liSO.Apttus_Config2__Comments__c = 'Comments Added my
Modify Asset API Code';
        liSO.Apttus_Config2__PricingStatus__c = 'Complete';
        assetActDO.CustomData = liSO;

        assetActDOList.add(assetActDO);
    }
}
//For a specific cart ID, invoke the API and modify the assets based
on the terminate function above.
    Apttus_CPQApi.CPQ.ModifyAssetRequestDO modifyRequest = new
Apttus_CPQApi.CPQ.ModifyAssetRequestDO();
    modifyRequest.CartId = cartID;
    modifyRequest.AssetActions = assetActDOList;

    Apttus_CPQApi.CPQ.ModifyAssetResponseDO modifyReponse =
Apttus_CPQApi.CPQWebservice.modifyAsset(modifyRequest);

    List<Decimal> lineNumberList = modifyReponse.LineNumbers;

    List<Apttus_CPQApi.CPQ.AssetActionDO> assetList = modifyReponse.
AssetActions;

    Boolean bIsPending = false;

    Integer iCounter = 0;

```

```

while (iCounter < 1000)
{
    bIsPending = false;
    for(Apttus_CPQApi.CPQ.AssetActionDO objAsset: assetList)
    {
        if(objAsset.Pending == true)
        {
            bIsPending = true;
            break;
        }
    }
    //if asset action is pending execute the loop below
    if(bIsPending == true)
    {
        modifyReponse = Apttus_CPQApi.CPQWebservice.modifyAsset
(modifyRequest);
        lineNumberList = modifyReponse.LineNumbers;
        assetList = modifyReponse.AssetActions;
    }
    else
    {
        break;
    }
    iCounter++;
}

bindAssets();
}

//Use the function below to bind the updated asset items.
public void bindAssets()
{
    List<Apttus_Config2__AssetLineItem__c> aliSOList = [select id,
Apttus_Config2__Description__c,
Apttus_Config2__Quantity__c, Apttus_Config2__StartDate__c,
Apttus_Config2__EndDate__c from Apttus_Config2__AssetLineItem__c
where Apttus_Config2__AccountID__c = :accountID];

    lstAssetWrapper = new List<AssetWrapperClass>();

    for(Apttus_Config2__AssetLineItem__c aliSO : aliSOList)
    {

```

```

        AssetWrapperClass objAssetWrapperClass = new
AssetWrapperClass ();
        objAssetWrapperClass.AssetId = aliSO.ID;
        objAssetWrapperClass.ProductId = aliSO.
Apttus_Config2__Description__c;
        objAssetWrapperClass.Quantity = aliSO.
Apttus_Config2__Quantity__c;
        objAssetWrapperClass.StartDate = aliSO.
Apttus_Config2__StartDate__c;
        objAssetWrapperClass.EndDate = aliSO.
Apttus_Config2__EndDate__c;

        lstAssetWrapper.Add(objAssetWrapperClass);
    }
}

```

The upgrade asset action enables you to update selected asset items. The sample below enables you to upgrade the asset. Using the sample below you can fetch the asset items using the `getAssetsForSearchText` API and upgrade the selected assetLineItems using `AssetAction = Upgrade`. You can upgrade the date and the quantity for an asset line item.

```

public static void processForUpgrade(ID cartId, ID accountId){
    //Declaration
    Set<ID> assetLineItemIds = new Set<ID>();

    Apttus_CPQApi.CPQ.AssetSearchResultDO result
    = Apttus_CPQApi.CPQWebService.getAssetsForSearchText
(accountId, null, null);

    Apttus_CPQApi.CPQ.ModifyAssetRequestDO assetRequest = new
Apttus_CPQApi.CPQ.ModifyAssetRequestDO();
    assetRequest.CartId = cartId;

    for (Apttus_Config2__AssetLineItem__c assetItemSO :
result.AssetItemSO) {
        Apttus_CPQApi.CPQ.AssetActionDO assetAction = new
Apttus_CPQApi.CPQ.AssetActionDO();
        assetAction.AssetItemSO = 'Upgrade';
        assetAction.AssetItemSO.Id = assetItemSO.Id;
    }
}

```

```

        assetAction.Quantity = assetItemSO.
Apttus_Config2__Quantity__c.intValue();
        assetAction.EndDate = Date.today();
        assetAction.Pending = true;
        assetLineItemIds.add(assetItemSO.Id);
        assetRequest.AssetActions.add
(assetAction);
    }

    Apttus_CPQApi.CPQ.ModifyAssetResponseDO assetResponse =
Apttus_CPQApi.CPQWebService.modifyAsset(assetRequest);

    Set<Decimal> lineNumbers = new Set<Decimal>
(assetResponse.LineNumbers);

    for (Apttus_Config2__LineItem__c lineSO : [Select Id,
Apttus_Config2__AssetLineItemId__c from Apttus_Config2__LineItem__c
Where Apttus_Config2__ConfigurationId__c = :cartId]){

    }
}

```

## Fetching Asset Line Items

This API fetches all Asset Line Items for various Accounts.

### getAssetLineItems

Parameters			
Name	Type	Description	
CPQStruct.QueryAssetsRequestDO	request	Request object invoked by the method	

Request Data Object - CPQStruct.QueryAssetsRequestDO		
Field	Type	Description

**Request Data Object - CPQStruct.QueryAssetsRequestDO**

AccountIds	List <Id>	List of Account Ids
------------	-----------	---------------------

**Response Data Object - CPQStruct.QueryAssetsResponseDO**

Field	Type	Description
AssetLineItems	List<Apttus_Config2__AssetLineItem__c>	List of Asset Line Items.

**Code Sample**

The code sample below helps you get Asset Line Items for a list of Accounts. Use this API to fetch all asset line items associated with an account.

```
List<Id> listAccount = new List<Id>();

listAccount.add(accountId);

Apttus_Config2.CPQStruct.QueryAssetsRequestDO request = new
Apttus_Config2.CPQStruct.QueryAssetsRequestDO();

request.AccountIds = listAccount;

Apttus_Config2.CPQStruct.QueryAssetsResponseDO response =
Apttus_Config2.AssetService.getAssetLineItems(request);

List<Apttus_Config2__AssetLineItem__c>
listItems = response.AssetLineItems;
```

## Changing Assets

You can invoke this API for changing Assets.

**changeAssets**



Parameters		
Name	Type	Description
Config2.CPQStruct. ChangeAssetsRequestDO()	request	Request object invoked by the method

Request Data Object - CPQStruct.ChangeAssetsRequestDO()		
Name	Type	Description
AssetId	Date	The Asset End Date for Renewal
CartId	Id	The id of Cart for which an asset is being changed.

Response Data Object - CPQStruct.ChangeAssetsResponseDO		
Field	Type	Description
Apttus_Config2__LineItem__c	Object	Returns all Field values of the Line Item

### Code Sample

The code sample below helps you make changes to an Asset by invoking this API.

```

List<Id> listAssetId = new List<Id>();

    for(AssetLineItemWrapperClass record :
wrapperAssetLineItemList) {

        if(record.selected) {
            listAssetId.add(record.assetId);
        }
    }

```

```

    Apttus_Config2.CPQStruct.ChangeAssetsRequestDO request = new
Apttus_Config2.CPQStruct.ChangeAssetsRequestDO();
    request.AssetIds = listAssetId;
    request.CartId = cartId;

    Apttus_Config2.CPQStruct.ChangeAssetsResponseDO response =
Apttus_Config2.AssetService.changeAssets(request);

    ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'changeAssets :' + response));

```

## Renewing Assets

You can invoke this API to renew Assets.

### renewAssets

Parameters		
Name	Type	Description
Config2.CPQStruct. RenewAssetsRequestDO()	request	Request object invoked by the method

Request Data Object - CPQStruct.RenewAssetsRequestDO		
Name	Type	Description
AssetId	ID	The id of the Asset
RenewEndDate	Date	The Asset End Date for Renewal
RenewTerm	Integer	The Renewal Term for an asset
CartId	ID	The id of Cart for which an asset is being renewed

CPQStruct.RenewAssetsResponseDO		
Field	Type	Description
Apttus_Config2__LineItem__c	Object	Returns all Field values of the Line Item.

### Code Sample

The code sample below helps you renew Assets based on the specified Renewal Date or Renewal Term.

```
List<Id> listAssetId = new List<Id>();

    for(AssetLineItemWrapperClass record :
wrapperAssetLineItemList) {

        if(record.selected) {
            listAssetId.add(record.assetId);
        }

        if(objAssetLineItem.Apttus_Config2__RenewalDate__c != null
|| objAssetLineItem.Apttus_Config2__RenewalTerm__c != null) {
            Apttus_Config2.CPQStruct.RenewAssetsRequestDO request = n
ew Apttus_Config2.CPQStruct.RenewAssetsRequestDO();
            request.RenewEndDate = objAssetLineItem.
Apttus_Config2__RenewalDate__c;
            request.RenewTerm = objAssetLineItem.
Apttus_Config2__RenewalTerm__c;
            request.AssetId = listAssetId;
            request.CartId = cartId;

            Apttus_Config2.CPQStruct.RenewAssetsResponseDO response
= Apttus_Config2.AssetService.renewAssets(request);

            ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'renewAssets : ' + response));
        }
    }
```

## Swapping Assets

You can invoke this API for swapping Assets.

### swapAssets

Parameters		
Name	Type	Description
Config2.CPQStruct. SwapAssetsRequestDO()	request	Request object invoked by the method

Request Data Object - CPQStruct.SwapAssetsRequestDO()		
Name	Type	Description
ProductId	Id	Id of the product with which the Asset is being swapped.
NewStartDate	Date	The new Asset Start Date on Swapping
AssetId	Id	The Id of the Asset which is swapped.
CartId	Id	The Id of Cart for which an Asset is being swapped

Response Data Object - Config2.AssetService.swapAssets()		
Field	Type	Description
Apttus_Config2__LineItem__c	Object	Returns all Field values of the Line Item.

### Code Sample

The code sample below helps you swap an Asset with another product.

---

```
List<Id> listAssetId = new List<Id>();

    for(AssetLineItemWrapperClass record :
wrapperAssetLineItemList) {

        if(record.selected) {
            listAssetId.add(record.assetId);
        }
    }

List<Id> listProductId = new List<Id>();

    for(ProductWrapperClass product : wrapperProductList) {

        if(product.selected) {
            listProductId.add(product.productId);
        }
    }

    if(objAssetLineItem.Apttus_Config2__StartDate__c != null) {
        Apttus_Config2.CPQStruct.SwapAssetsRequestDO request = new
w Apttus_Config2.CPQStruct.SwapAssetsRequestDO();
        request.ProductIds = listProductId;
        request.NewStartDate = objAssetLineItem.
Apttus_Config2__StartDate__c;
        request.AssetIds = listAssetId;
        request.CartId = cartId;

        Apttus_Config2.CPQStruct.SwapAssetsResponseDO response =
Apttus_Config2.AssetService.swapAssets(request);

        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'swapAssets : ' + response));
    }
}
```

## Getting a list of Products to be swapped with Assets

### getSwappedProducts

Fetches the list of products that are swapped.



Please ensure that the Replacement Rule is active for Swapping Assets.

### Parameters

Name	Type	Description
Config2.CPQStruct.RecommendationRequestDO()	request	Request object invoked by the method

### Request Data Object - CPQStruct.RecommendationRequestDO()

Name	Type	Description
ProductId	Id	Id of the product with which the Asset is being swapped.
CartId	Id	Id of Cart for which Swap action is performed

### Response Data Object - Config2.AssetService.getSwappedProducts()

Field	Type	Description
ProductIds	Id	Id of products that can be swapped with assets.

### Code Sample

The code sample below helps you fetch the list of Product Ids that can be swapped with Assets.

```
List<Id> listProductId = new List<Id>();

for(ProductWrapperClass product : wrapperProductList) {

    if(product.selected) {
        listProductId.add(product.productId);
    }
}
```

```

    }

    Apttus_Config2.CPQStruct.RecommendationRequestDO request = new
w Apttus_Config2.CPQStruct.RecommendationRequestDO();
    request.cartId = cartId;
    request.ProductIds = listProductId;

    Apttus_Config2.CPQStruct.RecommendationResponseDO response =
Apttus_Config2.AssetService.getSwappedProducts(request);

    ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'getSwappedProducts :' + response));

```

## Getting a count of Asset Line Items

This API gets the count of Asset Line Items.

### countAssetLineItems

Parameters		
Name	Type	Description
CPQStruct.QueryAssetsRequestDO	request	Request object invoked by the method

Request Data Object - CPQStruct.QueryAssetsRequestDO		
Field	Type	Description
AccountIds	List <Id>	List of Account Ids

Response Data Object - CPQStruct.QueryAssetsResponseDO		
Field	Type	Description

### Response Data Object - CPQStruct. QueryAssetsResponseDO

AssetCount	Integer	Number of Assets
------------	---------	------------------

### Code Sample

The code sample below helps you get a count of Asset Line Items for a particular account. Use this API to fetch all asset line items associated with an account.

```
List<Id> listAccount = new List<Id>();
    listAccount.add(accountId);
    Apttus_Config2.CPQStruct.QueryAssetsRequestDO request = new
Apttus_Config2.CPQStruct.QueryAssetsRequestDO();
    request.AccountIds = listAccount;

    Apttus_Config2.CPQStruct.QueryAssetsResponseDO response =
Apttus_Config2.AssetService.countAssetLineItems(request);

    ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Asset Line Item Count : ' + response.AssetCount));
```

## Terminating Assets

You can invoke this API for Asset Cancellation.

### cancelAssets

Parameters		
Name	Type	Description
Config2.CPQStruct. CancelAssetsRequestDO()	request	Request object invoked by the method



Request Data Object - CPQStruct.CancelAssetsRequestDO		
Name	Type	Description
CancelDate	Date	The termination date of the Asset
AssetId	Date	The Asset End Date for Renewal
CartId	Id	The id of Cart for which an asset is being canceled.

Response Data Object - CPQStruct.CancelAssetsResponseDO		
Field	Type	Description
Apttus_Config2__LineItem__c	Object	Returns all Field values of the Line Item

### Code Sample

The code sample below helps you terminate Assets based on the Termination Date.

```
List<Id> listAssetId = new List<Id>();

    for(AssetLineItemWrapperClass record :
wrapperAssetLineItemList) {

        if(record.selected) {
            listAssetId.add(record.assetId);
        }
    }

    if(objAssetLineItem.Apttus_Config2__CancelledDate__c != null)
    {
        Apttus_Config2.CPQStruct.CancelAssetsRequestDO request =
new Apttus_Config2.CPQStruct.CancelAssetsRequestDO();
        request.CancelDate = objAssetLineItem.
Apttus_Config2__CancelledDate__c.date();
    }
}
```

```

request.AssetIds = listAssetId;
request.CartId = cartId;

Apttus_Config2.CPQStruct.CancelAssetsResponseDO response
= Apttus_Config2.AssetService.cancelAssets(request);

ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'cancelAssets :' + response));

```

## Retrieving Asset Line Items

Gets the list of asset line item objects matching the parameters used as the search criteria.

getAssetsForSearchText

Parameters		
Name	Type	Description
accountId	ID	The id of the account associated with the asset. If you use this, you cannot pass locationId at the same time.
locationId	ID	The ids of the different locations associated with the assets. If you use this, you cannot pass accountId at the same time.
searchText	String	The search text.

Response Data Object - CPQ.AssetSearchResultDO		
Name	Type	Description
HasAssetItems	Boolean	Indicates whether there are asset line items, that match the parameters used for the search.
AssetItems		

Response Data Object - CPQ.AssetSearchResultDO		
Name	Type	Description
	List < Apttus_Config2__AssetLineItem__c >	This is a list of the asset line items. This returns the asset line item records and the values for the fields that belong to each record.

### Code Sample

When you generate a quote for an existing customer, it is possible that the customer has some assets associated with the account. You can provide a search field on the cart page that enables the customer to search for existing assets and view them. When the user types the search criteria for fetching the assets and clicks Search, invoke the API. This sample should enable the user to search a product by product name, product code, product description, category name, and configuration type. The search for get assets is similar to the product search in the catalog page and installed products page.

```
public void searchAssets()
{
    Apttus_CPQApi.CPQ.AssetSearchResultDO assetResults =
    Apttus_CPQApi.CPQWebService.getAssetsForSearchText(accountId, null ,
    assetSearchText);

    lstAssetWrapper = new List<AssetWrapperClass>();
    //If assets items that are searched by a keyword exist i.e
    hasassetitems=true and some value is returned, show the following as
    a part of the list
    if(assetResults.HasAssetItems == true)
    {
        List<Apttus_Config2__AssetLineItem__c> aliSOList =
        assetResults.AssetItems;

        for(Apttus_Config2__AssetLineItem__c aliSO : aliSOList)
        {
            AssetWrapperClass objAssetWrapperClass = new
            AssetWrapperClass ();

```

```

        objAssetWrapperClass.AssetId = aliSO.ID;
        objAssetWrapperClass.ProductId = aliSO.
Apttus_Config2__Description__c;
        objAssetWrapperClass.Quantity = aliSO.
Apttus_Config2__Quantity__c;
        objAssetWrapperClass.StartDate = aliSO.
Apttus_Config2__StartDate__c;
        objAssetWrapperClass.EndDate = aliSO.
Apttus_Config2__EndDate__c;

        lstAssetWrapper.Add(objAssetWrapperClass);
    }
}
//If there are no assets by the search text that the user entered,
display an appropriate message.
else
{
    lstAssetWrapper.clear();
    ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'No result found. Please try again.'));
}
}

```

## Comparing Products

This is used to retrieve products, based on product IDs, and compare them side by side. This is typically done from the Product Catalog, to decide between products before adding them to the cart.

compareProducts

Parameters		
Name	Type	Description
request	CPQ.FeatureInfoRequestDO	The request data object.

Request Data Object - CPQ.FeatureInfoRequestDO		
Field	Type	Description
productIds	List<ID>	The list of Ids of the product you want to compare.

Response Data Object - CPQ.FeatureInfosResponseDO		
Field	Type	Description
FeatureInfos	List<Apttus_CPQApi.FeatureSupport.FeatureInfo>	This returns the list of features for each of the products included in the comparison.
ProductId	ID	ID of the products, which have a feature set to be compared.

### Code Sample

The sample below enables you to fetch the IDs of the selected products. Two or more products should be selected to enable comparison. After the user selects two or more products such as a Laptop from different vendors, invoke this API.

```

public void compareProducts()
{
    productIds = new List<ID>();

    for(ProductWrapperClass selProdWrap: lstProductwrap)
    {
        //For the selected products fetch the ID
        if(selProdWrap.selected)
        {
            productIds.add((ID)selProdWrap.ProductId);
        }
    }
}

```

```

    }
    //If one one product is selected and the user clicks compare show an
    appropriate error message
    if(productIds.size() < 2)
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Please select at two products to compare.));
    }
    //If two or more products are selected execute the code below
    else
    {
        Apttus_CPQApi.CPQ.FeatureInfoRequestDO request = new
Apttus_CPQApi.CPQ.FeatureInfoRequestDO();
        request.ProductIds = productIds;
        //Invoke the compare products API
        List<Apttus_CPQApi.CPQ.FeatureInfoResponseDO> response =
Apttus_CPQApi.CPQWebService.compareProducts(request);

        listProducts = new List<CompareProductWrapperClass>();
        //The response object returns the products for which a feature list
        is available along with the product ID
        for(Apttus_CPQApi.CPQ.FeatureInfoResponseDO products :
response)
        {
            CompareProductWrapperClass wrap = new
CompareProductWrapperClass();
            wrap.ProductID = products.ProductId;
            wrap.featuresSet = products.FeatureInfos;

            listProducts.add(wrap);
        }
    }
}

```

Code sample for creating a table in a Visualforce page to display the compared products:

```

<!-- Compare Products Panel -->
<apex:outputPanel layout="block" Id="compareProductsPanel"
styleClass="grid-2-13 clearfix compareProductsPanel">
<table>
    <apex:repeat var="featureSetName" value="{!compareFeatureSets}">

```

```

    <tr>
      <th data-priority="1" colspan="{!colSpan}"><h4>{!featureSetName}<
/h4></th>
    </tr>
    <apex:repeat var="featureValue" value="{!compareFeatureSets
[featureSetName][0].productFeatureSet.features}">
      <apex:outputPanel layout="none" rendered="{!hasIncludedProduct
[compareFeatureSets[featureSetName][0].productFeatureSet.
featureSetSOId]}">
        <tr>
          <th class="label">{!featureValue.Name}</th>
          <apex:repeat var="product" value="{!productIds}">
            <apex:repeat var="prodFeatureInfo" value="{!
productFeatureInfosResponse[product]}">
              <apex:outputPanel layout="none" rendered="{!
prodFeatureInfo.productFeatureSet.Name == featureSetName}" >
                <apex:repeat var="prodFeatureValue" value="{!
prodFeatureInfo.productFeatureSet.features}">
                  <apex:outputPanel layout="none" rendered="{!
prodFeatureValue.featureSOId== featureValue.featureSOId &&
prodFeatureValue.isIncluded}" >
                    <td style="border: 1px #CCCCCC solid;">{!
prodFeatureValue.Value}</td>
                    </apex:outputPanel>
                    <apex:outputPanel layout="none" rendered="{!
prodFeatureValue.featureSOId == featureValue.featureSOId && NOT
(prodFeatureValue.isIncluded)}" >
                      <td style="border: 1px #CCCCCC solid;">--<
/td>
                      </apex:outputPanel>
                    </apex:repeat>
                  </apex:repeat>
                </tr>
              </apex:repeat>
            </apex:repeat>
          </tr>
        </apex:outputPanel>
      </apex:repeat>
    </table>
  </apex:outputPanel>

```

## Adding a Bundle to a Cart

This adds a bundle along with selected products, options, and updated quantity to the cart.

### addBundle

Parameters		
Name	Type	Description
request	CPQ.AddBundleRequestDO	The id of the agreement

Request Data Object - CPQ.AddBundleRequestDO		
Field	Type	Description
CartId	ID	The Id of the cart.
SelectedBundle	CPQ.SelectedBundleDO	The bundle to be added to the cart.

Data Object - CPQ.SelectedBundleDO		
Field	Type	Description
SelectedProduct	CPQ.SelectedProductDO	The selected product data object.
SelectedOptions	List<CPQ. SelectedOptionDO>	The list of selected option data objects.

Data Object - CPQ.SelectedProductDO		
Field	Type	Description
ProductId	ID	Id of the product bundle.



<b>Data Object - CPQ.SelectedProductDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
Quantity	Decimal	The bundle quantity.
SellingTerm	Decimal	The bundle selling term.
StartDate	Date	The start date. You should ensure you use the correct date format.
EndDate	Date	The end date.
Comments	String	Comments associated with the record.
CustomFields	List<String> CustomFields	List of custom fields created for your product.
CustomData	Apttus_Config2__LineItem__c CustomData	This can be used to include the list of custom fields you have added to the product.

<b>Data Object - CPQ.SelectedOptionDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ComponentId	ID	Id of the component.
ComponentProductId	ID	Id of the component product.
Quantity	Decimal	The option quantity.
SellingTerm	Decimal	The option selling term.
StartDate	Date	

Data Object - CPQ.SelectedOptionDO		
Field	Type	Description
		The start date. You should ensure you use the correct date format.
EndDate	Date	The end date.
Comments	String	Comments associated with the object record.
CustomFields	List<String>	List of Custom Field's API Name
CustomData	Apttus_Config2__LineItem__c	The values to be set for the custom fields in the CustomFields List

Response Data Object - CPQ.AddBundleResponseDO		
Field	Type	Description
LineNumber	Decimal	The bundle line number.

### Code Sample

The sample below enables you to add a bundled product with a specific product ID and its associated quantity to a specific cart with a specific cartID. For example, a user selects a bundled product-Laptop+Mouse and clicks Add to Cart, the request to add bundle to the cart is invoked and the bundle with the specific product ID is added to a cart with the cart ID.

```
//The line below fetches the selected products from the product
list. This fetches the productID and Quantity of the selected
product.
public void addBundle()
```

```

{
    string productID = '';
    Integer Quantity = 1;
    for(ProductWrapperClass selProdWrap: lstProductwrap)
    {
        if(selProdWrap.selected)
        {
            productID = selProdWrap.ProductId;
            Quantity = selProdWrap.Quantity;
            break;
        }
    }
    //The line below indicates that if the product ID is empty or no
    //product is selected, an error message is to be shown to the user.
    if(productID == '')
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Please select at least one Product.));
    }
    // This line comprises the request that includes the selected
    //productID and quantity to be added to the cart. The cart it is to be
    //added to is recognized by the cartID.
    else
    {
        Apttus_CPQApi.CPQ.AddBundleRequestDO request = new
Apttus_CPQApi.CPQ.AddBundleRequestDO();
        request.CartId = cartId;
        request.SelectedBundle = new Apttus_CPQApi.CPQ.
SelectedBundleDO();
        request.SelectedBundle.SelectedProduct = new Apttus_CPQApi.
CPQ.SelectedProductDO();
        request.SelectedBundle.SelectedProduct.ProductId = productID;
        request.SelectedBundle.SelectedProduct.Quantity = Quantity;

        List<Apttus_CPQApi.CPQ.SelectedOptionDO> options = new
List<Apttus_CPQApi.CPQ.SelectedOptionDO>();

        if(lstProductOptionWrapper!=null)
        {
            for(ProductOptionWrapperClass optionComponent :
lstProductOptionWrapper)
            {
                for(ProductQuantityOptionWrapperClass optionwrapper:
optionComponent.OptionComponents)

```

```

        {
            if(optionwrapper.selected)
            {
                Apttus_CPQApi.CPQ.SelectedOptionDO
objSelectedOptionDO = new Apttus_CPQApi.CPQ.SelectedOptionDO();
                objSelectedOptionDO.ComponentId =
optionwrapper.OptionComponent.ComponentId;
                objSelectedOptionDO.ComponentProductId =
optionwrapper.OptionComponent.ComponentProductId;
                objSelectedOptionDO.Quantity = optionwrapper.
Quantity;
                options.Add(objSelectedOptionDO);
            }
        }
        //All the options associated with the bundle are also
added with the bundled products to the cart that are selected.
        if(options.size(>0)
        {
            request.SelectedBundle.SelectedOptions = options ;
        }
    }

    Apttus_CPQApi.CPQ.AddBundleResponseDO response =
Apttus_CPQApi.CPQWebService.addBundle(request);

    getLineItems();

    if(lineNumber == null)
    {
        lineNumber = new List<Decimal>();
    }
    lineNumber.Add(response.LineNumber);
}
}

//The function below fetches the line items of the cart and presents
it on the UI.
public void getLineItems()
{
    lstWrapItems = new List<LineItemWrapperClass>();

    List<Apttus_Config2__LineItem__c> liSOList = [select id, Name,
Apttus_Config2__Description__c,

```

```

        Apttus_Config2__Quantity__c, Apttus_Config2__ListPrice__c,
Apttus_Config2__NetPrice__c, Apttus_Config2__LineNumber__c from
Apttus_Config2__LineItem__c where Apttus_Config2__ConfigurationId__c
= :cartID];
    for(Apttus_Config2__LineItem__c liSO : liSOList)
    {
        LineItemWrapperClass objLineItemWrapperClass = new
LineItemWrapperClass();
        objLineItemWrapperClass.Id = liSO.Id;
        objLineItemWrapperClass.Name = liSO.Name;
        objLineItemWrapperClass.ProductName= liSO.
Apttus_Config2__Description__c;
        objLineItemWrapperClass.Quantity = liSO.
Apttus_Config2__Quantity__c;
        objLineItemWrapperClass.ListPrice = liSO.
Apttus_Config2__ListPrice__c;
        objLineItemWrapperClass.NetPrice = liSO.
Apttus_Config2__NetPrice__c;
        objLineItemWrapperClass.LineNumber = liSO.
Apttus_Config2__LineNumber__c;
        lstWrapItems.Add(objLineItemWrapperClass);
    }
}

```

## Adding Options to a Bundle

This adds one or more Options Products to a Bundle product.

### addoptions

Request Parameters		
Name	Type	Description
CartID	ID	The cart ID
lineNumber	Integer	

Request Parameters		
Name	Type	Description
		Line Number of the Bundle Product
selectedOptions	List<Apttus_CPQApi.CPQ.SelectedOptionDO>	List of Options

Data Object - CPQ.SelectedOptionDO		
Field	Type	Description
ComponentId	ID	Id of the component.
ComponentProductId	ID	Id of the component product.
Quantity	Decimal	The option quantity.
SellingTerm	Decimal	The option selling term.
StartDate	Date	The start date. You should ensure you use the correct date format.
EndDate	Date	The end date.
Comments	String	Comments associated with the object record.
CustomFields	List<String>	List of Custom Field's API Name
CustomData	Apttus_Config2__LineItem__c	

Data Object - CPQ.SelectedOptionDO		
Field	Type	Description
		The values to be set for the custom fields in the CustomFields List

### Code Sample

Using the sample below you can dynamically add options to a bundled product that the user selects in the cart line item. For example, if the user selects a bundled product, Laptop, in the cart line item you can fetch the configured options for that selected product using the addoptions API. In the sample below, for a selected product you initially fetch the productID. Using the retrieve option groups API, you can check whether the selected product has option groups associated. If an option group is associated, fetch the option components and create a list comprising the CPQ.SelectedOptionDO. Invoke the addoptions API and pass the cartID, productID, and the list CPQ.SelectedOptionDO.

```

public void addOptions()
{
    string productName='';
    Integer lineNumber = 0;
    for(LineItemWrapperClass selProdWrap: lstWrapItems)
    {
        //For a selected bundled product from a cart line item execute the
        loop below
        if(selProdWrap.selected)
        {
            productName = selProdWrap.ProductName;
            lineNumber = Integer.valueOf(selProdWrap.LineNumber);
            break;
        }
    }
    //If no product is selected, show an appropriate error message
    if(String.isBlank(productName))
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
        severity.info, 'Please select at least one Product.'));
    }
}

```

```

    }
    else
    {
        List<Apttus_CPQApi.CPQ.SelectedOptionDO> selectedOptDOList =
new List<Apttus_CPQApi.CPQ.SelectedOptionDO>();

//For the selected product fetch the product ID
        List<Product2> productId = [SELECT Id FROM Product2 WHERE
Name = :productName LIMIT 1];

//Execute the getoptionGroups API to fetch the options with option
groups
        Apttus_CPQApi.CPQ.ProductOptionGroupSearchResultDO result =
Apttus_CPQApi.CPQWebService.getOptionGroupsForPriceListProduct
(priceListId, productId[0].Id);

//If the selected product has option groups execute the loop
below
        if(result.HasOptionGroups)
        {
            List<Apttus_CPQApi.CPQ.ProductOptionGroupDO>
prodOptGrpDOList = result.OptionGroups;
            for(Apttus_CPQApi.CPQ.ProductOptionGroupDO prodOptGrpDO
: prodOptGrpDOList)
            {
//For an option group if a product has option components such as
quantity execute the loop below
                if(prodOptGrpDO.HasOptionComponents)
                {
                    List<Apttus_CPQApi.CPQ.ProductOptionComponentDO>
prodOptCompDOList = new List<Apttus_CPQApi.CPQ.
ProductOptionComponentDO>();
                    prodOptCompDOList = prodOptGrpDO.
OptionComponents;

//Fetch all the option components for a particular option group.
                    for(Apttus_CPQApi.CPQ.ProductOptionComponentDO
prodOptCompDO :prodOptCompDOList )
                    {
                        Apttus_CPQApi.CPQ.SelectedOptionDO
selectedOptDO = new Apttus_CPQApi.CPQ.SelectedOptionDO();
                        selectedOptDO.ComponentId = prodOptCompDO.
ComponentId;

```



```

        selectedOptDO.ComponentProductId =
prodOptCompDO.ComponentProductId;
        selectedOptDO.Quantity = 1;
        selectedOptDOList.add(selectedOptDO);
    }
}
}
}
}
//Invoke the addOptions API and pass the cartID, selected product
line number, and the Option List retrieved from the getoptiongroups
API
    Apttus_CPQApi.CPQ.AddOptionsResponseDO addOptRespDO =
Apttus_CPQApi.CPQWebService.addOptions(cartId, lineNumber,
selectedOptDOList);
}
}
}

```

## Adding Products to a Cart

This API adds one or more products (with default options) to the cart along with quantity, term, start date, and end date.

### addMultiProducts

Parameters		
Name	Type	Description
request	CPQ.AddMultiProduct RequestDO	The request data object.

Request Data Object - CPQ.AddMultiProductRequestDO		
Field	Type	Description
CartId	ID	The Id of the cart.

**Request Data Object - CPQ.AddMultiProductRequestDO**

Field	Type	Description
SelectedProducts	List <CPQ.SelectedProductDO>	The list of selected product data objects.

**Response Data Object - CPQ.AddMultiProductResponseDO**

Field	Type	Description
LineNumbers	List<Decimal>	The list of line numbers added to the cart.

**Data Object - CPQ.SelectedProductDO**

Field	Type	Description
ProductId	ID	Id of the product bundle.
Quantity	Decimal	The bundle quantity.
SellingTerm	Decimal	The bundle selling term.
StartDate	Date	The start date. You should ensure you use the correct date format.
EndDate	Date	The end date.
Comments	String	Comments associated with the record.
CustomFields	List<String> CustomFields	List of custom fields created for your product.

Data Object - CPQ.SelectedProductDO		
Field	Type	Description
CustomData	Apttus_Config2__LineItem__c CustomData	This can be used to include the list of custom fields you have added to the product.

### Code Sample

The sample below enables you to add multiple selected products with a specific product ID and its associated quantity, validity and selling term to a specific cart with a specific cartID. For example, if the user has selected software and hardware products, the products are added to the cart, on click of Add to Cart. The user is navigated to the cart page where they can view and change the quantity, selling term and other editable aspects of the product.

```

public void addMultiProducts()
{
    List <Apttus_CPQApi.CPQ.SelectedProductDO> selectedProdDOList = new
    List <Apttus_CPQApi.CPQ.SelectedProductDO>();
    for(ProductWrapperClass selProdWrap: lstProductwrap)
    {
        if(selProdWrap.selected)
        {
            Apttus_CPQApi.CPQ.SelectedProductDO selProdDO = new
            Apttus_CPQApi.CPQ.SelectedProductDO();
            selProdDO.ProductID = selProdWrap.ProductId;
            selProdDO.Quantity = selProdWrap.Quantity;
            selProdDO.SellingTerm = 12;
            selProdDO.StartDate = Date.Today();
            selProdDO.EndDate = Date.Today() + 12;
            selProdDO.Comments = 'Added by Code';
            selectedProdDOList.add(selProdDO);
        }
    }
    //If the customer has selected one product i.e product size is
    greater than 0 execute the if condition
    if(selectedProdDOList.size()>0)
    {

```

```

        Apttus_CPQApi.CPQ.AddMultiProductRequestDO request = new
Apttus_CPQApi.CPQ.AddMultiProductRequestDO ();
        request.CartId = cartId;
        request.SelectedProducts = selectedProdDOList;

        Apttus_CPQApi.CPQ.AddMultiProductResponseDO response =
Apttus_CPQApi.CPQWebService.addMultiProducts(request);

// This adds and assigns the product line numbers in the cart.
    if(lineNumber == null)
    {
        lineNumber = new List<Decimal>();
    }

    lineNumber = response.LineNumbers;

    getLineItems();
}
//If the customer has not selected any package and clicks Add to
Cart execute the else condition
    else
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Please select at least one Product.));
    }
}
//The function below enables you to fetch the products and its
associated properties that belong to a cart with an ID CartID
public void getLineItems()
{
    lstWrapItems = new List<LineItemWrapperClass>();

    List<Apttus_Config2__LineItem__c> liSOList = [select id, Name,
Apttus_Config2__Description__c,
    Apttus_Config2__Quantity__c, Apttus_Config2__ListPrice__c,
Apttus_Config2__NetPrice__c, Apttus_Config2__LineNumber__c from
Apttus_Config2__LineItem__c where Apttus_Config2__ConfigurationId__c
= :cartID];
    for(Apttus_Config2__LineItem__c liSO : liSOList)
    {
        LineItemWrapperClass objLineItemWrapperClass = new
LineItemWrapperClass();
        objLineItemWrapperClass.Id = liSO.Id;
        objLineItemWrapperClass.Name = liSO.Name;i8

```

```

        objLineItemWrapperClass.ProductName= liSO.
Apttus_Config2__Description__c;
        objLineItemWrapperClass.Quantity = liSO.
Apttus_Config2__Quantity__c;
        objLineItemWrapperClass.ListPrice = liSO.
Apttus_Config2__ListPrice__c;
        objLineItemWrapperClass.NetPrice = liSO.
Apttus_Config2__NetPrice__c;
        objLineItemWrapperClass.LineNumber = liSO.
Apttus_Config2__LineNumber__c;
        lstWrapItems.Add(objLineItemWrapperClass);
    }
}

```

## Adding Price Ramps to a Cart (CPQ Web Service)

After you add a line item to a cart, this API enables you to add primary and secondary ramp line items for the line item. Once the ramp line items are created, you can also update the ramp line item details or delete ramp line item details using standard SOQL queries.

When you use Apttus CPQ out of the box, invoke the ramp using the red icon to the left of the primary line item.

	Standard Price	\$100.00	\$100.00	1/13/2015	2/12/2015	1	\$100.00	\$100.00	--None--		\$100	\$100.00	0.0000%	0.0000%
--	----------------	----------	----------	-----------	-----------	---	----------	----------	----------	--	-------	----------	---------	---------

Once you click the ramp icon, the ramp dialog appears:

Ramp Level	List Price	Start Date	End Date	Quantity	Adjustment Type	Adjustment Amount	Status
	1	\$100.00	1/13/2015	2/12/2015	1	--None--	

Save Cancel

The ramp dialog allows you to add, edit dates and quantity, make adjustments, save the changes, and cancel the changes.

Once the customer adds a ramp to a cart line item, they can do the following:

- Edit the start date, end date, quantity, adjustment type and adjustment amount based on the custom setting.
- The start date of a ramp line item defaults to the end date+1 of the previous line item.
- The end date of a ramp line item defaults to a date such that the difference between the start date and end date is the same as that of the previous line item.
- The user can add more ramp line items after or in between the ramp line items.
- The user can remove the new line before saving by clicking on the icon in the right most column.

Use the addMultiProducts API to add products to the cart.

### addMultiProducts

Parameters		
Name	Type	Description
request	CPQ.AddMultiProduct RequestDO	The request data object.

Request Data Object - CPQ.AddMultiProductRequestDO		
Field	Type	Description
CartId	ID	The Id of the cart.
SelectedProducts	List <CPQ.SelectedProductDO>	The list of selected product data objects.

<b>Response Data Object - CPQ.AddMultiProductResponseDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
LineNumbers	List<Decimal>	The list of line numbers added to the cart.

<b>Data Object - CPQ.SelectedProductDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ProductId	ID	Id of the product bundle.
Quantity	Decimal	The bundle quantity.
SellingTerm	Decimal	The bundle selling term.
StartDate	Date	The start date. You should ensure you use the correct date format.
EndDate	Date	The end date.
Comments	String	Comments associated with the record.
CustomFields	List<String> CustomFields	List of custom fields created for your product.
CustomData	Apttus_Config2__LineItem__c CustomData	This can be used to include the list of custom fields you have added to the product.

### **Code Sample**

The sample below enables you to add ramp line items after you have:

- Added Products to the cart using the AddMultiProducts APIs,

- Updated the Price for the added products using the updatePriceforCart API.
- Selected the products for which you want to add a ramp for.

Using the sample below you fetch the list of selected products for which you want to add a ramp. You also fetch the parameters for each of the selected products. For all the ramps you create, set PriceGroup as Price Ramp and PricingStatus as Pending. For a primary line item, set IsPrimaryLine\_\_c = true, IsPrimaryRampLine\_\_c = true, and PrimaryLineNumber\_\_c = 1.

```

public void createRampLineItems()
{
    List<String> rampLineItems = new List<String>();

    if(lstWrapItems.size() > 0)
    {
        // Create a list of selected products for which you want
        to create a ramp for
        for(LineItemWrapperClass objLineItemWrapperClass :
lstWrapItems)
        {
            if(objLineItemWrapperClass.Selected)
            {
                rampLineItems.add(objLineItemWrapperClass.Name);
            }
        }

        // Sort Ramp Line Items by name
        rampLineItems.sort();

        Integer rampLineItemIndex = 1;

        for(String rampLineItemName : rampLineItems)
        {
            // Get Line Item parameters for the selected products
            Apttus_Config2__LineItem__c lineItem = [SELECT
Apttus_Config2__ItemSequence__c, Apttus_Config2__PricingStatus__c,
Apttus_Config2__PriceGroup__c,
            Apttus_Config2__IsPrimaryRampLine__c,
Apttus_Config2__IsPrimaryLine__c, Apttus_Config2__LineNumber__c,
Apttus_Config2__PrimaryLineNumber__c from
Apttus_Config2__LineItem__c WHERE

```



```

        Name=:rampLineItemName];

        //Set the parameters for each of the line items
        lineItem.Apttus_Config2__PriceGroup__c = 'Price Ramp'
;
        lineItem.Apttus_Config2__PricingStatus__c = 'Pending'
;
        lineItem.Apttus_Config2__LineNumber__c = 1;
        lineItem.Apttus_Config2__PrimaryLineNumber__c = 1;
        lineItem.Apttus_Config2__ItemSequence__c =
rampLineItemIndex;

        //For a primary line item set the following
        if(rampLineItemIndex == 1)
        {
            lineItem.Apttus_Config2__IsPrimaryLine__c = true;
            lineItem.Apttus_Config2__IsPrimaryRampLine__c = t
true;
        }

        //For all secondary line items set the following
parameters
        else
        {
            lineItem.Apttus_Config2__IsPrimaryLine__c = false
;
            lineItem.Apttus_Config2__IsPrimaryRampLine__c = f
false;
        }

        // Update Line Items
        update lineItem;

        rampLineItemIndex++;
    }
}
else
{
    ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'No line items available.));
}
}

```

## Associating Constraint Rules to a Cart

This associates constraints rules to a cart.

### associateConstraintRules

Parameters		
Name	Type	Description
cartId	ID	The id of the cart.
existingPrimaryNumbers	List<Integer>	This is a collection of primary numbers for which rules are already attached. When existing primary numbers are supplied, rules are associated with the new lines; whereas when null or empty collection is supplied, rules are attached to all the line items.

### Code Sample

The sample below enables you to associate a constraint rule to a product added as a line item in a cart. The sample below fetches the line numbers of the products in the cart and associates the constraint rule to the new line numbers of the cart.

If the list object for primary line items is null, then the constraint rules are associated with all the products in the line items of the cart.

For example if the delivery and packaging charge constraint rule is already applied to the existing products in the cart, you will provide a list of *collection of primary line items comprising selected products* to which the rules are already applied, thus enabling the delivery and packaging constraint rule to be associated with the new line items added to the cart.

```
public void associateConstraintRules()
{
    List<Apttus_Config2__LineItem__c> liSOList = [select
Apttus_Config2__ProductID__c,
```

```

    Apttus_Config2__LineNumber__c from Apttus_Config2__LineItem__c
    where
    Apttus_Config2__ConfigurationId__c = :cartID];

    acrList = new List<Apttus_Config2__LineItem__c>();

    List<Integer> primaryLines = new List<Integer>();
    for(Apttus_Config2__LineItem__c liSO: liSOList)
    {
        for(Apttus_Config2__LineItem__c acrSO: acrList)
        {
            if(acrSO.Id == liSO.Id)
            {
                primaryLines.Add(liSO.Apttus_Config2__LineNumber__c.
intValue());
            }
        }
    }

    for(Apttus_Config2__LineItem__c liSO: liSOList)
    {
        for(LineItemWrapperClass objLineItemWrapperClass :
lstWrapItems)
        {
            if(objLineItemWrapperClass.Selected)
            {
                acrList.add(liSO);
                break;
            }
        }
    }

    Apttus_CPQApi.CPQWebService.associateConstraintRules(cartId,
primaryLines);
}

```

## Applying Constraint Rules to a Cart

This processes and applies all the constraint rules.





## Best Practice

It is recommended that you use the [associateConstraintRules API](#) before using this API. Directly using this API may not trigger the constraint rule.

### applyConstraintRules

Parameters		
Name	Type	Description
cartId	ID	The id of the cart.
finalCheck	Boolean	If this is set to true, runs rules that are marked as check on finalization.

### Code Sample

The sample below enables you to apply constraint rules to a cart with a specific cart ID. If you set the finalCheck flag as true, the constraint rules are run when you finalize the cart. If the flag is set as false, the rules are run before cart finalization. For example, if you want to add a Shipping Costs constraint rule only after the cart is finalized, set the finalCheck as true and the shipping costs constraint rule is applied once the user finalized the cart. If you want to apply constraint rules before the cart is finalized, set finalCheck as false. For example, if you set the finalCheck flag as false, installation charges are added along with a product selected before the cart is finalized.

```
public void applyConstraintRules()
{
    // For rules that are not marked as Check on Finalization
    Apttus_CPQApi.CPQWebService.applyConstraintRules(cartID, false);

    // For rules that are marked as Check on Finalization
    //Apttus_CPQApi.CPQWebService.applyConstraintRules(cartID, true);
}
```

## Removing a Bundle from a Cart

This removes a product bundle and related line items, options from the cart.

### removeBundle

Parameters		
Name	Type	Description
request	CPQ.RemoveBundleRequestDO	The request data object.

Request Data Object - CPQ.RemoveBundleRequestDO		
Field	Type	Description
CartId	ID	The Id of the cart.
LineNumber	Decimal	The bundle line number.

Response Data Object - CPQ.RemoveBundleResponseDO		
Field	Type	Description
IsSuccess	Boolean	Indicates the success of the operation.

### Code Sample

The sample below enables you remove a selected bundle from the cart using the line number and a cart id. Invoke the API, when the user selects a bundle from the cart and click Remove or Delete. Based on the line number and the cartID the asset is removed from the cart. Update the new line items using the getLineItems function.

```
public void removeBundle()
```

```

{
    for(LineItemWrapperClass objLineItemWrapperClass : lstWrapItems)
    {
        //For a selected bundle in the cart execute the function below
        if(objLineItemWrapperClass.Selected)
        {
            Apttus_CPQApi.CPQ.RemoveBundleRequestDO request = new
Apttus_CPQApi.CPQ.RemoveBundleRequestDO();
            //Pass cart ID and Line number of the bundle as
arguments to the API
            request.CartId = cartID;
            request.LineNumber = objLineItemWrapperClass.LineNumber;

            Apttus_CPQApi.CPQ.RemoveBundleResponseDO response =
Apttus_CPQApi.CPQWebService.removeBundle(request);

            //Show success message if API is executed successfully
            ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Success: ' + response.IsSuccess));
        }
    }

    getLineItems();
}

//Execute this function to update the Cart with the new line numbers.
public void getLineItems()
{
    lstWrapItems = new List<LineItemWrapperClass>();

    List<Apttus_Config2__LineItem__c> liSOList = [select id, Name,
Apttus_Config2__Description__c,
    Apttus_Config2__Quantity__c, Apttus_Config2__ListPrice__c,
Apttus_Config2__NetPrice__c, Apttus_Config2__LineNumber__c from
Apttus_Config2__LineItem__c where Apttus_Config2__ConfigurationId__c
= :cartID];
    for(Apttus_Config2__LineItem__c liSO : liSOList)
    {
        LineItemWrapperClass objLineItemWrapperClass = new
LineItemWrapperClass();
        objLineItemWrapperClass.Id = liSO.Id;
        objLineItemWrapperClass.Name = liSO.Name;
        objLineItemWrapperClass.ProductName= liSO.
Apttus_Config2__Description__c;
    }
}

```

```

        objLineItemWrapperClass.Quantity = listPrice;
    Apttus_Config2__Quantity__c;
        objLineItemWrapperClass.ListPrice = listPrice;
    Apttus_Config2__ListPrice__c;
        objLineItemWrapperClass.NetPrice = listPrice;
    Apttus_Config2__NetPrice__c;
        objLineItemWrapperClass.LineNumber = lineNumber;
    Apttus_Config2__LineNumber__c;
        lstWrapItems.Add(objLineItemWrapperClass);
    }
}

```

## Removing Multiple Bundles from a Cart

This removes one or more products (with default options) or bundles from the cart along with quantity, term, start date, and end date.

### removeMultiBundles

Parameters		
Name	Type	Description
request	CPQ.RemoveMultiBundlesRequestDO()	The request data object.

Request Data Object - CPQ.RemoveMultiBundlesRequestDO()		
Field	Type	Description
CartId	ID	The Id of the cart.
LineNumber	List<Decimal>	The List of LineNumbers that need to be removed from the cart.

**Response Data Object - CPQ.RemoveMultiBundlesResponseDO**

Field	Type	Description
IsSuccess	Boolean	Indicates the success of the operation.

**Code Sample**

Use the sample below to remove one or more products of the cart. When the user selects multiple products on the cart and clicks Delete or Remove, invoke this API. The multiple products are deleted from the cart. Based on the line number and the cartID the selected assets are removed from the cart. Update the new line items using the getLineItems function.

```

public void removeMultiBundle()
{
    List<Decimal> lineNumList = new List<Decimal>();
    for(LineItemWrapperClass objLineItemWrapperClass : lstWrapItems)
    {
        //For the selected bundles, fetch the line numbers of the bundle.
        The line numbers are stored in a list
        if(objLineItemWrapperClass.Selected)
        {
            lineNumList.add(objLineItemWrapperClass.LineNumber);
        }
    }
    //Invoke the removeMultiBundles API and pass the cartID and the
    //linenumber of the selected assets as input parameters to the API
    Apttus_CPQApi.CPQ.RemoveMultiBundlesRequestDO request = new
    Apttus_CPQApi.CPQ.RemoveMultiBundlesRequestDO();
    request.CartId = cartID;
    request.LineNumbers = lineNumList;

    Apttus_CPQApi.CPQ.RemoveMultiBundlesResponseDO response =
    Apttus_CPQApi.CPQWebService.removeMultiBundles(request);

    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
    info, 'Success: ' + response.IsSuccess));

    getLineItems();
}

```



```

}
//Execute this function to update the cart with the new line items.
After bundles are deleted, the line numbers of the cart reduce
public void getLineItems()
{
    lstWrapItems = new List<LineItemWrapperClass>();

    List<Apttus_Config2_LineItem__c> liSOList = [select id, Name,
Apttus_Config2_Description__c,
    Apttus_Config2_Quantity__c, Apttus_Config2_ListPrice__c,
Apttus_Config2_NetPrice__c, Apttus_Config2_LineNumber__c from
Apttus_Config2_LineItem__c where Apttus_Config2_ConfigurationId__c
= :cartID];
    for(Apttus_Config2_LineItem__c liSO : liSOList)
    {
        LineItemWrapperClass objLineItemWrapperClass = new
LineItemWrapperClass();
        objLineItemWrapperClass.Id = liSO.Id;
        objLineItemWrapperClass.Name = liSO.Name;
        objLineItemWrapperClass.ProductName= liSO.
Apttus_Config2_Description__c;
        objLineItemWrapperClass.Quantity = liSO.
Apttus_Config2_Quantity__c;
        objLineItemWrapperClass.ListPrice = liSO.
Apttus_Config2_ListPrice__c;
        objLineItemWrapperClass.NetPrice = liSO.
Apttus_Config2_NetPrice__c;
        objLineItemWrapperClass.LineNumber = liSO.
Apttus_Config2_LineNumber__c;
        lstWrapItems.Add(objLineItemWrapperClass);
    }
}

```

## Applying Constraint Rules to Deleted Products

This runs the rules that are related to the deleted products.

### **applyConstraintRulesOnDelete**

Parameters		
Name	Type	Description
cartId	ID	The id of the cart.
deletedProductIds	List<ID>	This is a list of product ids of the line item deleted from the cart.

### Code Sample

The sample below enables you to delete any constraint rules applied to a product that is deleted by a customer. For example, for all products you have added an inclusion constraint rule which states whenever you add a product, an installation charge is included along with the product. When the user deletes the product from the cart, this API enables you to delete the associated installation constraint rule applied to the product. Using the Product\_ID parameter you can specify the product from which the constraint rule is to be disassociated from.

```
Apttus_CPQApi.CPQWebService.applyConstraintRulesOnDelete(CART_ID, new
String[] {PRODUCT_IDS});
```

## Retrieving Constraint Rules Results

This retrieves the constraints rules applied to a cart.

### getConstraintRuleResult

Parameters		
Name	Type	Description
CartId	ID	When you pass the cartId as an argument to the API, it fetches ConstraintResultDO, which comprises all the constraint rules applied to the cart.

Response Data Object - CPQ.ConstraintResultDO		
Field	Type	Description
CartId	ID	The Id of the cart.
NeedMoreProcessing	Boolean	Indicates whether the rule required more processing.
HasPendingError	Boolean	Indicates whether there are pending rule actions that are error type.
HasPendingWarning	Boolean	Indicates whether there are pending rule actions that are warning type.
ConstraintRuleActions	List<CPQ.AppliedActionDO>	The list of constraint rule action applied to the cart.

### Code Sample

The sample below enables you to fetch the constraint rules applied to a cart with a specific Cart ID. Use this API when you want to view the constraint rules applied to a cart. For example, to generate a report about the constraint rules applied to a cart, you can fetch the constraint rules using this API.

```

public void getConstraintRuleResult()
{
    Integer numErrors = 0;

    Apttus_CPQApi.CPQ.ConstraintResultDO constraintResult =
    Apttus_CPQApi.CPQWebService.getConstraintRuleResult(cartID);

    List<Apttus_CPQApi.CPQ.AppliedActionDO> appliedActionDOList =
    constraintResult.ConstraintRuleActions;

```

```

    for(Apttus_CPQApi.CPQ.AppliedActionDO appliedActDO:
appliedActionDOList)
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, appliedActDO.Message));
        if(appliedActDO.MessageType.equals('Error') && appliedActDO.
IsPending)
        {
            numErrors++;
        }
    }
}

```

## Computing the Net Price for a Bundle

This API is used to calculate the price for the individual and summary line items of the cart. It runs the pricing rules, calculate bundle, line item, option level net prices and update the cart line with calculated prices. After the pricing is calculated for the cart line items, the resulting information is stored in the *Line Item* and *Summary Group* objects.

This API will also apply all the relevant rules and calculate the pricing including following among others:

- Line Item level discount
- Total Price based on specified quantity
- Applied Tiered Pricing
- Apply Ramp Pricing
- Apply Contractual Pricing
- Apply Related Pricing Rules

### **computeNetPriceForBundle**

Parameters		
Name	Type	Description
request	CPQ. ComputeNetPriceRequestDO	The request data object.

Request Data Object - CPQ.ComputeNetPriceRequestDO		
Field	Type	Description
CartId	ID	The Id of the cart.
LineNumber	Decimal	The bundle line number.

Response Data Object - CPQ.ComputeNetPriceResponseDO		
Field	Type	Description
IsSuccess	Boolean	Indicates whether getting the total net price was successful.

### Code Sample

The sample below prompts the user with the appropriate messages if a cart does not exist or when no products exist in the cart. If the user clicks calculate net price and products exist in the cart, the API computes the net price for all the line numbers of products in the cart with a specific cartID. For example, if the user wants to check the aggregate price of all the products in the cart, you can create a **Total Net Price** button on your cart page and invoke the computeNetPriceForBundle() API on click of the button. The API will calculate the total price taking into account any discount or pricing rules associated with the line items in the cart.

```
public void computeNetPriceForBundle()
{
```

```

//If a cart does not exist, there is no cartID. Show the following
message to the user.
    if(cartId == null)
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Please create cart.));
    }
//If no products are added to the cart, the lineNumber of the cart
is null. Prompt the use to add products to the cart.
    else if(lineNumber == null)
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Please add a bundle to the cart.));
    }
    else
    {
//Selected products are added to the cart. The request object
comprises the id of the cart and the line number in the cart
        for(Decimal line: lineNumber)
        {
            Apttus_CPQApi.CPQ.ComputeNetPriceRequestDO request = new
Apttus_CPQApi.CPQ.ComputeNetPriceRequestDO();
            request.CartId = cartId;
            request.LineNumber = line;

            Apttus_CPQApi.CPQ.ComputeNetPriceResponseDO
priceResponse = Apttus_CPQApi.CPQWebService.computeNetPriceForBundle
(request);

            ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Success: ' + priceResponse.IsSuccess));
        }
    }
}

```

## Finalizing a Cart's Contents

This finalizes the cart, synchronizing the cart line items with the quote/proposal.

### finalizeCart

Parameters		
Name	Type	Description
request	CPQ.FinalizeCartRequestDO	The request data object.

Request Data Object - CPQ.FinalizeCartRequestDO		
Field	Type	Description
CartId	ID	The Id of the cart.

Response Data Object - CPQ.FinalizeCartResponseDO		
Field	Type	Description
IsSuccess	Boolean	Indicates whether finalizing the cart items was successful.

### Code Sample

The sample enables you to finalize a cart with a specific cartID and synchronizes the products (line items) added to the cart with the quote or proposal used to generate the cart. You can create a button finalize cart which the user will click once the products in the cart are adjusted and final. Invoke this API on click of the button.

```
public void finalizeCart()
{
    // create the finalize cart request
```

```

        Apttus_CpqApi.CPQ.FinalizeCartRequestDO request = new
Apttus_CpqApi.CPQ.FinalizeCartRequestDO();
        // add request parameters
        request.CartId = CartId;
        // finalize the cart
        Apttus_CpqApi.CPQ.FinalizeCartResponseDO response =
Apttus_CpqApi.CPQWebService.finalizeCart(request);
    }

```

## Synchronizing a Cart

This is used to sync the shopping cart with the product configuration on the quote record.

### SynchronizeCart

Parameters		
Name	Type	Description
request	CPQ.SynchronizeCartRequestDO	The request data object.

Request Data Object - CPQ.SynchronizeCartRequestDO		
Name	Type	Description
CartId	ID	The ID of the cart (Product Configuration) you want to synchronize.

Response Data Object - CPQ.SynchronizeCartResponseDO		
Name	Type	Description
IsSuccess	Boolean	Indicates whether synchronizing the cart items was successful.

### Code Sample



The sample below enables you to synchronize the cart items with a quote. When the customer has finalized the cart, you can synchronize the products in the cart with the quote used to generate the cart. Invoke this API when the user has finalized the cart. The cartID with the updated products is provided as a parameter to the API.

```
public void synchronizeCart()
{
    //Pass the cartID as a parameter to the API to synchronize your
    quote with the updated cart items.
    Apttus_CPQApi.CPQ.SynchronizeCartRequestDO request = new
    Apttus_CPQApi.CPQ.SynchronizeCartRequestDO();
    request.CartId = cartId;

    Apttus_CPQApi.CPQ.SynchronizeCartResponseDO response =
    Apttus_CPQApi.CPQWebService.synchronizeCart(request);

    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
    info, 'Success: ' + response.IsSuccess));
}
```

## Abandoning a Cart

This deletes the selected cart in **Draft** status.

### abandonCart

Parameters		
Name	Type	Description
request	CPQ.AbandonCartRequestDO	The request data object.

**Request Data Object - CPQ.AbandonCartRequestDO**

Field	Type	Description
CartId	ID	The Id of the cart.

**Response Data Object - CPQ.AbandonCartResponseDO**

Field	Type	Description
IsSuccess	Boolean	Indicates whether the cart is deleted successfully.

**Code Sample**

The sample below enables you to send an API request for abandon cart along with the cart ID. The cart whose id has been passed will be abandoned when the request is successful. The response message in the sample indicates whether the request was successful. When the user clicks Abandon Cart the abandonCart API will be invoked and the cartID associated with the request is abandoned.

```

public void abandonCart()
{
    Apttus_CPQApi.CPQ.AbandonCartRequestDO request = new
Apttus_CPQApi.CPQ.AbandonCartRequestDO();
    request.CartId = cartId;

    Apttus_CPQApi.CPQ.AbandonCartResponseDO response = Apttus_CPQApi.
CPQWebService.abandonCart(request);
    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
info, 'Success: ' + response.IsSuccess));
}

```

## Updating Quote Terms

This method enables you to update the expected start date and expected end date of the quote, along with its selling term. This method does the following:

- Updates *Expected Start Date* and *Expected End Date* for the Apttus Quote/Proposal object.
- Retrieves the finalized cart associated with the quote.
- Creates a new cart by checking out the finalized cart.
- Updates Expected Start Date & Expected End Date in the cart object. Note this is for the new *Apttus Product Configuration* cart object.
- Updates Start Date, End Date, and Selling Term on line item terms that have a valid start date, i.e. when the start date is not null.
- Selling Term may be set to null to clear out the existing selling term which triggers a recalculation of the selling term using the start and end dates. Alternatively, if start date and selling term are provided, the end date is automatically calculated.
- Updates the net price and total price for the cart.
- The ID of the new cart is returned to the caller.
- It is the caller's responsibility to finalize the cart.

The field *QuoteLineItemColl*, which is part of the *CPQ.UpdateQuoteTermRequest*, can accept a list of quote line item sObjects which can hold the data to override one or more line items. For this the line items need to have the following fields populated:

- Start Date
- End Date
- Selling Term
- Derived Form

Line items which match the *Derived From* value will get overridden values from the Quote Line items. The remaining fields will default to values provided in the request object. A null value in the *Start Date* field in the request will prevent the values from defaulting to the line items from the request object.

### **updateQuoteTerm**

Parameters		
Name	Type	Description
CPQ.UpdateQuoteTermRequestDO	request	This is the request call made by the method.

Request Data Object - CPQ.UpdateQuoteTermRequestDO			
Field	Type	Mandatory	Description
QuoteId	ID	Yes	The Id of the quote you want to change the dates and selling term for.
QuoteLineItemCollDO	List of LineItems	No	The collection of Line items to be updated.
StartDate	Date	Yes	The expected start date of the quote.
EndDate	Date	No for Auto-roll scenario	The expected end of the quote.
SellingTerm	Decimal	No. Null for pro-rata	The selling term of the quote is typically measured in years, months, or days.
Recalculate Selling Term	Boolean	No for Auto-roll scenario. Yes for Pro-rata scenario	Set this value to true in the prorata scenario. For example, license validity start date will be applicable from the day the customer accepts the proposal.

Response Data Object - CPQ.UpdateQuoteTermResponseDO		
Field	Type	Description
CartId	ID	Id of the cart updated.

### Code Sample

The sample below enables you update the end date of a cart after the date of acceptance of the proposal. The auto-roll up end date is the sum of the proposal acceptance start date and selling term. When the recipient of the proposal accepts the quote and updates the status, invoke this API to update the start date and selling term of the products associated to the quote. In the sample below, the user enters the quote name in a search field and clicks Search. If a valid quote exists by the name, the quote is fetched. If the user clicks the update Quote Terms button, the API is invoked and the end date is updated.

```

public void autoroll()
{
    //Search a quote by its name and fetch its ID
    List<Apttus_Proposal__Proposal__c> listQuote = [Select Id from
Apttus_Proposal__Proposal__c where Name=:quoteNumber LIMIT 1];

    //If a valid quote exists with the name execute the if loop
    if(listQuote.size() > 0)
    {
        Apttus_CPQApi.CPQ.UpdateQuoteTermRequestDO updateQTRrequest =
new Apttus_CPQApi.CPQ.UpdateQuoteTermRequestDO();
        updateQTRrequest.QuoteId = listQuote[0].Id;

        //Start date=current date entered in the from field of the proposal.
        updateQTRrequest.StartDate = fromdate;
        //End date=startdate+selling term
        updateQTRrequest.EndDate = updateQTRrequest.StartDate.addMonths
(sellingTerm);
        /**updateQTRrequest.EndDate = endDate;*/
    }
}

```

```

        /*updateQTRRequest.SellingTerm = 12;*/

//Execute the API to update quote term
    Apttus_CPQApi.CPQ.UpdateQuoteTermResponseDO updateQTReponse
= Apttus_CPQApi.CPQWebService.updateQuoteTerm(updateQTRRequest);

    ID cartID = updateQTReponse.cartID;

//Invoke the finalize cart request to update end date with the cart
    Apttus_CPQApi.CPQ.FinalizeCartRequestDO finalizeRequest = new
Apttus_CPQApi.CPQ.FinalizeCartRequestDO();
    finalizeRequest.CartId = cartId;
//Invoke the finalize cart API to update the cart details
    Apttus_CPQApi.CPQ.FinalizeCartResponseDO finalizeResponse =
Apttus_CPQApi.CPQWebService.finalizeCart(finalizeRequest);
    }
}

```

The sample below enables you to update the start date and end date of a cart after the date of acceptance of the proposal. When the recipient of the proposal accepts the quote and updates the status, invoke this API to update the start date, end date and selling term of the products associated to the quote. In the sample below, the user enters the quote name in a search field and clicks Search. If a valid quote exists by the name, the quote is fetched. If the user clicks the update Quote Terms button, the API is invoked and the start date is updated. The validity i.e the selling term has to be updated on a pro-rata basis.

```

public void prorata()
{
//Search a quote by its name and fetch its ID
    List<Apttus_Proposal__Proposal__c> listQuote = [Select Id from
Apttus_Proposal__Proposal__c where Name=:quoteNumber LIMIT 1];

//If a valid quote exists with the name execute the if loop
    if(listQuote.size() > 0)
    {

        Apttus_Proposal__Proposal__c propSO = [select id,
Apttus_Proposal__ExpectedStartDate__c,

```

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```
Apttus_Proposal__ExpectedEndDate__c from
Apttus_Proposal__Proposal__c where id = :listQuote[0].Id limit 1];
    Date startDate = propSO.
Apttus_Proposal__ExpectedStartDate__c;
    Date endDate = propSO.Apttus_Proposal__ExpectedEndDate__c;

    Apttus_CPQApi.CPQ.UpdateQuoteTermRequestDO updateQTRequest =
new Apttus_CPQApi.CPQ.UpdateQuoteTermRequestDO();
    updateQTRequest.QuoteId = listQuote[0].Id;
//Fetch the start date of the proposal
    updateQTRequest.StartDate = fromdate;
    /**updateQTRequest.EndDate = updateQTRequest.StartDate.
addMonths(12);**/
//Fetch the end date of the proposal
    updateQTRequest.EndDate = endDate ;
    updateQTRequest.SellingTerm = null;

//Selling Term to be recalculated based on the start date and end
date
    updateQTRequest.ReCalcSellingTerm = true;
    /**updateQTRequest.SellingTerm = 12;*/

//Execute the API to update quote term
    Apttus_CPQApi.CPQ.UpdateQuoteTermResponseDO updateQTReponse
= Apttus_CPQApi.CPQWebService.updateQuoteTerm(updateQTRequest);

    ID cartID = updateQTReponse.cartID;
//Invoke the finalize cart request to update selling term of product
with the cart
    Apttus_CPQApi.CPQ.FinalizeCartRequestDO finalizeRequest = new
Apttus_CPQApi.CPQ.FinalizeCartRequestDO();
    finalizeRequest.CartId = cartId;
    Apttus_CPQApi.CPQ.FinalizeCartResponseDO finalizeResponse =
Apttus_CPQApi.CPQWebService.finalizeCart(finalizeRequest);
    }
}
```

## Price Breakup for a Cart or Specific Line Item

This method can be used to retrieve the price breakup for a cart or specific line item.

The *CartId* is a mandatory parameter, while *LineItemId* can be null.

### getPriceBreakup

Parameters		
Name	Type	Description
request	CPQ.GetPriceBreakupRequestDO	The request data object.

Request Data Object - CPQ.GetPriceBreakupRequestDO		
Name	Type	Description
CartId	ID	The ID of the new cart object. Mandatory parameter.
LineItemId	ID	The ID of the line item. This can be null. If it is null the price breakup for all applicable line items in the cart is retrieved. If a value is provided, only the price breakup for that specific line item is retrieved.

Response Data Object - CPQ.GetPriceBreakupResponseDO		
Name	Type	Description
HasPriceBreakups	Boolean	Indicates whether there are price breakups for the cart.
PriceBreakups	List <CPQ.PriceBreakupCollDO>	The list of price breakup collection objects



Data Object - CPQ.PriceBreakupCollDO		
Name	Type	Description
LineItemId	ID	The ID of the line item associated with the price break subjects.
BreakupItems	List<Apttus_Config2__PriceBreakup__c>	The list of price breakup subjects associated with the line item.

### Code Sample

Using the sample below you can enable the end user to view the price break up for a selected product. Suppose the user has selected a product Laptop, using the Price Breakup API, you can show the end user the pricing breakup. For example, if the user has bought 25 laptops and for 20 quantities of the laptop a 5% discount is provided on the net price, and for the other 5 quantities a discount of 10% is given. Using the getPriceBrakup API you can show the user the tiered pricing pattern applied to a product.

```

public void getPriceBreakup()
{
    lstPriceBreakup = new List<PriceBreakUpWrapperClass>();
    //For a selected product in a cart execute this loop.
    for(LineItemWrapperClass objLineItemWrapperClass:
lstWrapItems)
    {
        if(objLineItemWrapperClass.selected)
        {
            Apttus_CPQApi.CPQ.GetPriceBreakupRequestDO
priceBreakUpRequest = new Apttus_CPQApi.CPQ.
GetPriceBreakupRequestDO();
            priceBreakUpRequest.CartId = cartId;
            priceBreakUpRequest.LineItemId =
objLineItemWrapperClass.Id;

            //Pass the parameters to the API

```

```

        Apttus_CPQApi.CPQ.GetPriceBreakupResponseDO
priceBreakUpResponse = Apttus_CPQApi.CPQWebService.getPriceBreakup
(priceBreakUpRequest);

//If the response returns true i.e. HasProducts=true execute the
loop below and fetch the priceBreakup list.
        if(priceBreakUpResponse.HasPriceBreakups)
        {
            lstPriceBreakUpCalls = new List<Apttus_CPQApi.
CPQ.PriceBreakupCollDO>();
            lstPriceBreakUpCalls = priceBreakUpResponse.
PriceBreakups;

            for(Apttus_CPQApi.CPQ.PriceBreakupCollDO
objPriceBreakUpCall : lstPriceBreakUpCalls )
            {
                //priceBreakUpList = new
List<Apttus_Config2__PriceBreakup__c>();
                //priceBreakUpList = objPriceBreakUpCall.
BreakupItems;

                String lineItemId = objPriceBreakUpCall.
LineItemId;

                List<Apttus_Config2__PriceBreakup__c>
liSopriceBreakUpList = [select id, Apttus_Config2__Sequence__c,
Apttus_Config2__BreakupType__c,
                Apttus_Config2__TierStartValue__c,
Apttus_Config2__TierEndValue__c, Apttus_Config2__TierQuantity__c,
Apttus_Config2__TierBasePrice__c,
Apttus_Config2__TierExtendedPrice__c from
Apttus_Config2__PriceBreakup__c where Apttus_Config2__LineItemId__c
= :lineItemId];

                for(Apttus_Config2__PriceBreakup__c
lipriceBreakUpList : liSopriceBreakUpList)
                {
                    PriceBreakUpWrapperClass
objPriceBreakUpWrapperClass = new PriceBreakUpWrapperClass();
                    objPriceBreakUpWrapperClass.BreakUpID =
lipriceBreakUpList.Id;
                    objPriceBreakUpWrapperClass.Sequence =
lipriceBreakUpList.Apttus_Config2__Sequence__c;
                }
            }
        }

```

```

                                objPriceBreakUpWrapperClass.BreakupType
= lipriceBreakUpList.Apttus_Config2__BreakupType__c;
                                objPriceBreakUpWrapperClass.
TierStartValue = lipriceBreakUpList.
Apttus_Config2__TierStartValue__c;
                                objPriceBreakUpWrapperClass.TierEndValue
= lipriceBreakUpList.Apttus_Config2__TierEndValue__c;
                                objPriceBreakUpWrapperClass.TierQty =
lipriceBreakUpList.Apttus_Config2__TierQuantity__c;
                                objPriceBreakUpWrapperClass.
TierUnitPrice = lipriceBreakUpList.Apttus_Config2__TierBasePrice__c;
                                objPriceBreakUpWrapperClass.
TierUnitPrice = objPriceBreakUpWrapperClass.TierUnitPrice.setScale(2,
System.RoundingMode.HALF_UP);
                                objPriceBreakUpWrapperClass.
TierExtendedPrice = lipriceBreakUpList.
Apttus_Config2__TierExtendedPrice__c;
                                objPriceBreakUpWrapperClass.
TierExtendedPrice = objPriceBreakUpWrapperClass.TierExtendedPrice.
setScale(2, System.RoundingMode.HALF_UP);

                                lstPriceBreakup.add
(objPriceBreakUpWrapperClass);
                                }
                                }
                                }
//If the product selected has no price breakups show an appropriate
message.
                                else
                                {
                                    ApexPages.addMessage(new ApexPages.Message
(ApexPages.severity.info, 'No Price Breakup Available.));
                                }
                                }
                                }
                                }

```

## Updating Price For A Cart

This method enables you to update the price for items in a given cart. Only line items in pending status are updated.

### updatePriceForCart

Parameters		
Name	Type	Description
Request	CPQ.UpdatePriceRequestDO	This is the request data object.

Request Data Object - CPQ.UpdatePriceRequestDO		
Field	Type	Description
CartId	ID	The Id of the cart to update the price for.

Response Data Object - CPQ.UpdatePriceResponseDO		
Field	Type	Description
IsPricePending	Boolean	Indicates whether there are more items to update in future invocations. The caller needs to invoke the update price method in a separate transaction. This should be repeated until there are no more items pending.
PendingLineNumbers	List<Integer>	The list of line numbers in pending status after the method completes.

Response Data Object - CPQ.UpdatePriceResponseDO		
Field	Type	Description
CompletedLineNumbers	List<Integer>	The list of line numbers representing line items which were updated in the current update price invocation.

### Code Sample

The sample below enables you to update the net price in the cart for pending line items. In the sample below, with a single call of updatePriceForCart API, the API computes the net price for a single line item with status pending. updatePriceForCart API is invoked using <apex:actionPoller> command until compute net price operation is completed for all the line items in the cart. For example, there are 10 line items in the cart and you invoke updatePriceForCart API 10 times at regular interval of 5 seconds using <apex:actionPoller> command to complete the computing net price operation for all 10 line items.

```
<apex:actionPoller action="{!doUpdatePrice}" rerender="MessageID"
interval="5" rendered="{!actionPollerActive}" enabled="{!
actionPollerActive}"/> .
```

In the sample below the action poller is run as soon as the page is loaded. The hasPendingItems flag returns false since no pending items have been added to the cart yet. If a valid cartID has been passed as an argument to the API and isPricePending returns true, run the action poller and invoke the updatePriceforCart API. The action poller does not run when hasPendingItems=false. You can invoke this API when the user adds discounts to the cart and clicks Reprice.

```
public void updatePriceforCart()
{
    hasPendingItems = false;
    actionPollerActive = true;

    if(String.isBlank(cartId))
    {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Please create cart.));
```

```

        objUpdatePriceRequestDO = new Apttus_CpqApi.CPQ.
UpdatePriceRequestDO();
    }
    else
    {
        // create the update price request
        objUpdatePriceRequestDO = new Apttus_CpqApi.CPQ.
UpdatePriceRequestDO();

        // add request parameters
        objUpdatePriceRequestDO.CartId = cartId;

        // update price for the cart
        Apttus_CpqApi.CPQ.UpdatePriceResponseDO result =
Apttus_CpqApi.CPQWebService.updatePriceForCart
(objUpdatePriceRequestDO);

        hasPendingItems = result.IsPricePending;

        // Start the action poller. If isPricePending=true returns
true, run the action poller and the updatePrice API is invoked again
        if (hasPendingItems)
        {
            actionPollerActive = true;
            flagUpdatePrice = true;
        }
    }
}

// invoke the following in a new transaction using action poller
public void doUpdatePrice()
{
    // update price for the cart

    if(String.isNotBlank(cartId) && flagUpdatePrice == true)
    {
        // create the update price request
        objUpdatePriceRequestDO = new Apttus_CpqApi.CPQ.
UpdatePriceRequestDO();

        // add request parameters
        objUpdatePriceRequestDO.CartId = cartId;

```

```

        Apttus_CpqApi.CPQ.UpdatePriceResponseDO result =
Apttus_CpqApi.CPQWebService.updatePriceForCart
(objUpdatePriceRequestDO);

        hasPendingItems = result.IsPricePending;
        List<Integer> pendingLineNumbers = result.PendingLineNumbers;
        List<Integer> completedLineNumbers = result.
CompletedLineNumbers;

        if( hasPendingItems == false && completedLineNumbers.size() !
= 0 )
        {
            // stop the action poller
            actionPollerActive = false;
        }
        else if( hasPendingItems == true && pendingLineNumbers.size()
> 0 )
        {
            actionPollerActive = true;
        }
    }
}

```

## Computing Shipping for Cart Line Items

This API enables you to calculate the shipping amount for an entire order and does not display the breakup for each line item.

### computeShippingForCart

Parameters		
Name	Type	Description
request	Apttus_CPQApi.CPQ.ComputeShippingRequestDO	The compute shipping request.

**Request Data Object - CPQ.ComputeShippingRequestDO**

Field	Type	Description
CartID	ID	The id of the cart.

**Response Data Object - CPQ.ComputeShippingResponseDO**

Field	Type	Description
TotalShippingItem	Apttus_Config2__LineItem__c	The line item with total taxes.
ShippingResults	Map<ID, Apttus_Config2. CustomClass. ShippingResult>	The shipping result object populated by the line item id. This is only available when called from Apex.

**Data Object - Apttus\_Config2.CustomClass.ShippingResult**

Field	Type	Description
ShippingCharge	Decimal	Shipping amount total of all the cart line items. This is the total shipping amount for the line item. Line item is identified by the sequence in which the shipping result is added. This needs to be calculated and populated by the implementation.
Handback	Object	Any Apex Object passed by the calling class and passed back to the calling class in the result.  Handback is used only in case when the shipping charge needs to be calculated for an object other than Cart line item e.g. Billing Schedule line items.



Data Object - Apttus_Config2.CustomClass.ShippingResult		
Field	Type	Description
		<ul style="list-style-type: none"> <li>For calculating shipping charges for a cart, there is no need to pass the Handback object. It can be blank</li> <li>For calculating the shipping charges for objects other than line items, "Item" field will be blank and the actual object will be passed as handback object to identify the object for which shipping charges are calculated.</li> </ul>

### Code Sample

The sample below enables you to compute shipping for a cart with a valid cartID. Using the sample below, you can compute shipping for the entire cart using the values fetched from the shipping callback class. If the shipping charge is location dependent, ensure that the account associated with the order or proposal has a valid shipping to and billing to address.

For more information about Tax and Shipping scenarios refer, [Updating Taxes and Shipping for an Order](#).

```

public void computeShippingForCart()
{
    if(String.isNotBlank(cartId))
    {
        // Start timer
        startTime = System.currentTimeMillis();

        // Create the request
        Apttus_CPQApi.CPQ.ComputeShippingRequestDO request = new
Apttus_CPQApi.CPQ.ComputeShippingRequestDO();

        // Add request parameters
        request.CartId = cartId;

        // Compute Shipping For Cart
        Apttus_CPQApi.CPQ.ComputeShippingResponseDO result =
Apttus_CPQApi.CPQWebService.computeShippingForCart(request);
    }
}

```

```

// End timer
ResponseTime('computeShippingForCart');

// Get Total Tax Item
ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Total Shipping Item : ' + result.TotalShippingItem));

    Map<ID, Apttus_Config2.CustomClass.ShippingResult>
shippingResults = new Map<ID, Apttus_Config2.CustomClass.
ShippingResult>();

    shippingResults = result.ShippingResults;

    for(Id sId : shippingResults.keySet()) {

        Apttus_Config2.CustomClass.ShippingResult shippingResult
= shippingResults.get(sId);

        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Shipping Charges : ' + shippingResult.
ShippingCharge));
    }

    } else {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Invalid or blank cart Id.));
    }
}

```

## Computing Taxes for Cart Line Items

This API enables you to calculate tax breakups for cart line item.

### **computeTaxForCart**

Parameters		
Name	Type	Description
request	Apttus_CPQApi.CPQ.ComputeTaxRequestDO	The compute tax request

Request Data Object - CPQ.ComputeTaxRequestDO		
Field	Type	Description
CartID	ID	The id of the cart.

Response Data Object - CPQ.ComputeTaxResponseDO		
Field	Type	Description
TotalTaxItem	Apttus_Config2__LineItem__c	The line item with total taxes.
TaxResults	Map<ID, Apttus_Config2.CustomClass.TaxResult>	The Tax Result object populated by the line item id. This is only available when called from Apex.

Data Object - Apttus_Config2.CustomClass.TaxResult		
Field	Type	Description
TaxAmount	Decimal	This is the total amount for the line item. This is sum of the breakup tax amounts for the line item. Line item is identified by the sequence in which the tax result is added. This needs to be calculated and populated by the implementation.

Data Object - Apttus_Config2.CustomClass.TaxResult		
Field	Type	Description
TaxBreakups	List<Apttus_Config2__TaxBreakup>	Tax breakup provide the different components of the tax for a given line item. This needs to be implemented and provided by the implementation. Tax breakup has structure specified below.
Handback	Object	<p>Any Apex Object passed by the calling class and passed back to the calling class in the result.</p> <p>Handback is used only in case when the tax needs to be calculated for an object other than Cart line item e.g. Billing Schedule line items.</p> <ul style="list-style-type: none"> <li>• For calculating tax for cart line items, there is no need to pass the Handback object. It can be blank</li> <li>• For calculating the tax for object other than line items, "Item" field will be blank and the actual object will be passed as handback object to identify object for which tax is calculated.</li> </ul>

Data Object - Apttus_Config2__TaxBreakup		
Field	Type	Description
TaxType	String	Type of tax to be applied. For example, sales, custom, excise

<b>Data Object - Apttus_Config2__TaxBreakup</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
TaxRate	Decimal	Tax percentage to be applied
TaxAppliesTo	String	The field on which the tax is applied to. For example, net price.
TaxAmount	Decimal	The tax amount calculated based on the formulae defined in the callback.
BreakupType	String	If you specify the breakup type as Detail, then the quote or order line items show the detailed tax break up for a cart line item.

**Tax Breakup Type Example**

<b>Breakup Type</b>	<b>Tax Type</b>	<b>Tax Rate</b>	<b>Tax Applies to</b>	<b>Tax Amount</b>
Detail	State Tax	10	Net Price	100
Detail	City Tax	1	Net Price	10
Total				110

**Code Sample**

The sample below enables you to compute tax for a cart with a valid cartID. Using the sample below, you can compute tax for the entire cart using the values fetched from the tax callback class. The fields Taxable, Tax Inclusive and Tax Code are inherited from the quote or order line item. Tax code must be populated on the Price list item for each product and charge type combination. The Account and Account Location have a Tax Exempt indicator which overrides everything. For example, if the Account has a Tax Exempt flag enabled, then Tax is not calculated for the account. System gives preference to location, unless it is blank. If product is not taxable or tax inclusive, system will skip that line item.

For more information about Tax and Shipping scenarios refer, [Updating Taxes and Shipping for an Order](#).

```

public void computeTaxForCart()
{
    if(String.isNotBlank(cartId))
    {

        // Create the request
        Apttus_CPQApi.CPQ.ComputeTaxRequestDO request = new
Apttus_CPQApi.CPQ.ComputeTaxRequestDO();

        // Add request parameters
        request.CartId = cartId;

        // Compute Tax for cart
        Apttus_CPQApi.CPQ.ComputeTaxResponseDO result =
Apttus_CPQApi.CPQWebService.computeTaxForCart(request);

        // Get Total Tax Item
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Total Tax Item : ' + result.TotalTaxItem));

        Map<ID, Apttus_Config2.CustomClass.TaxResult> taxResults = ne
w Map<ID, Apttus_Config2.CustomClass.TaxResult>();
        lstTaxBreakUpWrapper = new List<TaxBreakUpWrapper>();

        taxResults = result.TaxResults;

        for(ID tId : taxResults.keySet()) {
            Apttus_Config2.CustomClass.TaxResult taxResult =
taxResults.get(tId);

            // Tax Amount
            ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Tax Amount : ' + taxResult.TaxAmount));

            // Tax BreakUps

```

```

        for(Apttus_Config2__TaxBreakup__c taxBreakUp : taxResult.
TaxBreakups) {

            TaxBreakUpWrapper temp = new TaxBreakUpWrapper();
            temp.TaxBreakUpId = taxBreakUp.Id;
            temp.TaxType = taxBreakUp.Apttus_Config2__TaxType__c;
            temp.TaxAppliedTo = taxBreakUp.
Apttus_Config2__TaxAppliesTo__c;
            temp.TaxRate = taxBreakUp.Apttus_Config2__TaxRate__c;
            temp.TaxAmount = taxBreakUp.
Apttus_Config2__TaxAmount__c;
            temp.Sequence = taxBreakUp.
Apttus_Config2__Sequence__c;

            lstTaxBreakUpWrapper.add(temp);
        }
    } else {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Invalid or blank cart Id.));
    }
}

```

## Retrieving Incentives on the Cart

This API is used to retrieve the incentives which your users want to apply automatically or manually to the products in your shopping cart.

### getIncentivesForCart

Parameters		
Name	Type	Description
request	CPQ.GetIncentivesForCartRequestDO	The request data object.

**Request Data Object - CPQ.GetIncentivesForCartRequestDO**

Field	Type	Description
CartID	ID	The id of the cart, containing products on which the promotions are applied.

**Response Data Object - CPQ.GetIncentivesForCartResponseDO**

Field	Type	Description
Incentives	List<Incentives>	This is a list of incentives, on which the PUSH promotion is applied.

**Data Object -**

Field	Type	Description
Name	String	User specific name for the Incentive. This promotion name is displayed to the user at any place the Incentive information is displayed. For example, whenever a user looks-up the promotion information applicable to a specific product, the promotion name you provide here is displayed.
UseType	Picklist	This picklist indicates whether the incentive is of type Promotion or Rebate. In our case, select <i>Promotion</i> .
StopProcessingMoreIncentives	Boolean	Indicates if the system does not have to process other incentives in case if there are multiple incentives applicable at the same time.



<b>Data Object -</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
Status	Picklist	<p>Specifies the status of the Promotion. The status of the promotion is dependent on the promotion lifecycle. Once a promotion is approved, you can set the status of the approval as active.</p> <p>Approvals on Promotions - Admins can setup approval processes and other workflows on promotions. Marketing managers can send promotions for approval and approvers can view the promotion, approve or reject the promotions with or without comments, and activate it.</p>
Sequence	Number	Defines the sequence in which incentives are applied, when there are more than one incentives.
RegionScope	Look up	Enables you to define promotions for a particular region. While defining a promotion you can choose to include or exclude a region. The region picklist must be defined for the Account object.
RegionScopeOper	Picklist	Consists of options like, Include and Exclude. These allow you to control if you want to include or exclude a region for a particular promotion.
ProductScope	Look up	Consists of the products for which you have defined promotions.
ProductScopeOper	Picklist	Based on the selected Product, you can control whether to include or exclude that product.
ProductFamilyScope	Look up	

Data Object -		
Field	Type	Description
		Consists of the product family for which you have defined promotions.
ProductFamilyScopeOper	Picklist	Based on the selected Product Family, you can control whether to include or exclude that particular product family.
PriceListScope	Look up	Consists of the price list for which you have defined promotions.
PriceListScopeOper	Picklist	Based on the selected Price List, you can control whether to include or exclude that particular price list and its products.
IncentiveNumber	Auto Number	System generated unique number for the Incentive. This differs from the Salesforce record id. When an active incentive is changed over time, the Incentive number remains same.
IncentiveCode	String	This is the code that is used for applying incentive. This code is captured on the order or proposal line items when an incentive is applied to the line item. By default, this value is set to Incentive Number, but is editable. This can also be used by the marketing team for marketing campaigns. When a promotion is not auto- applied, that is when the <b>Auto Apply ?</b> check box is cleared, the user can use the incentive code to avail a promotional offer.
ExpirationDate	Date	

Data Object -		
Field	Type	Description
		Date on which the promotion expires. It can be blank . It needs to be greater than the Start Date.
EffectiveDate	Date	Start Date from which the promotion is applicable.
CountryScope	Look up	Enables you to define promotions for a particular country. While defining a promotion you can choose to include or exclude a country. The country picklist must be defined for the Account object.
CountryScopeOper	Picklist	Consists of options like, Include and Exclude. These allow you to control if you want to include or exclude a country for a particular promotion.
AutoApply	Boolean	Can be set to <i>Yes</i> or <i>No</i> . Set it to <i>Yes</i> when you want a promotion to be automatically applied when a promotion criteria is met. Set it to <i>No</i> when you want the user to manually enter an Incentive Code to apply promotions.
ApplicationMethod	Picklist	When you select the Incentive category as <i>Promotion</i> , the incentive types are <i>Buy X Get X</i> , <i>Buy X Get Y</i> , <i>For Every X Get X</i> , <i>For Every Y Get Y</i> .
Active	Boolean	Can be set to <i>Yes</i> or <i>No</i> . Set it to <i>Yes</i> when you want a promotion to be applied and active for the criteria you specify. <b>Active</b> flag on the promotions will be set using a workflow linked to approvals similar to what you would do for any other custom object approval. For example, you can write a

Data Object -		
Field	Type	Description
		workflow rule to set the active status to true once the promotion is Approved (if approval is setup). Approvals set up would be similar to custom object approvals for any object.
AccountTypeScope	Look up	Enables you to define promotions for a particular Account type. While defining a promotion, you can choose to include or exclude the Account Type based on which the promotion is applied.
AccountTypeScopeOper	Picklist	Consists of options like, Include and Exclude. These allow you to define a promotion by choosing to include or exclude an account type.
AccountScope	Look up	Enables you to define promotions for a particular Account. While defining a promotion, you can choose to include or exclude the Account based on which the promotion is applied.
AccountScopeOper	Picklist	Consists of options like, Include and Exclude. These allow you to define a promotion by choosing to include or exclude an account.

### Code Sample

After you configure your products and update your pricing, the following code allows you to fetch the promo code, which your users can apply on the products in your shopping cart. This code snippet is for the PUSH and PULL type promotions. In the PUSH type, the promo code is automatically applied and in the PULL type, the user enters the promo code for multiple products

or on the entire cart before finalizing the cart. The Incentives list collects all the promo codes applicable on your shopping cart. The condition *Auto Apply\_\_c == false* further filters only those promo codes which you want the user to apply manually on the products. Each incentive record captures all the details listed in the above table.

```

public void getIncentivesForCart()
{
    Map<Decimal, String> incSequencePromoCodeMap = new
Map<Decimal, String>();
    List<Decimal> seqList = new List<Decimal>();

    Apttus_CPQApi.CPQ.GetIncentivesForCartRequestDO request = new
Apttus_CPQApi.CPQ.GetIncentivesForCartRequestDO();
    system.debug('Cart ID: ' + cartId);
    request.CartID = cartId;

    Apttus_CPQApi.CPQ.GetIncentivesForCartResponseDO response =
Apttus_CPQApi.CPQWebservice.getIncentivesForCart(request);

    String couponCodes = '';

    if(response.Incentives.size() > 0)
    {
        for(Apttus_Config2__Incentive__c incSO : response.
Incentives)
        {
            if(incSO.Apttus_Config2__AutoApply__c == false)
                couponCodes += incSO.
Apttus_Config2__IncentiveCode__c + ',';
        }
    }
}

```

## Cloning Bundle Line Items on the Cart

This method allows you to clone the primary bundle line items along with option line items and child line items (if applicable) on the Cart. This API is invoked when you click **Clone** action icon next to a bundle product on the Cart.

```
cloneBundleLineItems
```

Parameters		
Name	Type	Description
Request	CPQ.CloneLineItemsRequestDO	This is the request data object.

Request Data Object – CPQ.CloneLineItemsRequestDO		
Field	Type	Description
Cart ID	ID	The Id of the cart.
PrimaryLineNumber	Integer	The line numbers of the primary line items which have to be cloned using this API.

Response Data Object – CPQ.CloneLineItemsResponseDO		
Field	Type	Description
PrimaryLineNumber	List<IntegerMapDO>	The list of primary line item numbers.

Response Data Object – CPQ.IntegerMapDO		
Field	Type	Description
mapItem. Key	Integer	The line item numbers of the source primary line item from which new line items are cloned using this API.
mapItem. Value	Integer	The line item numbers of the cloned line items.

## Code Sample

Using the below sample, you can clone the primary bundle line items after you configure your products, add the attributes, configure your options and arrive on the cart. This API accepts the Cart ID and the primary bundle and option line item numbers. In the form of response, this API provides the original line items in the `mapItem.Key` parameter and the newly cloned line items in the `mapItem.Value` parameter.

For example, once you configure your cart by adding products using `addBundle` or `addMultiProducts` API, you can invoke this API in order to clone the bundle and option line items on the cart at any of the following:

- After the product is added on the Cart.
- Before making changes to pricing of the products.
- After updating the cart pricing using `updatePriceForCart` API.

```
public void cloneBundleLineItems()
{
    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
info, 'Cart Id: ' + cartId));

    Apttus_CPQApi.CPQ.CloneLineItemsRequestDO request = new
Apttus_CPQApi.CPQ.CloneLineItemsRequestDO();

    // cart id
    request.CartId = cartId;

    // primary line numbers to clone
    for(LineItemWrapperClass lineItemWrapperClass : lstWrapItems)
    {
        if(lineItemWrapperClass.selected)
        {
            List<Apttus_Config2__LineItem__c> primaryNumber = [SELECT
Apttus_Config2__PrimaryLineNumber__c FROM
Apttus_Config2__LineItem__c WHERE ID =: lineItemWrapperClass.ID];

            Decimal prNumber = primaryNumber[0].
Apttus_Config2__PrimaryLineNumber__c;

            request.PrimaryLineNumbers.add(prNumber.intValue());
        }
    }
}
```

```

    }
}

// make the call
Apttus_CPQApi.CPQ.CloneLineItemsResponseDO result =
Apttus_CPQApi.CPQWebService.cloneBundleLineItems(request);

for(Apttus_CPQApi.CPQ.IntegerMapDO mapItem : result.
OriginalToCloneMap)
    ApexPages.addMessage(new ApexPages.
Message(ApexPages.severity.info, 'Original Primary Line Number=' +
mapItem.Key + '->Clone Primary Line Number=' + mapItem.Value));

    getLineItems();
}

```

## Cloning Line Items on the Cart

This method enables you to clone the primary line items on the Cart. This API is invoked when you click **Clone** action icon next to a standalone product on the Cart.

cloneLineItems

Parameters		
Name	Type	Description
Request	CPQ.CloneLineItemsRequestDO	This is the request data object.

Request Data Object – CPQ.CloneLineItemsRequestDO		
Field	Type	Description
Cart ID	ID	The Id of the cart.
PrimaryLineNumber	Integer	



Request Data Object – CPQ.CloneLineItemsRequestDO		
		The line item numbers of the primary line items which have to be cloned using this API.

Response Data Object – CPQ.CloneLineItemsResponseDO		
Field	Type	Description
PrimaryLineNumber	List<IntegerMapDO>	The list of primary line item numbers.

Response Data Object – CPQ.IntegerMapDO		
Field	Type	Description
mapItem. Key	Integer	The line item numbers of the source primary line item from which new line items are cloned using this API.
mapItem. Value	Integer	The line item numbers of the cloned line items.

### Code Sample

Using the below sample, you can clone the primary line items after you configure your products, add the attributes and arrive on the cart. This API accepts the Cart ID and the primary line item numbers, and clones these line items. In the form of the response, this API provides the original line items in the `mapItem.Key` parameter and the newly cloned line items in the `mapItem.Value` parameter.

For example, once you configure your cart using *addMultiProducts* API, you can invoke this API in order to clone the line items on the cart at any of the following:

- After the product is added on the Cart.
- Before making changes to pricing of the products.

- After updating the cart pricing using *updatePriceForCart* API.

```

public void cloneLineItems()
{
    ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Cart Id: ' + cartId));

    Apttus_CPQApi.CPQ.CloneLineItemsRequestDO request = n
ew Apttus_CPQApi.CPQ.CloneLineItemsRequestDO();
    // cart id
    request.CartId = cartId;

    // primary line numbers to clone

    for(LineItemWrapperClass lineItemWrapperClass :
lstWrapItems)
    {
        if(lineItemWrapperClass.selected)
        {
            List<Apttus_Config2__LineItem__c>
primaryNumber = [SELECT Apttus_Config2__PrimaryLineNumber__c FROM
Apttus_Config2__LineItem__c WHERE ID =: lineItemWrapperClass.ID];
            Decimal prNumber = primaryNumber[0].
Apttus_Config2__PrimaryLineNumber__c;

            request.PrimaryLineNumbers.add(prNumber.
intValue());
        }
    }

    //make the call
    Apttus_CPQApi.CPQ.CloneLineItemsResponseDO result
= Apttus_CPQApi.CPQWebService.cloneLineItems(request);

    for(Apttus_CPQApi.CPQ.IntegerMapDO mapItem :
result.OriginalToCloneMap)

        ApexPages.addMessage(new ApexPages.Message
(ApexPages.severity.info, 'Original Primary Line Number=' + mapItem.
Key + '->Clone Primary Line Number=' + mapItem.Value));

```

```

    }
    getLineItems();
}
    
```

## Cloning Option Line Items on the Cart

This method allows you to clone the option line items and child line items (if applicable) on the Cart. This API is invoked when you click **Clone** action icon next to an option product on the Cart.

cloneOptionLineItems

Parameters		
Name	Type	Description
Request	CPQ.CloneLineItemsRequestDO	This is the request data object.

Request Data Object – CPQ.CloneLineItemsRequestDO		
Field	Type	Description
Cart ID	ID	The Id of the cart.
PrimaryLineNumber	Integer	The line numbers of the primary line items which have to be cloned using this API.

Response Data Object – CPQ.CloneLineItemsResponseDO		
Field	Type	Description
PrimaryLineNumber	List<IntegerMapDO>	The list of primary line item numbers.

**Response Data Object – CPQ.IntegerMapDO**

Field	Type	Description
mapItem. Key	Integer	The line item numbers of the source primary line item from which new line items are cloned using this API.
mapItem. Value	Integer	The line item numbers of the cloned line items.

**Code Sample**

Using the below code sample, you can clone the option line items after you configure your bundle products, add the attributes and arrive on the cart. This API accepts the Cart ID and the option line item numbers, and clones these line items. In the form of the response, this API provides the original line items in the `mapItem.Key` parameter and the newly cloned line items in the `mapItem.Value` parameter.

For example, once you configure your cart by adding option products using *addoptions* API, you can invoke this API in order to clone the option line items on the cart at any of the following:

- After the product is added on the Cart.
- Before making changes to pricing of the products.
- After updating the cart pricing using *updatePriceForCart* API.

```
public void cloneOptionLineItems()
{
    ApexPages.addMessage(new
        ApexPages.Message(ApexPages.severity.info, 'Cart Id: ' +
            cartId));

    Apttus_CPQApi.CPQ.CloneLineItemsRequestDO request = new
        Apttus_CPQApi.CPQ.CloneLineItemsRequestDO();

    // cart id
    request.CartId = cartId;
```

```

// primary line numbers to clone
for(LineItemWrapperClass lineItemWrapperClass : lstWrapItems)
{
    if(lineItemWrapperClass.selected)
    {
        List<Apttus_Config2__LineItem__c> primaryNumber = [SELECT
Apttus_Config2__PrimaryLineNumber__c FROM
Apttus_Config2__LineItem__c WHERE ID =: lineItemWrapperClass.ID];

        Decimal prNumber = primaryNumber[0].
Apttus_Config2__PrimaryLineNumber__c;

        request.PrimaryLineNumbers.add(prNumber.intValue());
    }
}

// make the call
Apttus_CPQApi.CPQ.CloneLineItemsResponseDO result =
Apttus_CPQApi.CPQWebService.cloneOptionLineItems(request);

ResponseTime('cloneOptionLineItems');

for(Apttus_CPQApi.CPQ.IntegerMapDO mapItem : result.
OriginalToCloneMap)

    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
info, 'Original Primary Line Number=' + mapItem.Key + '->Clone
Primary Line Number=' + mapItem.Value));

    getLineItems();
}

```

## Removing Line Items from the Cart

This API enables you to remove specific line items from the Cart. This API is invoked when you click **Remove** action icon next to any product on the Cart.

removeLineItems

Parameters		
Name	Type	Description
Request	CPQ.RemoveLineItemsRequestDO	This is the request data object.

Request Data Object – CPQ.RemoveLineItemsRequestDO		
Field	Type	Description
Cart ID	ID	The Id of the cart.
PrimaryLineNumbers	Integer	The line item numbers of the primary line items which have to be removed using this API.

Response Data Object – CPQ. RemoveLineItemsResponseDO		
Field	Type	Description
IsSuccess	Boolean	Indicates whether the operation of removing the line items was a success. True indicates success, false indicates that the line items were not removed from the Cart.

### Code sample

You can use this API after you realize that the end user has added some products (bundle, standalone or option) and you want to remove those products from the Cart at once. Along with the primary line items, this API also removes the child line items under these primary line items (if applicable).

```
public void removeLineItems()
{
```

```

    ApexPages.addMessage(new
    ApexPages.Message(ApexPages.severity.info, 'Cart Id: ' +
    cartId));

    Apttus_CPQApi.CPQ.RemoveLineItemsRequestDO request = new
    Apttus_CPQApi.CPQ.RemoveLineItemsRequestDO();

    // cart id
    request.CartId = cartId;

    // primary line numbers to clone
    for(LineItemWrapperClass lineItemWrapperClass : lstWrapItems)
    {
        if(lineItemWrapperClass.selected)
        {
            List<Apttus_Config2__LineItem__c> primaryNumber = [SELECT
            Apttus_Config2__PrimaryLineNumber__c FROM
            Apttus_Config2__LineItem__c WHERE ID =: lineItemWrapperClass.ID];

            Decimal prNumber = primaryNumber[0].
            Apttus_Config2__PrimaryLineNumber__c;

            request.PrimaryLineNumbers.add(prNumber.intValue());

        }
    }
    // make the call
    Apttus_CPQApi.CPQ.RemoveLineItemsResponseDO result =
    Apttus_CPQApi.CPQWebService.removeLineItems(request);

    ResponseTime('removeLineItems');

    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
    info, 'Removed Line Items : ' + result.IsSuccess));

    getLineItems();
}

```

## Updating Category Hierarchy for a single Category

This method allows you to run the Category maintenance for a single category. This is applicable to only those categories which have products associated to them. You can invoke this API when a user clicks **Update View** button in the Category Hierarchy.

updateCategoryView

Parameters		
Name	Type	Description
hierarchyId	ID	This is the ID of the category hierarchy record.

Response Data Object – Apttus_CpqApi.BatchUpdateService		
Field	Type	Description
apexBatchJobId	ID	The ID of the Batch Job run.

### Code sample

The code described below is used to run the Category Maintenance after you associate new products or modify the existing products under a category. You can also use this API when associate a Price List Item to a Category, under the related list, Price List Category.

This API takes up the ID of the category hierarchy record and returns the Batch job ID after success.

```
public void updateCategoryView(String categoryName)
{
    List<Apttus_Config2__ClassificationHierarchy__c> categoryList =
    [SELECT ID FROM Apttus_Config2__ClassificationHierarchy__c WHERE
    Name =: categoryName];
    String hierarchyId = categoryList[0].ID;
```



```

        ID apexBatchJobId = Apttus_CpqApi.BatchUpdateService.
updateCategoryView(hierarchyId);

        ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
info, 'Apex Batch Job Id : ' + apexBatchJobId));
    }

```

## Updating Category Hierarchy for multiple Categories

This method allows you to run the Category maintenance for multiple categories. This is applicable to only those categories which have products associated to them. You can invoke this API when a user clicks **Update View** button in the Category Hierarchy.

updateCategoryViews

Parameters		
Name	Type	Description
hierarchyIds	Set<ID>	This is the set containing the IDs of the category hierarchy records.

Response Data Object – Apttus_CpqApi.BatchUpdateService		
Field	Type	Description
apexBatchJobId	ID	The ID of the Batch Job run.

### Code sample

The code described below is used to run the Category Maintenance for multiple Category Hierarchies after you associate new products or modify the existing products under multiple categories. You can also use this API when associate a Price List Item to a Category, under the related list, Price List Category.

This API takes up the set of IDs of the category hierarchy records and returns the Batch job ID after success.

```

public void updateCategoryViews(List<String> categoryNames)
{
    Set<ID> hierarchyIds = new Set<ID>();
    for(String categoryName : categoryNames)
    {
        List<Apttus_Config2__ClassificationHierarchy__c>
categoryList = [SELECT ID FROM
Apttus_Config2__ClassificationHierarchy__c WHERE Name =:
categoryName];
        hierarchyIds.add(categoryList[0].ID);
    }

    ID apexBatchJobId = Apttus_CpqApi.BatchUpdateService.
updateCategoryViews(hierarchyIds);

    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
info, 'Apex Batch Job Id : ' + apexBatchJobId));
}

```

## BatchUpdate Web Service

The Batch Update Web Services enable you to update the single and multiple Category Views.

### Updating a Specific Category

Using this API enables you to update a category using the hierarchyID of a specific Category Hierarchy. You can invoke this API after you have associated a product or a bundle to the Category.

#### updateCategoryView

Parameters		
Name	Type	Description
hierarchyId	string	ID of the Category you want to update.

Response Object		
Field	Type	Description
apexBatchJobId	Id	Id of the Apex Batch job.

### Code Sample

The sample below enables you to update the Category based on the hierarchyID of the category. Using the sample code below you can fetch the categoryId using the categoryName.

```
public void updateCategoryView(String categoryName)
{
    List<Apttus_Config2__ClassificationHierarchy__c> categoryList =
    [SELECT ID FROM Apttus_Config2__ClassificationHierarchy__c WHERE
    Name =: categoryName];

    String hierarchyId = categoryList[0].ID;

    ID apexBatchJobId = Apttus_CpqApi.BatchUpdateService.
    updateCategoryView(hierarchyId);

    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
    info, 'Apex Batch Job Id : ' + apexBatchJobId));
}
```

### Updating Multiple Categories

Using this API enables you to update multiple categories using a set of hierarchyIDs of multiple Category Hierarchy. You can invoke this API after you have associated a product or a bundle to the Category.

#### updateCategoryViews

Parameters		
Name	Type	Description
hierarchyId	set	Set of the hierarchyIds of the categories you want to update.

Response Object		
Field	Type	Description
apexBatchJobId	Id	Id of the Apex Batch job.

### Code Sample

The sample below enables you to update multiple categories based on hierarchyIDs of categories. Using the sample code below you can fetch multiple categoryId using the categoryName.

```
public void updateCategoryViews(List<String> categoryNamees)
{
    Set<ID> hierarchyIds = new Set<ID>();

    for(String categoryName : categoryNamees) {

        List<Apttus_Config2__ClassificationHierarchy__c>
categoryList = [SELECT ID FROM
Apttus_Config2__ClassificationHierarchy__c WHERE Name =:
categoryName];

        hierarchyIds.add(categoryList[0].ID);
    }

    ID apexBatchJobId = Apttus_CpqApi.BatchUpdateService.
updateCategoryViews(hierarchyIds);

    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
info, 'Apex Batch Job Id : ' + apexBatchJobId));
}
```

}

## Order Web Service

You can use the Order Web Service APIs to create an order, create a shopping cart to order, create order line items from the shopping cart, and create the asset line items for the order.

You must use the CPQ web service APIs to complete the following tasks:

- Creating a cart
- Adding bundles and products a cart
- Finalizing or abandoning a cart
- Configuring categories, price lists, products, and bundles
- Generating a quote document
- [Creating an Order](#)  
This creates an order for a specific Account and Price List.
- [Creating a Cart for an Order](#)  
This creates a cart for the order referenced by OrderId.
- [Synchronizing a Cart to an Order](#)  
This is used to sync the shopping cart line items with the order line items. Before you synchronize your cart add products using addMultiProducts API, add bundles using the addBundle API. The API will generally be invoked when the user clicks the Place Order action from cart.
- [Create Asset Line Items for an Order](#)  
After you finalize and synchronize your cart, this is used to create asset line items for an order i.e add the finalized products as asset line items for the order.

### Creating an Order

This creates an order for a specific Account and Price List.

#### **createOrder**

Parameters		
Name	Type	Description
request	CPQStruct.CreateOrderRequestDO	The request data object.

Request Data Object - CPQStruct.CreateOrderRequestDO		
Field	Type	Description
AccountId	ID	The id of the Account to be associated with the order.
PriceListId	ID	The id of the PriceList to be associated with the order. Only the products associated with the Price List appear on the cart.
PricingDate	Datetime	Date and time associated with the order and represents the date when the order will be priced

Response Data Object - CPQStruct.CreateOrderResponseDO		
Field	Type	Description
orderId	ID	The ID of the newly created order object

### Code Sample

The sample below enables you to create an order for a valid account with an Account ID and a Price List with a valid price list id. Using the sample below, you can search for a valid account using an account number. If an account exists with the account number entered, you can create an order using the createorder API. You can invoke this API in use cases when you want to create an order page based on the account and price list.

```

public void createOrder()
{
    // Create the request
    Apttus_Config2.CPQStruct.CreateOrderRequestDO request = new
    Apttus_Config2.CPQStruct.CreateOrderRequestDO();

    // Add request parameters
    request.AccountId = accountId;
    request.PriceListId = priceListId;
    request.PricingDate = Datetime.now();

    // Create a new order
    Apttus_Config2.CPQStruct.CreateOrderResponseDO result =
    Apttus_Config2.OrderWebService.createOrder(request);

    // Assign orderId to local variable
    orderId = result.OrderSO.Id;
}
    
```

## Creating a Cart for an Order

This creates a cart for the order referenced by OrderId.

### createCart

Parameters		
Name	Type	Description
request	CPQStruct.CreateCartRequestDO	The request data object.

Request Data Object - CPQStruct.CreateCartRequestDO		
Field	Type	Description
OrderId	ID	The id of the order to be associated with the cart.

**Request Data Object - CPQStruct.CreateCartRequestDO**

Field	Type	Description
Properties	List<Config2.Property>	The list of properties applicable to the cart

**Data Object - Config2.Property**

Field	Type	Description
Name	String	Specify the features applicable to the cart. Applicable values are: <ul style="list-style-type: none"> <li>• useAdvancedApproval: Enables Advanced Approval for a cart.</li> <li>• useDealOptimizer: Enables Deal Optimizer for a cart</li> </ul>
Value	String	The applicable values are true or false. Specifying the value as true enables the feature for a cart.

**Response Data Object - CPQStruct.CreateCartResponseDO**

Field	Type	Description
CartId	ID	The ID of the newly created cart object

**Code Sample**

The sample below enables you to create a cart for a valid order with an Order ID. Using the sample below, you can search for a valid order using an order number. If an order exists with the order number entered, you can create a cart using the createCart API. You can invoke this API in use cases when you want to show a cart page based on the order. Based on a valid order ID, you can create a cart using this API.

```
public void createCart()
```



```

{
    if(String.isNotBlank(orderId))
    {
        // Create config properties
        List<Apttus_Config2.Property> configProps = new
List<Apttus_Config2.Property>();

        Apttus_Config2.Property prop = new Apttus_Config2.Property();

        prop.Name = 'useAdvancedApproval';
        prop.Value = 'false';
        configProps.add(prop);

        prop = new Apttus_Config2.Property();
        prop.Name = 'useDealOptimizer';
        prop.Value = 'false';
        configProps.add(prop);

        // Create the request
        Apttus_Config2.CPQStruct.CreateCartRequestDO request = new
Apttus_Config2.CPQStruct.CreateCartRequestDO();

        // Add request parameters
        request.OrderId = orderId;
        request.Properties.addAll(configProps);

        // Create a new cart for Order
        Apttus_Config2.CPQStruct.CreateCartResponseDO result =
Apttus_Config2.OrderWebService.createCart(request);

        // Get the cart Id
        cartId = result.CartId;
    } else {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Invalid or Blank Order Id.));
    }
}

```

## Synchronizing a Cart to an Order

This is used to sync the shopping cart line items with the order line items. Before you synchronize your cart add products using addMultiProducts API, add bundles using the addBundle API. The API will generally be invoked when the user clicks the Place Order action from cart.

### SynchronizeCart

Parameters		
Name	Type	Description
request	CPQStruct.SynchronizeCartRequestDO	The request data object.

Request Data Object - CPQStruct.SynchronizeCartRequestDO		
Name	Type	Description
CartId	ID	The ID of the cart (Product Configuration) you want to synchronize.

Response Data Object - CPQStruct.SynchronizeCartResponseDO		
Name	Type	Description
IsSuccess	Boolean	Indicates whether synchronizing the cart items was successful.

### Code Sample

The sample below enables you to synchronize the cart items with an order. When the customer has finalized the cart, you can synchronize the products in the cart with the order used to generate the cart. Invoke this API when the user has finalized the cart. The cartID with the updated products is provided as a parameter to the API.

```

public void synchronizeCart()
{
    if(String.isNotBlank(cartId))
    {
        // Create the request
        Apttus_Config2.CPQStruct.SynchronizeCartRequestDO request2 =
new Apttus_Config2.CPQStruct.SynchronizeCartRequestDO();

        // Add request parameters
        request2.CartId = cartId;

        // Synchronize cart
        Apttus_Config2.CPQStruct.SynchronizeCartResponseDO result2 =
Apttus_Config2.OrderWebService.synchronizeCart(request2);

    } else {
        ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'Invalid or blank cart Id.));
    }
}

```

## Create Asset Line Items for an Order

After you finalize and synchronize your cart, this is used to create asset line items for an order i.e add the finalized products as asset line items for the order.

### createAsset

Parameters		
Name	Type	Description
request	CPQStruct.CreateAssetRequestDO	The request data object.

**Request Data Object -CPQStruct.CreateAssetRequestDO**

Name	Type	Description
orderId	ID	The ID of the order against which the asset line items are added.

**Response Data Object - CreateAssetResponseDO**

Name	Type	Description
AssetItems	List	Specifies the list of asset items added against the order.

**Code Sample**

The sample below enables you to add asset line items to an order. When the customer has finalized the cart, you can synchronize the products in the cart with the order used to generate the cart. Invoke this API when the user has finalized and synchronized the cart.

```

public void createAsset()
{
    // Create the request
    Apttus_Config2.CPQStruct.CreateAssetRequestDO request3 = new
    Apttus_Config2.CPQStruct.CreateAssetRequestDO();

    // Add request parameters
    request3.OrderId = orderId;

    // Create Asset Line Items
    Apttus_Config2.CPQStruct.CreateAssetResponseDO result3 =
    Apttus_Config2.OrderWebService.createAsset(request3);
}

```

## Accepting an Order

Use this API to finalize a draft order on customer confirmation. Use this API to finalize a draft order on customer confirmation. Draft orders can be created either using Order Management APIs or using telesales flow in Order Management application” Accept order API performs the following functions

- IF Auto Activate Order = False
  - Order and Order Line Item status is set to “Pending”
  - Asset Line Items are created in “Pending” status
  - If “Ready for Billing Date” is set, billing schedule generation is initiated
- IF Auto Activate Order = True
  - Order and Order Line Item status is set to “Activated”
  - Asset Line Items are created in “Activated” status
  - If “Ready for Billing Date” is set, billing schedule generation is initiated.

### acceptOrder

Parameters		
Name	Type	Description
request	Apttus_Config2.CPQStruct.AcceptOrderRequestDO	The request data object.

Request Data Object - Apttus_Config2.CPQStruct.AcceptOrderRequestDO		
Field	Type	Description
OrderId	ID	The id of the Order to be finalized.

Response Data Object - CPQStruct.AcceptOrderResponseDO		
Field	Type	Description
IsSuccess	boolean	Specifies whether the order is finalized successfully.
AssetLineItems	List<Apttus_Config2__AssetLineItem__c>	List of Asset Line Items

### Code Sample

The sample below enables you to finalize an order for a valid order with an Order ID.

```
public void acceptOrder() {
    Apttus_Config2.CPQStruct.AcceptOrderRequestDO request = new
    Apttus_Config2.CPQStruct.AcceptOrderRequestDO();

    request.OrderId = orderId;

    Apttus_Config2.CPQStruct.AcceptOrderResponseDO response =
    Apttus_Config2.OrderWebService.acceptOrder(request);

    ApexPages.addMessage(new ApexPages.Message(ApexPages.
    severity.info, 'acceptOrder :' + response.IsSuccess));
    ApexPages.addMessage(new ApexPages.Message(ApexPages.
    severity.info, 'List of Assets :' + response.AssetItems));
}
```

## Cloning Incentives

Using this API you can clone existing incentives. The newly created incentive has a new ID.

### cloneIncentives

Parameters		
Name	Type	Description
Incentives	set<incentiveIDs>	A set of incentive ID's using which you want to create a new incentive.
props	List<Apttus_Config2.Property>	The list of properties applicable for the incentive

Data Object - Config2.Property		
Field	Type	Description
Name	String	Specify the Agreement ID, you want to associate to your incentive to
Value	String	The applicable values are agreement fields which you want populated to your incentive.

Response Data Object -		
Field	Type	Description

### Code Sample

The sample below enables you to create an incentive from an existing incentive by passing the incentive ID as input for a specific Agreement.

```
public String incentiveIds {get; set;}
```

```

public Set<Id> incentives {get; set;}
public Map<Id, Apttus_Config2__Incentive__c> incentiveResults {get;
set;}

public void cloneIncentives ()
{
    List<Apttus_Config2.Property> props = new List<Apttus_Config2.
Property>();
    Apttus_Config2.Property prop = new Apttus_Config2.Property();
    prop.Name = 'Apttus_CMConfig__AgreementId__c';
    prop.Value = '';
    props.add(prop);

    String[] incentivesArray = incentiveIds.split('\\,');

    incentives = new Set<Id>();
    for(String incentiveId : incentivesArray)
    {
        incentives.add(incentiveId);
    }

    incentiveResults = Apttus_Config2.IncentiveService.
cloneIncentives(incentives, props);

    ApexPages.addMessage(new ApexPages.Message(ApexPages.severity.
info, 'Incentives: ' + incentiveResults));
}

```

## Billing Webservices

- [Tax Amount Update on Invoice and Credit Memo](#)

### Tax Amount Update on Invoice and Credit Memo

This section comprises the taxation APIs.

#### **updateInvoiceTaxCalculationsAndBreakups**

This API calculates Tax Amount and populates it on the Invoice.



Request		
Field	Type	Description
invoiceIDs	List <Id>	List of Invoice Ids

### Code Sample

```
Set<ID> invoiceIDs = new Set<ID>();//[{invoices[0].Id, invoices[1].
Id};]BillingService.updateInvoiceTaxCalculationsAndBreakups
(invoiceIDs,true);
```

### updateCreditMemoTaxCalculationsAndBreakups

This API calculates Tax Amount and populates it on the Credit Memo.

Request		
Field	Type	Description
creditMemoIDs	List <Id>	List of Credit Memo Ids

### Code Sample

The code sample below helps you calculate and fetch Tax Amount for Invoices.

```
Set<ID> creditMemoIDs = new Set<ID>();//[{creditMemos[0].Id,
creditMemos[1].Id};]BillingService.
updateCreditMemoTaxCalculationsAndBreakups(creditMemoIDs, true);
```

## Agreement Web Service

The Agreement Web Service APIs are used for activating, selecting and publishing agreements. Once an agreement has been activated and associated with a template it can be published to [Salesforce.com](https://www.salesforce.com) – either to Chatter files or Documents - or published to an external repository.

The APIs enable you to do the following:

- [Activating an Agreement](#)  
This activates an agreement and can also be used to delete related draft versions. Once activated an agreement document can be published to multiple channels.
- [Selecting a Template for the Agreement Document](#)  
This associates a template with the agreement, enabling the agreement document to be published.
- [Publishing the Document to Chatter](#)  
This publishes the agreement document for the activated agreement to *Chatter > Files* for the Salesforce object the agreement is associated with.
- [Publishing the Document to Files and Attachments](#)  
This publishes the agreement document for the activated agreement to *Files and Attachments* for the Salesforce object the agreement is associated with.
- [Publishing Document Outside of Salesforce](#)  
This publishes the agreement document for the activated agreement to an external location. This method will write the data into an integration object. A trigger should be written to send the document to the external location.

### Activating an Agreement

This activates an agreement and can also be used to delete related draft versions. Once activated, an agreement document can be published to multiple channels.

#### **activateAgreement**

Parameters		
Name	Type	Description
agreementId	ID	The id of the agreement.
selectedDocIds	List<ID>	List of fully signed document ids.
removableDocIds	List<ID>	List of draft document ids that can be deleted.

Response		
Name	Type	Description
result	Boolean	Indicates whether the agreement was activated successfully.

### Code Sample

```

Id agreementId = agreement.Id;
String[] activateDocIds = new String[1];
String[] remDocIds = new String[]{};
Boolean response = Apttus.AgreementWebService.activateAgreement
(agreementId, activateDocIds, remDocIds);

```

## Selecting a Template for the Agreement Document

This associates a template with the agreement, enabling the agreement document to be published.

### **selectFirstTemplateIdForAgreement**

Parameters		
Name	Type	Description
agreementId	ID	The id of the agreement

Response		
Name	Type	Description
result	ID	The id of the template that is used to generate the agreement document

## Publishing the Document to Chatter

This publishes the agreement document for the activated agreement to *Chatter > Files* for the Salesforce object the agreement is associated with.

### publishToChatterRepository

Parameters		
Name	Type	Description
agreementId	ID	The id of the agreement
attachmentId	ID	The id of the document that is to be published and uploaded to Chatter > Files.

Response		
Name	Type	Description
result	Boolean	Indicates whether the document was published to Chatter successfully.

### Code Sample

```

Id agreementId = agreement.Id;
Id publishDocId= AttachmentId;
Boolean response = Apttus.AgreementWebService.
publishToChatterRepository (agreementId, publishDocId);
    
```

## Publishing the Document to Files and Attachments

This publishes the agreement document for the activated agreement to *Files and Attachments* for the Salesforce object the agreement is associated with.

### publishToDocumentRepository

Parameters		
Name	Type	Description
agreementId	ID	The id of the agreement
attachmentId	ID	The id of the document that is to be published and uploaded to Files and Attachments.

Response		
Name	Type	Description
result	Boolean	Indicates whether the document was published to Files and Attachments successfully.

## Publishing Document Outside of Salesforce

This publishes the agreement document for the activated agreement to an external location. This method will write the data into an integration object. A trigger should be written to send the document to the external location.

### publishToExternalRepository

Parameters		
Name	Type	Description
agreementId	ID	The id of the agreement
attachmentId	ID	The id of the document that is to be published.

Response		
Name	Type	Description
result	Boolean	Indicates whether the document was published successfully.

## Merge Web Service

The Merge Web Service APIs are used for generating and manipulating documents. Both agreements and supporting documents can be generated, while text can be added to document headers and footers. Word documents can be converted into PDF documents and security rules can be applied to PDF documents.

The APIs enable you to do the following:

- **Generating a Document**  
Generates a Word agreement document by using the template specified by the *templateId* parameter and the agreement indicated by the *agreementId*. The document is added to the Files and Attachments section for the Agreement object.
- **Generating a Document for a Standard Object**  
Generates a Word agreement document for a standard object, using the template selected by the *templateId* parameter and the object indicated by the *sObjectId* and *sObjectType*.
- **Generating a Supporting Document**  
Generates a supporting document, such as Contract Summary, Renewal Letter, and Termination Letter, using the template specified by the *templateId* and is associated with the agreement record represented by the *agreementId*.
- **Adding Text to a Header and Footer**  
Append the given text to the header and footer for a given document.
- **Converting a Word Document into a given output format (Deprecated)**  
This API converts an agreement Word document, specified in *docFileName* into a specific output format using the parameters, such as *agreementId* and *docFormat*. This API internally checks if the header and footer are added to the generated document.
- **Converting a Word Document into a given output format for Standard Object (Deprecated)**  
For any standard object, this API converts a generated Word document into a specific output format, specified in *docFormat* using the parameters, such as, *docId*, *docFileName*. This API is deprecated.
- **Converting a Word Document into a given output format (Deprecated)**  
This API converts an agreement Word document into a specific output format using the parameters, such as *agreementId* and *docFormat*. This API is deprecated.

- [Converting a Word Document into a PDF](#)  
This converts a Word document into a PDF document. It can be any Word document and does not have to be created using *generateDoc* or *generateSupportingDoc*. The protection level applicable on the Word document is not applicable to the PDF document.
- [Converting a Word Document into a PDF for Standard Objects](#)  
This converts a Word document into a PDF document for a standard object. It can be any Word document and does not have to be created using *generateDoc* or *generateSupportingDoc*. The protection level applicable on the Word document is not applicable to the PDF document.
- [Applying Security Parameters to a PDF](#)  
This applies Adobe PDF security parameters to the PDF document. Ensure that you have set an admin entry with the **PDFSecurityDefault** tags. For more information, refer *Contract Management Admin Guide*.
- [Enabling Authoring for Agreement Documents](#)  
This API enables redlining capability for a list of documents, specified in the *docIds*, by using the parameters, such as *sObjectID* and *pLevel*.
- [Generating a Document on Submit Request](#)  
This API submits the generate document action using the given template from *templateId* and agreement from *agreementId*. The output format of the generated document is of the type specified in the *docFormat* parameter.
- [Generating a Document on Submit Request for a Standard Object](#)  
For a standard object, this API submits the generate document action using the given template from *templateId* and for a sObject from *sObjectId* and *sObjectType*. The output format of the generated document is of the type specified in the *docFormat* parameter.
- [Generating a Supporting Document on Submit Request](#)  
This API submits the generate supporting document action using the given template from *templateId* and for an agreement from *agreementId*. The output format of the generated supporting document is of the type specified in the *docFormat* parameter.

## Generating a Document

Generates a Word agreement document by using the template specified by the *templateId* parameter and the agreement indicated by the *agreementId*. The document is added to the Files and Attachments section for the Agreement object.



The document can subsequently be converted to a PDF, using [convertWordDocToPDF](#).

**generateDoc**

Parameters		
Name	Type	Description
templateId	ID	The id of the template used to generate the word document.
agreementId	ID	The id of the agreement providing the content for the document.
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
docFormat	String	Indicates whether the document will be: <ul style="list-style-type: none"> <li>• <i>DOC</i></li> <li>• <i>DOCX</i></li> <li>• <i>PDF</i></li> <li>• <i>RTF</i></li> </ul>
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server id.

Response		
Name	Type	Description
result	ID	The id of the generated document.

### Code Sample

```

ID templateId= templateId;
Id proposalId = proposalSO.id;
String pLevel = 'Read only';
String docFormat = 'DOC';
String apiServerURL = System.Url.getSalesforceBaseUrl().
toExternalForm() +
'/services/Soap/u/14.0/' + UserInfo.getOrganizationId();
String sessionId = sessionId; //This is the session Id.
String generatedDocId = Apttus_Proposal.MergeWebService.generateDoc
(templateId, proposalId, accessLevel, docFormat, apiSessionId,
apiServerURL);

```

### generateDoc2

This API is the same as the **generateDoc** API and additionally enables you to add a draft watermark to the generated document.

Parameters		
Name	Type	Description
templateId	ID	The id of the template used to generate the word doc.
agreementId	ID	The id of the agreement providing the content for the document.
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> </ul>

Parameters		
Name	Type	Description
		<ul style="list-style-type: none"> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
docFormat	String	Indicates whether the document will be: <ul style="list-style-type: none"> <li>• <i>DOC</i></li> <li>• <i>DOCX</i></li> <li>• <i>PDF</i></li> <li>• <i>RTF</i></li> </ul>
isDraft	Boolean	Indicates whether a draft watermark should be added to the document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server id.

Response		
Name	Type	Description
result	ID	The id of the generated document.

## Generating a Document for a Standard Object

Generates a Word agreement document for a standard object, using the template selected by the *templateId* parameter and the object indicated by the *sObjectId* and *sObjectType*.

**generateCustomDoc**

Parameters		
Name	Type	Description
templateId	ID	The id of the template used to generate the word doc.
sObjectId	ID	The id of the sObject holding the data for the merge fields.
sObjectType	String	The type of the sObject.
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
docFormat	String	Indicates whether the document will be: <ul style="list-style-type: none"> <li>• <i>DOC</i></li> <li>• <i>DOCX</i></li> <li>• <i>PDF</i></li> <li>• <i>RTF</i></li> </ul>
isDraft	Boolean	Indicates whether a draft watermark should be added to the document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server id.

Response		
Name	Type	Description
result	ID	The id of the generated document.

## Generating a Supporting Document

Generates a supporting document, such as Contract Summary, Renewal Letter, and Termination Letter, using the template specified by the *templateId* and is associated with the agreement record represented by the *agreementId*.

### generateSupportingDoc

Parameters		
Name	Type	Description
templateId	ID	The id of the template used to generate the word document.
agreementId	ID	The id of the agreement providing the content for the document.
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
docFormat	String	Indicates whether the document will be:

Parameters		
Name	Type	Description
		<ul style="list-style-type: none"> <li>• <i>DOC</i></li> <li>• <i>DOCX</i></li> <li>• <i>PDF</i></li> <li>• <i>RTF</i></li> </ul>
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server id.

Response		
Name	Type	Description
result	ID	The id of the generated document.

### Code Sample

```

ID templateId= templateId;
Id proposalId = proposalSO.id;
String pLevel = 'Read only';
String docFormat = 'DOC';
String apiServerURL = System.Url.getSalesforceBaseUrl().
toExternalForm() + '/services/Soap/u/14.0/' + UserInfo.
getOrganizationId();
String sessionId = sessionId; //This is the session Id.String
generatedDocId = Apttus_Proposal.MergeWebService.
generateSupportingDoc(templateId, proposalId, pLevel, docFormat,
apiSessionId, apiServerURL);

```

**generateSupportingDoc2**

This API is the same as the **generateSupportingDoc** API and additionally enables you to add a draft watermark to the generated document.

<b>Parameters</b>		
<b>Name</b>	<b>Type</b>	<b>Description</b>
templateId	ID	The id of the template used to generate the word doc.
agreementId	ID	The id of the agreement providing the content for the document.
pLevel	String	The protection level to apply to the document. Valid values are: 'Full access', 'Insert comments only', 'Insert comments and tracked changes only', 'Read only', and 'Fill in form fields only'.
docFormat	String	Indicates whether the document will be 'DOC', 'DOCX', 'PDF', or 'RTF'.
isDraft	Boolean	Indicates whether a draft watermark should be added to the document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server id.

<b>Response</b>		
<b>Name</b>	<b>Type</b>	<b>Description</b>
result	ID	The id of the generated document.

## Adding Text to a Header and Footer

Append the given text to the header and footer for a given document.

### appendToHeaderFooter

Parameters		
Name	Type	Description
docId	ID	The id of the document which will have header and footer content added to it.
headerText	String	The header text to be appended to the document.
footerText	String	The footer text to be appended to the document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server Url.

Response		
Name	Type	Description
result	Boolean	Indicates whether the header and footer is added successfully.

### Code Sample

```

ID docId= AttachmentId;
String headerText = 'This is Header';
String footerText = 'This is Footer';
String apiServerURL = System.Url.getSalesforceBaseUrl().
toExternalForm() + '/services/Soap/u/14.0/' +

```



```

UserInfo.getOrganizationId();
String sessionId = sessionId; //This is the session Id.
String generatedDocId = Apttus_Proposal.MergeWebService.
appendToHeaderFooter(docId, headerText, footerText, sessionId,
serverUrl);
    
```

**i** **appendToHeaderFooter** does not support protection levels for FX1 documents (FX2 documents do support document protection). Document protection levels are reset when header and footer are added. To retain protection levels for FX1 documents, use **appendToHeaderFooter2** instead.

## appendToHeaderFooter2

Parameters		
Name	Type	Description
docId	ID	The id of the document which will have header and/or footer content add to it.
headerText	String	The header text to append to the document.
footerText	String	The footer text to append to the document.
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>

Parameters		
Name	Type	Description
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server Url.

Response		
Name	Type	Description
result	Boolean	Indicates whether the header and footer were added successfully.

## Converting a Word Document into a given output format

This API converts an agreement Word document, specified in *docFileName* into a specific output format using the parameters, such as *agreementId* and *docFormat*. This API internally checks if the header and footer are added to the generated document.



- If the output document format is DOC or DOCX, the Id returned is that of the updated input document.
- If the output document format is PDF, the Id returned is that of the newly created document.

### convertWordDocForAgreement

Parameters		
Name	Type	Description
agreementId	ID	The id of the agreement providing the content for the document.
docId	ID	The id of the agreement document to convert in a different output format.
docFileName	String	The file name for the Word document.
docFormat	String	Indicates whether the document will be: <ul style="list-style-type: none"> <li>• <i>DOC</i></li> <li>• <i>DOCX</i></li> <li>• <i>RTF</i></li> <li>• <i>PDF</i></li> </ul>
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
addWatermark	Boolean	Indicates whether a draft watermark should be added to the output document.
removeWatermark	Boolean	Indicates whether a draft watermark on the source word document should be removed from the resulting document.
sessionId	String	The Salesforce session id.

Parameters		
Name	Type	Description
serverUrl	String	The Salesforce server URL.

Response		
Name	Type	Description
result	ID	The id of the converted document.

## Converting a Word Document into a given output format for Standard Object (Deprecated)

For any standard object, this API converts a generated Word document into a specific output format, specified in *docFormat* using the parameters, such as, *docId*, *docFileName*. This API is deprecated.

### convertWordDoc

Parameters		
Name	Type	Description
docId	ID	The id of the agreement document to be converted in a different output format.
docFileName	String	The file name for the Word document.
docFormat	String	Indicates whether the document will be: <ul style="list-style-type: none"> <li>• <i>DOC</i></li> </ul>

Parameters		
Name	Type	Description
		<ul style="list-style-type: none"> <li>• <i>DOCX</i></li> <li>• <i>RTF</i></li> </ul>
sObjectId	ID	The sObject id for which you want to update the document.
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
addWatermark	Boolean	Indicates whether a draft watermark should be added to the output document.
removeWatermark	Boolean	Indicates whether a draft watermark on the source word document should be removed from the resulting document.
headerText	String	The header text to be appended to the document.
footerText	String	The footer text to be appended to the document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server URL.

Response		
Name	Type	Description
result	ID	The id of the converted document.

### Converting a Word Document into a given output format (Deprecated)

This API converts an agreement Word document into a specific output format using the parameters, such as *agreementId* and *docFormat*. This API is deprecated.

#### convertAgreementWordDoc

Parameters		
Name	Type	Description
agreementId	ID	The id of the agreement providing the content for the document.
docId	ID	The id of the agreement document to convert in a different output format.
docFileName	String	The file name for the Word document.
docFormat	String	Indicates whether the document will be: <ul style="list-style-type: none"> <li>• <i>DOC</i></li> <li>• <i>DOCX</i></li> <li>• <i>RTF</i></li> </ul>
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> </ul>

Parameters		
Name	Type	Description
		<ul style="list-style-type: none"> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
addWatermark	Boolean	Indicates whether a draft watermark should be added to the output document.
removeWatermark	Boolean	Indicates whether a draft watermark on the source word document should be removed from the resulting document.
agreementNbr	String	The agreement number of the document, upserted in the header.
dateFormat	String	The date format for the footer of the document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server URL.

Response		
Name	Type	Description
result	ID	The id of the converted document.

## Converting a Word Document into a PDF

This converts a Word document into a PDF document. It can be any Word document and does not have to be created using *generateDoc* or *generateSupportingDoc*. The protection level applicable on the Word document is not applicable to the PDF document.

### convertWordDocToPDF

Parameters		
Name	Type	Description
docId	ID	The id of the word document to be converted to PDF.
docFileName	String	The filename for the newly created PDF.
addWatermark	Boolean	Indicates whether a draft watermark should be added to the PDF.
removeWatermark	Boolean	Indicates whether a draft watermark on the source word document should be removed from the resulting PDF.
headerText	String	The header text to append to the document.
footerText	String	The footer text to append to the document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server URL.



Response		
Name	Type	Description
result	ID	The id of the generated document.

### Code Sample

```

Id docId = attachmentId;
String filename = 'newPDFFile.pdf';
Boolean addWatermark = 'true';
Boolean removeWatermark = 'false';
String headerText = 'This is Header';
String footerText = 'This is Footer';
String apiServerURL = System.Url.getSalesforceBaseUrl().
toExternalForm() + '/services/Soap/u/14.0/' + UserInfo.
getOrganizationId();
String sessionId = sessionId; //This is the session Id.
Id convertedDocId = Apttus.MergeWebService.convertWordDocToPDF
(docId, fileName,
addWatermark, removeWatermark, headerText, footerText, apiSessionId,
apiServerURL);

```

## Converting a Word Document into a PDF for Standard Objects

This converts a Word document into a PDF document for a standard object. It can be any Word document and does not have to be created using *generateDoc* or *generateSupportingDoc*. The protection level applicable on the Word document is not applicable to the PDF document.

### **convertWordDocToPDF2**

Parameters		
Name	Type	Description
docId	ID	The id of the word document to be converted to PDF.
docFileName	String	The filename for the newly created PDF.
sObjectId	Id	The id of the standard object.
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
addWatermark	Boolean	Indicates whether a draft watermark should be added to the PDF.
removeWatermark	Boolean	Indicates whether a draft watermark on the source word document should be removed from the resulting PDF.
headerText	String	The header text to append to the document.
footerText	String	The footer text to append to the document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server URL.

Response		
Name	Type	Description
result	ID	The id of the generated document.

## Applying Security Parameters to a PDF

This applies Adobe PDF security parameters to the PDF document. Ensure that you have set an admin entry with the **PDFSecurityDefault** tags. For more information, refer *Contract Management Admin Guide*.

The `applyPDFSecurity()` function provides a great way to handle document security. Using this function is fairly complex, and what we want is a simple way to quickly apply security. The function provides us with just such an option. The actual parameters in the policy could be `docId`, `session Id`, `serverUrl` and so on. This API controls the security properties of a PDF document, such as, Content Copying, Filling of form fields, and Printing.

### applyPDFSecurity

Parameters		
Name	Type	Description
<code>docId</code>	ID	The id of the PDF document to apply security parameters to.
<code>session Id</code>	String	The Salesforce session id.
<code>serverUrl</code>	String	The Salesforce server Url.

Response		
Name	Type	Description
result	Boolean	Indicates if the security parameters were applied successfully to the PDF.

### Code Sample

```

Id docId = attachmentId;
String apiServerURL = System.Url.getSalesforceBaseUrl().
toExternalForm() + '/services/Soap/u/14.0/' + UserInfo.
getOrganizationId();
String sessionId = sessionId; //This is the session Id.
Boolean securityApplied = Apttus.MergeWebService.applyPDFSecurity
(docId,
apiSessionId, apiServerURL);

```

## Enabling Authoring for Agreement Documents

This API enables redlining capability for a list of documents, specified in the *docIds*, by using the parameters, such as *sObjectId* and *pLevel*.

### enableAuthoring

Parameters		
Name	Type	Description
sObjectId	ID	The ID of the standard object for which authoring is to be enabled.
pLevel	String	The protection level to apply to the document. Valid values are <ul style="list-style-type: none"> <li>• Full access</li> </ul>

Parameters		
Name	Type	Description
		<ul style="list-style-type: none"> <li>• Insert comments only</li> <li>• Insert comments and tracked changes only</li> <li>• Read only</li> <li>• Fill in form fields only</li> </ul>
docIds	List	The ids of the documents for which you want to enable authoring. If the value is null, all the documents associated with the sObject are enabled.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server id.

## Generating a Document on Submit Request

This API submits the generate document action using the given template from *templateId* and agreement from *agreementId*. The output format of the generated document is of the type specified in the *docFormat* parameter.

### submitGenerateDoc

Parameters		
Name	Type	Description
templateId	ID	The id of the template used to generate the word doc.
agreementId	ID	The id of the agreement providing the content for the document.
pLevel	String	The protection level to apply to the document. Valid values are:

Parameters		
Name	Type	Description
		<ul style="list-style-type: none"> <li>• <i>Full access</i></li> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
docFormat	String	Indicates whether the document will be: <ul style="list-style-type: none"> <li>• <i>DOC</i></li> <li>• <i>DOCX</i></li> <li>• <i>PDF</i></li> <li>• <i>RTF</i></li> </ul>
isDraft	Boolean	Indicates whether a draft watermark should be added to the document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server id.

Response		
Name	Type	Description
result	ID	The id of the generated document.

## Generating a Document on Submit Request for a Standard Object

For a standard object, this API submits the generate document action using the given template from *templateId* and for a sObject from *sObjectId* and *sObjectType*. The output format of the generated document is of the type specified in the *docFormat* parameter.

### submitGenerateCustomDoc

Parameters		
Name	Type	Description
templateId	ID	The id of the template used to generate the word doc.
sObjectId	ID	The sObject id which comprises the data for the merge fields.
sObjectType	String	The type of the sObject.
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
docFormat	String	Indicates whether the document will be: <ul style="list-style-type: none"> <li>• <i>DOC</i></li> <li>• <i>DOCX</i></li> <li>• <i>PDF</i></li> <li>• <i>RTF</i></li> </ul>
isDraft	Boolean	Indicates whether a draft watermark should be added to the document.

sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server id.

Response		
Name	Type	Description
result	ID	The id of the generated document.

## Generating a Supporting Document on Submit Request

This API submits the generate supporting document action using the given template from *templateId* and for an agreement from *agreementId*. The output format of the generated supporting document is of the type specified in the *docFormat* parameter.

### submitGenerateSupportingDoc

Parameters		
Name	Type	Description
templateId	ID	The id of the template used to generate the word document.
agreementId	ID	The id of the agreement providing the content for the document.
pLevel	String	The protection level to apply to the document. Valid values are: <ul style="list-style-type: none"> <li>• <i>Full access</i></li> </ul>



Parameters		
Name	Type	Description
		<ul style="list-style-type: none"> <li>• <i>Insert comments only</i></li> <li>• <i>Insert comments and tracked changes only</i></li> <li>• <i>Read only</i></li> <li>• <i>Fill in form fields only</i></li> </ul>
docFormat	String	Indicates whether the document will be: <ul style="list-style-type: none"> <li>• <i>DOC</i></li> <li>• <i>DOCX</i></li> <li>• <i>PDF</i></li> <li>• <i>RTF</i></li> </ul>
isDraft	Boolean	Indicates whether a draft watermark should be added to the document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server id.

Response		
Name	Type	Description
result	ID	The id of the generated document.

## Package Multiple Documents

This API can be used to package multiple documents (such as a Quote and Agreement document) together into a single merged DOCX document. Implementation requires creation of a custom Visualforce page to make use of the API for document packing purposes.

### createWordPackage

Parameters		
Name	Type	Description
parentId	ID	The ID of the parent object associated with the result.
attachments	List<Apttus. CustomClass. AttachmentInfo>	List of all documents in the order to be packaged.
externalLinks	List<Apttus. CustomClass. ExternalLink>	List of external links to be embedded in document. ( <b><i>not currently supported</i></b> )
docFileName	String	Name of the packaged document file (.doc or .docx).
pLevel	String	Protection level of the document generated.
addWatermark	Boolean	Indicates whether to add a watermark to the document.
removeWatermark	Boolean	Indicates whether to remove a watermark from the document.

Parameters		
Name	Type	Description
addAutoHeaderFooter	Boolean	Indicates whether to use the configured header and footer format located in Comply System Properties.  If addAutoHeaderFooter=true, the API uses the Comply System Properties defined for header and footer data.  If addAutoHeaderFooter=false, the API uses values from the <i>headerText</i> and <i>footerText</i> parameters.
headerText	String	Text to include in the document header.
footerText	String	Text to include in the document footer.
sessionId	ID	The Session ID to use for callback.
sessionURL	String	The Server URL to use for callback.
preserveRedlines	Boolean	Indicates whether the redlines will be preserved in the packaged document. The default value is False



Note: header text will always be right-aligned and footer text will always be left-aligned by default. Also, any page numbers in the input documents will not be present in the final combined document.

Response		
Name	Type	Description
result	ID	Returns the ID of the merged DOCX document.

### Code Sample

```

// attachments
List<Apttus.CustomClass.AttachmentInfo> attachments = new
List<Apttus.CustomClass.AttachmentInfo>();
Apttus.CustomClass.AttachmentInfo attInfo = new Apttus.CustomClass.
AttachmentInfo();
attInfo.Title = 'Agreement-1';
attInfo.RecordId = attSO.Id;

attachments.add(attInfo);

Apttus.CustomClass.AttachmentInfo attInfo2 = new Apttus.CustomClass.
AttachmentInfo();
attInfo2.Title = 'Agreement-2';
attInfo2.RecordId = attSO2.Id;

attachments.add(attInfo);

// external links (not supported)
List<Apttus.CustomClass.ExternalLink> links = new List<Apttus.
CustomClass.ExternalLink>();

Apttus.CustomClass.ExternalLink linkInfo = new Apttus.CustomClass.
ExternalLink();
linkInfo.Title = 'Drawing-1';
linkInfo.Url = 'https://drive.google.com/doc1.docx';

links.add(linkInfo);

Apttus.CustomClass.ExternalLink linkInfo2 = new Apttus.CustomClass.
ExternalLink();
linkInfo2.Title = 'Drawing-2';

```

```

linkInfo2.Url = 'https://drive.google.com/doc2.docx';

links.add(linkInfo2);

// create action parameters
Apttus.CustomClass.ActionParams params = new Apttus.CustomClass.
ActionParams();

params.ParentId = agreementSO.Id;
params.Attachments = attachments;
params.ExternalLinks = links;
params.AddAutoHeaderFooter = true;
params.ProtectionLevel = AgreementProtection.LEVEL_FULL_ACCESS;
params.DocFileName = 'Agreement-Merged.docx';
params.AddWatermark = true;
params.RemoveWatermark = false;
params.HeaderText = 'Agreement Id: 0123456789';
params.FooterText = 'Date Created: 11/27/2011 7:23:15 PM';
params.SessionId = ServerInfo.getSessionId();
params.SessionUrl = ServerInfo.getServerUrl();

ID docId = Apttus.MergeWebService.createWordPackage(params);

System.debug('Merged Doc ID=' + docId);

```

## Merging Proposal Documents into a single PDF Document

### createPDFPackage

Use this API to package multiple proposal documents together into a singled merged PDF document. Implementation requires creation of a custom Visualforce page to make use of the API for document packaging purposes.

Parameters		
Name	Type	Description
parentId	ID	The ID of the parent object associated with the result.

Parameters		
Name	Type	Description
attachments	List<Apttus.CustomClass.AttachmentInfo>	List of all documents in the order to be packaged.
externalLinks	List<Apttus.CustomClass.ExternalLink>	List of external links to be embedded in document.
docFileName	String	Name of the packaged document file (PDF).
sessionId	ID	The Session ID to use for callback.
sessionURL	String	The Server URL to use for callback.

Response		
Name	Type	Description
result	ID	Returns the ID of the merged PDF document.

### Code Sample

```
// Attachments
//
List<Apttus_Proposal.CustomClass.AttachmentInfo>
attachmentsInfoList = new List<Apttus_Proposal.CustomClass.
AttachmentInfo>();
// Attachment: Primary
```

```

        Apttus_Proposal.CustomClass.AttachmentInfo attachmentInfo = n
ew Apttus_Proposal.CustomClass.AttachmentInfo();
        ...
        ...
        attachmentInfo.Title           = attachmentDetails.Name;
        attachmentInfo.RecordId        = attachmentDetails.Id;
        attachmentsInfoList.add(attachmentInfo);

        // Attachments: Docx
        for (selectoption so :
listOfDocxAttachmentsRelated2Proposal_Selected) {

            Apttus_Proposal.CustomClass.AttachmentInfo
attachmentInfo = new Apttus_Proposal.CustomClass.AttachmentInfo();
            ...
            ...
            attachmentInfo.Title           = attachmentDetails.Name;
            attachmentInfo.RecordId        = attachmentDetails.Id;
            attachmentsInfoList.add(attachmentInfo);

        }
        // Attachments: PDFs
        for (selectoption so :
listOfPDFAttachmentsRelated2Proposal_Selected) {

            Apttus_Proposal.CustomClass.AttachmentInfo
attachmentInfo = new Apttus_Proposal.CustomClass.AttachmentInfo();
            ...
            ...
            attachmentInfo.Title           = attachmentDetails.Name;
            attachmentInfo.RecordId        = attachmentDetails.Id;
            attachmentsInfoList.add(attachmentInfo);

        }
        //
        // External Links
        //
        List<Apttus_Proposal.CustomClass.ExternalLink>
externalLinksInfoList = new List<Apttus_Proposal.CustomClass.
ExternalLink>();
        if ( !string.isBlank(externalLinks) ) {

            String[] arrayOfURLs = parseURLsCSV(externalLinks);

```

```

        for (String str : arrayOfURLs) {

            String url      = str.trim();
            String filename = getFilenameFromURL(url);

            Apttus_Proposal.CustomClass.ExternalLink
externalLinkInfo = new Apttus_Proposal.CustomClass.ExternalLink();
            externalLinkInfo.Title = filename;
            externalLinkInfo.Url   = url;
            externalLinksInfoList.add(externalLinkInfo);
        }
    }
    // API Parameters
    Apttus_Proposal.CustomClass.ActionParams apiParameters = new
Apttus_Proposal.CustomClass.ActionParams();
    apiParameters.ParentId           = myProposal.Id;
    apiParameters.Attachments       = attachmentsInfoList;
    apiParameters.ExternalLinks     = externalLinksInfoList;
    apiParameters.DocFileName       = 'outputCollatedPDFFilename.
pdf';
    apiParameters.SessionId         = sessionId;
    apiParameters.SessionUrl        = apiServerURL;
    try {

        //submit request
        Id myDocId = Apttus_Proposal.MergeWebService.
createPDFPackage(apiParameters);

    } catch (Exception ex) {

        System.debug('Apttus.MergeWebService.createPDFPackage:
Oops!!! Caught an Exception: ' + ex);
    }
}

```

## Merging Docs to a PDF

mergeDocsToPDF2

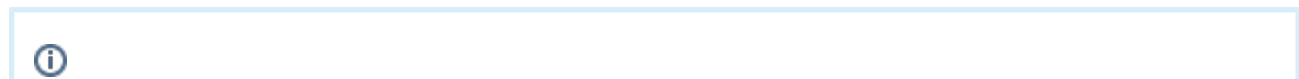


The API introduced in this release is an enhancement of the existing Merge Webservice API *mergeDocsToPDF*. **mergeDocsToPDF2** merges multiple documents using the values specified in the *docIds* parameter into a single PDF document with the name *docFileName* and adds a flag to specify whether PDF document protection should be carried over to the collated PDF.

Before invoking this API, **CustomClass.ActionParams** must be instantiated by passing the parameters described below. The parameters are then passed to the API when it is invoked.

**mergeDocsToPDF2**

Parameters		
Name	Type	Description
parentId	Id	The Id of the parent object to associate with the result (merged) document.
docIds	List	A collection of the Ids of the documents to merge into a PDF document.
docFileName	String	The file name for the PDF document.
sessionId	String	The Salesforce session Id.
sessionUrl	String	The Salesforce server Id.
ProtectOutputDoc	Boolean	Preserve document protection from source documents (Apttus-generated PDFs) as defined by PDF security properties.



Response		
Name	Type	Description
result	Id	The Id of the generated (merged) PDF.

### Code Sample

```

CustomClass.ActionParams params = new CustomClass.ActionParams();

params.ParentId = agreementSO.Id;
params.DocIds = new ID[]
{attSO.Id, attSO2.Id};

params.DocFileName = 'Agreement-Merged.pdf';
params.ProtectOutputDoc = true;
params.SessionId = ServerInfo.getSessionId();
params.SessionUrl = ServerInfo.getServerUrl();

ID docId = MergeWebService.mergeDocsToPDF2(params);

```

*Values inside '{ }' in the above code sample denote an Id is required*

## Creating a Merged PDF for Agreements

createPDF

A new API has been introduced for Apttus Merge Webservice (Agreements only) that merges multiple documents using the values specified in the docIds parameter into a single PDF document with the name docFileName. This supersedes an earlier API and provides the ability to specify the ability to automatically display or hide the footer in the merged PDF.

Before invoking this API, **CustomClass.ActionParams** must be instantiated by passing the parameters described below. The parameters are then passed to the API when it is invoked.

Parameters		
Name	Type	Description
parentId	Id	The Id of the parent object to associate with the result (merged) document.
docIds	List	A collection of the Ids of the documents to merge into a PDF document.
docFileName	String	The file name for the PDF document.
sessionId	String	The Salesforce session Id.
sessionUrl	String	The Salesforce server Id.
addFooter	Boolean	Display/hide the footer in the merged PDF.

Response		
Name	Type	Description
result	Id	The Id of the generated (merged) PDF.

```

CustomClass.ActionParams objParam = new CustomClass.ActionParams();
objParam.SessionId = ServerInfo.getSessionId();
objParam.SessionUrl = ServerInfo.getServerUrl();
objParam.ParentId = '{parentID}';
objParam.DocIds = new ID[]{ID.valueOf('{docId}'),
ID.valueOf('{docId}')};
objParam.DocFileName = 'My_Merged_PDF.pdf';
objParam.AddFooter = true;

```

```
ID mergedPDF = MergeWebService.createPDF(objParam);
```

*Values inside '{ }' in the above code sample denote an Id is required*

## Merging Multiple Documents to a PDF

This API merges multiple documents using the values specified in the *docIds* parameter into a single PDF document with the name *docFileName*.

### mergeDocsToPDF

Parameters		
Name	Type	Description
parentId	ID	The id of the parent object to associate with the result document.
docIds	List	A collection of the ids of the documents to merge into a PDF document.
docFileName	String	The file name for the PDF document.
sessionId	String	The Salesforce session id.
serverUrl	String	The Salesforce server id.

#### Note

You cannot use an Apttus-generated PDFs with document protection enabled as input documents.

Response		
Name	Type	Description
result	ID	The id of the generated document.

 **Note**

Footers in the final PDF will always list the original filename of the input document for the collated page.

## Creating Favorite Configuration

This API creates a favorite configuration from the Catalog page referenced by cartID.

### saveFavoriteConfiguration

Parameters		
Name	Type	Description
request	FavoriteConfigurationStruct.SaveFavoriteRequestDO	The request data object.

Request Data Object - FavoriteConfigurationStruct.SaveFavoriteRequestDO		
Field	Type	Description
cartID	ID	The identifier of the cart.
favoriteConfigurationSO	Object	Reference to the Favorite Configuration Object

**Request Data Object - FavoriteConfigurationStruct.SaveFavoriteRequestDO**

Field	Type	Description
lineNumbers	List <Integer>	The list of line numbers to be added to the favorite configuration.

**Data Object - favoriteConfigurationSO**

Field	Type	Description
Name	String	Enter a suitable name for your favorite configuration. This name is displayed as a record under your Favorites category.
Scope	String	Choose an option for the visibility of your configuration record. The available values are, <i>Public</i> and <i>Private</i> . If you set this to <i>Private</i> , this record is visible to only the owner of the record. If you set this to <i>Public</i> , this record is accessible to all the users.
PriceListId	String	The pricelist id associated with a favorite configuration.

**Response Data Object - SaveFavoriteResponseDO**

Field	Type	Description
processedLineNumbers	List<Integer>	List of line numbers added as a favorite configuration.

**Code Sample**

The sample below enables you to create a favorite configuration for a cart with a cartId. You can invoke this API in use cases when you want to show a Favorite configuration page based on the cartID and pricelist.

```
Apttus_Config2.FavoriteConfigurationStruct.SaveFavoriteRequestDO
requestDO = new Apttus_Config2.FavoriteConfigurationStruct.
SaveFavoriteRequestDO();
System.debug('requestDO\'s favorite configuration : ' +
requestDO.favoriteConfigurationSO);
requestDO.favoriteConfigurationSO.Name = 'HG Fav BundleandStd';
requestDO.favoriteConfigurationSO.Apttus_Config2__Scope__c = 'Public'
;
requestDO.favoriteConfigurationSO.Apttus_Config2__PriceListId__c = 'a
ElF0000000Gmhp';
requestDO.cartId = ID.valueOf('a1I4C0000009hYV');
requestDO.lineNumbers = new List<Integer>();
Integer maxLineNumber = 5;
for (Integer i=1; i<=maxLineNumber; i++)
{ requestDO.lineNumbers.add(i); }
System.debug('response = ' + Apttus_Config2.
FavoriteConfigurationGlobalService.saveFavoriteConfiguration
(requestDO));
```

# Scenarios

- [Working with Products in the Shopping Cart](#)

After you set up the user roles and use either sites or communities to build the basic framework for your cart page, create a visual force page and a sample CSS to define the look and feel for your cart. You can then proceed with using the Apttus APIs to create a working catalog page.

## Working with Products in the Shopping Cart

After you set up the user roles and use either sites or communities to build the basic framework for your cart page, create a visual force page and a sample CSS to define the look and feel for your cart. You can then proceed with using the Apttus APIs to create a working catalog page.

- [Searching Products](#)

- [Configuring and Adding Products](#)

In the product catalog, you can see the list of products that a vendor offers. Using this list, you can add a product to your cart, configure the product attributes, such as color and memory. If the product is a bundled product, you can select the options with which you want to bundle your product. This section lists the scenarios using which the customer can view the configuration options for a product.

- [Displaying Recommendations](#)

In the product catalog, you can see the list of products that a vendor offers. When the customer selects a product, you can display the list of recommended products on the same page . This section lists the scenarios using which the recommended products appear. To configure recommendations for a product use the following APIs:

- [Updating Price](#)

- [Viewing Price Break-up Details](#)



- [Adding Price Ramps to a Cart](#)

After you add a line item to a cart, this API enables you to add primary and secondary ramp line items for the line item. Once the ramp line items are created, you can also update the ramp line item details or delete ramp line item details using standard SOQL queries.

- [Viewing Configured Order in the Shopping Cart](#)

After the customer has configured and added all the products to the cart, display the detailed shopping cart items. This section lists all the scenarios using which the customer can view the finalized shopping cart.

- [Updating Taxes and Shipping for an Order](#)

- [Creating and Updating Quote and Quote Line Items](#)

- [Creating and Updating Order and Order Line Items](#)

- [Asset Based Ordering](#)

The end user or a renewals manager can view and modify products that the organization owns and should be able to filter the assets to renew orders. Display and modify the assets that belong to a company based on the following criteria:

- [Finalizing the Cart](#)

- [Updating Quote Terms to Modify Dates](#)

## Searching Products

A customer browsing a product catalog can navigate for a product and select the required product manually or can search for a product. You can enable searches using the search text field in the cart page and enable the user to search for a desired product by category, sub-category, or options available with the product. This section lists all the possible scenarios for which a customer can search or view a product listing.

## To browse products

1. Create a cart using the [Creating a Favorite Configuration](#).

2. Browse products by categories and subcategories using the search text entered by the user by utilizing [Retrieving Products and List Prices For a Price List Category and Search Text](#) and [Retrieving Products and List Prices For a Price List and Search Text](#). Using this API, the customer can search for a product directly or select a category and enter search text to refine the search further.
3. Browse for categories and option groups using [Retrieving Categories for a Price List](#) and [Retrieving Option Groups, Options, and List Prices for a Price List Product](#).
4. Browse for products using [Retrieving Products and List Prices for a Price List](#) and [Retrieving Products and List Prices for a Price List and Category](#).
5. Compare the displayed products using .

## Configuring and Adding Products

In the product catalog, you can see the list of products that a vendor offers. Using this list, you can add a product to your cart, configure the product attributes, such as color and memory. If the product is a bundled product, you can select the options with which you want to bundle your product. This section lists the scenarios using which the customer can view the configuration options for a product.

When you configure and add products to your cart, you can do the following:

- Show Product / Bundle Details
- Create Cart (Create Quote first and then Cart for the Quote)
- Configure Bundles
- Add Single Product to Cart
- Add Multiple Products to Cart
- Show Recommendations for Selected Product
- Show Validation and other messages
- Auto-Include Products
- Delete single product from Cart
- Delete Multiple products from Cart
- Apply any constraint rules related to Cart

- Remove any constraint rules for a deleted product.

## To add products and apply constraint rules in the cart

1. Create a cart using [createCart](#).
2. Add products and options to the cart using [addBundle](#) , [addMultiProducts](#), or [Adding Options to a Bundle](#).
3. Associate constraint rules for the added products, by querying the right set of rules, using [associateConstraintRules](#).
4. Apply constraint rules to the products in the cart using [applyConstraintRules](#).
5. View the results of applying the constraint rules using [getConstraintRuleResult](#). If the results return *NeedMoreProcessing*, then [applyConstraintRules](#) must be run again.

## To delete products and apply constraint rules for deleted line items

1. Delete products from the cart using [removeBundle](#) or [Removing Multiple Bundles from a Cart](#)
2. Remove constraint rules for a deleted product using [Applying Constraint Rules to Deleted Products](#)
3. View the results of removing the constraint rules using [getConstraintRuleResult](#).

## Displaying Recommendations

In the product catalog, you can see the list of products that a vendor offers. When the customer selects a product, you can display the list of recommended products on the same page . This section lists the scenarios using which the recommended products appear. To configure recommendations for a product use the following APIs:

### **Scenario 1**

After a customer searches a product, the customer selects a product by clicking the product name or image in the result view. The recommendations for that product along with product details should appear.

## Scenario 2

After a customer searches a product, the customer adds the product to the cart using the Add to Cart button. On the Cart Details page, the recommendations for that product along with product details should appear along with the cart line items.

For each recommended product, display the product image, name, description, and price.

## Updating Price

If you want to update price for a cart after a specific interval use the [Updating Price For A Cart API](#).

You can use the Update Price API for your cart in the following scenarios:

- When the quantity of a product is incremented or decremented.
- When an additional product is added to your cart.
- If any additional charges apply for the product added.
- If any Adjustment whether Markup or Discounts are applied to the cart.

## Viewing Price Break-up Details

If the customer wants to view the breakup of how the tiered pricing rules are applied for a given quantity / term of the line item use the [Price Breakup for a Cart or Specific Line Item](#).

The customer might want to see the breakup of how the tiered pricing rules are applied for a given quantity / term of the line item. For example:

There is a tiered pricing structure for a given quantity as follows:

- 0-20 - 5% Discount
- 21-30 - 10% Discount
- > 30 - 15% Discount

If the line item has 25 quantities then show the pricing breakup as

- Product 1 - List Price: \$10 Quantity: 20 Discount: 5% Net Price: \$190
- Product 1 - List Price: \$10 Quantity: 5 Discount: 10% Net Price: \$180

Tiered pricing is applicable in the following scenarios:

- Tiered Pricing for a Single Larger Tiers

- Tiered Pricing defined in Price List
- Tiered Pricing negotiated in the quote
- Tiered pricing negotiated in pricing agreement
- Tiered Pricing for a Single Order leading to higher tier e.g. single order of quantity 25 in above case
- Tiered Pricing for new and add-on order leading to higher tier e.g. initial order of 15 and then add-on (increment) asset based order of 10 quantity
- Tiered for different price types
  - Usage Tiers
  - One time Charge Tiers
  - Recurring subscription tiers
- Ramps

The breakup details for each line item should display a cart id, line id, and price break up details, such as quantity tier, list price, base price, extended price, adjustment, and net price.

### Adding Price Ramps to a Cart

After you add a line item to a cart, this API enables you to add primary and secondary ramp line items for the line item. Once the ramp line items are created, you can also update the ramp line item details or delete ramp line item details using standard SOQL queries.

When you use Apttus CPQ out of the box, invoke the ramp using the red icon to the left of the primary line item.

	Product	Standard Price	\$100.00	\$100.00	1/13/2015	2/12/2015	1	\$100.00	\$100.00	--None--		\$100	\$100.00	0.0000%	0.0000%
--	---------	----------------	----------	----------	-----------	-----------	---	----------	----------	----------	--	-------	----------	---------	---------

Once you click the ramp icon, the ramp dialog appears:

Ramps							
Ramp Level	List Price	Start Date	End Date	Quantity	Adjustment Type	Adjustment Amount	Status
	1	\$100.00	1/13/2015	2/12/2015	1	--None--	

Save Cancel

The ramp dialog allows you to add, edit dates and quantity, make adjustments, save the changes, and cancel the changes.

Once the customer adds a ramp to a cart line item, they can do the following:

- Edit the start date, end date, quantity, adjustment type and adjustment amount based on the custom setting.
- The start date of a ramp line item defaults to the end date+1 of the previous line item.
- The end date of a ramp line item defaults to a date such that the difference between the start date and end date is the same as that of the previous line item.
- The user can add more ramp line items after or in between the ramp line items.
- The user can remove the new line before saving by clicking on the icon in the right most column.

Use the addMultiProducts API to add products to the cart.

### addMultiProducts

Parameters		
Name	Type	Description
request	CPQ.AddMultiProduct RequestDO	The request data object.

Request Data Object - CPQ.AddMultiProductRequestDO		
Field	Type	Description
CartId	ID	The Id of the cart.
SelectedProducts	List <CPQ.SelectedProductDO>	The list of selected product data objects.

<b>Response Data Object - CPQ.AddMultiProductResponseDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
LineNumbers	List<Decimal>	The list of line numbers added to the cart.

<b>Data Object - CPQ.SelectedProductDO</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
ProductId	ID	Id of the product bundle.
Quantity	Decimal	The bundle quantity.
SellingTerm	Decimal	The bundle selling term.
StartDate	Date	The start date. You should ensure you use the correct date format.
EndDate	Date	The end date.
Comments	String	Comments associated with the record.
CustomFields	List<String> CustomFields	List of custom fields created for your product.
CustomData	Apttus_Config2__LineItem__c CustomData	This can be used to include the list of custom fields you have added to the product.

### Code Sample

The sample below enables you to add ramp line items after you have:

- Added Products to the cart using the AddMultiProducts APIs,

- Updated the Price for the added products using the updatePriceforCart API.
- Selected the products for which you want to add a ramp for.

Using the sample below you fetch the list of selected products for which you want to add a ramp. You also fetch the parameters for each of the selected products. For all the ramps you create, set PriceGroup as Price Ramp and PricingStatus as Pending. For a primary line item, set IsPrimaryLine\_\_c = true, IsPrimaryRampLine\_\_c = true, and PrimaryLineNumber\_\_c = 1.

```

public void createRampLineItems()
{
    List<String> rampLineItems = new List<String>();

    if(lstWrapItems.size() > 0)
    {
        // Create a list of selected products for which you want
        to create a ramp for
        for(LineItemWrapperClass objLineItemWrapperClass :
lstWrapItems)
        {
            if(objLineItemWrapperClass.Selected)
            {
                rampLineItems.add(objLineItemWrapperClass.Name);
            }
        }

        // Sort Ramp Line Items by name
        rampLineItems.sort();

        Integer rampLineItemIndex = 1;

        for(String rampLineItemName : rampLineItems)
        {
            // Get Line Item parameters for the selected products
            Apttus_Config2__LineItem__c lineItem = [SELECT
Apttus_Config2__ItemSequence__c, Apttus_Config2__PricingStatus__c,
Apttus_Config2__PriceGroup__c,
            Apttus_Config2__IsPrimaryRampLine__c,
Apttus_Config2__IsPrimaryLine__c, Apttus_Config2__LineNumber__c,
Apttus_Config2__PrimaryLineNumber__c from
Apttus_Config2__LineItem__c WHERE
            Name=:rampLineItemName];

```



```

        //Set the parameters for each of the line items
        lineItem.Apttus_Config2__PriceGroup__c = 'Price Ramp'
    ;
        lineItem.Apttus_Config2__PricingStatus__c = 'Pending'
    ;
        lineItem.Apttus_Config2__LineNumber__c = 1;
        lineItem.Apttus_Config2__PrimaryLineNumber__c = 1;
        lineItem.Apttus_Config2__ItemSequence__c =
rampLineItemIndex;
        //For a primary line item set the following
        if(rampLineItemIndex == 1)
        {
            lineItem.Apttus_Config2__IsPrimaryLine__c = true;
            lineItem.Apttus_Config2__IsPrimaryRampLine__c = t
true;
        }

        //For all secondary line items set the following
parameters
        else
        {
            lineItem.Apttus_Config2__IsPrimaryLine__c = false
;
            lineItem.Apttus_Config2__IsPrimaryRampLine__c = f
false;
        }

        // Update Line Items
        update lineItem;

        rampLineItemIndex++;
    }
}
else
{
    ApexPages.addMessage(new ApexPages.Message(ApexPages.
severity.info, 'No line items available.));
}
}

```

## Viewing Configured Order in the Shopping Cart

After the customer has configured and added all the products to the cart, display the detailed shopping cart items. This section lists all the scenarios using which the customer can view the finalized shopping cart.

## Updating Taxes and Shipping for an Order

After the user has added products to the cart, you apply taxes to each of the cart line items and shipping charges for the entire order.

- Tax and shipping can be calculated for the Quotes (Estimated tax / Shipping amount), but will be more generally used with E-Commerce orders with Pay Now scenario as the actual tax and shipping amount.

After the user has added the products to the cart, the sequence of actions is as follows:

- Customer specifies the Ship-to location.
- Once the ship to account or location is specified at the header (line item level in case of multiple ship-to locations)level, invoke the APIs to calculate Shipping as well as tax.
- Once the shipping and tax charges are calculated, the total price, shipping, and tax amount is displayed for a customer to review.
- Customer will then specify Payment option and Place the order.

### Tax Calculation Workflow:

- Create Tax callback class.
- Implement tax interface `ITaxCallback2` in the callback class to call the tax engine to calculate the total tax for the cart (Quote / Order) and breakup for each line item.
- Invoke `computeTaxforCart` API to which we just pass the "CartId". The API will create the tax breakup line items as well as the total tax line for the entire cart.

### Shipping Callback Workflow:

- Create Shipping callback class.
- Implement shipping interface `IShippingCallback` in the callback class to call the shipping engine to calculate the total shipping charges for the cart (Quote / Order).

- Invoke computeShippingForCart to which we just pass the “CartId”. The API will create the shipping charges for the entire cart.
- [Sample Callback for Calculating Shipping](#)  
This section comprises the sample callback class that enables you to apply an appropriate shipping charge to a cart.
- [Sample Callback for Calculating Taxes](#)  
This section comprises the sample callback class that enables you to apply an appropriate tax to a cart line item.
- [To apply taxes and shipping charges](#)

## Sample Callback for Calculating Shipping

This section comprises the sample callback class that enables you to apply an appropriate shipping charge to a cart.

Before you define the shipping callback ensure that you have set the following:

- If shipping charges change based on the ship to or shipping address of the account, ensure that the account associated with the proposal has both specified.

In addition, you can add additional custom fields on the quote or order line item such as Shipping Speed to calculate the shipping charge.

The sample callback class comprises the following objects:

Data Object - Apttus_Config2.ShippingInput		
Field	Type	Description
ShippingAddress	Address	Shipping Address. The address for shipping charge calculation obtained from the "Ship To" account for the line item. Accordingly, Ship To Account should be populated on each line item by the implementation.
Item	SObject	

**Data Object - Apttus\_Config2.ShippingInput**

Field	Type	Description
		Apttus_Config2__LineItem__c. The Cart Line item. This is the reference to the cart line items. Implementation can use this cart line item to get any additional custom fields that might be needed to calculate Shipping.
Handback	Object	<p>Any Apex Object passed by the caller and passed back to the caller in the result. Handback is used only in case when the shipping needs to be calculated for an object other than Cart line item. For example, Billing Schedule line items.</p> <ul style="list-style-type: none"> <li>• For calculating shipping for cart , there is no need to pass the Handback object. It can be blank</li> <li>• For calculating the Shipping for object other than line items, "Item" field will be blank and the actual object will be passed as handback object to identify object for which shipping is calculated.</li> </ul>

**Data Object - Apttus\_Config2.CustomClass.ShippingResult**

Field	Type	Description
ShippingCharge	Decimal	Shipping amount total of all the cart line items. This is the total shipping amount for the line item. Line item is identified by the sequence in which the shipping result is added. This needs to be calculated and populated by the implementation.
Handback	Object	Any Apex Object passed by the calling class and passed back to the calling class in the result.

Data Object - Apttus_Config2.CustomClass.ShippingResult		
Field	Type	Description
		<p>Handback is used only in case when the shipping charge needs to be calculated for an object other than Cart line item e.g. Billing Schedule line items.</p> <ul style="list-style-type: none"> <li>• For calculating shipping charges for a cart, there is no need to pass the Handback object. It can be blank</li> <li>• For calculating the shipping charges for objects other than line items, "Item" field will be blank and the actual object will be passed as handback object to identify the object for which shipping charges are calculated.</li> </ul>

Once you have set shipping to, shipping address or shipping speed to your quote or order, create a Shipping Callback class and specify the name of the callback class in **Custom Settings > Config Custom Classes > (Edit) Custom Classes > Shipping Callback Class**.

In the sample callback class below, we fetch and create a list of all the products added to the cart. Then we fetch the shipping charges applicable for a product using an SOQL query. If a corresponding shipping code and a valid shipping charge exist for a product in the order or cart, the total shipping amount for a cart is added directly.

## Sample Callback for Calculating Taxes

This section comprises the sample callback class that enables you to apply an appropriate tax to a cart line item.

Before you define the tax callback ensure that you have set the following:

- Go to the product price list item, click **Edit > Tax & Billing** and select the **Taxable?** checkbox. Also ensure that the **Tax Inclusive?** checkbox is deselected. If it is selected, the product price specified includes the tax amount.
- From the **Tax&Billing** tab, specify the tax code applicable for a product using a look up. The tax code maps to a code in an external system where various taxes, tax charges, tax types are mapped against a tax code.

- If a tax is applicable based on the billing or shipping address of the account, ensure that the account associated with the proposal has both specified.

The sample callback class comprises the following objects:

<b>Data Object - Apttus_Config2.TaxInput</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
TaxCode	String	Tax code for the line item as inherited from the Price list item or overridden at the line item level.
TaxAddress	Address	Tax Address.  Address as obtained for the line item based on precedence hierarchy specified. For example, Line Item Location ==> Line Item Ship To ==> Line Item Bill To ==> Cart Header Ship To ==> Cart Header Bill To ==> Cart Header Sold to
TaxableAmount	Decimal	Net Price from the Line Item in case the tax needs to be calculated on the Net Price. In case the tax needs to be calculated based on List or Base Price then the total amount calculated based on list or base price needs to be used from the line item to calculate tax.
Item	SObject	Apttus_Config2__LineItem__c. This is the reference to the cart line items. Implementation can use this cart line item to get any additional custom fields that might be needed to calculate tax.
Handback	Object	Any Apex Object passed by the caller and passed back to the caller in the result. Handback is used only in case when the tax needs to be calculated for an object other than Cart line item e.g. Billing Schedule line items. For calculating tax for cart line items, there is no need to pass the Handback object. It can be blank. For calculating the tax for object other than line items, "Item" field will be blank and the actual object will be passed as handback object to identify object for which tax is calculated.

<b>Data Object - Apttus_Config2.CustomClass.TaxResult</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
TaxAmount	Decimal	This is the total amount for the line item. This is sum of the breakup tax amounts for the line item. Line item is identified by the sequence in which the tax result is added. This needs to be calculated and populated by the implementation.
TaxBreakups	List<Apttus_Config2__TaxBreakup>	Tax breakup provide the different components of the tax for a given line item. This needs to be implemented and provided by the implementation. Tax breakup has structure specified below.
Handback	Object	<p>Any Apex Object passed by the calling class and passed back to the calling class in the result.</p> <p>Handback is used only in case when the tax needs to be calculated for an object other than Cart line item e.g. Billing Schedule line items.</p> <ul style="list-style-type: none"> <li>• For calculating tax for cart line items, there is no need to pass the Handback object. It can be blank</li> <li>• For calculating the tax for object other than line items, "Item" field will be blank and the actual object will be passed as handback object to identify object for which tax is calculated.</li> </ul>

<b>Data Object - Apttus_Config2__TaxBreakup</b>		
<b>Field</b>	<b>Type</b>	<b>Description</b>
TaxType	String	Type of tax to be applied. For example, sales, custom, excise
TaxRate	Decimal	Tax percentage to be applied
TaxAppliesTo	String	The field on which the tax is applied to. For example, net price.
TaxAmount	Decimal	The tax amount calculated based on the formulae defined in the callback.
BreakupType	String	If you specify the breakup type as Detail, then the quote or order line items show the detailed tax break up for a cart line item.

**Tax Breakup Type Example**

<b>Breakup Type</b>	<b>Tax Type</b>	<b>Tax Rate</b>	<b>Tax Applies to</b>	<b>Tax Amount</b>
Detail	State Tax	10	Net Price	100
Detail	City Tax	1	Net Price	10
Total				110

<b>Data Object - Apttus_Config2. CustomClass.Address</b>	
<b>Field</b>	<b>Type</b>
Street	String



Data Object - Apttus_Config2. CustomClass.Address	
Field	Type
City	String
State	String
County	String
PostalCode	String
Country	String

Once you have set a Tax Code for each price list item, create a Tax Callback class and specify the name of the callback class in **Custom Settings > Config Custom Classes > (Edit) Custom Classes > Tax Callback Class**.

In the sample callback class below, we fetch and create a list of all the products added to the cart. Then we fetch the tax charges applicable for a product using an SOQL query. If a corresponding tax code and a valid tax charge exists for a product in the order or quote line item, the total tax amount for a product is calculated using the formula-  $\text{taxAmount} += (\text{taxRate} \neq \text{null} ? (\text{taxRate} * \text{input.TaxableAmount}) / 100 : 0)$ . After the total tax on a product is calculated, you can list the tax break up based on Tax types applied for each of the order or quote line items. The sample callback lists the parameters applicable for a tax break up. If you want to apply tax to shipping charges as well, you can capture shipping amount for each line item in a custom field and use the total amount (Net Price + Shipping Amount) from the line item to calculate tax. In this case shipping should be calculated first and then tax.

In the sample callback class, tax is calculated using hardcoded rates. For actual implementations, tax rates and tax amounts are fetched from external Tax calculation engines such as Avalara and Vertex to calculate tax.

```
/**
 * Apttus Config & Pricing
```

```

* QATaxCallBack
*
* @2013-2014 Apttus Inc. All rights reserved.
*/
global with sharing class QATaxCallBack implements Apttus_Config2.
CustomClass.ITaxCallback2 {

    /**
    * Callback invoked to compute tax based on the given input
    * @param input the tax input
    * @return the tax result
    */
    global Apttus_Config2.CustomClass.TaxResult computeTax
(Apttus_Config2.CustomClass.TaxInput input) {
        // Compute Tax
        system.debug('Entering into computeTax');
        List<Apttus_Config2.CustomClass.TaxResult> results =
computeTaxMultiple(new Apttus_Config2.CustomClass.TaxInput[]
{input});
        return (!results.isEmpty() ? results[0] : new Apttus_Config2.
CustomClass.TaxResult());
    }

    /**
    * Callback invoked to compute tax based on the given list of
inputs
    * @param inputs the list of tax inputs
    * @return the list of tax results
    */
    global List<Apttus_Config2.CustomClass.TaxResult>
computeTaxMultiple(List<Apttus_Config2.CustomClass.TaxInput> inputs)
{

        List<Apttus_Config2.CustomClass.TaxResult> results = new
List<Apttus_Config2.CustomClass.TaxResult>();

        for (Apttus_Config2.CustomClass.TaxInput input : inputs) {

            Decimal taxAmount = 0;

            Apttus_Config2.CustomClass.TaxResult result = new
Apttus_Config2.CustomClass.TaxResult();

```

```

        List<Apttus_Config2__TaxBreakup__c> taxBreakUps = new
List<Apttus_Config2__TaxBreakup__c>();

        // Add the handback object to correlate the result with
the input
        result.Handback = input.Handback;

        // Compute tax based on tax code and tax address

        // Tax Code is required
        if (input.TaxCode == null || input.TaxCode.trim().
length() == 0 || input.TaxableAmount == null || input.TaxableAmount
== 0) {

            // Tax Amount
            result.TaxAmount = 0;
        } else {

            List<QA_Tax_Rate__c> accountTaxRates = new
List<QA_Tax_Rate__c>();

            SObject sObj = input.Item;
            Id taxCodeId = (Id) sObj.get('Apttus_Config2__TaxCode
Id__c');

            accountTaxRates = [SELECT Id, Name,
Tax_Applies_To__c, Tax_Rate__c, Tax_Type__c
FROM QA_Tax_Rate__c
WHERE Tax_Code__c =: taxCodeId];

            for(QA_Tax_Rate__c accountTaxRate : accountTaxRates)
{

                Decimal taxRate = accountTaxRate.Tax_Rate__c;
                String taxAppliesTo = accountTaxRate.
Tax_Applies_To__c;
                String taxType = accountTaxRate.Tax_Type__c;

                Apttus_Config2.CustomClass.Address addr = input.
TaxAddress;

                // Calculate Tax Amount
                taxAmount += (taxRate != null ? (taxRate * input.
TaxableAmount) / 100 : 0);

```

```

        // Calculate Tax BreakUps
        Apttus_Config2__TaxBreakup__c taxBreakUp = new
Apttus_Config2__TaxBreakup__c();
        taxBreakUp.Apttus_Config2__TaxType__c = taxType;
        taxBreakUp.Apttus_Config2__TaxRate__c = taxRate;
        taxBreakUp.Apttus_Config2__TaxAppliesTo__c =
taxAppliesTo;
        taxBreakUp.Apttus_Config2__TaxAmount__c =
taxRate * input.TaxableAmount / 100;
        taxBreakUp.Apttus_Config2__BreakupType__c = 'Detail';

        taxBreakUps.add(taxBreakUp);
    }

    result.TaxBreakups = taxBreakUps;
    result.TaxAmount = taxAmount;
}
results.add(result);
}
return results;
}
}

```

## To apply taxes and shipping charges

1. Create a cart using the [Creating a Favorite Configuration](#).
2. Browse products by categories and subcategories using the search text entered by the user by utilizing [Retrieving Products and List Prices For a Price List Category and Search Text](#) and [Retrieving Products and List Prices For a Price List and Search Text](#). Using this API, the customer can search for a product directly or select a category and enter search text to refine the search further.
3. Browse for categories and option groups using [Retrieving Categories for a Price List and Retrieving Option Groups, Options, and List Prices for a Price List Product](#).
4. Browse for products using [Retrieving Products and List Prices for a Price List and Retrieving Products and List Prices for a Price List and Category](#).

5. Compare the displayed products using [Comparing Products](#).
6. Add products to the cart by using [Adding Products to a Cart](#) and [Adding a Bundle to a Cart](#).
7. Update the price using [Updating Price For A Cart](#).
8. Finalize the cart using [Finalizing a Cart's Contents](#).
9. Define the Tax and Shipping Callbacks using [Sample Callback for Calculating Taxes](#) and [Sample Callback for Calculating Shipping](#).
10. Specify the Callback class names at **Custom Settings > Config Custom Classes (Edit) > Tax Callback and Shipping Callback**.
11. Apply the taxes and shipping charges using [Computing Taxes for Cart Line Items](#) and [Computing Shipping for Cart Line Items](#). The Tax API creates and populates - the tax breakup for each applicable line item in the cart and the total Tax line and related breakup. The shipping API calculates the shipping amount for the entire order.
12. Update the Order Line Items using [Synchronizing a Cart](#).

## Creating and Updating Quote and Quote Line Items

A customer with a valid account can create a quote from an existing opportunity. Using the Quote ID and a valid price list, you can create a cart from scratch and by browsing the product catalog you can navigate for a product and select the required product manually or can search for a product. You can enable searches using the search text field in the cart page and enable the user to search for a desired product by category, sub-category, or options available with the product. This section lists all the possible scenarios for which a customer can create a quote and or view a product listing.

### To create and update quote and quote line items

1. Create a cart using the [Creating a Favorite Configuration](#).
2. Browse products by categories and subcategories using the search text entered by the user by utilizing [Retrieving Products and List Prices For a Price List Category and Search Text](#) and [Retrieving Products and List Prices For a Price List and Search Text](#). Using this API, the customer can search for a product directly or select a category and enter search text to refine the search further.

3. Browse for categories and option groups using [Retrieving Categories for a Price List](#) and [Retrieving Option Groups, Options, and List Prices for a Price List Product](#).
4. Browse for products using [Retrieving Products and List Prices for a Price List](#) and [Retrieving Products and List Prices for a Price List and Category](#).
5. Compare the displayed products using [Comparing Products](#).
6. Add products to the cart by using [Adding Products to a Cart](#) and [Adding a Bundle to a Cart](#).
7. Update the price using [Updating Price For A Cart](#).
8. Finalize the cart using [Finalizing a Cart's Contents](#).
9. Update the Quote Line Items using [Synchronizing a Cart](#).

## Creating and Updating Order and Order Line Items

A customer with a valid account can create an order from an existing opportunity. Using the order ID and a valid price list, you can create a cart from scratch and by browsing the product catalog you can navigate for a product and select the required product manually or can search for a product. You can enable searches using the search text field in the cart page and enable the user to search for a desired product by category, sub-category, or options available with the product. This section lists all the possible scenarios for which a customer can create a order and or view a product listing.

### To create and update order and order line items

1. Create an order using [Creating an Order](#)
2. Create a cart for an order using [Creating a Cart for an Order](#).
3. Browse products by categories and subcategories using the search text entered by the user by utilizing [Retrieving Products and List Prices For a Price List Category and Search Text](#) and [Retrieving Products and List Prices For a Price List and Search Text](#). Using this API, the customer can search for a product directly or select a category and enter search text to refine the search further.
4. Browse for categories and option groups using [Retrieving Categories for a Price List](#) and [Retrieving Option Groups, Options, and List Prices for a Price List Product](#).

5. Browse for products using [Retrieving Products and List Prices for a Price List](#) and [Retrieving Products and List Prices for a Price List and Category](#).
6. Compare the displayed products using .
7. Add products to the cart by using [Adding Products to a Cart](#) and [Adding a Bundle to a Cart](#).
8. Update the price using [Updating Price For A Cart](#).
9. Update the order line items using [Synchronizing a Cart to an Order](#).
10. Create Asset Line Items using [Create Asset Line Items for an Order](#).

## Asset Based Ordering

The end user or a renewals manager can view and modify products that the organization owns and should be able to filter the assets to renew orders. Display and modify the assets that belong to a company based on the following criteria:

- All assets with recurring, usage, and one-time charge types for which renewal date is approaching.
- All licenses that expire within 30, 60, or 90 days.
- Expired licenses.
- All services that expire in 30 days.
- All assets that are in the End of Life or End of Sale state by the vendor.
- All services that are no longer active or are cancelled should be displayed.
- All software licenses setup for a site.
- All products under the CPQ product category.

The assets should be filtered and displayed based on asset status, price type, and subscription expiration.

The displayed results of the asset list the product name, ID, asset name, asset ID, SKU ID, quantity, price type, price UOM, purchase date, start and end date, base price, adjustment, net price, asset status, and renewal term.

## To view assets

Retrieve asset results that fulfill the criteria using the [Retrieving Asset Line Items](#) API. Using this API, you can fetch the assets.

## To modify assets

1. Retrieve asset results that fulfill the criteria using the [Retrieving Asset Line Items](#) API. Using this API, you can fetch the assets.
2. You can renew, amend, increment, or terminate the assets using the code snippets for [Modifying Assets \(Deprecated\)](#).

## To create assets from orders

Create assets from an order using the [Create Asset Line Items for an Order](#) API. Using this API, you can create assets.

## Finalizing the Cart

The customer can finalize the cart in the following scenarios:

- All the required products have been added.
- All requisite prices have been adjusted accordingly.

Invoke the [Finalizing a Cart's Contents](#) to enable the user to finalize the cart.

## Updating Quote Terms to Modify Dates

For a finalized quote, a customer can choose to apply add-ons. The term, validity period, and pricing have to be recalculated after the quote is finalized, approved, and a subsequent proposal is generated. Use the [Updating Quote Terms](#) to achieve the scenarios highlighted.

The updateQuoteTerms API behavior is as follows:

- Update the carts in Finalized or Ready for Finalization status. The latest cart from the quote in any of the two statuses are used as basis to updating the quote.



- Create a new version of the cart in case of Finalized cart and supersede the current version of the cart. The status of the new version of the cart will be same as the status of the current version of the cart. If the cart was in Finalized status, the new cart will also be in finalized status and system will update the "Finalized date" on the quote header.
- Auto-Synch cart line items with the Proposal Line Items.

## To synchronize cart and update quote

1. Finalize the cart using the [Finalize Cart API](#).
2. Synchronize the finalized cart with the quote using the [Synchronize API](#).
3. Update the selling terms of the products associated to the quote using the [Update Quote Terms API](#).

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