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ATG Overview and Framework features

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1. ATG – An Overview

Art Technology Group (ATG) is a top ranked solution provider in the context of e-Commerce. It acts as a solution provider for many brands around the world. It delivers a consistent and personalised cross-channel customer experience. The ATG web commerce offers a complete commerce software platform that enables to provide a personalised buying experience across all the customer touch points.

1.1 ATG Components

ATG comprises of the following components.

- Dynamo Application Framework (DAF)
- Dynamo Personalization Server (DPS)
- Dynamo Scenario Server (DSS)
- ATG Portal
- ATG Commerce
- ATG Content Administration (ATG Publishing)
- ATG Merchandising
- ATG Search
- ATG Commerce Service Center (CSC)
- ATG Business Control Center (BCC)

1.2 Features of ATG Commerce

The major features of ATG Commerce are as follows.

- Product Catalog
- Purchasing and Fulfilment Services
- Targeted Promotions
- Inventory Management
- Pricing Services
- Merchandising Services

1.2.1 Product Catalog

Product catalog is a collection of repository items. A standard catalog implementation has been included in ATG Commerce based on a SQL repository that can be extended as per the requirements.

1.2.2 Purchasing and Fulfilment Services

These are the tools for handling pre-checkout order processing tasks. The order processing includes the following tasks.

- add items to a shopping cart
- ensure items shipping by the customer’s preferred method
- validating credit card information

Sites that supports multiple shopping carts, multiple payment methods and shipping addresses can be designed due to the flexibility and easy customization.

When the user submits an order, the purchasing is over and the fulfilment takes over processing. Fulfilment is a collection of standard services which coordinate and execute the order fulfilment process.

The fulfilment processes comprises of the following features.

- Cost centers – track costs and run related reports
- Export an order via XML – easy integration with other systems
- Scheduled Orders – same order to be placed at regular intervals of time
- Order Approvals – review if the order can be approved or rejected
- Invoicing – provides invoice for the orders placed
- Requisitions – attach a requisition number for easier internal tracking.

1.2.3 Targeted Promotions

Targeted promotions are used to offer discounts and highlight products as a way of encouraging the customers to purchase the products. The different categories of promotions are as follows.

- Specific amount off a particular product
  - Buy a product X and get Rs.Y off
- Specific amount off a whole order
  - Place an order X and get Rs.Y off
- Percentage amount off a particular product
  - Buy a product X and get Y% off
- Percentage amount off a whole order
- - Place an order X and get Y% off
- Specific amount or percentage off a product based on an attribute
- - Buy a product with flavour X and get Rs.Y or Y% off
- Free product or free order
- Substitution
  - Buy product X for the price of product Y
- Free shipping for a specific product

1.2.4 Inventory Management

This framework facilitates the inventory management and inventory querying. Under inventory management, the following tasks can be performed.

- View, add or remove items from the inventory
- Notify the customer about the item's availability – not currently in stock (backorder) or it has never been in the stock (preorder)
- Make a specific number of items available for backorder and preorder purchases.

- Determine the time of availability of an item in the store.

1.2.5 Pricing Services

The pricing services comprises of a pricing engine which is used to determine the price of an item, an order, shipping charge or tax based on a customer's profile. These are capable of generating prices dynamically based on the constantly changing business conditions.

1.2.6 Merchandising Services

A wide variety of merchandising services can be implemented using ATG commerce. The most commonly implemented features are as follows.

- Gift Lists
  - Customers can register for special events and create a list of items
- Wish Lists
  - Customers can save a list of products without actually placing the items in their cart
- Comparison Lists
  - Ability to select multiple items side by side and compare them
- Gift Certificates
  - A kind of vouchers that can be used on purchases on the site
- Coupons
  - A type of promotion that the customers can redeem during the checkout process

The other merchandising services includes Personalisation, Persistent shopping cart, Express checkout, anonymous checkout and multi-national support.

2. ATG Technical Overview

ATG (ATG Dynamo) at framework level is a java based application platform which is used for building data and content driven web applications. This framework is largely being utilised for commerce and publishing. The framework comprises of the following.

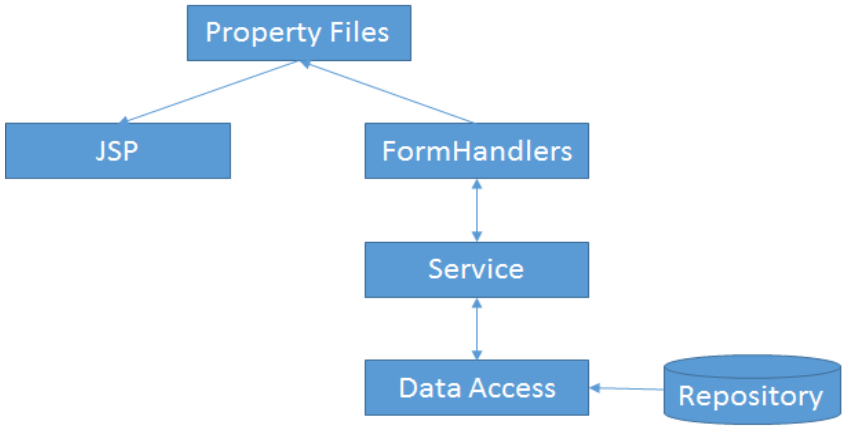
- ORM layer (Repositories)
- Component Container (Nucleus)
- Set of tag libraries for JSP

Repositories maps objects to and from relational databases. It can also handle mapping with LDAP, XML and file system data sources using the same consistent data access API. The Nucleus is a lightweight container for managing the life cycle and dependency binding (dependency injection) of Java component objects (beans). The JSP tags for binding form elements on a page to values on business objects. Droplets are the ATG servlet beans which are used to dynamically generate an HTML page. DSP (dynamo server page) tag libraries interacts directly with the nucleus.

2.1 ATG Flow

ATG model is page-driven not controller-driven. Internally, it is certainly controller-driven with a pipeline approach to chaining dispatchers and controllers. Controllers in Spring framework are replaced by Formhandlers in the ATG framework. Formhandlers in ATG are a fusion of model and controller of a spring framework. That is, the function of the MVC Controller and the MVC Model is all in the Form-handler. ATG provides large number of formhandlers. If any of the custom behaviour is required, these formhandlers can be simply extended.

For displaying a particular value in the JSP, the property files will be used as objects in the JSP. The property files in turn will contain the scope and the data from the formhandler. Each and every formhandler will have a property file and the property files will act as the objects for displaying data in the JSP. The data will be loaded through the ATG repositories.



2.2 Dynamo Application Framework

The Dynamo Application Framework (DAF) provides the foundation layer of code necessary for running the ATG platform on the application server your company uses. At its core is Nucleus, a framework of predefined Java components and services that your application developers can customize and use as the basis for building a Web site. Simple configuration files are used to specify the components used by the application, and it initializes the components and provides the interrelationship between different components in the system.

2.3 Dynamo Application Server

Dynamic Application Server (DAS) is an application server developed by ATG. It provides platform and tools required to develop, deploy and run the personalized business web sites. The key features of DAS includes the following.

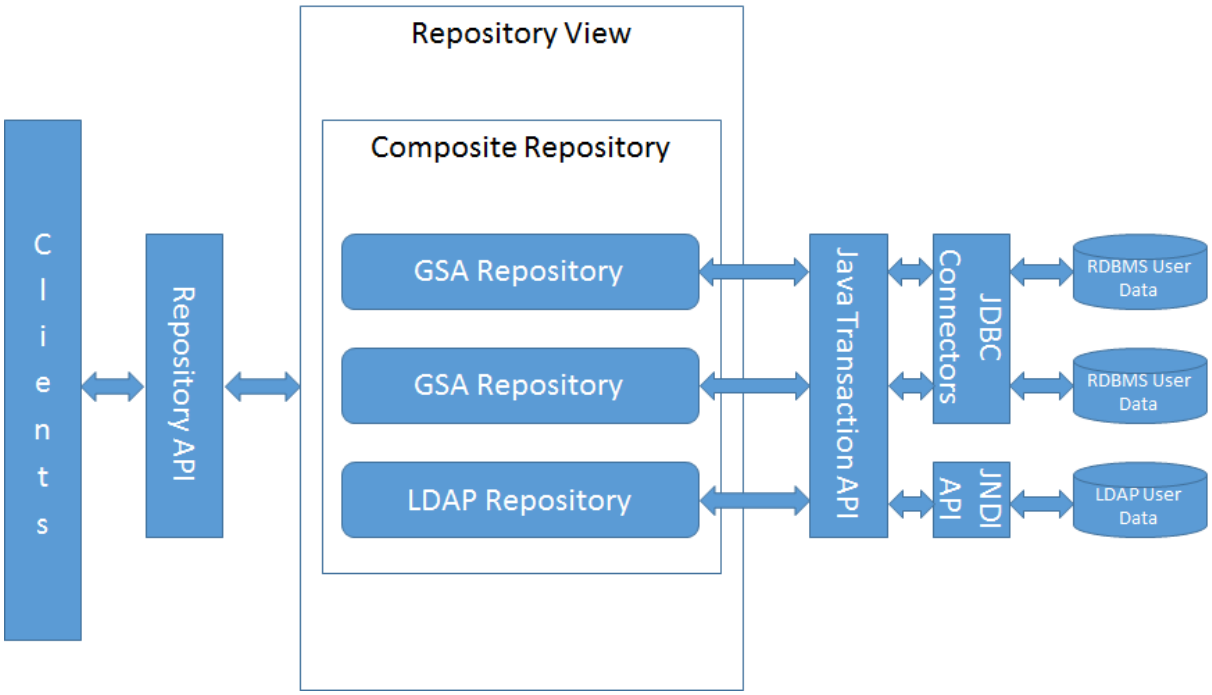
- Full J2EE Support
- Wireless Support
- Dynamo Messaging System
- Transaction Management
- Security
- Session Federation

- Performance
- Scalability
- Reliability

2.4 Repositories in ATG

ATG has the Data anywhere architecture. It provides access to a variety of data sources through a single and unified API, the repository API. It permits the users to pull data from different sources such as files, databases, LDAP directories and third party applications into a unified repository. The details of the repository are stored in an XML file. The programmers do not need to worry about the source of the data. The data can be accessed as simple java objects through the data elements configured in the XML files. It offers performance benefits with distributed caching capability.

The composite repository view can be represented as follows.

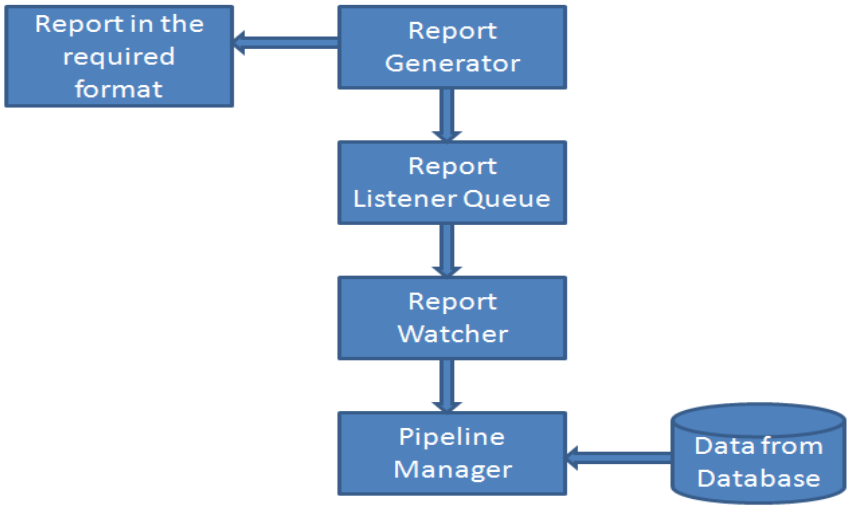


3. ATG Reporting

ATG facilitates generation of reports in Excel, PDF and text formats. It has a scheduler which can be used to schedule the time and frequency of the reporting.

3.1 Framework

The ATG reporting framework is represented in the below block diagram.



3.1.1 Report Generator

The report generator picks the report requests posted by the users. All the cache invalidation activities are carried out in this part.

3.1.2 Report Listener Queue

The report listener queue will broadcast the report event to the report watcher one by one (Synchronized event) and puts it in the listener queue.

3.1.3 Report Watcher

The report watcher fetches the report requests from report listener queue and calls the pipeline manager for further processing. The maximum number of threads that can be processed will be defined in the respective property files. When given a large number of requests, only the given number of reports will be processed at a particular time.

3.1.4 Pipeline Manager

The Pipeline manager processes the reports in parallel. From the pipeline manager, respective java process file and the XML file will be called for further processing. Each and every report type will have a separate XML file. These XML files will have the template for that particular report. That is, the headers, style, column width etc., will be defined in these XML files.

Reportpipeline.xml file will call the respective process files and XML files based on the report types. Each and every report type will have separate process files. The process files in turn will call the ATG repositories and fetches the required data from the database based on the criteria given in the request. The generated report can be either stored in the server location for future use or it can be made available as a real time report.

There are some other in-built reports that can be utilised if necessary. Example, reports on hourly basis for the sales, daily basis, and weekly basis can be configured.

3.2 Dynamo Scheduler

The scheduler can be defined to trigger the report generation at a specific time and a specified frequency. (daily, weekly, monthly etc.,). It can be scheduled using the below format in the report generator.

The following are the available types of dynamo scheduler.

- Periodic Schedule
- Calendar Schedule

3.2.1 Periodic Schedule

It is used schedule a particular task at regular intervals of time.

Schedule=every 5 minutes

The periodic schedule can be configured with 'catch up'.

Example: A job is scheduled at 2.00 PM and it runs every 5 minutes. If this particular job fails to run at 2.00 PM till 2.07 PM, the job which has to be run at 2.05 PM will be skipped.

Schedule=every 5 minutes with catch up

In this case, the scheduler will force the execution of 2.05 PM job even if the 2.00 PM fails till 2.07 PM. 2.10 PM job will run as scheduled.

3.2.2 Calendar Schedule

A calendar schedule is used to schedule the jobs at different points on a calendar. This scheduler consists of six parameters.

Schedule= <months> <dates> <week days> <month occurrences> <hours> <minutes>

Months	Number of occurrences in a month	0…11 1,5 – February and June 1-5 – February to June
Dates	Days of the month	1…31
Week days	Days of the week	1…7 2,5 – Monday and Friday 2-5 – Monday to Friday
Month occurrences	Occurrences of specified weekdays in a month	1…4, last
Hours	Hours of a day	0…23 1,17 – at 1 AM and 5 PM
Minutes	Minutes in an hour	0…59

Examples

Schedule=* * 2-5 . 5-22 0,15,30,45 (runs from Monday to Friday from 5 AM to 10.45 PM for every 15 minutes)

In the above example asterisk (*) denotes all values for that parameter and period (.) denotes no value for that parameter.

Schedule=* . 5 2,last 1 30 (runs 2nd and last Friday of every month at 1:30 AM)

Atg/dynamo/service/scheduler provides the ability to schedule these tasks.

3.3 Common Issues in reporting

Since the pipeline manager processes the reports in parallel, and if there are more requests in queue, it leads to out of memory error. It will cause the entire system to clock until some free space is available for further processing. To avoid this kind of issue, memory optimization tools can be utilized at the time of development to create a memory efficient code.

To overcome this issue,

- the JVM memory can be increased
- separate JVM can be used for reporting purposes
- have a maximum number of connection pools if the application is being primarily utilised for reporting.

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Thank You

Contact

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