

**Evaluation of IBM Cognos ReportNet Reporting Engine
And
Integrate with IBM Information Server**

A Thesis submitted in partial fulfillment of the
requirements for the award of the degree of

Master of Technology

**In
Computer Science**

By

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June 2009

CERTIFICATE

This is to certify that the project report entitled “**Evaluation of IBM Cognos ReportNet Reporting Engine And Integrate with IBM Information Server**”, submitted for partial fulfillment of the requirements for the award of Degree of Master of Technology in Computer Science (M.Tech (CS)) to the University of Hyderabad is a record of bonafide project work carried out by **Mr. M. Shravan Kumar Reddy(07MCMT19)** at India Software Labs, IBM India Pvt. Ltd., Hyderabad, for a period of one year during June 2008 to June 2009 under the guidance of Mr. Ravi Chamarthy, Software Engineer, IBM India Software Labs.

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ACKNOWLEDGEMENTS

No significant achievement can be a solo performance. This project is not an exception to this. This project has benefited from the generous contributions of time and effort of many individuals. Here I would like to acknowledge their precious operation and express my sincere gratitude to them.

I would like to express my sincere thanks and due respects to **Prof. Arun Agarwal**, Head, DCIS, Hyderabad Central University for giving me an opportunity to work in IBM.

I am very thankful to IBM India Private Ltd., for offering me Internship at India Software Labs.

I express my profound regards and deep sense of gratitude to my external guide, **Mr. Ravi Chamorthy**, software engineer ISF Reporting Framework ISL, IBM, for his valuable guidance. His valuable suggestions and comments made me to work better.

I sincerely thank **Dr. Rajendra Prasad Lal**, Reader, DCIS, for giving me suggestions and back-up.

I would like to express my sincere thanks and due respects to my Manager **Mr. Srinivasa Murthy Sista** who has been friendly and helpful all the time.

Finally I thank all the members of the ISF Core Development team for making my stay a memorable one and who were always a source of inspiration for me.

M. Shravan Kumar Reddy

ABSTRACT

Reporting service manages run time and administrative aspects of reporting for IBM Information Server. IBM information server is the industry's first comprehensive, unified foundation for enterprise information architectures. It is built entirely on a set of shared services that centralize core tasks such as security, user administration, logging, and reporting. IBM Cognos 8 BI provides many facilities. One of these facilities is Report Studio. With Report studio we can create many types of reports in different output formats that meet the industrial requirements. Reporting Service allows integrating an external reporting engine to create, execute, modify and perform all the administrative reporting operations.

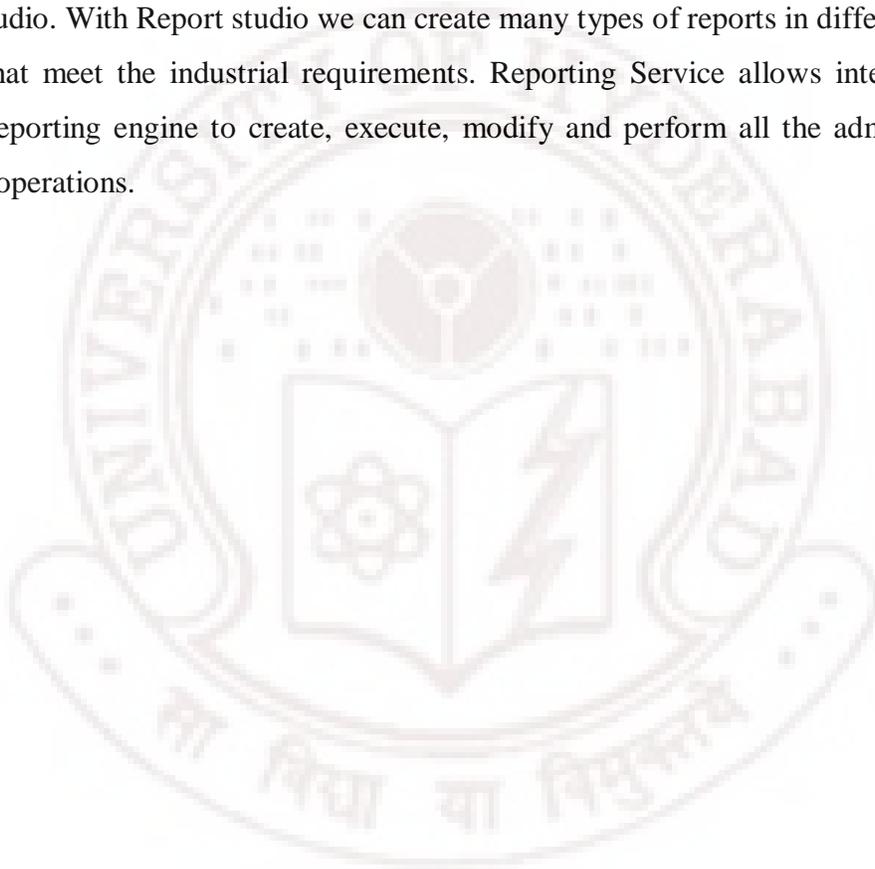


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1. Introduction

IBM Information Server is the industry's first comprehensive, unified foundation for enterprise information architectures, capable of scaling to meet any information volume requirement so that companies can deliver business results within these initiatives faster and with higher quality results. IBM Information Server helps user understand existing data sources, cleanse, correct, and standardize information, and load analytical views that can be reused throughout the enterprise.

It is built entirely on a set of shared services that centralize core tasks across the platform. These include administrative tasks such as security, user administration, logging, and reporting. Shared services allow these tasks to be managed and controlled in one place, regardless of which product module is being used. The shared services, otherwise known as common services, also include the metadata services, which provide standard service-oriented access and analysis of metadata across the platform.

One of the common services is Reporting service, which manage run time and administrative aspects of reporting for IBM Information Server. The user of Information Server can create product-specific reports for WebSphere DataStage, WebSphere QualityStage, and WebSphere Information Analyzer, Business Glossary and cross-product reports for logging, scheduling, and security services. All reporting tasks are set up and run from a single interface, the IBM Information Server Web console. The user can retrieve and view reports and schedule reports to run at a specific time and frequency. User defines reports by choosing from a set of predefined parameters and templates. Reports can be formatted as HTML, PDF or Microsoft® Word documents.

Reporting Service allows integrating an external reporting engine to create, execute, modify and perform all the administrative reporting operations. For integration, reporting service provides a Service API which has to be implemented for the specific reporting engine. The aim of this project is to implement the reporting engine provider API for IBM Cognos reporting engine and integrate it with the IBM Information Server. This exercise includes understanding of IBM Cognos ReportNet, understanding the IBM Information Services Framework and developing same SOA Services, developing and

executing the reports with sample data, implementing the IBM Reporting Service Provider API for Cognos ReportNet, deploying reports in IBM Information Server, and executing the reports.



2. IBM Cognos BI

2.1 Cognos 8 Architecture

Cognos 8 has a multi-tiered architecture. It can be separated into three tiers:

1. Web server
2. Applications
3. Data

The tiers are based on business function, and are separated by network firewalls.

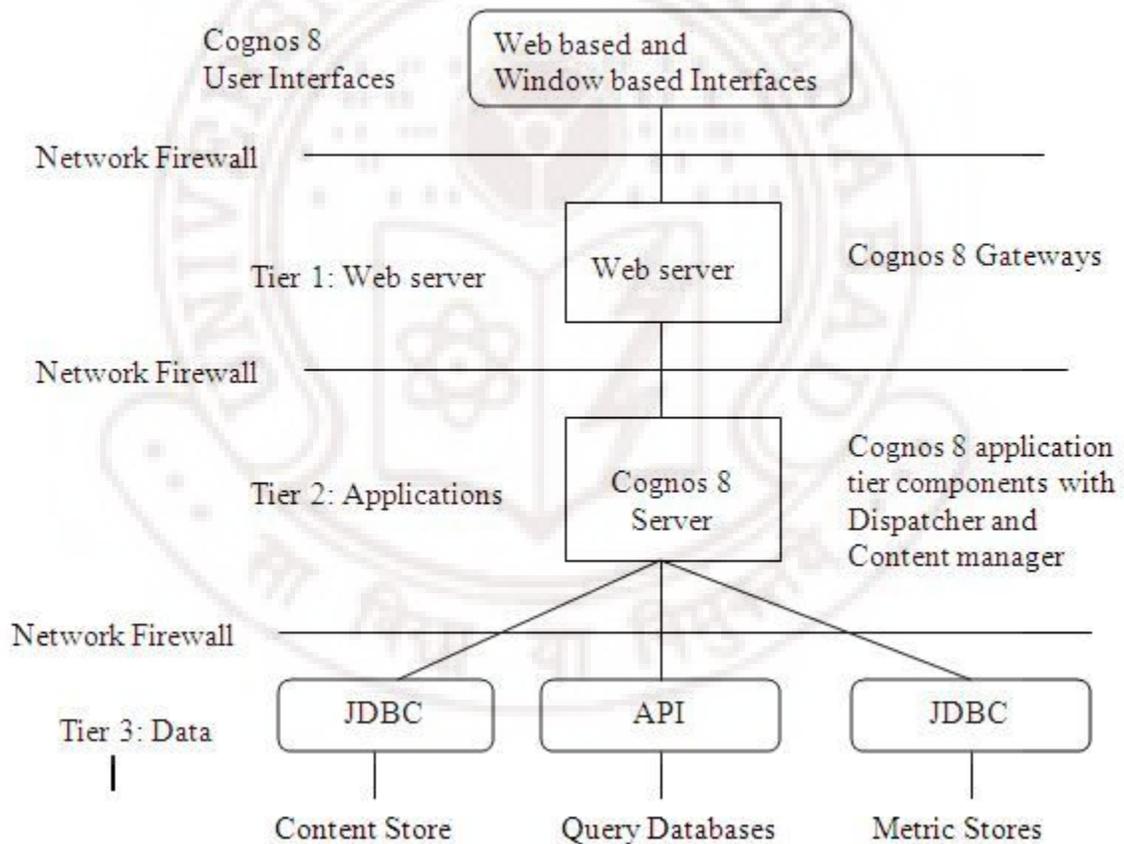


Figure 1: IBM Cognos 8 Architecture

User Interfaces

Cognos 8 has Web-based and Windows-based user interfaces.

Web-based interfaces

1. Cognos Connection
2. Cognos Administration
3. Query Studio
4. Report Studio
5. Analysis Studio
6. Event Studio
7. Metric Studio

Windows-based interfaces

1. Framework Manager
2. Metric Designer
3. Transformer
4. Map Manager
5. Cognos 8 Go! Office

Web-based User Interfaces:

a) Cognos Connection:

Cognos Connection provides a single access point to the corporate data available for its products. It provides a single point of entry for querying, analyzing, and organizing data, and for creating reports, scorecards, and events. Users can run all their Web-based Cognos 8 applications through Cognos Connection. Other business intelligence applications, and URLs to other applications, can be integrated with Cognos Connection.

In addition to selections for viewing data and creating objects, Cognos Connection includes

- portal pages

The new page button opens a wizard where users can create a customizable page that uses portals to show different types of content at the same time.

- Public Folders

Public Folders store shared Cognos 8 content, such as packages, reports, agents, shortcuts, and jobs.

- My Folders

My Folders store personal Cognos 8 content, such as reports, shortcuts, and jobs.

- Link to tools and applications

The Launch button provides links to the Cognos 8 studios, Drill-through Definitions, which are used to navigate through related data when querying or analyzing data, and Cognos Administration.

b) Cognos Administration:

Cognos Administration is a central management interface that contains the administrative tasks for Cognos 8. It provides easy access to the overall management of the Cognos environment and is accessible through Cognos Connection.

Cognos Administration is organized into three sections:

1. Status

Use the links in this section to monitor activities, server status, and system metrics, and change some system settings.

2. Security

Use the links in this section to define users, groups, and roles for security purposes, configure capabilities for the interfaces and studios, and set properties for the user interface profiles that are used in Report Studio.

3. Configuration

Use the links in this section to set up data source connections, deploy Cognos8 content from one content store to another, create distribution and contact lists, add printers, set styles, manage portals and portal layout, start or stop dispatchers and services, and change system settings.

c) Query Studio:

Query Studio lets users with little or no training quickly design, create and save reports to meet reporting needs not covered by the standard, professional reports created in Report Studio.

d) Report Studio:

Report Studio lets report authors create, edit, and distribute a wide range of professional reports. They can also define corporate-standard report templates for use in Query Studio, and edit and modify reports created in Query Studio or Analysis Studio.

e) Analysis Studio:

In Analysis Studio, users can explore, analyze, and compare dimensional data. Analysis Studio provides access to dimensional, OLAP (Online Analytical Processing), and dimensionally modeled relational data sources. Analyses created in Analysis Studio can be opened in Report Studio and used to build professional reports.

f) Event Studio:

In Event Studio, user set up agents to monitor users data and perform tasks when business events or exceptional conditions occur in users data that must be dealt with. When an event occurs, people are alerted to take action. Agents can publish details to the portal, deliver alerts by email, run and distribute reports based on events, and monitor the status of events. For example, a support call from a key customer or the cancellation of a large order may trigger an event, sending an email to the appropriate people.

g) Metric Studio:

In Metric Studio, user can create and deliver a customized score carding environment for monitoring and analyzing metrics throughout users organization. Users can monitor, analyze, and report on time-critical information by using scorecards based on cross-functional metrics.

Windows-based User Interfaces:

The Windows-based Cognos 8 interfaces are the modeling components: Framework Manager, Metric Designer, Transformer, and Map Manager.

a) Framework Manager :

Framework Manager is the Cognos 8 modeling tool for creating and managing business-related metadata for use in Cognos 8 analysis and reporting. Metadata is published for use by reporting tools as a package, providing a single, integrated business view of any number of heterogeneous data sources. OLAP cubes are designed to contain sufficient metadata for business intelligence reporting and analysis.

b) Metric Designer:

Metric Designer is the Cognos 8 modeling tool used to create extracts for use in Cognos 8 score carding applications. Extracts are used to map and transfer information from existing metadata sources such as Framework Manager and Impromptu Query Definition (.iqd) files.

c) Cognos 8 Go! Office:

Cognos 8 Go! Office allows users to access Cognos reporting data directly within Microsoft Office applications. Cognos 8 Go! Office makes use of the Microsoft .NET Framework to allow clients to interact with server-based components.

Cognos 8 Go! Office provides two types of clients:

1. The smart client provides a zero-administration client with a zero-deployment impact. Product updates are automatically captures though the smart client.
2. The COM add-in client requires a client installation. Product updates are delivered by uninstalling and reinstalling the COM add-in client.

d) Transformer:

Cognos 8 Transformer is the Cognos 8 modeling tool used to create PowerCubes for use in Cognos 8. Secured Cognos 8 PowerCubes are not compatible with Cognos Series 7.

e) Map Manager:

Administrators and modelers use a Windows utility named Map Manager to import maps and update labels for maps in Report Studio. For map features such as country and city names, administrators and modelers can define alternative names to provide multilingual versions of text that appears on the map.

Tier 1: Web Server

The Cognos 8 Web server tier contains one or more Cognos 8 gateways. Web communication in Cognos 8 is typically through gateways, which reside on one or more Web servers. A gateway is an extension of a Web server program that transfers information from the Web server to another server.

Cognos 8 supports several types of Web gateways

1. CGI

CGI is the default gateway, it can be used for all supported Web servers.

2. ISAPI

ISAPI can be used for the Microsoft Internet Information Services (IIS) Web server. It delivers faster performance for IIS.

3. Apache_mod

User can use an apache_mod gateway with the Apache Web server.

4. servlet

If users Web server infrastructure supports servlets or user are using an application server, user can use a servlet gateway.

Working of Cognos 8 gateway

When a Cognos 8 gateway receives a request, it

1. encrypts passwords to ensure security
2. extracts information needed to submit the request to a Cognos 8 server
3. attaches environment variables for the Web server
4. adds a default namespace to the request to ensure that the server authenticates the user in the correct namespace
5. passes requests to a Cognos 8 dispatcher for processing

Tier 2 : Applications Cognos 8 Servers

The Cognos 8 applications tier contains one or more Cognos 8 servers. A Cognos 8 server runs requests, such as reports, analyses, and queries that are forwarded by a gateway. A Cognos 8 server also renders the Cognos Connection and Metric Studio interfaces.

Each Cognos 8 installation includes

1. Application Tier Components, which include a dispatcher that operates services and routes requests
2. Content Manager which manages Cognos 8 information

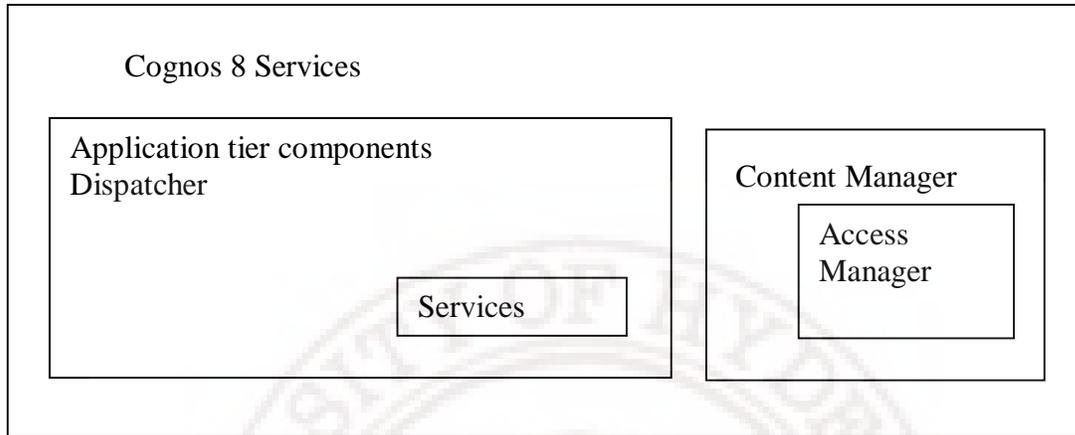


Figure 2: Cognos 8 Server

Dispatcher

The dispatcher starts all Cognos 8 services configured and enabled on a computer, and routes requests. The dispatcher is a multithreaded application that uses one or more threads per request. The dispatcher can route requests to a local service, such as the report service, presentation service, job service, or monitor service. A dispatcher can also route requests to a specific dispatcher to run a given request. Requests can be routed to specific dispatchers based on load-balancing needs, or package or user group requirements.

Content Manager

Content Manager is the Cognos 8 service that manages the storage of customer application data, including security, configuration data, models, metrics, report specifications, and report output. Content Manager is needed to publish models, retrieve or store report specifications, manage scheduling information, and manage the Cognos namespace. Content Manager stores information in a content store database, which is located in Tier 3 of the architecture.

The information stored by Content Manager includes

- Reports

Reports contain specifications, properties, security settings, and outputs. This includes analyses created in Analysis Studio, queries created in Query Studio, and reports created in Report Studio.

- Report packages

Packages contain metadata, reports, and folders.

- Metric packages

Metric packages contain metadata, scorecards, and folders.

- Agents

Agents include the conditions, schedules, and tasks used to monitor events and deliver notifications. This includes the list of recently detected instances of an event.

- Server configuration

Server configuration contains directory information, the Cognos namespace and information about contacts, distribution lists, data sources, and printers.

- Personal user information

Personal user information consists of My Folders and My Pages.

- Language information

Language information includes names, descriptions, and tool tips in different languages to support Cognos 8 multilingual capabilities.

Access Manager

Access Manager is the primary security component of Cognos 8. It provides Cognos 8 with a consistent set of security capabilities and APIs, including user

authentication authorization and encryption. It also provides support for the Cognos namespace.

Tier 3: Data

The Cognos 8 data tier contains

- Content store
- Data sources
- Metric store

Content Store

The content store is a relational database that contains data that Cognos 8 needs to operate, such as report specifications, published models, and the packages that contain them; connection information for data sources; information about the external namespace, and the Cognos namespace itself; and information about scheduling and bursting reports. The relational database can be Cognos Content Database or a database from a supported third-party vendor.

Cognos 8 includes the Cognos Content Database as a default content store. User can use the Cognos Content Database as users content store, or user can use other databases, such as Microsoft SQL Server, Oracle, IBM DB2, or Sybase. Content Manager uses a JDBC API to access the content store and metric stores.

Much of the information in the content store, such as report results and XML report specifications, is stored as binary large object (BLOB) fields. Report results in other formats, such as HTML, XML, and CSV (comma separated values), are stored in compressed form and are uncompressed by Content Manager before they are sent to a user.

Cognos Content Database

Cognos Content Database is an instance of an Apache Derby database that can be optionally installed and used as the default content store. Cognos Content Database can be used where user do not want to implement a commercial database for the content store.

Data Sources

Data sources, also known as query databases, are relational databases, dimensional cubes, files, or other physical data stores that can be accessed through Cognos 8. Application Tier Components use data source connections to access data sources.

Metric Store

A metric store is a relational database that contains content for metric packages. A metric store also contains Metric Studio settings, such as user preferences. More than one metric store may be created. For example, one metric store may contain content for a sales application and another metric store may contain content for a finance application.

2.2 Building Cognos 8 Applications

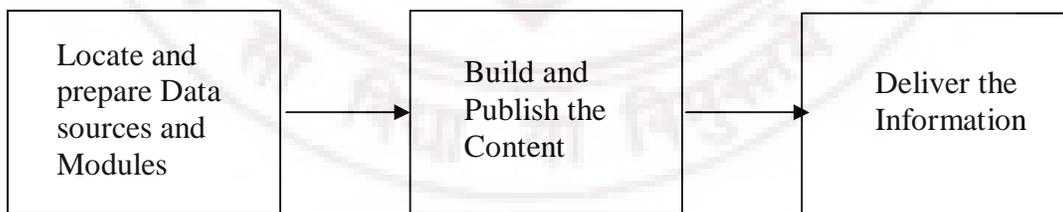


Figure 3: Building Cognos 8 Applications

Locate and prepare data sources and models:

Cognos 8 can report from a wide variety of data sources, both relational and dimensional.

Database connections are created in the web administration interface, and are used for modeling, for authoring and for running the application. To use data for authoring and viewing, the business intelligence studios need a subset of a model of the metadata (called a package). The metadata may need extensive modeling in Framework Manager.

Build and publish the content

Reports, scorecards, and so on are created in business intelligence studios of Cognos 8. Which studio user use depends on the content, lifespan and audience of the report, and whether the data is modeled dimensionally or relationally. Report Studio reports and scorecards are usually prepared for a wider audience, published to Cognos Connection or another portal, and scheduled there for bursting, distribution, and so on. User can also use Report Studio to prepare templates for self-service reporting.

Deliver and view the information

User delivers content from the Cognos portal or other supported portals, and view information that has been saved to portals, or delivered by other mechanisms. User can also run reports, analyses, scorecards, and so on from within the business intelligence studio in which they were created.

2.3 Cognos 8 request flow

Request flow describes internal Cognos 8 responses to user requests. In general, browser requests go through the Cognos 8 Web gateway and are sent to a dispatcher. Before any processing is performed by the dispatcher, the request is validated by Cognos Application Firewall. A passport is attached to each request as a record of a valid user session.

Accessing Cognos 8

Authenticated Access

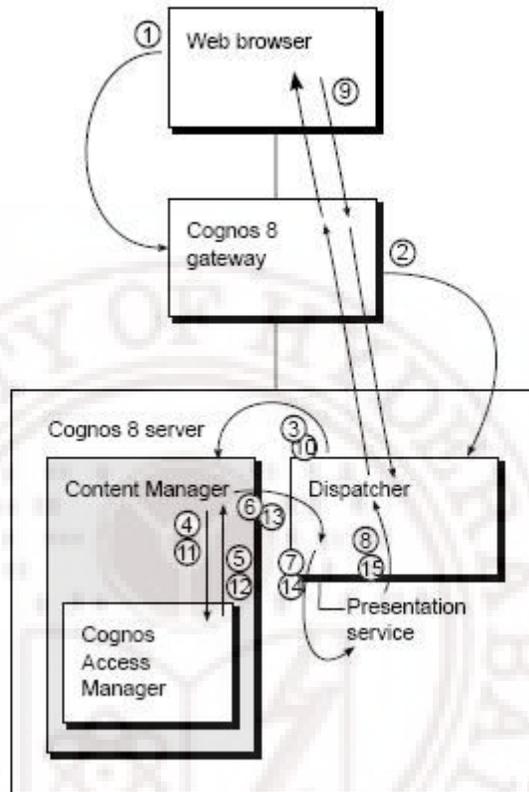


Figure 4: Accessing Cognos 8

When a user requests authenticated access to Cognos 8, the following occurs:

1. When the user attempts to access the Cognos 8 Welcome page or any other Cognos 8 user interface from a Web browser, a request will be generated.
2. The gateway accepts the request and sends it to a dispatcher.
3. The dispatcher notes that there is no passport attached to the request and sends the request to Content Manager.
4. Content Manager sends the request to Access Manager.

5. Anonymous access is disabled in this Cognos 8 system, so Access Manager sends the request back to Content Manager with a fault attached. The fault contains information about what is needed to log on.

6. Content Manager returns the request with the attached fault to the dispatcher.

7. The dispatcher sends the request to the presentation service.

8. The presentation service creates the appropriate logon page for the user, and returns the page through the dispatcher and the gateway to the user.

9. The user enters the required information, such as a user ID and password. The information is attached to the original request and sent through the gateway to the dispatcher.

10. The dispatcher sends the request to Content Manager.

11. Content Manager sends the request to Access Manager.

12. If all the required information is correct, Access Manager issues a passport, attaches it to the original request, and sends the request back to Content Manager. If the required information is incorrect or incomplete, then the request faults back to step 9.

13. Content Manager sends the request to a dispatcher.

14. The dispatcher processes the request and sends it to the presentation service.

15. The presentation service sends the Welcome page back through the dispatcher and the gateway to the user.

Running a Report

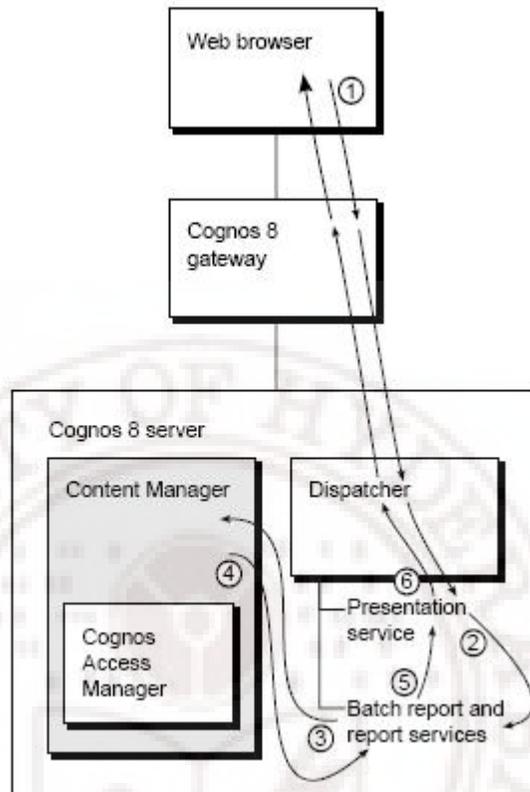


Figure 5: Running reports

When a user runs a report or analysis through Cognos Connection, the following occurs:

1. The user clicks a report or analysis to run it, and the request goes through the gateway and the dispatcher to the presentation service.
2. The presentation service sends the request to the report service through the dispatcher.
3. The report service requests the report or analysis and metadata from Content Manager, through the dispatcher.

4. Content Manager sends the report or analysis XML specifications and metadata to the report service. Content Manager refreshes metadata only when Cognos 8 is stopped and restarted or the model is updated and republished.

5. The report service returns one of these results to the presentation service:

- an error page
- a not ready page
- a page of an HTML report or analysis

6. The presentation service sends one of these results through the dispatcher and gateway to the browser:

- an error page
- a wait or cancel page
- a page of a completed HTML report or analysis in the Cognos Viewer interface

Overview of Cognos 8 for Reporting

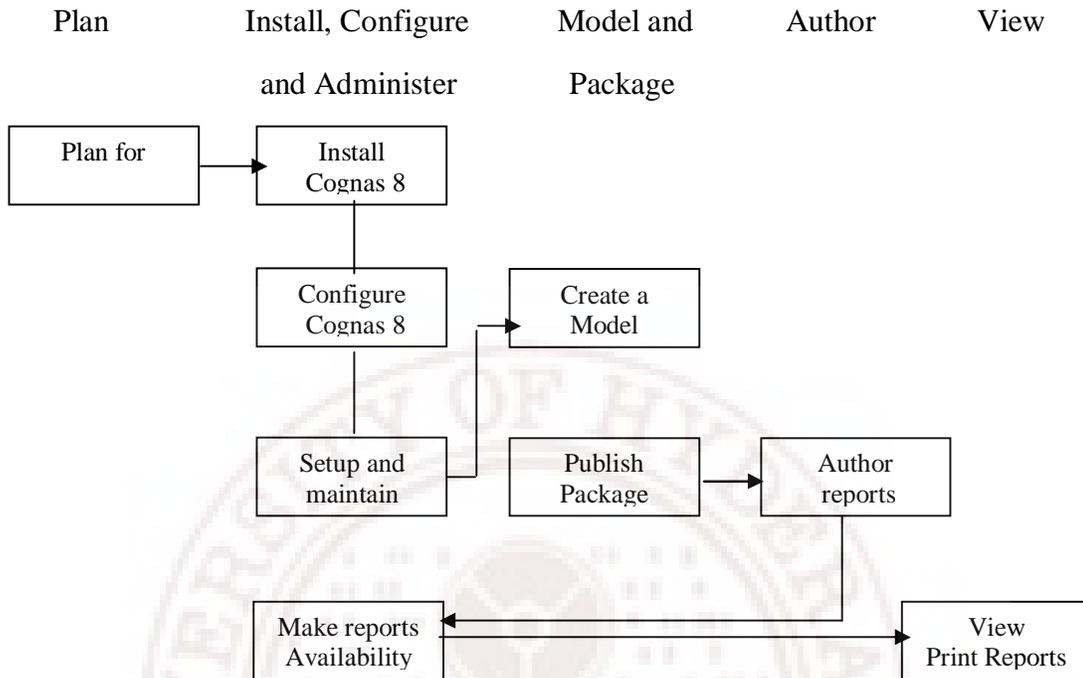


Figure 6: Cognos 8 Overview

3. IBM Cognos installation and configuration

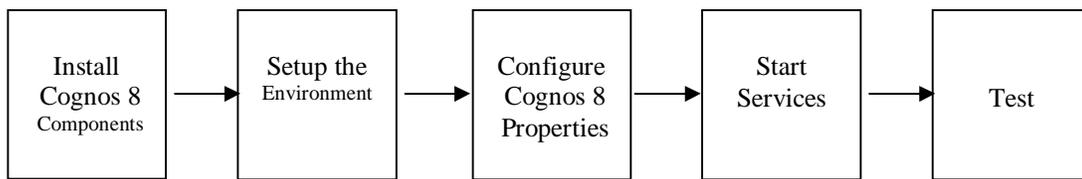


Figure 7: IBM Cognos installation and configuration

1. Install Cognos 8 components.
2. Set up the environment by installing or configuring third-party products.
3. Configure Cognos 8 properties using Cognos Configuration. Some tasks may require that user also configure properties for third-party products.
4. Start the Cognos services.
5. Test users Cognos 8 product by using the test feature in Cognos Configuration and performing one or two simple tasks.

Installing Cognos 8

1. Install Cognos 8
2. Check the default settings
3. Create the content store database
4. Set up the database client
5. Update the Java environment
6. Configure the Web server
7. Configure the Web browsers
8. Configure a user account

9. Set the database connection properties for the content store
10. Start the services
11. Test the installation and configuration
12. Finish the configuration

Install Cognos 8

Install Server Components

Install server components of Cognos 8. If user wants to use Cognos Content Database as users content store, user must select it in the installation wizard.

Install the Cognos 8 Samples

The Cognos 8 samples illustrate product features and technical and business best practices. User can also use them for experimenting with and sharing report design techniques, and for troubleshooting.

Install Framework Manager

Install Framework Manager, the metadata modeling tool for Cognos 8 for reporting.

Create the Content Store database

The content store is a database that Content Manager uses to store global configuration data, global settings connections to data sources, and product-specific content. Design models and log files are not stored in the content store.

1. Set the appropriate environment variables for DB2.

Environment Variable	Description
DB2DIR	The top level directory that contains the database client software or the entire database installation.
Library Path	The load library path. User must add driver location.
DB2INSTANCE	The default database server connection.
DB2CODEPAGE	Setting this optional environment variable to a value of 1208 provides support for multilingual databases.

2. Determine if the database is Unicode by typing the following at the command prompt: **db2 get database configuration for database_name** the codepage is Unicode if it has a value of 1208.
3. If the codepage is not Unicode, create a new database that has a codepage value of 1208.
4. Create a buffer pool with a page size of 32k.

5. Create a system temporary tablespace with a page size of 32k.
6. Create a user temporary tablespace with a page size of 4k.
7. Global temporary tables will be created in the user temporary tablespace.
8. Create a regular user tablespace with a page size of 4k.
9. If user already created the content store and are now creating a logging database, create an additional regular user tablespace with a page size of 8k.
10. Determine which user account Cognos 8 will use to access the database.
11. Grant creates and drop table privileges on the database to the user account.

Set up the database client

1. Install the DB2 client software on the appropriate computers.
2. If the content store is on a different computer from Content Manager, configure a database alias to the content store by running the DB2 Client Configuration Assistant.
3. On Windows, stop the DB2 services and the HTML Search Server.
4. To copy the JDBC2 driver, copy the *DB2_installation/sqlllib/java/db2java.zip* file to the *c8_location/userbapps/p2pd/WEB-INF/lib* directory.
5. Rename the *db2java.zip* file to *db2java.jar*.
6. On Windows, restart the DB2 services and the HTML Search Server.
7. Repeat this entire procedure on the Cognos 8 computers where the software must be installed.

Update the Java Environment

Cognos 8 cryptographic services use a specific .jar (Java Archive) file, named *bcprov-jdknn-*nnn*. jar*, that must be located in users Java Runtime Environment (JRE).

This file provides additional encryption and decryption routines that are not supplied as part of a default JVM installation.

1. Ensure that the JAVA_HOME environment variable is set to the JRE location. For example, to set JAVA_HOME to the JRE files provided with the installation, the path `isc8_location/bin/jre/version`.
2. Copy the `bcprov-jdknn-nnn.jar` file from the `c8_location/bin/jre/version/lib/ext` directory to the `Java_location/jre/lib/ext` directory.

Configure the Web server

To use Web pages generated by Cognos 8, user must configure Web server. User must set up virtual directories, also known as Web aliases, for the directories that contain the HTML and Web files for Cognos 8. The virtual directories must be created to connect to the Cognos 8 portal and for client applications to be able to connect to the server.

Create the following virtual directories:

Alias	Location	Permission
Cognos 8	<code>c8_location/userbcontent</code>	Read
Cognos 8/cgi-bin	<code>c8_location/cgi-bin</code>	Execute

Configure the Web browser

Cognos 8 uses the default browser configurations user must ensure that settings are enabled for cookies, activeX controls, java and Java scripts.

Configure a user account

The account under which Cognos 8 runs must:

- have access to all required resources, such as printers and Web servers
- have the rights to logon as a service and act as part of the operating system

- be a member of the local admin group

Set the database connection properties for the content store

1. On the computer where user installed Content Manager, start Cognos Configuration.
2. In the *Explorer* window, under *Data Access, Content Manager*, right-click *Content Store* and click *Delete*.
3. Right-click *Content Manager*, and then click *New resource, Database*.
4. In the *Name* box, type a name for the resource.
5. In the *Type* box, select the type of database and click *OK*.
6. In the *Properties* window, provide values depending on users database type:
7. If user uses a DB2 database, for the *Database name* property, type the database alias.
8. If user want to change the logon credentials, specify a user ID and password:
9. From the *File* menu, click *Save*.
10. Test the connection between Content Manager and the content store.

Start the services

To register the Cognos 8 service so that users can access it through Cognos Connection, user must start the services. Before user start the services, test the configuration by using the test feature in Cognos Configuration.

Test the installation and configuration

Test the configuration settings by running the test feature.

Open a Web browser.

1. Test the availability of the dispatcher by typing

`http://host_name:port/p2pd/servlet`

2. Open Cognos Connection by typing one the following, where cognos8 is the virtual directory user created when user configured the Web server.

`http://host_name:port/cognos8`



4. IBM Cognos 8 Report Studio

Report Studio is a Web-based tool that professional report authors use to build sophisticated, multiple-page, multiple-query reports against multiple databases. With Report Studio, user can create any report that Users Company requires, such as invoices, statements, and weekly sales and inventory reports.

Working in Report Studio

To create reports in Report Studio, first get familiar with the Report Studio environment.

1. Familiarize with the user interface.
2. Learn about basic report structure, which includes the layout and queries.
3. Learn how to work with report objects and different authoring modes.

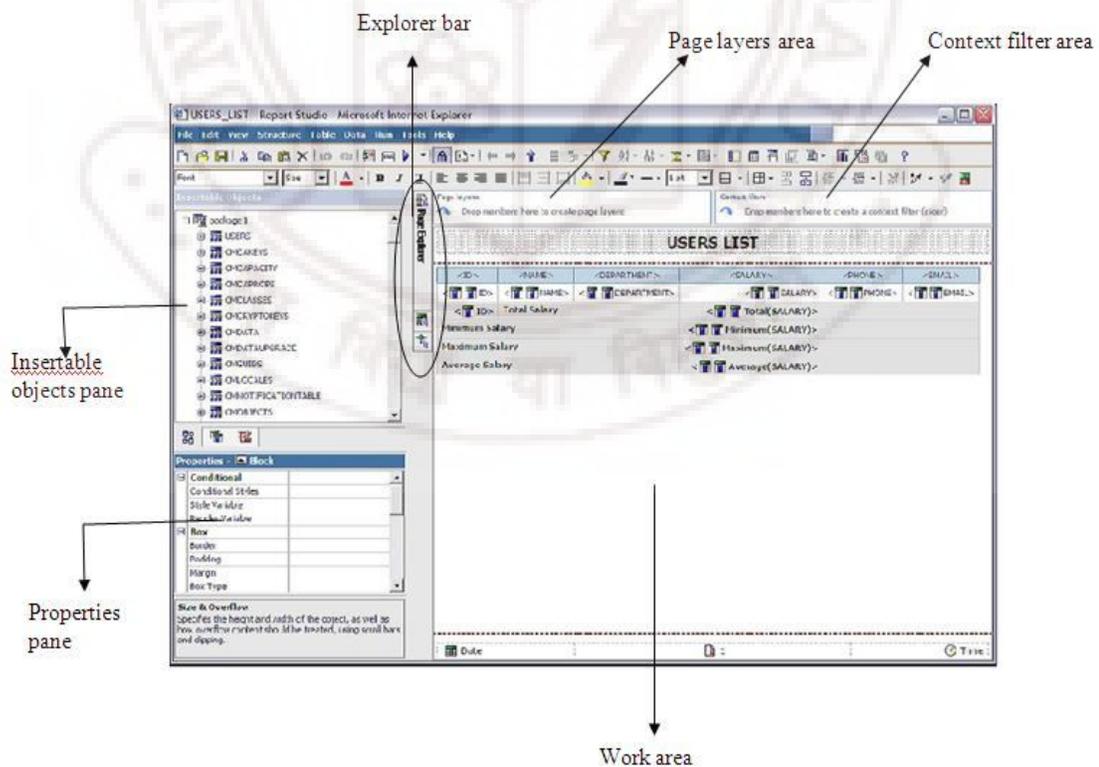


Figure 8: Cognos 8 Report Studio

The User Interface

The Report Studio user interface has two panes, an explorer bar, and a work area to help user create reports.

Insertable Objects Pane

The *Insertable Objects* pane contains objects that user can add to a report. User add objects to a report by dragging them to the work area.

The *Insertable Objects* pane contains these tabs:

1. The *Source* tab contains items from the package selected for the report, such as data items and calculations.
2. The *Data Items* tab describes the queries created in the report.
3. The *Toolbox* tab contains a variety of objects that user can add to the report, such as text and graphics.

Properties Pane

The *Properties* pane lists the properties that user can set for an object in a report.

Explorer Bar

With the following buttons on the Explorer bar work with different parts of a report:

- Pause the pointer over the page explorer button to go to a specific report page or prompt page.
- Pause the pointer over the query explorer button to work with queries.
- Pause the pointer over the condition explorer button to work with variables.

Page Layers Area

Use the *Page layers* area to create sections, or page breaks, in a report to show values for each member on a separate page.

Context Filter Area

When working with dimensional data, use the *Context filter* area to filter users report to show values, or context, only for a specific data item. This technique is also known as a slicer filter.

Work Area

The work area is where user designs reports.

Visual Aids Button

The visual aids button provides options to help user when user are designing reports in the layout.

Basic Report Structure

All reports have two components, a *layout component* that defines the report appearance, and a *query component* that defines report data. Understanding these components will help user design effective reports.

Layout:

A layout is a set of pages that defines the appearance and formatting of a report. When user design the layout of a report, user

- Present the data in a meaningful way by using lists, crosstabs, charts, and maps.
- Give the report the appearance user want by adding formatting, such as borders, color, images, and page numbers.
- Specify how the data flows from one page to the next page.

Pages:

Pages are containers for the layout objects that user use to build a report. A page is made up of the following mandatory and optional components:

- page header (optional)
- page body (mandatory)
- page footer (optional)

Objects:

Add layout objects to a page when user creates a report. Below are some of the objects that user will use often when building reports in Report Studio:

List Add a list to show data in rows and columns.

- cross tab

Add a crosstab to show data in a grid, with dimensions along the rows and columns, and measures in the cells or intersection points.

- Chart
- Map
- Repeater

Add a repeater to show each instance of a certain column or data item in a separate frame.

- Text
- Block
- Table

Queries:

Queries determine what data items appear in the report. Report Studio automatically creates the queries user need as user build reports. However, user can modify these queries or create users own custom queries to get the results user want.

Working with Objects

User build reports by adding objects and manipulating them to obtain the results user want. To understand how to work with objects in Report Studio, user must be familiar with the following concepts:

- object types
- objects as containers
- locking and unlocking objects
- hierarchy of objects

Object Types:

In Report Studio, layout objects are either inline or block. User can insert other objects on the same line as an inline object, but not on the same line as a block object. When user inserts an object to the left or to the right of a block object, the object appears on the line above or below the block object respectively. Examples of inline objects include graphics and text items.

Objects as Containers:

Objects, such as tables, blocks, and any report frame, are containers in which user can insert other objects.

Locking and Unlocking Objects:

To manipulate the contents of some objects, user must first unlock the object.

Authoring Modes

To meet the needs of both regular report authors and financial report authors, Report Studio provides distinct custom user interfaces that contain reporting features relevant to these roles. Access to each authoring mode is determined by the permissions user has to secured functions and features.

Professional Authoring Model:

The Professional authoring mode gives users access to the full range of Report Studio functionality. In this mode, user can create any report type, including charts, maps, lists, and repeaters, using any data source (relational or multi-dimensional). It contains a superset of the features available in the Express authoring mode. However, user cannot view live data.

Express Authoring Model:

The Express authoring mode provides a simplified and focused Report Studio interface. It is designed for non-technical users to create traditional financial and management statement reports. It only allows access to dimensionally-modeled data and uses a member-oriented data tree. This authoring mode allows user to see live data and supports only crosstab reports. It contains a subset of the features available in the Professional authoring mode. When user are in the Express authoring mode, if user open a report that was authored in the Professional authoring mode, user can see but cannot modify objects that can be inserted only in the Professional authoring mode, such as charts, maps, and lists.

Creating a Report

When user creates a report, user is actually creating a report specification. The report specification defines the queries and prompts that are used to retrieve data, as well as the layouts and styles used to present the data. For simplicity, the report specification is named the report.

Creating a new report involves

1. specifying the package
2. choosing a report template
3. adding data items
4. saving the report
5. running the report

a) Specify the Package:

Specify the package that will provide items for the report. The packages that user use to generate reports is based on models that are created in the modeling tool, Framework Manager. A model is a set of related objects, such as query subjects, dimensions, filters, and calculations. When user opens a package in Cognos 8, these model objects are visible in the left frame.

Steps

1. In the Cognos Connection Welcome page, click the *Launch* link. from the drop-down list, click *Report Studio*.
2. In the *Select a package* dialog box, click the package user want to use.
3. In the *Welcome* dialog box, choose whether to open a new or existing report or template.

b) Choose a Report Template:

When creating a new report, choose a report template to get user started quickly. User can select a predefined template that is formatted as a particular report type, or user can open an existing report as a template.

c) Add Data to a Report:

Select the data items that user want to appear in the report. Each object in the data source has a representative icon. User can insert all of the following objects in a report, except for packages and dimensions.

d) Save a Report:

Save user report to preserve the modifications user made. Reports are saved to the Cognos 8 server. User can also save user report on user computer.

1. From the *File* menu, click *Save*, or click *Save As* to save a copy of the report under a different name.
2. If user is saving the report for the first time, specify where user want to save the report and type a file name.
3. Click *Save*.

e) Run a Report:

Run report to see the data that is retrieved.

Steps

1. Open the report that user want to run.
2. If user want to clear parameters values stored on the Cognos 8 server, from the *File* menu, click *Clear Parameter Values*.
3. From the *Tools* menu, click *Validate Report*.
4. If user requires more detail from the validation process, revalidate the report by clicking *Validate with Options*.
5. If user encounter validation errors and want Report Studio to identify incorrect objects in user report, from the *Tools* menu, click *Auto Correct*.
6. If user want to view only the tabular data, from the *Run* menu, click *View Tabular Data*
7. If user wants to set run options, from the *Run* menu, click *Run Options*.
8. Change any values user want for the current session and click *OK*.

9. From the *Run* menu, click one of the options to produce the report in the format user want.

User can produce a report in HTML, PDF, CSV, various Excel formats, and XML. User cannot produce a report in CSV or XML format if user has more than one query defined in the report, unless the additional queries are used for prompts.

f) Creating Report Templates:

A report template is a pattern user use to build reports. Create user own report templates when user frequently produce the same type of report.

A template can include the following objects:

- HTML items
- Hyperlinks
- Page numbers
- Images
- Tables
- Text items
- Blocks
- Layout calculations
- Date
- Time

To create a report template, user can

- Create a new template
- Convert a report to a template

Create a New Template

1. From the *File* menu, click *New*.
2. Click *Query Studio Template* and click *OK*.
3. Pause the pointer over the page explorer button and click the report page or prompt page user want to format.
4. In the *Insertable Objects* pane, click the *Toolbox* tab.
5. Add the objects user want to the work area.
6. Save the template.

Convert a Report to a Template

Convert a new or existing report to a template so it can be reused.

1. Create a new report or open an existing report.
2. Add the objects user want to the work area.
3. From the *File* menu, click *Convert To Template*.
4. From the *File* menu, click *Save As* to save the template as a new file and keep the original report intact.

Types of Reports:

In Report Studio, user can create the following types of reports:

- List
- Crosstab
- Chart
- Map

1) List Reports:

A list report is a report that shows data in rows and columns. List reports show detailed information from database. Each column shows all the values for a data item in the database or a calculation based on data items in the database.

The below list report USERS LIST shows the information of the users with ID, NAME, DEPARTMENT, SALARY, PHONE, and EMAIL as the columns. The report also gives the information about total number of users, their total salary, their average salary, minimum salary and maximum salary.

USERS LIST

ID	NAME	DEPARTMENT	SALARY	PHONE	EMAIL
abc123	abc	A	30,000	1,234,567,890	abc@in.ibm.com
ghi951	ghi		25,000	6,543,210,987	ghi@in.ibm.com
ijk761	ijk		50,000	7,610,349,285	ijk@in.ibm.com
bcd927	bcd	B	25,000	1,546,328,970	bcd@in.ibm.com
mno759	mno		25,000	9,431,607,825	mno@in.ibm.com
cde153	cde	C	35,000	1,632,548,790	cde@in.ibm.com
lmn741	lmn		32,000	7,410,963,582	lmn@in.ibm.com
def258	def	D	32,000	5,326,419,807	def@in.ibm.com
klm943	klm		30,000	3,698,520,147	klm@in.ibm.com
efg159	efg	E	50,000	6,123,840,795	efg@in.ibm.com
fgh357	fgh		35,000	9,513,764,028	fgh@in.ibm.com
11	Total Salary		369,000		
	Minimum Salary		25,000		
	Maximum Salary		50,000		
	Average Salary		33,545.45454545		

Figure 9: Users List Report

Group Data:

Group data items in a list report to remove duplicate values. In addition to grouping, user can specify the sort order of data items. In lists, user can sort data items within groups as well as ungrouped items.

1. Click the column user want to group on.
2. From the *Structure* menu, click *Group/Ungroup*. A symbol appears indicating that the column is grouped.

The USERS LIST is grouped on DEPARTMENT column.

2) Crosstab Reports

Crosstab reports show the data in rows and columns. Crosstab reports show information in a more compact form than in a grouped list.



SALARY	A	B	C	D	E
abc	30,000				
ghi	25,000				
ijk	50,000				
bcd		25,000			
mno		25,000			
cde			35,000		
lmn			32,000		
def				32,000	
klm				30,000	
efg					50,000
fgh					35,000

Figure 10: Users cross report

This is the crosstab report which gives the information about the SALARY of the users in each DEPARTMENT.

Single-Edge Crosstab Report:

Single-edge crosstab report shows data in a list-like form.

1. From the *File* menu, click *New*.
2. Click *Crosstab* and click *OK*.
3. In the *Insertable Objects* pane, on the *Source* tab, click the data item user want to add to the crosstab and drag it to *Rows* or *Columns*.
4. Repeat step 3 to insert additional data items.

If user dragged the data item in step 3 to *Rows*, drag the additional items above or below the first item. If user dragged the data item in step 3 to *Columns*, drag the additional items to the left or right of the first item.

5. To add measures to the crosstab, drag the measures user want to *Measures*.

Nested Crosstab Report:

Nest data in a crosstab report to compare information by using more than one data item in a column or row.

1. In the *Insertable Objects* pane, on the *Source* tab, click the data item user want to add to the report.
2. Drag the data item to the location in which user want it to appear as a nested column or nested row.
3. Repeat steps 2 to 3 to add other nested columns or rows.

3) Charts:

Report Studio can generate many types of chart reports, like

- Column
- Bar

- Pareto
- Line
- Pie, donut
- Area
- Combination
- Scatter, bubble, point
- Radar, polar
- Gauge
- Metrics range

Choosing a Chart Type and Configuration:

To choose a chart type, consider what user wants the chart to illustrate. Different chart types and configurations emphasize different things.

<u>Purpose</u>	<u>Chart type and configuration</u>
Show contributions of parts to a whole	Pie, stacked configuration 100% stacked configuration
Show trends in time or contrast values across different categories	Line, area, bar, column
Compare groups of related information against actual values	Standard configuration, Radar, 3D
Compare different kinds of quantitative information	column-line

Figure 11: Sample Chart Report

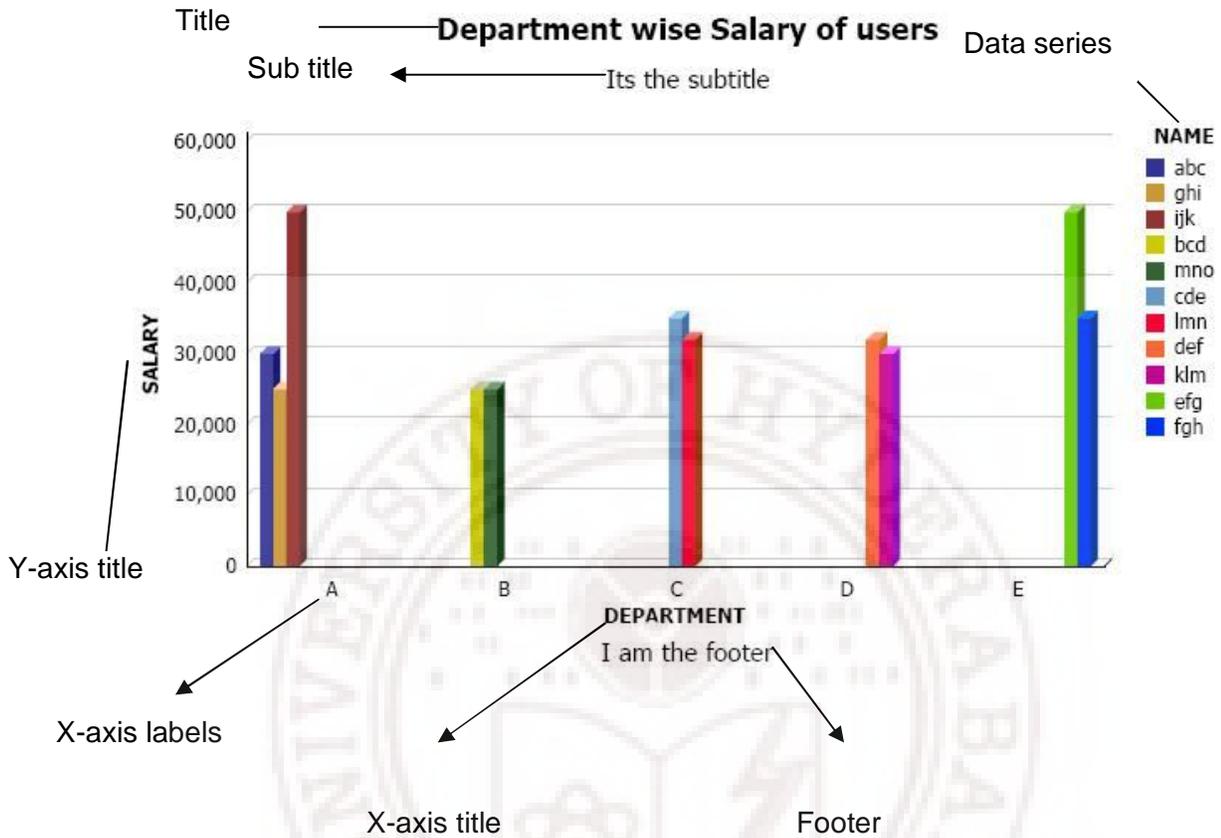


Figure 12: Users Chart Report

4) Pie Charts:

Pie charts are useful for highlighting proportions. Pie charts use segments of a circle to show the relationship of parts to the whole. Pie charts plot a single data series.

5) Column Charts:

Column charts are useful to compare discrete data or to show trends over time. Column charts use vertical data markers to compare individual values.

6) Pareto Charts:

Pareto charts are useful for prioritizing and focusing process changes. Pareto charts rank categories from the most frequent to the least frequent. It is more effective to act on the most frequent causes of events than to solve an easy yet infrequent issue.

7) Bar Charts:

Bar charts are useful for showing trends over time and for charts that plot many data series. Bar charts use horizontal data markers to compare individual values.

8) Line Charts:

Line charts are useful for showing trends over time and for charts with many data series. Line charts plot data at regular points connected by lines.

9) Area Charts:

Area charts are useful for emphasizing the magnitude of change over time. Area charts are like line charts that have the areas below the lines filled with colors or patterns.

10) Radar Charts:

Radar charts are useful as a comparative tool and for charts with few data series. Radar charts integrate multiple axes into a single radial figure.

11) Scatter Charts:

Scatter charts use data points to plot two measures anywhere along a scale, not only at regular tick marks.

12) Bubble Charts:

Bubble charts use data points and bubbles to plot measures anywhere along a scale, like scatter charts. The size of the bubble represents a third measure. Bubble charts are useful for visually representing financial data.

13) Point Charts:

Point charts are useful for showing quantitative data in an uncluttered fashion. Point charts use multiple points to plot data along an ordinal axis. A point chart is similar to a line chart without the lines.

14) Polar Charts:

Polar charts are useful for showing scientific data. Polar charts are circular charts that use values and angles to show information as polar coordinates.

15) Metrics Range Charts:

Metric range charts are useful for showing a target range and a tolerance range. A metric range chart adds a target and range marker to a column, line, or area chart.

16) Gauge Charts:

Gauge charts are useful for comparing values between a small number of variables either by using multiple needles on the same gauge or by using multiple gauges. Gauge charts use needles to show information as a reading on a dial. The value for each needle is easily read against the colored data range.

4.1 Re-usability

Cognos provides re-usability with “*Reuse Layout Object*”. User can reuse the properties of a report to other report or user can use some components of the report or the entire report.

Click the object that user want to reuse.

1. In the *Properties* pane, in the *Name* property, type a value beginning with a letter to uniquely identify the object and press the Enter key.
2. To reuse the object in another report, open that report.

3. In the *Insertable Objects* pane, on the *Toolbox* tab, drag the *Layout Component Reference* object to the location where user wants to reuse the object.
4. In the *Component Location* box, do the following:
5. Click *This report* to reference an object in the current report.
6. Click *Another report* to reference an object in another report, click the ellipsis (...) button, and open the report user want.
7. In the *Available components to reference* box, click the object user want and click *OK*.
8. If the referenced object is in another report, click the *Layout Component Reference* object and in the *Properties* pane, click the *Embed* property and specify how to store the referenced object in the report:
9. Click *Copy* to store a copy of the object.
10. Click *Reference* to store a reference, or pointer, of the object.

4.2 Sub Report

Cognos provides sub reports functionality/facility with Drill through definition concept. Using drill-through access, user can move from one report to another Drill-through access helps user to build business intelligence applications that are bigger than a single report.

In Cognos 8, user can drill through

- between reports created in different packages against different data source types
- from one existing report to another report using Report Studio
- between reports in Report Studio, Query Studio, or Analysis Studio, exploring data in many ways
- from Metric Studio to other Cognos 8 reports by passing parameters using URLs

The drill-through object appears as a blue hyperlink in the report.

Steps

1. Open the target report.
2. Create a parameter that will serve as the drill-through column or that will be used to filter the report.
3. Open the source report.
4. Click the element in the report that will serve as the drill-through object.
5. Click the drill-through definitions button or from the *Properties* pane, double-click the *Drill-Through Definitions* property.
6. Click the new drill-through definition button. A drill-through definition is created.
7. On the *Target report* tab, click the ellipsis (...) button next to the *Report* box, and select the drill-through target report.
8. In the *Action* box, decide how the target report will be viewed when users click the drill-through column in the parent report:
9. In the *Display prompt pages* box, decide whether to display prompt pages

4.3 Prompts and Parameters

The prompt is the drop-down list of values, the parameter is a placeholder for the selected product type, and the parameter value is the specific product type that the user selects. Prompt is represented by the *selectValue*. Parameter is located in the *filterExpression*

Parameters:

Parameters are used to control or guide the report execution. Parameters are the input values to a report. It is a way the user communicates with the report. User can pass parameters to reports through filters and prompts. These filters and prompts, prompts the

user to enter parameters to reports while the report is executing. Report takes these parameters and processes it and gives the information based on the parameter given by the user. Filter expression is to focus a report and minimize processing time by excluding unwanted data.

Prompts:

Prompts are composed of three interrelated components.

Parameters, which are based on parameterized filters. These parameterized filters form the questions the report wants to ask users.

Prompt controls provide the user interface in which the questions are asked.

Parameter values provide the answers to the questions.

Report Studio provides several ways to create prompts. User can

- Define prompts using context filters
- Use the Build Prompt Page tool
- Build user own prompt and prompt page
- Create a parameter to produce a prompt
- Insert prompts directly into the report page

a) Define Prompts Using Context Filters

If context filters are already defined, use these filters to create prompts in the report.

1. In the *Context filter* section of the overview area, click the down arrow next to the filter that user want to use as a prompt.
2. Click *Prompt*.
3. Do one of the following:

4. To remove the prompt, click *No Prompt*.
5. To allow users who run the report to select any member from a tree of the hierarchy, click *Prompt on Hierarchy*.
6. To allow users who run the report to select from a list of members from the current level, click *Prompt on Level*.

b) Use the Build Prompt Page Tool:

Use the *Build Prompt Page* tool to quickly add prompts to a report.

1. Click the column user want users to be prompted on.

To create multiple prompts or a cascading prompt, click more than one column.

2. From the *Tools* menu, click *Build Prompt Page*.

c) Build Users Own Prompt and Prompt Page:

1. Pause the pointer over the page explorer button and click *Prompt Pages*.
2. In the *Insertable Objects* pane, on the *Toolbox* tab, drag *Page* to the *Prompt Pages* box.
3. Double-click the page user just created.
4. In the *Insertable Objects* pane, on the *Toolbox tab*, drag one of the prompt controls to the prompt page.

d) Create a Parameter to Produce a Prompt:

Report Studio can automatically generate prompted reports based on parameters user create.

1. From the *Data* menu, click *Filters*.
2. On the *Detail Filters* tab, click the add button.

3. In the *Available Components* box, click the source or *Data Items* tab to select the data item user want to use for the prompt:
4. In the *Expression Definition* box, type an operator after the data item, or select an operator from the *Functions* tab.
5. Type a name after the operator to define the prompt parameter. A question mark must precede and follow the name.
6. Click *OK*.
7. In the *Usage* box, click one of the following
8. To create a required prompt, click *Required*.
9. To create an optional prompt, click *Optional*.
10. To specify not to use the prompt, click *Disabled*.
11. Click *OK*.

e) Create a Prompt Directly in a Report Page:

User can add prompt controls directly in a report page instead of creating a prompt page.

- In the *Insertable Objects* pane, on the *Toolbox* tab, drag a prompt control to the location where user wants it to appear.
- Provide the information necessary to create the prompt.
- In the work area, click the prompt.
- In the *Properties* pane, set the *Auto-Submit* property to *Yes*.

Modifying Prompts:

User can modify prompt properties by specifying values in the *Properties* pane. User can,

- change the prompt control interface

- specify that a prompt requires user input
- allow users to select multiple values
- show or hide prompt status
- specify default selections
- specify prompt values
- add a prompt button
- create a cascading prompt

4.4 User defined formulas/expressions:

Cognos provides a wide variety of expression to work with data. An expression is any combination of operators, constants, functions, and other components that evaluates to a single value. A calculation is an expression that user use to create a new value from existing values contained within a data item. The expression editor shows the expression components that are supported by the data source in which the metadata is stored.

When building expressions in the expression editor, user can browse the data of a data item. This is useful when user do not know how a particular value is stored in the database.

Operators:

Operators specify what happens to the values on either side of the operator. Operators are similar to functions, in that they manipulate data items and return a result.

Summaries:

This list contains predefined functions that return either a single summary value for a group of related values or a different summary value for each instance of a group of related values.

Constants:

A constant is a fixed value that user can use in an expression.

Constructs:

A construct is a template that can be used to create an expression.

Business Date/Time Functions:

Business functions for performing date and time calculations.

Block Functions:

Functions used to access members of a set, usually in the context of Analysis Studio.

Macro Functions:

These functions can be used within a macro. A macro may contain one or more macro functions.

Report Functions:

Expressions created by using the objects of a report.

In addition to these Cognos uses some database specific functions for the databases like DB2, Informix, MS Access, Oracle, Red Brick, SQL Server, Teradata, SAP BW and Sybase.

4.5 User defined styles to report controls:

Cognos allows a wide range of styles that user can apply to reports. Properties pane gives most of the styles that user can apply.

Properties pane gives the following properties

1. Conditional

2. Box
3. Size and overflow
4. Colour and background
5. Text and font
6. Positioning
7. Miscellaneous styles

In addition to these styles user can

- group the data
- create sections
- create headers and footers
- add tables
- add user defined formulas or expressions
- add filters
- aggregate the values
- add drill through access
- build prompt pages

To set a style to a object, select the object and go to properties pane or set other styles given by the Cognos.

5 Merits and De-merits

Merits

- User can create different types of reports.
- User can create reports in different output formats.
- User can create a wide variety of chart reports.
- User can create the filters in different ways.
- User can traverse the package easily
- User can connect to different types of databases
- User can set different styles to reports easily

De-merits

Here I am listing some problem which I observed while working with Cognos Report studio.

Problem 1: In the charts it is difficult to distinguish the borders between the values if the entries (series values) are more.

Problem 2: It is not easy to place an object where ever user wants in the report. It needs to do some work with margin and border and padding of the object.

Problem 3: There is no padding property (or option) for image object.

Problem 4: user can't place an object on another object.

Problem 5: There is no Line object. To draw a line user have use "Border" property.

Problem 6: Conditional styles do not working properly.

Problem 7: Some Report Functions are not working in report studio but working in Cognos Connection. Ex. ReportName

6. IBM Cognos 8 Software Development Kit (SDK)

Cognos 8 SDK allows the user to manage Cognos 8 processes and implement custom reporting solutions. User can use the SDK to create and modify reports and queries, schedule and deploy reports and other objects, and administer Cognos 8 servers and security. The Cognos 8 BI software development kit (SDK) provides a single application programming interface (API) that delivers complete openness and the ability to access broad business intelligence functionality.

- Install Cognos 8 SDK in the installation location of the Cognos 8 server.
- Work with the SDK code to configure it to users working environment.
- Create report with SDK code and Run report in java environment.
- Create report that takes parameters and outputs required values.
- Create an enterprise application that uses the above code which creates and runs the report with WebSphere Application Server.

Changes made to the code

1. in CRNConnect.java change

```
private String CRN_HOME = curDir.substring(0,curDir.lastIndexOf("sdk")-1);
```

to

```
private String CRN_HOME = curDir.substring(0,curDir.lastIndexOf("sdk")+1);
```

2. Because user are not using any action listerns take default values for

- Package path for parent path in ReportObject.java
- Columns names in addcolumns method of ReportObject.java

7. IBM Integration Services Framework (ISF)

The Integration Services Framework serves the purpose of developing and integrating the IBM products as a set of managed applications. It provides common facilities (the ISF common services) such as security, monitoring, logging, reporting - and more. It also provides a standard API level access to those services in a transport and language independent way, greatly facilitating the integration of the IBM Platform in an enterprise wide environment.

ISF Applications

- Model
- Logging
- Scheduling
- Report
- Web components
- Agent handlers
- Calling other apps
- Security

ISF Service

An ISF service is a software module for a specific business function. In the context of the ISF, the business function is one of the functions provided by the IBM platform. Typical examples are:

- A logging service: a service to log messages.

- A job control service: a service to stop, start, schedule and examine log of DataStage jobs.
- A job design service: a service to create and design DataStage jobs.
- A data cleansing service.

A service provider is the entity creating and implementing a specific service. A service consumer is the entity calling (or invoking) a service.

Developing with ISF

ISF and all the developed ISF applications are hosted in a J2EE application server. The currently supported application server is WebSphere 6.0.2.5. The supported Java environment is IBM Java Runtime Environment 1.4.2.

Implementing an ISF application is as follows:

1. Define the service interface as a Java interface.
2. Develop an EJB stateless or state full session bean implementing the service interface.
3. Session bean remote interface must be completely empty. It must just extend the business interface.
4. provide an ISF deployment descriptor
5. package the session beans for the services in users application in a J2EE EAR file, and provide the ISF, J2EE and application server specific deployment descriptors
6. Use the ISF deployment tools to deploy the EAR file for users application.

8. Service Oriented Architecture (SOA)

- Install Service Oriented Architecture and configure it to user environment.
- Create a service and deploy it in IBM Information server.
- Create a Cognos service and integrate it with IBM Information server.



9. Conclusion and Future Work

Conclusion

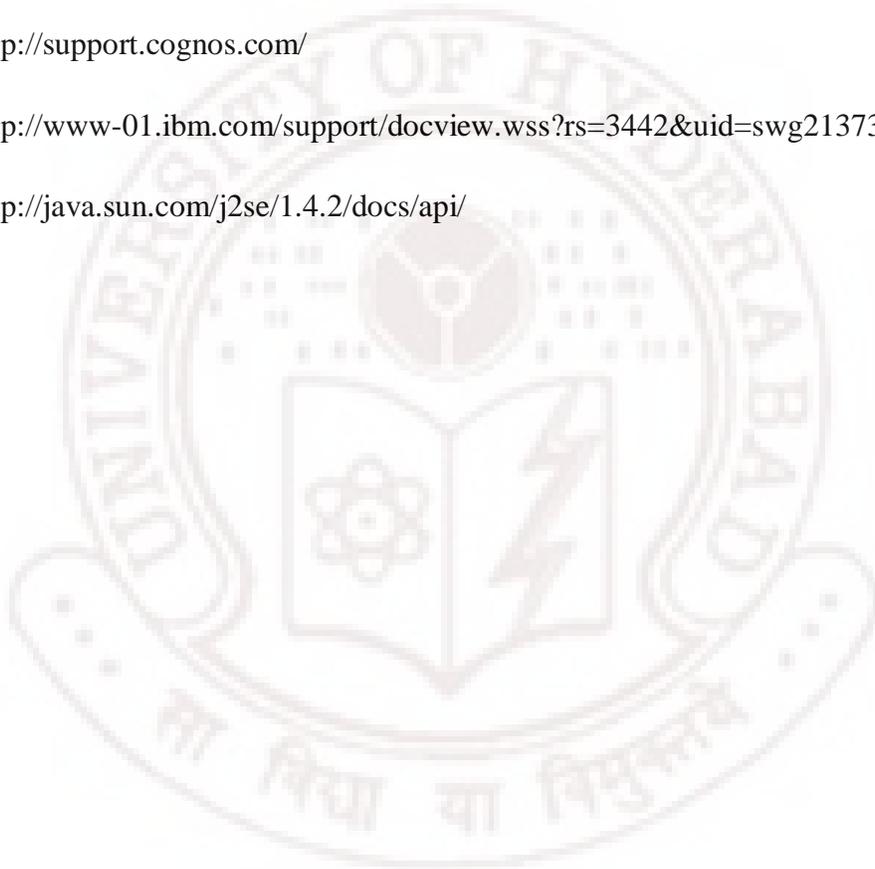
IBM Cognos ReportNet is a Web-based reporting tool which can meet almost all the reporting requirements of the organization. It can generate many types of the reports in different formats. It can generate the reports from simple inventory lists to high volume billings. ReportNet can generate sophisticated, multiple-page, multiple-query reports against multiple databases. It is easy to work with ReportNet. It provides many options to change the contents of the reports. It provides many styles to apply the reports. It gives a good way to reuse the report objects and to create sub reports with the reports. User can easily communicate with the reports with prompts. User can apply own formulas and expressions to data in the reports.

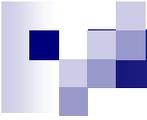
Future work

IBM Cognos ReportNet is installed and configured and evaluated for different features like user defined options, user defined styles, and user defined formulas, re-usability, subreports, and prompts. A service for Cognos ReportNet is created in SOA and given to IBM ISF team and they will forward it for integration with IBM Information Server.

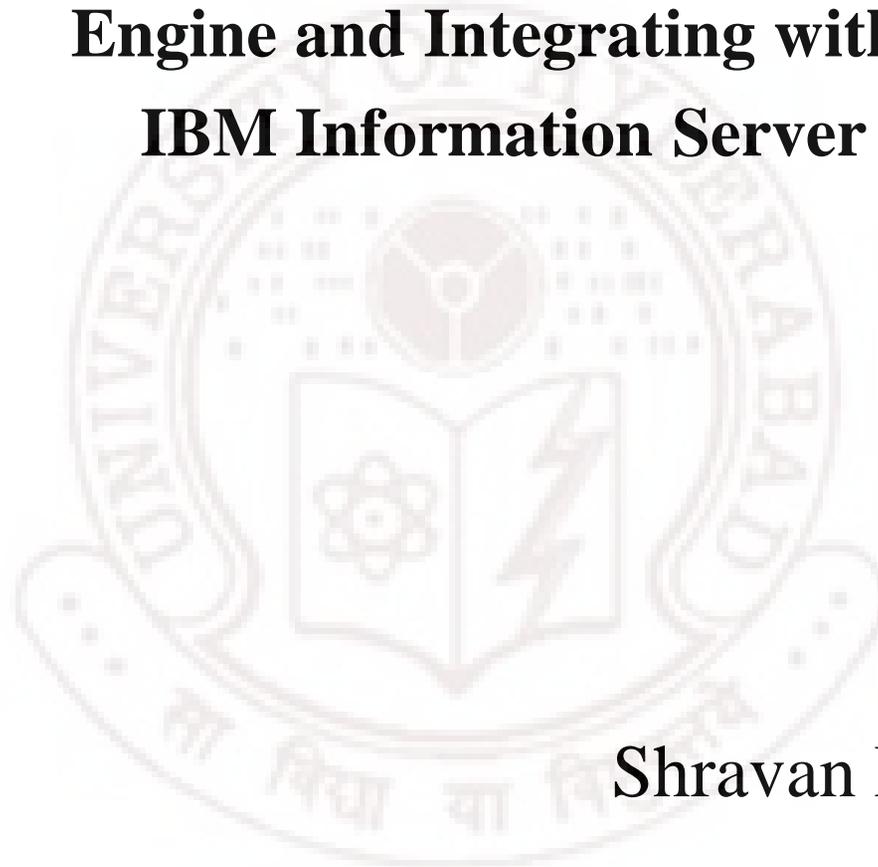
References

1. <http://www.ibm.com/developerworks/>
2. <http://publib.boulder.ibm.com/infocenter/cognosbi/>
3. <http://www.clearviewinformatics.com/2008/04/23/setting-up-the-cognos-8-samples-on-db2/>
4. <http://support.cognos.com/>
5. <http://www-01.ibm.com/support/docview.wss?rs=3442&uid=swg21373237>
6. <http://java.sun.com/j2se/1.4.2/docs/api/>

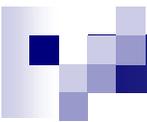




Evaluation of IBM Cognos ReportNet Reporting Engine and Integrating with IBM Information Server

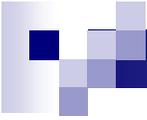


Shravan Kumar Reddy
07MCMT19



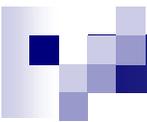
Overview

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- The aim of this project is to evaluate IBM Cognos ReportNet and integrate with the IBM Information Server.



Requirements

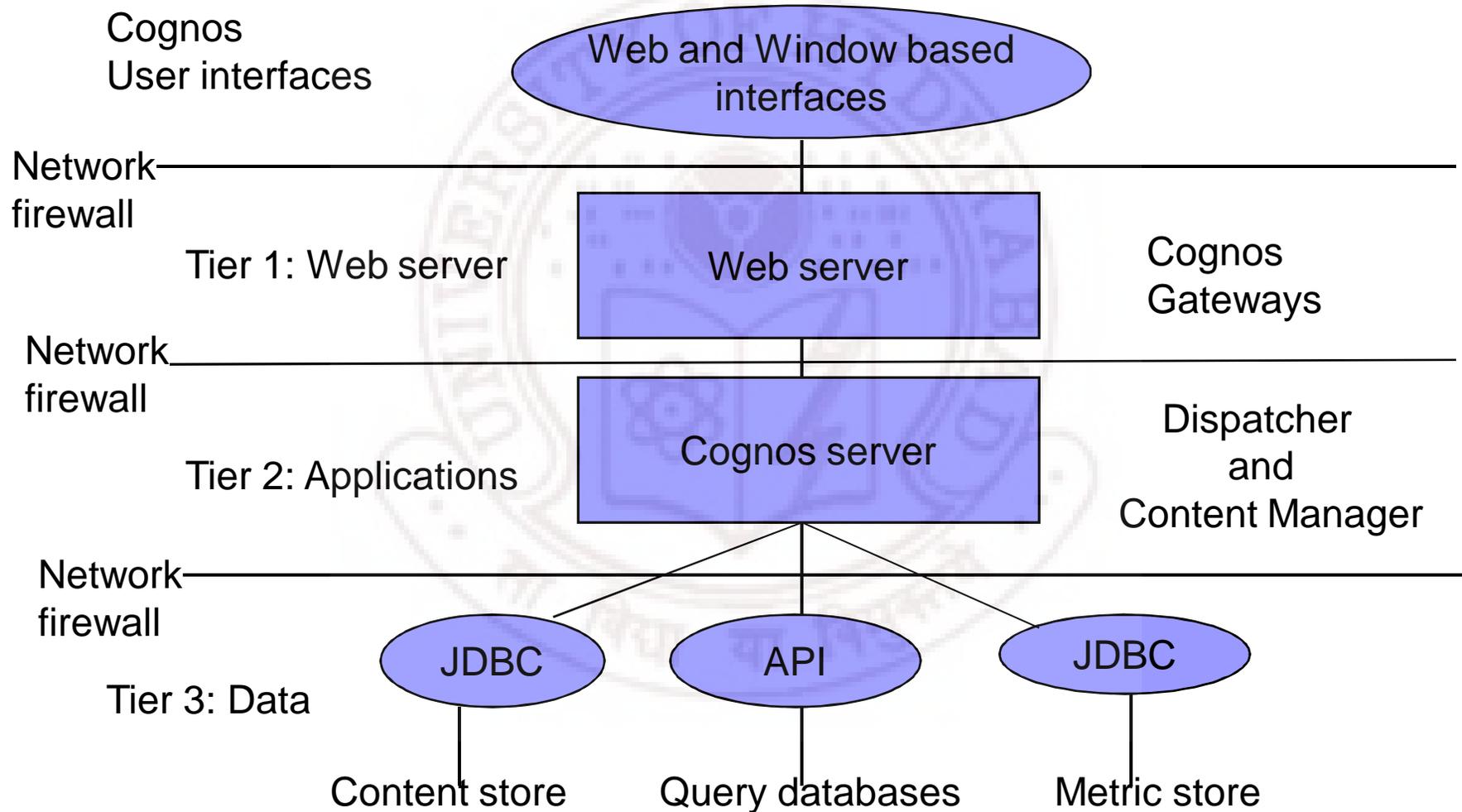
- IBM Cognos Report Studio
- IBM Information Services Framework (ISF)
- IBM Service Oriented Architecture
- IBM Information Server

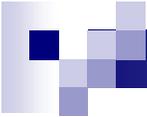


IBM Cognos Report Studio

- First completely Web-based enterprise reporting solution.
- Address all reporting requirements of an organization.
- Fully integrated with score carding, dash boarding, analysis, event management, query and reporting.
- Can develop reports from simple inventory lists to high-volume billings.
- Can deliver many type of reports like lists, cross tabs, charts, maps.
- Can create reports in many formats like html, pdf, Excel, csv, xml.

IBM Cognos Architecture





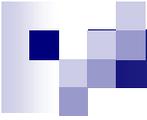
User Interfaces

Web based

1. Cognos Connection
2. Cognos Administration
3. Report Studio
4. Query Studio
5. Analysis Studio
6. Event Studio
7. Metric Studio

Window based

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2. Metric Designer
3. Transformer
4. Map Manager
5. Cognos 8 Go office



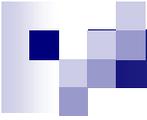
Cognos Connection

- It provides a single access point to all data available in Cognos.
- User can use Cognos Connection to work with entries such as reports, analyses, queries, packages
- User can use Cognos Connection to create shortcuts, URLs, and pages, to organize entries.
- Go [Cognos Connection](#)



Framework Manager

- It is the metadata tool used to model data
- Package provides the data items that we use in reports.
- Go [Framework Manager](#)



Report Studio

Report Studio is a Web-based tool that is used to build sophisticated, multiple-page, multiple-query reports against multiple databases.

[Report studio](#)

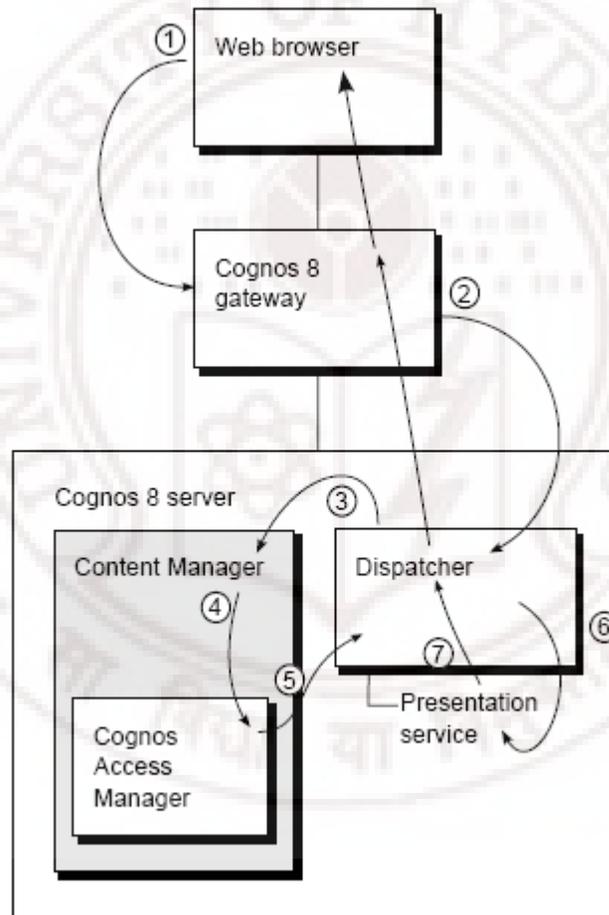
- Report [Go](#) sample report [sample report](#)
- Report template [Go](#)

Building Cognos Applications

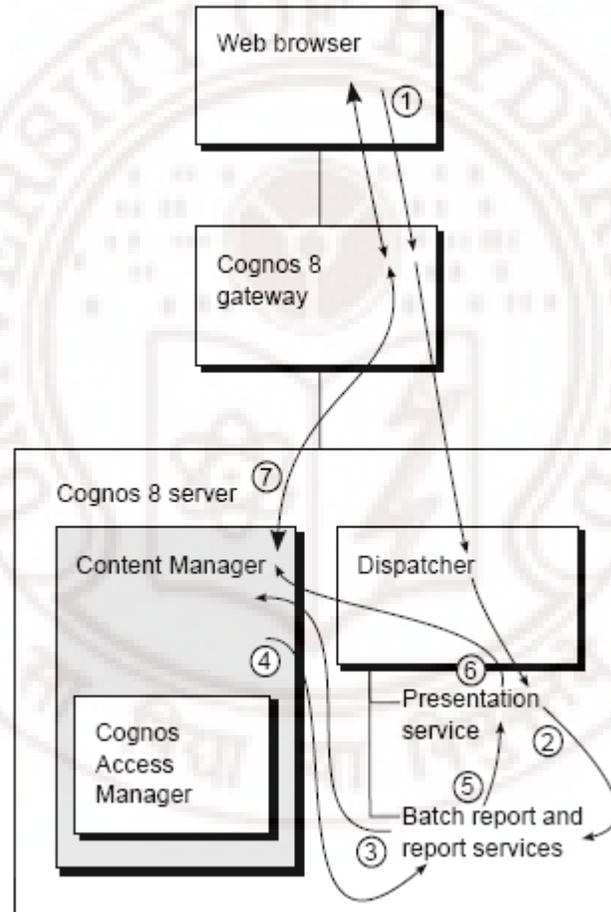
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Access Cognos



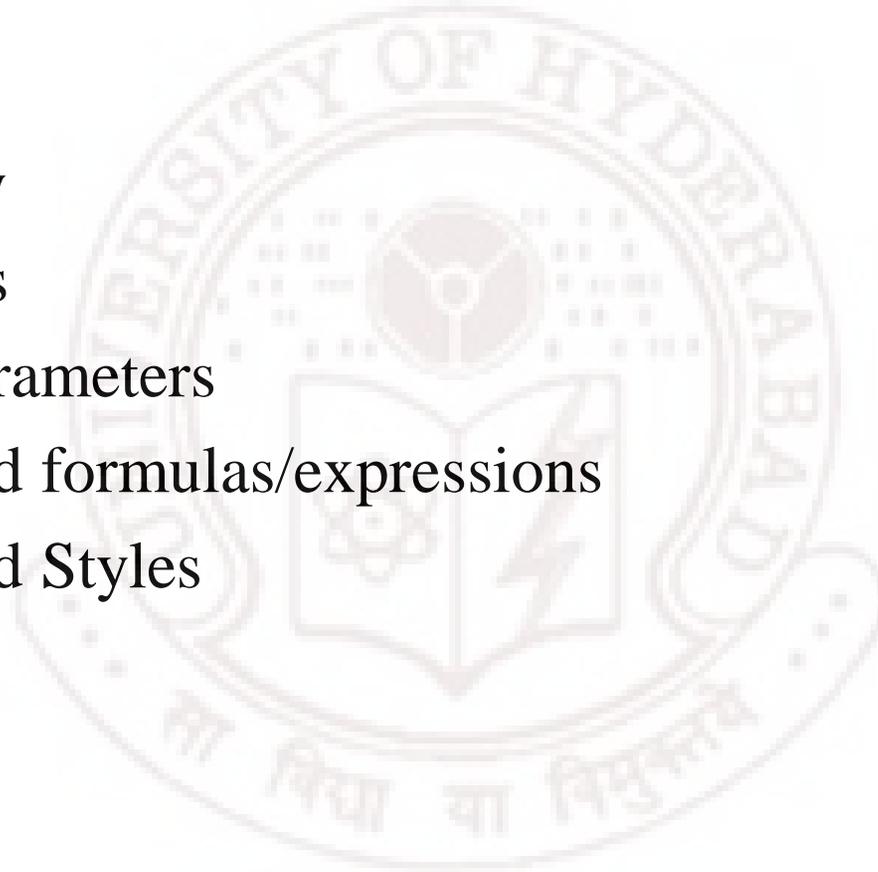
Running a Report





Report Studio Features

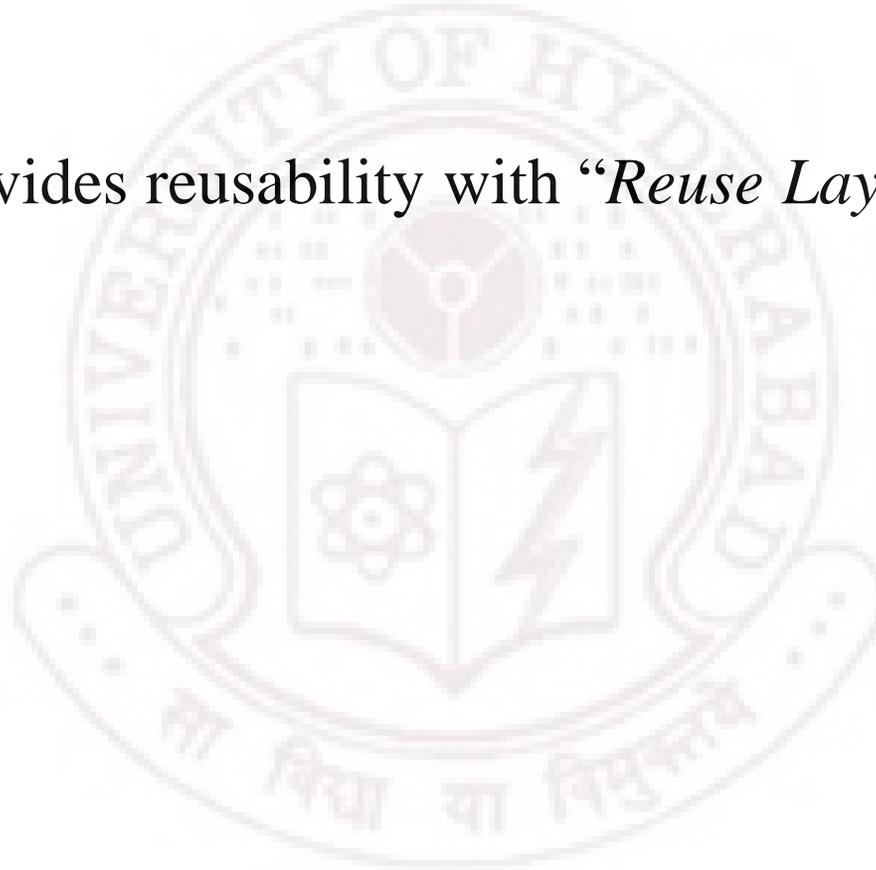
- Re-usability
- Sub Reports
- Prompts/Parameters
- User defined formulas/expressions
- User defined Styles

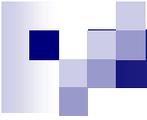




Re-usability

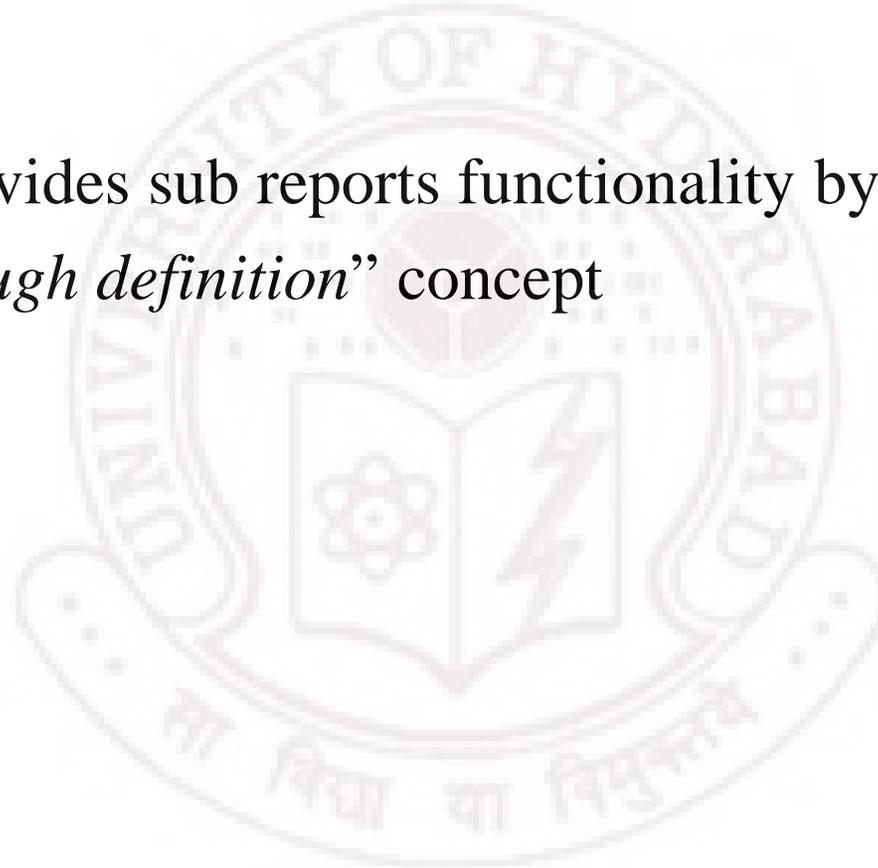
- Cognos provides reusability with “*Reuse Layout Object*”.

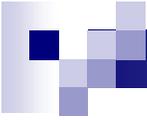




Sub Report

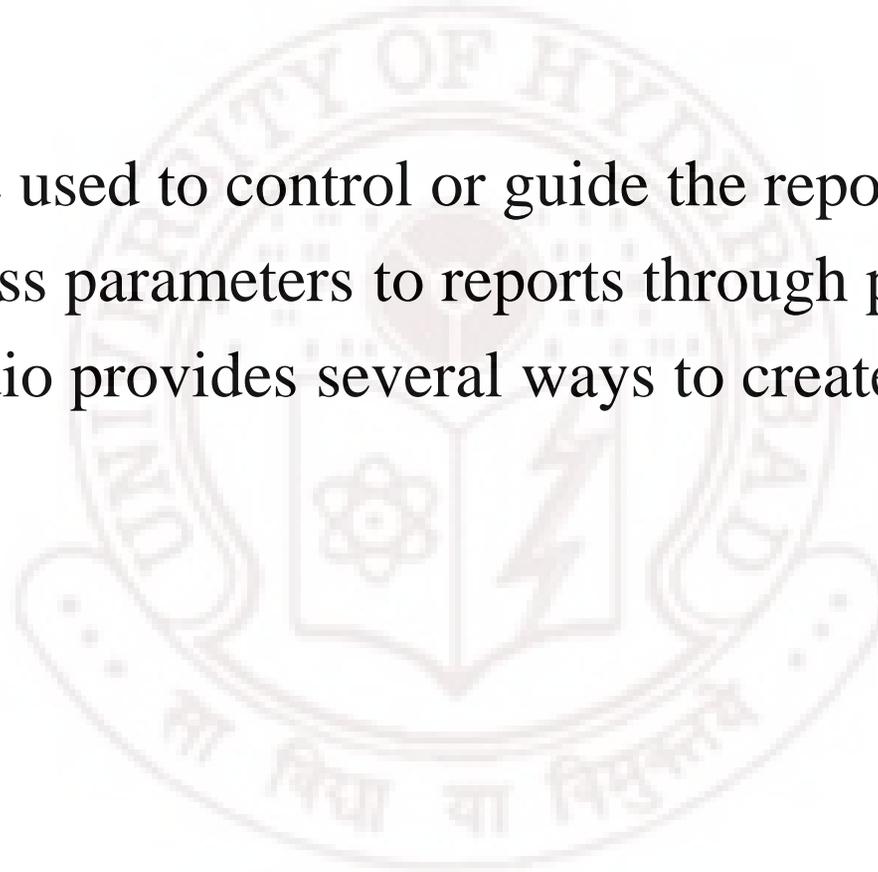
- Cognos provides sub reports functionality by “*Drill through definition*” concept





Prompts and Parameters

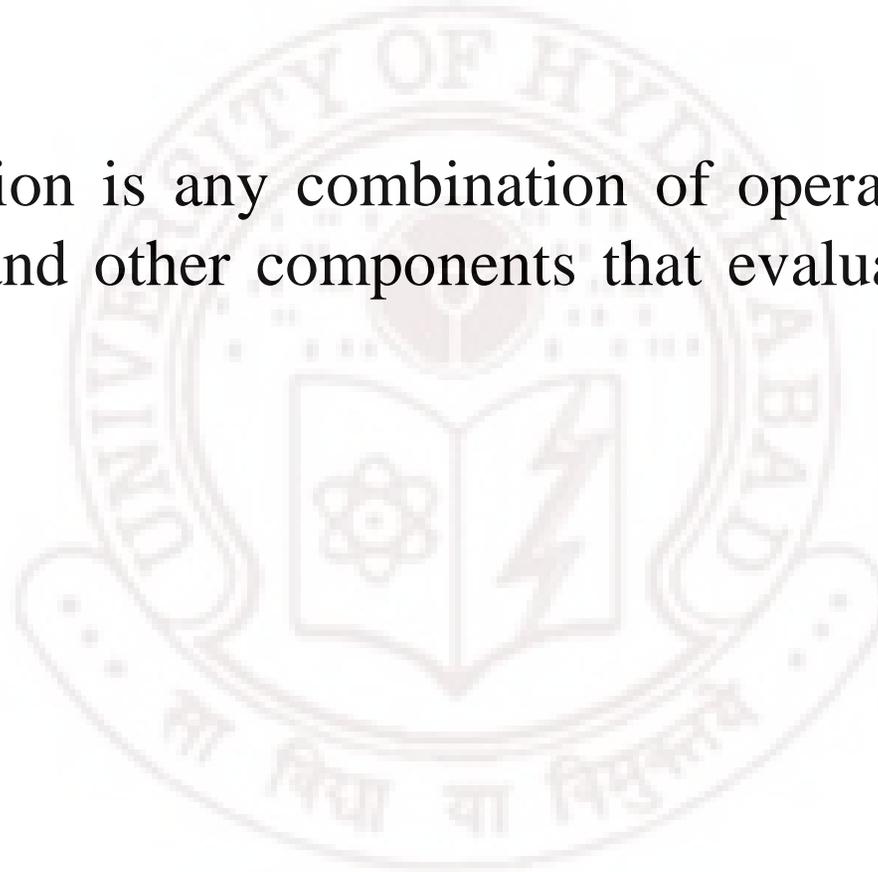
- Prompts are used to control or guide the report execution
- User can pass parameters to reports through prompts
- Report Studio provides several ways to create prompts.





User defined formulas/expressions

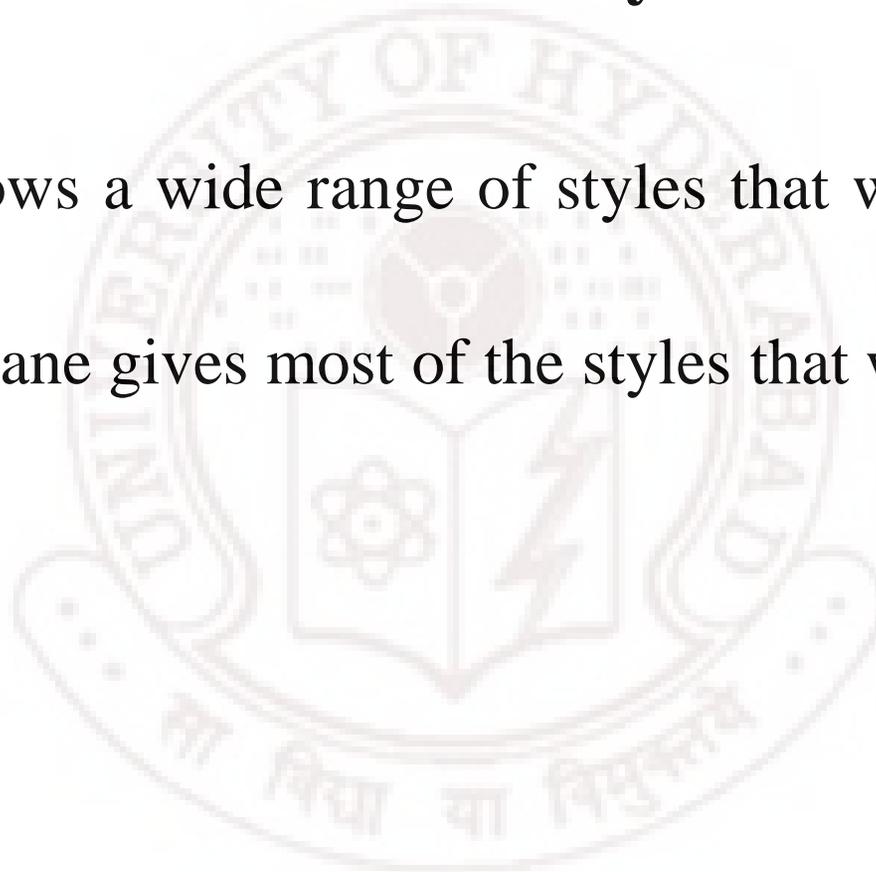
- An expression is any combination of operators, constants, functions, and other components that evaluates to a single value.

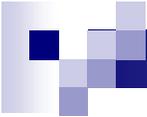




User defined styles

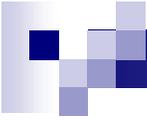
- Cognos allows a wide range of styles that we can apply to reports
- Properties pane gives most of the styles that we can apply.





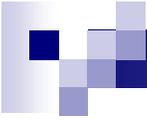
Merits

- different types of reports.
- reports in different output formats.
- a wide variety of chart reports.
- filters in different ways.
- traverse the package easily
- connect to different types of databases
- set different styles to reports easily



De-merits

- In charts it is difficult to distinguish the borders between the values if the entries (series values) are more.
- It is not easy to place an object where ever we want in the report. It needs to do some work with margin and border and padding of the object.
- There is no Line object. To draw a line we have use “Border” property.
- Some Report Functions are not working in report studio but working in Cognos Connection.



Cognos Software Development Kit

- Install Cognos 8 SDK configure it to working environment.
- Create report with SDK code that takes parameters and outputs required values. and Run report in java environment.
- Create an enterprise application that uses the above code which creates and runs the report with Websphere Application Server.



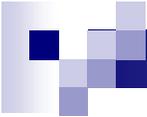
IBM ISF

- IBM Information Services Framework
- Developing and integrating the IBM products
- ISF common services are monitoring, logging, security



IBM Service Oriented Architecture

- Install Service Oriented Architecture and configure it to your environment
- Create a Cognos service and deploy it in IBM Information Server
- Run the Cognos service from IBM Information Server



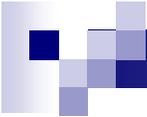
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- <http://www.clearviewinformatics.com/2008/04/23/setting-up-the-cognos-8-samples-on-db2/>
- <http://support.cognos.com/>
- <http://java.sun.com/j2se/1.4.2/docs/api/>

Sample Report

USERS LIST

ID	NAME	DEPARTMENT	SALARY	PHONE	EMAIL
abc123	abc	A	30,000	1,234,567,890	abc@in.ibm.com
ghi951	ghi	A	25,000	6,543,210,987	ghi@in.ibm.com
ijk761	ijk		50,000	7,610,349,285	ijk@in.ibm.com
bcd927	bcd	B	25,000	1,546,328,970	bcd@in.ibm.com
mno759	mno	B	25,000	9,431,607,825	mno@in.ibm.com
cde153	cde		35,000	1,632,548,790	cde@in.ibm.com
lmn741	lmn	C	32,000	7,410,963,582	lmn@in.ibm.com
def258	def	D	32,000	5,326,419,807	def@in.ibm.com
klm943	klm	D	30,000	3,698,520,147	klm@in.ibm.com
efg159	efg		50,000	6,123,840,795	efg@in.ibm.com
fgh357	fgh	E	35,000	9,513,764,028	fgh@in.ibm.com
11	Total Salary		369,000		
	Minimum Salary		25,000		
	Maximum Salary		50,000		
	Average Salary		33,545.45454545		



Uses

- The user of Information Server can create reports for logging, scheduling, and security services.
- The user can retrieve and view reports and schedule reports to run at a specific time and frequency.
- Reports can be formatted as HTML, PDF, Excel, Microsoft® Word documents.

Cognos Connection

Public Folders - Cognos Connection - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/cognos8/cgi-bin/cognos.cgi?b_action=xts.run&m=portal/cc.xts&gohome=

Links IBM Business Transformation Homepage IBM Standard Software Installer IT Help Central Join World Community Grid

Cognos Connection

Public Folders My Folders

Public Folders

Name	Modified	Actions
Dashboard Folder	October 2, 2007 10:22:46 PM	More...
Dashboard Objects	October 2, 2007 10:19:41 PM	More...
GO Data Warehouse (analysis)	October 15, 2007 8:19:45 PM	More...
GO Data Warehouse (query)	October 15, 2007 8:22:01 PM	More...
GO Sales (analysis)	October 15, 2007 8:28:12 PM	More...
GO Sales (query)	October 15, 2007 8:29:02 PM	More...
package1	January 6, 2009 1:59:31 PM	More...
Practical Examples	October 5, 2007 10:25:18 PM	More...
Sales and Marketing (conformed)	October 15, 2007 8:24:50 PM	More...
Sample Template	October 3, 2007 11:01:32 PM	More...

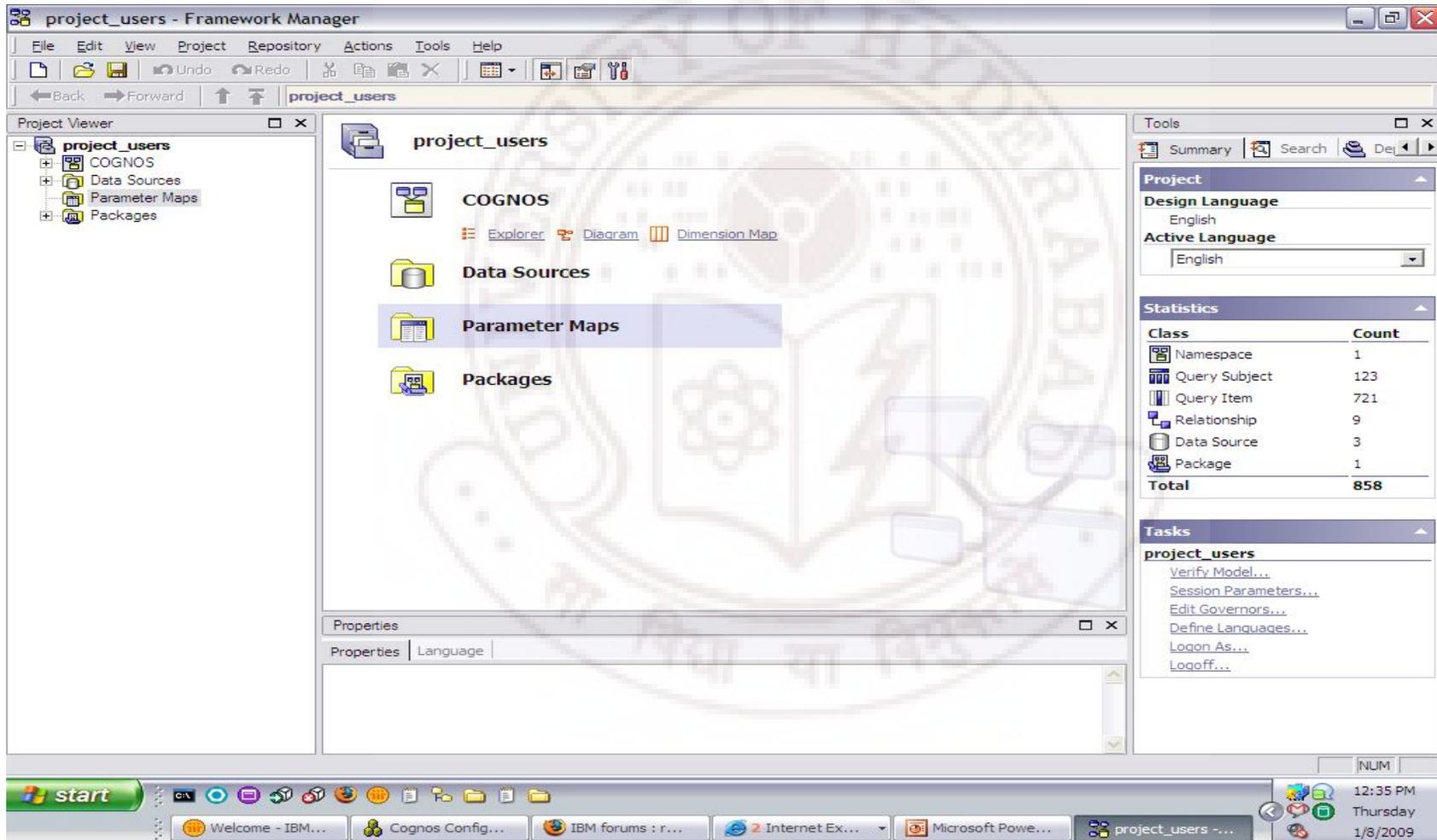
Done Local intranet

start

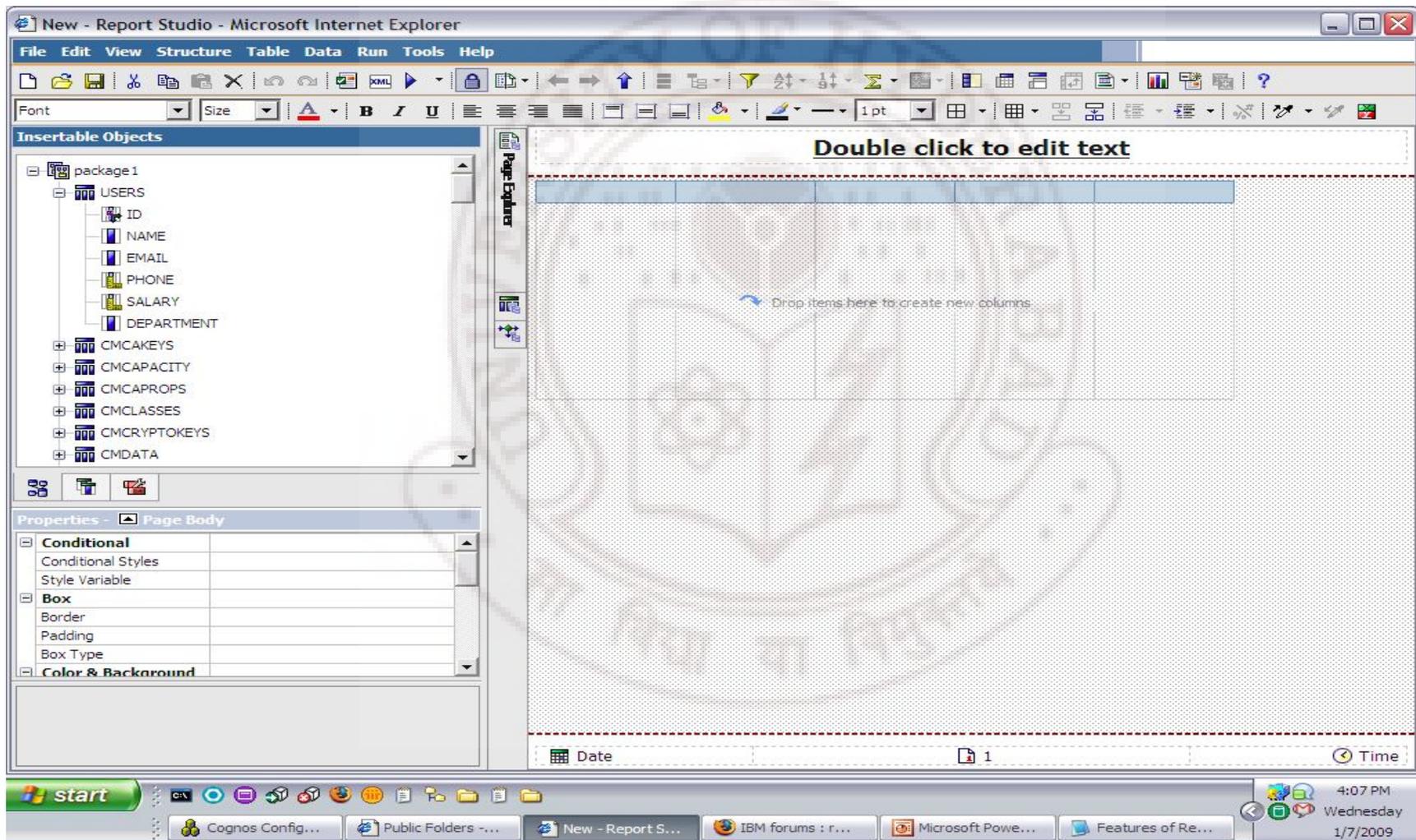
Cognos Configuratio... Internet Explorer IBM forums : report... Microsoft PowerPoin... untitle - Paint

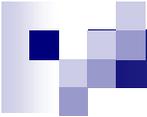
4:59 PM Wednesday 1/7/2009

Framework Manager



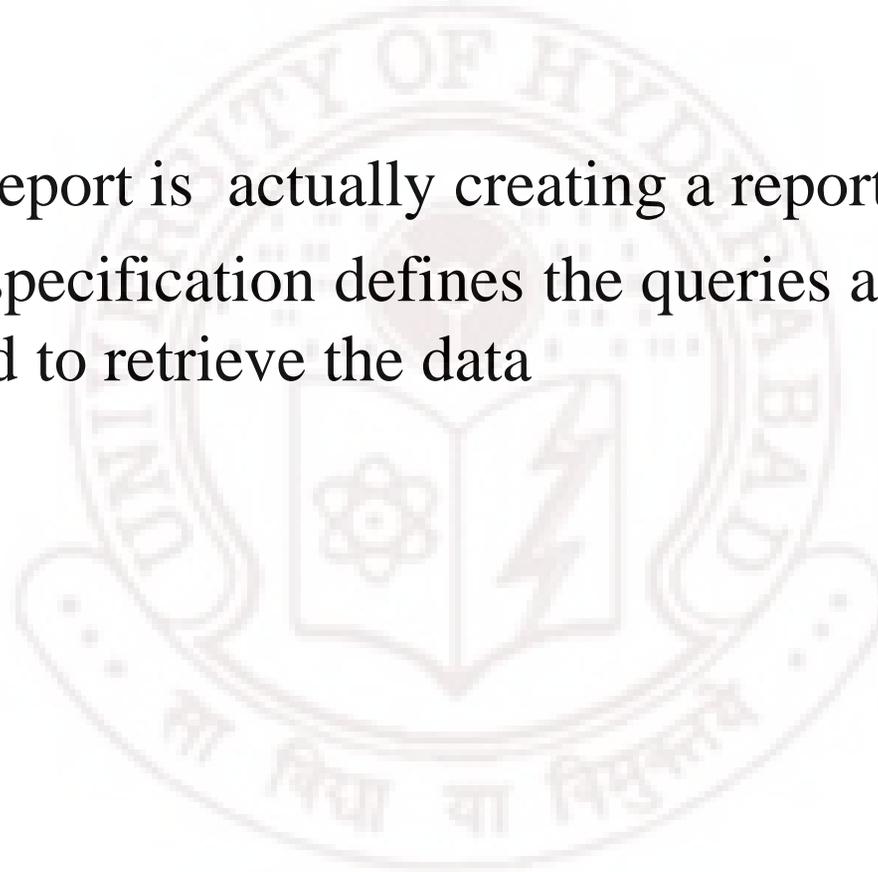
Report studio



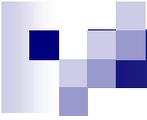


Report

- Creating a report is actually creating a report specification
- The report specification defines the queries and prompts that are used to retrieve the data



[Back](#)

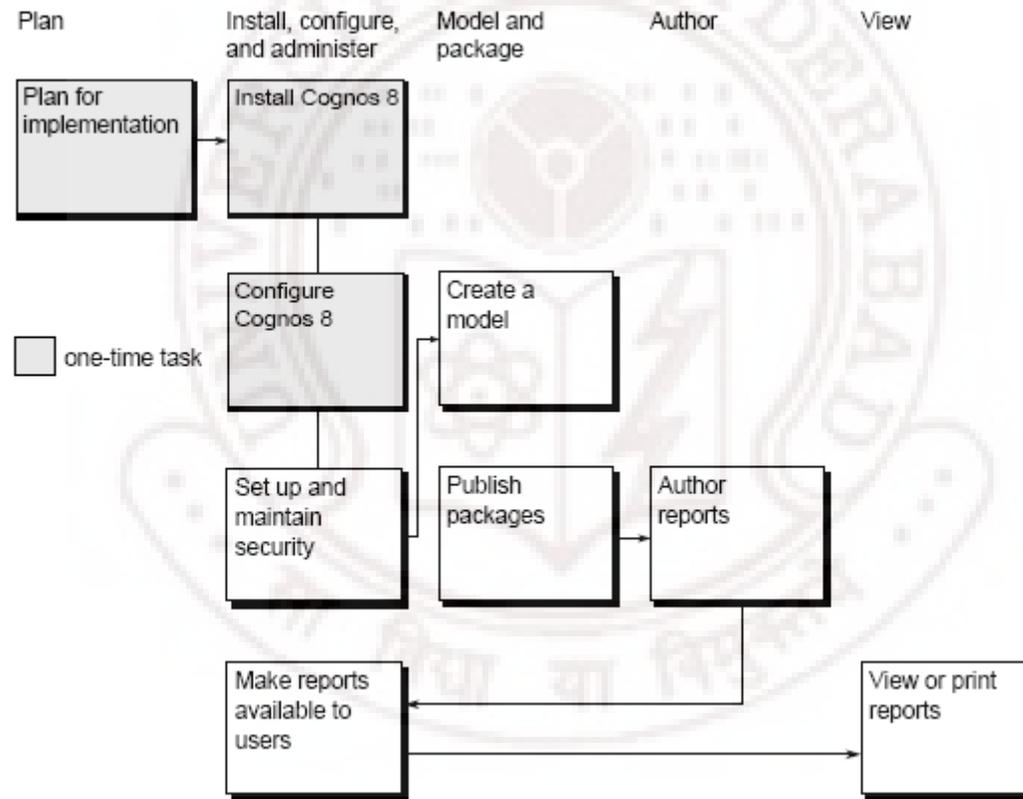


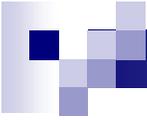
Report Template

- Its a “pattern used to build” reports
- Used when we frequently produce the same type of report
- It may contain HTML items, Hyperlinks, page numbers, images, tables, text items, blocks, layout calculations, date, time
- convert a report to a template or create a new template

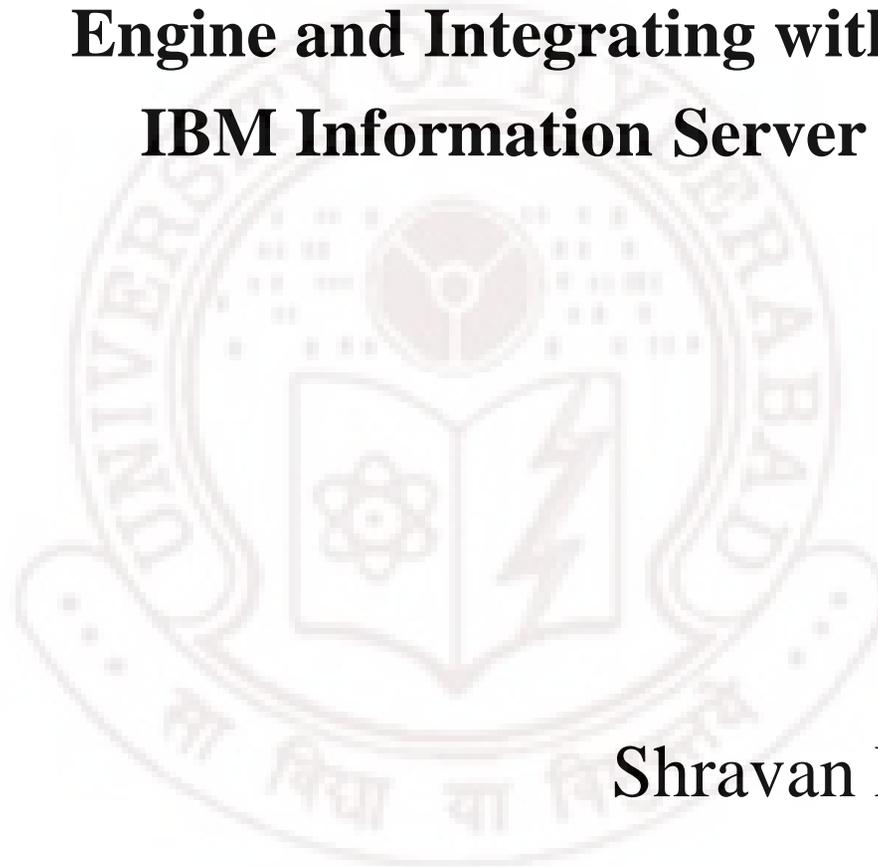
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Using Cognos for Reporting

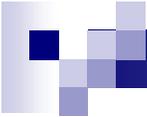




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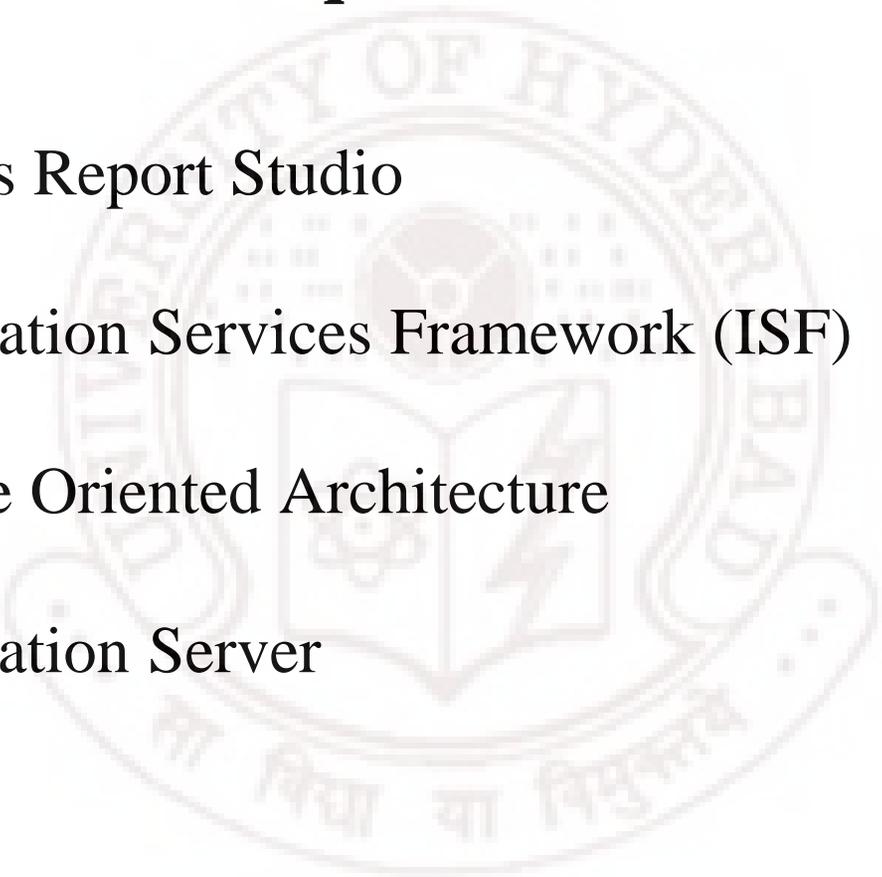


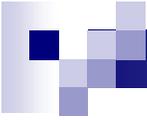
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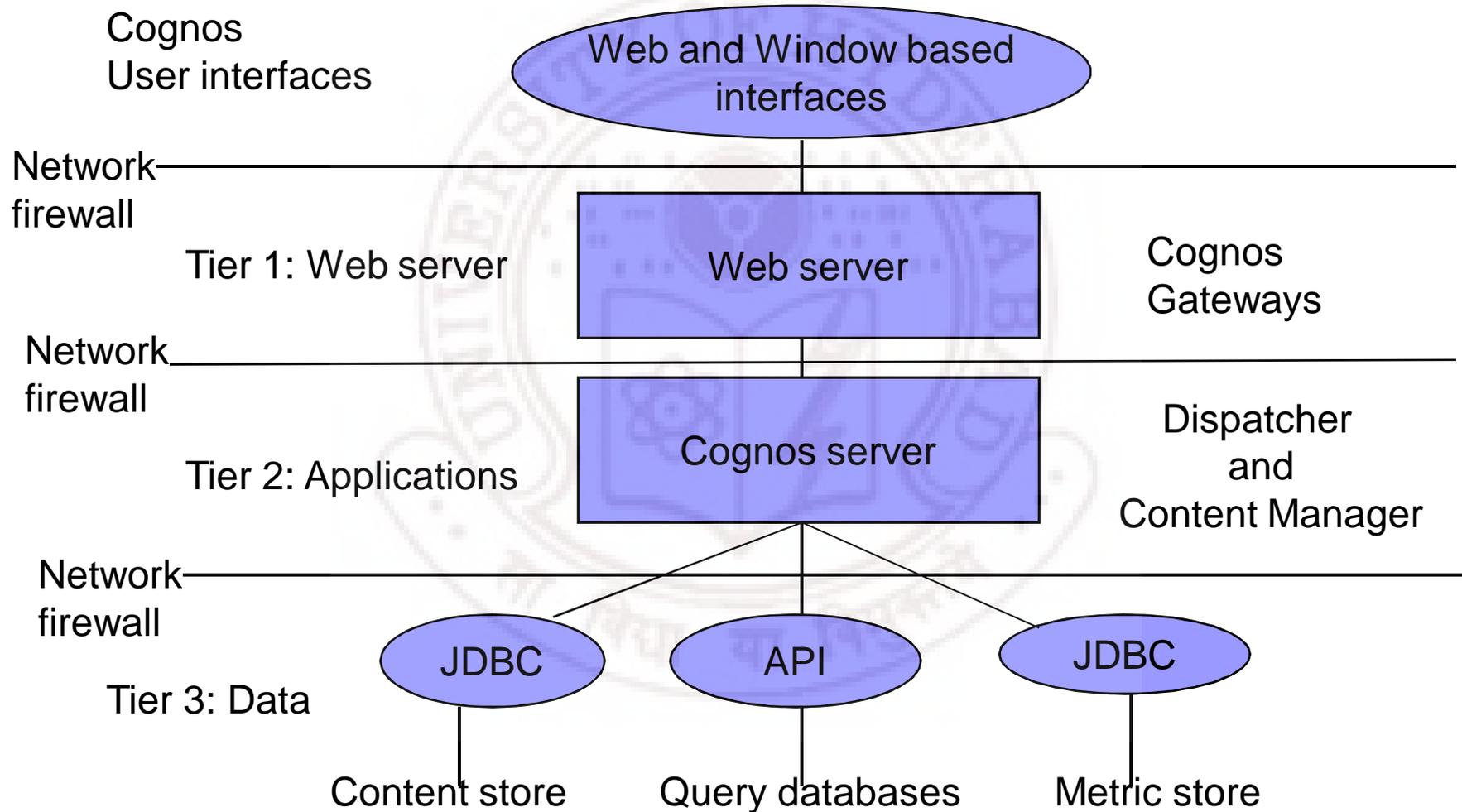
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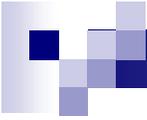


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IBM Cognos Architecture





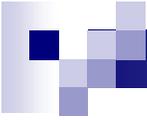
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[Report studio](#)

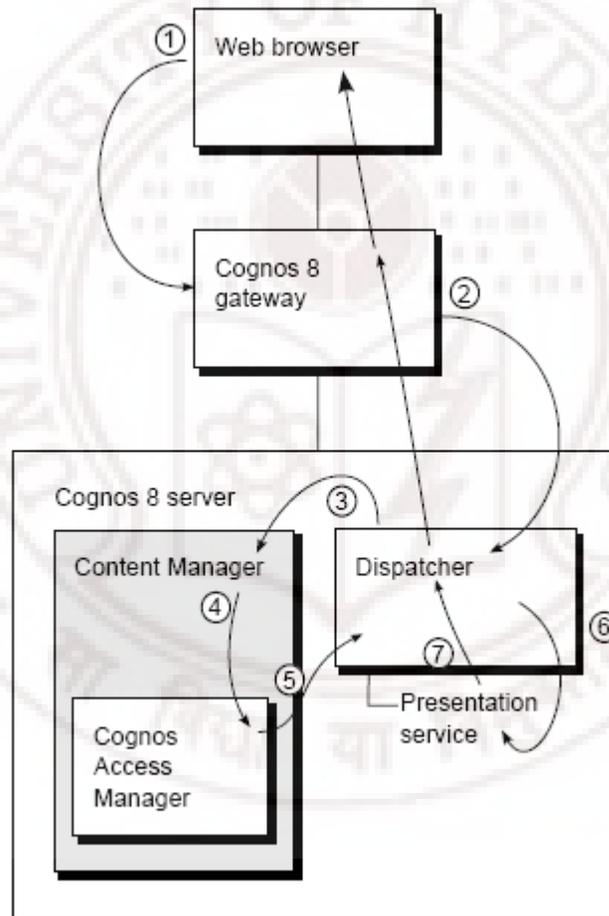
- Report [Go](#) sample report [sample report](#)
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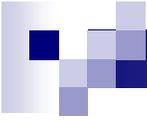
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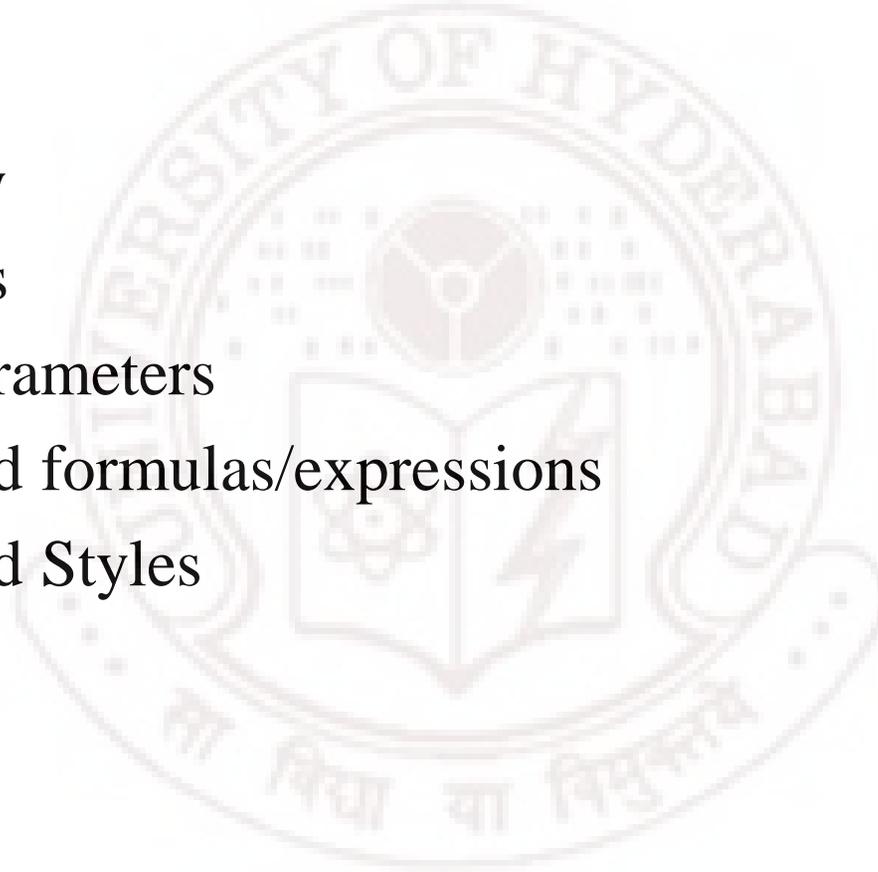
Access Cognos

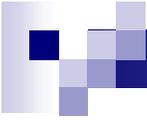




Report Studio Features

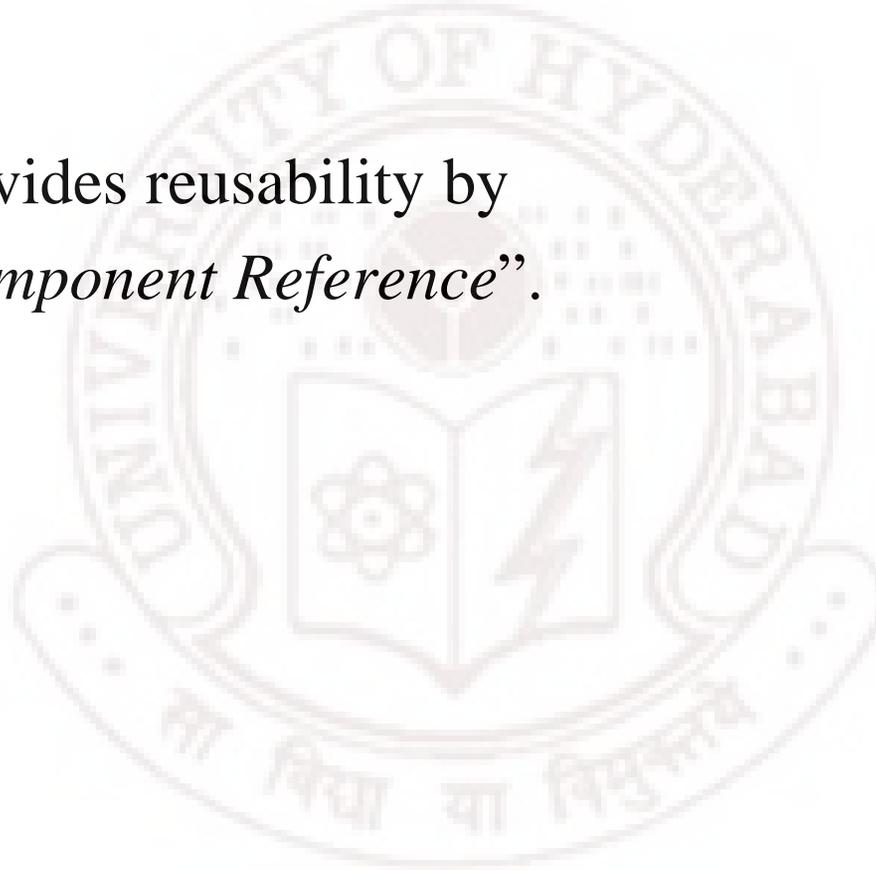
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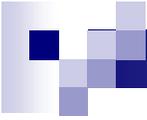




Re-usability

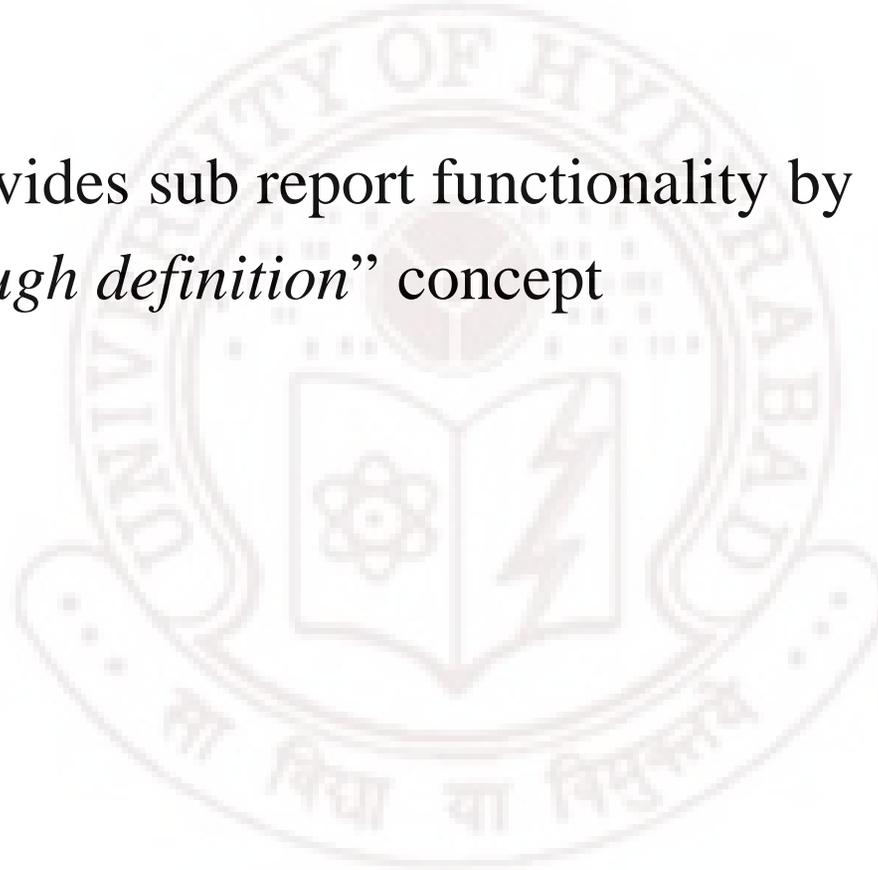
- Cognos provides reusability by “*Layout Component Reference*”.

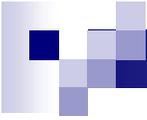




Sub Report

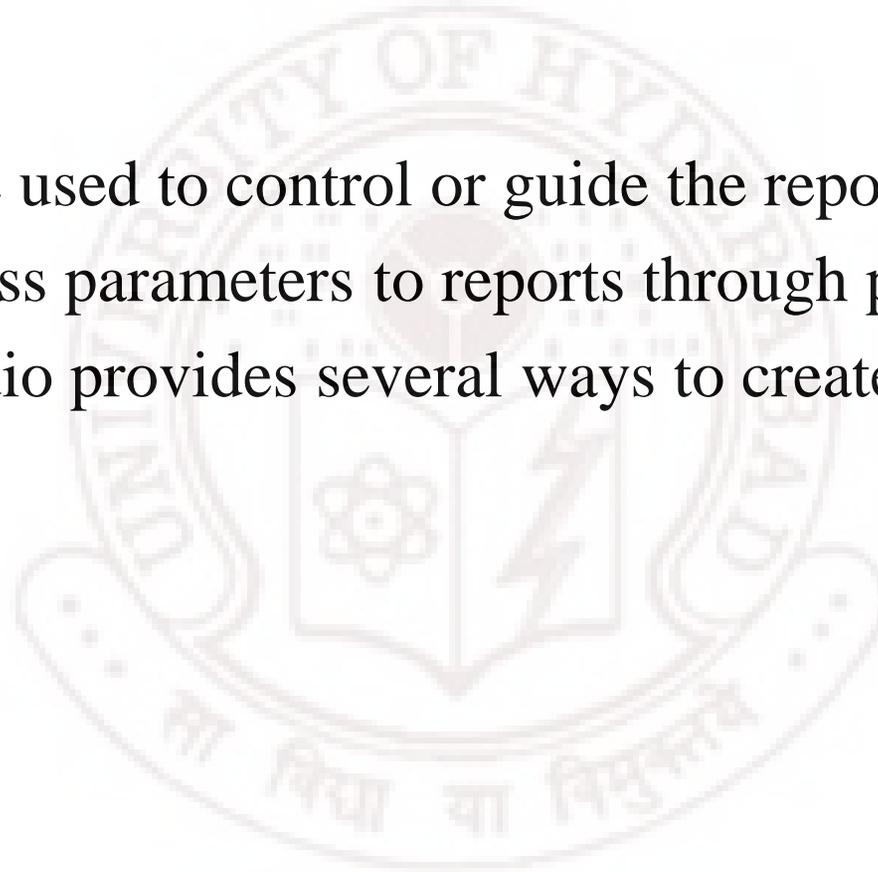
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Prompts and Parameters

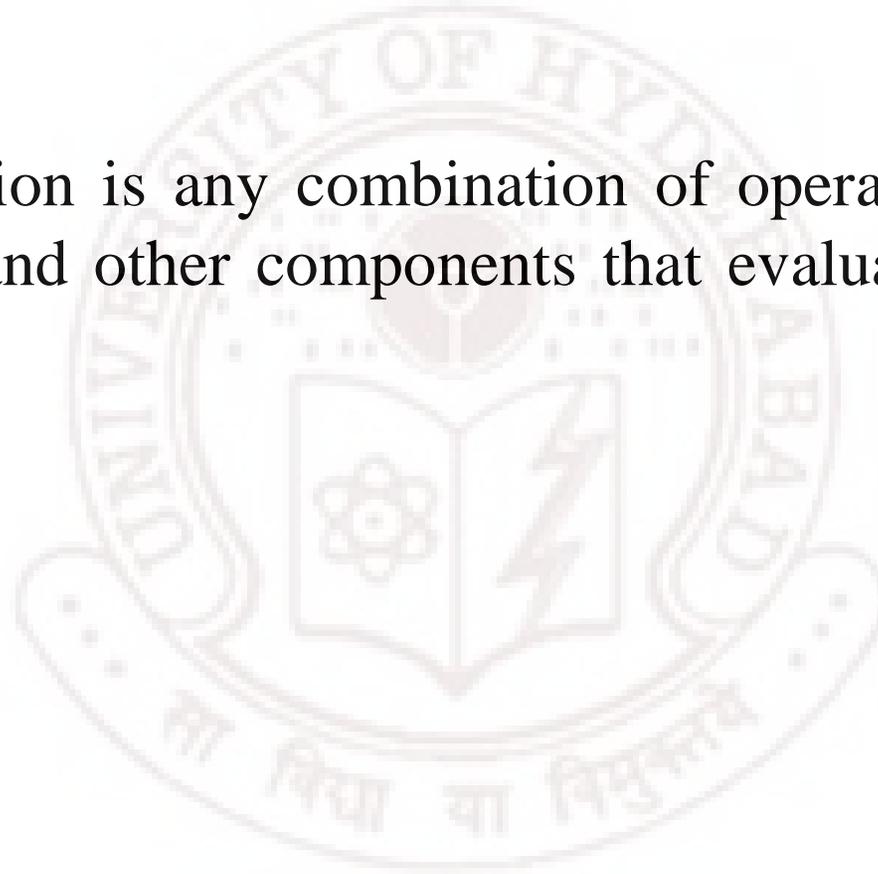
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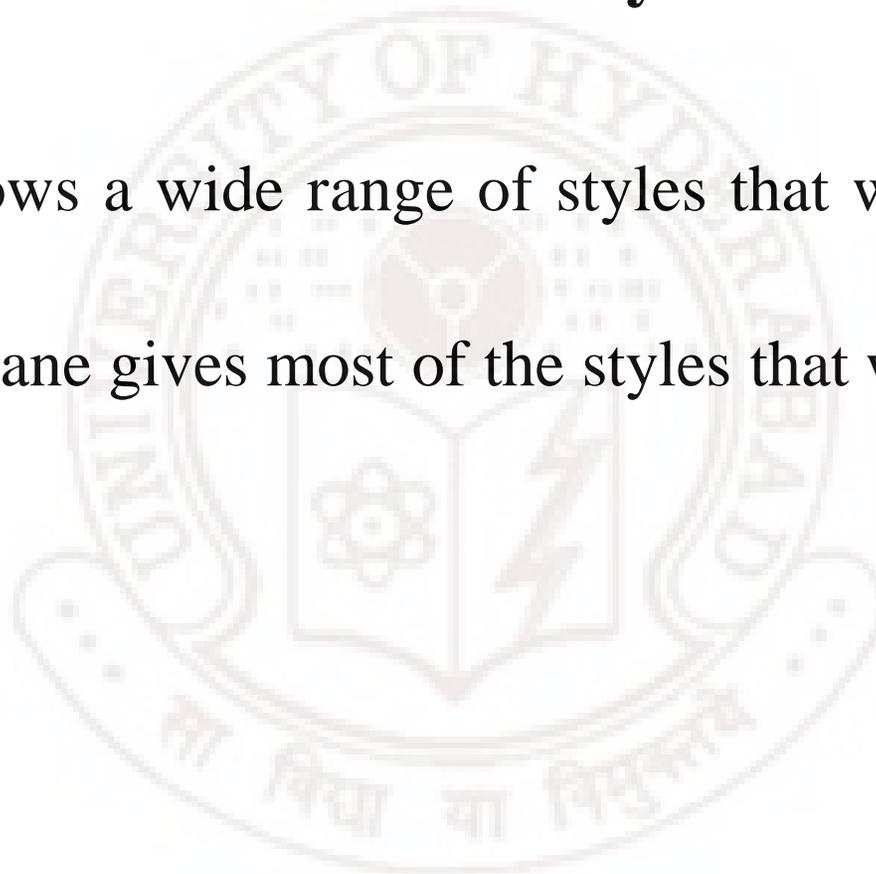
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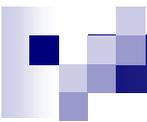




User defined styles

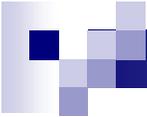
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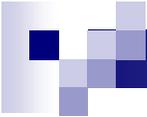
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- There is no Line object. To draw a line we have use “Border” property.
- Some Report Functions are not working in report studio but working in Cognos Connection.



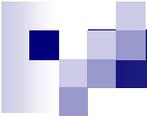
IBM Cognos Software Development Kit

- Install Cognos SDK configure it to working environment.
- Create report with SDK code that takes parameters and outputs required values, and Run report in java environment.
- Create an enterprise application that uses the above code which creates and runs the report with Websphere Application Server.



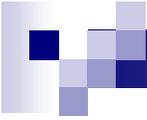
IBM ISF

- IBM Information Services Framework
- Developing and integrating the IBM products
- ISF common services are monitoring, logging, security



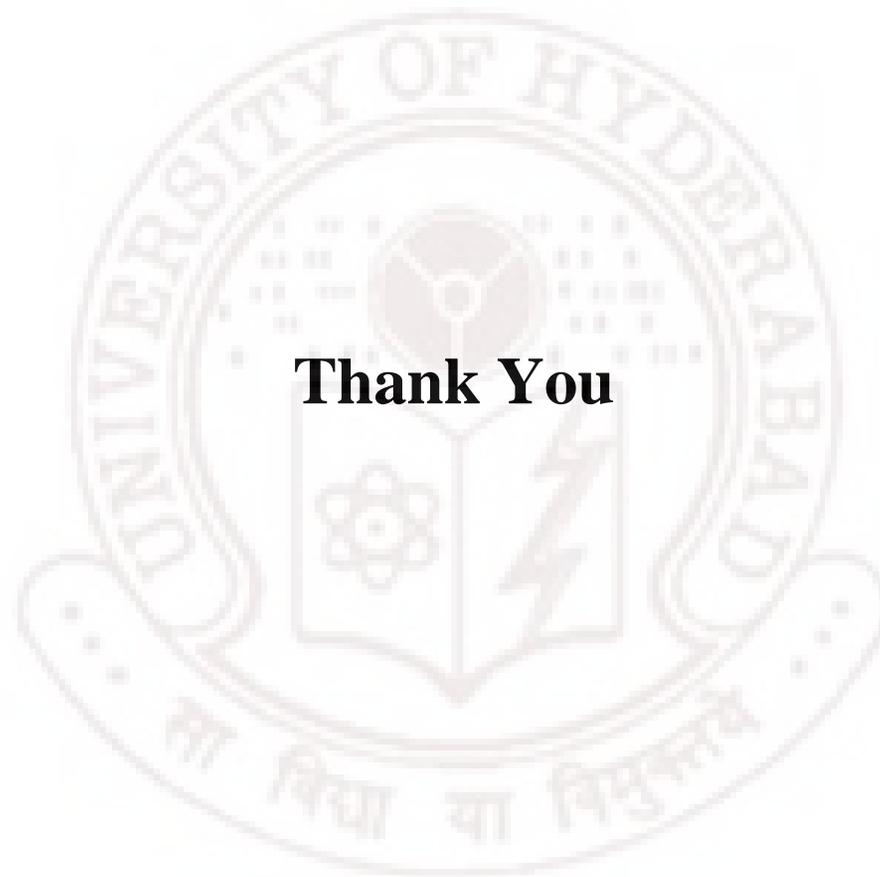
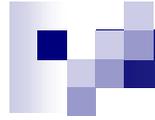
IBM Service Oriented Architecture

- Install Service Oriented Architecture and configure it to your environment
- Create a Cognos service and deploy it in IBM Information Server
- Run the Cognos service from IBM Information Server



References

- <http://www.ibm.com/developerworks/>
- <http://publib.boulder.ibm.com/infocenter/cognosbi/>
- <http://www.clearviewinformatics.com/2008/04/23/setting-up-the-cognos-8-samples-on-db2/>
- <http://support.cognos.com/>
- <http://java.sun.com/j2se/1.4.2/docs/api/>



Thank You

Sample Report

USERS LIST

ID	NAME	DEPARTMENT	SALARY	PHONE	EMAIL
abc123	abc	A	30,000	1,234,567,890	abc@in.ibm.com
ghi951	ghi	A	25,000	6,543,210,987	ghi@in.ibm.com
ijk761	ijk		50,000	7,610,349,285	ijk@in.ibm.com
bcd927	bcd	B	25,000	1,546,328,970	bcd@in.ibm.com
mno759	mno	B	25,000	9,431,607,825	mno@in.ibm.com
cde153	cde		35,000	1,632,548,790	cde@in.ibm.com
lmn741	lmn	C	32,000	7,410,963,582	lmn@in.ibm.com
def258	def	D	32,000	5,326,419,807	def@in.ibm.com
klm943	klm	D	30,000	3,698,520,147	klm@in.ibm.com
efg159	efg		50,000	6,123,840,795	efg@in.ibm.com
fgh357	fgh	E	35,000	9,513,764,028	fgh@in.ibm.com
11	Total Salary		369,000		
	Minimum Salary		25,000		
	Maximum Salary		50,000		
	Average Salary		33,545.45454545		



Uses

- The user of Information Server can create reports for logging, scheduling, and security services.
- The user can retrieve and view reports and schedule reports to run at a specific time and frequency.
- Reports can be formatted as HTML, PDF, Excel, Microsoft® Word documents.

Cognos Connection

Public Folders - Cognos Connection - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/cognos8/cgi-bin/cognos.cgi?b_action=xts.run&m=portal/cc.xts&gohome=

Links IBM Business Transformation Homepage IBM Standard Software Installer IT Help Central Join World Community Grid

Cognos Connection

Public Folders My Folders

Public Folders

Entries: 1 - 10

Name	Modified	Actions
Dashboard Folder	October 2, 2007 10:22:46 PM	More...
Dashboard Objects	October 2, 2007 10:19:41 PM	More...
GO Data Warehouse (analysis)	October 15, 2007 8:19:45 PM	More...
GO Data Warehouse (query)	October 15, 2007 8:22:01 PM	More...
GO Sales (analysis)	October 15, 2007 8:28:12 PM	More...
GO Sales (query)	October 15, 2007 8:29:02 PM	More...
package1	January 6, 2009 1:59:31 PM	More...
Practical Examples	October 5, 2007 10:25:18 PM	More...
Sales and Marketing (conformed)	October 15, 2007 8:24:50 PM	More...
Sample Template	October 3, 2007 11:01:32 PM	More...

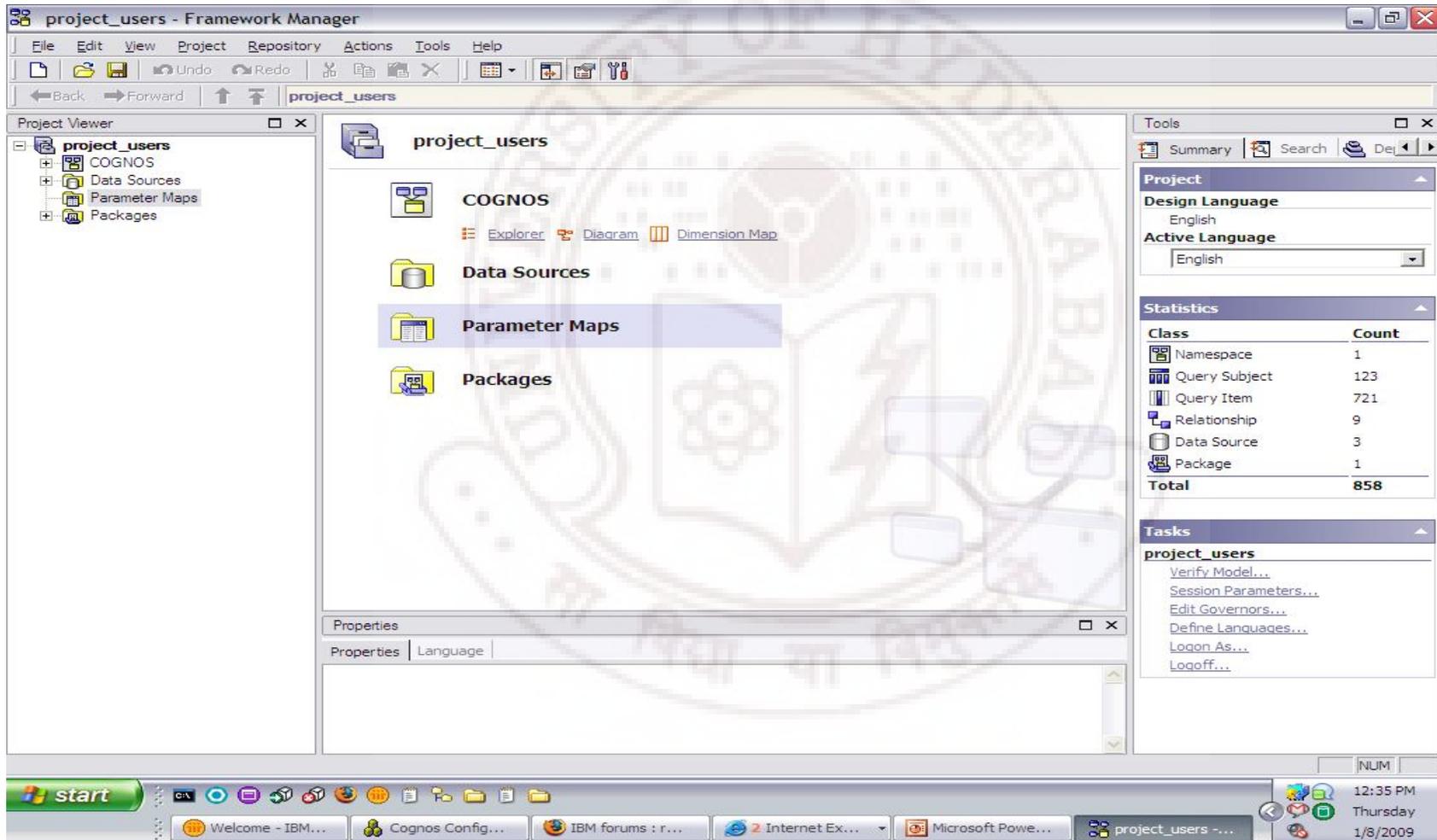
Done Local intranet

start

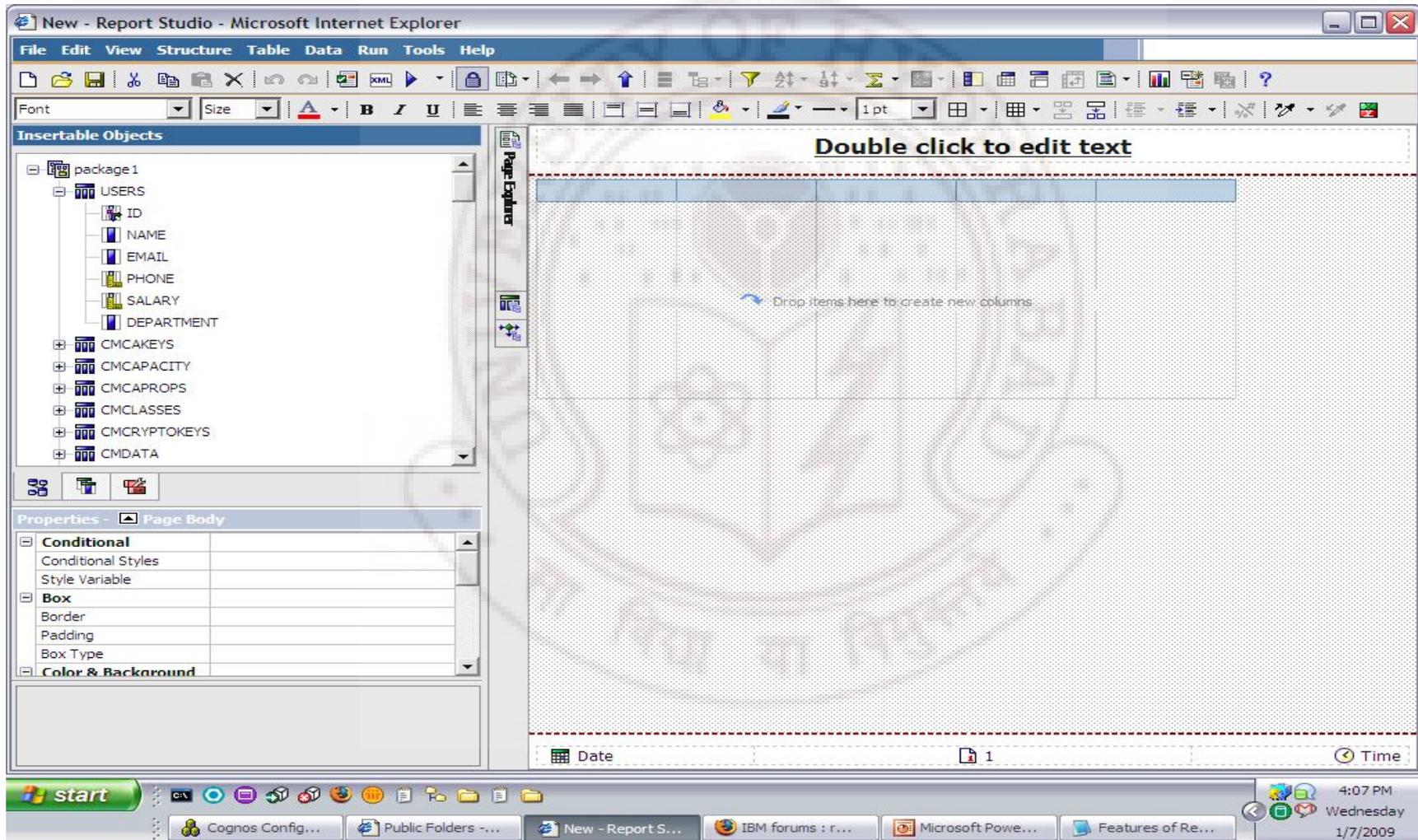
Cognos Configuratio... Internet Explorer IBM forums : report... Microsoft PowerPoin... untitled - Paint

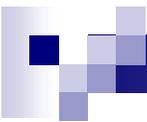
4:59 PM Wednesday 1/7/2009

Framework Manager



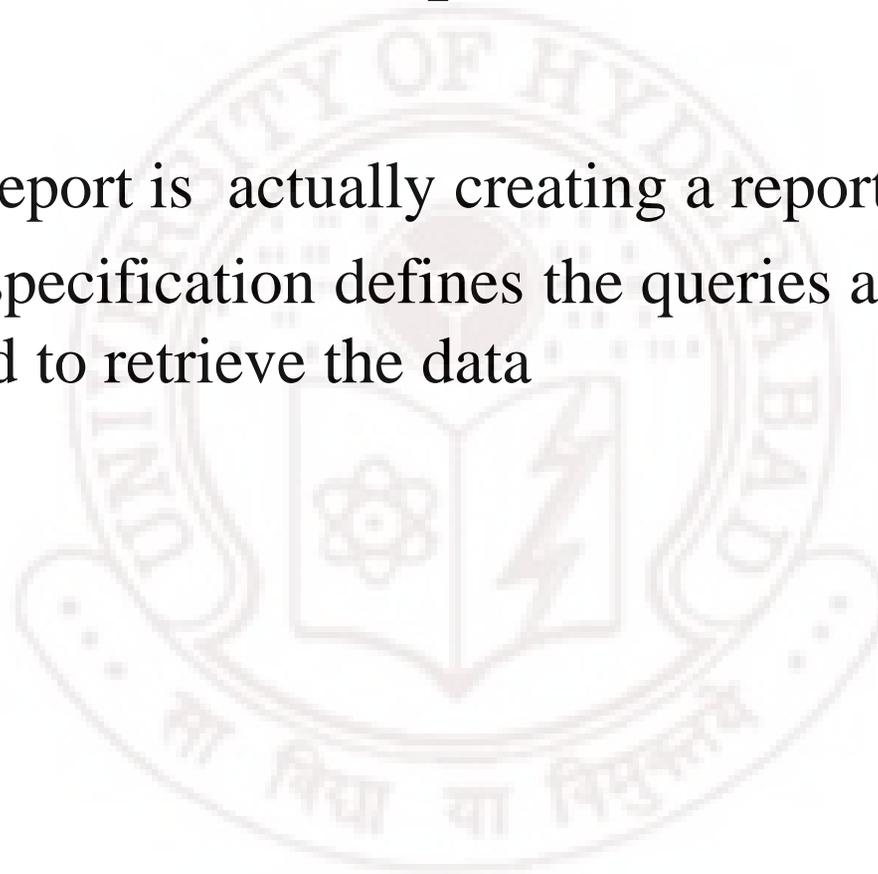
Report studio





Report

- Creating a report is actually creating a report specification
- The report specification defines the queries and prompts that are used to retrieve the data



[Back](#)

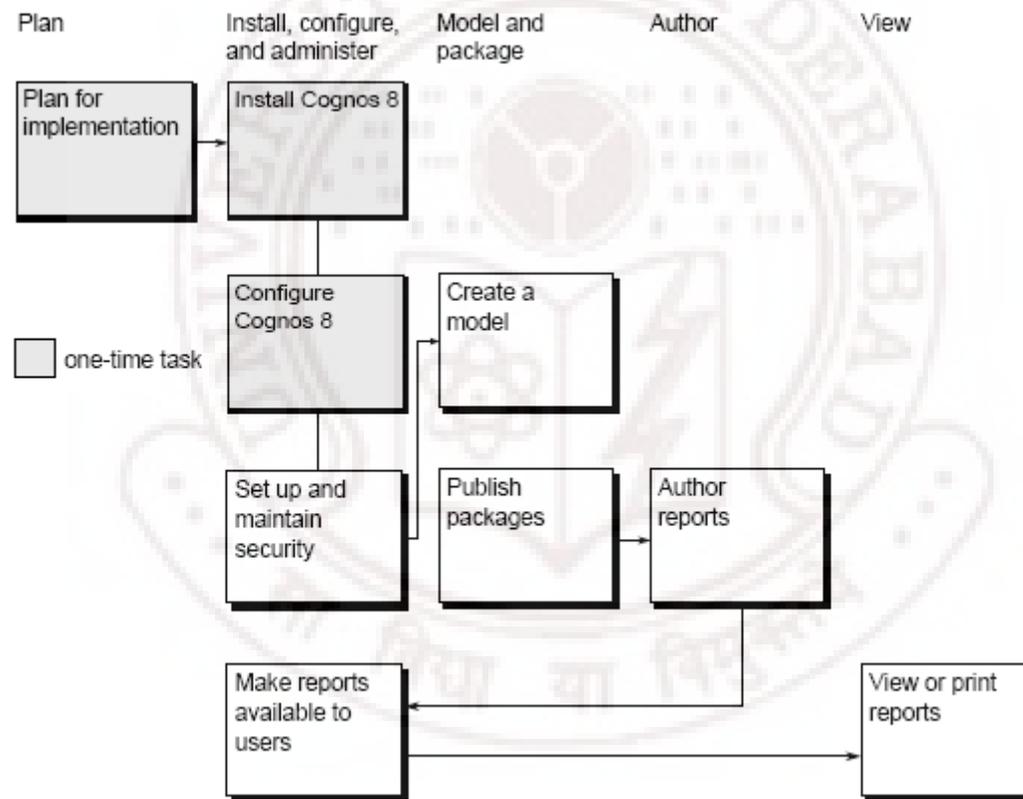


Report Template

- Its a “pattern used to build” reports
- Used when we frequently produce the same type of report
- It may contain HTML items, Hyperlinks, page numbers, images, tables, text items, blocks, layout calculations, date, time
- convert a report to a template or create a new template

[Back](#)

Using Cognos for Reporting



Running a Report

