ACM Architectural Considerations
Agenda

- Simplified Architecture
- Deployment Patterns
- Deployment Considerations
- Third Party Integrations
  - Lotus SameTime
  - IBM Content Analytics
  - Cognos Real Time Monitor (RTM)
  - Cognos Business Intelligence (BI)
  - WebSphere iLog Jrules
- Cross Brand License and Up-sell Considerations
- Performance Characteristics
IBM® Case Manager can be installed on either a single system that FileNet® P8 is also installed on or in a distributed environment where IBM Case Manager is on a separate system than FileNet P8.
Simplified Architecture

IBM Case Manager
High Level Design Architecture

Case Manager WAS Profile

WAS profile configured for Container Managed authentication (LTPA based SSO)

Case Builder Application

CEWS

CMIS
CASE REST
PE REST

Case Manager API

CE API

PE API

P8 Engine

CE WAS Profile

CE

PE

CEWS

WPS

RDBMS

* CE
* PE
* Mashup DB

SCA

JDBC

JDBC

JDBC

JDBC

Lotus Mashup Center

Case Manager Runtime (case client server component)

WorkplaceXT

EJB / CORBA

EJB / CEWS

HTTP

CORBA

IBM Corporation

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Case Manager Components

WebSphere Application Server

IBM Case Manager 5.0 Applications (32 bit JVM)
- Case Builder
- Case Manager Runtime
- Lotus Mashup Center
- Workplace XT
- Integration Tier API's

P8 Content Engine 5.0 (64 bit JVM)

P8 Process Engine 5.0

Optional Components and Cross Brand Integrations

- Content Search Engine
- IBM Content Analyzer
- IBM Case Analyzer (Cognos RTM)
- Rendition Engine
- WebSphere Integration Developer
- WebSphere iLog Rules
- Cognos BI
- WebSphere Process Server
- Lotus Sametime
- P8 eForms

External Infrastructure

- LDAP
- RDBMS
Deployment Patterns

- High Level Deployment Factors*
- Pattern Based Approach*
- Moderate Application Isolation Architecture

*Reference Information OnDemand 2010 session A Pattern-based Methodology for Deploying IBM FileNet P8 ECM Solutions
High Level Deployment Factors

- Departmental vs. Enterprise Focus
- Applications
  - Degree of isolation
  - Degree of information sharing
  - Geographic usage
  - Number
  - Maintenance
  - Service level agreements
- Enterprise Standards
  - Hardware
  - Operating system
  - J2EE application servers
  - RDBMS
  - Storage
  - Number of environments
  - Virtualization
  - High availability
  - Disaster recovery
Pattern Based Approach

- Take into consideration deployment factors
- Select appropriate IBM Case Manager deployment pattern
- Instantiate pattern for each environment
- Deselect capabilities not required for each environment
- Define logical architecture meeting minimal requirements
Template Drawing Legend

- **App 1.1**
  - JVM Instance – multiple instances supported per virtual or physical server
  - Singleton Executable – max. one instance per virtual or physical server

- **PE 1.1**
  - JEE Application Server Cell
    - e.g. WebSphere ND Cell
  - JEE Application Server Cluster

- **NAS FSA 2**
  - Network Attached Storage – File Storage Area

- **NAS CSA**
  - Network Attached Storage – Cache Storage Area

- **OS 1**
  - Two SQL databases in a single RDBMS Server Instance

- **PE 1**
  - OLAP and a SQL database in two SQL Server Instances

- **PA 1 OLAP**
  - Deselected capability

- **PA 1 DM**
  - Standby capability

January 13, 2011
**Template Drawing Legend**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>App</td>
<td>P8 Application Engine</td>
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<tr>
<td>CE</td>
<td>P8 Content Engine</td>
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<tr>
<td>PE</td>
<td>P8 Process Engine</td>
</tr>
<tr>
<td>CM</td>
<td>Case Manager</td>
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<tr>
<td>MC</td>
<td>Lotus Mashup Center</td>
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<td>Comp Mgr</td>
<td>Component Manager</td>
</tr>
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<td>RE</td>
<td>P8 Rendition Engine</td>
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<tr>
<td>PA</td>
<td>P8 Process Analyzer</td>
</tr>
<tr>
<td>CA</td>
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</tr>
<tr>
<td>CN</td>
<td>Cognos Now!</td>
</tr>
<tr>
<td>CRTM</td>
<td>Cognos Real-Time Monitor</td>
</tr>
<tr>
<td>FSM</td>
<td>FileNet System Monitor</td>
</tr>
<tr>
<td>TS</td>
<td>P8 IBM Text Search</td>
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<td>NAS</td>
<td>Network Attached Storage</td>
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<td>CSA</td>
<td>Cache Storage Area</td>
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<td>GCD</td>
<td>Global Configuration Database</td>
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<tr>
<td>OS</td>
<td>Object Store</td>
</tr>
<tr>
<td>DOS</td>
<td>Case Manager Design Object Store</td>
</tr>
<tr>
<td>TOS</td>
<td>Case Manager Target Object Store</td>
</tr>
<tr>
<td>DM</td>
<td>Datamart</td>
</tr>
</tbody>
</table>
Note: Lotus Mashup Center, Case Manager Builder, Case Manager API and Workplace XT all installed in the same WAS JVM instance (profile).

Op challenges re WAS ND deployment!
Optional components installed in separate WAS ND JVMs.

Note: Case Manager 5.0 only supports one target object store in a development environment, but multiple in non-dev envs.

Note: Multiple PE instances running in one server. Need at least one PE instance per Case Manager object store.

Could utilize N+K cluster for CA, e.g. K spare virtual servers instead of N spare virtual servers. Same true for CN.
Deployment Considerations
Single-server Installation

- The IBM Case Manager Platform Installation Tool (CMPIT) installs and configures all of the software required for a functional IBM Case Manager application on a single server. When you ‘stage’ the following product images, the tool installs the following software:
  - FileNet Content Manager 5.0 (CE)
  - FileNet Business Process Manager 5.0 (PE)
  - WebSphere® Application Server 7.0
  - DB2 LUW 9.7
  - Tivoli Directory Server 6.2
  - IBM Mashup Center 3.0
  - IBM Case Manager 5.0 (Case Builder, Case Client, Case APIs, Case Admin Tool, & Object Model)

- The IBM Case Manager Platform Installation tool sets up default users and groups, and automatically configures the application and it’s underlying platform making it ready for use with minimal/no configuration required.

- The single-server installation method is useful for demonstrating and testing the application.

- If you plan to use a single-server installation in a production scenario, you must first reconfigure security for the single-server IBM Case Manager environment.
  - Case Manager Admin Client - Production Tasks

- You can also extend the default configuration with additional optional components. For example:
  - Replace DB2 with Oracle or replace TDS with AD
  - Add eForms, iLog Jrules, IBM Content Analytics, IBM Cognos RTM, Cognos BI, Lotus Sametime, etc.
Distributed Server Installation

• The IBM Case Manager Integrated Installer (CMII) is intended for use in a distributed architecture where IBM Case Manager is installed on a separate system from FileNet P8.

• The IBM Case Manager Integrated Installer (CMII) installs the following
  • Case Manager Builder
  • Case Manager Client
  • Case Manager Administration Client
  • Case Manager API
  • Case Manager Case Object Model.

• High Level Procedure
  • Install IBM Mashup Center first
  • Install Workplace XT into Mashup Center WAS instance
  • Run Case Manager Integrated Installer (CMII) to install the rest of the ICM application.
Hardware/Software Requirements

• When planning your IBM Case Manager installation please consult the P8 hardware/software guide.

• Since IBM Case Manager integrates with many other software applications also consider which the platform requirements of these applications when planning your deployment. Highlights are covered below.

• Required IBM Case Manager per-requisites include:
  • IBM Lotus Mashup Center 3.0
  • P8 Content Engine 5.0
  • P8 Process Engine 5.0
  – WorkplaceXT 1.1.4.x

• The following components are bundled and integrated with IBM Case Manager (along with the P8 BPM Platform, which includes FileNet eForms, among other capabilities)
  • Case Analyzer
  • Cognos Real Time Monitoring
  • Content Analytics
  • WebSphere ILOG jRules
  • Lotus Sametime

While the above components are integrated with Case Manager, they are not required for implementation or use; however, they can add great value to Case Manager solutions.

Note: Cognos Real Time Monitoring, Content Analytics, WebSphere ILOG jRules, and Lotus Sametime are licensed on a limited use basis. While Cognos BI is not included, Case Analytics reports can be loaded and viewed in the Cognos BI report studio. WebSphere Process Server and WebSphere Integration Developer are integrated with Case Manager but are not bundled with the product.

Detailed Hardware/Software requirements are listed at:
## Operating System Support

<table>
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<tr>
<th>Category</th>
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<td>Operating Systems</td>
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<td>Solaris x86-64</td>
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</table>

(1) Not supported by Lotus Mashups 3.0.
(2) Target for post-qualification when supported by IBM. IBM targeting support for this platform in Q1 2011.
(3) 32-bit only

**Legend**
- **New for this release**
- **Unsupported**
- **Future Release**

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Hardware/Software Requirements (continued)

Desktop Operating System Support

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(1) Win7 FDCC support pending Microsoft GA availability

Legend:
- **New for this release**
- **Unsupported**
- **Future Release**
## Database Support

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<td>9/10 g R2</td>
<td>11g</td>
<td>11g R2</td>
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<td>Microsoft SQL</td>
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<td>Application Servers</td>
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**Legend**
- **New for this release**
- **Unsupported**
- **Future Release**
Directory Servers Support

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<td>IBM Tivoli Directory Server</td>
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<td>6.3 Target GA 8/24/2010</td>
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<td>Microsoft Active Directory</td>
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<tr>
<td>Microsoft ADAM</td>
<td>2003</td>
<td>2008</td>
<td>2008 R2</td>
<td>TBA</td>
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<tr>
<td>Sun Java Directory Server</td>
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Legend:
- New for this release
- Unsupported
- Future Release
### Hardware/Software Requirements (continued)

#### Browsers Support

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<tr>
<td>Internet Explorer</td>
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<tr>
<td>FireFox</td>
<td>2.x/3.0</td>
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**Legend**
- **Gray**: New for this release
- **Unsupported**: Unsupported
- **Future Release**: Future Release
## Hardware/Software Requirements (continued)

### Virtualization Platform Support

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<tr>
<td>VMWare ESX Server (Windows, RHEL, SUSE)</td>
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<td>Solaris Zones</td>
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**Legend:**
- New for this release
- Unsupported
- Future Release
## WPS/ICM Integrated Platform Summary

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<th>O/S</th>
<th>App Server</th>
<th>Directory Server</th>
<th>Database</th>
<th>JDK/JRE</th>
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<tr>
<td>IBM Case Manager 5.0</td>
<td>AIX 6.1, Redhat Linux x64 Windows 2008 R2</td>
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<td></td>
<td></td>
<td>any, Determined by app server</td>
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<tr>
<td>P8 5.0</td>
<td>AIX 6.1, Redhat Linux x64 Windows 2008 R2, Min 7.0.0.13</td>
<td>WAS 7.0.0.x TDS 6.2</td>
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<td>WPS 7.0.0.3 Feature Pack 2</td>
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<td>WID 7.0.0.3 Feature Pack 2</td>
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<td></td>
<td></td>
<td></td>
<td>n/a, Determined by WID (JRE 1.6 SR7+ifix)</td>
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</table>
Additional Deployment Considerations

- IBM Lotus Mashup Center installs and configures its own instance of WebSphere Application Server
- IBM Case Manager and WorkplaceXT must be deployed into this WAS instance
- In High Availability configurations, you must install your IBM Mashup Center in a WebSphere® Application Server managed cluster configuration by adding a new node to include the WebSphere Application Server (installed by IBM Mashup Center).
  - Installing into existing WebSphere instance is not permitted
- IBM Case Manager requires a WebSphere Federated repository configuration
  - P8 Content Engine can remain be configured for either stand-alone LDAP or federated repository.
Additional Deployment Considerations

• IBM Case Manager applications provide the ability to incorporate content from a diverse set of sources supported by IBM's Content Federation Services offerings. Whether content has already been federated, or will be after solutions are deployed into a production environment, IBM Case Manager and Content Federation Services features allow customers to include from federated systems in their Case Management solutions.

  • Refer to the following whitepaper for additional details: http://www-01.ibm.com/support/docview.wss?uid=swg27020548

• ICM 5.0 is translated into all Group 1 languages which include: English, Chinese (simplified and traditional), Japanese, Korean, French, German, Italian, Spanish, and Portuguese (Brazil).

• ICM has multicultural support for all languages

  • Multicultural is the ability to support the cultural conventions of multiple languages and geographic regions. Cultural conventions include the use of various writing systems, sort orders, different formats for date, time, numbers, and currency, different keyboard layouts, etc.).
Additional Deployment Considerations

• If you are installing P8 5.0 for the first time with IBM Case Manager, you are strongly encouraged collocate your Process Engine database with the corresponding target object store database.

• If you want to add IBM Case Manager to an existing FileNet P8 environment collocating the CE object store and PE region is an optional but recommended step.

• There is a one to one relationship between Case Management Content Engine object stores and Process Engine regions which is now enforced through an object store attribute in the PE connection point.
Revision: IBM Case Manager Cross Brand Integrations
Case Analyzer

- Evolution of Process Analyzer
  Bundled with BPM
- Case Analyzer provides the ability to generate real time reports and historical data analysis using both Content Engine and Workflow events. It integrates with Cognos Real Time Monitor (RTM) and Cognos Business Integration (BI) products
- Cognos BI - Historical Analytics - Case trends and patterns For example:

  Examples

  - Average time to complete cases or business activities during a time interval
  - Number of cases created, currently active, or completed during a time interval
  - Cognos RTM Active Analytics
    - Thresholds, Alerts, and Monitoring.
    - Examples
      - Average age of current cases
      - Time spent working on cases or waiting on activities
      - Average processing time of currently active cases
IBM Content Analytics (ICA) for unstructured case analytics

- ICA has extended its P8 integration to provide a specific Case Analytics crawler
  - The new crawler is built on top of the existing P8 crawler and is tailored specifically to crawling cases
  - Use ICA to perform content analysis: for example, to look for frequency of occurrences of case-related phrases

- Unstructured analytics based on full text textual pattern discovery “Case crawler”
  - How frequently do textual patterns occur across cases
  - e.g. What is the most common compliant in user comments (CRM Cases)
Case Manager Integration with iLOG jRules

- Provides sophisticated rules management
- Leverage existing P8 BPM iLog rules integration for dynamic process and integrated case flow

```java
if the manager name of the account of 'the payment plan' is "John"
and
    the number of payments of 'the payment plan' is 1
then
    set the discount of 'the payment plan' to 60;
```
Case Runtime Integration with P8 eForms

- A form is presented in a widget
  - Values from the form go back into the case, and the form is filed as a document in the case folder

- Forms can be:
  - Added as attachments to cases
  - Used to capture information and persist as case properties (Step Processors)
Case Runtime Integration with Lotus Sametime

- Case worker can become aware of another's status in Sametime
- Case workers can chat with others on case related artifacts using web based chat
  - User's information (Full Name, Phone Number, Status) shown in chat window
  - User's do not have to install Sametime Connect (thick client) on their desktop
- Case worker can receive a chat message from another worker within Widgets
- Seemless connectivity with the rest of ACM components via WAS SSO
- Facilitated via Lotus LiveNames API integration
- Sametime Proxy server provides option to support additional IM clients in the future
- Online meeting support built in, but requires license upsell
WebSphere Process Server Integration

- Associate Case Manager Tasks to WPS components
- Support for web services based authoring (WID) integration to WPS components
- Content Adapter for general WPS content integration based on CMIS
Case Manager WPS Integration Architecture
Performance Characteristics

- **Capacity to scale both horizontally and vertically**
  - High levels
  - Good performance characteristics

- **Near linear scalability**
  - Horizontally
  - Vertically
  - Good
    - Throughput
    - Response times
Horizontal Scalability
Vertical Scalability
Performance Guidance

- Performance studies forthcoming
- Do not set JVM heap size min/max to the same
- Do not set JVM heap max too high
  - Start at 256M
  - Watch garbage collection and adjust if needed
  - If free space is 85% or more lower max setting
- System paging should be close to 0
  - Very little I/O
- HTTP tunneling increases
  - CPU usage
  - Response times
Performance Guidance

- **Lotus Mashup Center 32-bit limitation**
  - Limits max JVM heap size
  - Too high can cause “out of native memory”

- **ORB defaults good for moderate loads**
  - Heavier loads consider increasing from 1 to 5 – 10

- **Heavy loads monitor web container threadpool**
  - Increase pool size accordingly

- Consider increasing the TCP/IP buffer size from default

- **Using HTTP server as load balancer**
  - Increase threads (or processes) for high concurrency workload
QUESTIONS?