
Rational Software

Payroll System Describe Distribution Solution

Version 2003

Mastering OOAD with UML	Issue: v2003
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Revision History

Date	Issue	Description	Author
09/01/2000	V2000	Generated for beta	Shawn Siemers
10/02/2000	V2000	Final release	Shawn Siemers
01/14/2003	V2003	Final Release	Alex Kutsick

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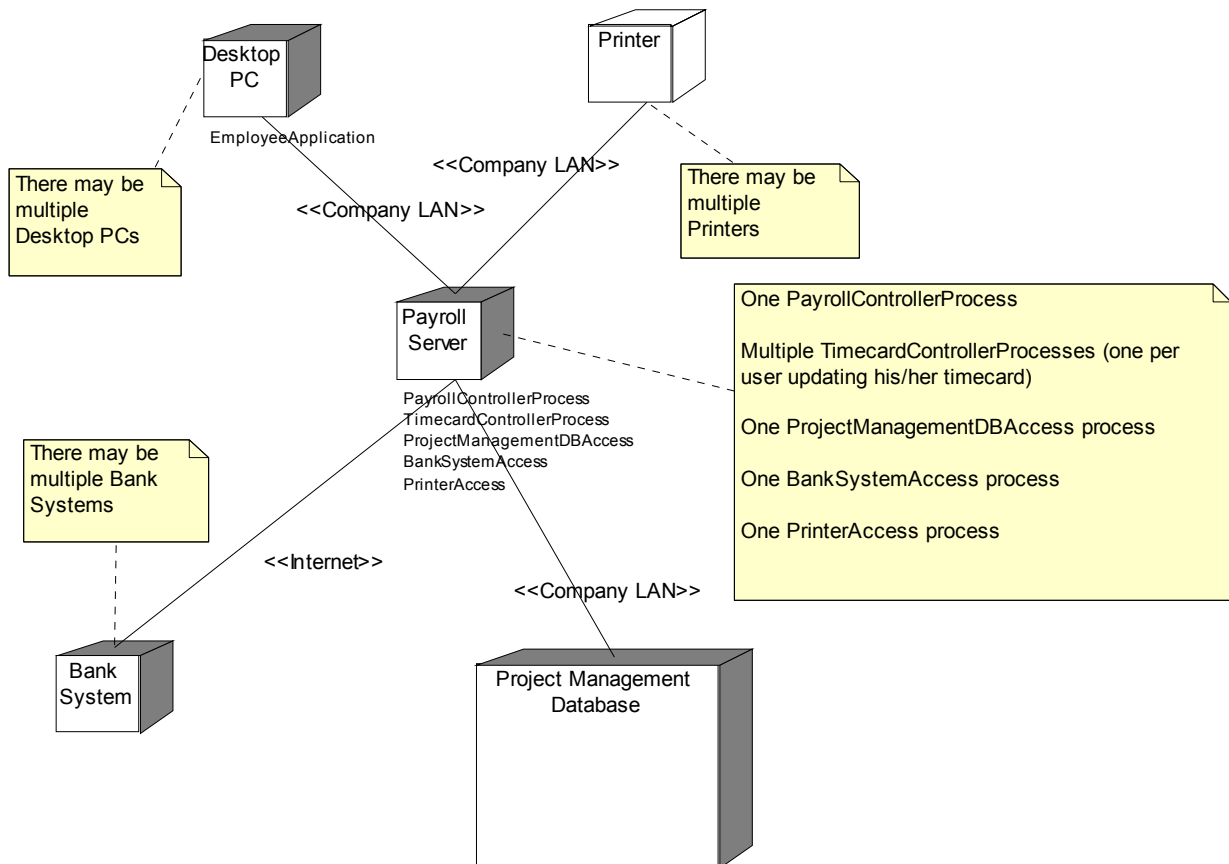
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1. Exercise: Describe Distribution

1.1 Deployment Model



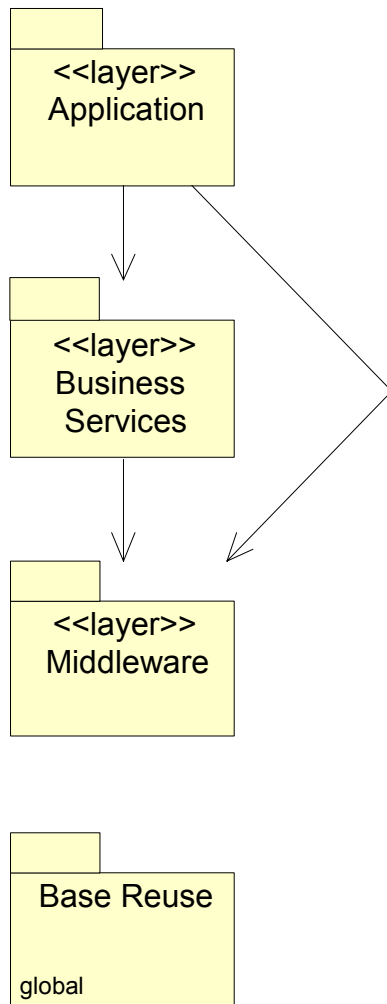
1.2 Applying the Distribution Mechanism (RMI)

This section describes the architectural changes that were needed to support the distribution mechanism (RMI). This is an example of how the architecture may need to be adjusted as design details are added. Such changes are architectural changes and MUST be made/approved by the Architect.

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1.2.1 Architectural Layers and Their Dependencies

Main Diagram



1.2.1.1 Layer Descriptions

Application Layer: The Application layer contains application-specific design elements.

Business Services Layer: The Business Services layer contains business-specific elements that are used in several applications.

Base Reuse : Basic reusable design elements.

Middleware Layer: Provides utilities and platform-independent services.

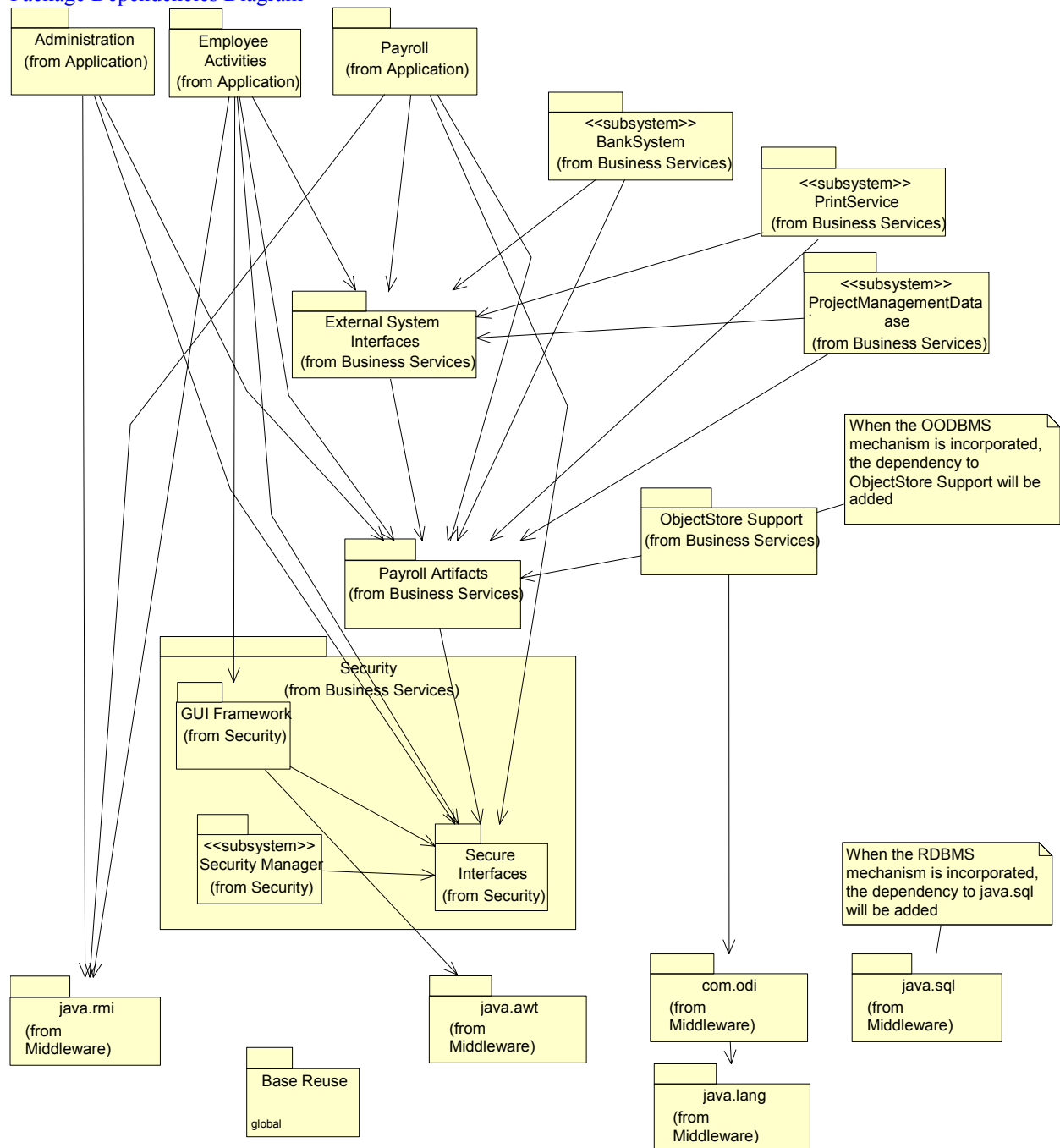
As modeled in the above diagram, the following layer dependency was added to support distribution:

- Dependency from Application layer to Middleware layer to support new dependencies from the Application packages to the java.rmi package (see next section).

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1.2.2 Packages and Their Dependencies

Package Dependencies Diagram



1.2.2.1 Package Descriptions

Administration : Contains the design elements that support the Payroll Administrator's applications.

BankSystem Subsystem: Encapsulates communication with all external bank systems.

Base Reuse : Basic reusable design elements.

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com.odi : The com.odi package contains the design elements that support the OODBMS persistency mechanism. The name of the package in the model reflects the naming convention for 3rd party Java software. The convention is to use the reverse of the domain name, so if Rational had a Java package called "util" they'd call it "com.rational.util". This com.odi has nothing to do with Microsoft COM/DCOM; they are totally separate. There is nothing COM/DCOM related when using CORBA, RMI, or ObjectStore.

Employee Activities : Contains the design elements that support the Employee's applications.

External System Interfaces : Contains the interfaces that support access to external systems. This is so that the external system interface classes can be version controlled independently from the subsystems that realize them.

GUI Framework : This package comprises a whole framework for user interface management.

It has a ViewHandler that manages the opening and closing of windows, plus window-to-window communication so that windows do not need to depend directly upon each other.

This framework is security-aware, it has a login window that will create a server-resident user context object. The ViewHandler class manages a handle to the user context object.

The ViewHandler also starts up the controller classes for each use case manager.

java.awt : The java.awt package contains the basic GUI design elements for java.

java.lang : The package contains some basic java design elements.

java.rmi : The java.rmi package contains the classes that implement the RMI distribution mechanism. This package is commercially available with most standard JAVA IDEs.

java.sql : The package that contains the design elements that support RDBMS persistency.

ObjectStore Support : Contains the business-specific design elements that support the OODBMS persistency mechanism. This includes the DBManager. The DBManager class must contain operations for every OODBMS persistent class.

Payroll : Contains the design elements that support the execution of the payroll processing.

Payroll Artifacts : Contains the core payroll abstractions.

PrintService Subsystem: Provides utilities to produce hard-copy.

ProjectManagementDatabase Subsystem: Encapsulates the interface to the legacy database containing information regarding projects and charge numbers.

Secure Interfaces : Contains the interfaces that provide clients access to security services.

Security : Contains design elements that implement the security mechanism.

Security Manager Subsystem: Provides the implementation for the core security services.

As modeled in the above diagram, the following package dependencies were added to support distribution:

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- The java.rmi package contains the classes that implement the RMI distribution mechanism. This package is commercially available with most standard JAVA IDEs.
- Dependency from the Application packages to java.rmi to provide access to the Remote interface for distributed controller interfaces, and to the Naming service for the distributed controller clients (forms).
- Dependency from the Application packages to the Java Server package to provide access to the UnicastRemoteObject class for distributed controllers.
- Dependency from University Artifacts to java.rmi to provide access to the Serializable interface for classes whose instances must be passed for distributed objects.

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