HP OpenView Using Radia

for the IBM-AIX, HP-UX, Linux, Solaris, Macintosh, MVS, and Windows operating systems

Release Version: 4.1

Essentials Guide

Document Release Date: December 2005

Legal Notices

Warranty

Hewlett-Packard makes no warranty of any kind with regard to this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be held liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

A copy of the specific warranty terms applicable to your Hewlett-Packard product can be obtained from your local Sales and Service Office.

Restricted Rights Legend

Use, duplication, or disclosure by the U.S. Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause in DFARS 252.227-7013.

Hewlett-Packard Company
United States of America

Rights for non-DOD U.S. Government Departments and Agencies are as set forth in FAR 52.227-19(c)(1,2).

Copyright Notices

Trademark Notices

Linux is a registered trademark of Linus Torvalds.

Microsoft®, Windows®, and Windows® XP are U.S. registered trademarks of Microsoft Corporation.

OpenLDAP is a registered trademark of the OpenLDAP Foundation.

Acknowledgements

PREBOOT EXECUTION ENVIRONMENT (PXE) SERVER
Copyright © 1996-1999 Intel Corporation.

Support

You can visit the HP OpenView support web site at:

http://www.hp.com/managementsoftware/support

This web site provides contact information and details about the products, services, and support that HP OpenView offers.

HP OpenView online software support provides customer self-solve capabilities. It provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valuable support customer, you can benefit by using the support site to:

- Search for knowledge documents of interest
- Submit enhancement requests online
- Download software patches
- Submit and track progress on support cases
- Manage a support contract
- Look up HP support contacts
- Review information about available services
- Enter discussions with other software customers
- Research and register for software training

Most of the support areas require that you register as an HP Passport user and log in. Many also require a support contract.

To find more information about access levels, go to:

http://www.hp.com/managementsoftware/access_level

To register for an HP Passport ID, go to:

http://www.managementsoftware.hp.com/passport-registration.html

Documentation Updates

This manual's title page contains the following identifying information:

- Version number, which indicates the software version
- Document release date, which changes each time the document is updated
- Software release date, which indicates the release date of this version of the software

To check for recent updates or to verify that you are using the most recent edition, visit the following URL:

http://ovweb.external.hp.com/lpe/doc_serv/

You will also receive updated or new editions if you subscribe to the appropriate product support service. Contact your HP sales representative for details.

Table 1 indicates changes made to this document since the last released edition.

Table 1   Document Changes

Chapter	Version	Changes
Chapter 2	4.1	Page 21, The Radia Server Management Application has been added to Figure 2.
Chapter 2	4.1	Page 22, The Radia Server Management Application is a significant addition to this release. Be sure to have the appropriate Server License to Use (LTU).
Chapter 2	4.1	Page 23, Application Management Profiles is a component of the Server Management client. Use this to control deployment of server applications.
Chapter 2	4.1	Page 23, Server Management includes support for Windows Terminal Server and Citrix servers.
Chapter 2	4.1	Page 24, The Configuration Baseline Auditor collects configuration information and reports configuration changes.
Chapter 2	4.1	Page 25, Configuration File Management provides a simple solution for administrators to manage changes to configuration files and implement these changes automatically.
Chapter 2	4.1	Page 57, Table 1 has been updated to include Radia Server Management.

Chapter	Version	Changes
Chapter 3	4.1	Page 98, The Configuration Baseline Auditor Process section describes how this new component works.
Appendix A	4.1	Page 101, The HP OpenView Using Radia Products and Publications table has been updated to include the new guides associated with the Server Management components.

Contents

1 Introduction

- Know the scope and content of this book.

- Be familiar with terminology associated with Radia.

About Radia Technology

Enterprises have tried various software distribution methods to solve the challenge of distributing digital assets. These methods include:

- **Electronic CDs**
  Individual users can personalize their own software, but this method lacks the ability to standardize software, and does not allow for synchronized installation.

- **Electronic Software Distribution (ESD) tools**
  This method ensures synchronized delivery, but at the price of excessive standardization. Everyone in the organization is forced to get a one-size-fits-all copy of the software, even though each department in an organization may have different software needs.

- **Push Products**
  Some companies are attempting to deal with the software management challenge with Internet-based push technology. This method, similar to ESD, ensures synchronized delivery, but does not allow for customization.

Radia technology provides high levels of adaptability, flexibility, and automation. Adaptability comes from the embedded intelligence of platform-independent object-oriented technology. Flexibility is provided by the media-independence of Radia technology that enables content to be easily revised and customized. And Radia solutions automate digital asset management across virtually any kind of network. The following bullets describe each of these distinctive capabilities that are essential to Radia technology:

- **The Embedded Intelligence of Object-Oriented Technology**
  Object-oriented technology transforms software and content from file-based media into self-aware, platform-independent, intelligent objects that automatically assess the environment into which they are deployed,

and personalize, install, update, and repair themselves accordingly. In other words, as intelligent objects, they know what they need for a particular device or user, where to get it, when they need to change, how to change themselves, and how to repair themselves.

- **Revisable Packaging for Revisable Content**
Radia technology enables revision and customization of software and content at any midstream point in the publisher-to-subscriber deployment process. Because Radia technology transforms software and content into objects, these objects can be easily modified midstream – subtracted from, added to, or reconfigured – simply by packaging them with other objects or new configuration information. With revisable packaging, value-added service providers and IT administrators may customize standard published software offerings for the needs of their particular users without having to unpack and repackage everything.

- **Self-Managing Infrastructure**
The object-oriented intelligence of Radia technology incorporates a self-managing infrastructure. This capability begins with network-independence. Radia technology supports any deployment environment, whether client/server, local, wide or virtual area network, intranet, extranet, or the Internet. Furthermore, Radia supports whatever distribution media make sense for the target audience and the provider (which might be a software publisher, application service provider (ASP), Internet service provider (ISP), provider of enterprise application integration (EAI) services, e-business integrator, e-commerce component provider, or in-house IT administrator).

In the Internet age in which software is fundamental to the ability of businesses to compete, change is a constant state, and audience diversity has grown beyond the capacity of older technologies to manage. Radia technology provides the necessary automation, adaptability, and flexibility to solve the software management challenge.

Why use Radia?

Radia manages the distribution of digital assets based on your **distribution model** or **desired state**. A distribution model records the identities and intended configurations of the desktop computers or devices whose configurations are managed by Radia. The distribution model can be simple or complex.

At a minimum, a Radia distribution model includes the following five elements:

- **Users**
  The identity of the devices or subscribers being managed.

- **Applications**
  The software that is being managed.

- **Application Files**
  The components that make up the applications.

- **Deployment Source**
  The location where the application components are stored, such as on a Radia Proxy Server, Radia Staging Server, or Radia Configuration Server.

- **Deployment Destinations**
  The locations to which the application and its files will be distributed such as desktop computers, PDAs, and laptops.

Figure 1   Elements in a distribution model
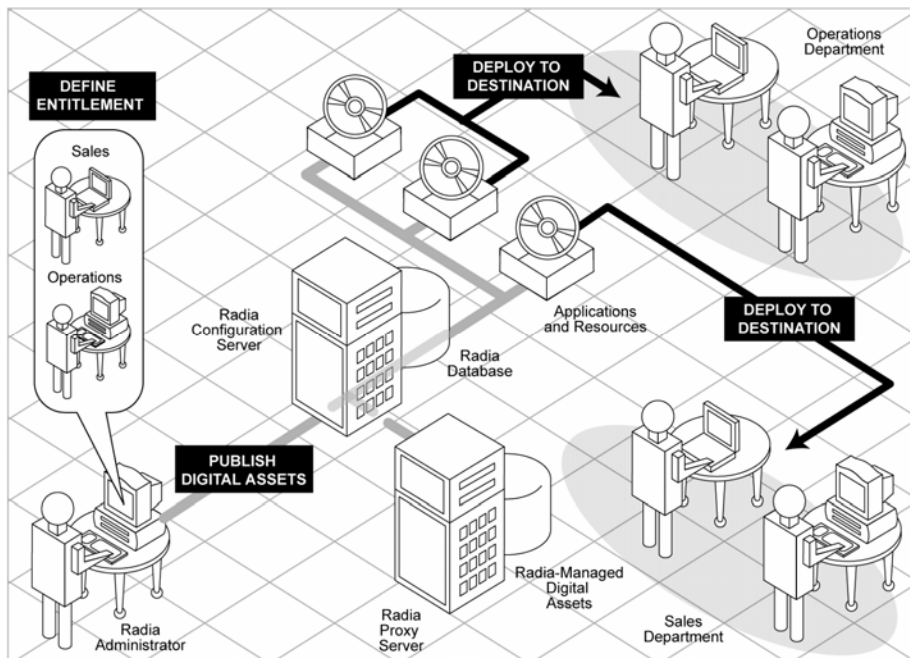
Use Radia to manage all of these components. You will publish **packages** of digital assets, determine entitlement policy, and define how the packages will be deployed.

▶ A package is a unit of distributable software or data.

Scope

The purpose of this guide is to describe essential Radia concepts and the benefits of the Radia components. For information regarding the installation and configuration of Radia products, consult the HP OpenView support web site or the appropriate Radia publication.

Terminology

The following terms are often used throughout this publication, and it may be helpful to become familiar with them before using this guide.

administrator

The person who uses the Radia Administrator Workstation tools to configure and maintain the Radia environment.

client

The Radia Client software (Radia Software Manager, Radia Application Manager, Radia Inventory Manager, Radia Patch Manager, Radia OS Manager, Radia Server Management) that runs on the client computer or device. It communicates with the Radia Configuration Server to receive information about the desired state of the client computer, and compares that information with the current state of the client computer. Then, the Radia Client makes any adjustments necessary to make the current state match the desired state.

client computer

A client computer is a computer (workstation or server) that has the Radia Client software installed. It may also be referred to as a device.

desired state

The desired state embodies the content that Radia manages for a specific client computer. The Radia Configuration Server, using the resolution process, dynamically creates the desired state. The desired state is also known as the distribution model.

device

A device is a computer, ATM, or other piece of hardware that can be managed by Radia.

distribution model

See desired state.

package

A package is data that is published as an individual unit.

policy

A policy defines what services a subscriber, a client computer, or a managed device is entitled to.

Radia Administrator Workstation

The Radia Administrator Workstation includes tools used to configure and maintain the Radia environment. The tools are Radia Client Explorer, Radia Packager, Radia Publisher, Radia System Explorer, and Radia Screen Painter.

Radia Configuration Server

The Radia Configuration Server dynamically calculates the desired state. It can also distribute applications to client computers. It maintains the Radia Database, which stores information that the Radia Configuration Server needs to manage digital assets for distribution to client computers.

Radia Database

The Radia Database stores all of the information necessary to manage digital assets on a client computer, including:

— The software and/or data that Radia distributes.

— The policies determining which subscribers or users can subscribe to which packages.

— Security and access rules for Radia administrators.

service

A service organizes a group of related packages (applications), methods, or behaviors into manageable units.

subscriber or user

A subscriber is the person who uses Radia-managed applications on a client computer.

About this Guide

Radia Server Management is a significant addition to the Radia Infrastructure. See HP OpenView Server Management Using Radia on page 22 for more information.

The remaining chapters of this book cover the following topics:

- **Chapter 2: Radia Products and Benefits**
  This chapter discusses Radia products, their benefits, and their place in relation to other Radia components. Radia Server Management has been added to the group of Management Applications

- **Chapter 3: Essential Processes**
  This chapter describes some of the essential Radia processes. It will help you gain an understanding of how Radia works.

HP OpenView Using Radia Publications

While this book provides an overview of Radia products and processes, it is merely a starting point. You can find more information on all of the Radia products from either the HP OpenView web site or from the Radia publications library. The publications cover a breadth of products on multiple platforms. These publications will guide you through the software management cycle to prepare your digital assets for management on your enterprise's computers. See HP OpenView Using Radia Publications on page 101.

> Be sure to check the HP OpenView Web site periodically for new and updated publications.

Summary

- This book introduces you to the various Radia products and how they fit into the Radia infrastructure.

- After reading this guide, you may want to examine other Radia publications that show you how to use the different Radia components.

2 Products and Benefits

At the end of this chapter, you will:

- Know the Radia family of products.
- Understand the benefits of each product.

Radia Infrastructure

Use Radia Infrastructure components to take full advantage of the ability of Radia to manage your enterprise's computing environment. Depending on your enterprise's configuration, your infrastructure may be enhanced by any combination of these components. The Radia components can be divided into four categories.

- Radia Management Applications

- Radia Management Infrastructure

- Radia Extended Infrastructure

- Radia Management Extensions

Radia Server Management is a significant addition to the Radia Infrastructure. See HP OpenView Server Management Using Radia on page 22 for more information.

Figure 2   Radia Infrastructure overview

Radia Management Applications
Automate deployment, updates, repairs, deletions, inventory for servers and desktops.

Radia Server Managment
Radia Application Manager
Radia Patch Manager
Radia Software Manager
Radia OS Manager
Radia Inventory Manager

Radia Management Infrastructure
Maintain configuration information, store software and content packages, automate software management activities, and administer Radia environment.

Radia System Explorer
Radia Packager
Radia Publisher
Radia Client Explorer
Radia Screen Painter

Radia Configuration Server
Radia Administrator Workstation

Radia Extended Infrastructure
Scale software management services across the extended enterprise.

Radia OS Manager
Radia Patch Manager

Radia Multicast Server
Radia Inventory Manager
Radia Management Portal
Radia Distributed Configuration Server
Radia Proxy Server
Radia Usage Manager
Radia Staging Server

Radia Management Extensions
Provide integration and extended enterprise functionality, allowing Radia to interface with other technologies.

Radia Policy Server
Radia Adapter for SSL
Radia Systems Management Adapters
Radia Publishing Adapter
Radia Extensions for Windows Installer

Note: Multiple products may be installed on multiple workstations or devices.
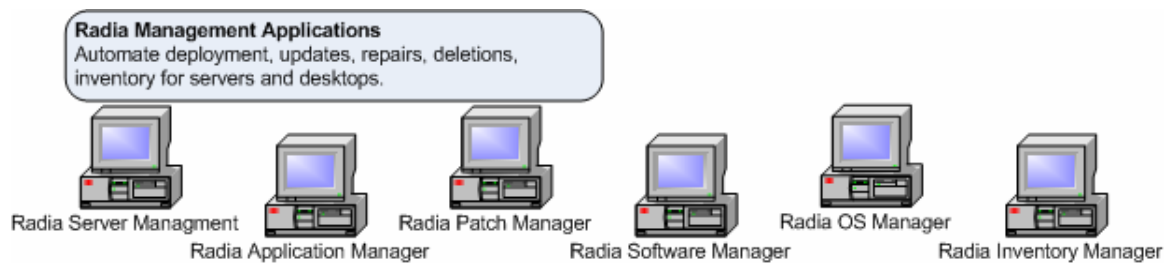
Radia Management Applications

Radia Management Applications allow you to automate deployment, updates, repairs, and deletion activities, and inspect hardware and software. The Radia Management Applications are installed on the client computer or device. Radia Management Applications can run across a wide variety of operating systems and architectures. There are six types of Radia Management Applications (clients) available for communicating with the Radia Configuration Server: the Radia Application Manager, the Radia Software Manager, the Radia Inventory Manager, the Radia OS Manager, the Radia Patch Manager, and Radia Server Management. You can install more than one management application to combine their features. Not all management applications are available for all operating systems and architectures. Consult the HP OpenView web site or your HP representative for the most current information on platform availability.

Figure 3   Radia Management Applications

HP OpenView Server Management Using Radia

Radia Server Management is comprised of a number of components. These components allow you to control deployment of server applications, control configuration files, create baselines, and manage terminal server applications. The components are described in the sections below.

> To use any of the Server Management components, you must have the appropriate Server License to Use (LTU). Consult the appropriate guide for each component.

Application Management Profiles

Application Management Profiles includes a set of tools built on top of Radia Application Manager to enable the deployment and management of complex software products that are typically required to be present on servers in a datacenter environment such as Microsoft SQL Server, Oracle, Apache, and Internet Information Server among others. These products often employ their own instrumentation or repositories for deployment and management of their implementation.

Application Management Profiles provides tools to:

- Analyze and parameterize configuration control data for targeted products

- Specify values in the form of a model to be used at deployment time

- Articulate in the model pre-requisites and constraints that qualify the ability to deploy the products

- Publish the control information and required ancillary tools such as utility programs to the HP OpenView Using Radia infrastructure for deployment

- Deploy and configure the software to targeted devices

- Interact with the target environment before and after installation to enhance management of the deployment

- Report on the success of the deployment

- Allows for load balancing for Apache Servers.

See the *Application Management Profiles Guide of HP OpenView Server Management Using Radia*.

Terminal Server Support

Windows Terminal Services is a thin-client server available on Windows 2003 Server, Windows 2000 Server, and Windows NT 4.0 Terminal Server Edition. With Terminal Services, the processing of one or more applications is moved completely off of a user's desktop and onto a centralized server. Only screen, mouse, and keyboard information is passed between the client and the server.

Terminal Server Support provides the ability to install and manage applications in a Windows Terminal Server environment for applications to be run by Windows Terminal Server clients, and for applications to be run locally on the Windows Terminal server.

As part of the application deployment process, the Terminal Server Client Agent automatically manages the Install and Execute modes in which a Windows Terminal Server can install and maintain applications. Before installing or updating an application, the Terminal Server Client Agent will query the Windows Terminal Server for active sessions, prompt users to logoff, and, if needed, disconnect user sessions. Upon completion of the installation, the Windows Terminal Server is brought back online to accept incoming user sessions.

See the *Windows Terminal Server and Citrix Support Guide for HP OpenView Server Management Using Radia*.

Configuration Baseline Auditor

The Configuration Baseline Auditor (CBA) is a component that collects configuration information and reports configuration changes. A *baseline* is a state that you select as the standard against which you want to compare other states for the subsystem. Typical uses of the CBA are to review changes to a device over time, to review differences between devices that should be configured identically, or to review differences between a device and a well-defined baseline configuration.

Configuration Baseline Auditor data is stored in subsystems. A subsystem can be as simple as a single file, as complete as all files and configuration settings on a device, or as well-defined as all of the resources required by specific applications such as SQL Server. When defining a subsystem, you will define collection options and filters used to scan the resources on the device. As you collect information about configuration changes on your device, a state is created within the subsystem. Then, you will use the Configuration Baseline Auditor interface to compare different states within a subsystem.

The Configuration Baseline Auditor:

- Collects detailed file and registry value information.

- Collects the subsystem state at regular intervals, such as daily or weekly.

- Transfers information about configuration changes only, which reduces data transfer and database import overhead.

- Allows easy definition of the resources that belong to specific subsystems.

See the *Configuration Baseline Auditor Guide for HP OpenView Server Management Using Radia.*

Configuration File Management

The Configuration File Management (CFM) component of HP OpenView Server Management Using Radia provides a simple solution for administrators to manage changes to configuration files and implement these changes automatically.

Configuration files managed by CFM are text files that can be categorized as follows:

- Hierarchical files, such as INI files, which are divided into sections containing keys and values.

- Files that have a flat well-defined structure, such as hosts files, which contain records and fields.

To use CFM effectively, you will want to:

- Determine the desired change in behavior that affects the configuration file.

- Understand the current state of the configuration file, if one already exists.

- Decide what changes must be made or what file and entries must be created.

See the *Configuration File Management Guide for HP OpenView Server Management Using Radia*.

HP OpenView Application Manager Using Radia

The **administrator** controls the distribution of mandatory applications throughout the enterprise. The administrator is the person who uses the Radia Administrator Workstation tools to configure and maintain the Radia environment.

With the Radia Application Manager installed on the client device, the administrator can:

- Deploy mandatory (required) digital content to subscribers (employees, devices, affiliates, partners, and customers) over intranets, extranets, and the Internet to unattended devices.

- Select, install/uninstall, and update subscribers' software and content automatically on a scheduled or just-in-time basis transparently to subscribers.

- Restore broken applications on unattended devices automatically to a desired state.

- Control application versions.

For more information, see the *Radia Application Manager Guide*.

HP OpenView Inventory Manager Using Radia

This management application, in conjunction with the Radia Inventory Manager Server discussed on page 40, allows you to collect hardware and software information for reporting. You must use both the server and client component.

The Radia Inventory Manager:

- Gathers information about software and hardware configurations automatically, and consolidates the results into Web-based reports.

- Increases manageability of enterprise digital assets by maintaining current inventory information collected across LAN, Internet, and dial-up links, and across a wide array of heterogeneous devices and operating systems.

See the *Radia Inventory Manager Guide* for details.

If you install both the Radia Software Manager and Radia Application Manager feature sets, you decide if an application is mandatory or optional, and specify who controls the installation of the application. By adding the Radia Inventory Manager, you can also find out the hardware and software configurations of the client computer.

HP OpenView Software Manager Using Radia

The **subscribers** install, remove, or update optional applications that the administrator makes available to them. A subscriber is the person who uses Radia-managed applications on a client computer.

The Radia Software Manager:

- Enables self-service software and content management for subscribers within the extended enterprise.

- Provides a user interface that the subscribers use to install, remove, verify, and update their *own* elective software and content. The administrator still decides which software and content the subscriber is entitled to.

For more information, see the *Radia Software Manager Guide.*

HP OpenView Patch Manager Using Radia

This management application is used with the Radia Patch Manager Server as described on page45. It allows you to analyze, deploy and manage security patches on a client device.

The Radia Patch Manager agent:

- Gathers information about security patches installed on the client device.

- Manages the deployment of patches.

- Monitors vulnerabilities.

See the *Radia Patch Manager Guide* for details.

HP OpenView OS Manager Using Radia

The Radia OS Manager is comprised of both a client and a server. The Radia OS Manager Server is described on page 45. These two pieces allow you to provision operating systems on client devices.

The Radia OS Manager:

- Deploys operating systems based on policy assignments.

- Can prompt the user to choose an operating system based on a set of criteria.

See the *Radia OS Manager Guide* for details.

If you install both the Radia Software Manager and Radia Application Manager feature sets, you decide if an application is mandatory or optional, and specify who controls the installation of the application. By adding the Radia Inventory Manager, you can also find out the hardware and software configurations of the client computer. Radia Patch Manager will allow you to manage security patches for the operating system deployed through Radia OS Manager. Use Radia Server Management to control server applications.

Radia Management Infrastructure

The Radia Management Infrastructure is the nerve center for all Radia activities. Use the Radia Management Infrastructure to maintain desired state information, store software and content packages, automate software management activities, and administer your Radia environment. The Radia Configuration Server and the Radia Administrator Workstation tools are the management core of your Radia infrastructure. Consult the HP OpenView web site or your HP representative for the most current information on platform availability.

Figure 4   Radia Management Infrastructure
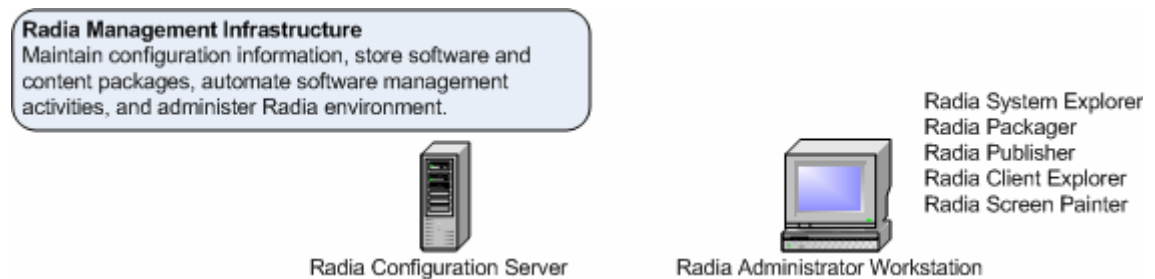
HP OpenView Configuration Server Using Radia

The Radia Configuration Server resides on a single server or multiple servers. Applications and information about the subscribers and client computers are stored in the Radia Database on the Radia Configuration Server. The Radia Configuration Server distributes application packages based on policies established by the Radia administrator. See the *Radia Configuration Server Guide* for details.

The Radia Configuration Server:

- Dynamically generates the desired-states based on situation-specific data creating a software environment that automatically adapts to changes in a user or machine environment.

- Synchronizes distributed objects, such as application components, packages, computer configurations and policy relationships across the network automatically managing the transfer of objects to and from other Radia components.

- Maintains enterprise policies in the Radia Database. When a device under Radia management connects to the Radia Configuration Server, current policy is automatically transmitted to and updated on the managed device.

- Contacts devices to have them initiate requests to the Radia Configuration Server according to a schedule, upon notification from a Radia administrator, and/or when invoked by the subscriber. Radia-managed devices do not poll over the network, conserving network bandwidth.

If you want to synchronize multiple Radia Configuration Servers, use the Radia Distributed Configuration Server. See HP OpenView Distributed Configuration Server on page 39 and the *Radia Distributed Configuration Server Guide* for more information.

Radia Database

Radia administrators maintain the enterprise's policies in the Radia Configuration Server Database. A policy defines which services subscribers, client computers, or managed devices are entitled to. Use the Radia System Explorer, one of the Radia Administrator Workstation tools, to administer the Radia Database. The Radia Database is stored on the Radia Configuration Server.

It includes the following information:

- The digital assets that Radia distributes.

- The policies showing which managed devices and subscribers are assigned to which packages.

- Security and access rules for Radia administrators.

For more information on the structure of the Radia Database, see The Radia Database on page 66.

Figure 5   Radia Configuration Server

Radia Configuration Server
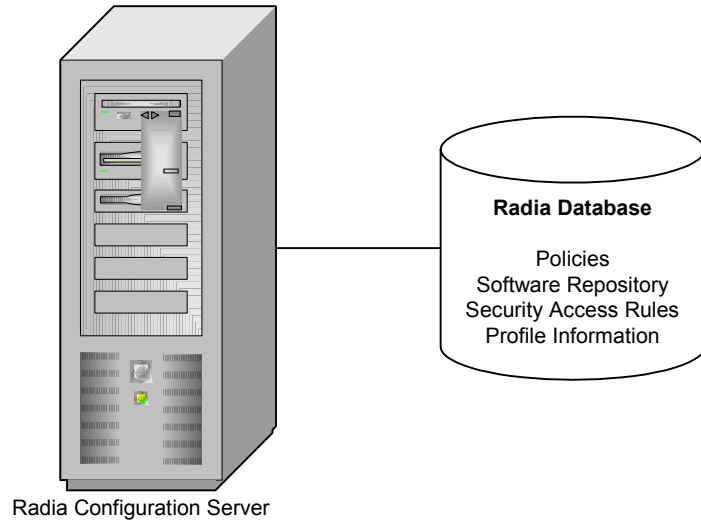
HP OpenView Administrator Workstation Using Radia

The Radia Administrator Workstation tools provide centralized control of Radia objects and entitlements. It provides a set of tools to carry out basic Radia functions. The administrator uses these tools to manage the Radia Database, prepare applications for management, view Radia Client objects, and customize your Radia environment. The Radia Administrator Workstation includes the following tools and capabilities:

Radia Packager

The Radia Packager provides a graphical interface for packaging all software components for distribution. The packages are promoted to the Radia Database. See Publishing and Packaging Process with Radia Packager on page 72 for information on the publishing process.

> The Radia Publisher for Radia Version 3.x has been renamed the Radia Packager for Radia Version 4.x. The Radia Packager is similar to the Radia 3.x Publisher except that it only packages in component selection mode and installation monitor mode. Packaging for applications installed or maintained using Windows Installer is now handled by the Radia Publisher.

There are two publishing modes, Component Selection Mode and Installation Monitor Mode. Availability of the modes depends on your operating system and architecture. Consult the HP OpenView web site or your HP representative for the most current information on platform availability.

- **Installation Monitor Mode**
  In Installation Monitor Mode, the Radia Packager determines what to package by scanning the computer before and after installing the software. It *differences* the before and after scans to determine what changes were made to the computer. These differences make up the package that you promote to the Database.

- **Component Selection Mode**
  In Component Selection Mode, you select the individual components that make up the package, such as files, directories, registry entries, and links.

See the *Radia Application Manager Guide* or the *Radia Software Manager Guide* for more information.

Radia Publisher

The Radia Publisher is an administrative tool that facilitates publishing Windows Installer applications and operating system images to your Radia Database. In only four steps, you can have your files ready for deployment to your environment. Additionally, the Radia Publisher allows for the publication of files in batch mode. Install the Radia Publisher to the computer where your administrator will have access to the necessary files for publishing. See the *Radia Publisher Guide* for more information.

Figure 6   **Radia Publisher publishing to the Radia Database**
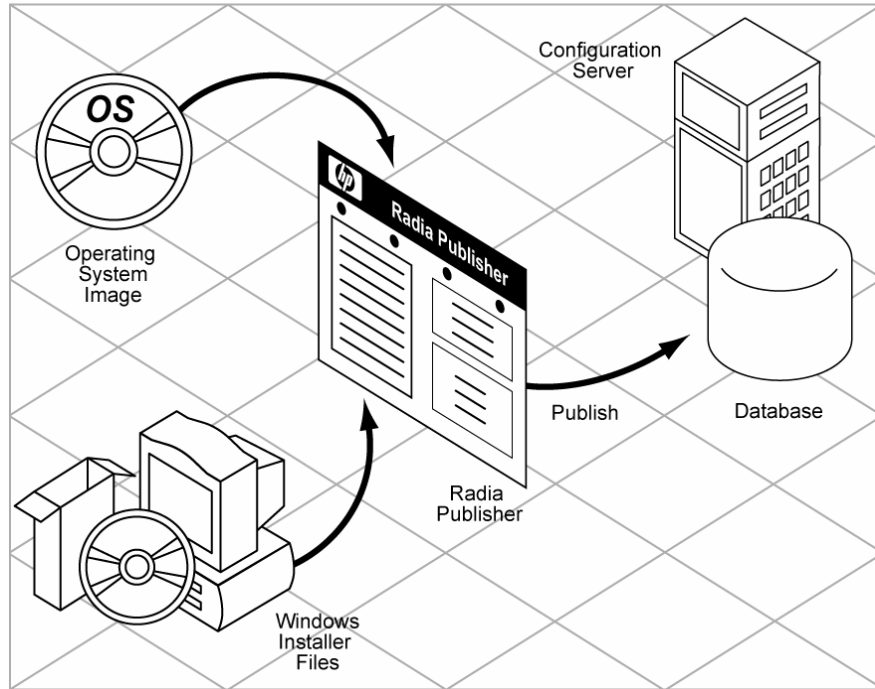
Radia System Explorer

The administrator uses the Radia System Explorer to view and configure policy and application services stored in the Radia Database. In addition, the Radia System Explorer allows administrators to perform the following tasks:

- Modify application packages after the initial publishing process.

- Establish reuse of application components between application services.

- Define application service prerequisites.

- Define policy for application entitlements.

- Control versions (active and inactive versions with control for timed-based activation and roll-back) of centralized application service management activities.

- Centralize control for unattended application service updates, install, and repairs.

For more information, see the *Radia System Explorer Guide*.

Radia Client Explorer

The administrator uses the Radia Client Explorer to manipulate desktop Radia objects. You can use the Radia Client Explorer to:

- View and edit existing objects.
- Create new objects.
- Diagnose issues by viewing error objects.

Radia Screen Painter

Use the Radia Screen Painter to create and design custom dialog boxes.

Radia Extended Infrastructure

Employ the Radia Extended Infrastructure to scale software management services across the extended enterprise. The Extended Infrastructure can be divided into two categories; components and products. Components are shared among two or more products. The software for the components is provided as needed with the products.

> Consult the HP OpenView web site or your HP representative for the most current information on platform availability.

Components

Radia products share some components to consolidate communications among products and to facilitate data flow. Shared components include the Radia Integration Server, Radia Messaging Server, and the Radia Reporting Server.

HP OpenView Integration Server Using Radia

The Radia Integration Server integrates independent modules giving them access to all the functions and resources under the control of the Radia Integration Server. The Radia Integration Server is *not* a separately licensed

product. Many of the Radia Extended Infrastructure products use the Radia Integration Server, such as the Radia Management Portal, the Radia Proxy Server, the Radia Policy Server, and the Radia Inventory Manager. Each product is composed of modules that reside in the Radia Integration Server's modules directory. These Radia components use the same core Radia Integration Server files, and run under the same process.

Benefits of the Radia Integration Server are:

- All the products using the Radia Integration Server for Windows can be loaded from a single Windows NT or Windows 2000 Service called "Radia Integration Server".

- When the Radia Integration Server starts, it will scan its configuration file and try to load all the products marked as loadable.

- Each product loaded from the Radia Integration Server is separately licensed.

- The Radia Integration Server provides Web services that are shared by all loaded modules, resulting in a single entry point for all HTTP (Web based) requests. This integration provides performance, efficiency, and ease of maintenance in an adaptable and cohesive (server) framework.

If you installed the Radia Management Portal:

- and if either Radia Inventory Manager or Radia Policy Server is loaded on the computer, there will be a button in the portal banner which points to **INVENTORY** or **POLICY**.

If you do not have the Radia Management Portal:

- and if you point your browser to your Radia Integration Server, you will open the Radia Integration Server main page.

- Click on the **Reporting** tab to access the Radia Inventory Manager reporting information.

The Radia Management Portal, Radia Inventory Manager, and Radia Proxy Server are described below since they are part of the extended infrastructure. More information on the Radia Policy Server is provided on page 54.

## HP OpenView Reporting Server Using Radia

As part of the Radia extended infrastructure, the web-based Radia Reporting Server allows you to query the combined data in existing Radia Inventory Manager, Radia Patch Manager, and Radia Usage Manager databases and create detailed reports. In addition, you have the option of mounting an

existing LDAP directory, which allows you to filter your data using your LDAP directory levels.

The Radia Reporting Server interface provides a dynamic and intuitive way to use Radia SQL data for reporting and overall environmental assessment.

A Radia Reporting environment is illustrated in Figure 7 below.

Figure 7   Radia Reporting Environment
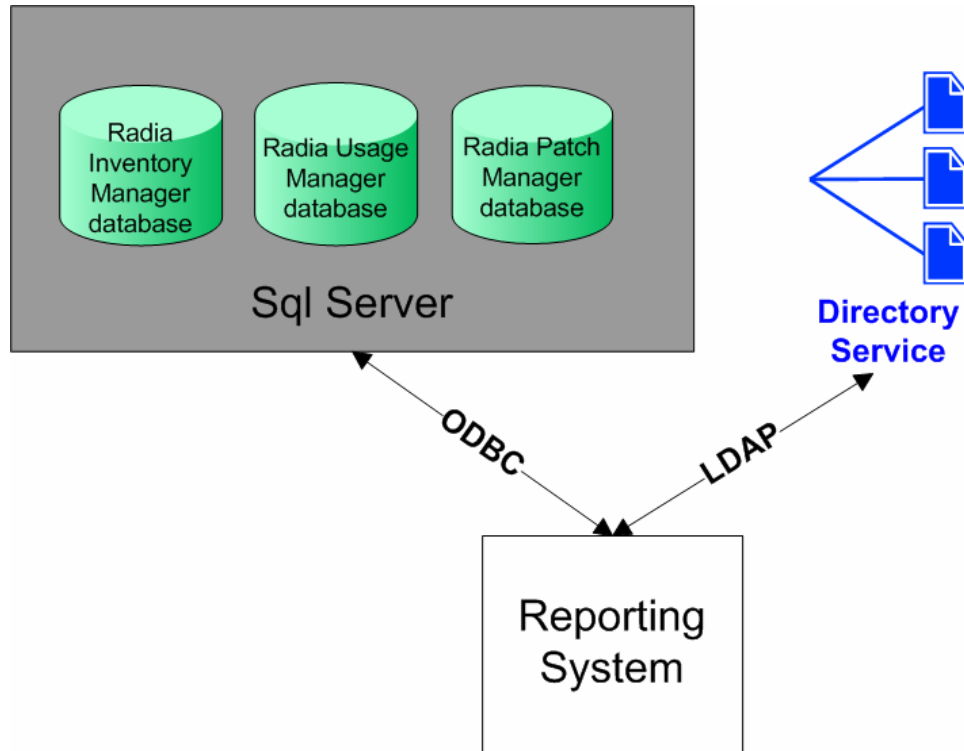
The Radia Reporting environment includes the following required and optional components:

- **Reporting System Modules**
  The Reporting System modules do not require the Radia Management Portal. They can be installed on any Win32 machine, which includes the required Web server, discussed below.

  ▶ The Radia Management Portal is only required if you intend to use the Radia Reporting Server to notify devices.

- **Web Server**
  The Radia Reporting Server requires the Microsoft Internet Information Service (IIS) component for Web services, which is available as a component of all Win32 platforms and Windows Server 2003. For more information on IIS, refer to your Windows Operating System documentation.

- **Connections to Radia SQL Databases**
  Radia Reporting can access any Radia SQL database, such as those for Radia Inventory Manager, Radia Patch Manager, and Radia Usage Manager. *However, all SQL databases accessed by the Radia Reporting Server must exist on a single SQL Server.*

- **Connections to LDAP Directory** (optional)
  The Radia Reporting Server supports optional access to an existing LDAP directory in your enterprise. Access to an LDAP directory allows you to filter report data according to the directory entries.

HP OpenView Messaging Server Using Radia

The Radia Messaging Server (RMS) is a robust messaging service that is used to transfer data from one piece of the Radia Infrastructure to another. Its job is to continually monitor predefined data queues and dynamically route data objects to one or more external destinations using dedicated data delivery agents. It can be used as a point to aggregate different types of data as well as to segregate data accumulated from various Radia servers, by type.

On an HP OpenView Configuration Server using Radia (Configuration Server), the Messaging Server operates hand-in-hand with the executable, QMSG, to handle the transfer of data reported from Radia clients to the appropriate ODBC reporting database or external Radia Server.

Figure 8　Radia Messaging Server routes data
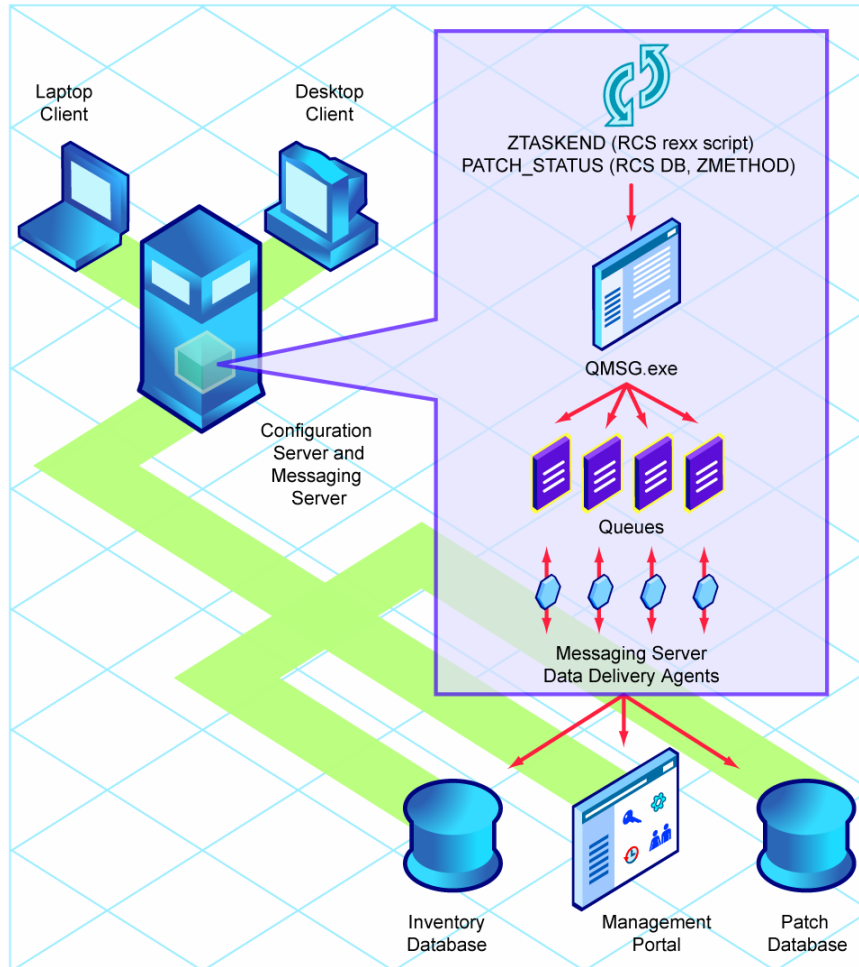
As shown in Figure 8 above, multiple data delivery agents of the Radia Messaging Server handle the routing of client-reported objects for Patch Manager, Inventory Manager and Management Portal to the desired reporting database, or directory. Using data delivery agents, data can be posted directly to an ODBC database, or, it can be forwarded securely to another directory or server (such as a Store and Forward Messaging Server) using HTTPS or HTTP.

The Radia Messaging Server runs on all Windows and UNIX platforms supported by the Radia Configuration Server.

Features and benefits of the Radia Messaging Server include:

- Ability to post objects directly to a SQL database via ODBC. Can eliminate the need for the Inventory Manager Server.

- Efficient, parallel processing of messages placed in separate data queues by independent data delivery agents.

- Built-in support for secure data routing using HTTPS or HTTP.

- Built-in store and forward support, with store and forward Messaging Servers maintaining multiple data queues.

- Reliable processing of Inventory, Patch and Management Portal data, due to:

  — Automatic retry capability.

  — Ability to reroute messages remaining in a queue to a failover location.

  — Retry, holding, and re-routing features eliminate potential loss of data caused by network failures.

- Efficient routing of a single message to multiple destinations.

Products

Through distributed administrative capabilities, replication services, and bandwidth conservation and metering, Radia Extended Infrastructure products provide an end-to-end management solution. The Radia extended infrastructure contains the following products:

  — Radia Distributed Configuration Server

  — Radia Multicast Server

  — Radia Management Portal

  — Radia Inventory Manager

  — Radia OS Manager

  — Radia Patch Manager

  — Radia Usage Manager

  — Radia Proxy Server

  — Radia Staging Server

Figure 9   Radia Extended Infrastructure
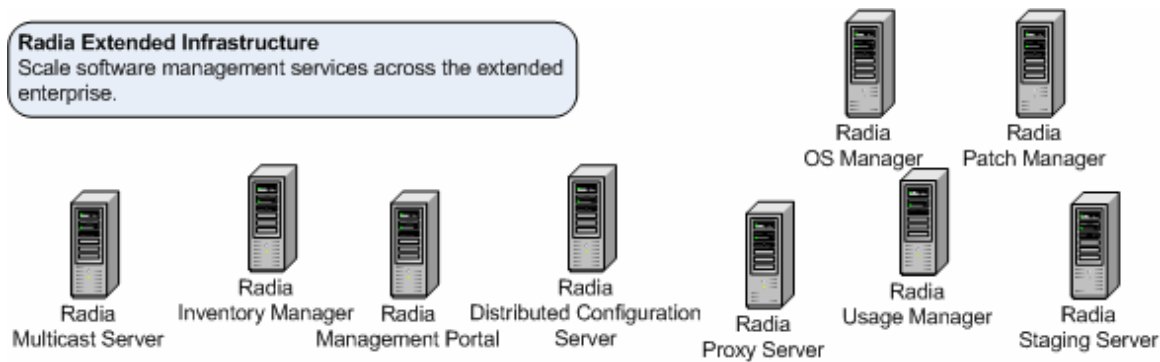
HP OpenView Distributed Configuration Server Using Radia

The size or network environment of your enterprise may require more than one Radia Configuration Server. The Radia Distributed Configuration Server allows multiple Radia Configuration Servers to share information about policies and managed content. A Radia Distributed Configuration Server synchronization must be configured for at least two Radia Configuration Servers, a Source and a Destination. Planning, architecture, and configuration are all very important considerations when implementing Radia Distributed Configuration Servers into an enterprise environment.

The Radia Distributed Configuration Server is designed to synchronize Radia Databases that are running on separate Radia Distributed Configuration Server-enabled Radia Configuration Servers throughout a network of Radia Distributed Configuration Servers. The Radia Distributed Configuration Server must be able to communicate with each of the Radia Configuration Servers that it is synchronizing. The destination Radia Configuration Servers do not need to be able to contact each other nor do they need to share the same operating system.

The Radia Database is divided into functional domains. The Radia Distributed Configuration Server contacts the selected domains, and then provides the intermediate common facilities to make the source and destination domains identical. The destination domain is always a replica of the source domain. For more information on the Radia Database, see The Radia Database on page 66.

Figure 10   Radia Distributed Configuration Servers communicate
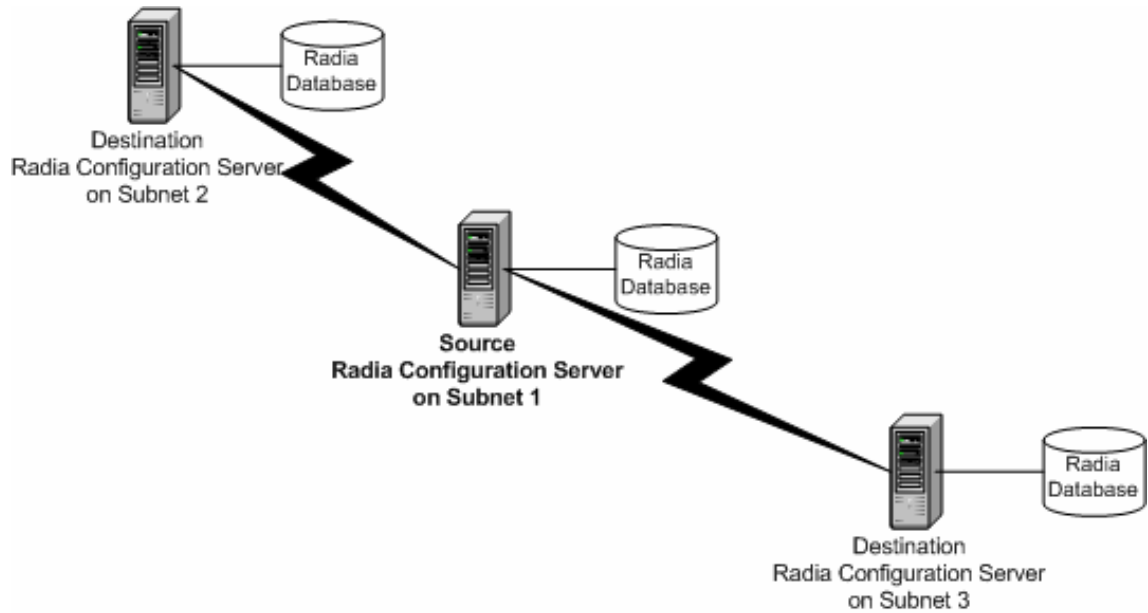
The benefits of the Radia Distributed Configuration Server are:

- Radia administrators can automatically synchronize distributed Radia Databases allowing managed applications and policy information to be shared across the enterprise.

- The Radia Distributed Configuration Server removes any logical limitations to the scale of the software management environment.

- Individual Radia Configuration Servers do not need to share a common network protocol or operating system.

For additional information, see the *Radia Distributed Configuration Server Guide*.

HP OpenView Inventory Manager Using Radia

The Radia Inventory Manager consists of two parts, the Radia Inventory Manager server and the Radia Inventory Manager client. The Radia Inventory Manager server enables centralized reporting and administration based upon the discovery results. The Radia Inventory Manager client discovers configuration information on the client device, and reports the

results to the Radia Inventory Manager server. The results are sent to the Radia Configuration Server during connection activities, and forwarded by the Radia Messaging Server to the Radia Integration Server. Optionally, the data can be sent for insertion into an ODBC-compliant database. You can view the Radia Inventory Manager reports using the new Radia Reporting Server. In addition, Inventory reports can be viewed from the native Radia Integration Server or the Radia Management Portal.

Figure 11   Radia Inventory Manager communicates with ODBC source
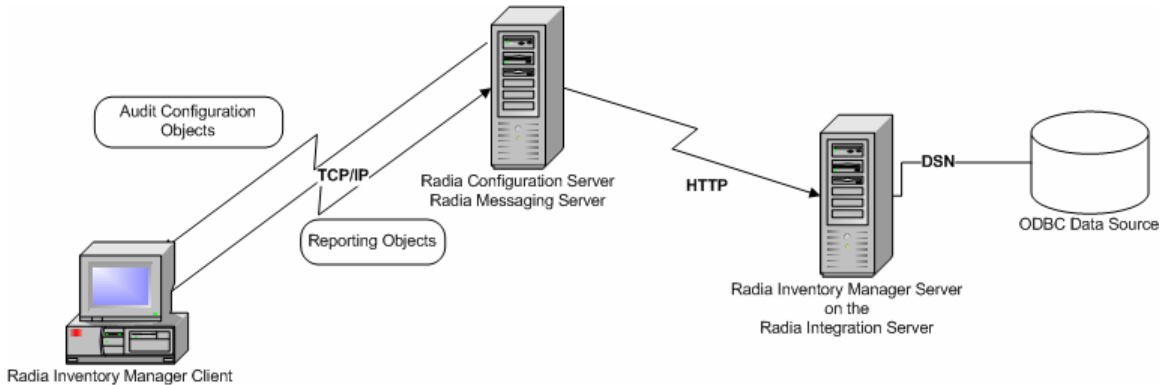
The Radia Inventory Manager provides the following benefits:

- Audits hardware information.

- Audits software, including the ability to audit specific files or classes file, such as `.EXE` files.

- Collects files from client devices.

- Generates reports on collected information through an ODBC-compliant database.

- Reports on Personal Digital Assistants (PDAs).

For more information, see the *Radia Inventory Manager Guide.*

HP OpenView Management Portal Using Radia

The Radia Management Portal provides a single access point from which Radia administrators can deploy Radia Client components, detect the current status of some Radia components, manage the Radia Database, and track the completion status of all Radia Management Portal tasks. The Radia

Management Portal is web-based and provides Radia administrators with the ability to manage their entire Radia environment regardless of location or computing platform. Administrative tasks can easily be distributed to administrators in remote locations based on roles and policies.

The Radia Management Portal is made up of the following:

- The **Portal Run-time** is the run-time technology that integrates the Radia infrastructure services. This is made up of the Radia Integration Server and the Radia Management Portal module.

- The **Portal Directory** contains configuration and entitlement information for the Radia Management Portal, infrastructure information, and status information. A sample directory is distributed with the Portal.

- The **Radia Management Agent (RMA),** installed on the remote device, performs tasks on behalf of the Radia Management Portal.

You can use the Radia Management Portal to perform operational and administrative tasks on the Radia Infrastructure; however, the Radia Management Portal cannot always perform these tasks remotely. Therefore, the Radia Management Agent, which is installed on a remote device, performs these tasks on behalf of the Radia Management Portal. Install the Radia Management Agent using the Radia Management Portal.

The Radia Management Portal allows you to:

- Access the Radia Publications Library.

- View your Radia infrastructure.

- Administer the Radia Policy Server.

- View the Radia Inventory Manager.

- Remotely start and stop Radia services.

- Remotely install the Radia Management Applications (Radia Clients), the Radia Management Agent, and the Radia Proxy Server.

- Synchronize (or preload) the Radia Proxy Server.

- Use Notify, a Radia notification utility, to perform an action on a selected audience.

- Query the Radia Management Portal logs.

- Backup and restore the Portal Directory.

- Notify an audience based on information reported to the Radia Inventory Manager.

For more information, see the *Radia Management Portal Guide.*

HP OpenView Multicast Server Using Radia

The Radia Multicast Server enhances and simplifies data-transmission technology by reducing the number of transmissions necessary, maximizing use of network bandwidth. Multicasting allows the transmission of the same data stream to many receivers, simultaneously. This method of information transmission differs from the usual method of transmission, where a server has to transmit the same information to each of its clients individually.

Most multicast utilities are designed to provide the simplest delivery of a payload that has been statically composed of all files and components for all possible recipients. In this model, every receiver is forced to take all resources bundled into that payload. The Radia Multicast Server allows the collection of the sets of resources that are needed by only those receivers that are eligible to participate in a specific multicast transmission. Only data required by the participants is sent, and the participants retrieve only the data that they have requested.

Figure 12   Multicast transmissions
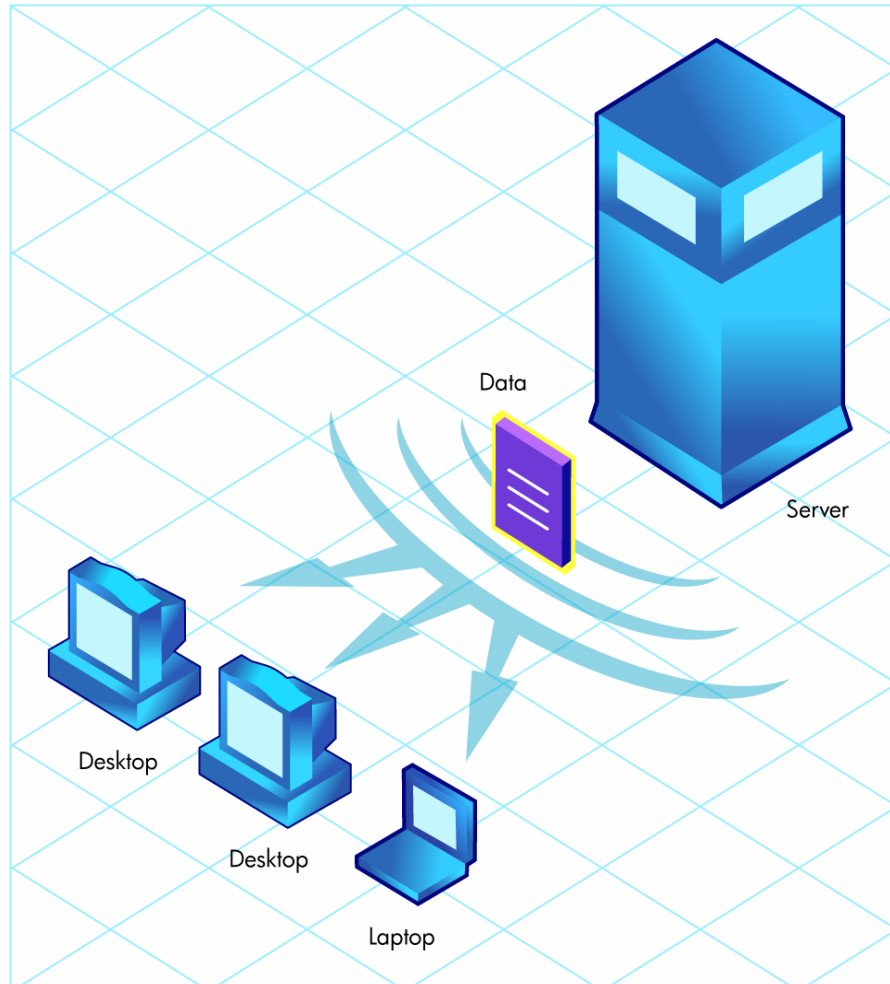
The Radia Multicast Server provides the following benefits:

- The same data stream is transmitted to many receivers at the same time.
- Only data required by the participants is sent.
- Participants who are part of the receive group only retrieve the data that they need.
- Maximizes the utilization of network bandwidth by transmitting a single data-stream to multiple clients.

- Saves resources of the server by not having to set up separate client sessions, and then repetitively transmit data to each client individually.

The Radia Configuration Server takes part in the multicast process during the Client Connect, and as the repository for the database files. The Radia Multicast Server accesses the resources needed for transmission during the multicast from the Radia Database.

Additionally, the Radia Database contains the information required to:

- Determine whether a client computer is eligible.

- Assign the client computer to a multicast group.

- Inform the client computer of the files it needs in order to match the desired state.

For additional information, see the *Radia Multicast Server Guide.*

HP OpenView OS Manager Using Radia

The Radia OS Manager provides you with the ability to use the Radia policy-driven, real-time, state-based management to control operating systems. Use the Radia OS Manager to build machines from a bare-metal state or to replace existing operating systems, while applying service packs, patches, hot fixes, applications and other Radia-managed content. Benefits of the Radia OS Manager include:

- Fully integrated component of the Radia Management Suite, which reduces the learning curve for your administrators.

- Improved speed and reliability of operating system deployment with automated policy-based management.

- Increased service levels by maintaining operating systems in the right configuration through desired-state automation.

- Reduced IT costs by simplifying and streamlining the OS management process across multiple platforms.

HP OpenView Patch Manager Using Radia

Radia Patch Manager provides value for business continuity and security initiatives, server provisioning and repurposing, and OS and application migration. Radia Patch Manager is offered as a complete stand-alone solution and can be used as a fully integrated component of the Radia Management Suite, which provides automated and ongoing configuration management for

all software across the enterprise, ensuring that the entire software infrastructure is always in its desired state—up-to-date, reliable, and secure.

Figure 13   Patch Management life cycle
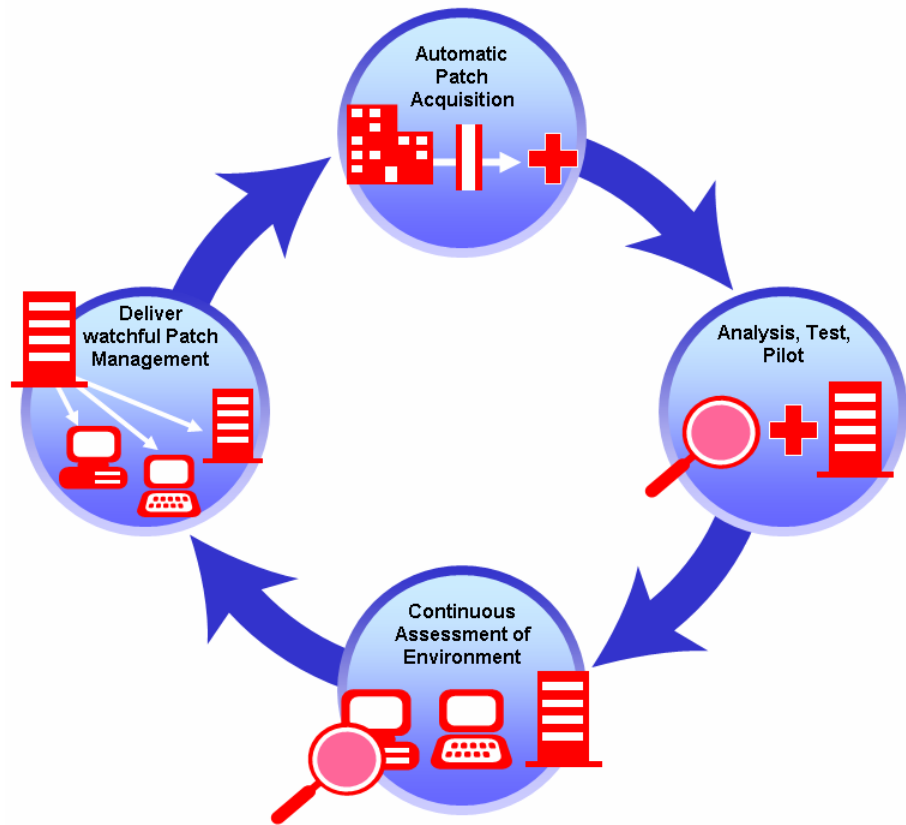
Key capabilities for security patch management activities include:

- Configurable acquisition tools to enable automatic collection of new security patches directly from a vendor's web-based depository for security patches.

- Ability to perform impact analysis and pilot testing to identify affected applications and devices.

- Automatic and continuous discovery of devices on the network, software products that are installed on each device, the collected security patches

that are already applied to each software product, and identification of software products that the device actually executes.

- Policy-based management capabilities that interface directly with a variety of existing policy sources such as Active Directory, LDAP or SQL databases to enable automatic, rapid, and precise targeting of patches for deployment to servers, desktops and laptops.

- Devices and users are monitored and checked against policy and, if found to be out of compliance, are automatically adjusted to appropriate patch levels.

HP OpenView Proxy Server Using Radia

The Radia Proxy Server localizes digital content enabling Radia-managed devices to receive application data over the Local Area Network (LAN) instead of across a Wide Area Network (WAN). Radia Proxy Servers increase scalability while dramatically reducing traffic over the network. Radia Proxy Servers used in your environment are beneficial if you have many client computers requesting the same resources from the same location. When data is cached on the Radia Proxy Server, the demand placed on the Radia Configuration Server is decreased, allowing the Radia Configuration Server to allocate more resources to other tasks.

Placing Radia Proxy Servers at strategic points in your network increases the efficiency at which data is transferred. The connection between subscribers and the Radia Proxy Server may be more efficient than the connection between the subscribers and the Radia Configuration Server. The factors that determine the efficiency of a connection between a server and a client computer include hardware capability, network bandwidth, workload on the servers, network traffic patterns, and the volume of software to be distributed.

> The Radia Proxy Server is not a generic proxy, but rather a proxy specifically designed to manage and distribute Radia resources.

The Radia Proxy Server can be installed and software can be preloaded using the Radia Management Portal. Use the Radia System Explorer to configure subscribers to use the Radia Proxy Server in the Radia Database. If the Radia Integration Server is not already installed, the Radia Proxy Server installation will install the Radia Integration Server.

Figure 14   Radia Proxy Server caching
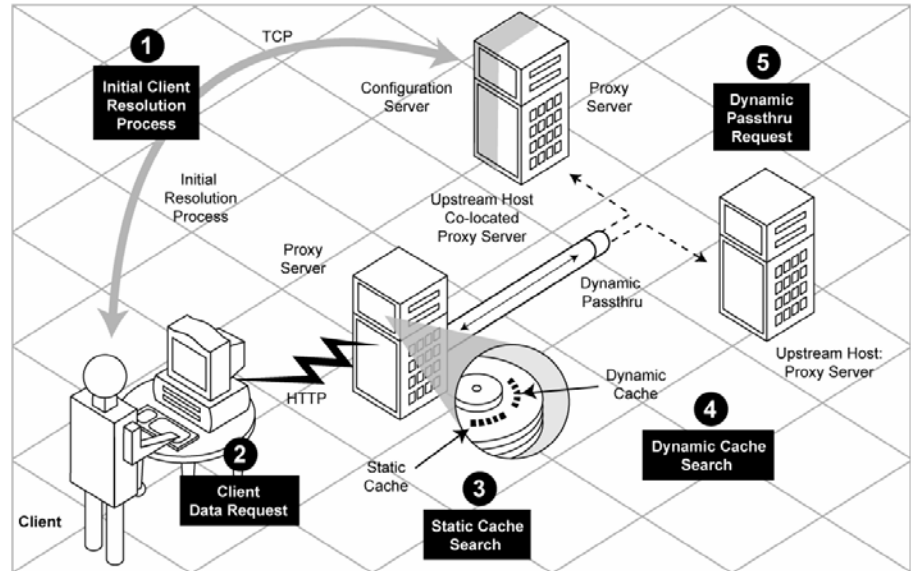
The Radia Proxy Server, when used, is the primary repository for Radia Client data. Once the Radia Client determines the resources needed for its desired state, it can request those resources from the Radia Proxy Server. It provides the following benefits:

- Requests are made using either HTTP (recommended for all new installations) or TCP/IP.

- The ability to service multiple, concurrent client requests from either protocol source.

- You can preload applications for deployment by using the synchronize task from the Radia Management Portal.

- If an application is not already on the Radia Proxy Server, when the first client requests the application from the Radia Configuration Server, and it is not loaded, the application data is directly loaded onto the Radia Proxy Server for distribution.

- If the Radia Proxy Server cannot service an application request, it automatically sends the request to the Radia Configuration Server for processing.

For more information see the *Radia Proxy Server Guide*.

HP OpenView Staging Server Using Radia

Server staging is a method of loading a portion of the work required to deliver application software from the Radia Configuration Server to another server located closer to the client computer. It is similar in usage to the Radia Proxy Server, but it cannot use HTTP, and does not use dynamic caching like the Radia Proxy Server.

As configured at installation, the first client to connect to the Radia Configuration Server will retrieve a copy of the application software from the Radia Configuration Server, and then send a copy to the Radia Staging Server. See Figure 15 below. The next client computer that connects to the Radia Configuration Server is directed to obtain its application software from the Radia Staging Server. It is possible to preload the Radia Staging Server so that the first client to connect will immediately receive the data from the Radia Staging Server. Users are assigned to Radia Staging Servers by modifying the Radia Database using the Radia System Explorer.

Figure 15   Default staging server processing
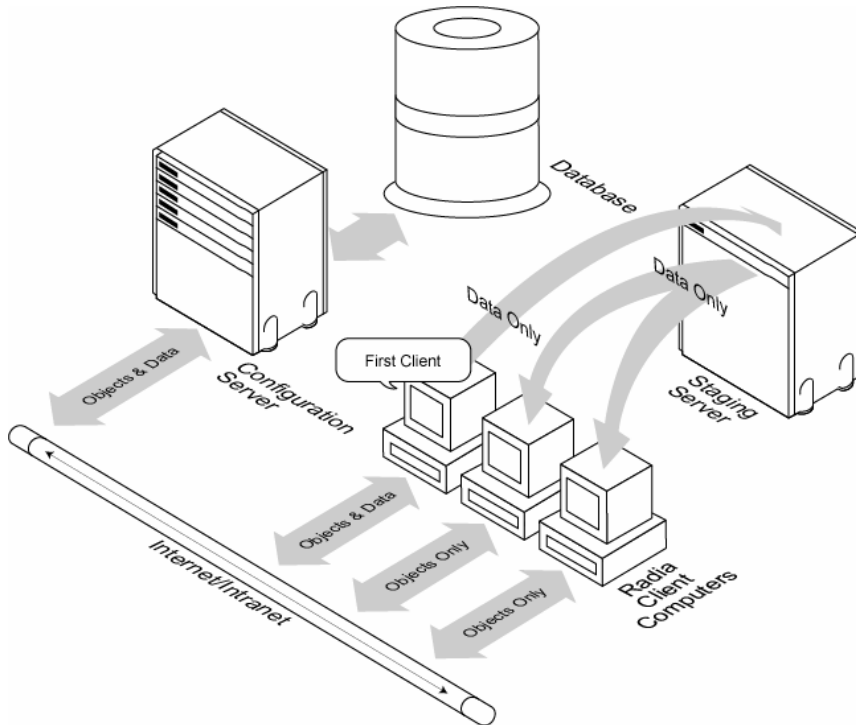
Server staging is beneficial to a subscriber when these conditions are present:

- The Radia Staging Server has available disk space to store the application software to be distributed.

- The users subscribe to a *common* set of applications.

- The amount of application software to be distributed must be sufficiently large or complex enough to make it beneficial to store a copy on the server. If the distribution involves a small amount of data, the benefit of staging will be correspondingly small, and may not justify the disk utilization.

See the *Radia Staging Server Guide* for more information.

HP OpenView Usage Manager Using Radia

As an IT administrator you can use the Radia Usage Manager to assess patterns of application usage in your environment. This allows you to facilitate adherence to license agreements, re-provision licenses if needed, and monitor user productivity.

The Radia Usage Manager monitors the use of every application on all of your servers, desktops, and laptops. This enables you to:

- Enforce corporate standards by identifying non-standard software and software versions in use within your enterprise.

- Implement license tracking, giving you the ability to purchase and maintain only those licenses that are needed.

- Enable OS migration support by prioritizing software distribution based on actual usage.

- Use reporting to view the actual use of application resources.

The Radia Usage Manager can be used in your existing environment whether or not you are currently using Radia for software distribution. For more information, see the *Radia Usage Manager Guide*.

Radia Management Extensions

Radia Management Extensions provide integration and extended enterprise functionality. They allow Radia to interface with other technologies such as LDAP and SSL. The Radia Policy Server, the Radia Adapter for SSL, the

Radia Publishing Adapter, and the Radia Systems Management Adapters are Management Extensions.

Figure 16   Radia Management Extensions
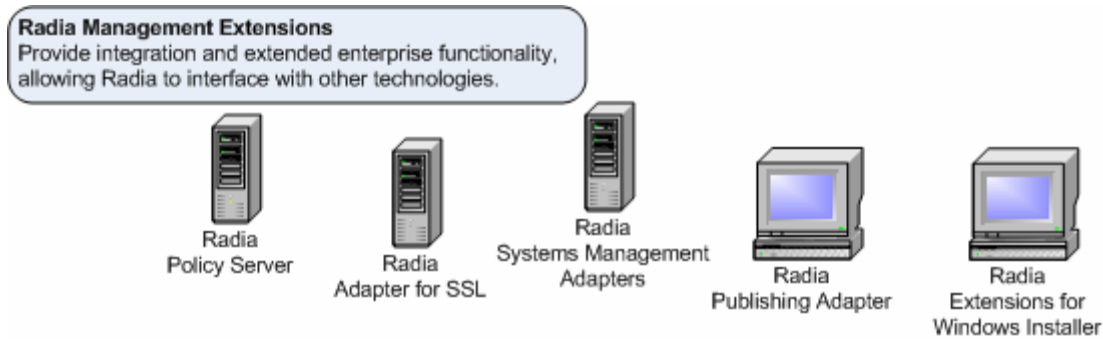
HP OpenView Adapter for SSL Using Radia

The Radia Adapter for SSL (Secure Sockets Layer) utilizes encryption and security protocols to maintain the safety and confidentiality of information transmitted over intranets and extranets, allowing organizations to provide secure software management services to extended audiences. The Radia Adapter for SSL supports SSL and HTTPS communications between Radia Servers and the Radia Client to secure information transmitted over networks. The installation copies the necessary files to support SSL communications and generates a server certificate request and private key file. The server certificate request must be signed by a public certificate authority. The Radia Adapter for SSL must be installed on each Radia Server that is to be configured for SSL communications. For more information, see the *Radia SSL Adapter Guide*.

HP OpenView Extensions for Windows Installer Using Radia

The Radia Extensions for Windows Installer is a management system designed to automate and simplify the enterprise application integration laboratory process. Use this product to build, test, maintain, deploy, and troubleshoot Windows Installer applications and installation packages.

The **Radia Packager for Windows Installer** gives you complete control over the resource gathering, analysis, a creation of a Windows Installer

packaging. Complete packaging of an application typically takes less than an hour. Several interfaces allow you to choose the session granularity that you require:

- Use the **Radia Packager Menu** to run a typical, unified packaging session or to use one of the custom options for creating a modified package.

- Alternatively, use the Radia Packager **Process Menu** to access a comprehensive flowchart of all package creation components that are part of the Radia Extensions for Windows Installer suite.

The underlying components of the Radia Packager for Windows Installer include a set of Wizards and an editor. These can be launched individually or are automatically launched from one of the menu options.

- Radia State Wizard
  Create and modify state files.

- Radia Library Wizard
  Create and modify library files.

- Radia Package Wizard
  Build and modify the Windows Installer packages.

- Radia Install Wizard
  Publish packages into a non-Radia distribution point, or modify packages using transforms. For publishing Windows Installer packages to the Radia Database, see the Radia Publisher.

- Radia Insulation Wizard
  Use application specific resources that are isolated from other applications.

- Radia Configuration Analyzer
  View, store, and compare application data. See HP OpenView Configuration Analyzer in the section below and the *Radia Configuration Analyzer Guide* for more information.

- Radia Knowledge Base Manager
  Populates the Radia Knowledge Base with data in the form of state files.

- Radia MSI Editor - Radia MSIEdit
  Allows you direct access to the Windows Installer database tables through an easy to use interface.

See the *Radia Extensions for Windows Installer Getting Started Guide* and the *Radia Extensions for Windows Installer Guide* for information on how to use the Radia Extensions for Windows Installer.

HP OpenView Configuration Analyzer Using Radia

The Radia Configuration Analyzer administrator console simplifies your view of application management. Backed by a database, imported state files keep a detailed history of all of the resources needed by an application to run successfully. With a click of the mouse, powerful features of the console identify conflicts between two or more applications. With this historical and complete set of information at your fingertips, you can easily determine the impact on your environment of:

- Deploying a new application.

- Upgrading an existing application.

- Adding or modifying modules, registry keys, and data files.

The Radia Configuration Analyzer performs integration and management analysis functions. Administrators can profile applications, initiate application comparisons or views, analyze applications, populate the Radia Knowledge Base, and establish and manage Radia Knowledge Base Permissions.

To analyze data with the Radia Configuration Analyzer, data must be in the form of a state file. State files are generated by different Radia Products, including the Radia Packager for Windows Installer, Radia Usage Manager, Radia Patch Manager and the Radia System Explorer. Refer to the product specific guides for more information about how to create state files with that product.

HP OpenView Knowledge Base Manager Using Radia

The Radia Knowledge Base Manager is a component used with the Radia Configuration Analyzer. It populates the Radia Knowledge Base with data in the form of state files. State files consist of data that represent the current state of an application. This data is acquired by the Radia Knowledge Base Manager from a continuously monitored user-specified directory, or collection point. When data is detected in this collection point, it is automatically transferred to the Radia Knowledge Base.

The collection point is populated by one or more Radia products including the Radia Patch Manager, Radia Usage Manager, and Radia Packager for Windows Installer.

The endpoint for this data, the Radia Knowledge Base database, may be either a SQL Server or an Oracle database configured in your environment. From here, data analysis can take place.

Figure 17   Radia Knowledge Base Manager process
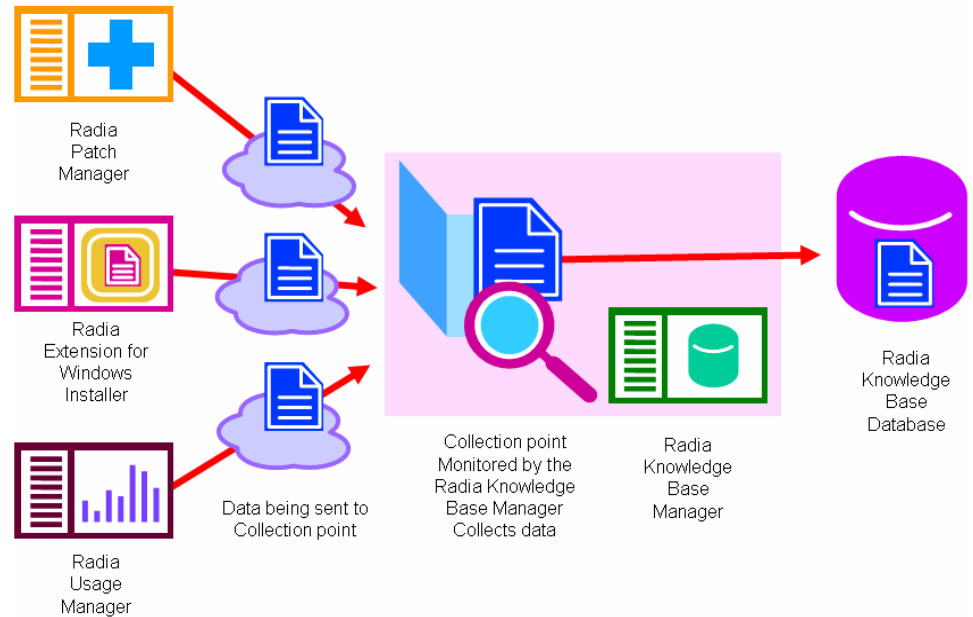
For more information, see the *Radia Knowledge Base Manager Guide.*

HP OpenView Policy Server Using Radia

The Radia Policy Server is a Web server used for administration purposes such as mapping services to users in the directory tree. It is one of the Management Extensions in the Radia Infrastructure providing integration and extended enterprise functionality with your directory services. Policy method connections in the Radia Configuration Server Database are used to determine what services should be distributed and managed for the user that is currently logged on by querying the Radia Policy Server.

The Radia Policy Server integrates with Lightweight Directory Access Protocol (LDAP) directory servers and SQL databases to enable single source points of control for user authentication, access policies, and subscriber entitlement. These LDAP directory servers include Microsoft Active Directory, Novell NDS, and other vendor's LDAP servers, as well as Oracle, Sybase and Microsoft SQL-based databases.

Figure 18   Radia Policy Server integrates with LDAP and SQL
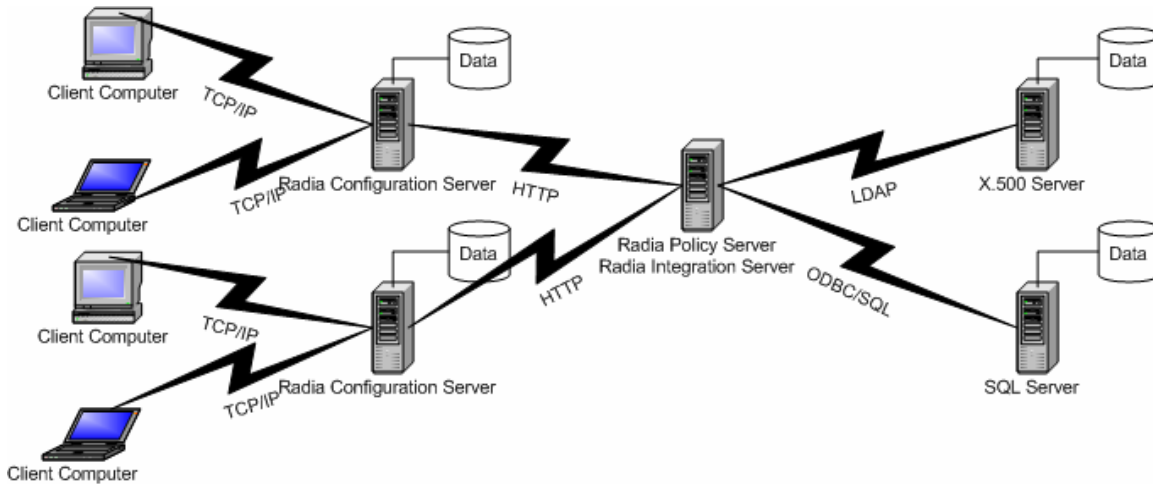
For more information, see the HP OpenView web site and the *Radia Policy Server Guide*.

HP OpenView Publishing Adapter Using Radia

The Radia Publishing Adapter is a command line driven publishing tool that can easily be integrated with third-party configuration management and packaging products for fully automated, unattended updates to application packages. The Radia Publishing Adapter provides an alternative to the Component Selection Mode of the Radia Packager. The Radia Publishing Adapter offers an automated, repeatable command-line process, while the Radia Publisher must be monitored from start to finish.

The Radia Publishing Adapter identifies a set of files and components, and publishes them, in a controlled, automated, repeatable manner, to the Radia Database where they are stored as objects. Its focus is distributing updates to content, data, and applications rather than initial application packaging. Digital content, such as file sets, graphics, price lists, and interest rates, are types of managed lists that might require an automated update process such that Radia Publishing Adapter can provide.

The Radia Publishing Adapter can:

- Scan for files on multiple drives or file systems.

- Scan and publish files from any mapped drive or file system.

- Be configured to limit the subdirectories that are scanned.

- Include or exclude files at the file level.

- Select files by type.

Additionally, the Radia Publishing Adapter can accommodate frequent patching of internal applications, as well as publish build versions, and output from HP legacy (PVCS or ClearCase) adapters. Its capacity to revise content material is reliable, and can execute continuously, at designated times, and in pre-determined intervals. It can easily be run from within any script or code capable of calling a command prompt. See the *Radia Publishing Adapter Guide* for more information.

HP OpenView Systems Management Adapters Using Radia

You can integrate the Radia Infrastructure with event, security, and performance management, and help desk environments of other vendors' products. The Radia Systems Management Adapters allow Radia and third-party products to exchange information. There are adapters available for HP OpenView, IBM Tivoli Management Framework and the Tivoli Enterprise Console, Computer Associates Unicenter, Remedy Help Desk, Microsoft SMS and Microsoft Operations Manager, or any SNMP-compliant system. Contact your HP representative for information on available adapters.

Essential Functions

Table 1 below summarizes the essential functions for each Radia product. For more information on each product, review the product's section in this chapter and the associated publications.

Table 1   Radia Products and Essential Functions

Use	To
Management Applications	
Radia Server Management	• Deploy server applications • Manage Windows Terminal Server and Citrix applications • Manage baselines • Manage configuration files
Radia Application Manager	• Deploy mandatory packages to unattended devices.
Radia Inventory Manager	• Track and report on hardware and software on client devices. Used with the Radia Inventory Manager Server. Note that the Radia Inventory Manager has both a client and server component.
Radia OS Manager	• Provision and manage operating systems on client devices. Used with the Radia OS Manager Server. Note that the Radia OS Manager has both a client and server component.
Radia Patch Manager	• Deploy and analyzer vendor's security patches and bulletins. Used with the Radia Patch Manager Server. Note that the Radia Patch Manager has both a client and server component.
Radia Software Manager	• Have subscribers decide when to install the packages that they are entitled to.
Radia Management Infrastructure	
Radia Configuration Server	• Configure and maintain a distribution model for your enterprise devices and client computers.
Radia Administrator Workstation	• Configure or maintain your Radia environment.

Use	To
Radia Extended Infrastructure	
Radia Distributed Configuration Server	• Replicate part or all of your Radia Databases across a network of Radia Configuration Servers.
Radia Inventory Manager	• Track and report on hardware and software on client devices. Used with the Radia Inventory Manager client. Note that the Radia Inventory Manager has both a client and server component.
Radia Management Portal	• Manage your Radia infrastructure through a Web browser.
Radia Multicast Server	• Send the same resources in one data stream to multiple clients at the same time.
Radia OS Manager	• Provision and manage operating systems on client devices. Used with the Radia OS Manager Server. Note that the Radia OS Manager has both a client and server component.
Radia Patch Manager	• Deploy and analyzer vendor's security patches and bulletins. Used with the Radia Patch Manager Server. Note that the Radia Patch Manager has both a client and server component.
Radia Proxy Server	• Use cache management over HTTP or TCP/IP to store and transmit application data dynamically, freeing resources on the Radia Configuration Server.
Radia Staging Server	• Store and transmit application data over TCP/IP or IPX/SPX, freeing resources on the Radia Configuration Server.
Radia Usage Manager	• Assess patterns of application usage in your environment.
Radia Management Extensions	
Radia Adapter for SSL	• Maintain the safety and confidence of transmitted information.
Radia Extensions for Windows Installer	• Publish and manage Windows Installer applications.
Radia Policy Server	• Use directory services to implement Radia policy.

Use	To
Radia Publishing Adapter	• Create fully automated, unattended updates to application packages.
Radia Systems Management Adapters	• Exchange data with other vendors' products.

Example 1: Radia Inventory Manager

Suppose you wanted to be able to do the following in your enterprise:

- Manage mandatory digital content.

- Use your existing directory services to create entitlements.

- Place servers with your digital content closer to your client devices.

- Distribute management across your enterprise.

- Report on hardware and software assets.

You would then want to combine the functions of the Radia Application Manager, the Radia Configuration Server, the Radia Policy Server, the Radia Proxy Server, the Radia Distributed Configuration Server, and the Radia Inventory Manager. A diagram of your network might be similar to Figure 19 on page 60.

Figure 19   Create a Radia Inventory Manager environment
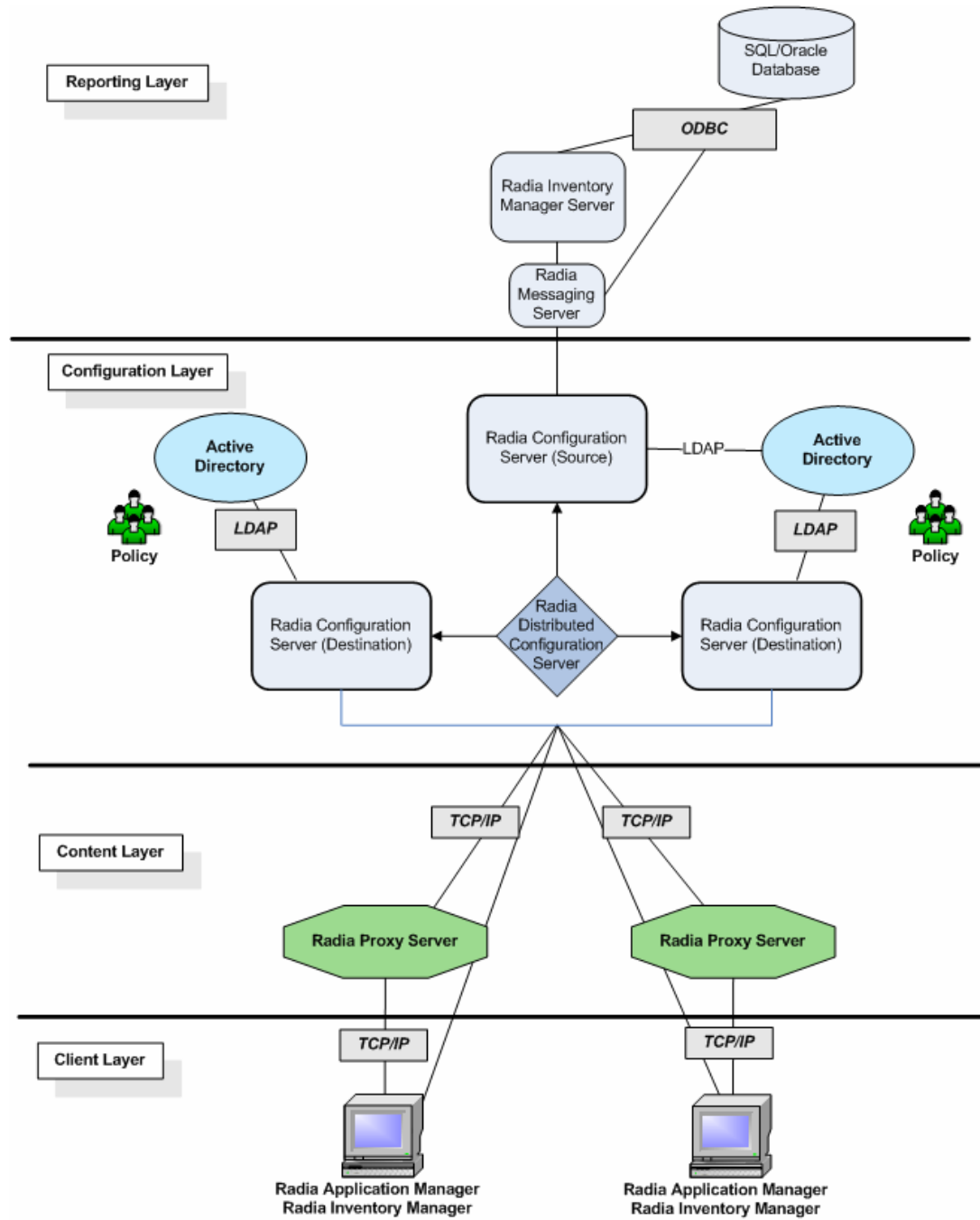
Example 2: Radia Patch Manager

Suppose you wanted to be able to do the following in your enterprise:

- Manage mandatory digital content.

- Analyze and manage security vulnerabilities.

- Use your existing directory services to create entitlements.

- Place servers with your digital content closer to your client devices.

- Distribute management across your enterprise.

You would then want to combine the functions of the Radia Application Manager, the Radia Configuration Server, the Radia Policy Server, the Radia Proxy Server, the Radia Distributed Configuration Server, and the Radia Patch Manager. A diagram of your network might be similar to Figure 20 on page 62.

Figure 20   Create a Radia Patch Manager environment
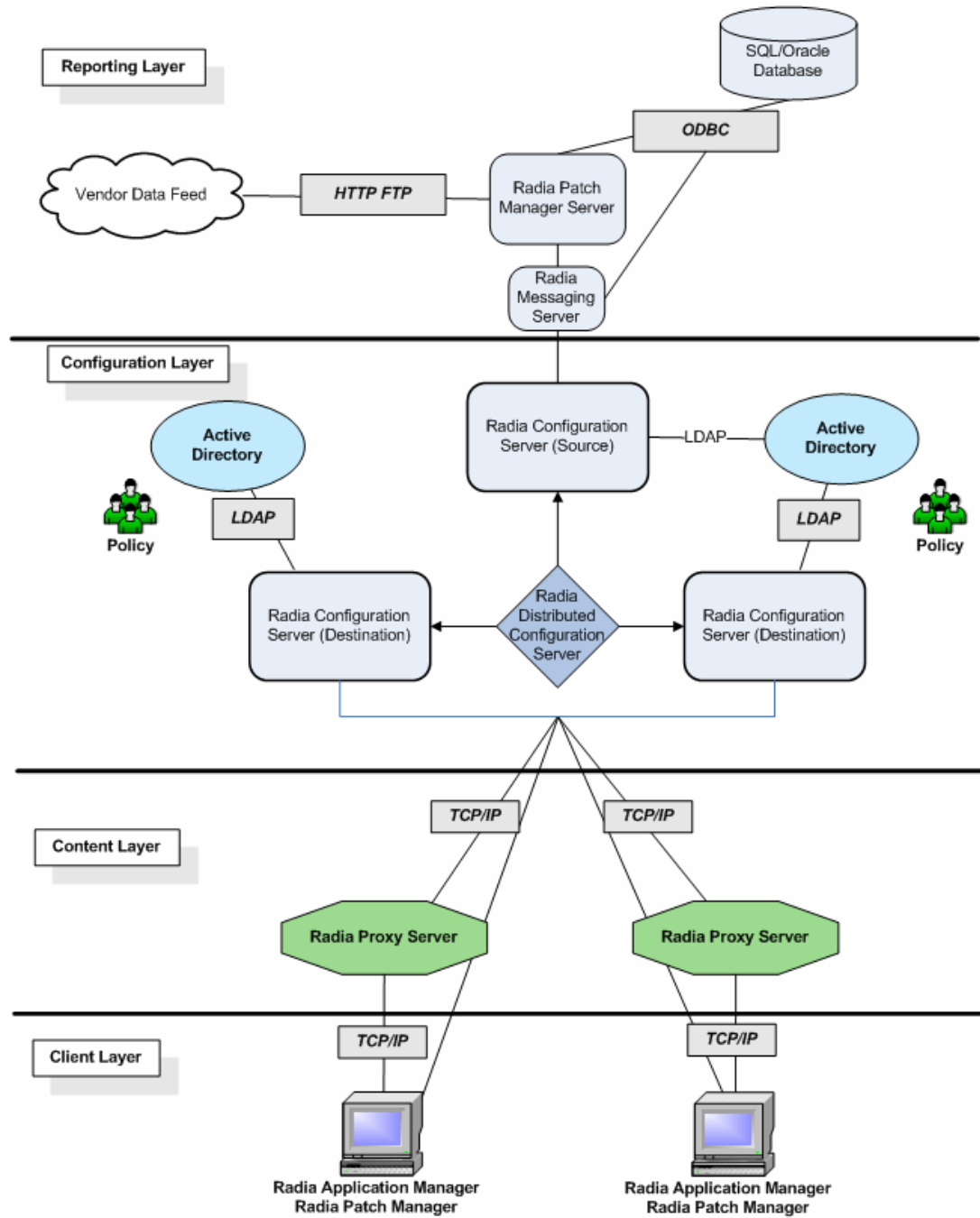
Summary

- Radia products can be divided into four categories: Management Infrastructure, Extended Infrastructure, Management Extensions, and Management Applications.

- Install the Radia Management Applications on your client computers and devices to manage and track digital assets.

- The Radia Management Infrastructure represents the core of Radia activities.

- Use the Radia Extended Infrastructure to increase scalability of the Radia Management Infrastructure.

- Radia Management Extensions are available to allow you to exchange information between Radia and other systems management software.

3 Essential Processes

At the end of this chapter, you will:

- Be familiar with the structure of the Radia Database and Radia objects.

- Know the dynamics of a service.

- Be familiar with the Packaging process.

- Understand the Client Connect process.

- Understand the Resolution process.

- Understand the Inventory Collection process.

- Know the basics of Radia Proxy Server processing.

- See the Radia OS Manager image deployment architecture.

- Know how the Radia Patch Manager acquires security patches.

- Be familiar with how the Configuration Baseline Auditor Works

In order to understand the discussions of essential Radia processes in this chapter, you must have an understanding of the Radia Database and Radia objects. You should also be familiar with the terms described in Terminology on page 14.

The Radia Database

The Radia Database, stored on the Radia Configuration Server, records your distribution model. This includes all of the information that Radia uses to manage applications on a client computer, including:

- The software or data that Radia distributes.

- The distribution model for each client.

- The policies determining which subscribers are assigned to which packages.

- Security and access rules for Radia administrators.

Use the Radia System Explorer to view and manipulate the Database. The Radia Database is hierarchically structured, and its components consist of files, domains, classes, instances, and attributes.

Radia Database Structure

File

Highest level in the hierarchy of the Radia Database. Groups similar domains together.

Example: The PRIMARY file is used to define and maintain the distribution model. This is one of the pre-configured files distributed with Radia.

Domain

Logically partitions a Radia file. Groups similar classes together.

Example: The POLICY domain contains the classes needed to create users and groups.

Class

A category of the distribution model. The class is a template for the attributes needed to create an instance of the class. Refer to the *Radia Database Reference Manual* for information on the structure and usage of Radia classes.

Example: The USER class of the POLICY domain defines subscribers of Radia-managed applications. It defines all of the attributes necessary to identify the client computer to be managed by Radia.

Class Instance or Instance

An object containing a specific occurrence of a class. This is analogous to a row in a relational data table, or a record in a traditional flat file. The attributes of a class instance object contain data describing one specific entity of that class.

Example: A USER instance is an object created from the USER class, containing the information needed to identify a subscriber's client computer.

Attribute, Attribute Value

An attribute is a data element of a class. The class contains the definition (e.g., the name, data type, description, and length) for each attribute comprising the class. Each class instance created from the class contains a value for each of the attributes defined in the class.

Example: The NAME attribute of a USER class contains the name of the subscriber, and the USERID attribute contains the user ID, as specified by the Radia administrator.

Default Domains

When you install the Radia Configuration Server, LICENSE and PRIMARY are the only two files available. As you use Radia, your Database may change. Some of the Management Infrastructure products add other domains. For example, Radia Patch Manager adds the PATCHMGR Domain, and Radia Usage Manager adds the USAGE Domain. Radia OS Manager used the OS and MACHINE Domains.

- The LICENSE file is read-only and used for Radia Configuration Server processing. This file is for HP use, and should not be modified.

- The PRIMARY file is where you will find most information regarding software management. Within the PRIMARY file, there are seven default domains.

  — Use the ADMIN domain to define administrative rights and rules for connecting classes.

  — Use the AUDIT domain to configure tasks that will inventory client computers' assets.

— Use the CLIENT domain to configure Client Operations Profiles. This includes defining which Radia Configuration Servers, Radia Proxy Servers, and Radia Staging Servers the client computer can use.

— Use the POLICY domain to create users and groups, and to assign users to groups.

— Use the PRDMAINT domain to store packages for self-maintenance.

— The SOFTWARE domain contains information about the software being managed and the methods used to deploy the software.

— The SYSTEM domain contains administrative and process control definitions.

As you begin to use Radia, the PROFILE file appears. This file contains information that is collected from client computers and devices. The file appears after the first client has registered with the Radia Configuration Server. This information is used to connect to computers and devices to deploy software managed by Radia, and to see the configuration of the client computer.

The NOTIFY file contains information about attempts by the Notify function to update, remove or e-mail subscribers. This file appears after the first attempted Notify.

In this chapter, you will find the different parts of the Radia Database defined in the following ways:

Table 2   Radia Database Usage

Element	Style	Example
Files (in the Radia Database)	All uppercase	PRIMARY
Domains (in the Radia Database)	All uppercase	PRIMARY.SOFTWARE May also be referred to as the SOFTWARE domain in the PRIMARY file.
Classes (in the Radia Database)	All uppercase	PRIMARY.SOFTWARE.ZSERVICE May also be referred to as the ZSERVICE class in the SOFTWARE domain in the PRIMARY file.

See the *Radia Database Reference Guide* for more information.

Radia Objects

An object is a storage structure, that is, a record or record set. It contains variables, including both the definition (variable name and length), and the value (for example, the LOCALUID variable contains the user ID) for each variable. An object consists of **instances** (also called **heaps**). An instance is an occurrence of a set of variables. It is analogous to a record in a flat file, a row in a relational database table, or a row in an array. Objects can consist of a single instance (for example, the ZMASTER object), or multiple instances (for example, the FILE object).

Service Dynamics

Within your enterprise, you have groups (packages) of data or applications that you want to control. A **package** is a data set that is published as an individual entity that includes the files, desktop shortcuts, and registry entries needed for a particular application, such as Microsoft Word. Once you have identified these packages, you can categorize them into services. A **service** allows you to organize a group of related packages, methods, or behaviors into manageable units. One package could be a manageable unit.

For example, you may want to manage an anti-virus application. Usually, you will need the anti-virus software and a data file that holds virus information. Since you would have no use for the data file without the software, you might group these two packages into one service. If for whatever reason you want to manage them separately, you would associate each of these packages with a separate service.

If you are creating a service for the purpose of managing an application, the service might evolve as follows:

1   Use the Radia Packager or Radia Publisher to create a package. See Publishing and Packaging Process with Radia Packager on page 72.

2   Use the Radia System Explorer to create and edit the properties of a service associated with packages.

3   Create your distribution model by setting **policy** for a user or group by using the Radia System Explorer. A policy defines which of the applications subscribers and client computers are entitled to.

4   The client and the Radia Configuration Server use the Client Connect process and the Resolution process, respectively, to create the

distribution model. See The Client Connect Process on page 76 and The Resolution Process on page 82.

5   The client completes the updates, removals, installations, and verifications needed to achieve its desired state.

About Packaging and Publishing with Radia

Packaging is the process of identifying resources, editing those resources' installation attributes, defining how they are to be installed, and saving the resources and installation instructions in a machine-readable file format. A package typically contains one or more files and configuration settings.

Publishing is the process of importing a package and its imbedded information to the Radia Database (AKA the Radia Configuration Server Database). A package must be published before its content can be distributed and deployed into your environment.

Radia offers many different packaging and publishing options through multiple tools. Make note of the different types of resource packages you will create and publish, then choose your Radia packaging and publishing products as required.

- If you're packaging Windows Installer files, use the Radia Packager for Windows Installer. (See the *Radia Extensions for Windows Installer Guide*).

- If you're publishing Windows Installer files, use the Radia Publisher. (See the *Radia Publisher Guide)*.

- To package and publish all other types of files and applications, use the Radia Packager. (See the *Radia Application Manager Guide* or the *Radia Software Manager Guide*).

Figure 21   Radia Packaging/Publishing options
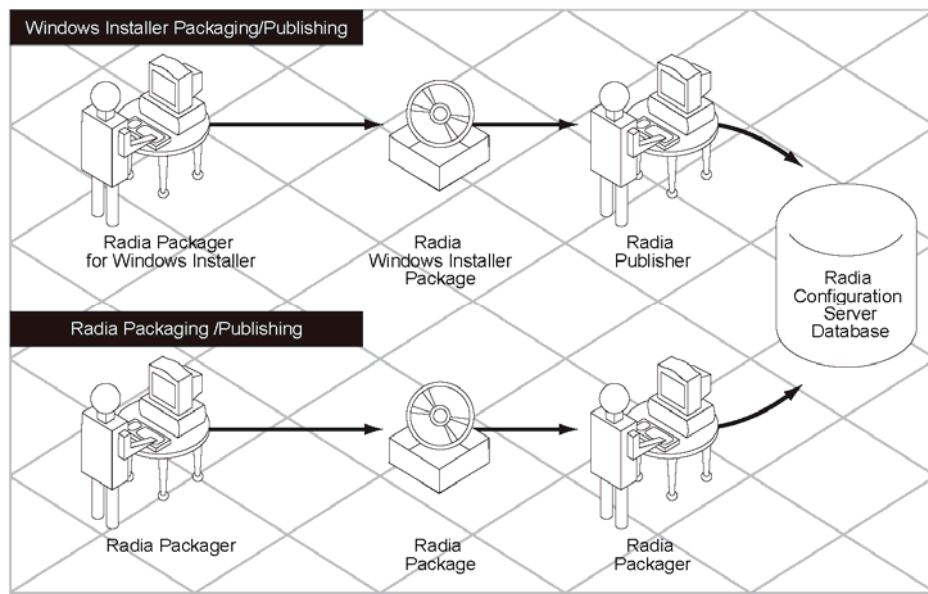
Radia Publisher

The Radia Publisher consists of four main steps for publishing files to the Radia Database. These are:

1 **Select**
   Select the file or image to be published to the Radia Database.

2 **Edit**
   Create the Administrative Installation Point, simulate the application's user interface, edit MSI features and properties, select any transforms, and enable Machine/User parameters (Windows Installer files only).

3 **Configure**
   Provide the information for creating a Radia package or service that will be published to the database.

4 **Publish**
   Publish to the Radia Database.

Figure 22   Publishing steps for Radia Publisher
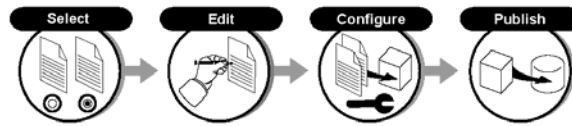
During each step you will select, edit, and configure the package to be published by providing the information requested at each window. See the *Radia Publisher Guide* for details.

Publishing and Packaging Process with Radia Packager

The Packaging Process identifies the components of the software (files, shortcuts, registry entries) and organizes them into Radia packages. Radia packages are compressed for speedier delivery over limited bandwidth, and can be stored on the Radia Configuration Server, a Radia Proxy Server, or on a Radia Staging Server closer to the subscribers.

The Radia Packager is used to create the packages. To **publish** is to bundle a set of related data into a single unit that can be managed by Radia. Two packaging modes are available in the Radia Packager: Installation Monitor Mode and Component Selection Mode.

- **Installation Monitor Mode (Radia Packager)**
  In Installation Monitor Mode, the Radia Packager determines what to package by scanning the Radia Packager computer before and after installing the software. It **differences** the before and after scans to determine what changes were made to the computer. These differences make up the package that you promote to the database.

- **Component Selection Mode (Radia Packager)**
  In Component Selection Mode, you select the individual components that make up the application, such as files, directories, registry entries, and links.

Another tool that you can use for packaging is the Radia Publishing Adapter that can automate publishing for users who want to incorporate publishing into an automated framework. For more information, see HP OpenView Publishing Adapter on page 55.

Installation Monitor Mode

In Installation Monitor Mode, the Radia Packager determines what to package by scanning the computer before and after installing the software on the Radia Packager computer. It **differences** the before and after scans to determine what changes were made to the computer. These differences make up the package that you promote to the Database. We recommend this mode for packaging when you do not know all of the components that make up the application.

1   Identify the package properties such as package name, description, and version number. A local object is created with this information. An instance is created in the Package class of the Radia Database with this information. A ZSTOP expression is inserted in the database that prevents the application from being deployed before the package creation is complete.

2   Select the requirements for operating system, memory, processor speed and availability.

3   Specify the location of files to scan, and whether or not to scan registry and desktop items as well.

4   Local objects that include information on the package requirements are created on the Radia Packager computer, system, and initialization files to check for differences.

5   The Radia Packager does a pre-installation scan of the Radia Packager computer.

Figure 23   Installation Monitor Mode pre-installation steps
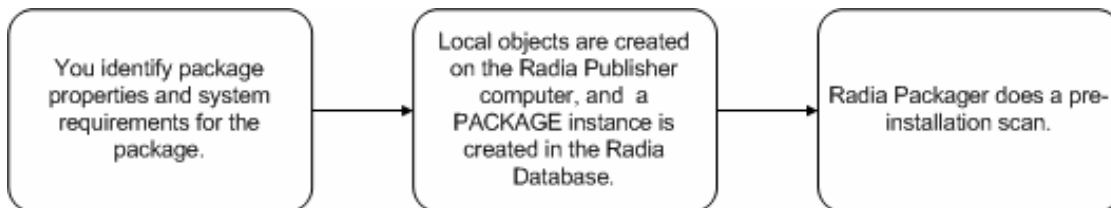
6   Install the application that you want to monitor.

7   Upon completion of the installation, Radia Packager restarts and performs a post-installation scan. The local Radia objects are updated to reflect what Radia the Publisher records as the differences between the pre-installation and post-installation scan.

8   Change file, registry, and desktop properties, if needed.

9   The Radia Packager promotes the data needed to install the application to the Radia Database in a compressed format. The Package instance in the Radia Database is updated with all of the path, registry, file, and desktop instances as described below:

— One File Resources (FILE) instance for each file in the package.

— One Desktop (DESKTOP) instance for each program group, link, and shortcut in the package.

— One Path (PATH) instance for each unique path to one or more components on the computer where the software is installed.

— One Registry Resources (REGISTRY) instance for each hive in the package.

Figure 24   Installation Monitor Mode post-installation steps
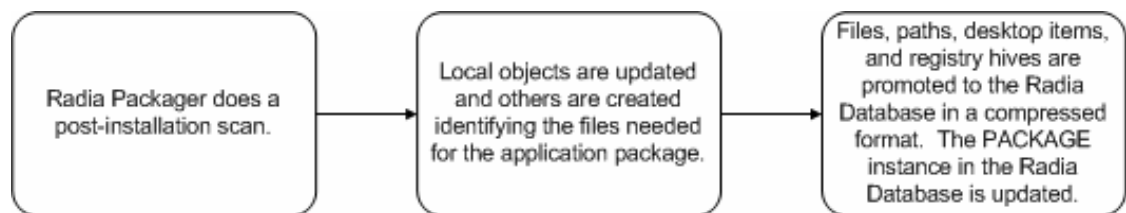
In the tree view of Figure 25 on page 75 you see the Stratus Pad package for Windows 2000 and Windows XP with all four types of instances.

Figure 25   Stratus Pad package contains multiple instances
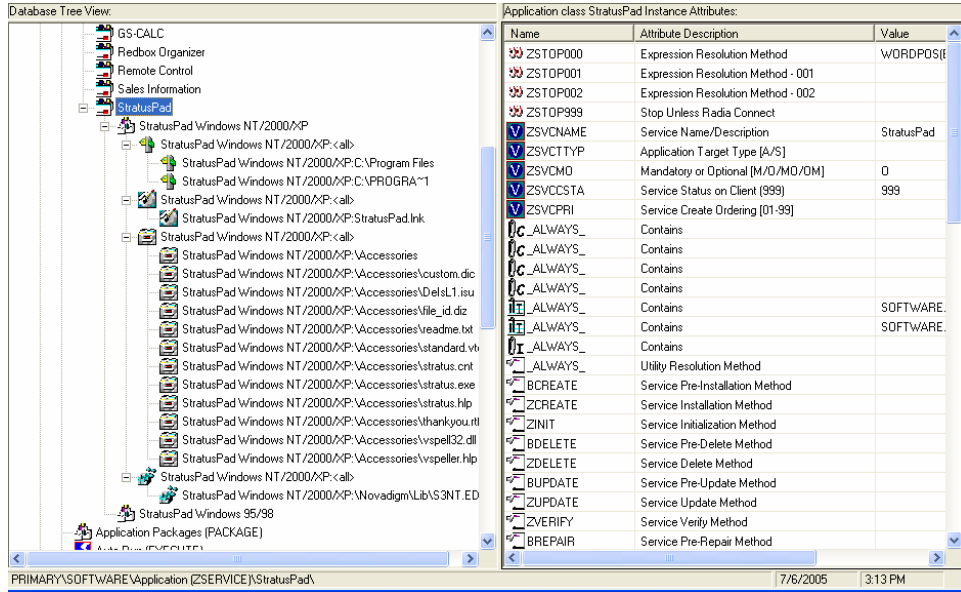
Component Selection Mode

In Component Selection Mode, you select the individual components of the application, such as files, registry entries, and links. We recommend this mode for packaging simple data or applications.

Figure 26   Select components to publish
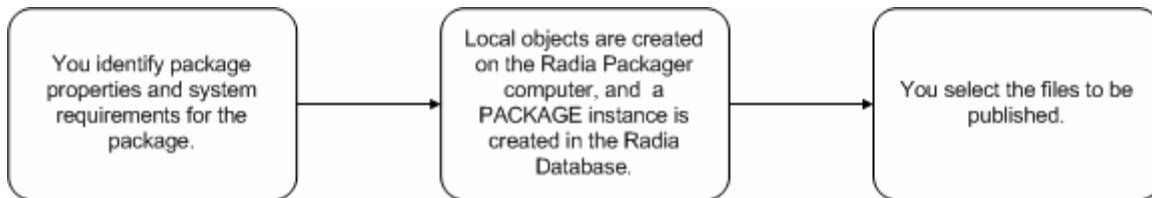
1   Identify the package properties such as package name, description, and version number. A local object is created with this information. An instance is created in the Package class of the Radia Database with this information. A ZSTOP expression is inserted in the database that

prevents the application from being deployed before the package creation is complete.

2   You also choose the requirements for operating system, memory, processor speed, and availability. Local objects that include information on the package requirements are created on the Radia Packager computer.

3   Select the files that you want to include in the package including exported registry hives and desktop shortcuts. The file formats of the registry and desktop files are transformed so that they are promoted as registry and desktop items rather than as file instances.

4   Change file, registry, and desktop properties, if needed.

Figure 27   Selected components are promoted to Radia Database

Local objects are updated and other are created identifying the files needed for the application package.	→	Files, paths, desktop items, and registry hives are promoted to the Radia database in a compressed format.	→	The PACKAGE instance in the Radia Database is updated.
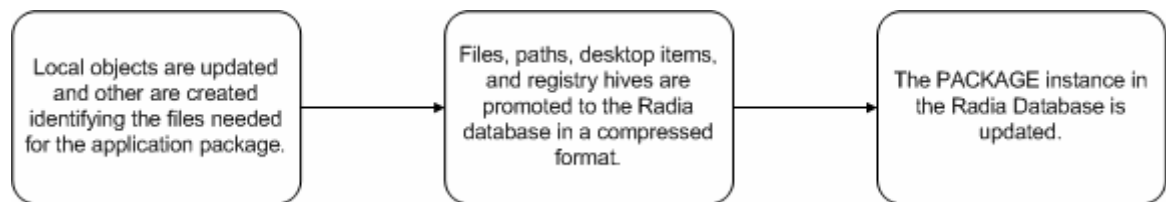
5   The Radia Packager promotes the data you identified for the application to the Radia Database in a compressed format. The Package instance in the Radia Database is updated with all of the path, registry, file, and desktop instances as described below:

— One File Resources (FILE) instance for each file in the package.

— One Desktop (DESKTOP) instance for each program group, link, and shortcut in the package.

— One Path (PATH) instance for each unique path to one or more components on the computer where the software is installed.

— One Registry Resources (REGISTRY) instance for each hive in the package.

The Client Connect Process

The purpose of the Client Connect process is to insure that the subscriber's client computer matches its distribution model. A **subscriber** is the person who uses Radia-managed applications on a client computer. A **client**

computer is a subscriber's computer that has the Radia Client software installed on it. The **distribution model**, also called the desired state, embodies the content that Radia manages for the subscriber's computer. A model representing the desired state for each subscriber's computer is stored in the Radia Database; it is created and managed using the Radia System Explorer.

The Client Connect process is initiated when a client sends an object, such as ZMASTER, to the Radia Configuration Server. The ZMASTER object contains information about the client computer necessary to run Radia, such as the identity of the subscriber and the IP address of the client computer.

The ZMASTER object can be sent to the Radia Configuration Server as a result of the following events:

- A scheduled **Timer** event.

   Timers are usually associated with a particular service and can be triggered periodically or randomly within a certain time period.

- A **Notify** sent by the Radia Configuration Server to the Radia Client.

   Notify requests, in general, are used to update or remove a specific service.

- A refresh of the **Service List** on the client in the Radia Software Manager.

   To manage Radia services, the subscriber uses the Service List. The Service List is only available with the Radia Software Manager, and can be used to install, remove, verify, and update a service.

- The subscriber invokes an application that is under Radia **Just-in-Time** management.

   Just-In-Time causes a Radia Client Connect to verify the application before the application executes on the client. This feature is available for the Radia Application Manager only. See the *Radia Application Manager Guide* for more information.

The connect process involves the following three stages.

1 **Tree Differencing** to download the new objects from the Radia Configuration Server, create the **difference objects** (delta objects), and identify any data that needs to be retrieved.

2 **Data Transfer** in which data is downloaded to a temporary location (IDMDATA).

3　**State Machine** processing to install files from the temporary location to the live location, and create the new desired state objects to manage Radia services.

Figure 28　Three phases of Client Connect process
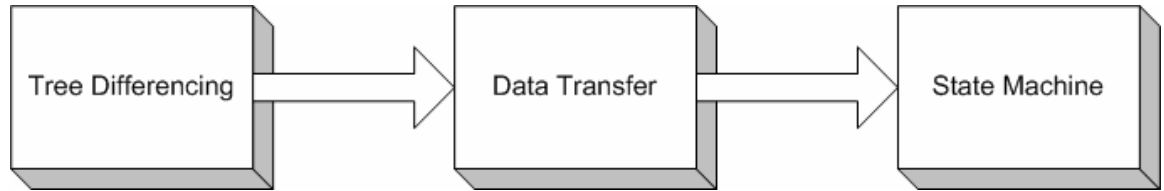
Tree Differencing

During the Tree Differencing phase of the Client Connect, the client identifies which files it needs to bring the client computer to the desired state. The client differentiates the data between the configuration information on the client and the Radia Configuration Server. First, the client sends the ZMASTER object to the Radia Configuration Server. Then, the Radia Configuration Server builds the distribution model based on the rules for the user designated in the ZMASTER object. The distribution model is sent back to the client as a new object, where the client synchronizes the old and new objects between the server and the client. See Figure 29 on page 79 for more detail.

Figure 29   Client completes Tree Differencing process

1 An object is sent to the Radia Configuration Server by the Radia Client.

2 The Radia Configuration Server uses the Resolution process to dynamically build the desired state.

Radia Configuration Server

3 The Radia Configuration Server sends the resolved desired state information back to the client.

Radia Client

4 The client finds the differences between the current state and the desired state, and generates difference objects.

5 Client identifies which instances have data, such as File or Registry.

6 Client checks for these files in the application and IDMDATA directories.

7 Radia Software Manager Client creates backup of files to be replaced in the UNDO directory.

During Tree Differencing, the client prepares to receive data to bring the computer to its desired state.

Tree differencing works by using a **reference list**, which is like an object dictionary; it stores the different names for a particular class. The reference list is updated whenever a change is detected within the tree, in the "branches" or "leaves". The differencing algorithm relies on a name algorithm to generate predictable names for the difference object, the downloaded object, and the branch object.

After generating the difference object, the client identifies if it needs to get any data files or install applications to bring the client computer to its desired state. The client requests and downloads these files from the Radia Configuration Server, a Radia Proxy Server, or a Radia Staging Server during the Data Transfer stage of the Client Connect process.

Data Transfer

The Data Transfer phase of the Client Connect begins when the client sends a request for these files to the Radia Configuration Server. If the client is configured to retrieve files from the Radia Proxy Server or the Radia Staging Server, the client checks those servers for the files it needs. If the files are present, the client downloads them. If any of the files cannot be retrieved from the Radia Proxy Server or the Radia Staging Server, the client retrieves the files from the Radia Configuration Server. If the client is not configured to use the Radia Proxy Server or the Radia Staging Server, the files are retrieved directly from the Radia Configuration Server.

The Radia Configuration Server, the Radia Proxy Server, or the Radia Staging Server sends the data to the client computer in a compressed form, and copies it to the IDMDATA directory. The IDMDATA directory is used as a temporary storage location on the client computer for these compressed files. Once the files are decompressed and installed on the subscriber's computer, the compressed files are erased automatically if configured.

Figure 30   Client receives application data
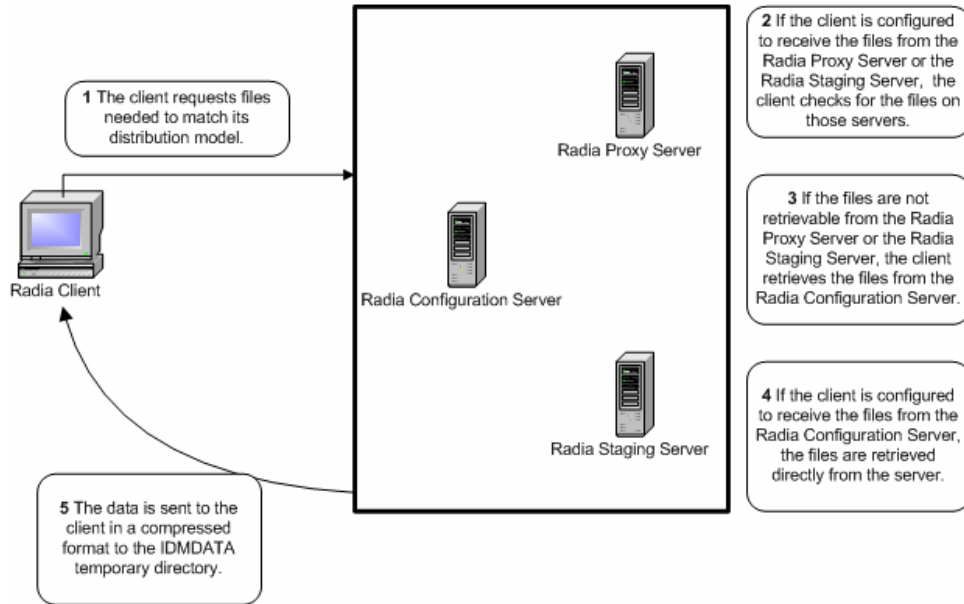
> Use Radia Client Operations Profiles to prioritize and set criteria for where the client devices should obtain their digital content from. See the *Radia Application Manager Guide* or the *Radia Software Manager Guide* for details.

State Machine

After the client downloads the files needed to bring the machine to its desired state during the Data Transfer phase, the client installs these files from the IDMDATA directory. The client erases the compressed files after they have been installed on the client computer. Then, the client merges the original object from the client with the differenced object created during the Tree Differencing Process.

Figure 31   State Machine processing
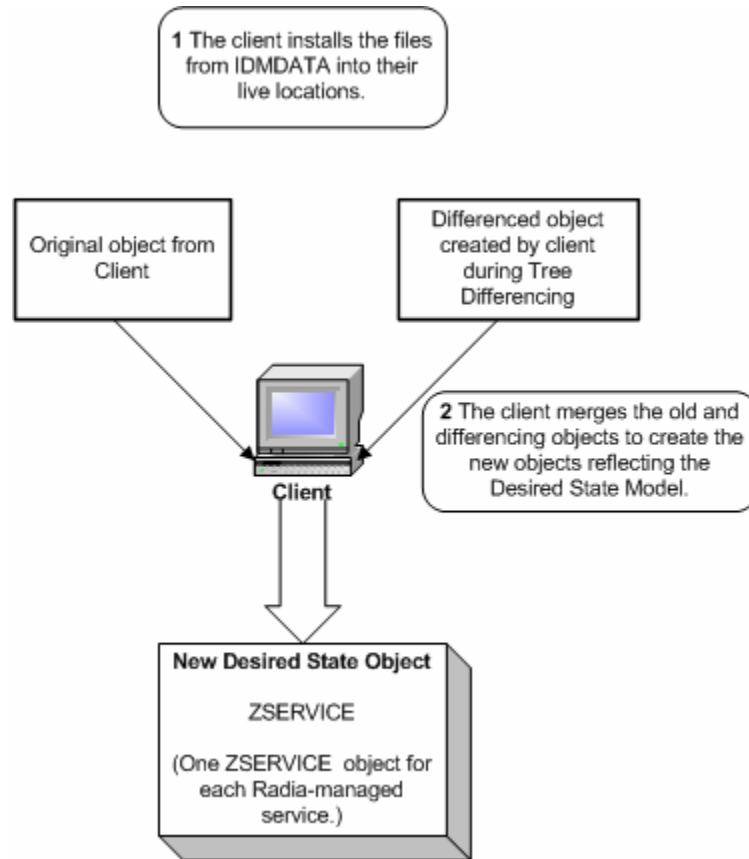
At the end of the Client Connect process the client computer's configuration should match its distribution model in the Radia Database.

The Resolution Process

The Radia Configuration Server uses the **resolution process** to accomplish a unit of work in response to a service request. The unit of work is defined by the contents of the Radia Database, and parameters included in the request. In other words, what Radia does depends upon what information is stored in its Database, and what information accompanies the request for Radia to

perform some action. For example, the Radia Client Connect submits service requests to the Radia Configuration Server, and the Radia Configuration Server performs a resolution process in response to each request.

Figure 32   Radia Configuration Server performs resolution
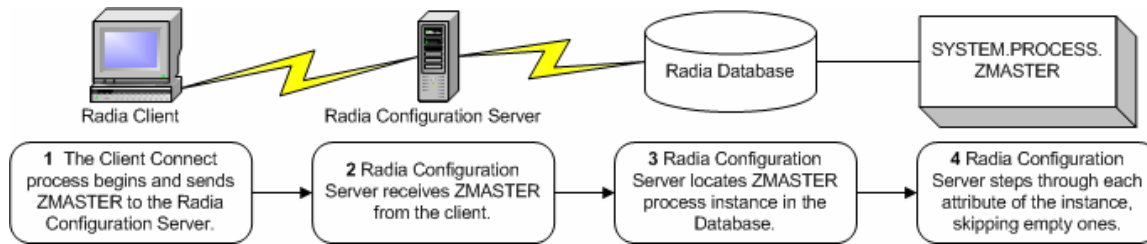
The ZMASTER object is sent to the Radia Configuration Server during the Client Connect. The ZMASTER object contains information about the client computer necessary to run Radia, such as the identity of the subscriber and the IP address of the client computer.

The Radia Configuration Server stores the ZMASTER object in **global memory.** Global memory is a temporary storage area in the Radia Configuration Server. The Radia Configuration Server maintains global memory's contents for the duration of the resolution process.

Figure 33   Subscriber's local ZMASTER object
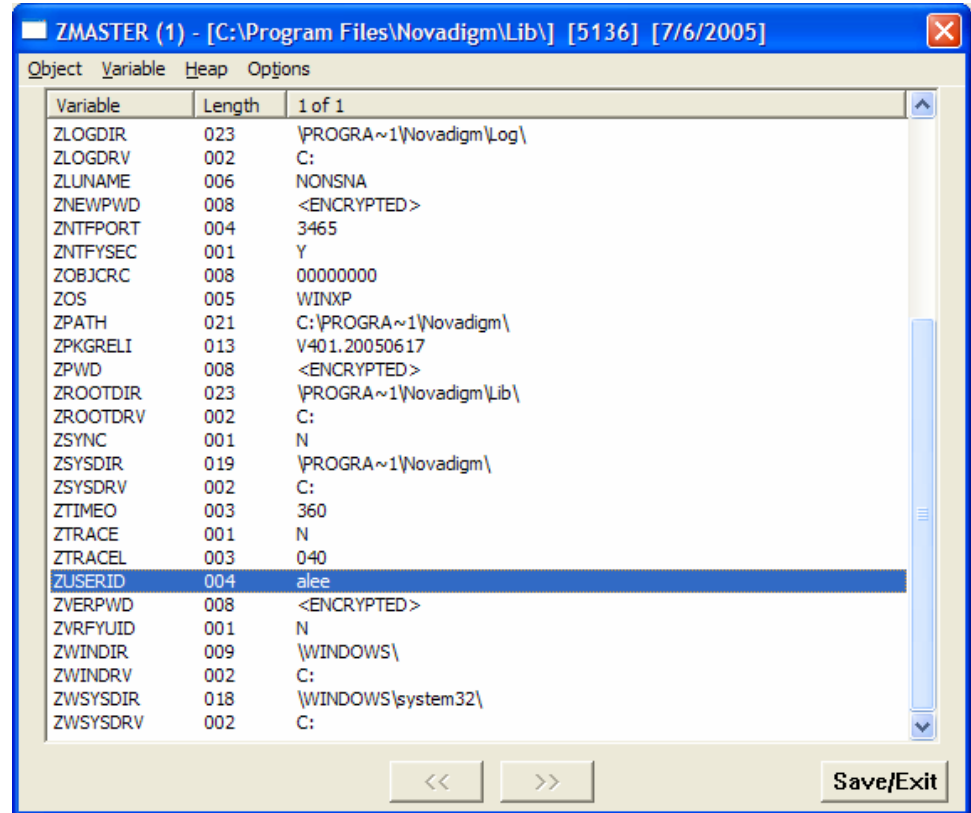
After storing ZMASTER in global memory, the Radia Configuration Server finds the Process instance for the ZMASTER. This is the **process entry point**. Its location is SYSTEM.PROCESS.ZMASTER.

The Radia Configuration Server reads each attribute of SYSTEM.PROCESS.ZMASTER. As a result of an attribute, the Radia Configuration Server may:

— Set variable values.

— Evaluate an expression.

— Execute a method.

— Connect to other instances.

If there is a connection to another instance, the Radia Configuration Server processes the connected instance. Then, the resolution process resumes in the referring instance at the next attribute after the connection attribute. For example, in Figure 34 below, the first connection instance links to POLICY.USER.&(ZMASTER.ZUSERID). After processing POLICY.USER.&(ZMASTER.ZUSERID), the resolution process will return to PRIMARY.SYSTEM.PROCESS.ZMASTER, and will process the next attribute which is a connection instance to SYSTEM.ZMETHOD.PUTPROF_ZMASTER.

Figure 34   PRIMARY.SYSTEM.PROCESS.ZMASTER instance

Radia Processes class ZMASTER Instance Attributes:

Name	Attribute Description	Value
ALWAYS	Method	
ALWAYS	Method	
ALWAYS	Connect To	
ALWAYS	Connect To	POLICY.USER.&(ZMASTER.ZUSERID)
ALWAYS	Method	SYSTEM.ZMETHOD.PUTPROF_ZMASTER
ALWAYS	Method	SYSTEM.ZMETHOD.PUTPROF_ZCONFIG
ALWAYS	Method	
ALWAYS	Method	
ALWAYS	Method	
ALWAYS	Method	
ALWAYS	Method	
DESCRIPT	Process Description	Processing Client Request for &ZCUROBJ
ZMAXOKRC	Max acceptable method Return Code	008

During resolution the Radia Configuration Server, performs **symbolic substitution** to set values and connect to other instances. For example, in SYSTEM.PROCESS.ZMASTER there is a connection to POLICY.USER.&(ZMASTER.ZUSERID). The Radia Configuration Server substitutes the value of the ZUSERID from the ZMASTER object that is in global memory. In Figure 33 on page 84, the value of ZUSERID is alee. Therefore, the resolution process will connect to POLICY.USER.ALEE, and resolve that instance.

Figure 35   POLICY.USER.ALEE instance

In Figure 35 above, after setting a number of variables, the first connection attribute is to SOFTWARE.ZSERVICE.AMORTIZE. In your implementation, the POLICY instance may connect to a workgroup that connects to a service.

Figure 36   ZSERVICE.AMORTIZE instance

A Service instance links to packages. Figure 36 above begins with a ZSTOP expression variable. An expression variable contains statements that, if evaluated to "true", stop the resolution of the current instance. For information on Radia REXX, see the *Radia REXX Programming Guide*. An expression allows alternative paths to be taken in a given resolution, based upon variable data. In this case, the expression checks to be sure that the operating system of the client computer is allowed for the Amortize software.

A service instance connects to package instances. In our example, the first connection is to SOFTWARE.PACKAGE.AMORTIZE2_W95. The Radia Configuration Server looks at the instance. After setting some variable, there is a ZSTOP expression. If the client computer's operating system is either Windows 95 or Windows 98, the Resolution process continues with this instance, connecting the file instances, registry entries, path instances, and shortcuts. If the client has another operating system, resolution returns to SOFTWARE.ZSERVICE.AMORTIZE, to the next connection instance.

Eventually, the resolution process will return to the User instance, finish resolving it, and will return to the process entry point, SYSTEM.ZPROCESS.ZMASTER. Referring back to Figure 34 on page 85, the next attribute connects to the PUTPROF_ZMASTER method. A *method* is a program that performs functions based on certain parameters.

Figure 37   ZMETHOD.PUTPROF_ZMASTER instance

The Radia Configuration Server executes the EDMMPPRO method, passing ZMASTER as a parameter. This causes the contents of the ZMASTER object in global memory to be written to the PROFILE file of the Radia Database.

After processing all attributes in the SYSTEM.PROCESS.ZMASTER instance, resolution terminates.

Inventory Collection

The Radia Inventory Manager has a client and a server component. The Radia Inventory Manager Server enables centralized reporting and administration based upon the discovery results. The Radia Inventory Manager client discovers configuration information on the client device, and reports the results to the Radia Inventory Manager Server. Web-Based Enterprise Management (WBEM) enables information such as the amount of RAM in a computer, hard disk capacity, process type, and versions of operating systems to be extracted from computers, routers, switches, and other networked devices. Windows Management Instrumentation (WMI) is Microsoft's implementation of WBEM for Microsoft Windows platforms.

Figure 38   Inventory results report to an ODBC source
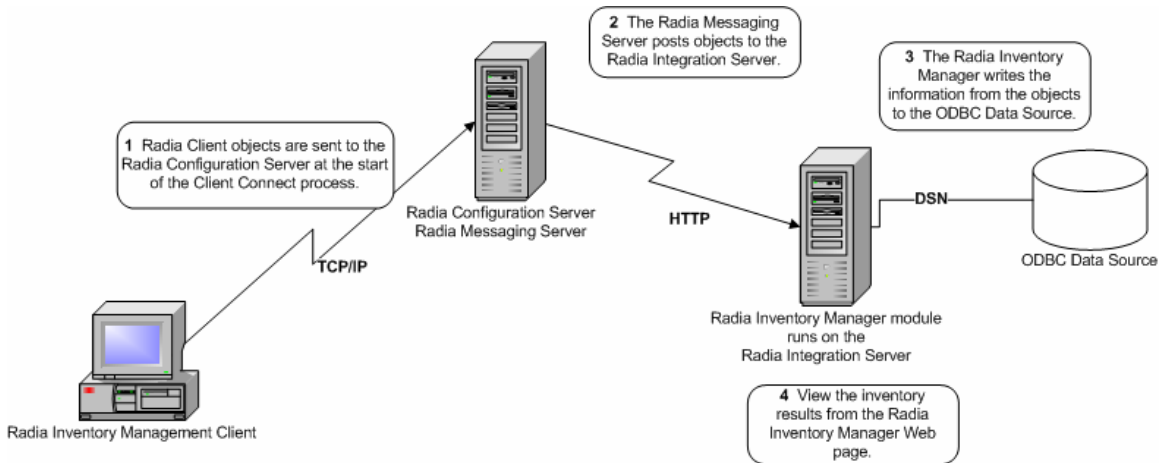
1   During the Client Connect, Radia objects are sent to the Radia Configuration Server. Some objects are always sent and others are sent as a result of an Audit Service being performed. The following information may be sent:

— The APPEVENT object that describes the most recent service events.

— The ZCONFIG object that contains information on the device's hardware configuration.

— If a WBEM audit is performed and the client is a WBEM consumer, then WBEM objects will be sent.

2   The Radia Messaging Server forwards the information to the Radia Integration Server.

3   The Radia Inventory Manager transforms the information into inserts and updates for an ODBC data source.

You can view pre-configured reports through the Radia Inventory Manager page on the Radia Integration Server, the Radia Reporting Server, or the Radia Management Portal. You can create your own reports to be placed there as well.

Radia Proxy Server Processing

If the client has been configured to use a Radia Proxy Server, then the client will attempt to retrieve files from the Radia Proxy Server when resolving a service. The logical flow for a typical client request to a Radia Proxy Server is as follows (assuming all components are enabled):

1 The client sends a request to the Radia Proxy Server.

2 The Radia Proxy Server protocol front end receives the request.

3 This request is validated, and passed to the main cache manager.

4 The local static cache is searched, and if found, the request is satisfied.

5 If the file is not in the static cache, the dynamic cache is then searched.

6 If the file does not reside in the dynamic cache, Dynamic PassThru requests the file from the defined upstream host (typically, the Radia Configuration Server). The original request is satisfied, and the file is stored in the dynamic cache for future requests.

Figure 39 on page 91 is a simple overview of the flow, as described above.

Figure 39   Radia Proxy Server process
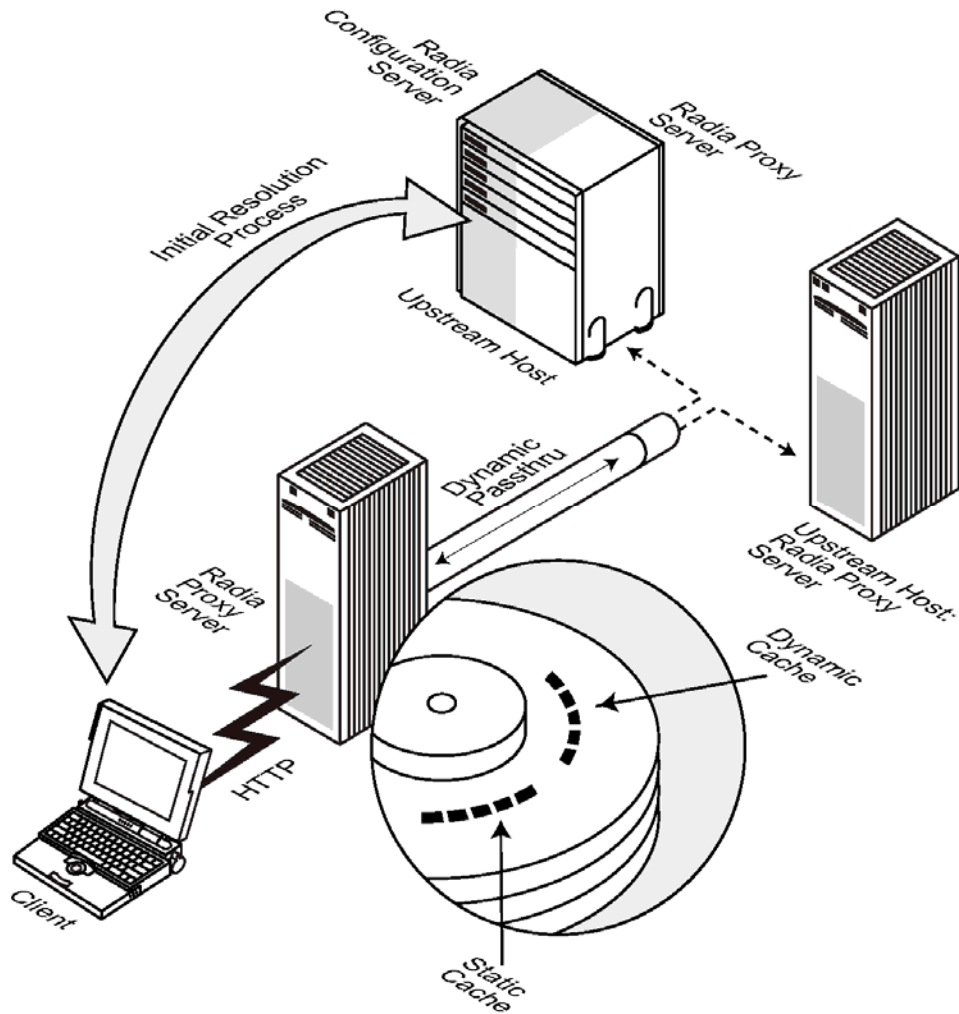
Static and Dynamic Cache

The **static cache** is managed by the Preloader component of Radia Proxy Server. This component manages this cache by connecting to the assigned Radia Configuration Server, similar to a Radia Client. The static cache is typically **preloaded** during the off hours, so the required resources are

available when requested. This is the primary cache location for the Radia Proxy Server. For performance efficiency, this cache should be preloaded with all resources that are to be distributed by the Radia Proxy Server.

The **dynamic cache** is populated on demand by the Dynamic PassThru component of the Radia Proxy Server. When a requested resource is not found in the primary (static) cache, the dynamic cache is searched and populated if necessary. This cache is viewed as a safety net for requests that fall through the static cache search. The Dynamic PassThru component also manages this cache, removing files that have not been requested in a previously configured number of days. You can define the maximum number of days this cache is defined in the Radia Proxy Server configuration file.

Preloader

The Preloader component maintains the static cache by interacting with its defined Radia Configuration Server. Required resources are placed into the cache, while resources no longer included in the Radia Proxy Server model are removed from the cache. The Radia Proxy Server's model is created according to the POLICY domain on the Radia Configuration Server.

Dynamic PassThru

When a client request is received for a resource that does not exist locally, the Radia Proxy Server can request these resources from an upstream host, such as the Radia Configuration Server or another Radia Proxy Server. These resources are then returned to the requesting client, as well as stored locally in the dynamic cache for subsequent requests.

Radia OS Manager Image Deployment Server Architecture

The Radia OS Manager deployment architecture involves a set of servers designed to manage and deploy operating systems to a set of target machines based on a set of criteria. Typically, you will need four server machines. During deployment, the following server components are used:

- **Machine 1**

— **DHCP Server**
The target machine uses a DHCP server to obtain an IP address. You can easily implement Radia OS Manager in an existing DHCP-enabled network. There is no need to install additional DHCP servers.

- **Machine 2**

— **Radia OS Manager Server (ROMS)**
The Radia OS Manager Server sends requests for images from the target machine to the Radia Configuration Server.

— **Radia Configuration Server (RCS)**
The Radia Configuration Server manages the policy information and images for Radia OS Manager. See the *Radia Configuration Server Guide* on the HP OpenView support web site. The Radia Database must be updated, as described in this document, to accommodate the Radia OS Manager.

— **Radia Proxy Server (RPS)**
The Radia Proxy Server is a web server used to deploy the service containing the gold image to the target machines. The Radia Proxy Server handles the heavy lifting for transferring gold images to targeted machines. Radia Proxy Servers should be placed and sized to accommodate high volume data transfer. This is consistent with standard recommendations. Where appropriate, separate Radia Proxy Servers may be used for applications and OS file serving.

— **Radia OS Manager Administrative Interface**
The ROM Administration tasks, which create a Radia OS Manager Administrative Interface, are a plug-in to the Radia Management Portal. This provides a graphical user interface for performing OS management tasks.

> You can also install the Radia Publisher on this machine.

- **Machine 3**

— **Boot Server (PXE/TFTP servers)**
The Boot Server is a Windows-based PXE (Pre-execution environment) server and TFTP (Trivial File Transfer Protocol) server. *Do not install the Boot Server on the same machine as your DHCP server.*

For information about PXE industry standards, see

http://pxes.sourceforge.net/pxe.html

- **Machine 4**

    — **Radia Information Base Server (RIB)**
      The Radia Information Base Server, a component of the Radia OS
      Manager, stores the information about the machines in your
      environment in a single location that can be shared by all of the
      components.

The following diagram illustrates the deployment architecture.

Figure 40   Deployment architecture
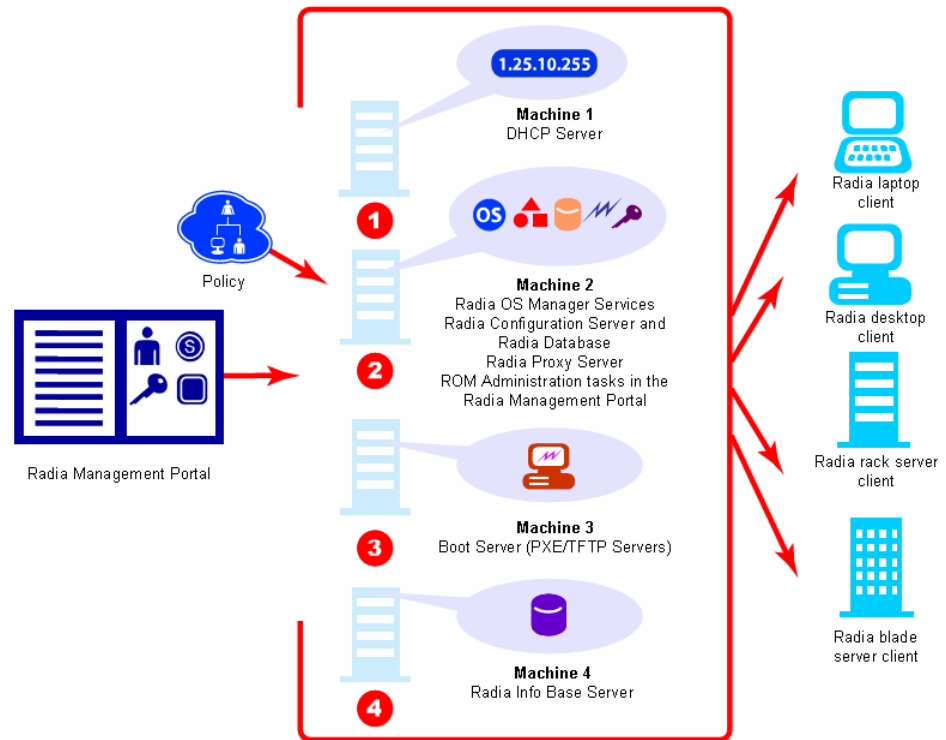
Radia Patch Manager Acquisition

Radia Patch Manager acquires security patches and synchronizes the patch's
information in the Radia Database on the Radia Configuration Server with

the Patch database on an SQL or Oracle Server. During the acquisition, the following things occur:

- The vendor's web site is contacted to prepare for the acquisition of Bulletins.

- Either the information about the Security Bulletins and Service Packs and the actual patch files or only the information about the patches is downloaded. The information downloaded contains, but is not limited to, detailed data about each patch, such as supercedence, reboot requirements, and probe information.

- An xml file is created for each security bulletin acquired and is put in the vendor's folder in the Radia Integration Server's directory. These files are called patch descriptor files.

- The Radia Database PATCHMGR domain is populated with this information

- Services are created in the PATCHMGR domain for each of the bulletins acquired.

- The PATCHMGR domain is synchronized with the SQL database you created.

If you have already performed an acquisition, only instances that are different are updated.

Figure 41   Vendor's patch repository is contacted
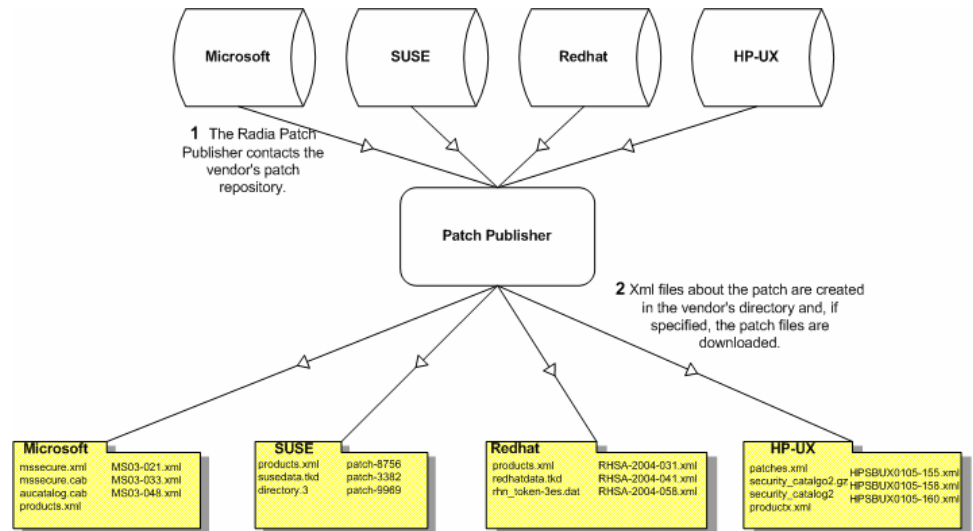
About Patch Descriptor Files

When security patches are acquired an xml (patch descriptor file, with information about the patch is created and placed in the vendor's directory. The vendor directories are located by default in \\Novadigm\IntegrationServer\Data\Patch. For example, patch descriptor files for Microsoft bulletins would be in \\Novadigm\IntegrationServer\Data\Patch\Microsoft. The security bulletin number is the file name with an xml extension. If the bulletin is identified by MS03-051, then the patch descriptor will be named MS03-051.xml. If you also acquired the actual files associated with the bulletin, a folder is created with the name of the bulletin that contains the patch files.

Figure 42   View acquired Patch Descriptor file directory structure
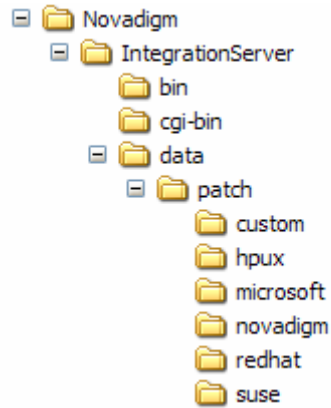
Some of the information acquired from the vendor may need to be altered before the patch can be managed. Therefore, there are two other subdirectories in \\Novadigm\IntegrationServer\Data\Patch. HP provides you with some additional patch descriptor files that are located in the Novadigm subdirectory. Patch descriptor files located in the Novadigm directory override patch descriptor files in the Microsoft directory. You can also create or modify your own patch descriptors that will override files in the Novadigm and Microsoft directories. Use a text editor to make the changes, name the file *exactly* as it is named in the vendor's directory, and place these xml files in the Custom subdirectory.

Figure 43 Security Patch descriptor files in Custom override those in Novadigm and Microsoft
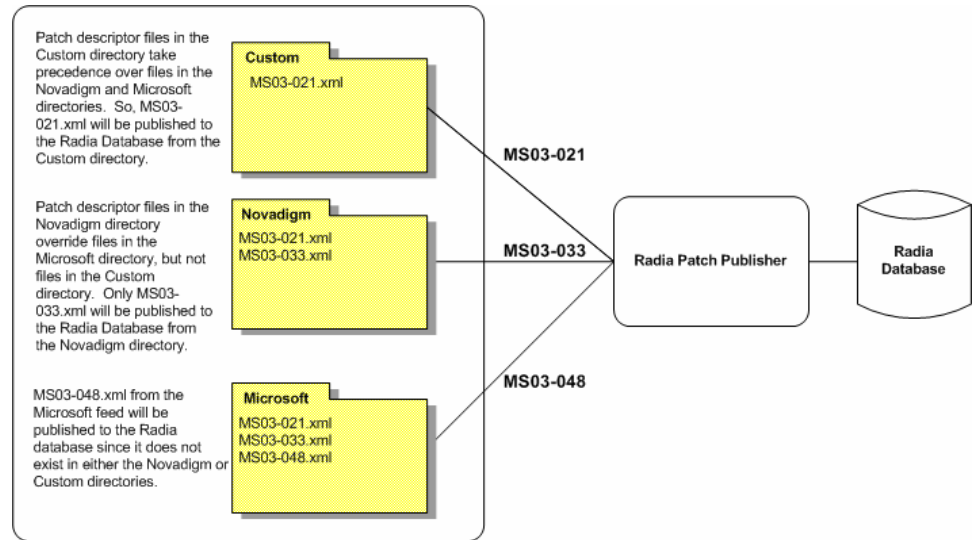
Configuration Baseline Auditor Process

Configuration Baseline Auditor processes can be divided into three categories.

1 **Defining Subsystems**

   The Configuration Server contains a BASELINE domain used to define subsystems. It also contains a scanning script, known as the Configuration Baseline Scanner.

2 **Collecting and Importing Data**

   A Radia client connect or timer initiates the Configuration Baseline Scanner. The scanner scans the device and creates a set of files (compressed XML files) that are sent to the Radia Integration Server. The Radia Integration Server stores the XML files from the device in a directory that you specify during the installation. The Configuration Baseline Importer component reads the XML files and imports them into a Microsoft SQL Server database.

3 Reporting

Use the Configuration Baseline Auditor or the Radia Reporting Server to view the results of the collection. These reports can be exported into multiple formats.

Figure 44   Configuration Baseline Auditor Process Flow
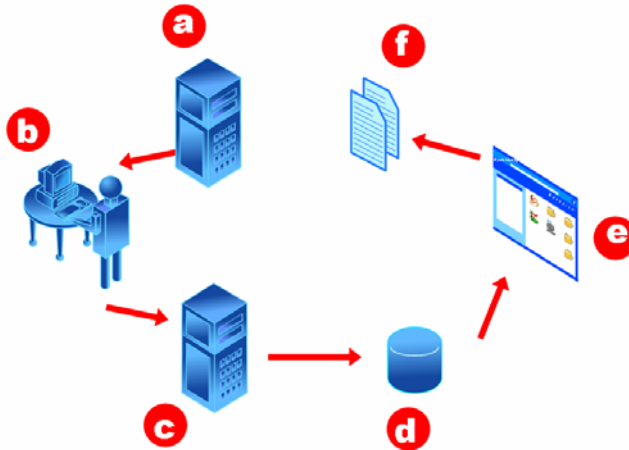
Legend

a   The Configuration Server contains the BASELINE domain. Use this domain to define subsystems, configure your filters, and specify collection options.

b   A Radia client connect or timer initiates the Configuration Baseline Scanner which is a script stored in the BASELINE domain.

c   When the scan is complete, XML files containing the collected subsystem information are created and stored in a pre-determined directory (typically the HP OpenView data directory).

d   The Configuration Baseline Importer retrieves the XML files from the pre-determined directory and imports them into the Microsoft SQL Server database.

e   Use the Configuration Baseline Auditor or Radia Reporting Server to view and compare subsystem states.

f   You can also use the Configuration Baseline Auditor or Radia Reporting Server to export reports of the comparisons into various formats.

Summary

- The Radia Database records your distribution model.

- The Packaging Process identifies and organizes software components into Radia Packages.

- The Client Connect Process insures that a subscriber's client computer matches its distribution model.

- Inventory collection is completed using the Radia Inventory Manager server and client components.

- A client can be configured to retrieve files from a Radia Proxy Server instead of a Radia Configuration Server.

A HP OpenView Using Radia Publications

HP provides an extensive publications library. The following table will help you find more information on Radia products. Check the HP OpenView support web site for new publications and updates to current publications.

Table 3   **HP OpenView Using Radia Products and Publications**

Learn	Read
Management Applications	
Application Manager	• Application Manager Guide • Management Applications Messages and Codes • REXX Programming Guide.
Inventory Manager	• Inventory Manager Guide • Management Applications Messages and Codes
OS Manager	• OS Manager Guide
Patch Manager	• Patch Manager Guide
Server Management	• Application Management Profiles Guide • Installation and Configuration Guide for Windows Terminal Server and Citrix Support • User's Guide for the Configuration Baseline Auditor • User's Guide for Configuration File Management
Software Manager	• Software Manager Guide • Management Applications Messages and Codes • REXX Programming Guide

Learn	Read
Management Infrastructure	
Configuration Server	• Configuration Server Guide • Configuration Server Messages Guide • Getting Started Guide • REXX Programming Guide • Database Reference Manual
Radia Administrator Workstation	• Configure or maintain your Radia environment.
• Client Explorer	• Application Manager Guide • Software Manager Guide
• Packager	• Application Manager Guide • Software Manager Guide
• Publisher	• Publisher Guide
• System Explorer	• System Explorer Guide
Extended Infrastructure	
Distributed Configuration Server	• Distributed Configuration Server Guide
Inventory Manager	• Inventory Manager Guide
Management Portal	• Getting Started Guide • Management Portal Guide
Multicast Server	• Multicast Server Guide • Multicast Server: Network Test Modules
OS Manager	• OS Manager Guide
Patch Manager	• Patch Manager Guide
Proxy Server	• Proxy Server Guide
Staging Server	• Staging Server Guide
Usage Manager	• Usage Manager Guide

Learn	Read
Management Extensions	
Adapter for SSL	• SSL Adapter Guide
Extensions for Windows Installer	• Extensions for Windows Installer Getting Started Guide • Extensions for Windows Installer Guide • Configuration Analyzer Guide • Knowledge Base Manager Guide
Policy Server	• Policy Server Guide
Publishing Adapter	• Publishing Adapter Guide
Systems Management Adapters	• See the HP OpenView web site for the current list.

Index

description, 43

Radia OS Manager
  benefits, 45

Radia OS Manager Administrative Interface. See ROM Administrative Interface

Radia Packager
  description, 30
  modes, 31

Radia Patch Manager, 34, 36
  features
    compliance assessment, 47
    deployment, 47
    impact analysis, 46
    pilot testing, 46
    vulnerability assessment, 47

Radia Policy Server, 50
  description, 54
  Radia Integration Server, 33

Radia Proxy Server. See RPS
  benefits, 48
  description, 47
  process, 90

Radia Publications Library, 17

Radia Publisher
  publishing steps, 71

Radia Publishing Adapter, 51
  benefits, 55
  description, 55

Radia Reporting Server, 99
  overview, 34

Radia Screen Painter, description, 33

Radia Server Management
  description, 22

Radia Software Manager, 22
  benefits, 26
  description, 26

Radia SQL data, 35

Radia SQL Databases, 36

Radia Staging Server
  beneifts, 50
  description, 49

Radia Staging Server, default processing, 49

Radia System Explorer
  benefits, 32
  description, 32

Radia systems management adapters, 51
  description, 56

Radia Usage Manager, 34, 36
  benefits, 50
  description, 50

RCS, 93

Reporting, 99

Reporting System modules, 35

required components, 35

Resolution process, 82

RIB Server
  definition, 94

ROMS, 93

RPS, 93

S

self-managing infrastructure, 12

service, definition, 16

SOFTWARE domain, 68

state file
  definition, 53

subscriber, definition, 16

SYSTEM domain, 68

T

Terminal Server Support
  description, 23

V

vulnerability
  assessment, 47

W

WBEM, definition, 88

Web server, 36

Z

ZMASTER, 83