QAD Enterprise Applications
Standard & Enterprise Edition

Training Guide

QAD .NET UI Administration

70-3063A
QAD 2010 Standard & Enterprise Edition
November 2010

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About This Course

Course Description

This course provides a technical and functional overview of the architecture and use of QAD's .NET UI Application Shell.

The course includes information on:

- The architecture of QAD's interface tools
- Deployment options for the QAD .NET UI
- Administration of the QAD .NET UI
- Tuning and troubleshooting the installation
- Navigation, browses, and process maps.

Objective

Learn how to administer and troubleshoot both the Enterprise (EE) and Standard (SE) editions of QAD Enterprise Applications. In addition, students will be able to use browses and process maps effectively.

Audience

- Implementation consultants
- System administrators

Prerequisites

- Progress 4GL knowledge
- Data model basics
- Knowledge of QAD Application architecture concepts
- Familiarity with Enterprise (EE) and Standard (SE) editions of QAD Enterprise Applications

Course Credit and Scheduling

This course is designed to be taught in three days.

Virtual Environment Information

The hands-on exercises in this book can be used with the "Standard Edition r01 - Training" environment, in the "Training" workspace.

Chapter 1

Terminology and Components

Chapter Objectives

QAD
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Chapter Objectives

- The objective of this chapter is to describe terminology and installation components that apply to QAD .NET UI.

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Benefits

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Benefits

- You will be familiar with terminology and components used in QAD .NET UI architecture and installation.

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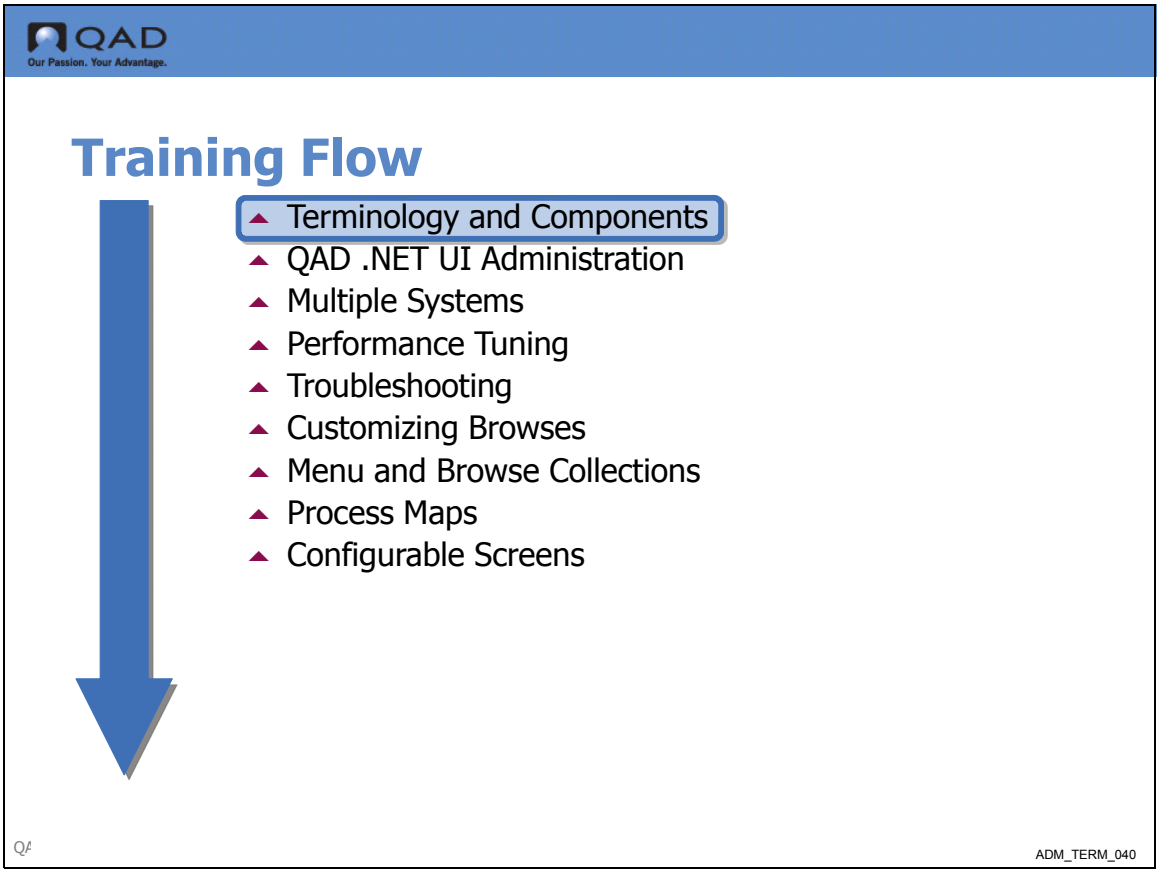
Training Flow



Overview

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Overview

- Network Terminology
- Web Terminology
- Java Terminology
- .NET Terminology

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Network Terminology

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Network Terminology

- Intranet: A private network inside a company
- Internet: A system of linked networks that are worldwide in scope
- Extranet: A network that allows a company to share information with other businesses and customers

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Network Terminology

- LAN: Local Area Network. A network of computers that span a relatively small area
- WAN: Wide Area Network. A network that spans a larger area and comprised of two or more LANs
- TCP/IP: Transmission Control Protocol / Internet Protocol
- HTTP: Hypertext Transmission Protocol

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Web Terminology

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Web Terminology

- HTML: Hypertext Markup Language
- URL: Uniform Resource Locator
- HTML Documents: ASCII Files containing HTML which the web server sends to the browser
- CGI: Common Gateway Interface

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JAVA Terminology

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Java Terminology

- JAR File: Java Archive File. A zip file that contains an optional META-INF directory
- JVM: Java Virtual Machine. Enables cross-platform delivery
- JDK/JSDK: Java Development Kit (required by Tomcat)

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Tomcat Terminology

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Tomcat Terminology

- Servlet: Simple, consistent mechanism for extending the functionality of a Web Server
- JSP: JavaServer Pages; technology to rapidly develop and easily maintain information-rich, dynamic web pages
- XML: eXtensible Markup Language
- XSLT: Transforms XML to another format and allows manipulation of Elements, Attributes & Data

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.NET Terminology

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.NET Terminology

- .NET: Microsoft software for connecting information, people, systems, and devices. .NET provides XML-based interoperability and is being incorporated across Microsoft clients, servers, services, and tools.
- .NET Framework: An integral Windows component that enables building and running the next generation of software applications and Web services.
- ADO.NET
  - Key for integrating .NET with Progress
  - A set of classes used to wrap data and data services
    - XML Web Services
    - .NET Remoting
    - Passes data back and forth to OpenEdge AppServer
  - In memory database

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.NET Terminology

- ProDataSet
  - An OpenEdge in-memory data store
  - Maps directly to an ADO.NET DataSet allowing us to:
    - Design a .NET interface in terms of .NET DataSets
    - Pass data back and fourth to OpenEdge AppServer

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Components

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Overview

- .NET UI Architecture
  - Tomcat
  - Connection Manager
  - Progress AppServer
  - Progress WebSpeed
  - Telnet Server
  - .NET UI Client
- .NET UI Technology Overview

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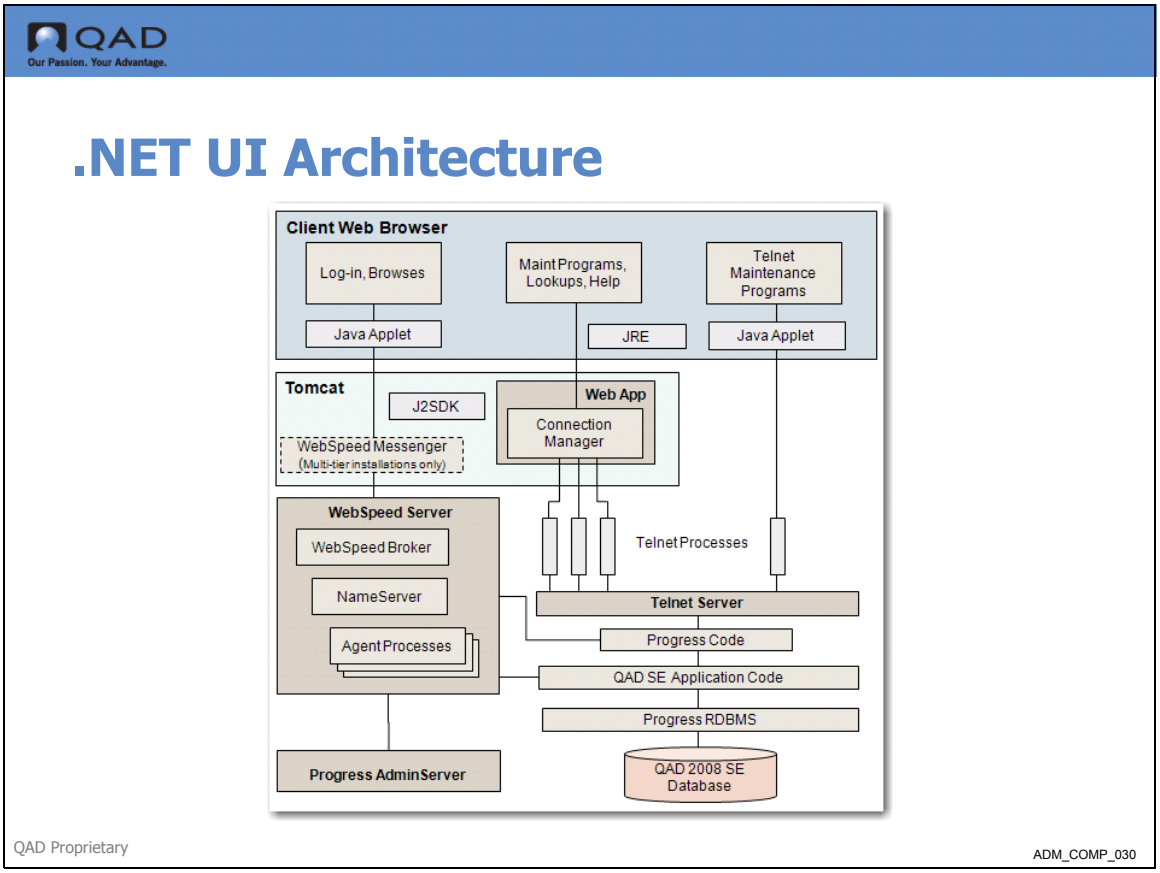
.NET UI Architecture



Webspeed

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What is WebSpeed?

- WebSpeed is a Progress development and deployment environment that enables users to build robust, data-driven Internet Transaction Programs (ITP) for the intranet or Internet
- Enables you to create Web Objects (application modules) that map data to and from static HTML documents using the WebSpeed Workshop and WebSpeed 4GL
- Enables you to deploy your HTML pages and Web Objects to a run-time environment using the WebSpeed Transaction Server

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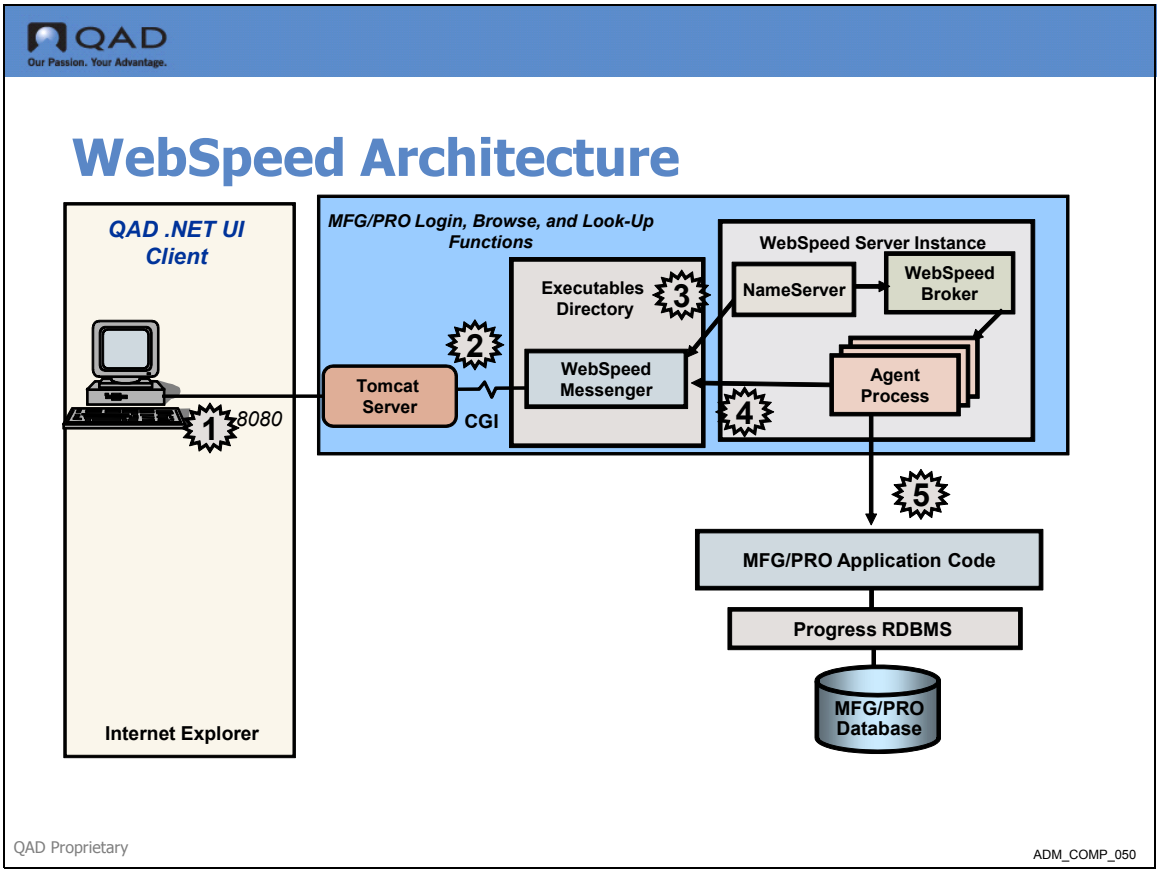
Webspeed Architecture



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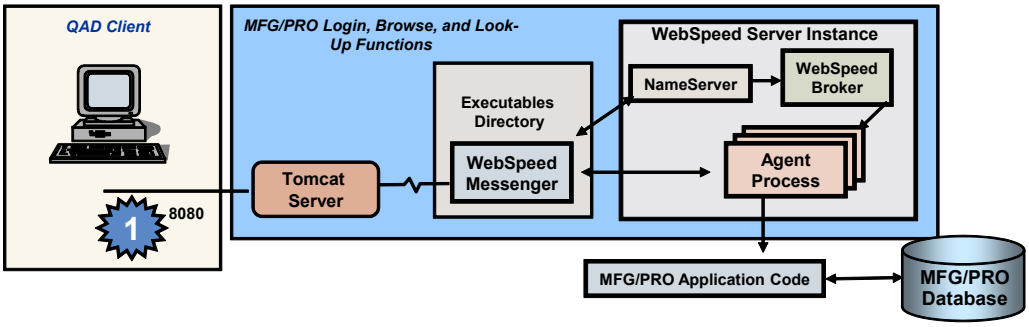
WebSpeed Architecture

- Connection 1
  - Network Connection between the browser and the Tomcat server. Default server port is 8080
  - Tomcat server and WebSpeed messenger must be on the same machine
  - Tomcat server communicates with the WebSpeed messenger



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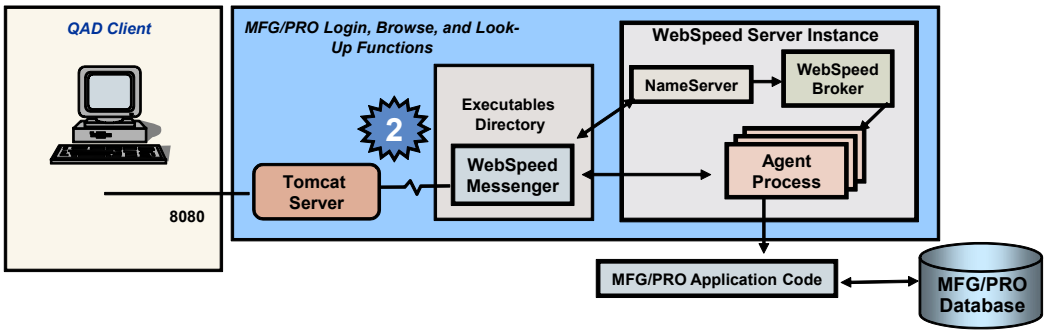
WebSpeed Architecture

- Connection 2
  - Tomcat server connection to the WebSpeed messenger
  - Uses script programs stored on the Tomcat server to communicate with the messenger
  - Messenger is a PROGRESS .exe file that takes a PROGRESS Web Object procedure (.w) as input and sends back an HTML page as output



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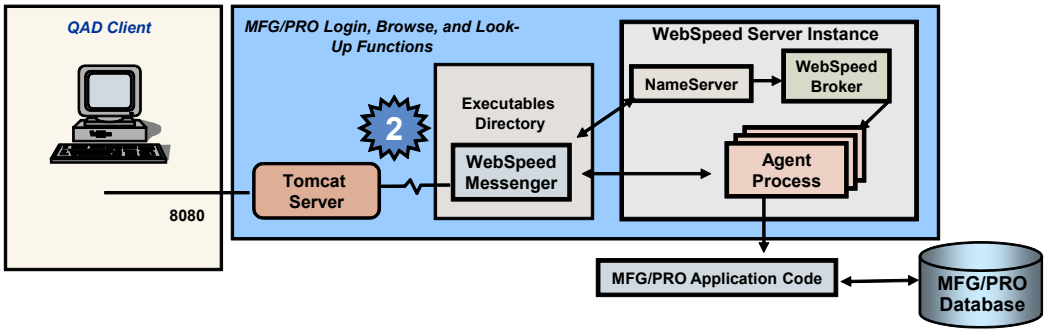
WebSpeed Architecture

- After processing, the agent returns its HTML output to the messenger for transfer back to the web server and finally to the browser



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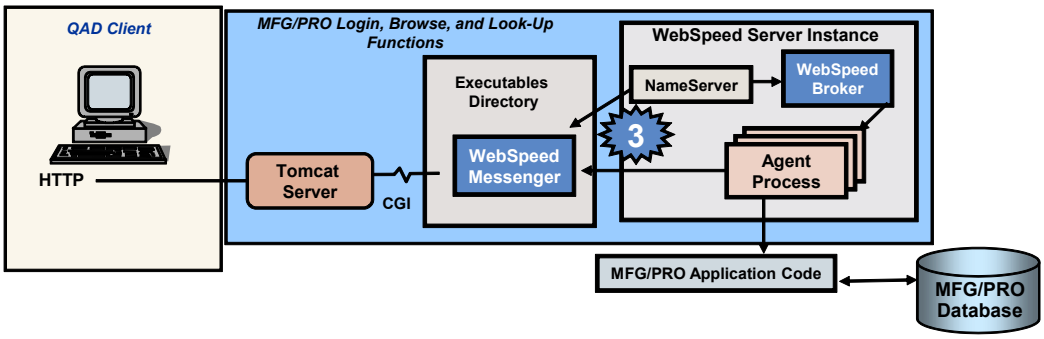
WebSpeed Architecture

- Connection 3
  - Network connection between the messenger and the transaction broker
  - Defined by the hostname and port defined in the `ubroker.properties` file



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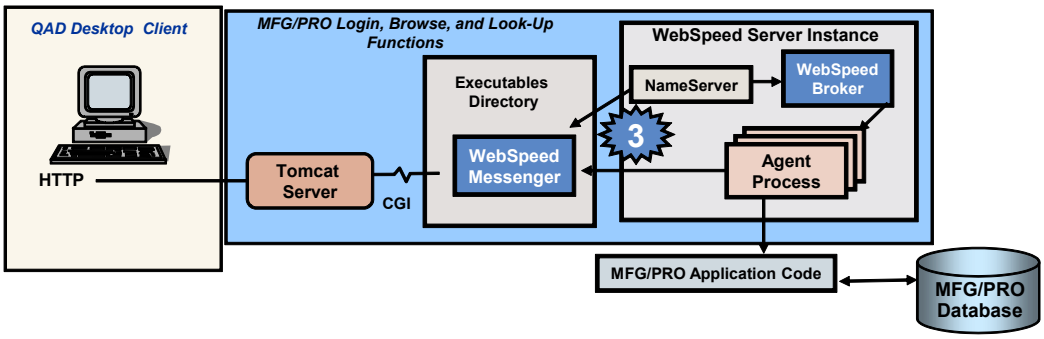
WebSpeed Architecture

- WebSpeed Transaction Broker is responsible for:
  - Receiving requests from the messenger on availability of an agent to service the web object
  - Replying to the messenger with the ID and port of the available agent
  - Spawning a new agent if none available and not at the limit



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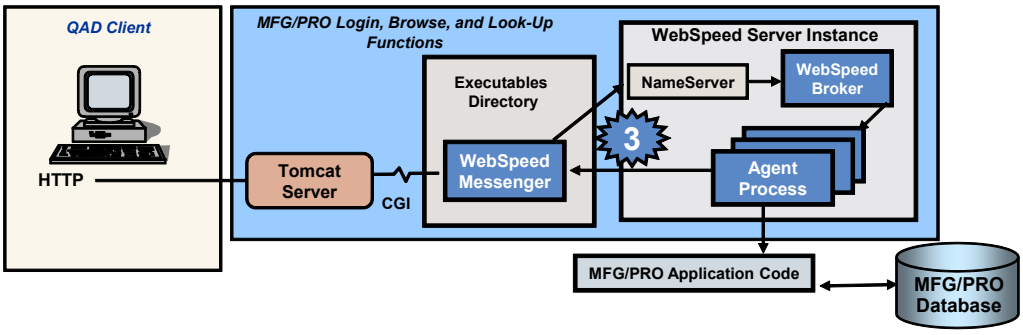
WebSpeed Architecture

- The WebSpeed broker will assign an agent
  - If at the limit, sends message to messenger that no agents are available
  - Provides the status and states of running agents
    - STARTING, AVAILABLE, LOCKED, BUSY



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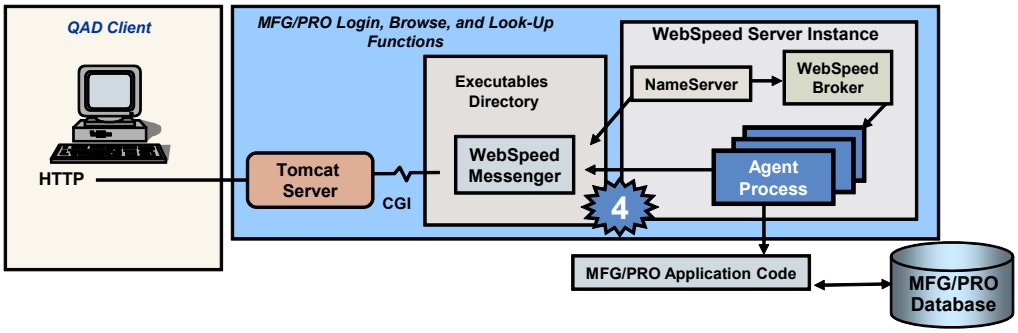
WebSpeed Architecture

- Connection 4:
  - Network connection between the WebSpeed transaction agents and web server
  - Defined by the hostname and port defined in the the `ubroker.properties` file



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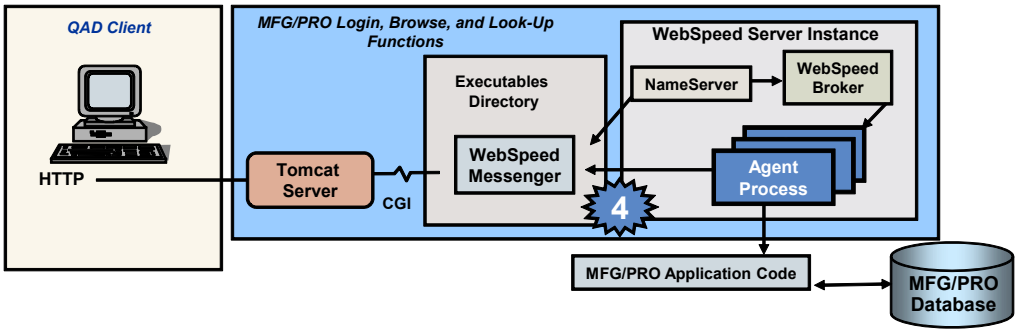
WebSpeed Architecture

- WebSpeed Transaction Agent:
  - A Progress client (_progres) with modifications to work with WebSpeed
  - Agents accept requests from the messenger in the form of a URL, parse the URL for the name of the web object to execute, and then run it
  - Passes output back to the messenger



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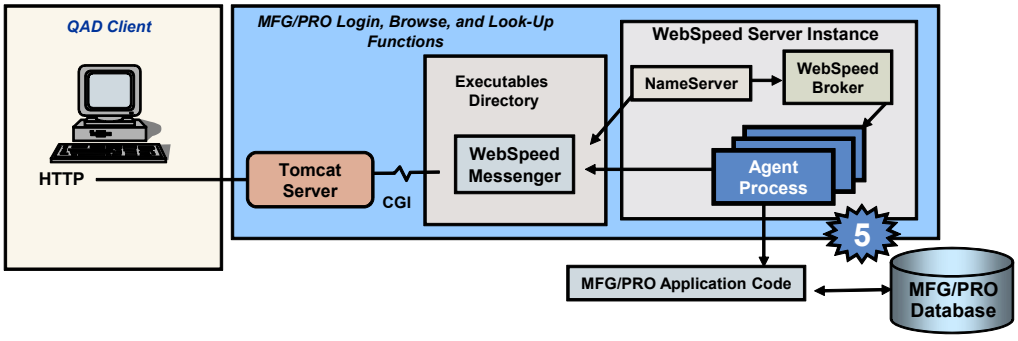
WebSpeed Architecture

- Connection 5:
  - Connection between agents and the database
  - The WebSpeed Agents can connect to the databases in either Client/Server or shared memory mode



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Progress AppServer

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Progress AppServer

- Executes OpenEdge 4GL Procedures that can be called by Progress, Java and .NET

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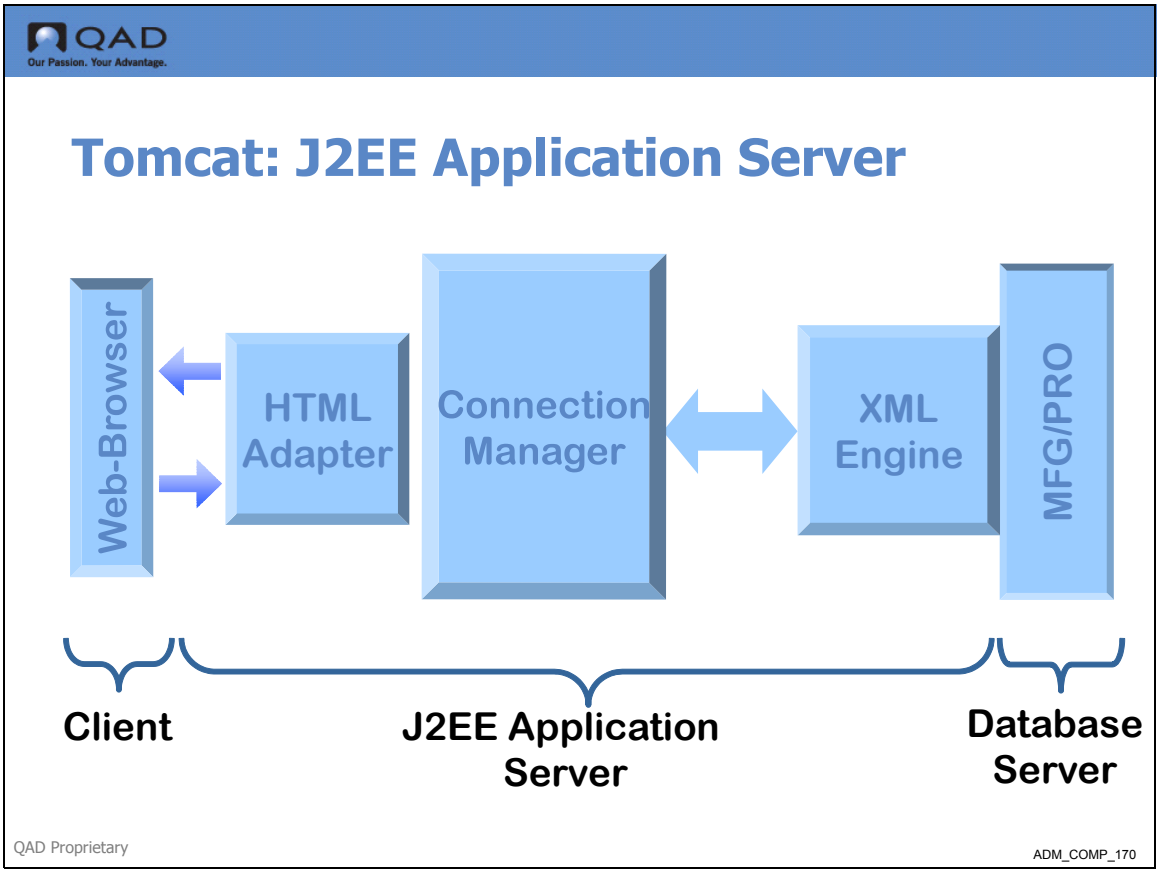
Tomcat J2EE Application Server



Tomcat

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Tomcat

- Java-based web application container
- Runs servlet in JSP

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Tomcat Directories

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Tomcat Directories

- Key subdirectories
  - `/bin` – administration scripts
    - startup.sh
    - shutdown.sh
  - `/logs` – log files directory
    - catalina.out
  - `/conf` – configuration files directory
    - server.xml
  - `/webapps` – web applications directory
    - Location of .NET UI directories and files

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Tomcat Directories

- Startup and shutdown scripts
  - For Tomcat Server
  - Set JAVA_HOME environment variable
  - Uses Administration port
- Log files
  - catalina.out
  - Helpful for resolving Tomcat issues

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Tomcat Directories

- Key .NET UI directories and files
  - TomcatInstallDir/webapps/<.NET UI Install>
    - /applet <location of multinet.jar>
    - /pronav <files for Process Editor>
    - /uiconfig <location of configurable screens>
  - TomcatInstallDir/webapps/qadhome

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Tomcat Directories

- Key .NET UI directories and files
  - TomcatInstallDir/webapps/<.NET UI Install>
    - /WEB-INF
      - /conf <configuration files for .NET UI components>
      - /cgi <WebSpeed Messenger and other executables>
      - /log <log files for .NET UI>
    - /WEB-INF/conf
      - connectionManagerConfig.xml
        - » Stores configuration values for the connection manager
        - » Edit via the Connection Manager
      - process-config.xml
        - » Stores values for the Process Editor

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Using Tomcat

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Using Tomcat

- Set JAVA_HOME environment variable
- Startup Tomcat (`startup.sh`)
- Verify Tomcat Server is up (`http://server:8080`)
- Shutdown Tomcat (`shutdown.sh`) as needed
- See catalina.out for error messages

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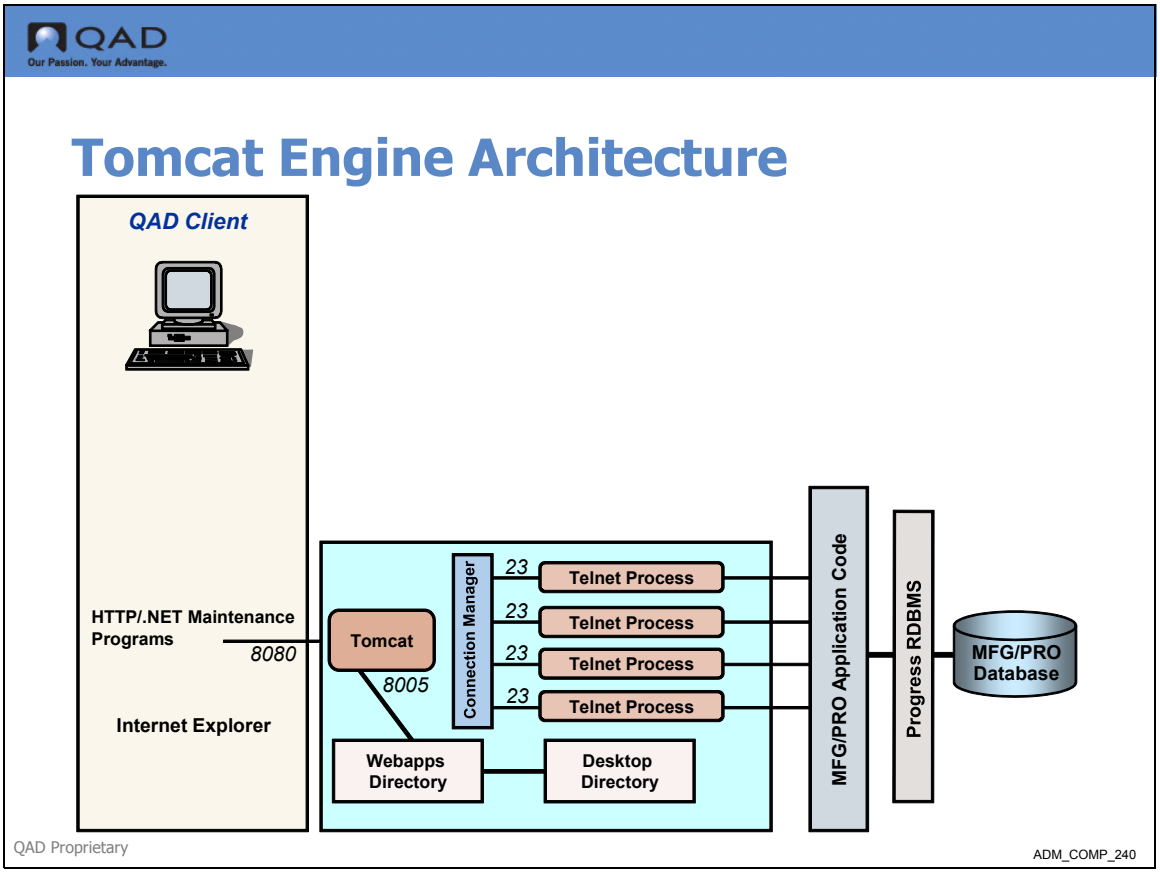
Tomcat Engine Architecture



Connection Manager

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Connection Manager

- Use to update configuration settings
- View a log file of Connection Manager actions
- Monitor connections in the connections pool
- Monitor users and close user sessions
- Configure Connection Manager before you start a .NET UI client session

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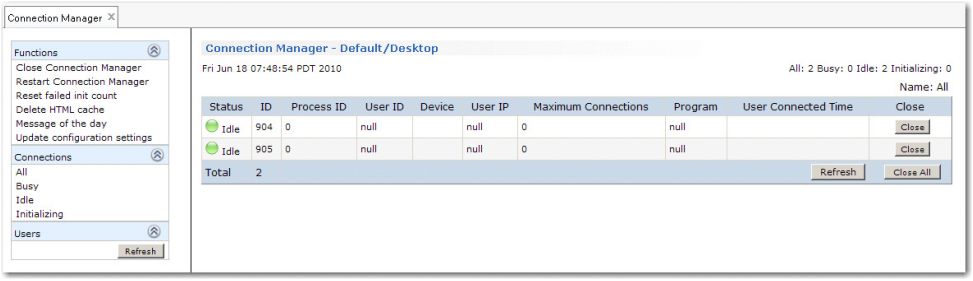
Connection Manager

- Manage pool of Telnet connections
- Functions
- Connections
- Users



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The Connection Manager controls the pool of telnet sessions used for HTML-based maintenance programs, lookups, reports, and inquiries. The Connection Manager lets you:

- Close, start, and reset Connection Manager.
- Update configuration settings.
- View a log file of Connection Manager actions.
- Monitor connections in the connection pool.
- Monitor users and close user sessions, if needed.

Once Connection Manager is configured, you can start a .NET UI client session.

Configuration Settings

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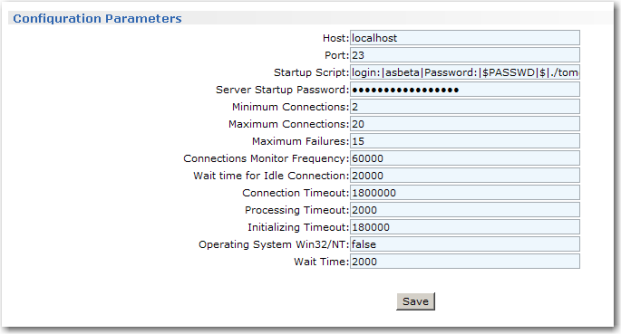
Configuration Settings

- Update as necessary
- Host: The machine name or IP address of the telnet server
- Port: The port number for the telnet server. Usually set to 23



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Close Connection Manager. Terminates all active connections. Any data being processed by active UI sessions is lost. Any processes begun by active sessions are terminated.

Restart Connection Manager. Shuts down and restarts Connection Manager. This option has the same effect as Close Connection Manager, but also restarts it after complete shutdown.

Reset failed init count. Resets the initialization failed counter. The system maintains a count of the number of times Connection Manager unsuccessfully attempts to start a session. When this counter reaches the maximum number, as indicated in Maximum Failures on the Connection Manager configuration page, it stops further automatic attempts to start the session.

This number is automatically reset when a successful connection is made.

Delete HTML cache. This option clears all cached maintenance screens. Removing the cache is required whenever updates are made to screen elements—such as adding lookups to a field—to ensure that the new screen information is read by the system.

Message of the day. Select this option to set up a brief message that displays in the header of the main page each time a user logs in. A screen displays where you can enter up to 80 characters of message text. Use the message to alert users of upcoming system maintenance, other updates, or other business needs. You can specify how long the message displays.

Update configuration settings. Displays the Configuration Settings Update page , which is used to set up and configure the Connection Manager options.

Monitoring Connections and Users

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Monitor Connections and Users

- Displays connection status
- Click Refresh to update
- View currently logged in users
- Click the user ID to view user information
- Click Close to close a user session

Connection Manager - Default/Desktop

Fri Jun 18 08:09:27 PDT 2010 — All: 2 Busy: 0 Idle: 2 Initializing: 0

Name: All

Status	ID	Process ID	User ID	Device	User IP	Maximum Connections	Program	User Connected Time	Close
Idle	906	0	null		null	0	null		Close
Idle	907	0	null		null	0	null		Close
Total	2								Refresh / Close All

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- Initializing. The session is starting and is not available for use.
- Idle. The session is active and available for the next user request.
- Busy. The session is executing a user request.
- Pause. The session is waiting for a response from the user; for example, the user may need to press the spacebar to continue.
- Processing. The session is actively updating the Progress database and database records are locked.
- Force Disconnect. This is a temporary state that occurs when the administrator closes an initializing session.
- Disconnected. This is a temporary state that occurs when idle sessions are closed.

Click a User ID to see information related to that user, including the following: Status, ID, Process ID, User ID, Device, User IP, Maximum Connections, Program, and User Connected Time.

Click Refresh to update the display.

Click Close to close a user session. This might be needed if a user has locked a database record and left their session running

.NET UI Client

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.NET UI Client

- Runs in the Microsoft .NET framework
- Server components are installed during the .NET UI install
- Brief automated installation on client

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Exercises and Knowledge Check

1. What is the default port number for the Tomcat server?
2. You must install the Tomcat server and WebSpeed Messenger on the same machine. True or False?
3. The hostname and port number of the connection between WebSpeed Messenger and transaction broker is contained in which properties file?
4. .NET UI files and directories are contained in which directory?
5. The `web-inf` directory contains configurationh files, WebSpeed Messenger and other executables, and log files. True or False ?
6. What is the command for starting Tomcat?

Chapter 2

QAD .NET UI Administration

Chapter Objectives

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Chapter Objectives

- The objective of this chapter is to describe different administration features and functions.

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Benefits

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Benefits

- You will have an overview of release and service pack installations, be able to edit the `client-session.xml` file, and to identify and use different session monitors and logs.

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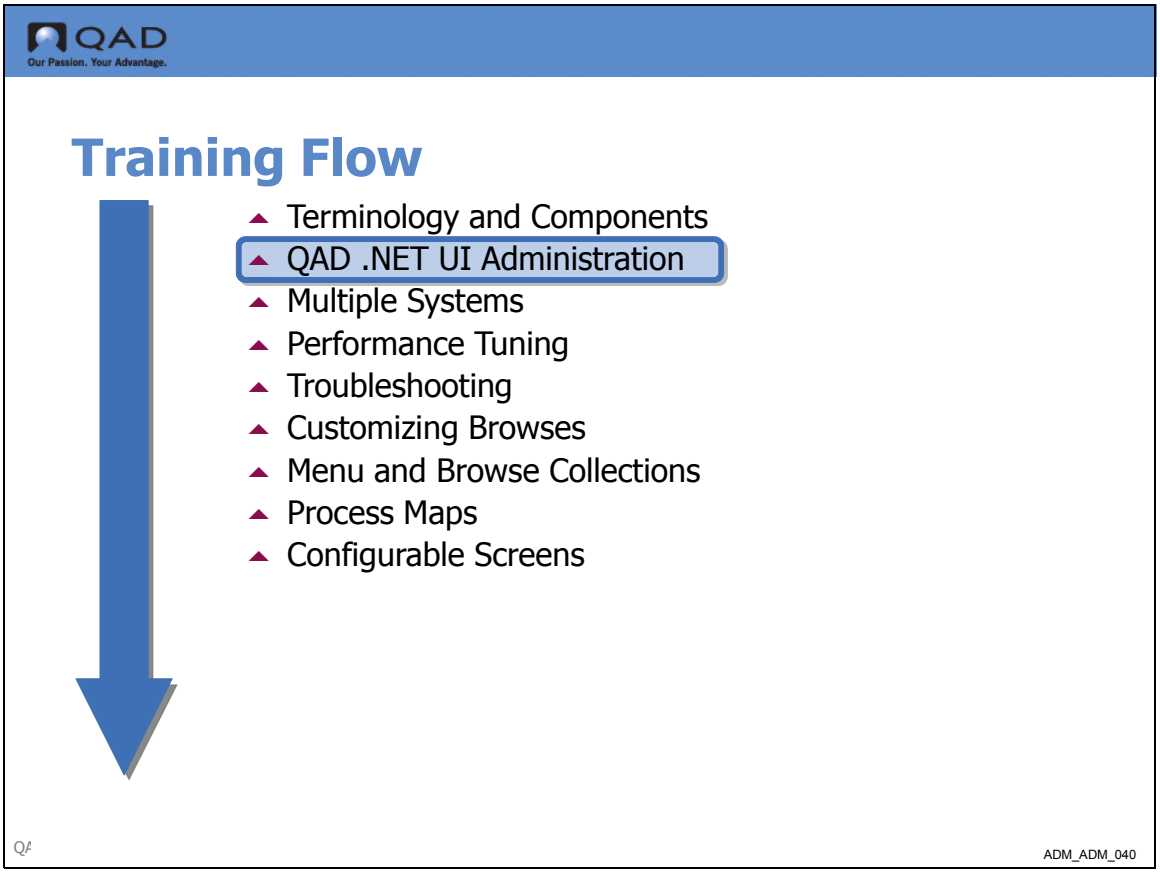
ADM_ADM_030

Training Flow



Overview

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Overview

- .NET UI Administration
  - Installation of New Release
  - Installation of an MFG/PRO Service Pack
  - Client session configuration file: client-session.xml
  - Applying System-Wide Settings
  - Excluding MFG/PRO Menus in .NET UI
  - Set Session Configuration
- Session Monitoring
- Adding Custom Menus

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QAD .NET UI Administration

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.NET UI Administration

- Installation of new release
  - Review Release Notes and Errata
  - Clear Tomcat cache
  - .NET UI client automatically checks for new version
- Installation of an MFG/PRO service pack
  - May overwrite newer MFGUTIL files
  - Re-install may be needed to place back updated MFGUTIL files

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.NET UI Administration

- Client Session Configuration File:
  - `client-session.xml`
  - Located on the server in `<Tomcat Install>/webapps/qadhome/configurations/qaduiConfig>/client-session.xml`
  - Contains configuration for NameServer, AppServer and WebSpeed broker names and ports

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.NET UI Administration

- Client Session Configuration File:
  - client-session.xml


```
<?xml version="1.0" encoding="utf-8" ?>
<Configuration>
   <ConnectionProtocol>AppServer</ConnectionProtocol>
   <ConnectionSecureProtocol>AppServer</ConnectionSecureProtocol>
   <ConnectionHost>qaddemo.qad.com</ConnectionHost>
   <ConnectionPort>5162</ConnectionPort>
   <ConnectionService>qaddemo_AS</ConnectionService>
   <ConnectionSecureService>qaddemo_AS</ConnectionSecureService>
   <ConnectionSecureHost>qaddemo.qad.com</ConnectionSecureHost>
   <ConnectionSecurePort>5162</ConnectionSecurePort>
   <DesktopProtocol>http</DesktopProtocol>
   <DesktopHost>qaddemo.qad.com</DesktopHost>
   <DesktopPort>8080</DesktopPort>
   <DesktopService>qaddemo</DesktopService>
   <DesktopAPI>shell.jsp</DesktopAPI>
   <DesktopAsWebBrowser>false</DesktopAsWebBrowser>
   <WebSpeedService>qaddemo_WS</WebSpeedService>
   <WebSpeedPath>cgi-bin/wspd_cgi.ksh/WService</WebSpeedPath>
   <WebSpeedProgram>com/qad/desktop/interface/wsep1.p</WebSpeedProgram>
```


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JAVA Terminology

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.NET UI Administration

- Setting Browse Record Threshold in `client-session.xml`

```
<MaximumBrowseRecordsToCount>50000</MaximumBrowseRecordsToCount>
<MaximumBrowseRecordsToDownload>50000</MaximumBrowseRecordsToDownload>
<BrowseRecordsForPrintWarning>10000</BrowseRecordsForPrintWarning>
<BrowseRecordsForExcelWarning>10000</BrowseRecordsForExcelWarning>
<ChartElementsForChartWarning>100</ChartElementsForChartWarning>
```

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Telnet Screen Settings

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Embedded Telnet Screen Settings

- Using SSH for embedded telnet screens:
  - Download `Routrek.granados.dll`
  - `<SshProviderUrl>${HomeServer}/Routrek.granados.dll</SshProviderUrl>`
  - Choose SSH2 instead of telnet
  - `<TerminalProtocol>telnet</TerminalProtocol>`
- Changing the login method for embedded telnet screens:
  - `<add key="TerminalAuthentication" value="ScriptUser" />`
  - ScriptUser: The user defined in 36.20.10.3 will be used for telnet login
  - SchellUser: The user defined in MFG/PRO will be used for telnet login
  - PromptUser: The user will get prompted for telnet login when using embedded telnet screen

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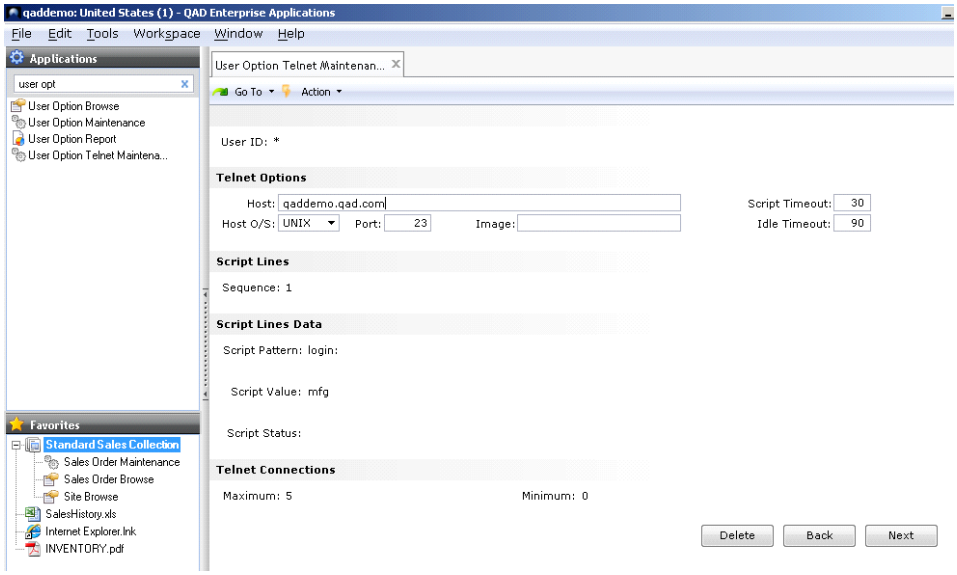
Embedded Telnet Screen Settings

- Embedded telnet screen login is defined in 36.20.10.3:



System-Wide Settings and Menus

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QAD .NET UI Administration

- Applying system-wide settings
  - Set in `./webapps/qadhome/configurations/default/client-bootstrap.xml`
  - Examples: Log level, log file location
- Adding menus in .NET UI
  - Set in `./webapps/qadhome/configurations <qaduicfg>/menus/plugin-menu.xml`

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Session Configuration

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QAD .NET UI Administration

- Set session configuration
  - Can set maximum number of forms each user can open
  - Setting it too high can impact performance
  - Set in User Option Telnet Maintenance

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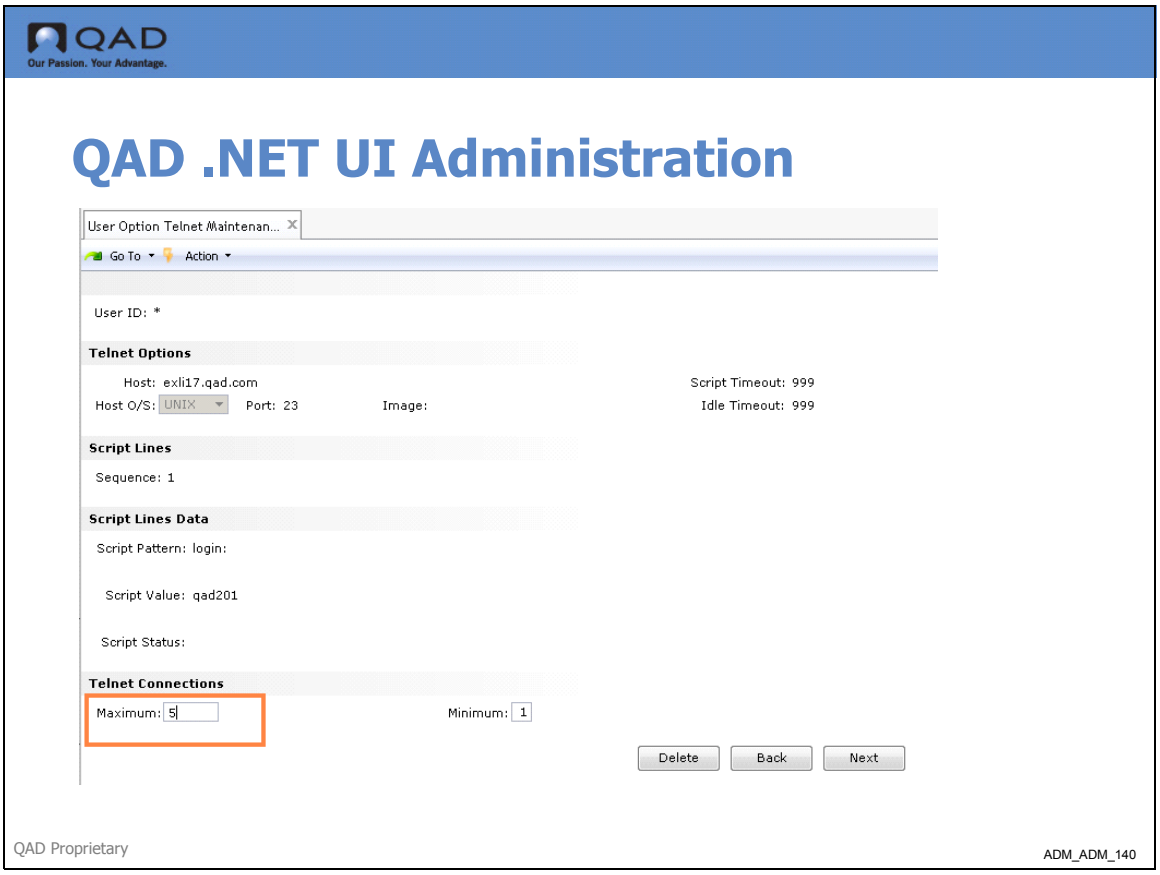

Use the Script Timeout field to enter the maximum number of seconds (between 1 and 999) the system allows for all the Telnet log-in script lines to execute.

If this value is exceeded, a time-out message displays and the session closes.

The Idle Timeout value is the number of seconds (between 1-999) for which the system waits after a user successfully logs into a Telnet session and before they choose an MFG/PRO program to execute.

Session Monitoring

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Session Monitoring

- Session Master Maintenance – 36.20.10.15
  - No maintenance done in this screen
  - Can be used to delete defunct users
  - Specifies a system generated session ID
- Connection Manager
  - Monitor which users are accessing system/programs
  - View status of connection pools
- Hearbeat Monitor
  - Configure load balancer device or create script that monitors the Connection Manager through heartbeat pages
- User Count Log file
  - Logs user, program executed and time of execution
  - Located in `./webapps/<qaduicfg>/WEB INF/logs/usercount.log`

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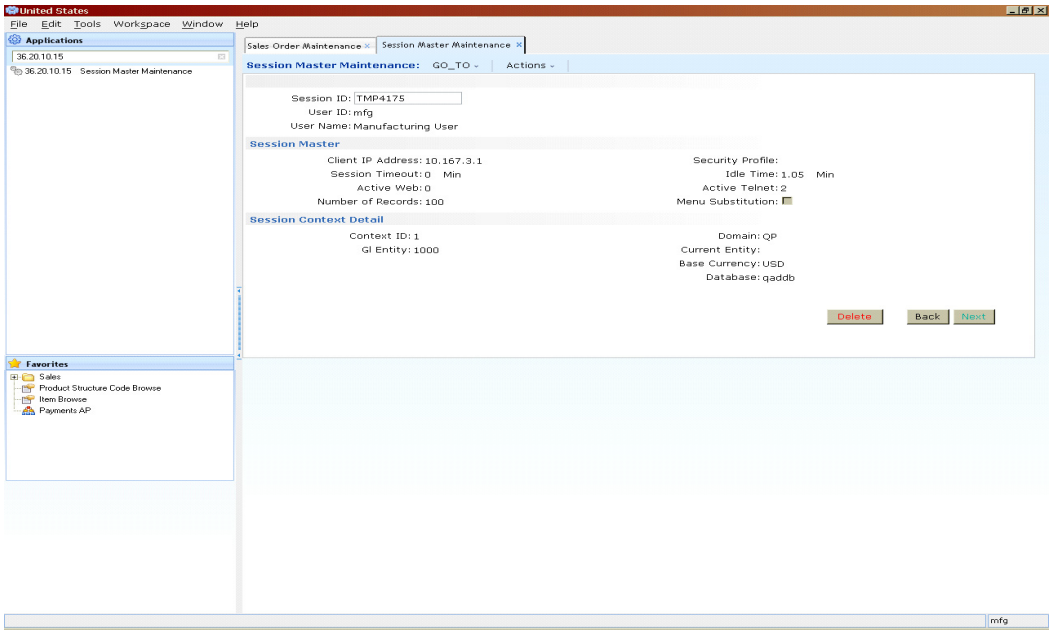
Session Master Maintenance



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Connection Manager

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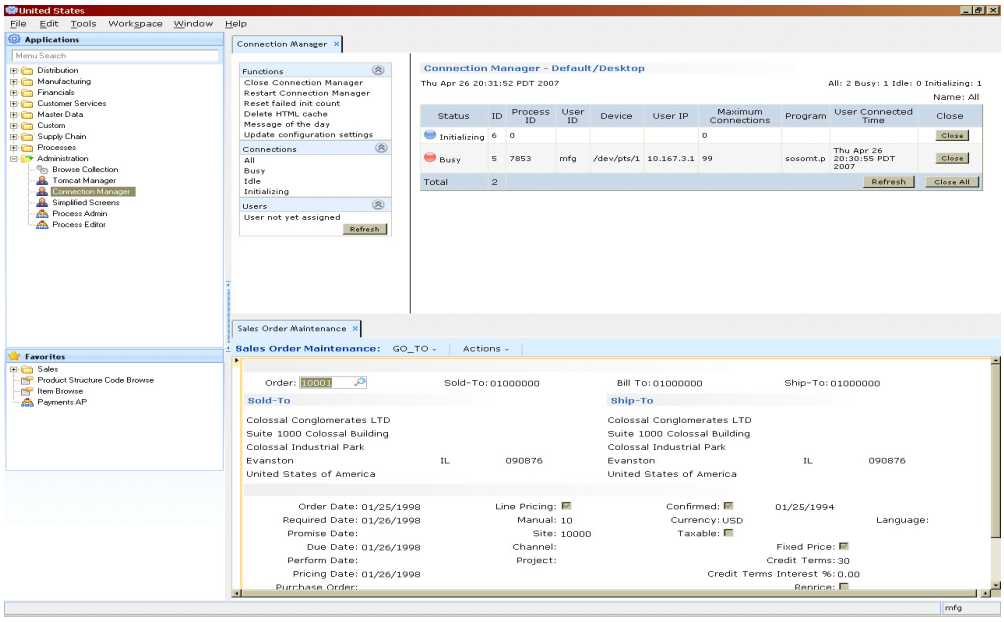
Connection Manager



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HeartBeat Monitor

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Heartbeat Monitor

- `status.jsp` — returns a status message containing the number of agents that are All / Idle / Init / Busy.
- `idle.jsp` — returns a page containing the number of idle connections
- `busy.jsp` — returns a page containing the number of busy connections
- `init.jsp` — returns a page containing the number of initializing connections

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ADM_ADM_180

User Count Log File

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User Count Log File

2007-11-11 06:26:47,554 apisource=AppShell at=s d=QP ip=10.167.3.1 s=TMP6 sid=TM
P6 t=li u=mfg
2007-11-11 06:35:58,879 a=sobr009.p apisource=AppShell at=s d=QP s=TMP6 sid=TMP6
t=ai u=mfg
2007-11-11 06:36:00,643 a=sobr009.p apisource=AppShell at=s d=QP s=TMP6 sid=TMP6
t=ao u=mfg
2007-11-11 06:36:10,355 a=mgdbiq.p apisource=AppShell at=s d=QP s=TMP6 sid=TMP6
t=ai u=mfg
2007-11-11 06:36:42,728 a=mgdbiq.p apisource=AppShell at=s d=QP s=TMP6 sid=TMP6
t=ao u=mfg
2007-11-11 06:37:32,866 apisource=AppShell at=s d=QP s=TMP6 sid=TMP6 t=lo u=mfg
2007-11-11 06:37:36,817 apisource=AppShell at=s d=QP ip=10.167.3.1 s=TMP9 sid=TM
P6 t=li u=mfg
2007-11-11 06:39:50,038 a=sosomt.p apisource=AppShell at=s d=QP s=TMP9 sid=TMP6
t=ai u=mfg
2007-11-11 06:40:15,754 a=sosomt.p apisource=AppShell at=s d=QP s=TMP9 sid=TMP6
t=ao u=mfg
2007-11-11 06:40:16,120 apisource=AppShell at=s d=QP s=TMP9 sid=TMP6 t=lo u=mfg
2007-11-11 06:40:49,743 servletcontextpath=%2Fdr01%2Ftomcat%2Fwebapps%2Fqaddemo%
2F t=webappstop

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ADM_ADM_190

Adding Custom Menus

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Adding Custom Menus

- Must be created within an existing Menu or Menu Group
- Multiple ways to create new menus, depending on release
- **Example**: in Menu System Maintenance, add menu 88.1 under new menu group called "My Custom Menu Group":
  1. Create an entry for A.9. Assign a label (ex. My Custom Programs) and execute procedure of "A.9"
  2. Create an entry for A.9.88. Assign a label (ex. Custom Sales Orders) and execute procedure of "88"
  3. Create an entry for 0.88. Assign a label (ex. Custom Sales Orders) and execute procedure of "88"
  4. Create an entry for 88.1. Assign a label (ex. Custom Sales Order Maintenance) and execute procedure with the program name (for example: xxsomt.p).

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ADM_ADM_200

Exercises and Knowledge Check

1. What information is contained in the `client-session.xml` file?
2. You define user telnet options in which menu?
3. What settings are contained in the `client-bootstrap.xml` file?
4. What effect on user navigation does the Maximum field in User Option Telnet Maintenance have?
5. What menu do you use to delete defunct users?
6. What is the purpose of Heartbeat Monitor?

Chapter 3

Multiple Systems

Chapter Objectives

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Chapter Objectives

- The objective of this chapter is to look at aspects of running multiple database instances in different environments.

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Benefits

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Benefits

- You will be aware of the different issues relating to running multiple database instances.

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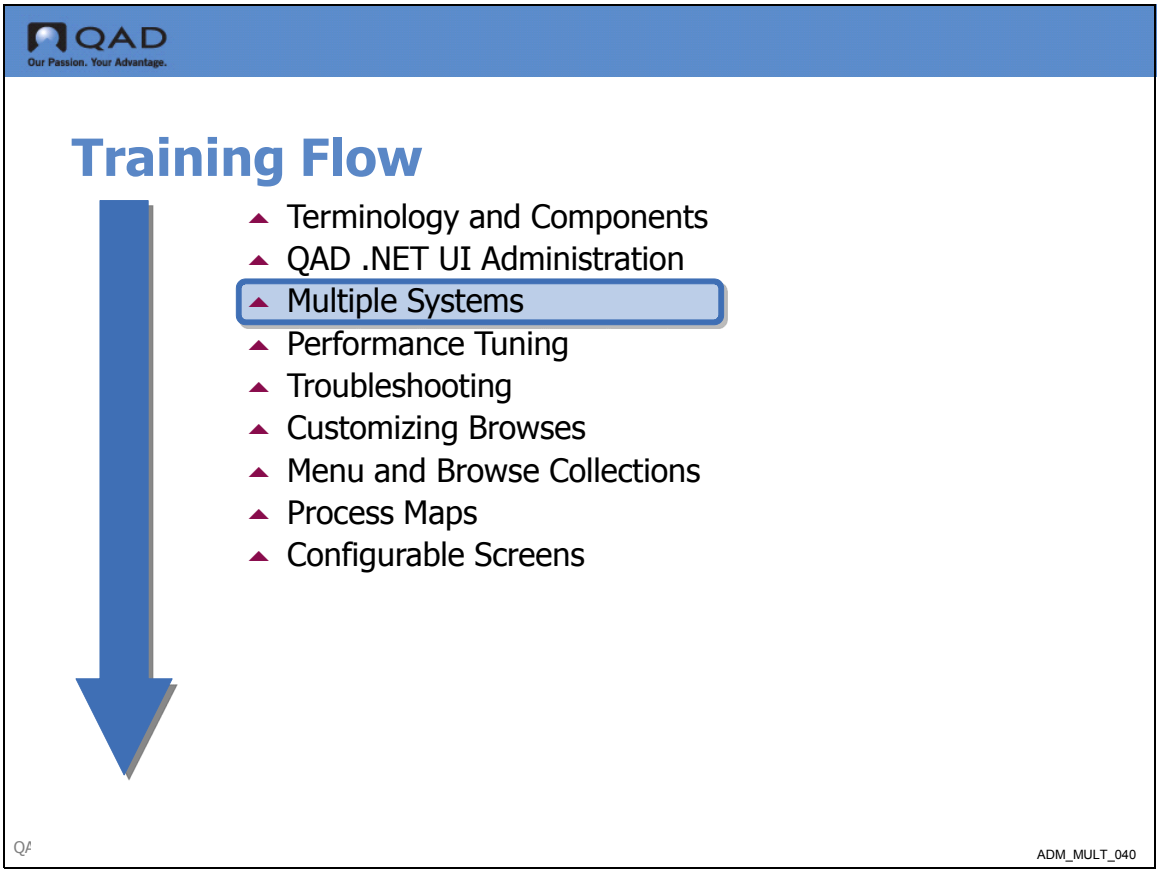
ADM_MULT_030

Training Flow



Overview

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Overview

- Multiple DB: Independent Environment
- Multiple DB: Single Environment
- Multi-Language Environments

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Multiple Databases: Independent Environment

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Multiple DB: Independent Environment

- Why?
  - Production, development, training
  - Independent environments
- Considerations
  - Different code streams
  - Different startup parameters
  - Administrative differences

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Install Review List

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.NET UI Install Review List

- MFG/PRO character environment
  - Database parameters
  - Data
  - Application code
- WebSpeed
  - Broker
- AppServer
  - Broker

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.NET UI Install Review List (cont.)

- Tomcat
  - WebApplication
- .NET UI
  - Progress Code
  - Configuration

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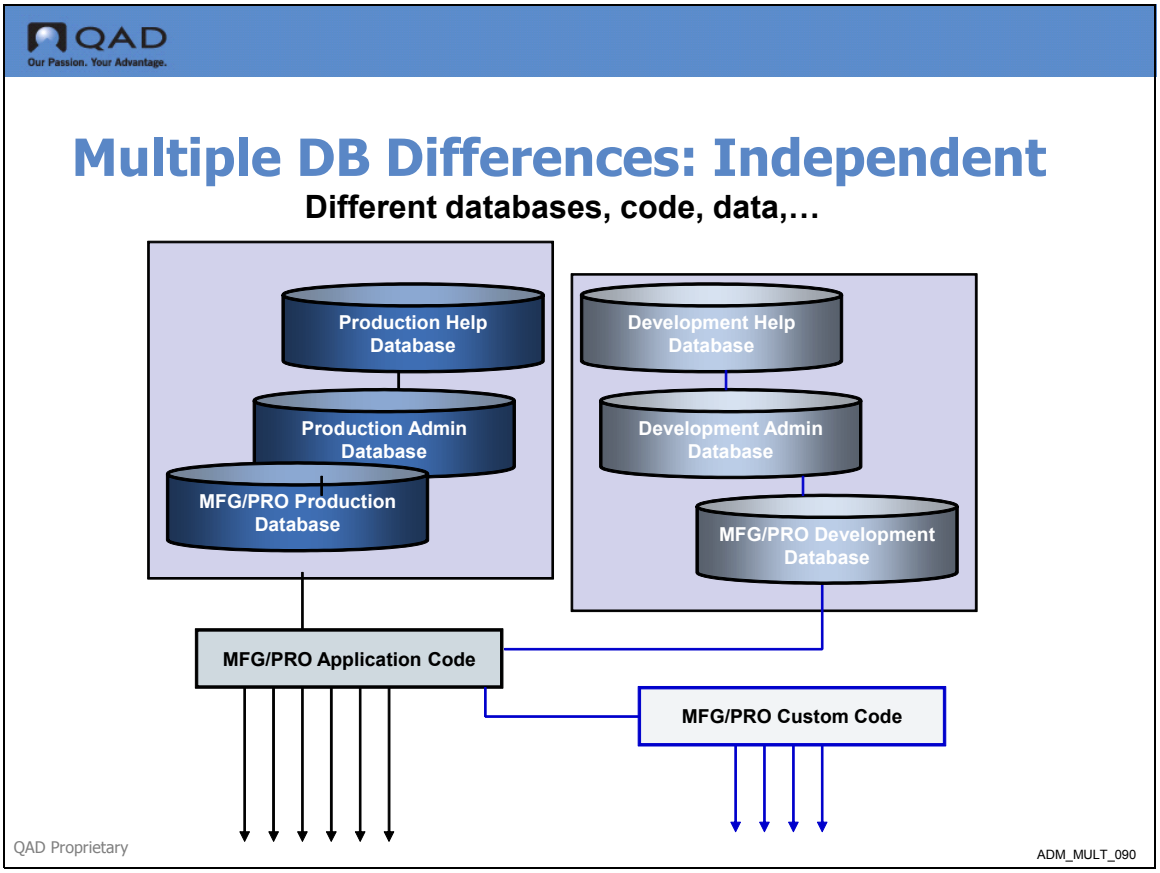
Database Differences



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Multiple DB Differences: Independent

Differences	What does this affect?

• Databases
  • Names
  • Ports
  • Startup parameters
	• Parameter file
	  • Telnet file
	  • Tomcat file

• MFG/PRO application code	• Propath
	  • WebSpeed broker
	  • AppServer broker
	  • .NET UI build

• Data	

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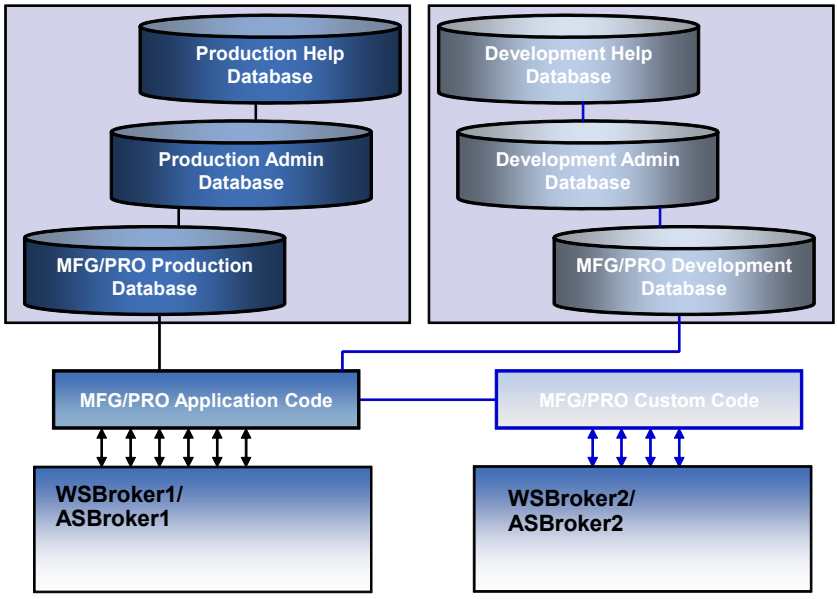
Multiple DB – WebSpeed & AppServer: Independent

Different brokers



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Multiple DB – WebSpeed and AppServer: Independent

- Differences
  - WebSpeed Brokers
    - Names
    - Ports
    - Agents/port ranges
  - AppServer Brokers
    - Names
    - Ports
    - Agents/port ranges

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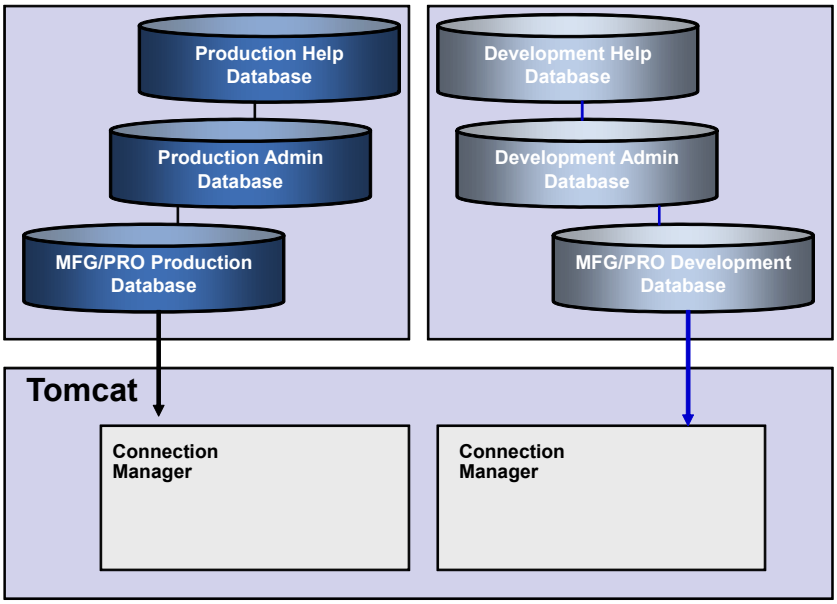
Multiple DB – Tomcat: Independent



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Multiple DB – Tomcat: Independent

- No requirement for additional Tomcat servers
- Considerations for additional Tomcat servers
  - Resources (CPU, memory)
  - Administration (starting and stopping)
- Requires a separate .NET UI webapp
  - Different names
  - Different telnet script files
  - Different configuration files

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.NET UI Considerations

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.NET UI

- Managed by separate client config files in `<Tomcat Install>/webapps/qadhome/configurations>`
- Each .NET UI installation points to one qadhome server through configuration file:

```
C:\Program Files\QAD\QAD Enterprise Applications
  2007.1\container\QAD.Client.exe.config
<configuration>
<appSettings>
<!--  An HTTP URI to a server that provides backend
  services for the application. -->
<add key="HomeServer" value="http://qaddemo:8080/qadhome"
  />
```

- Users choose .NET UI instance upon login

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.NET UI

- Possible to have multiple icons that point to multiple qadhome servers

1. Install multiple instances of .NET UI

   Example:

   C:\...\Production\QAD\...

   C:\...\Test\QAD\...

2. Configure shortcut to use batch file to replace configuration file corresponding to desired environment prior to launching

   Example:

   The Production icon batch file will copy `Production.QAD.Client.exe.config` to `QAD.Client.exe.config`

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ADM_MULT_160

Exercises and Knowledge Check

1 Consider and list the setup and configuration issues involved in running a multiple database .NET UI environment.

Chapter 4

Performance Tuning

Chapter Objectives

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Chapter Objectives

- The objective of this chapter is to describe the different performance tuning techniques you can apply to the installation.

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Benefits

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Benefits

- You will be able to use memory allocation and database tuning techniques, and to identify optimum client settings and UNIX performance commands.

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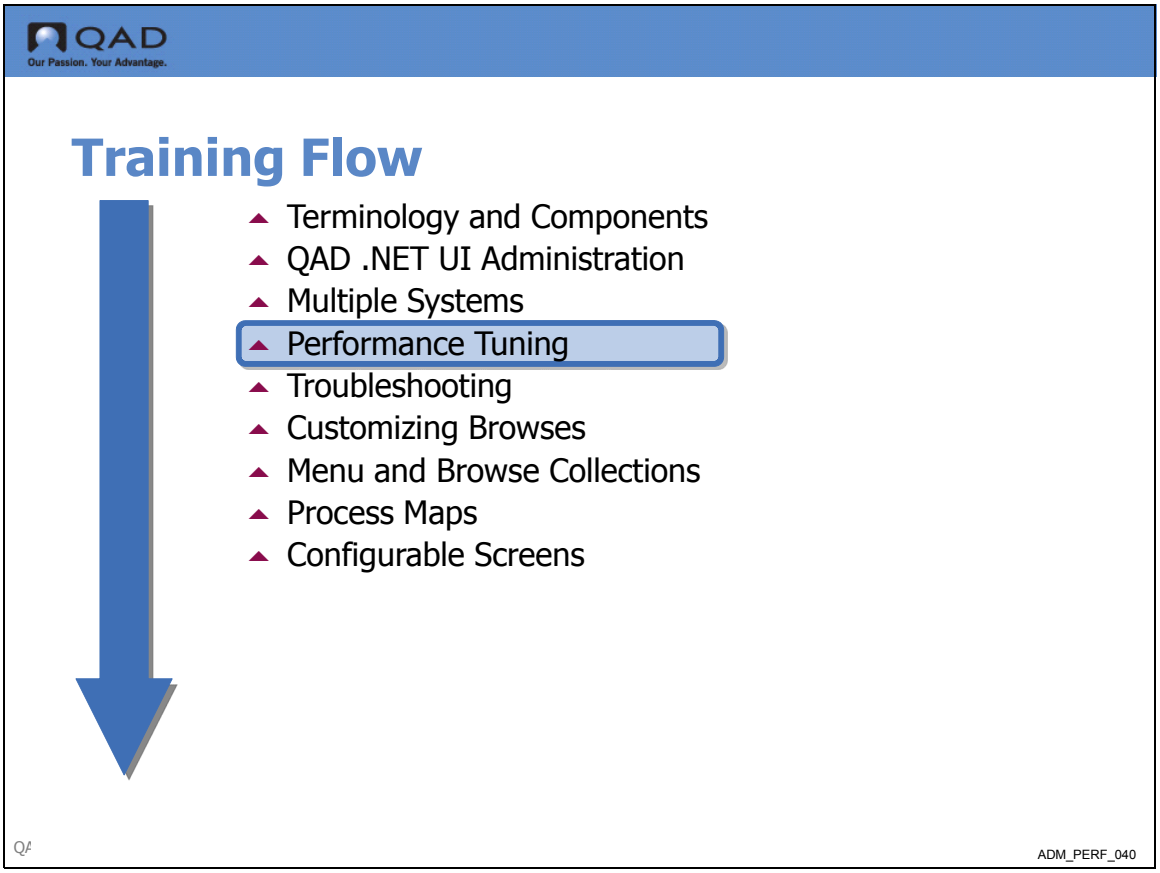
ADM_PERF_030

Training Flow



Overview

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Overview

- Tomcat considerations
- Database
- Clients
- UNIX tools
- Kernel considerations

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ADM_PERF_050

Tomcat Memory Allocations

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Tomcat

- Memory allocations (Java options)
  - `-server`: Tells java to run optimized for server side
  - `-Xms256m`: Sets initial heap size (this example sets it to 256 MB)
  - `-Xmx256m`: Sets maximum heap size (this example sets it to 256 MB)
  - Set via `CATALINA_OPTS` environment variable
    - `export CATALINA_OPTS="-server -Xms256m -Xmx256m"`

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ADM_PERF_060

Database Tuning

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Database

- Standard Database tuning …
- Make sure to set the `-n` parameter
  - This sets the maximum number of connections a database can have
  - This value should exceed:
    Max WebSpeed agents + Max AppServer agents + Max tomcat agents + Max character connect + Max telnet connects
- 36.20.10.3 (Telnet Maint)
  - Max value = Maximum number of telnet connections a user can have **and** Maximum number of active HTML maint programs a user can have
  - Min value = Number of idle telnet connections a client will have.
  - **RECOMMEND SETTING THIS VALUE TO "0"**

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ADM_PERF_070

Client Considerations

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Clients

- HTML Rendering is CPU-intensive
- A P400 PC will see its processor peg at 100% with each page rendering
- Recommend at least a 1.6 GHz
- Recommend double the OS required memory
- Recommend 1GB of hard disk space

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UNIX Tools

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UNIX Tools

- Top

```
root@coli22:/dr01/mfgpro/tomcat-8080/bin
 12:35pm  up 75 days, 21:52, 45 users,  load average: 1.99, 1.91, 1.71
794 processes: 792 sleeping, 2 running, 0 zombie, 0 stopped
CPU0 states:  7.2% user, 48.1% system,  0.0% nice, 43.1% idle
CPU1 states:  9.1% user, 32.0% system,  0.0% nice, 58.0% idle
Mem:  1028368K av, 1023272K used,    5096K free,   14120K shrd,    3752K buff
Swap: 2048248K av,  384116K used, 1664132K free                  140584K cached

  PID USER     PRI  NI  SIZE  RSS SHARE STAT %CPU %MEM   TIME COMMAND
 9815 root      17   0  1944 1940   956 R    60.5  0.1   0:03 top
10642 nobody    11   0 26992  25M   496 S    12.4  2.5 450:01 smbd
26579 root       9   0 10856  10M  1844 D    10.1  1.0  62:48 smbd
31110 root       9   0 14364 4932  1572 S     3.5  0.4  13:16 java
 1807 root       9   0 10628 8756  7756 S     1.5  0.8   5:36 _progres
26740 root      10   0  202M 139M 60032 S     1.5 13.8   0:37 java
 3175 named      9   0 44212  40M 36888 S     0.7  4.0  98:38 named
22803 nobody     9   0 27256  26M  2728 S     0.7  2.6  30:27 smbd
 9812 root       9   0  2056 2056  1476 S     0.3  0.1   0:00 vim
    1 root       8   0   120   72    72 S     0.0  0.0   0:08 init
    2 root       9   0     0    0     0 SW    0.0  0.0   0:00 keventd
    3 root      19  19     0    0     0 SWN   0.0  0.0   0:05 ksoftirqd_CPU0
    4 root      19  19     0    0     0 SWN   0.0  0.0   0:06 ksoftirqd_CPU1
    5 root       9   0     0    0     0 SW    0.0  0.0  18:44 kswapd
    6 root       9   0     0    0     0 SW    0.0  0.0   5:30 kreclaimd
    7 root       9   0     0    0     0 SW    0.0  0.0   0:51 bdflush
```

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UNIX Tools

- Check memory with `free`

root@coli22:/dr01/mfgpro/tomcat-8080/bin

```
[root@coli22 bin]# free
             total       used       free     shared    buffers     cached
Mem:       1028368    1023284       5084      14120       2520     133088
-/+ buffers/cache:     887676     140692
Swap:      2048248     384116    1664132
[root@coli22 bin]#
```

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Other UNIX Tools

- `lsof`
  - Lists open files on system
  - A way of tracking down process associated with a port
- `ipcs`: Provides information on ipc facilities
- `who`: Shows who is logged into system
- `ps -elf`
  - Shows active processes
  - Will want to redirect to file for viewing
  - Will want to pipe it to a `grep` command for filtering

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Kernel Considerations

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Kernel Considerations

- Maximum number of open files
- Maximum number of telnet connections
- Terminal type
- Java threading

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Maximum File Size

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Increase Maximum File Size

root@coli22:/etc/rc.d

```
#!/bin/sh
#
# This script will be executed *after* all the other init scripts.
# You can put your own initialization stuff in here if you don't
# want to do the full Sys V style init stuff.

touch /var/lock/subsys/local

# 20020117 - mwg - Added increase to file-max
echo 65535 > /proc/sys/fs/file-max

~
~
~
~
~
~
~
~
~
~
~
~
"rc.local" 11L, 303C                                    1,1           All
```

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ADM_PERF_130

xinetd.d

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xinetd.d

root@coli22:/etc

```
#
# Simple configuration file for xinetd
#
# Some defaults, and include /etc/xinetd.d/

defaults
{
        #instances               = 60
        instances               = 256
        log_type                = SYSLOG authpriv
        log_on_success          = HOST PID
        log_on_failure          = HOST
        cps                     = 25 30
}

includedir /etc/xinetd.d

~
~
~
~
~
~
"xinetd.conf" 17L, 321C                                  1,1           All
```

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ADM_PERF_140

Additional Resources

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Additional Resources

- QAD .NET UI Deployment Guide

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ADM_PERF_150

Exercises and Knowledge Check

1. What is the purpose of the `-n` parameter?
2. What is the purpose of the `lsof` and `ps -elf` UNIX commands?
3. What is the function of the `xinetd.d` program?

Chapter 5

Troubleshooting

Chapter Objectives

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Chapter Objectives

- The objective of this chapter is to describe troubleshooting techniques, commands and logs for the QAD .NET UI.

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ADM_TSH_130

Benefits

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Benefits

- You will be able to identify basic troubleshooting techniques based on standard startup sequence types, possible test points and database connections, troubleshooting commands for servers, and system logs.

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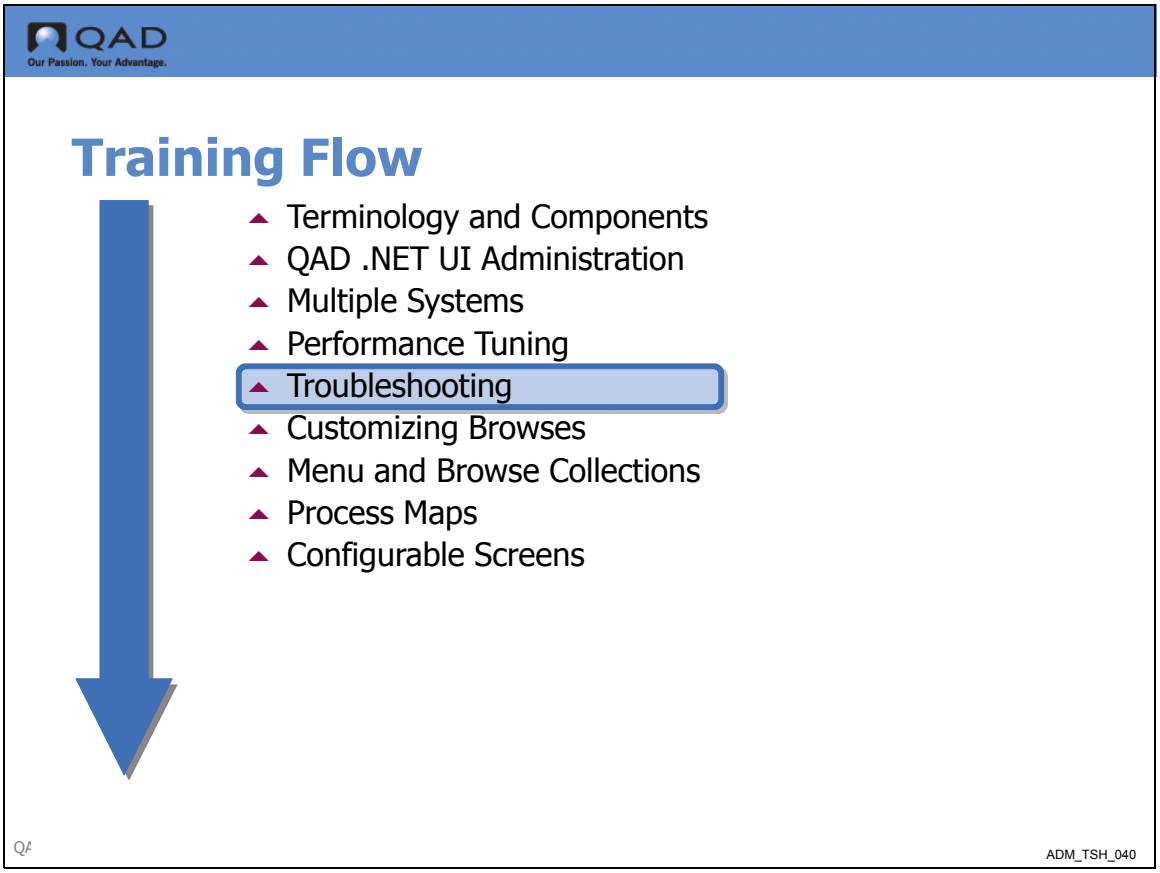
ADM_TSH_030

Training Flow



Overview

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Troubleshooting

- Troubleshooting basics
- Startup sequence
- Test points
- Logs
- Some tools
- Troubleshooting labs

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Troubleshooting Basics

- Everyone will develop their own troubleshooting techniques
- QAD .NET UI is not a diagnostic tool, it is an application. However:
  - It can be used to gather important troubleshooting indications
    - Can you log on?
    - Can you run browses?
    - Can you run HTTP Maintenance programs?
    - Can you run Telnet Maintenance programs?
    - Do the URL links work?
    - Are the screens correctly rendered?
  - Do the SE programs run in a character client?
- Develop a list of test points

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Startup Sequence

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.NET UI Startup Sequence

- The startup sequence is important to a point
  1. The database servers must be started before the other Desktop components
  2. Admin Server and Name Server
  3. WebSpeed Brokers: Will require restart if the databases are bounced
  4. AppServer Brokers: Will require restart if the databases are bounced
  5. Tomcat
  6. Connection Manager: Will also require restart if the databases are bounced

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Test Points

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Troubleshooting Test Points

- Possible test points
  - Databases
  - Admin Sever – Name Server
  - WebSpeed/AppServer brokers, agents, and messengers
  - Tomcat Server
  - Connection Manager
  - Correct operation of both telnet scripts
    - User Option Telnet Maintenance Telnet Script
    - Connection Manager Telnet Script
  - Then – what does the client do or not do
    - Login?
    - Run browses?
    - Run HTTP Maintenance?
    - Run Telnet Maintenance
    - Are the screens rendered correctly?

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Database Connections

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Database Connections

- Are all the necessary databases running?
- Are there a reasonable number of database connections?
  - Use a sanity check to account for the number of database connections
    - Connections for the WebSpeed brokers
    - Connections for the AppServer brokers
    - Connections for each Connection Manager instance
    - Connections for Telnet Maintenance
    - Connections for any character users
    - Connections for batch processes
  - Have the databases been bounced?

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PROMON

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Check the Databases

- Use PROMON
  - How many users are logged on?
  - Does the number match the configuration?
  - Does the `-n` accommodate enough logins on all of the databases?
  - Are there users from all WebSpeed Brokers?

```
Rec Lock Waits     0 %    BI Buf Waits       0 %    AI Buf Waits
Writes by APW      0 %    Writes by BIW      0 %    Writes by AIW
Buffer Hits       99 %
DB Size          158 MB
FR chain           0 bloc
Shared Memory   8960 K

0 Servers, 17 Users (17

RETURN - repeat, U - con
```

```
   Enter your selection: 8
usr    pid    time of login           user id     tty Limbo?
 6     386 Mon Sep 16 14:27:03 2002   dtremote    /dev/pts/12
 7    4285 Fri Sep 13 08:40:28 2002   root        batch
 8     388 Mon Sep 16 14:27:03 2002   dtremote    /dev/pts/15
 9     387 Mon Sep 16 14:27:03 2002   dtremote    /dev/pts/13
10     389 Mon Sep 16 14:27:03 2002   dtremote    /dev/pts/14
11    4390 Fri Sep 13 08:41:18 2002   root        batch
12     394 Mon Sep 16 14:27:04 2002   dtremote    /dev/pts/16
13     436 Mon Sep 16 14:27:14 2002   dtremote    /dev/pts/17
15    4593 Fri Sep 13 08:44:34 2002   dt2         /dev/pts/3
16    4592 Fri Sep 13 08:44:34 2002   dt2         /dev/pts/2
17    4857 Fri Sep 13 08:45:34 2002   dt2         /dev/pts/6
18    4879 Fri Sep 13 08:45:34 2002   dt2         /dev/pts/5
19    4878 Fri Sep 13 08:45:34 2002   dt2         /dev/pts/9
20    4882 Fri Sep 13 08:45:35 2002   dt2         /dev/pts/7
```

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PROMON is a Progress command that displays server, configuration, and user information.

Admin and Name Servers

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Test the Admin and Name Servers

- Test the Admin Server

proadsv -query

```
(root) /apps/progress/91d/bin $ proadsv -query
PROGRESS Version 9.1D as of Wed May  8 16:47:54 EDT 2002
AdminServer is alive. (8545)
(root) /apps/progress/91d/bin $
```

- Test the Name Server

nsman -name NS1 -query

```
(root) /apps/progress/91d/bin $ nsman -name NS1 -query
PROGRESS Version 9.1D as of Wed May  8 16:47:54 EDT 2002


Connecting to Progress AdminServer using rmi://localhost:20931/Chimera (8280)
Searching for NS1 (8288)
Connecting to NS1  (8276)

NameServer NS1 running on Host plli01.qad.com Port 5162 Timeout 30 seconds.
Application Service
```

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WebSpeed Brokers

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Test the WebSpeed Broker(s)

- Test the broker and agents

wtbman -name qaddemo_WS -query

```
root@qaddemo:/dr01/tomcat/webapps/qadhome/client/configs
Connecting to Progress AdminServer using rmi://localhost:20931/Chimera (8280)
Searching for qaddemo_WS (8288)
Connecting to qaddemo_WS  (8276)

Broker Name                    : qaddemo_WS
Operating Mode                 : Stateless
Broker Status                  :  ACTIVE
Broker Port                    : 4160
Broker PID                     : 2382
Active Agents                  : 1
Busy Agents                    : 0
Locked Agents                  : 0
Available Agents               : 1
Active Clients (now, peak)     : (0, 1)
Client Queue Depth (cur, max)  : (0, 0)
Total Requests                 : 13
Rq Wait (max, avg)             : (1 ms, 0 ms)
Rq Duration (max, avg)         : (8 ms, 1 ms)

PID   State     Port  nRq    nRcvd  nSent  Started          Last Change
02416 AVAILABLE 04173 000006 000006 000006 Jul 31, 2006 20:50 Jul 31, 2006 22:16


[root@qaddemo configs]#
```

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Appserver Brokers

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Test the AppServer Broker(s)

- Test the broker and agents

asbman -name qaddemo_AS -query

```
root@qaddemo:/dr01/tomcat/webapps/qadhome/client/configs
Connecting to Progress AdminServer using rmi://localhost:20931/Chimera (8280)
Searching for qaddemo_AS (8288)
Connecting to qaddemo_AS  (8276)

Broker Name                    : qaddemo_AS
Operating Mode                 : Stateless
Broker Status                  :  ACTIVE
Broker Port                    : 4150
Broker PID                     : 2446
Active Servers                 : 1
Busy Servers                   : 0
Locked Servers                 : 0
Available Servers              : 1
Active Clients (now, peak)     : (0, 0)
Client Queue Depth (cur, max)  : (0, 0)
Total Requests                 : 0
Rq Wait (max, avg)             : (0 ms, 0 ms)
Rq Duration (max, avg)         : (0 ms, 0 ms)

PID   State     Port  nRq    nRcvd  nSent  Started          Last Change
02484 AVAILABLE 04179 000000 000000 000000 Jul 31, 2006 20:50 Jul 31, 2006 20:50


[root@qaddemo configs]#
```

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WebSpeed Messenger

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Test the WebSpeed Messenger

- **A simple test of WebSpeed will tell you a lot**

Address http://plli01:8080/demo/cgi-bin/wspd_cgi.ksh/WService=wsdemo/ping

Web Object Path (PROPATH):

```
/apps/mfgpro/eb2/desktop
/apps/mfgpro.eb2
/apps/mfgpro/eb2/bbi
/apps/progress/91d/tty
/apps/progress/91d/tty/adecomm.pl
/aps/progress/91d/tty/adeshar.pl
/apps/progress/91d/tty/prodict.pl
/apps/progress/91d/tty/adeedit.pl
/apps/progress/91d/tty/adecomp.pl
/apps/progress/91d/tty/as4dict.pl
/apps/progress/91d
apps/progress/91d/bin
```

Connected Databases:

```
qaddb (PROGRESS)
qadhelp (PROGRESS)
qadadm (PROGRESS)
```

- Does the broker respond?
- Is the PROPATH correct?
- Are the correct databases connected?
- Ping each service that you are supporting

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Is Tomcat Running?

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Verify Tomcat is Running

- **Enter the URL for each Tomcat instance**

Address http://plli01.qad.com:8080/index.html

Address http://plnt07:8080/index.html

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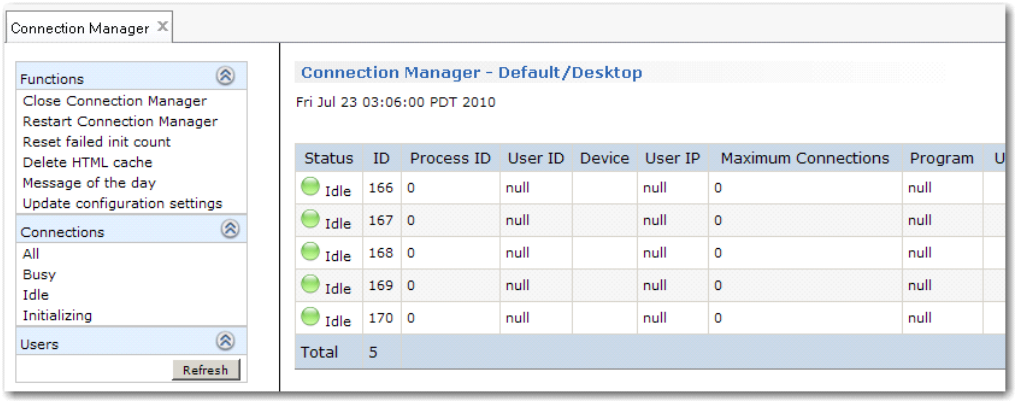
Test the Tomcat Web App

- Log in to the application and run Connection Manager



- Is Connection Manager functioning?

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who Command

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Other Troubleshooting Aids

- Use the `who` command to differentiate users

```
root     pts/0    Sep 13 08:25 (:0)
root     pts/1    Sep 13 08:29 (:0)
dt2      pts/7    Sep 13 08:45 (plli01)
dt2      pts/9    Sep 13 08:45 (plli01)
dt2      pts/8    Sep 13 08:45 (plli01)
dt2      pts/10   Sep 13 08:45 (plli01)
mfg      pts/11   Sep 17 10:58 (167.3.25.15)
dtremote pts/12   Sep 16 14:27 (plnt07)
dtremote pts/13   Sep 16 14:27 (plnt07)
dtremote pts/14   Sep 16 14:27 (plnt07)
dtremote pts/15   Sep 16 14:27 (plnt07)
dtremote pts/16   Sep 16 14:27 (plnt07)
dtremote pts/17   Sep 16 14:27 (plnt07)
dttelnet pts/18   Sep 17 10:59 (167.3.25.15)
dttelnet pts/19   Sep 17 10:59 (167.3.25.15)
```

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ADM_TSH_170

tail Command

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Other Troubleshooting Aids

- Use the `tail` command to view active logs
- `tail -f catalina.out`

```
 StateName: Idle
 connectionID: 2
 ID: null
 RequestID: null
 SessionID: null
 ProcessSeqID:
 UserIP: null
 UserID: null
 program: null
 UserMaxSessions: 0
 PID: 4592
 SessionStart:
 AgentStart: Fri Sep 13 08:44:32 PDT 2002
 LastAccessedTime: Fri Sep 13 09:31:04 PDT 2002

Init:
Initializing
timing:,,,1032362612673,Connnection Mgr Monitor end,1
```

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ADM_TSH_180

Troubleshooting Logs

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Other Troubleshooting Aids

- Some important logs
  - WebSpeed broker logs:
  - `/../qadui/<brokername>/.broker.log`
  - `/../qadui/<brokername>/.server.log`
  - AppServer broker logs:
  - `/../qadui/<brokername>/.broker.log`
  - `/../qadui/<brokername>/.server.log`
  - Database logs:
  - `<db name>.lg`
  - Tomcat's catalina.out:
  - `/../tomcat/logs/catalina.out`
  - Client shell log:
  - `C:\Documents and Settings\<user>\Application Data\QAD\Shell\QAD.Applications.log`

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Additional Commands

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Other Troubleshooting Aids

- Some additional informational commands
  - `TOP - VSAR - GLANCE - VMSTAT`
  - Windows Task Manager
  - GSW Admin Monitor
  - `ps -ef` or `ps -elf`
  - `wtbman -name [broker] -query`
  - `asbman -name [broker] -query`
  - `nsman -name NS1 -query`
  - WebSpeed Messenger Admin Utility - ping
  - Connection Manager status
  - ?

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ADM_TSH_200

Troubleshooting Lab

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Troubleshooting Lab

- Bad news – All of your users report they can't get into their QAD .NET UI systems
  - Use your bag of tricks to determine and correct the cause of their problems
  - Be sure to test all functionality of QAD .NET UI before giving them the go-ahead
- As always happens, they have a few more complaints, even after your heroic efforts to get the system up and running

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ADM_TSH_220

Exercises and Knowledge Check

4 When databases are bounced, which services need to be re-started?

5 Which two commands do you use to test the Admin and Name servers?

6 How do you test WebSpeed Messenger?

7 What is the purpose of the `tail` command?

8 Where are the Appserver and `catalina.out` logs located?

Chapter 6

Customizing Browses

Chapter Objectives

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Chapter Objectives

- The objective of this chapter is to describe the Browse Maintenance, Browse Link Maintenance, and Browse URL Maintenance programs.

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Benefits

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Benefits

- You will be able to use the Browse Maintenance programs to customize your browses.

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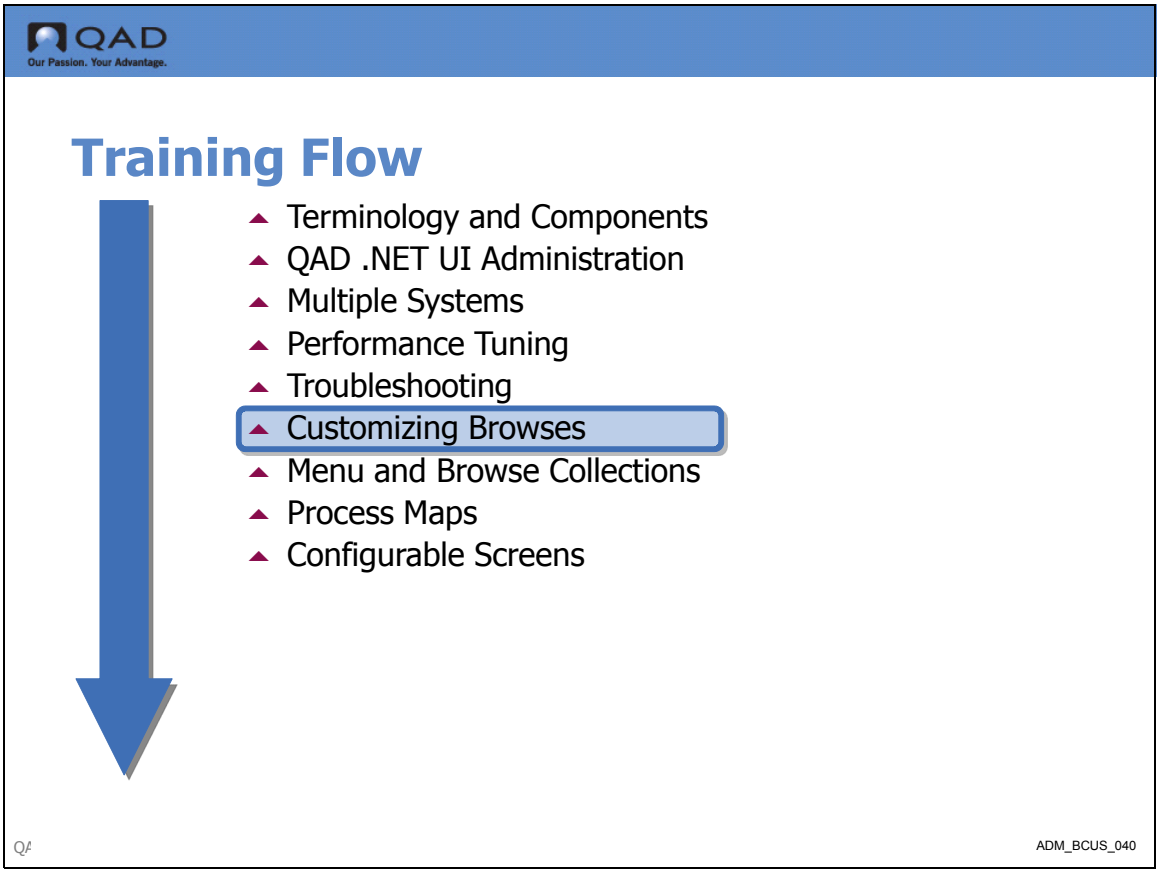
ADM_BCUS_030

Training Flow



Browse Maintenance

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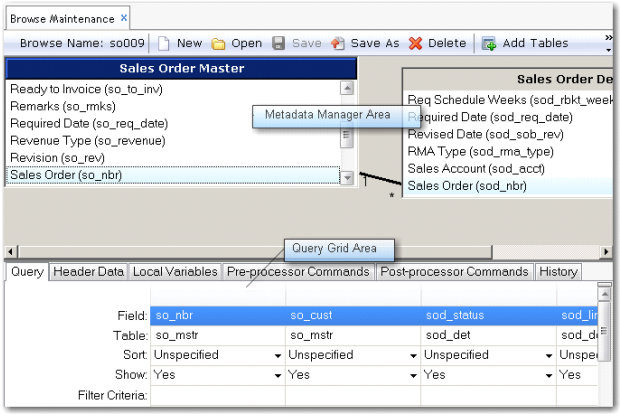
Browse Maintenance

- Design tool for creating, editing, duplicating and deleting browses
- .NET UI program for non-component based browses
- Customize field properties
- Create table joins
- Import and export browses



QAD Proprietary ADM_BCUS_050

Use Browse Maintenance to specify the components of a browse. The storage of the browse definition is performed automatically.

All browses created by Browse Maintenance (.NET User Interface) can be maintained in the Character UI.

There is no limit to the number of tables you can include using the .NET UI Browse Maintenance, but including more than 30 tables in a browse definition can cause the .NET UI Browse Engine to halt. The Browse Engine was originally designed with a four-table limit to avoid Progress performance issues. The Character UI Browse engine and Desktop Browse engine have four-table limits.

Creating a Browse

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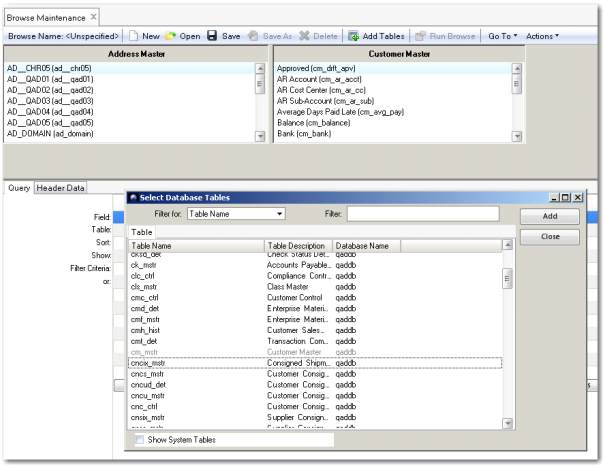
Creating a Browse

- Add left and right tables
- Include or exclude system tables
- Can include up to 30 tables in a new browse
- Tables defined in `clientsession.xml`
- Restricted tables are not displayed



QAD Proprietary

ADM_BCUS_060

When you start Browse Maintenance, the function is ready to create a new browse.

Double-click on the name of the table you want to add as the left table, and then double-click on the name of the table you want to add as the right table.

In the Select Database Tables screen, the Show System Tables screen ensures that system tables (such as `*_Db`, `*_File`, and `*_Field`) are displayed in the Table List.

The tables displayed for each program are defined in the `client-session.xml` file. The Browse Maintenance function reads this .XML file before populating the Select Tables screen. You can prevent tables from being displayed by modifying this file.

Selecting Fields

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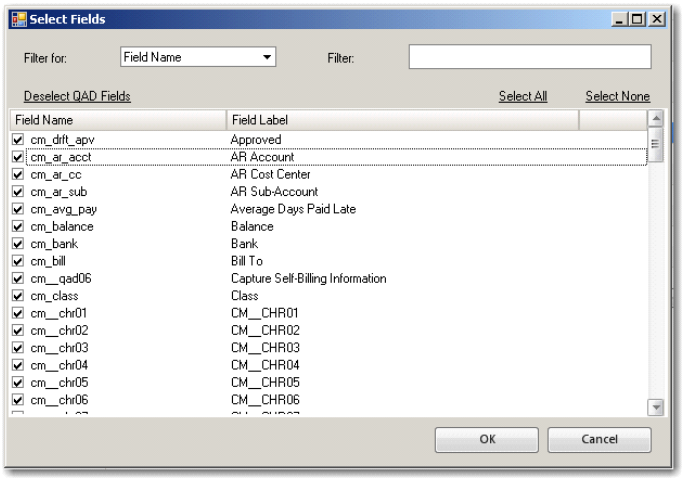
Selecting Fields

- Right-click Table Area
- Select or deselect custom QAD fields



QAD Proprietary APPS_BCUS_040

The Select Fields dialog has the following constraints:

- A field used in a table join may not be unchecked and is displayed as grayed-out text in the dialog field list.
- A minimum of one field must be checked in the dialog field list before clicking OK to exit the screen.

When you have selected a subset of fields for a table, only the selected fields are displayed in the table control area. Note the filter icon displayed in the upper right corner of the Table Control to indicate to the user that a filtered list of fields is being displayed.

Using the Query Tab

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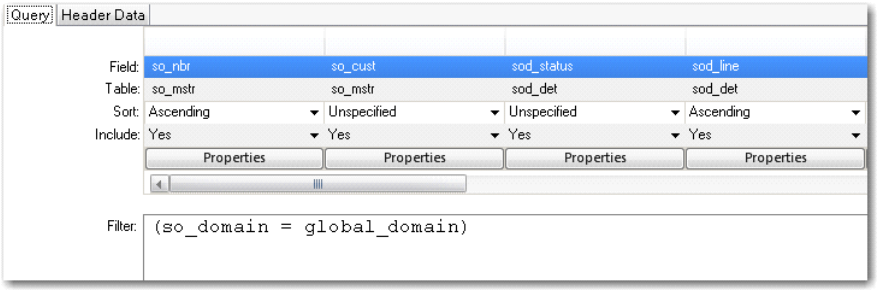
Using the Query Tab

- Add fields to the browse using the Query tab
- Set field Sort and Include properties
- Set field filters
- View and modify field properties



QAD Proprietary APPS_BCUS_050

To add a field from a table to the browse, drag-and-drop a field from the table to a column in the Query section. Note that you can view and modify the properties by clicking on the Properties button at the bottom of the column.

To insert new blank columns into the grid, right-click the column header to display the column options.

Field Properties

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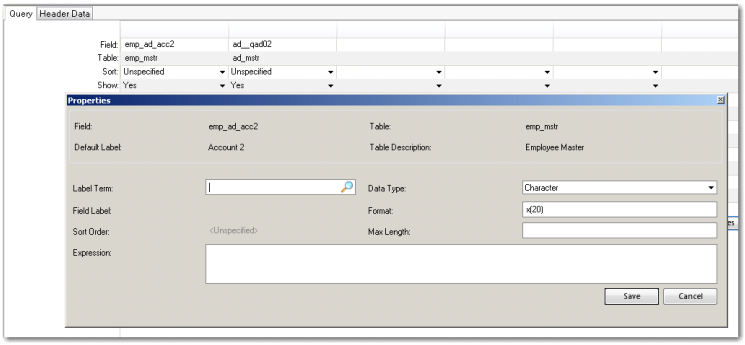
Field Properties

- Specify a label term from the label master table
- Sort order if column is set to Ascending
- Expressions for local variables
- Data Types for local variables
- Format depends on data type
- Display length



QAD Proprietary APPS_BCUS_060

The label term field specifies the key or label term from the label master table which is used to retrieve the field label displayed in the column in the browse results.

When saving the browse definition:

If the label term does not exist in the label master table, the system creates a new label master record using the string entered (the string is set to all uppercase and spaces are replaced with underscores).

The new label master record's value is the entered label term. For example, if you enter the new term `Red Book`, the label master table is queried and the term is not found. A new label master record is created with the key `RED_BOOK` and the value `Red Book`. An associated lookup allows the user to select an existing label term from the label master table.

Header Data Tab

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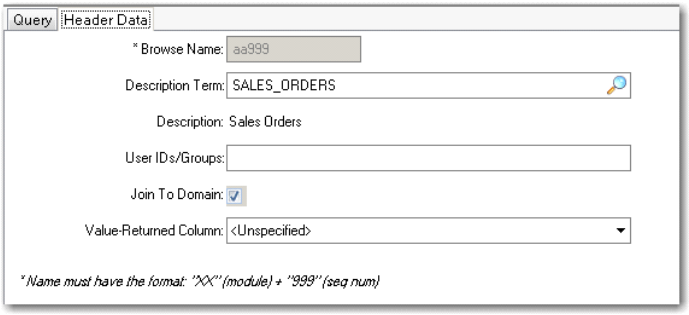
Header Data Tab

- Name and description for the browse
- Optionally restrict access to the browse
- Join the browse tables to the global domain
- Specify the value returned by double-clicking on a browse row



QAD Proprietary

APPS_BCUS_070

Roles in Enterprise Edition are the equivalent of user groups in Standard Edition. You use the same User IDs/Groups field to define access to browse functions in both applications.

If your role or user group has not been specified in the UserID/Groups field on the Header Data tab, you can run the browse but cannot open the browse in Browse Maintenance. You can also specify roles or user groups in the authorized user list for the Browse Maintenance Import, Export, and Multiple Delete functions.

Other Browse Options

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Other Browse Options

- Local Variables
- Pre-Processor Commands
- Post-Processor Commands
- Browse History

Query | Header Data | Local Variables | Pre-processor Commands | Post-processor Commands | History

```
DEFINE VARIABLE local-var01 AS CHARACTER FORMAT "x(8)".
```

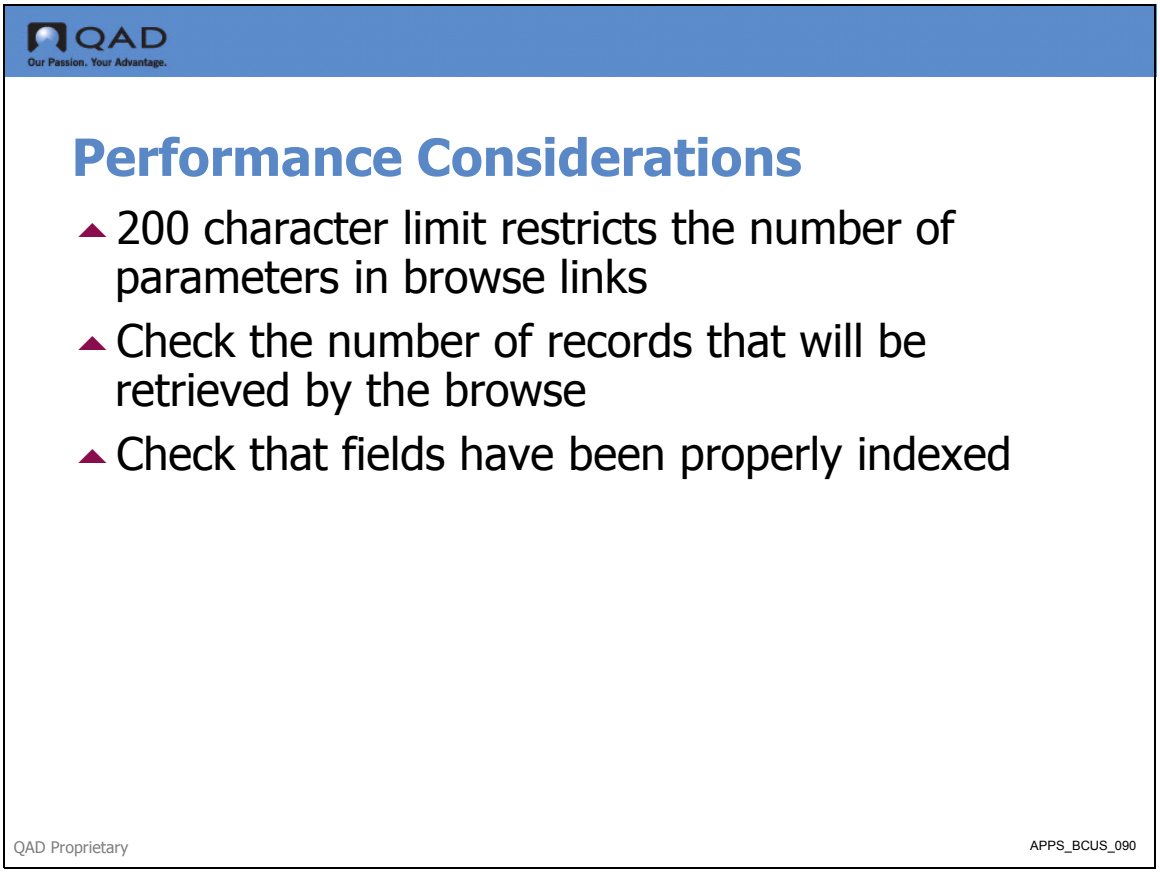
QAD Proprietary APPS_BCUS_080

Right-click the Header Data tab to include the Local Variables, Pre-processor Commands, Post-processor Commands, and History tabs.

The Pre-Processor Commands and Post-processor Commands tabs are available only for backwards compatibility with browses defined using the Character UI. These tabs provide a way to enter Progress 4GL code that can run either before (pre-processor) or after (post-processor) the browse runs. You do not need to use these tabs when creating a new browse using the QAD .NET UI.

The History tab displays revision history for this browse.

Performance Considerations



A browse on a database table that has a great many records may take a long time to save and hours to run. System resources are also strained when you select fields as search criteria that have not been properly indexed.

You should therefore consult the data dictionary before defining a browse, to check the number of records being retrieved by a browse. You should also check that the selected fields have been indexed.

There is no limit to the number of tables you can include using the .NET UI Browse Maintenance, but including more than 30 tables in a browse definition can cause the .NET UI Browse Engine to halt. The Browse Engine was originally designed with a four-table limit to avoid Progress performance issues. The Character UI Browse engine and Desktop Browse engine have four-table limits.

Although all browses created by Browse Maintenance (.NET User Interface) can be maintained in the Character UI, some legacy browses defined using the Character UI might not be maintainable by Browse Maintenance (.NET User Interface). In the Character UI, you create a browse by entering data in two maintenance programs, View Maintenance and Browse Maintenance. You have to enter the join data in View Maintenance's Join Phrase field, where *join data* is a clause of the form `<from table>.<from field> = <to table>. <to field>`. However, more than just join data can be entered in View Maintenance's Join Phrase field. For example, you can include field filters of the form `<field name> <operator> <value>`. Browse Maintenance (.NET User Interface) only supports maintaining join data.

Table Joins

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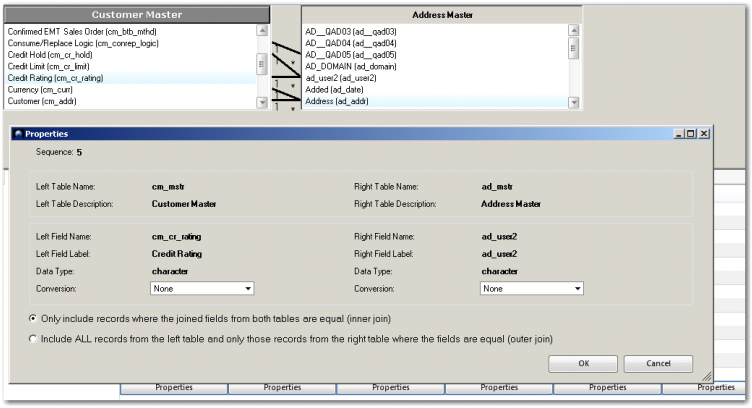
Table Joins

- Drag and drop to create a join
- View and modify join properties
- Datatype conversion
- Inner and Outer Joins



QAD Proprietary APPS_BCUS_100

An inner join returns the records selected for the first table combined with related records selected from the second table. If a record does not exist in the second table, no records are returned. Only related records selected from both sides of the relationship display in the view.

An outer join returns the records found by an inner join. However, in addition, for each value in the first table, it returns unknown values from the second table when no related record is found. As a result, all matching records from the first table are preserved for unmatched records in the second table.

The default join type is inner. Using the outer join can give you more flexibility in displaying information.

Example An inner join between customers and sales orders displays only customers with sales orders. An outer join includes all customers, even those who do not have orders.

Importing Browses

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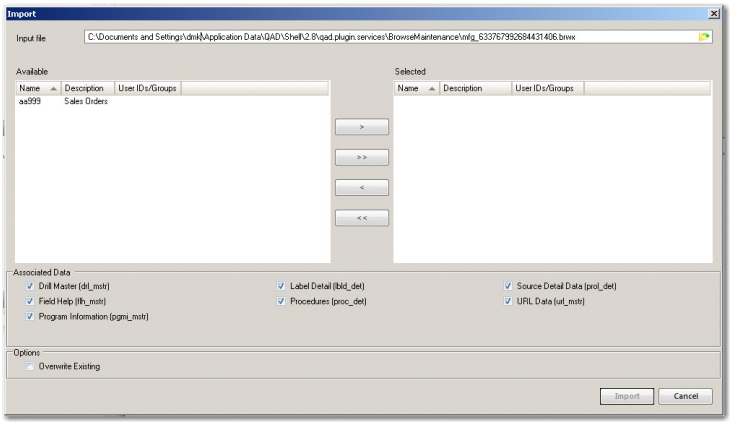
Importing Browses

- Select a browse definition file (.brwx) using the Open lookup



- Specify the data to import using the Associated Data options

QAD Proprietary APPS_BCUS_110

Importing includes the browse and view data for the browse, but you can specify whether to include associated browse data in the Associated Data pane, which includes checkboxes for including the Drill Master, Field Help, Program Information, Label Detail, Procedures, Source Detail Data, and URL Data.

If you are importing a browse that has the same name as an existing browse, specify whether you want the system to replace the existing browse with the one you are importing by choosing the Overwrite Exiting checkbox in the Options pane. Finally, click the Import button.

The Import and Export functions requires that you are using Progress version 10.1C01 at a minimum.

Exporting Browses

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Exporting Browses

- Select a .brwx file to display available browses
- Use the Associated Data options to limit the data to be exported
- Browses are exported to a default location:
  - C:\Documents and Settings*username*\Application Data\QAD\Shell*version*\qad.plugin.services\BrowseMaintenance

QAD Proprietary APPS_BCUS_120

The ability to export, import, and delete browses is disabled by default and should be limited to authorized users.

The `client-session.xml` file (located in *TomcatInstallDir*/webapps/qadhome/configurations/*SysEnv*/) now includes a setting for authorizing access to the import, export, and delete features.

A new `<DotNetBrowseMaintenanceUtilities>` element includes a `<Utility>` element whose attributes specify authorization.

Deleting Multiple Browses

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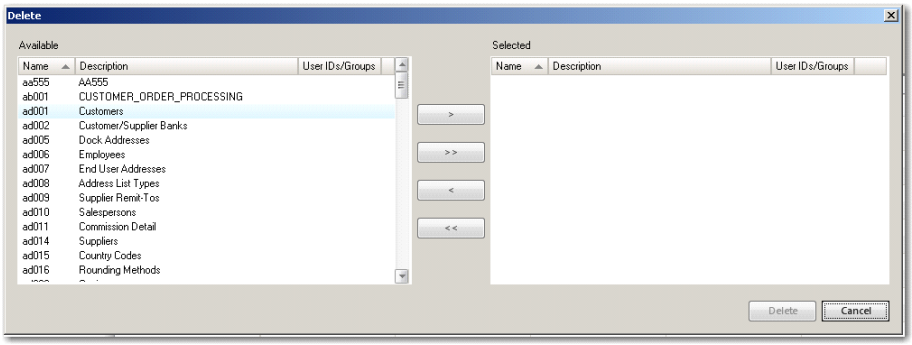
Deleting Multiple Browses



- Security considerations
  - Restricting the use of Browse Import, Export and Multiple Delete functions by modifying the `client-session.xml` file

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Deleting will remove the browse and view data along with the associated data.

Browse Link Maintenance

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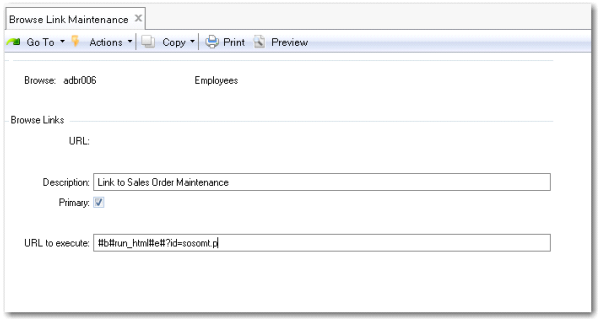
Browse Link Maintenance

- Creating New and Edit buttons on browses that link to Create and Modify programs
- Programs linked as URLs
- Data in the current browse is passed to the linked Modify program



QAD Proprietary APPS_BCUS_150

The New and Edit buttons provide browse program links. When you click on a browse program link Edit button, data from the currently selected row in the browse will be passed to the linked program.

For example, in Sales Order Browse, click Create to open Sales Order Maintenance to enter a new sales order. Click Edit to open Sales Order Maintenance to modify the order for the currently selected row in Sales Order Browse.

Creating a Browse Link

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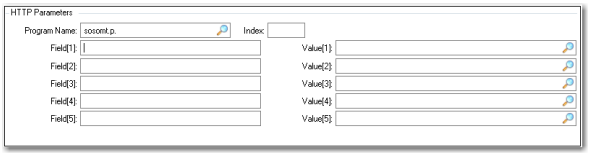
Creating a Browse Link

- Select a browse
- Specify the program link as a URL to Execute, using the syntax:
  - **#b#run_html#e#?id=program_name**
- Set the HTTP parameters for the program
- Index is the number of submits the program executes
- Field and Value are the field and value you want to load in the linked program



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APPS_BCUS_160

The index field is used to store the number of times the program will execute an Enter action (similar to pressing the Next button).

In simple maintenance programs, this is set to 1 to simply enter the key field values and access the fields that can be maintained in the linked record.

For more complex maintenance programs, there may be multiple sets of input prompts to be processed to access the frame of maintainable data.

For example, the first prompt for data in `addkmt.p` requires a value for the field `Shipto`. The program link record provides the value of `ad_ref` from the browse and executes the first Enter action.

The next prompt for data in the maintenance program requires a value for the field `ad_addr` and the browse link provides the value of `ad_addr` from the browse and executes a second Enter action. This advances the maintenance program to its frame of maintainable data for the user. Each time the program asks for data to be entered, the browse link logic offers up the fields it has and if there is a match between the field names it has data for and the fields the program is looking for, the field value is provided and an Enter action is executed (if there are any left to execute).

Use the Field field to enter the name of the variables that the target program is using to prompt for data. This information can be found by executing the desired program, advancing the cursor into the desired fields and pressing Ctrl-F.

The value fields (Value[1], Value[2], etc.) are the variables names from the browse providing the data and must be contained within `#b#` and `#e#`. The browse link logic uses these tags to parse out the value of the field from its record buffer.

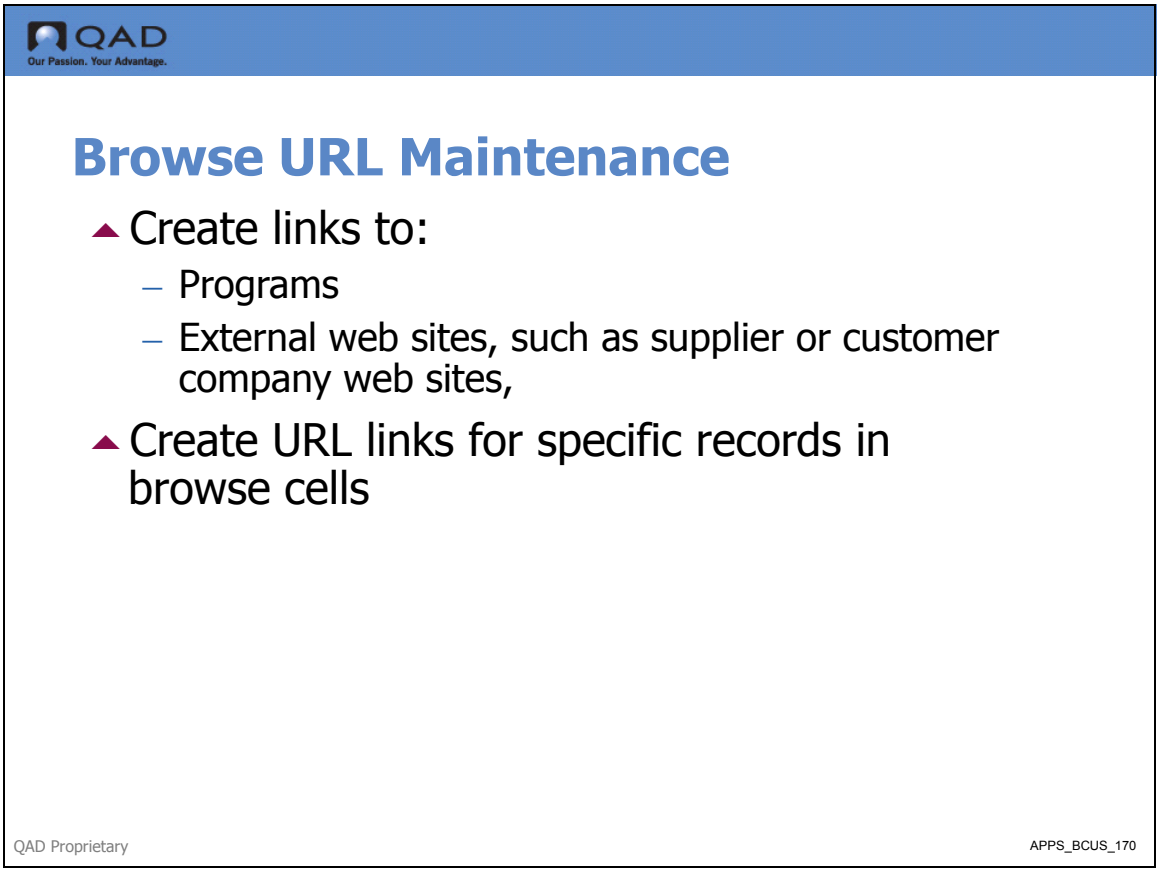
Example

Field[1]: shipto; Value[1] : `#b#ad_ref#e#`

Field[2]: ad_addr; Value[1] : `#b#ad_addr#e#`

Important Progress has a limit in the size of the data that can be stored in an index. In versions prior to 10.1B, the limit is around 200 characters (the sum of all the data contained in the fields of an index of a record). This limit has been increased to around 2000 characters in version 10.1B and beyond. Within Browse Link functionality, you are restricted to the 200-character limit unless you have upgraded your version of Progress. This limits the number of parameters that can be defined in a browse link, usually to four or less, although a fifth parameter is possible if the names of all of the involved fields are small.

Browse URL Maintenance



When a browse cell contains a URL link, double-clicking it launches a new browser window and displays the intranet or Internet resource associated with the URL. You can use these URLs in two ways:

- Create links to external Web sites that users can activate from QAD .NET browses, such as a supplier Web site associated with a supplier ID.
- Create links to other programs and pass specific data values to the programs. This lets you use browses as a means of navigating directly to maintenance programs.

You can access links to other programs only from drill-down browses, not lookups. Drill-down browses are typically available directly from the menus, but can also be associated with program fields in Drill Down/Lookup Maintenance (36.20.1).

Creating a Browse URL Link to a Program

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Creating a URL Link to a Program

- Using `run_html` to build the URL
- Specify:
  - The program
  - The field and value
  - The index
- Use the syntax
  `#b#run_html#e#?id=program_name&f1=field_name&v1=value_name#b#`
- Set the HTTP parameters for the program
- Field and Value are the field and value you want to load in the linked program

QAD Proprietary APPS_BCUS_180

Example For example, you can set up links in an item browse to directly access Item Master Maintenance (1.4.1), passing the current item number to the maintenance program, and executing the Next command any number of times. When a user clicks the link, Item Master Maintenance displays in a detached window. Multiple columns of data in a browse can contain links so that you can access maintenance programs for any data related to a record. However, data for only one field can be passed to each program.

Creating a Browse Link to a Web Page

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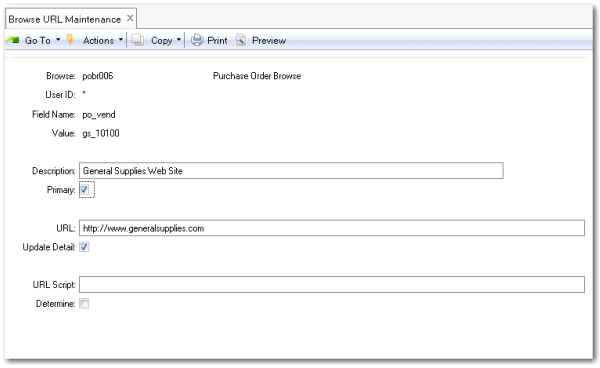
Creating a Browse Link to a Web Page

- Specify:
  - The browse
  - Field name and value
  - The URL
- Use the syntax: `http://www.website.com`



QAD Proprietary APPS_BCUS_190

Example You want to establish a URL link in the Purchase Order Browse from supplier ID GS10100 to the corresponding supplier's company Web site, located at http://www.generalsupplies.com.

Enter these values in Browse URL Maintenance:

Field Name	Value
Browse	`pobr006.p`
User ID	`*`
Field Name	`po_vend`
Value	gs_10100
URL	`http://www.generalsupplies.com`
Description	General Supplies Web Site
Primary	Yes

When you run Purchase Order Browse, the supplier gs_10100 record now features a link to the website `www.generalsupplies.com`.

Creating a Browse Link to a Record

URLs can contain special strings that are automatically replaced by field values in the browse.

Selecting a link containing this type of string automatically replaces that string with the corresponding field value in the row.

Follow these steps to define this type of special string in a URL:

1. Enter `#b#` to indicate the beginning of the string.
2. After the `#b#`, enter a field name associated with the specified browse.
3. Enter `#e#` to indicate the end of the string.
4. The Web site for one of your primary suppliers contains a catalog of items. Entering an item's identifier at this Web site accesses the catalog entry for that item, containing information such as item cost, quantity available, and ship weight. To create links from the supplier item numbers to their corresponding catalog entries at the supplier's Web site, create the following URL: `http://www.generalsupplies.com/catalog/#b#vp_vend_part#e#`

   Note You must include `http://` in the URL. For example, you must use `http://www.generalsupplies.com/` and not just `www.generalsupplies.com`.
5. Next, associate the URL with the Supplier Item column in the Supplier Item Browse.

6 After you establish this link, selecting a supplier item number in the Supplier Item Browse automatically inserts the selected field value. For example, selecting supplier item 10-1005 creates this URL: `http://www.generalsupplies.com/10-1005`.

7 The system then launches a Web browser to display the relevant catalog information for that item located at that URL address.

Exercises and Knowledge Check

1. What is the recommended upper limit of tables you can include in a browse definition?
2. How do you restrict access to the Browse Import and Export functions?
3. What information should you check before creating a browse?
4. What is the file extension for browse definitions?
5. Which menu do you use to associated drill-downs with fields?

Chapter 7

Menu and Browse Collections

Chapter Objectives

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Chapter Objectives

- The objective of this chapter is to introduce the Menu Collection and Browse Collection programs.

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Benefits

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Benefits

- You will be familiar with the Collections functions.

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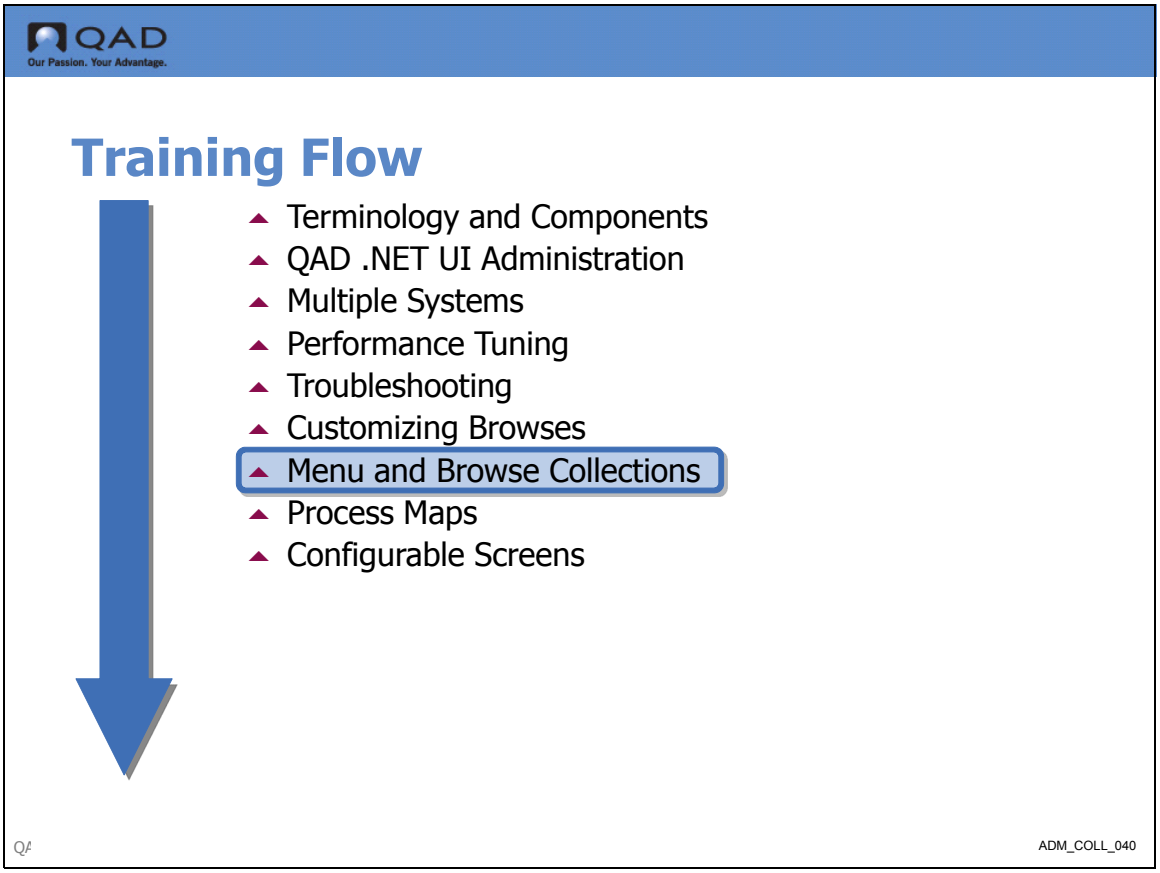
Training Flow



Menu Collections

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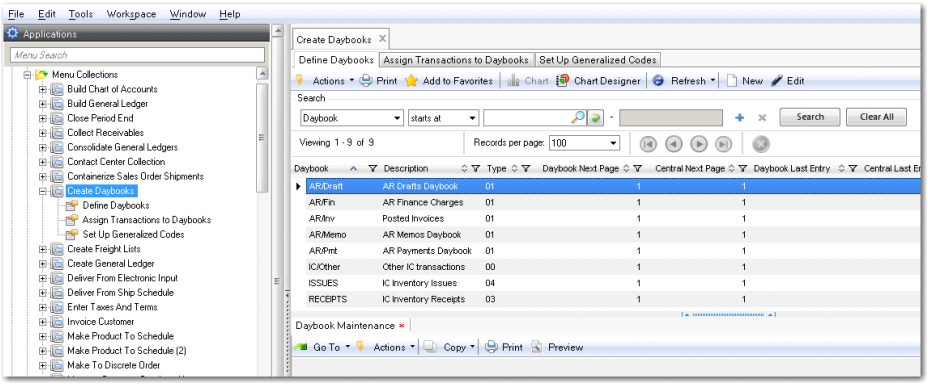
Menu Collections

- Collections of menu items such as programs, browses, process maps, and dashboards
- Stored in the Collections folder
- Need access to Administration Menu



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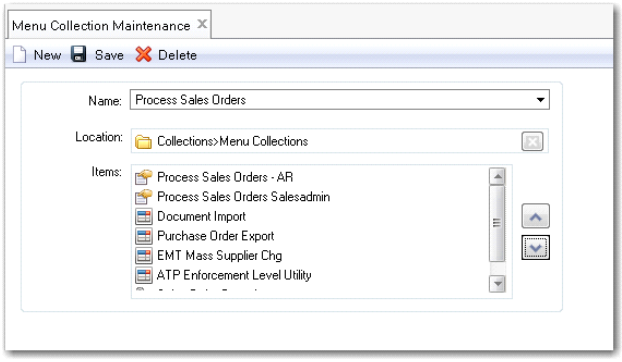
Menu Collection Maintenance

- Drag-and-drop facility for adding menus to collections
- Set the order of menus in the collection using the up and down arrows



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Browse Collections

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Browse Collections

- Browse Collections comprise a main browse that can drive selected fields in other browses and programs
- Can be customized and saved to user favorites
- Can link to
  - Other browses
  - Maintenance and report programs
  - Other URLs (web pages etc.)
- Need access to Administration Menu

QAD Proprietary ADM_COLL_070

There is no limit to the number of programs and browses you can include in a Browse Collection. However, when defining the collection, you should consider that a large collection takes longer to display on the screen, and there may be a performance issue if it is to be in constant use by a large number of users. In this case, you should consider multiple smaller collections.

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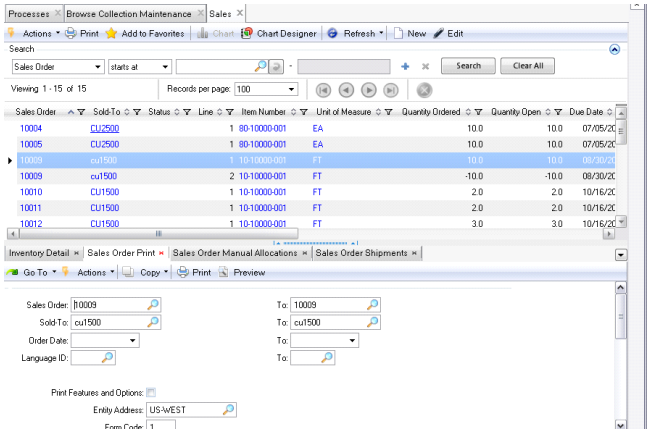
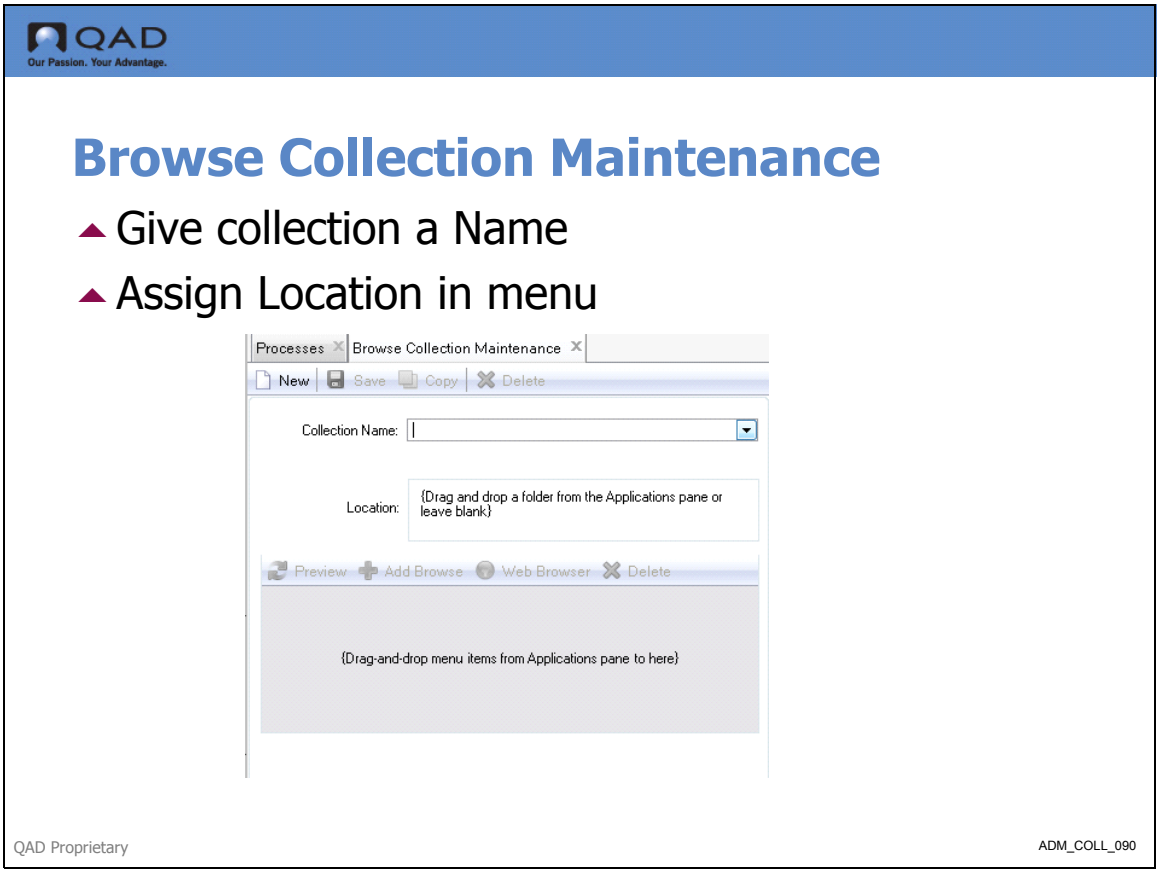
Browse Collection Maintenance

- Main browse in upper half of screen
- Related browses and programs in lower half



QAD Proprietary ADM_COLL_080

Browse Collection Maintenance



Browse collections are stored in the Collections folder in the Applications area. When you right-click the Collection name and select Design, you can open the collection directly in Browse Collection Maintenance. This option lets you modify collection properties from the desktop without having to run the maintenance program.

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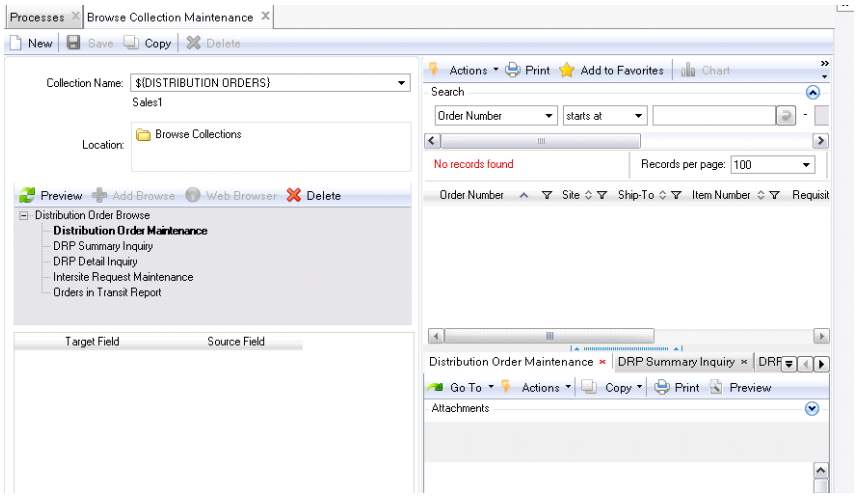
Browse Collection Maintenance

- Select Main Browse and related browses / programs and links between them



QAD Proprietary ADM_COLL_100

You can specify a label term as a name for the browse collection. The advantage of doing this is that you can use a label term whose associated description has been translated into a supported language. To find an existing label term, open Label Master Browse (36.4.17.2). To quickly find a label term you might want to use, use the browse's Search function. For example, if you want to find a label term that includes `Item`, set the Search fields to `Term contains Item` and click Search.

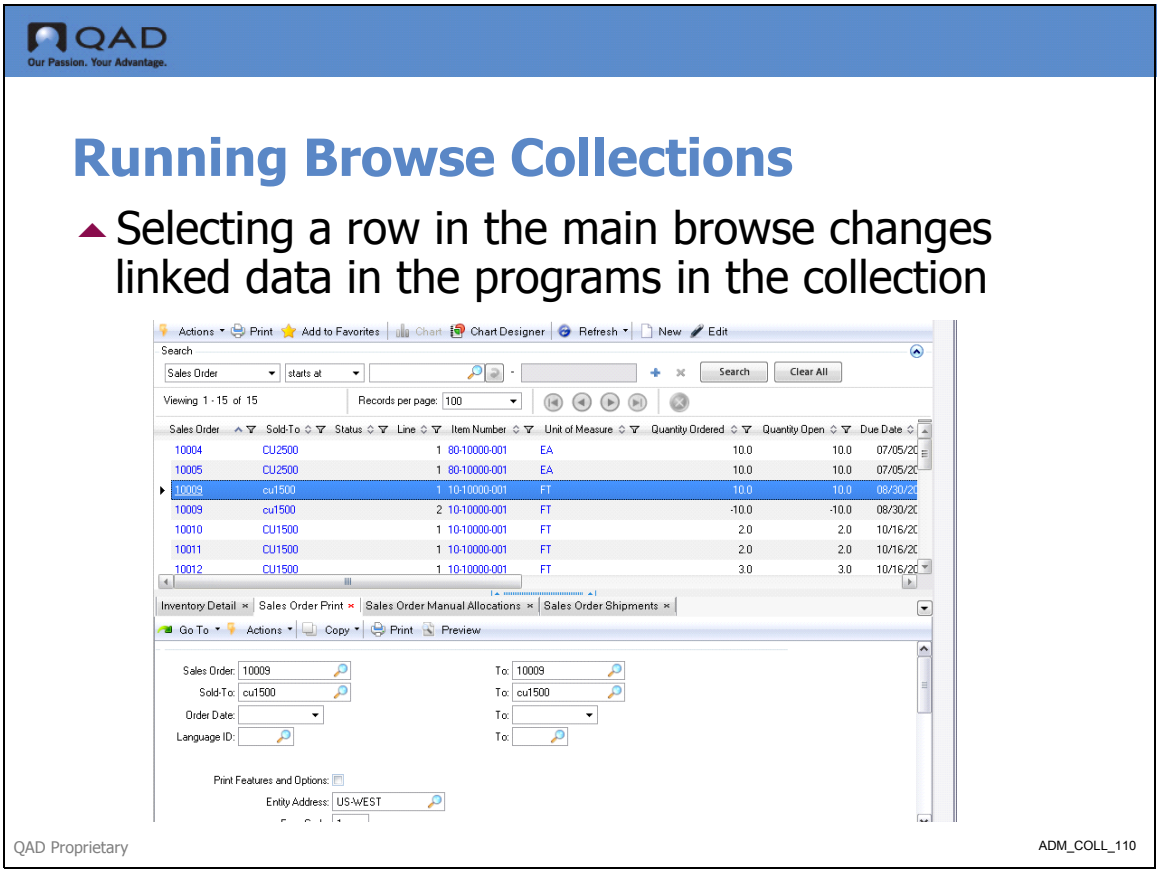
In the browse, the Term column lists the label terms that include Item and the Long Label column displays the associated descriptions. Next, in Browse Collection Maintenance's Name field, enter the label term in the format *`${Term}`*.

Important You must use curly brackets {} when defining a label term. Otherwise, the label will not link correctly to the translated description.

For example, if the label term is `ALL_ITEMS`, enter `${ALL_ITEMS}` in the Name field. After the browse collection is saved, in the Applications Pane, the browse collection name takes the description associated with the `ALL_ITEMS` label term.

If the *`${Term}`* name is not converted immediately to the label term's description, log out and log back in again to refresh the Application area's display.

Running Browse Collections



You can also drive URLs from browses. For example, select Customer Address Browse and click the Web Browser button.

1. In the Title field, enter Google Address Search. In the URL field, enter `http://maps.google.com/maps?q=` and then choose Postal Code from the pull-down menu, which adds *<Postal Code>* to the Google Maps query. Now Customer Address Browse automatically drives a Google Maps query.
2. If you decide you want to remove one of the browses or programs, select the browse or program and click the Delete button just above the gray area.
3. To preview the collection, click Preview.

Exercises and Knowledge Check

1. Where are menu and browse collections located in the Applications area?
2. How do you edit a browse collection directly from the Applications area?
3. How many fields can be used as target fields?

Chapter 8

Process Maps

Objectives

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Chapter Objectives

- The objective of this chapter is to describe the Process Map program.

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Benefits

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Benefits

- You will be able to create process maps, and to link process maps to menus and operational metrics.

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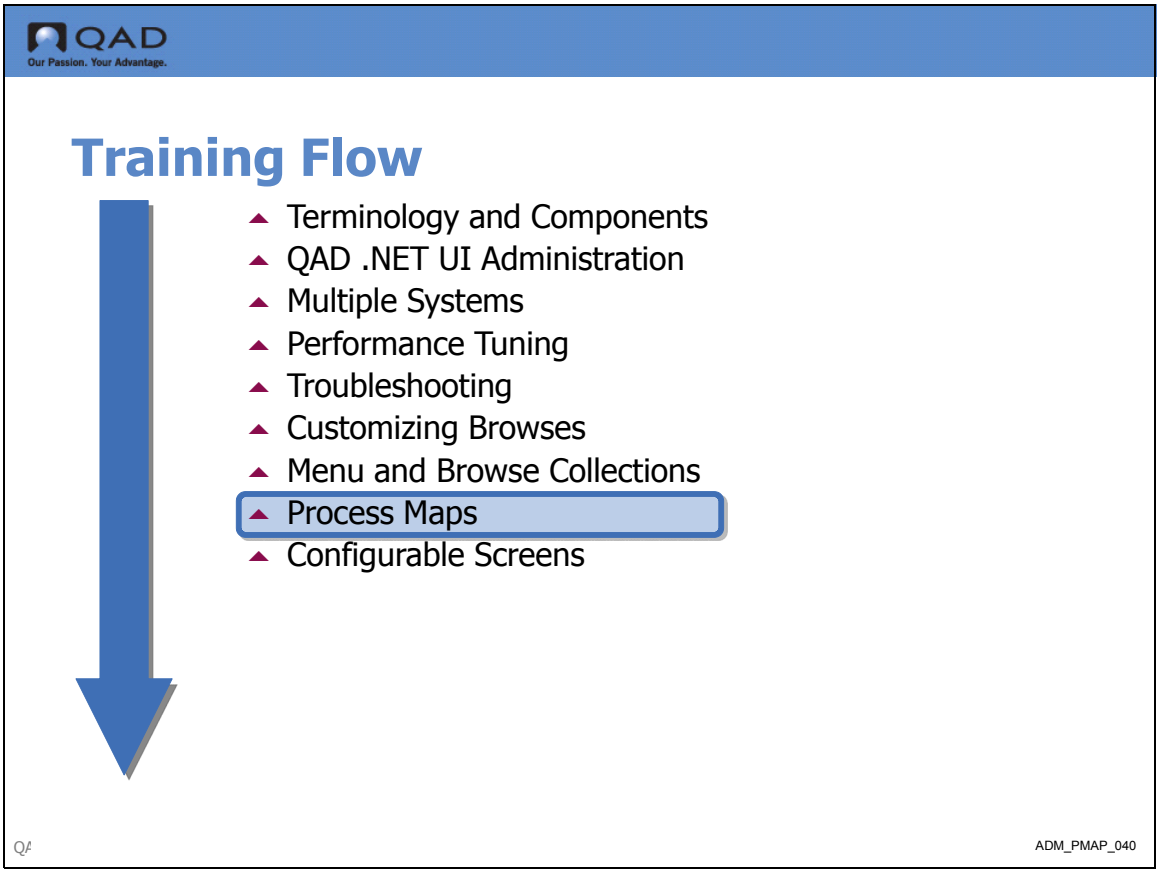
Training Flow



Overview

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Process Maps

- A process is a structured set of activities designed to accomplish a specific objective.
- Process maps illustrate the principal business and operational processes within a QAD application, and provide graphical navigation.
- Two separate views for process maps in QAD applications
  - Vertical Industry View
  - Supply Chain View
- Both views lead to the same detailed maps.

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Process Maps View

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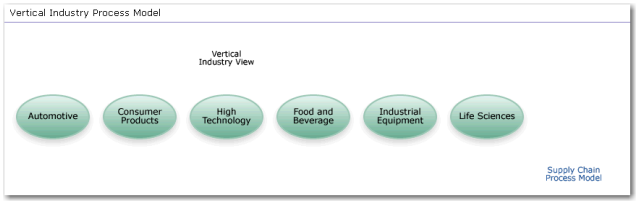
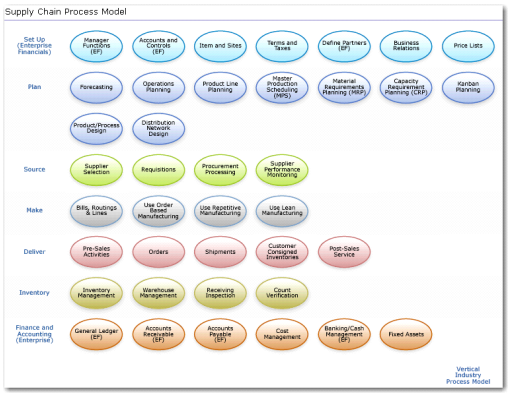
Process Maps Views

- Vertical Industry



- Supply Chain



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Naming Conventions

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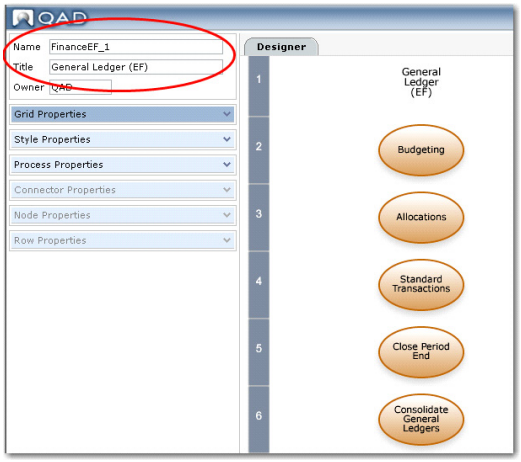
Naming Conventions

- Each map has:
  - an alphanumeric name, which is also the process map filename
  - a title, displayed on the process map breadcrumb.
- You must enter the title as a Text node for it to appear on the process map.



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Numbering Conventions

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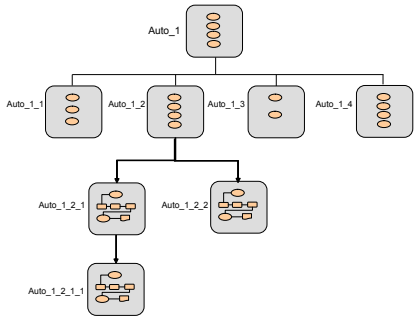
Numbering Conventions

- A code identifies the functional area to which the map belongs,
- A number indicates the map's place within the map hierarchy for that area.
  - **Example**: the first map in the Automotive area is named Auto_1. If Auto_1 opens four sub-maps, they are named Auto_1_1, Auto_1_2, Auto_1_3, and Auto_1_4. If two maps open from Auto_1_2, they are named Auto_1_2_1 and Auto_1_2_2.



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Map Titles

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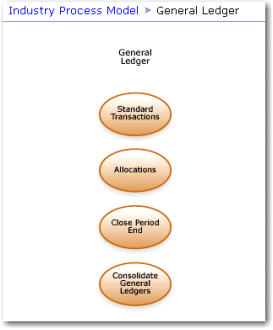
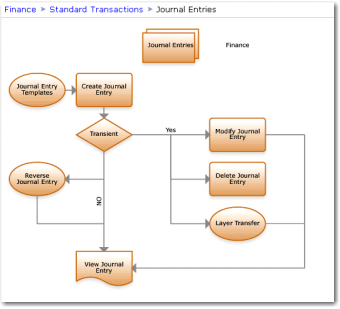
Map Titles

- Level 1: high-level vertical map for that area; title in **black text** above the map
- Level 2: a subsequent vertical map, or a detailed process flow; for detailed processes, the title is represented in a collection node





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Breadcrumbs

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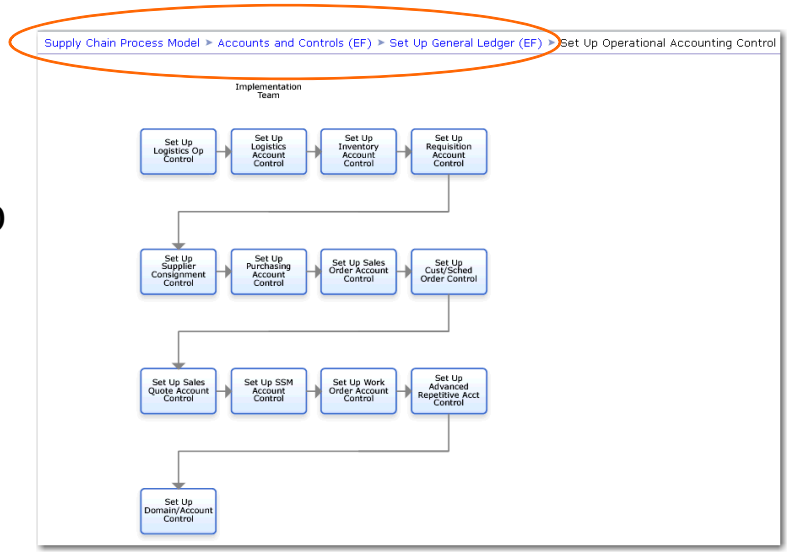
Breadcrumbs

- Lowest level maps do not open any subsequent maps
- Title is indicated by a breadcrumb trail



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Nodes

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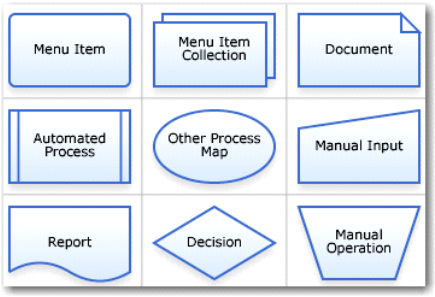
Nodes



- Menu Item
  - Indicates a link to a program on the menu.
- Other Process Map
  - Connects activities on one process map to another process map.
- Menu Item Collection
  - Links to collections.
- Manual Step
  - Tasks performed outside of the QAD application, for example, external planning
- Decision
  - Directs the flow of a map when it can branch in two directions.

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Nodes

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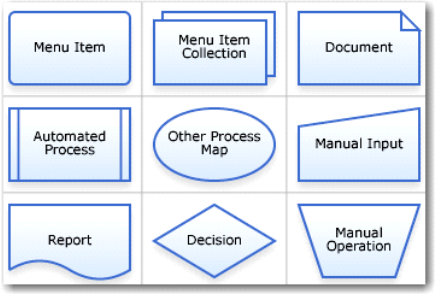
Nodes



- Document
  - Represents reports or files, such as Word documents or Excel spreadsheets, that are relevant to a task.
- Manual Input
  - Indicates inputs to the process from external systems or outputs from the process to external systems, for example, Electronic Document Interchange (EDI).
- Automated Process
  - Indicates a link to an automated process, such as ??
- Report
  - Indicates a link to a report program
- Nodes also indicate a user's permissions with regard to functionality. If the user does not have access to a linked program, the node grays out.

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Viewing Process Maps

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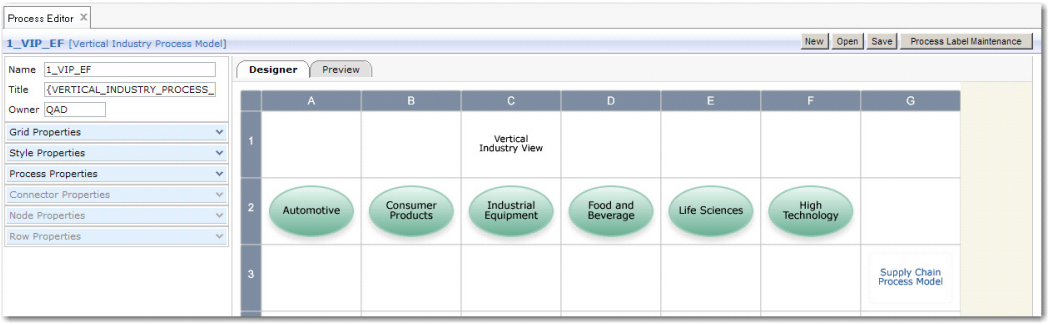
Viewing Process Maps

- Use the Process Editor to view maps



- Click Open to select existing process maps

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Process Map Rendering

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Viewing Process Maps

- Process maps are rendered using Microsoft's **Silverlight** technology
- Silverlight is a programmable web browser plugin compatible with .NET applications.
- Can also be viewed using standard **SVG**-based technology.
- The scalable vector graphics (SVG) format is an XML technology for defining vector-based two-dimensional graphics for the Web.
- You set the default display technology in Process Admin Context Parameters.

QAD Proprietary ADM_PMAP_140

Note Adobe Scalable Vector Graphics (SVG) Viewer is no supported by Adobe Systems. If the SVG plugin does not correctly install automatically, you must install it manually.

Creating a Process Map

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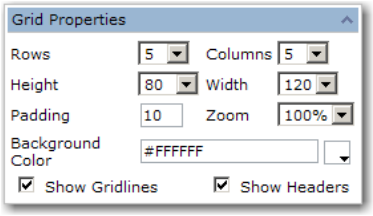
Creating a Process Map

- Click New to create a new map.
- Assign a name, title, and owner. Do not use spaces.
- Use Grid Properties to set:
  - the number of rows and columns,
  - cell height, width, and padding
  - A zoom factor for previewing purposes
  - Cell background color
  - Cell gridlines and header settings



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Style Properties

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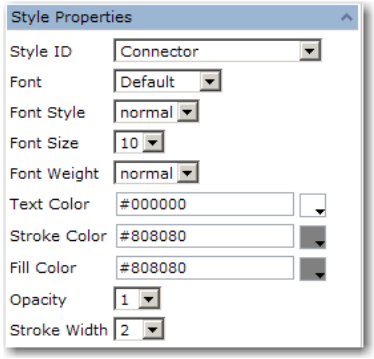
Editing Style Properties

- Styles are pre-defined and are applied to nodes
- You can edit the default font and node properties for the style
- Style attributes are stored in `process-config.xml`
- Changes you make to styles do not affect existing process maps in which the style is used



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Process Map Variables

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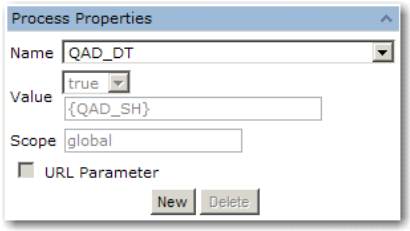
Process Maps Variables

- Used to create links from the Editor to programs, images, icons, other nodes, operational metrics, ..
- Variables ensure that processes can be used in multiple environments.
- System global variables are displayed in the Process Properties dialog, and defined in the Process Administration dialog.



- You can also define local variables with this dialog.

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Connector Properties

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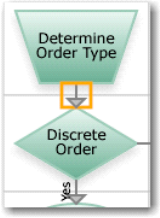
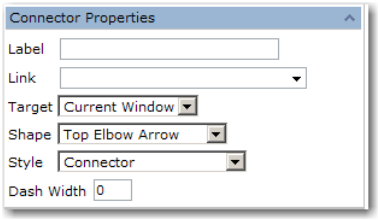
Connector Properties



- Available when you select an inter-node connector
- Define properties arrows and lines
- Apply a label, or link the connector to a program, other process map, or file
- If the connector is linked, specify the target window
- Set the shape, style, and dash width



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Node Properties

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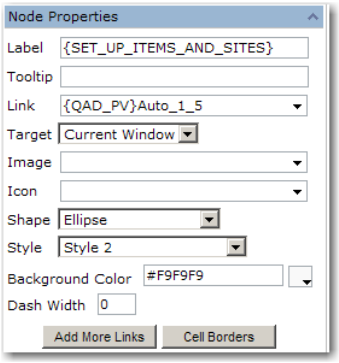
Node Properties



- Available when you click a cell in the grid.
- Use to design nodes.
- Set a label and tooltip, which use the default attributes defined in the style.
- Link to a file, program or another node. The system uses the process variables to locate the files, programs or process maps to be linked. The Target option lets you open the link in the current window or new window.

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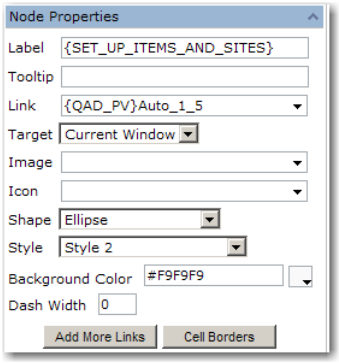
Node Properties



- Display an image instead of the default node shape.
- The image sized to fit the cell.
- Select an icon to display in the lower right-hand corner of the node.
- Select the node shape, based on the function of the node in the process map.
- Select a style for the node, from the default styles defined in Style Properties.
- Set a background color.

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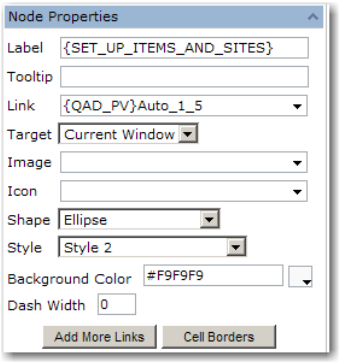
Node Properties

- Dash Width is the length in pixels of dashed lines for the node border or for connectors.
- Click Add More Links to add up to 8 additional URL links for the process map.
- Click Cell Borders to define the color, width, and dash width of the cell borders.



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Process Map Administration

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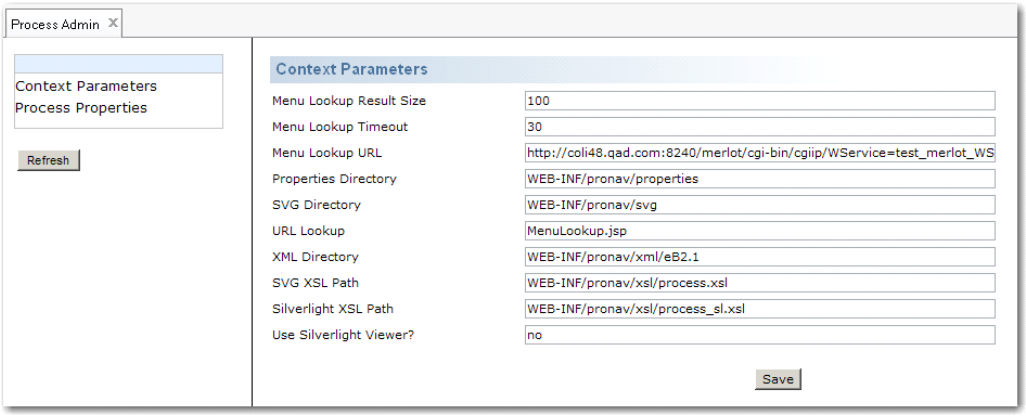
Process Administration

- Use the Process Admin option to set context parameters and define system properties variables.



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Context Parameters

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Context Parameters

- Menu Lookup Result Size
  - The number of records returned when a user displays the Program Lookup associated with the URL field in Node Properties and Connector Properties. Default 100.
- Menu Lookup Timeout
  - When a user uses the Program Lookup, the system connects to the active database using the URL specified in Menu Lookup URL and reads the menu information from the database. This information is held in memory for the number of minutes specified in this parameter.

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Context Parameters

- Menu Lookup URL
  - The full URL the system uses to connect to a database when it reads menu records to display in the Program Lookup. Example:
  - `http://crsu04.qad.com:4949/cgi-bin/qad_wspd_cgi_31c_dt91.ksh/ WService=testdt91web/com/qad/nav/xmenu.p?Action=MenuLookup`
- It is built using the following elements:
  - Relative path to the executables directory on the Web server
  - WebSpeed executable name
  - WebSpeed broker name
  - API for reading the database menus

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Context Parameters

- SVG Directory
  - Specifies the directory path where the SVG files created with the Process Editor are stored. The path is relative to the *QADDesktopBase*/webapps directory.
- URL Lookup
  - Specifies the file to use for generating the listing of programs associated with the URL field in Connector and Node Properties. By default, this is MenuLookup.jsp.

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Context Parameters

- XML Directory
  - Specifies the path to the directory where the XML files created with the Process Editor are stored. The path is relative to the `QADDesktopBase/webapps` directory. Process maps for each supported language are stored in the `QADDesktopBase/webapps/WEB-INF/pronav/xml` directory.
- SVG XSL Path
  - Specifies the path to the XSL file used to convert process files from XML to SVG format, typically `WEB-INF/ pronav/xsl/process.xsl`. The path is relative to the `QADDesktopBase/webapps` directory. This file was installed during installation

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Context Parameters

- Silverlight XSL Path
  - Specifies the path to the XSL file used to convert process files from XML to SVG format, typically `WEB-INF/ pronav/xsl/process_sl.xsl`. The path is relative to the *`QADDesktopBase`*`/webapps` directory. This file was installed during installation.
- Use Silverlight Viewer
  - Use this option to set the default process map viewer. By default, this is set to Yes

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Process Properties

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Process Properties

- Use to display variables used by the Process Editor when creating maps
- Edit the default global variable definitions or create a new local variable.
- Generally, you may only need to change the path for the QAD_DT_DOC_ROOT variable.

Process Properties

Delete	Name	Value	Scope	URL Parameter
☐	QAD_CONTENT	{QAD_DT_DOC_ROOT}/content/	global	☐
☐	QAD_CONTENT_IMG	/content/	global	☐
☐	QAD_DT	{QAD_SH}	global	☐
☐	QAD_DT_DOC_ROOT	/zinfandelEE	global	☐
☐	QAD_DT_IMG	{QAD_DT_DOC_ROOT}/images/	global	☐
☐	QAD_HOMESERVER	http://coli48.qad.com:8888/qadzinfandelee/	global	☐
☐	QAD_IMG	{QAD_DT_DOC_ROOT}/images/	global	☐
☐	QAD_IMG_DOCUMENT	{QAD_IMG}document.gif	global	☐
☐	QAD_IMG_MENUITEM	{QAD_IMG}table.gif	global	☐
☐	QAD_IMG_PROCESS	{QAD_IMG}process.gif	global	☐
☐	QAD_METRICS_IMAGE	[QAD_HOMESERVER]/configurations/<test>/storage/metrics_images/	global	☐
☐	QAD_PV	ProcessViewer.jsp?ProcessName=	global	☐
☐	QAD_SH	qadsh://menu/invoke?menuitem-alias=	global	☐
☐	QAD_SH_MENU_KEY	qadsh://menu/invoke?menuitem-key=	global	☐

Apply New

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Language Support

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Language Support

- The node Label field specifies the node text.
- Each label has a key that identifies the label.
- Use Process Label Maintenance to maintain the label keys and text in multiple languages.
- Translated label text is stored separately to the node attributes.
- Create a new label key for each new node
- Specify this key and its translated text for each required language

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Process Label Maintenance

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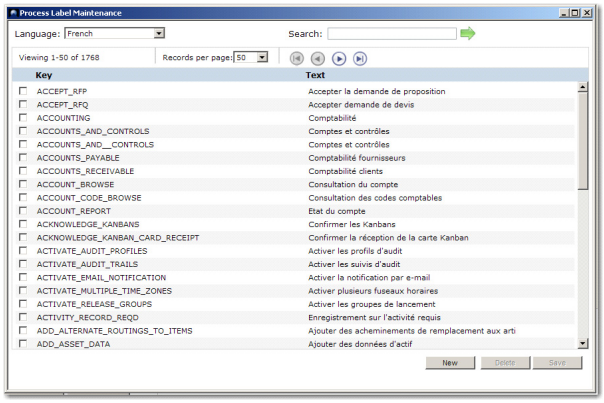
Process Label Maintenance

- Select a language from the drop-down list.
- The translated text is displayed for each label key.



- Translated labels are stored in the `properties_language.xml` file
- The system identifies the label text to display based on the label key and the user's language.

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Managing Process Maps

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Managing Process Maps

- Process maps are stored as XML files, for example, `FinanceEF_3_4.xml`.
- These files are stored in the *`TomcatInstallDir`*`/webapps/qadhome/configurations/default/storage` directory.
- When migrating to a new QAD .NET UI release, you must manually copy the map files to the `configurations/default/storage` directory of the new web applications server.

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ADM_PMAP_310

Exercises and Knowledge Check

1. When a user does not have permissions for a program, how is this represented in the related process map?
2. In which menu do you set the default display technology?
3. In which file are the map style properties stored?
4. What is the purpose of the xml directory parameter?
5. Where are process maps stored?
6. What is the procedure for migrating process maps from one installation to another?

Chapter 9

Configurable Screens

Objectives

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Chapter Objectives

- The objective of this chapter is to describe the Configurable Screens design function.

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Benefits

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Benefits

- You will be able to customize non-component based programs using Configurable Screens features and functions.

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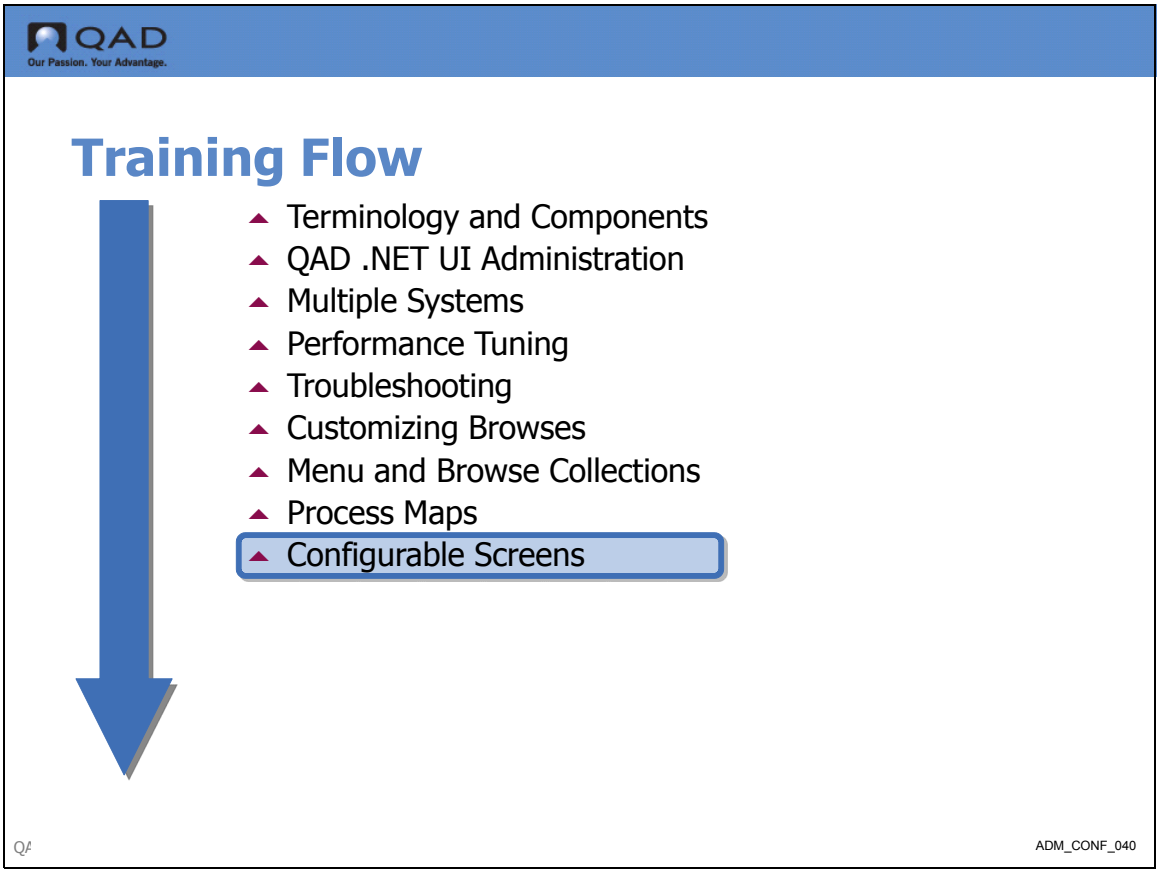
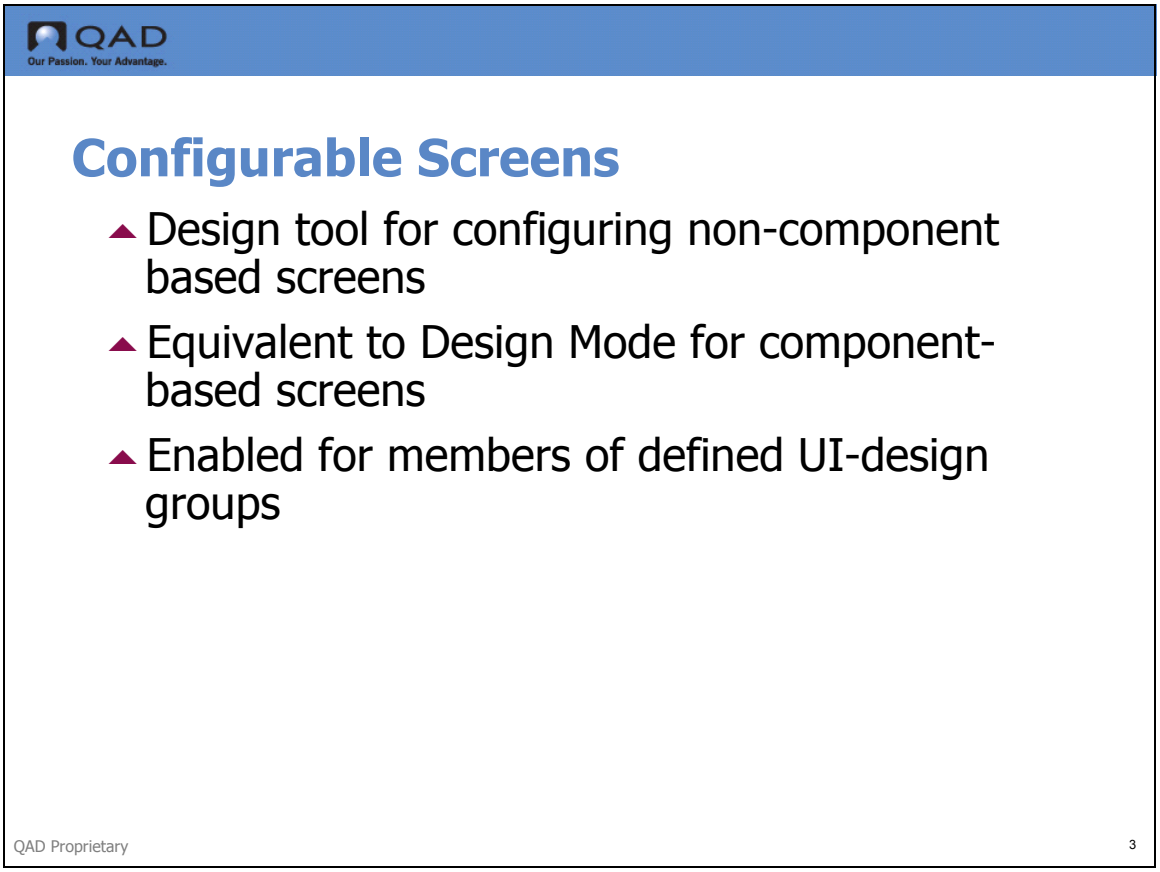
ADM_CONF_030

Training Flow



Overview

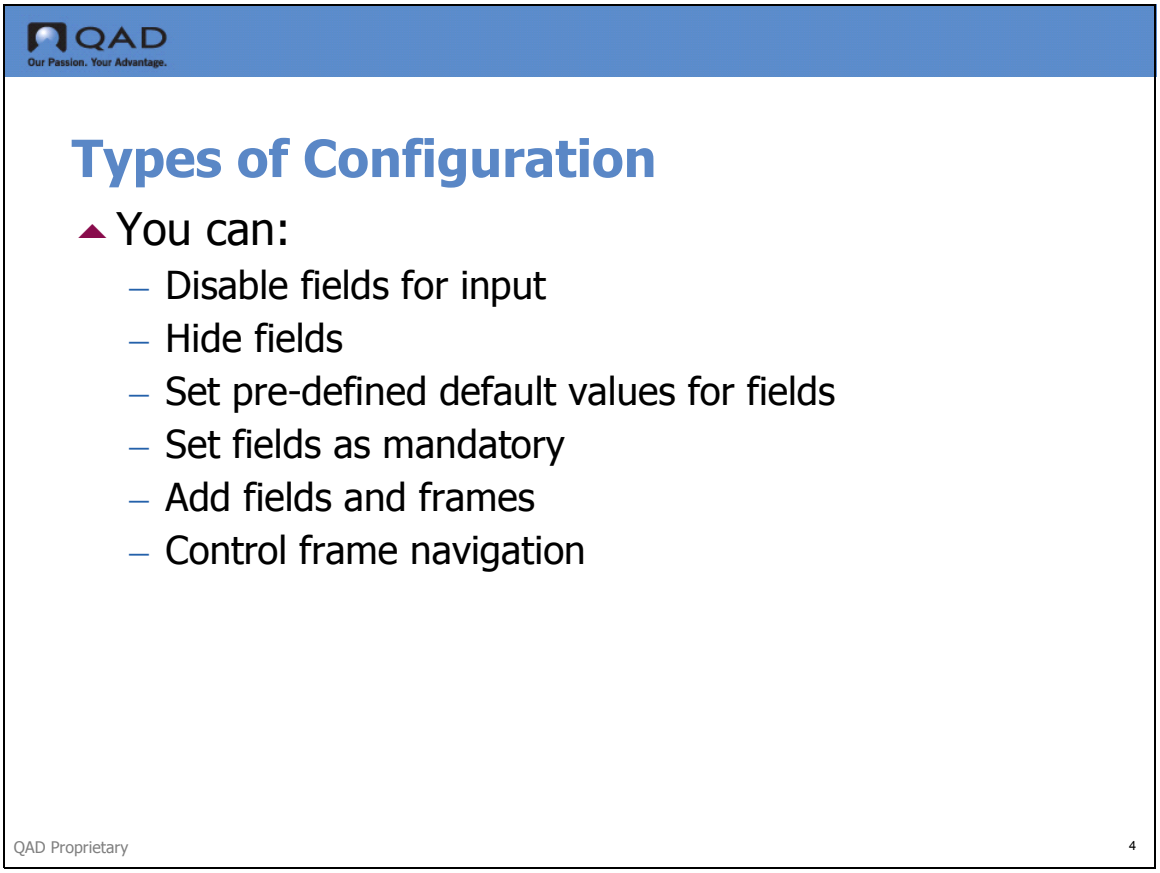


Configurable Screens lets users in a designated UI design group disable fields for input, hide fields, set a predefined default value for a field, mark a field as required, add fields and frames, and set frame navigation.

Configurable Screens is used for non-component based programs only. Component-based screens are customized using Design Mode.

Note Access to the Configurable Screens functionality is enabled by the system administrator.

Types of Configuration



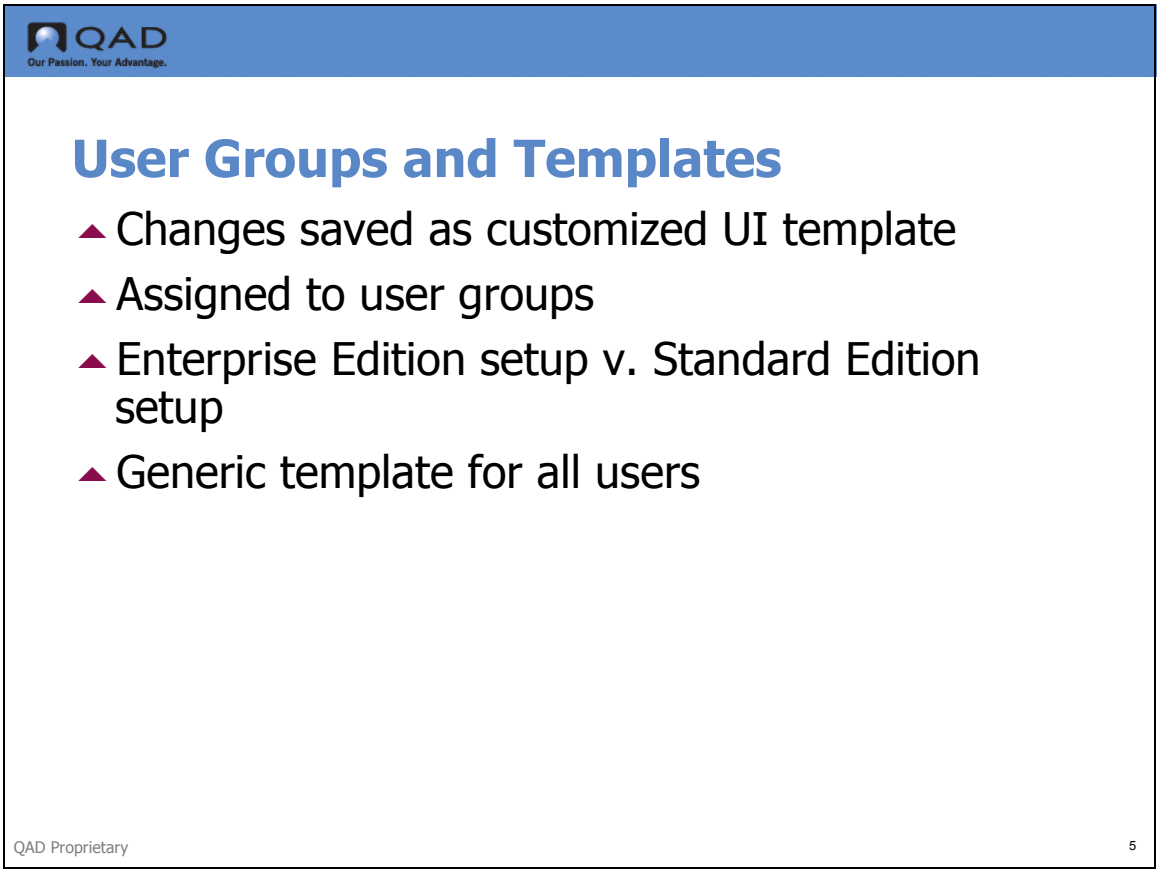
Each company that implements a particular function may use different features. This affects which fields are required and which are optional.

Configuration Examples:

- Generalized codes validation
- Optional modules
- Control settings

You must have a very clear understanding of how a particular function is being used before you change the data input requirements. You must thoroughly test the templates you create before using them in a production environment.

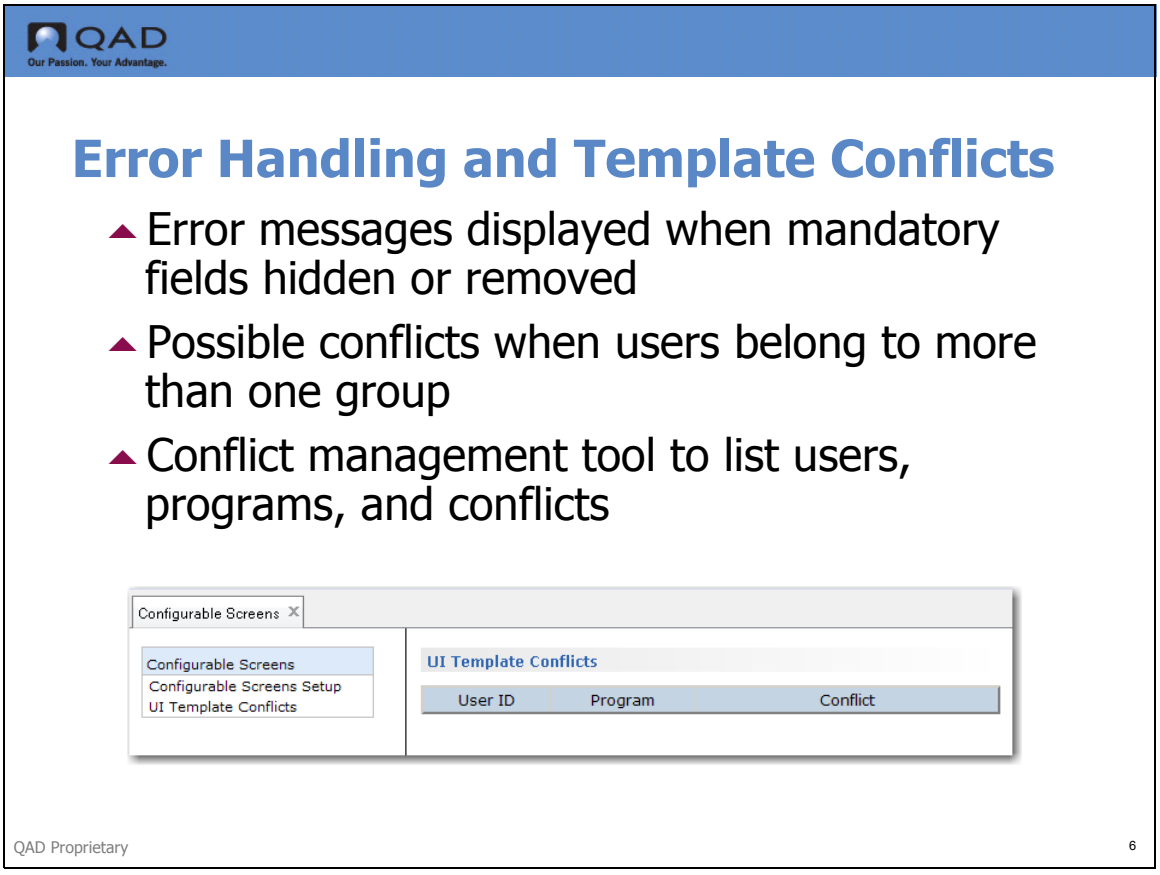
User Groups and Templates



Screen definitions are stored as UI templates, which can be assigned to user groups so that the screen appearance and behavior can vary based on the user's role within an organization.

In QAD Enterprise Applications - Enterprise Edition, the user group function is replaced by the role function. To enable Configurable Screens in Enterprise Edition, you therefore enter the name of the role to which you want to assign the function in the UI Design Group setup field. The users to which this role has been assigned are then authorized to use Configurable Screens.

Error Handling and Template Conflicts

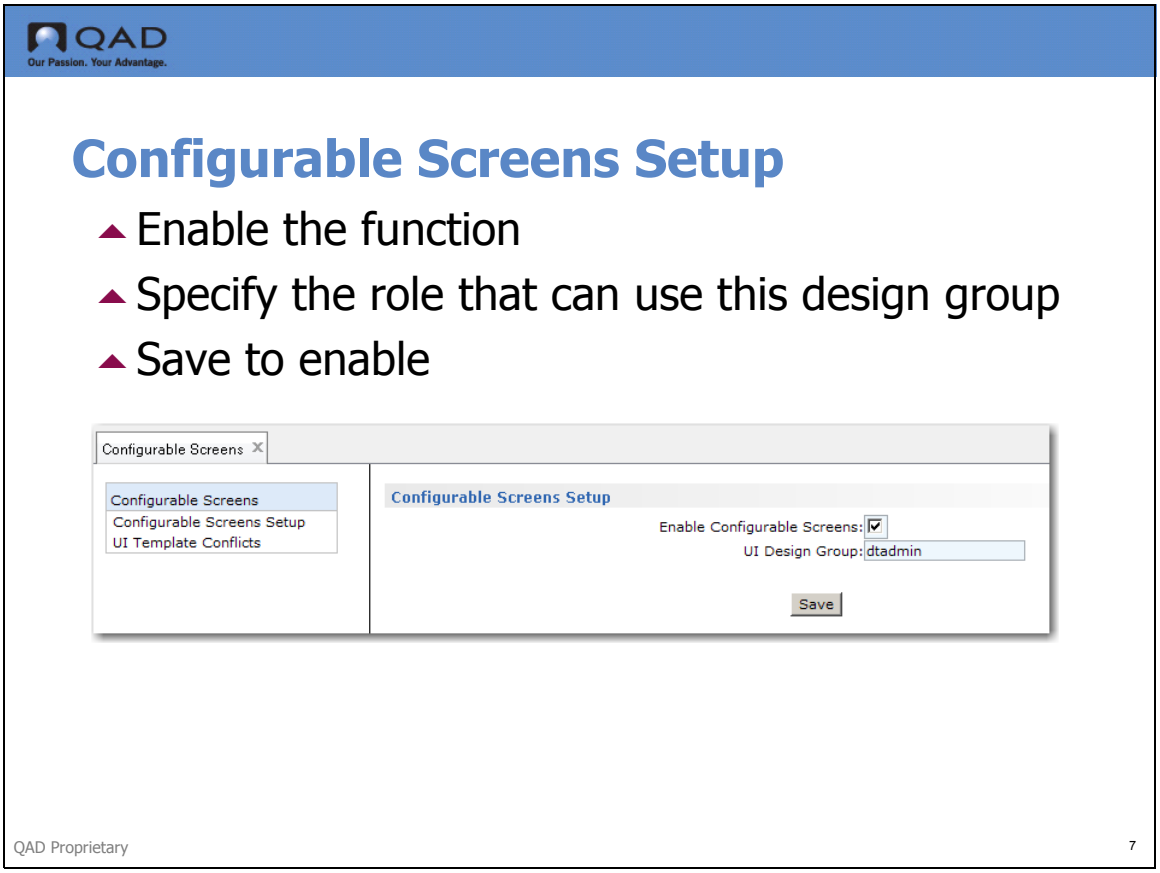


When you hide a field that is validated by the system, and attempt to progress through the frame containing the field, the system displays the following error message:

```
The following error was caused by a configurable screen setting.
Please contact your System Administrator.
ERROR: Country code does not exist. Please re-enter.
```

Use the Configurable Screen UI Template Conflicts screen to resolve conflicting template assignments. If a user belongs to more than one group, the system uses the template associated with the first group assigned to the user. You can view and manage these conflicts using the UI Template Conflicts function, accessible from the Configurable Screens table on the Configurable Screens Admin screen. The administrator can use the drop-down list in the Conflict column to select the group assignment that the system should prioritize.

Setup



To setup configurable screens:

1. Choose Administration, Configurable Screens.
2. Select Configurable Screens Setup.

   Enable Configurable Screens

   Select this field to enable the function for members of the UI Design Group. If you do not select the field, the function is disabled for all users.

   UI Design Group

   Enter the name of a role that is authorized to create and modify screen templates. Only users assigned to this group can create configurable screen templates. You can create a specific role for Configurable Screens using Role Create (36.3.6.1).

Click Save to apply this setting.

Creating a Template

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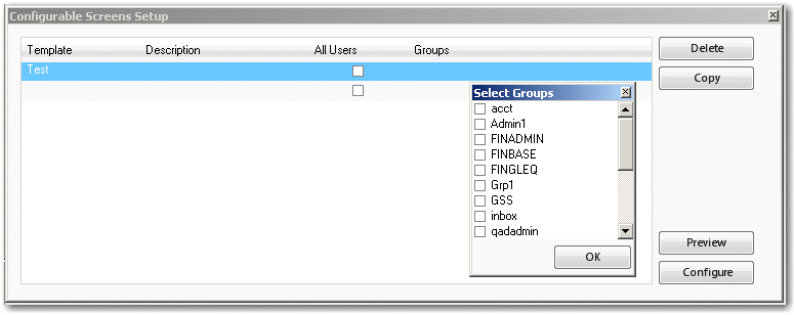
Creating a Template

- Select the program to configure
- Right-click to select Design
- Enter a name, description, and roles for the template
- Click Configure to enter Design mode



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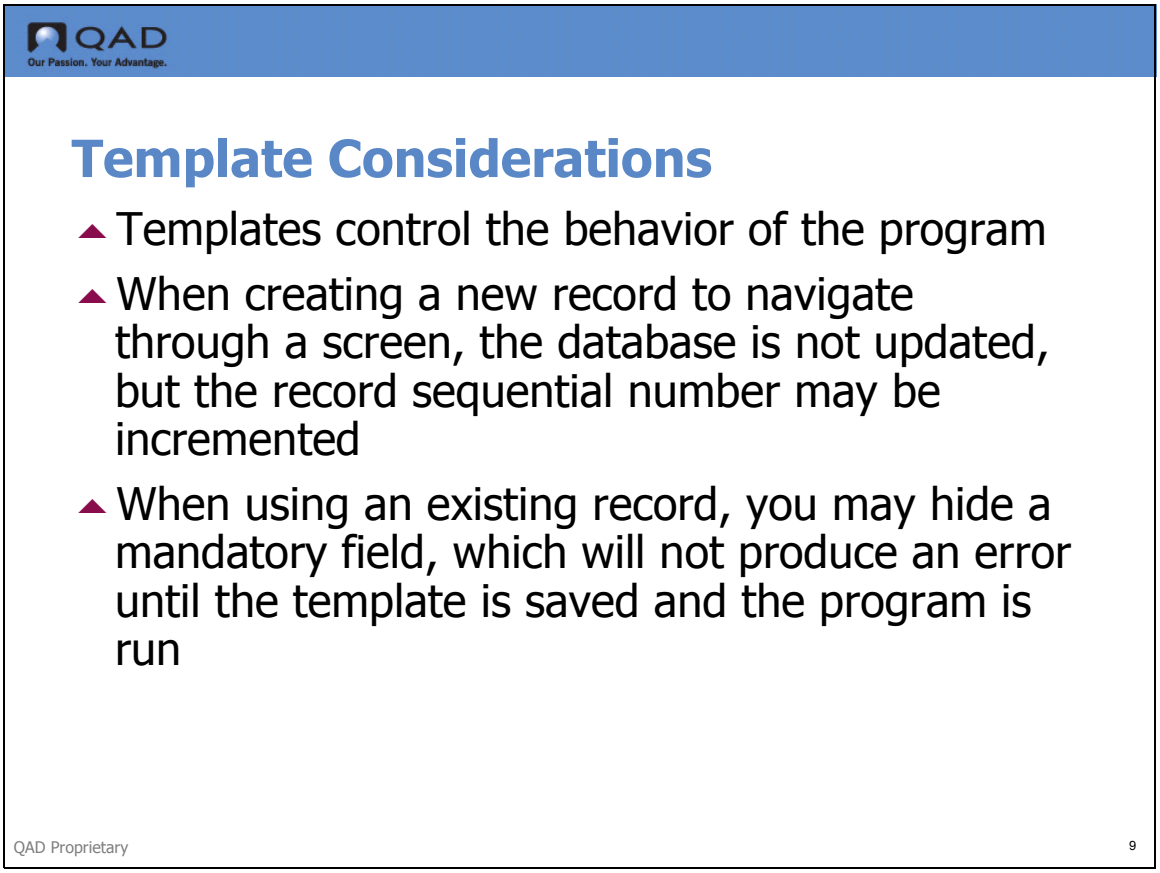
Right-click the program name in the Applications area, and select Design to display the setup screen.

You can assign this template to all users, or select a specific role.

Templates are defined per program. When you select Design for a program, the existing templates for this program are listed, and you can use Delete to remove unwanted templates, or Copy to copy an existing template. When you copy a template, the copy is re-named by adding a 1 to the template name.

Template Considerations



Each template defines how fields display, whether they are required and enabled, if default values are supplied, and any automatic navigation from frame to frame.

To move through the sequence of frames in a program, you must either create a new record or modify an existing one. In cases where new records are assigned sequential numbers, it may be better not to create new records. Although the records are not saved, number sequences are incremented.

If you hide a required field and test with an existing record that has a field value, no error is generated. Later when a user attempts to create a new record, template errors may occur because a field that needs input cannot be updated.

Performance Considerations

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Performance Considerations

- Consider the impact on the database of deleting the field at a later stage
- If the field is in constant use, many records are created for it
- When you delete, you delete the field and all its values.
- You can remove the field from the frame without deleting it

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When you create your own field and frame, you add the field to the schema, and as the program is used, users add values to it. When you delete, you delete the field and all its stored values from the database. Use the Disable or remove options to remove a field from the screen without deleting it from the database.

Configure Screen

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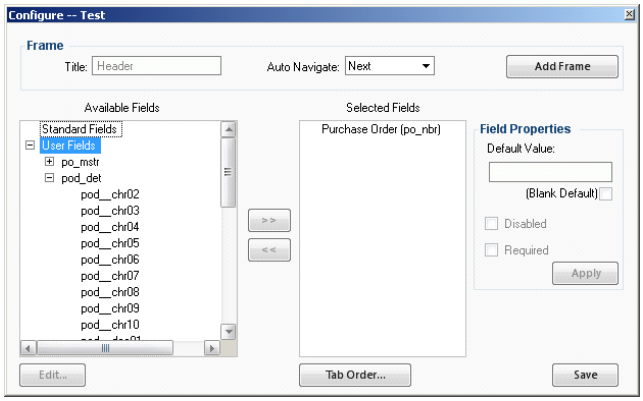
Configure Screen

- Auto-Navigate
- Available and Selected Fields
- Field Properties
- Tab Order



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You can click the Save button at any time to save your changes and leave configuration mode. Your changes are also saved each time you click Next or Back to access a new frame.

Auto-Navigate. Use Auto-Navigate to control navigation between frames. You can use the Next and Back options to skip entire frames. To skip an entire frame without generating an error, the proper defaults must exist for all required fields. Next and Back have a similar effect; use them to skip the display of a frame. Which one you use depends on the normal screen navigation.

Available Fields. This area displays the user-defined fields you can add to the current frame or to a new frame. These fields are defined for each program in the `configscreens.xml` file.

Selected Fields. This area displays the fields selected for use on the current frame.

Tab Order. The tabbing order is the sequence in which you access fields using the Tab key. Click to display the tabbing order of fields in the current Frame. Use the Up and Down buttons to change the order, if required.

Available Fields

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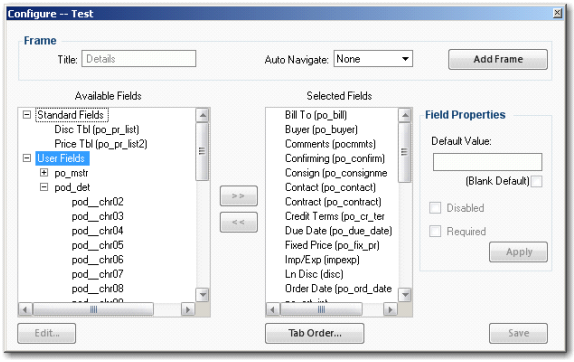
Available Fields

- Standard Fields and User Fields
- Tables and fields defined in `configscreens.xml`
- Add new user fields to `configscreens.xml`
- Default values for fields



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- Standard Fields

  These are existing data fields for the program. The Standard fields area only displays fields that have been hidden from the screen as part of a previous customization.

- User Fields

  These are the default user customization fields that are defined for all tables.

Adding New Fields and Tables to Programs

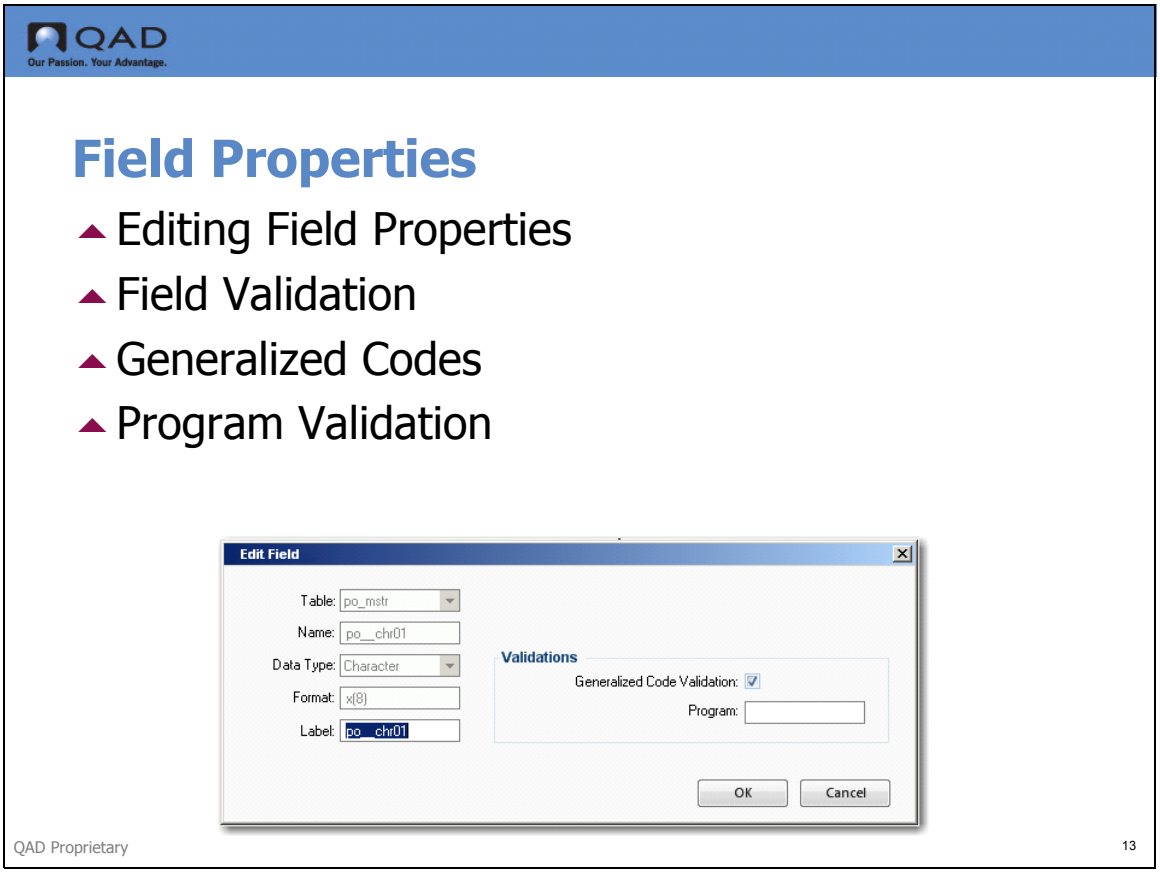
When you design a program, the user fields available to add to the screen are displayed in the Available Fields area. You can add these to existing frames, or create a new frame to contain one or more of these fields.

By default, only specific tables and fields are displayed for a particular program. These tables and fields are defined in the `configscreens.xml` file.

Default Values

You can add a default value to existing or new fields, which is displayed in red on the screen. A drop-down list of default values (None, True, or False) is displayed beside logical-type fields. Defaults you specify for a template override any other defaulting logic associated with a field are only applied to new records; when a record is being edited, no field values are overridden.

Field Properties



The Edit Field screen displays read-only properties for the selected field, and lets you modify the field label and validation.

Note The Edit Field screen is not available for Standard Fields.

Table

This read-only field displays the database table for which this field is defined.

Name

This read-only field displays the field name.

Data Type

This field displays the field type: character, date, logical, decimal, user 1, or user 2

Format

This read-only field displays the field data format, for example, the maximum number of characters for a character field.

Label

This field displays the field label. Note that the system will translate the value you put in the Label field if the value is a label term. Otherwise, the system will just use the value for the label.

Generalized Code Validation

Check this field to ensure that the values for this field are based on the valued specified in Generalized Code Maintenance (36.2.13). You can use Generalized Codes Validation Rpt (36.2.15) to view a list of database fields that have schema validation assigned.

Note When adding values in Generalized Codes Maintenance, you must specify the full table and field name. For example, if specifying values for the field `pt_chr01`, you enter the table and field name `pt_mstr.pt.chr01`.

Program

Use this field to enter the name of a user-defined Progress program that validates the field.

You can use the program template `gpvalidate.p` to create your own Progress programs. This template is stored in the *`QADInstallDir`*`/qadui/com/qad/shell/interface` directory and contains instructions for usage. Copy the template and rename it appropriately.

Adding Lookups to Fields

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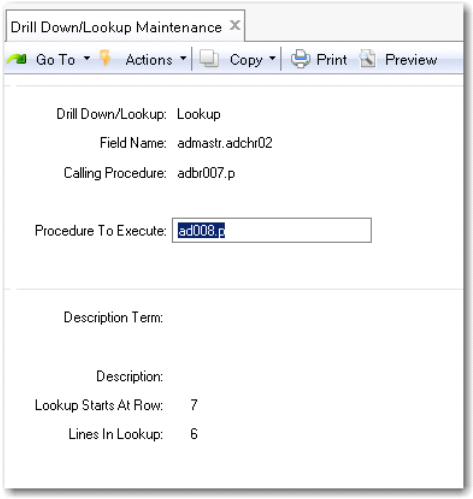
Adding Lookups to Fields

- Use Drill-Down/Lookup Maintenance
- Enter the full table and field name



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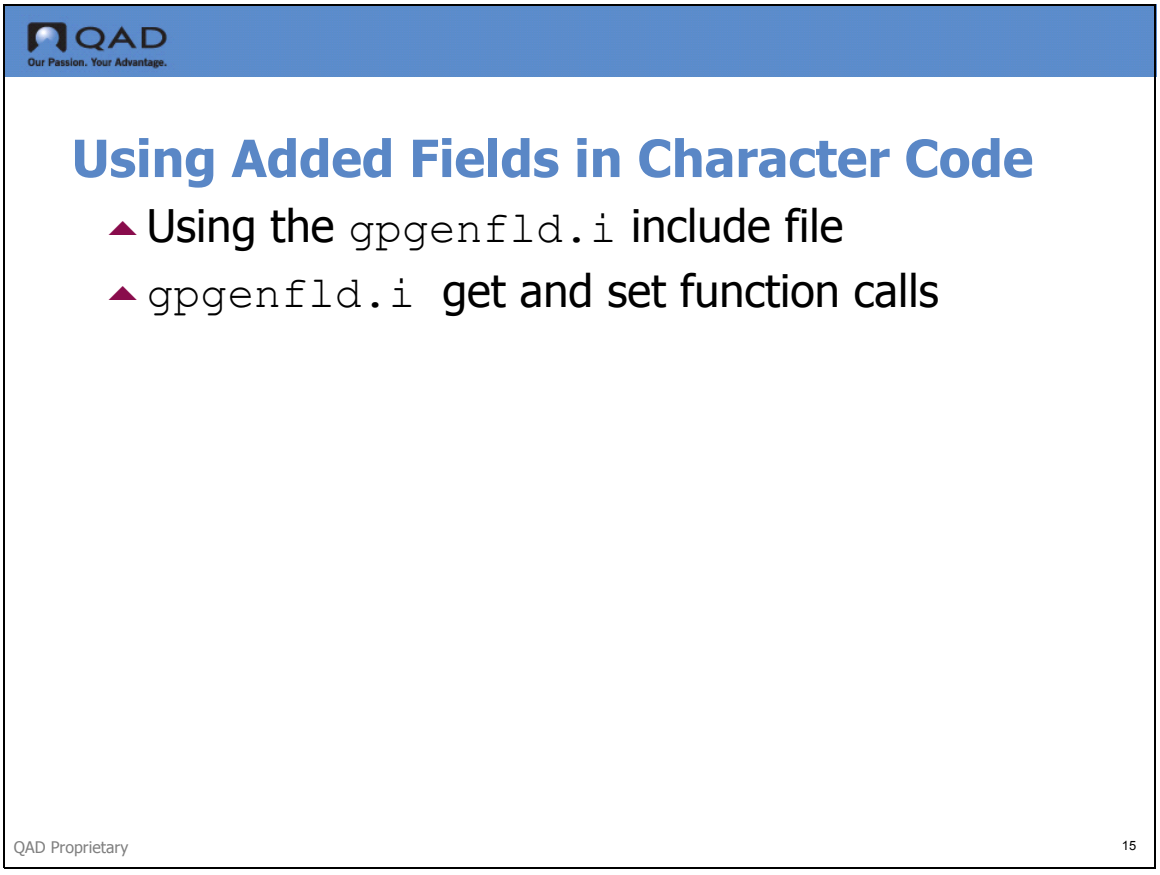
Use Drill-Down/Lookup Maintenance (36.4.8.1) to assign drill-downs or lookups to fields that do not have a browse, to replace a browse, or to delete one.

Warning Most programs attached to a function with Drill-Down/Lookup Maintenance display values in a database table. You can attach any Progress function to a field, and this program executes when the user selects Help. For example, you can attach the program `calculat.p` to field `pt_avg_int` to display a calculator.

When you create your own field and frame, you add the field to the schema, and as the program is used, users add values to it. When you delete, you delete the field and all its stored values from the database. Use the Disable or remove options to remove a field from the screen without deleting it from the database.

Using Added Fields in Character Code



You can modify character code to add new fields to program screens. New fields can be added to existing tables without requiring schema changes. These fields are not physically part of the master tables but are stored in a side table and thus require a different way to access their values from the code. For this purpose, the include file `gpgenfld.i` gives access to the values of these new fields through function calls.

Note This function is only used when modifying character code.

To gain access to the get and set function calls, include this file at the top of the program that will use them, for example:

```
{com/qad/mfgpro/gpgenfld.i}
```

Adding Frames

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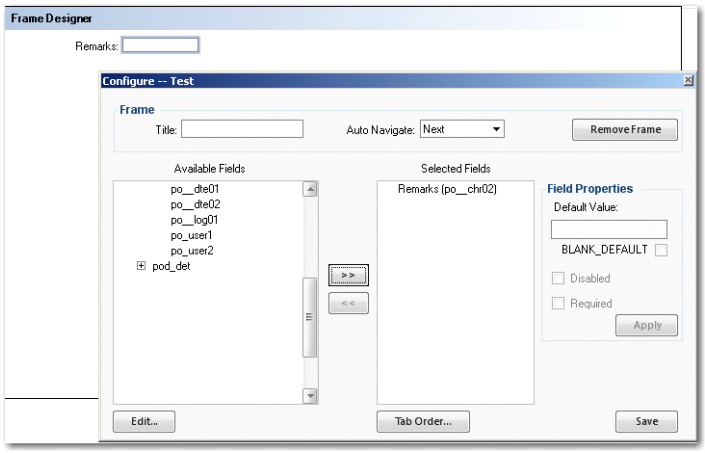
Adding Frames

- Frames option only available when fields are available
- Use Tab Order to set the tabbing order



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The Frame button is only available when there are available fields to add. A default message (8622, ‘See User Guide for adding User Fields) is displayed when no fields are available.

The new frame is displayed behind the Configure screen. To add fields to the screen, use the arrow key to move fields from the Available Fields area to the Selected Fields area. Use the cursor to position fields in the frame, and click the Tab Order button to set the tabbing order for the frame.

Click Save to save this frame and insert it into the program sequence, or Remove Frame to remove the frame from the sequence. When you remove a frame, the fields are selectable again in the Available Fields area.

When you create a new frame, save your updates and exit Configure Screens, the frame is displayed immediately following the current frame when you next launch the program.

Configurable Screens Report

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Configurable Screens Report

- All configured screens
- Details on individual fields

Configurable Screens Report | Configurable Screens Report -...

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Domain 1 Curr USD DB newyork **Page:1**

```
Program: popomt.p

    Template: Test
 Description:
      Groups:

        Frame: a (Auto Next)
          - po__chr05            Added

        Frame: b
          - po_cr_terms          Disabled
          - po_pr_list           Hidden
          - po_pr_list2          Hidden
          - po_rmks              Required

        Frame: fra_me_cfg633 (Added)
          - po__chr04
          - po__chr05
          - po__chr06
          - po__chr09

                    End of Report
```

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Domain 1 Curr USD DB newyork **Page:2**

```
Report Criteria:                    Report Submitted By:      mfg
            Program: popomt.p   To: popomt.p          Output: PAGE
```

36.20.10.17 Configurable Screens Report mgcfgrp.p

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You can generate a report on individual configured screens or on all screens.

Exercises and Knowledge Check

1. How does Configurable Screens handle template conflicts?
2. You cannot delete design templates: True or False?
3. How do you define the tabbing sequence in a new frame?
4. In which file are new fields defined?
5. How do you add a lookup to a field?
6. What causes the Frame button to be unavailable?